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Water-related Subsidies and Groundwater Regulation in India: Social and Environmental Dimensions

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Abstract

The role of groundwater in realising the fundamental right to water and food security of the nation is immense as it contributes to half of India's drinking water and irrigation water demands. However, the current groundwater legal framework based on the land-water nexus leads to inequitable access and allocation by restricting the benefits of groundwater access to landowners. The State interventions like water-related subsidies aim to address this inequitable access and allocations and ensure equity and inclusiveness in accessing groundwater drinking water supply and necessary inputs like technology and credit in groundwater-based irrigation. Nevertheless, factors like land rights, social discrimination, economic disparities, political choices, and bureaucratic interventions that influence and determine access to subsidies in drinking water and agriculture development schemes widen the inherent inequity in groundwater access and affect supply sustainability. Furthermore, the excessive use of subsidies and the current land-water nexus has led to groundwater and aquifers' depletion and deterioration, threatening the source sustainability and necessitating reconceptualization of our current legal, policy and administrative framework to address these ecological impacts of subsidies and groundwater extraction. This thesis explores the role of subsidies in equity and inclusiveness in groundwater access and allocation and examines the impacts and implications of subsidies on distributive and social equity and environmental sustainability in groundwater access and regulation in India. It uses a tripartite water justice framework based on distributive, social, and ecological justice and employs a socio-legal approach to analyse subsidies' contribution to groundwater access and sustainability. This thesis argues for a paradigm shift in groundwater regulation from the current land rights-based, anthropocentric water demands focused, curative approach to adopting ecological justice framework in water governance to balance human rights and environmental water needs.

Key words: Groundwater, Water-related Subsidies, Land-water Nexus, Water Justice

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Abbreviation

ADB	Asian Development Bank
AEE	Assistant Executive Engineer
ARWSP	Accelerated Rural Water Supply Programme
BDO	Block Development Officer
BPL	Below Poverty Line
CCM	Common Concern of Mankind
CGWB	Central Groundwater Board
CHM	Common Heritage of Mankind
CPR	Civil and Political Rights
CSS	Centrally Sponsored Scheme
CUP	Cambridge University Press
DDP	Desert Development Programme
DPAD	Drought Prone Areas Programme
DPSP	Directive Principles of State Policy
EPA	Environment Protection Act 1986
GPs	Grama Panchayats
HUP	Harvard University Press
IELRC	International Environmental Law Research Centre
IFIs	International Financial Institutions
IFPRI	International Food Policy Research Institute
IHTC	Individual Household Tap Connections
IWDP	Integrated Wasteland Development Programme
JBIC	Japan Bank for International Cooperation
JJM	Jal Jeevan Mission
JJY	Janta Jal Yojana
KRWSSA	Kerala Rural Water and Sanitation Agency
KWA	Kerala Water Authority
LPCD	Litre Per Capita per Day
LSG	Local Self Governments
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MJSA	Mukyamantri Jal Swavlamban Abhiyan
NFSM	National Food Security Mission
NGO	Non-Government Organisation
NGT	National Green Tribunal
NMOOP	National Mission on Oil Seeds and Oil Palm
NRDWP	National Rural Drinking Water Programme
OBC	Other Backward Communities
ODF	Open Defecation Free
OUP	Oxford University Press
PHED	Public Health & Engineering Department
PMKSY	Pradhan Mantri Krishi Sinchay Yojana
PPP	Polluter Pays Principle
PTD	Public Trust Doctrine
RGJSY	Rajiv Gandhi Jal Swavlamban Abhiyan
RGNDWM	Rajiv Gandhi National Drinking Water Mission
RKVY	Rastriya Krishi Vikas Yojana

RO	Reverse Osmosis
RoN	Rights of Nature
SC	Scheduled Castes
SER	Social and Economic Rights
SPCB	State Pollution Control Board
ST	Scheduled Tribes
UDHR	Universal Declaration of Human Rights, 1948
UOI	Union of India
US	United States of America
WB	World Bank
WTO	World Trade Organisation

Glossary

Terminologies used	Meaning in Indian Context
<ul style="list-style-type: none"> • Anganwadi 	<ul style="list-style-type: none"> • Rural mother and child care centres
<ul style="list-style-type: none"> • Assistant Executive Engineer/Executive Engineer 	<ul style="list-style-type: none"> • Various Designation of Engineers in Irrigation/Groundwater Departments
<ul style="list-style-type: none"> • BPL 	<ul style="list-style-type: none"> • Economic Benchmark based on income to determine financially weaker sections.
<ul style="list-style-type: none"> • Dalits 	<ul style="list-style-type: none"> • People belonging to SC Communities.
<ul style="list-style-type: none"> • Depressed classes 	<ul style="list-style-type: none"> • Communities including SC/OBC/ST who, faced historic social discrimination.
<ul style="list-style-type: none"> • Kunbis 	<ul style="list-style-type: none"> • Communities in Kerala and South India who usually belong to Other Eligible Communities.
<ul style="list-style-type: none"> • Grama Panchayats 	<ul style="list-style-type: none"> • Lowest Level of Local self-government Units, functioning at the village level.
<ul style="list-style-type: none"> • Moopan 	<ul style="list-style-type: none"> • The community leader of tribals
<ul style="list-style-type: none"> • Rikshawallas 	<ul style="list-style-type: none"> • Rikshaw Puller
<ul style="list-style-type: none"> • Sarpanch 	<ul style="list-style-type: none"> • Grama Panchayat President
<ul style="list-style-type: none"> • Scheduled Caste 	<ul style="list-style-type: none"> • Official name granted to the lowest caste people in India, who were classified as previously untouchables.
<ul style="list-style-type: none"> • Scheduled Tribes 	<ul style="list-style-type: none"> • Official name granted to indigenous people
<ul style="list-style-type: none"> • State 	<ul style="list-style-type: none"> • Denotes Nation as a whole
<ul style="list-style-type: none"> • state 	<ul style="list-style-type: none"> • state government

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- *Subhash Kumar v State of Bihar* (1991 (1) SCC 598
- *The State of West Bengal v Kesoram Industries Ltd* MANU/SC/0038/2004
- *TN Godavarman Thirumulpad v Union of India* MANU/SC/0122/2012
- *Vardhaman Kaushik v Union of India* MANU/GT/0109/2017
- *Vellore Citizen's Welfare Forum v Union of India* (1996) 5 SCC 647
- *Virender Gaur v State of Haryana* (1995) 2 SCC 577
- *Vishala Kochi Kudivela Sambrakshasamiti v State of Kerala* 2006 (1) KLT 919

Statutes

- Constitution of India 1950
- Constitution of the Republic of Ecuador 2008
- Consumer Protection Act 2019
- Draft National Water Framework Bill 2016
- Environment (Protection) Act 1986
- Indian Easement Act 1882
- Kerala Groundwater (Control and Regulation) Act 2002
- Kerala Municipalities Act 1994
- Kerala Panchayati Raj Act 1992
- Kerala State Water Policy 2008
- Kerala Water and Waste-Water Ordinance 1984
- Kerala Water Authority (Water Supply) Regulations 1991
- Kerala Water Supply and Sewerage Act 1986
- Law of the Rights of Mother Earth, 2010
- Model Bill to Regulate and Control the Development and Management of Groundwater, 2005
- National Water Policy 2012
- Protection of Civil Rights Act 1955
- Rajasthan State Water Policy 2010
- Rajasthan Water Resources Regulatory Act, 2012
- Scheduled Caste & Scheduled Tribes (Prevention of Atrocities) Act 1989
- Te Awa Tupua Act 2017
- Water (Prevention and Control of Pollution) Act, 1974

Introduction

1.1 Overview of this Research

Water-related subsidies (*from now on* subsidies) form an integral part of drinking water, sanitation, and irrigation development schemes worldwide.¹ These subsidies emanating from the State policies on economic growth and welfare-oriented social sector schemes aim to achieve equity and inclusiveness in accessing natural, economic, and social resources. Such subsidies have tremendous significance in realising the human right to water in developing countries, particularly in the light of neoliberalist water governance patterns.² Their contribution to irrigation is inevitable in supporting millions of farmers' food and water security.³

The contribution of subsidies to groundwater, the most relied on water resource for drinking water and irrigation in India, is pivotal for the nation's water and food security, assuring equitable groundwater access and allocations. It aids the State in implementing the fundamental right to water through groundwater-based drinking water supply schemes, emphasising the uncovered habitats in rural areas. These subsidies in the form of credit, technological development, and energy revolutionised mechanised pumping making groundwater a key irrigation driver since the Green Revolution.⁴

Subsidies in groundwater helped unleash the current inequitable groundwater allocation framework regulated by the land-water nexus. These policy instruments help the State to address social justice, distributive equity and inclusiveness in groundwater access and allocation by overcoming the inherent social discriminations and economic

¹ Charisma Acey and others, 'Cross-Subsidies for Improved Sanitation in Low Income Settlements: Assessing the Willingness to Pay of Water Utility Customers in Kenyan Cities' (2019) 115 *World Development* 160; The World Bank, 'Doing More with Less: Smarter Subsidies for Water Supply and Sanitation' (World Bank 2019) xii.

² Clarissa Brocklehurst, Jan Janssens and Pete Kolsky, 'Designing Water-Pricing Policy, Tariffs and Subsidies to Help the Poor' (2002) 21 (2) *Waterlines* 4.

³ HK Pullabhotla, C Kumar and S Verma, 'Micro-Irrigation Subsidies in Gujarat and Andhra Pradesh [India] Implications for Market Dynamics and Growth' (IWMI-Tata Water Policy Research Highlight 2012) 43.

⁴ Govindan Parayil, 'The Green Revolution in India: A Case Study of Technological Change' (1992) 33 (4) *Technology and Culture* 737.

differences in the water sector. However, the interaction of subsidies with land rights contributes to the widening social and economic divide rather than expanding its positive externalities. Additionally, the excessive use of subsidies promotes groundwater overexploitation, leading to environmental harm and threatening the source and ecosystem water balance, with severe consequences on supply sustainability.

These social, distributive and environmental inequities stimulate water (in)justice in groundwater access among water users, demanding a regulatory framework based on a water justice framework. This thesis examines the interactions and implications of water-related subsidies on social and distributive equity and environmental sustainability in groundwater access and regulation in India through the fieldwork conducted in two states. It argues that adopting a water justice framework is essential to ensure social and distributive equity and environmental sustainability in groundwater access and regulation by balancing anthropogenic and ecological water needs.

1.2 Situating the Thesis: Context of the Research

Groundwater constitutes India's primary source of drinking water and irrigation water demands. Its contribution to rural drinking water is significant, with more than three-quarters of the population relying on it⁵ and forming a reliable source for urban drinking water needs.⁶

Reliance on groundwater for irrigation water demands surged over the past decades with the fast growth of mechanised pumping.⁷ Groundwater use for irrigation has increased dramatically since the Green Revolution⁸, also known as the Tubewell Revolution.⁹ Large-scale investments in this resource extraction for irrigation have

⁵ The World Bank, 'Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India' (The World Bank 2010) ix.

⁶ S Janakarajan, 'Unequal Power, Unequal Contracts and Unexplained Resistance: The Case of the Peri-Urban Areas of Chennai' in KJ Joy and others (eds), *Water Conflicts in India: A Million Revolts in the Making* (Routledge 2008) 69.

⁷ PS Vijay Shankar, Himanshu Kulkarni and Sunderrajan Krishnan, 'India's Groundwater Challenge and the Way Forward' (2011) 46 (2) *Economic & Political Weekly* 37.

⁸ Marcus Moench, 'Groundwater Policy: Issues and Alternatives in India' (International Irrigation Management Institute 1996) 3.

⁹ Robert Repetto, 'The "Second India" Revisited: Population, Poverty, and Environmental Stress Over Two Decades' (World Resources Institute 1994) 35.

tended to a 'race to below' for tapping the untapped aquifers with its skewed nature of development in different places.¹⁰

With more than half of the irrigation demands catalysed by this mechanised groundwater exploration, groundwater constitutes 90% of minor irrigation in the country.¹¹ The 5th Minor Irrigation Census data report shows an increasing trend in groundwater schemes while surface water schemes are decreasing¹², which offers the reliability of groundwater and shows its predominance in the irrigation sector.¹³

The nature and volume of groundwater use have categorised India as the largest user and exploiter of this resource globally. This 'atomised development' of groundwater¹⁴ and increased reliance on this resource led to overexploitation in several areas¹⁵, with the number of regions declared 'over exploited' in groundwater exploration surge over the past few years. While the data from the 2007 Planning Commission Report shows that among 5723 assessment units, 71% are safe (4078), 10% semi-critical (550), 4% are critical (226), and 15% categorised as overexploited (839),¹⁶ the recent data published by the Central Groundwater Board (CGWB) in 2019 shows among 6881

¹⁰ Tushaar Shah, *Taming the Anarchy: Groundwater Governance in South Asia* (Routledge 2009); Shankar, Kulkarni and Krishnan (n 7) 39.

¹¹ Ministry of Water Resources, River Development and Ganga Rejuvenation, 'Report of the 5th Census of Minor Irrigation Schemes' (Government of India 2017) v.

¹² *ibid* v.

¹³ Tushaar Shah, OP Singh and Aditi Mukherji, 'Some Aspects of South Asia's Groundwater Irrigation Economy: Analyses from a Survey in India, Pakistan, Nepal Terai and Bangladesh' (2006) 14 (3) *Hydrogeology Journal* 286, 292.

¹⁴ For this terminology and context, see Shah, *Taming the Anarchy* (n 10).

¹⁵ M Dinesh Kumar and others, *The Water, Energy and Food Security Nexus: Lessons from India for Development* (Routledge 2014) 2; M Dinesh Kumar, 'Food Security and Sustainable Agriculture in India: The Water Management Challenge' (International Water Management Institute, 2003); Aditi Mukherji, 'Groundwater Development and Agrarian Change in Eastern India' (IWMI-Tata Comment 2003) 9; Tushaar Shah and others, 'Global Groundwater Situation: Opportunities and Challenges' (2001) 36 (43) *Economic & Political Weekly* 4142.

¹⁶ Planning Commission of India, 'Report of the Expert Group on Groundwater Management and Ownership' (Government of India 2007) 7. This assessment is done jointly by State Ground Water Departments and CGWB. If the stage of groundwater use is less than or equal to 90%, those areas are safe. But if the percentage is above 100%, then those areas are categorized as over exploited. Stage of groundwater use is the percentage of annual groundwater draft and net annual groundwater availability.

units assessed, only 62 % are safe (4310), 14% units are semi-critical (972), 4.5% are critical (313) and 17% of units (1186) falls under the overexploited category.¹⁷

Several factors, including the hydrogeological availability and technological developments, influence the dynamics of this groundwater choice and its boom despite the availability of subsidised surface water.¹⁸ However, the contribution of subsidies in ensuring continued reliance on groundwater resources assuring equity and inclusiveness and its role in widening groundwater exploitation attracts more attention among such factors and calls for detailed research.

This section contextualises the thesis framework by examining the nature and trend in groundwater development, including the factors influencing and contributing to this exploitation and leading to inequitable groundwater access and allocation and highlights the significance of a comprehensive regulatory framework to assure equity and sustainability in groundwater access and balance human and ecosystem water demands.

1.2.1 The magnitude of Groundwater Reliance: Supporting Water and Food Security

Groundwater is a vital resource for socio-economic development, with a sizeable proportion of the population relying on it for life and livelihood.¹⁹ It heavily supports India's rural development and economic stability with water and food security and employment generation. Additionally, its role in the drinking water supply is also relevant. Nevertheless, the spatial and temporal variations in water resource availability

¹⁷ Department of Water Resources, 'National Compilation on Dynamic Groundwater Resources of India 2017' (Government of India 2019) 50.

¹⁸ Nitin Bassi, 'Groundwater Depletion in India: Potential of Alternative Approaches and Policy Instruments' in Vishal Narain and Annasamy Narayanamoorthy (eds), *Indian Water Policy at the Cross-Roads: Resources, Technology and Reforms* (Springer 2016) 36; Anjal Prakash, *The Dark Zone : Groundwater Irrigation, Politics and Social Power in North Gujarat* (Orient Longman 2005); MR Llamas and P Martínez-Santos, 'Intensive Groundwater Use: Silent Revolution and Potential Source of Social Conflicts' (2005) 131 (5) *Journal of Water Resources Planning and Management* 337; John Briscoe and RPS Malik, *India's Water Economy: Bracing for a Turbulent Future* (OUP 2006).

¹⁹ Raj Mohan Panda, 'A Growing Concern: How Soon Will India Run Out of Water?' (2011) 1 (2) *Journal of Global Health* 135.

and the expanding gap in the demand and availability of groundwater use influence water and food security for different uses.²⁰

Groundwater distribution, influenced by variations in geological, tectonic and climatic conditions, is uneven throughout the country, with extraction rate exceeding recharge in several states like Rajasthan, Punjab and Haryana and vice versa in several other parts like the North-Eastern States where abundant rainfall facilitates recharge.²¹ Several factors like uncertainties in demand from increasing population, socio-economic growth variation, insufficient understanding of the effects of climate change on the water cycle,²² the rapid spread of energised pumping technologies, resource characteristics, and governmental policies²³ aggravate the impacts of unsustainable imbalance between supply and demand in several parts of the country.

A. Fostering Socio-economic Development in Agrarian Economy: Negative Externalities Followed

Factors like subsidised energy access and institutional financial support for infrastructure development determine the scope and extent of groundwater exploitation in rural areas.²⁴ Some scholars point out that the preference for groundwater is because

²⁰ M Dinesh Kumar, MVK Siva Mohan and A Narayanamoorthy, 'Food Security Challenges in India: Exploring the Nexus between Water, Land and Agricultural Production' in M Dinesh Kumar, MVK Siva Mohan and Nitin Bassi (eds), *Water Management, Food Security and Sustainable Agriculture in Developing Economies* (Routledge 2013) 38.

²¹ Mahender Mehta, 'Status of Groundwater and Policy Issues for Its Sustainable Development in India' in Bharat Sharma, Karen G Villholth and Kapil D Sharma (eds), *Groundwater Research and Management: Integrating Science into Management Decisions* (IWMI 2005) 63.

²² Rajiv Sinha and Alexander L Densmore, 'Focus on Sustainable Groundwater Management' (2016) 51(52) *Economic & Political Weekly* 53; Rajiv Sinha, 'Recognizing Spatial Heterogeneity in Aquifer Distributions: Lessons for Sustainable Groundwater Management' (2015) 109 (3) *Current Science* 395.

²³ Christopher A Scott and B Sharma, 'Energy Supply and the Expansion of Groundwater Irrigation in the India' (2009) 7 (2) *International Journal of River Basin Management* 1; Christopher A Scott and Tushaar Shah, 'Groundwater Overdraft Reduction through Agricultural Energy Policy: Insights from India and Mexico' (2004) 20 (2) *Water Resource Development* 149.

²⁴ M Dinesh Kumar, A Narayanamoorthy and MVK Siva Mohan, 'Key Issues in Indian Irrigation' in M Dinesh Kumar, MVK Siva Mohan and Nitin Bassi (eds), *Water Management, Food Security and Sustainable Agriculture in Developing Economies* (Routledge 2013) 17.

it can be accessed with the 'least financial, social and environmental consequences' to meet irregularities in water demand-supply.²⁵

Groundwater is the driving force for poverty alleviation and socio-economic development in many countries.²⁶ The groundwater-based irrigation was also critical for India's agriculture development and food security, supported and promoted by various national policies and schemes.²⁷ Substantial energy-water-food nexus followed the energy subsidies, creating positive externalities on agriculture, rural development and poverty alleviation.²⁸ Any serious interference on one factor produced severe repercussions on the other.²⁹

However, unsustainable resource consumption utilising these subsidies, particularly the energy subsidies causing groundwater overexploitation, adversely impacts the resources and water users. Such impacts on the resources as such can be three-fold:

- Declining water table increases the pressure to dig deep with more sophisticated technology and affects recharge and natural flow to surface water bodies.
- Depletion within the aquifer system leads to a reduction in the buffer zone in drought-prone areas.
- Over-drafting, salinity intrusion, leaching of fertilisers and pesticides and certain natural elements like fluoride lead to quality deterioration.³⁰

The tubewell irrigation vigour promoted through these energy subsidies since the Green Revolution, once considered the solution for agricultural development and water

²⁵ Kumar, Siva Mohan and Narayanamoorthy (n 20) 39–40.

²⁶ HO Nwankwoala, 'Groundwater and Poverty Reduction: Challenges and Opportunities for Sustainable Development in Nigeria' (2016) 7 Hydrol Current Res 240.

²⁷ KD Sharma, 'Groundwater Management for Food Security in India' (2009) 96 (11) Current Science 1444, 1445.

²⁸ Anindita Sarkar, 'Groundwater Irrigation and Farm Power Policies in Punjab and West Bengal: Challenges and Opportunities' (2020) 140 Energy Policy 111437; Navroz K Dubash, 'The Electricity-Groundwater Conundrum: Case for a Political Solution to a Political Problem' (2008) 42 Economic & Political Weekly 45; Tushaar Shah and Shilp Verma, 'Co-Management of Electricity and Groundwater: An Assessment of Gujarat's Jyoti gram Scheme' (2008) 43 Economic & Political Weekly 59.

²⁹ Rajiv K Gupta, 'Water and Energy Linkages for Groundwater Exploitation: A Case Study of Gujarat State, India' (2002) 18 (1) International Journal of Water Resources Development 25.

³⁰ Himanshu Kulkarni, 'Groundwater Overdraft: Perspectives and Impacts Groundwater Overdraft: A Physical Perspective' in Roger C Calow and David McDonald (eds), *Community Management of Groundwater Resources in Rural India: Research Report* (British Geological Survey 2005) 2.

problems, is now the cause of groundwater depletion³¹ and food security issues.³² Excessive reliance on groundwater irrigation contributed to this depletion and deterioration of groundwater and impacted aquifers, significantly challenging water and food security.³³ The negative externalities of this undue reliance include groundwater depletion, salinisation and waterlogging and anthropogenic water pollution.³⁴ Elements like inequitable land ownership, land-water nexus-based groundwater regulation, and policy interventions like subsidies catalyse this reliance leading to a situation described by Lester R Brown as a *"race to the bottom"*³⁵ where the search for water is deepening, food production threatened, and food security concerns rising high.³⁶

B. Contributing to Fundamental Right to Water: Equitable Access Restricted by Lack of Rights-based Approach and Land-Water Nexus

The contribution of groundwater to drinking water security and the realisation of the fundamental right to water in India is crucial because it supports more than half of the water needs in this sector.³⁷ Realising the contribution of groundwater to the nation's drinking water security and the significance of clean and safe drinking water to public health, the drinking water supply receives considerable attention from every government.

³¹ Mihir Shah, PS Vijay Shankar and Francesca Harris, 'Water and Agricultural Transformation in India' (2021) 56 (29) *Economic & Political Weekly* 46, 47.

³² Richa Kumar, 'India's Green Revolution and Beyond' (2019) 54 (34) *Economic & Political Weekly* 41.

³³ M Dinesh Kumar, *Groundwater Management in India: Physical, Institutional and Policy Alternatives* (SAGE 2007); M.G Chandrakant and Jeff Romm, 'Groundwater Depletion in India—Institutional Management Regimes' (1990) 30 (3) *Natural Resources Journal* 485.

³⁴ MS Vani, 'Groundwater Law in India: A New Approach' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 435, 436.

³⁵ Lester R Brown, *World on the Edge: How to Prevent Environmental and Economic Collapse* (Routledge 2011) 26.

³⁶ Edith Brown Weiss, 'The Coming Water Crisis: A Common Concern of Humankind' (2012) 1 *Transnational Environmental Law* 153.

³⁷ Himanshu Kulkarni and PS Vijay Shankar, 'Groundwater Resources in India: An Arena for Diverse Competition' (2014) 19 (9) *Local Environment* 990.

Drinking water is also the most vital element in the institutional and legal framework of any water law or policy.³⁸ Every government involved in the development and implementation of water management systems aim to ensure access to safe, clean and sufficient water for all and regulate the use and management of water through comprehensive laws and policies.³⁹ Currently, pluralistic water sources cater to drinking water demands, and fragmented rules and regulations govern the drinking water supply in India.⁴⁰

The right to water is a fundamental right under Article 21 of the Constitution of India (*after this* Constitution),⁴¹ essential and integral for life. It provides citizens with the right to approach the courts for its violation and points to the obligations of the State to respect, protect and fulfil this right.⁴² The courts held that water is "the basic need for the survival of human beings and is part of the right of life and human rights as enshrined in the Constitution"⁴³ and reminded the State of its duty to adopt progressive and sustainable measures to realise this right:

"[A]ny government, whether proletarian or bourgeois and certainly a Welfare State committed to the cause of the common man, is bound to provide drinking water to the public which should be the foremost duty of

³⁸ *Ashok Kumar Agarwal v Hyderabad Metropolitan Water Supply & Sewerage Board* 2006 (3) ALD 541 [8]; *Delhi Water Supply & Sewage Board v State of Haryana* (1996) 2 SCC 572 [1]; Philippe Cullet, 'Drinking Water Reforms' in Philippe Cullet Alix Gowlland Gualtieri, Roopa Madhav and Usha Ramanathan (eds), *Water Law for the Twenty-First Century: National and International Aspects of Water Law Reform in India* (Routledge 2010) 160.

³⁹ Irina Zodrow, 'International Aspects of Water Law Reforms in in Philippe Cullet and others (eds) *Water Law for the Twenty-First Century: National and International Aspects of Water Law Reform in India* (Routledge 2010) 36.

⁴⁰ Philippe Cullet, *Water Law, Poverty, and Development: Water Sector Reforms in India* (OUP 2009)141.

⁴¹ Constitution of India, Article 21- "No person shall be deprived of his life or personal liberty except according to procedure established by law".

⁴² *Subhash Kumar v State of Bihar* (1991 (1) SCC 598; *FK Hussain vs Union of India* AIR 1990 Ker 321; *Attakoya Thangal v Union of India* 1990(1) KLT 550; *Vishala Kochi Kudivela Sambrakshasamiti v State of Kerala* 2006 (1) KLT 919.

⁴³ *Narmada Bachao Andolan v Union of India* (2000) 10 SCC 664; *AP Pollution Control Board vs Prof M V Nayudu (Retd)* AIR 1999 SC 812.

any Government. When considering the priorities of a government, supply of drinking water should be on the top of the list." ⁴⁴

The courts highlighted the fundamental right to water jurisprudence reminds the State of its duties to ensure clean and safe drinking water, protect water from pollution,⁴⁵ and prevent health hazards.⁴⁶ The contribution of groundwater to the realisation of the fundamental right to water for citizens and the implementation of the duty of the State is immense. The State water supply schemes heavily rely on groundwater resources and ensure more coverage through policy-based instruments like subsidies.

However, two elements restrict the scope of ensuring equity and inclusiveness in realising the fundamental right to water for all. Firstly, the current drinking water supply framework doesn't adopt a rights-based approach but relies on a policy framework to ensure this right despite this judicial development.⁴⁷ This policy-based water supply follows the welfarist objectives of the State, using policy instruments like subsidies to deliver water to its citizens. The lack of a rights-based approach to water supply fails to address the inequitable access and allocations of drinking water, particularly groundwater resources, the most relied on source.

Secondly, the land-water nexus in groundwater access and allocations restrict the benefits of groundwater access to landowners compromising equity and inclusiveness in realising the fundamental right to water.⁴⁸ Social, economic and political factors like caste,⁴⁹ religion, gender⁵⁰, and intersectoral water allocation from rural to urban areas affect agricultural stability, food security and groundwater depletion in rural areas⁵¹,

⁴⁴ *Vishala Kochi Kudiavela Sambrakshasamiti v State of Kerala* (n 42).

⁴⁵ *PR Subash Chandran v Govt of AP and Others* 2001 (5) ALD 771.

⁴⁶ *D Viswanatha Reddy and Company v Government of Andhra Pradesh* 2002 (4) ALD 161.

⁴⁷ Philippe Cullet, 'Is Water Policy the New Water Law? Rethinking the Place of Law in Water Sector Reforms' (2012) 43 (2) IDS Bulletin 69.

⁴⁸ See Sec 1.2.2.

⁴⁹ Rakesh Tiwary and Sanjiv J Phansalkar, 'Dalits' Access to Water: Patterns of Deprivation and Discrimination' (2007) 3 (1) International Journal of Rural Management 43.

⁵⁰ Rhodante Ahlers and Margreet Zwarteveen, 'The Water Question in Feminism: Water Control and Gender Inequities in a Neo-Liberal Era' (2009) 16 Gender, Place & Culture 409; Deepa Joshi, 'Caste, Gender and the Rhetoric of Reform in India's Drinking Water Sector' (2011) 46 Economic & Political Weekly 56; Barbara van Koppen, 'Gender and Water' in Ken Conca and Erika Weinthal (eds), *The Oxford Handbook of Water Politics and Policy* (OUP 2018) 77.

⁵¹ Kulbhushan Balooni and L Venkatachalam, 'Managing Water for Sustainable Development: An Indian Perspective' (2016) 5 (1) IIM Kozhikode Society & Management Review; L Venkatachalam, 'Informal Water Markets and Willingness to Pay for Water: A Case Study of the Urban Poor in Chennai City, India' (2015) 31 (1) International Journal of Water Resources 134; Philippe Cullet, Lovleen Bhullar and

and disparities in land ownership patterns add to this existing legal framework to widen the gaps in the fundamental right to water. The impacts of inequitable access and groundwater allocations caused by its regulatory framework on the realisation of fundamental rights, the influence of subsidies on mitigating and widening this inequitable access, and the associated environmental sustainability problems open the scope for further research in this thesis.

1.2.2 Land-water Nexus in Groundwater Regulation: Widening the Inequities in Access and Allocations

Presently, the groundwater legal framework in India is pluralistic with common law rules regulating access and allocations, environmental law principles applied by the judiciary controlling water pollution and the recent legislation passed by various states following the draft law circulated by the Central Government regulating groundwater extraction and development.⁵² Among these, the common law principles still determine groundwater rights,⁵³ which grants the landowners rights over the groundwater.⁵⁴

Sujith Koonan, 'Inter-Sectoral Water Allocation and Conflicts: Perspectives from Rajasthan' (2015) 50 (34) *Economic & Political Weekly* 61; Suhas Paranjape and KJ Joy, 'A Million Revolts in the Making – Understanding Water Conflicts' in India Infrastructure Development Company (ed), *India Infrastructure Report 2011 – Water: Policy and Performance for Sustainable Development* (OUP 2011) 44; Karen Coelho, 'The Slow Road to the Private: A Case Study of Neoliberal Water Reforms in Chennai' in Philippe Cullet and others (eds), *Water Governance in Motion – Towards Socially and Environmentally Sustainable Water Laws* (CUP 2010) 80; S Janakarajan, 'Urbanization and Peri-Urbanization: Aggressive Competition and Unresolved Conflicts – The Case of Chennai City in India' (2009) 1 *South Asian Water Studies* 51; SN Lele and RK Patil, 'Discrimination in an Irrigation Project – Equity, Access and Allocation' (2006) 41 (7) *Economic & Political Weekly* 583; Stephen Foster and Hector Garduno, 'India – Tamil Nadu: Resolving the Conflict Over Rural Groundwater Use Between Drinking Water & Irrigation Supply' (World Bank, 2004 2004).

⁵² Sujith Koonan, 'Revamping the Existing Groundwater Legal Regime in India: Towards Ensuring Equity and Sustainability' (2016) 12 (2) *Socio-Legal Review* 45.

⁵³ Sujith Koonan, 'Legal Regime Governing Groundwater' in Philippe Cullet (ed), *Water Law for the Twenty-First Century: National and International Aspects of Water Law Reform in India* (Routledge 2010) 183, 184; Vani (n 34) 436,442.

⁵⁴ Philippe Cullet, *Water Law, Poverty, and Development: Water Sector Reforms in India* (OUP 2009) 127(hereinafter *Water Law, Poverty, and Development*); Chhatrapati Singh(ed), *Water Law in India* (Sweet & Maxwell Ltd 1992) 17 ; Chhatrapati Singh, *Water Rights and Principles of Water Resources Management* (NM Tripathi 1991) 39 (hereinafter *Water Rights and Principles*).

Under the common law principles, groundwater is a chattel attached to land under the doctrine of dominant heritage without distinctive nature without the attached land.⁵⁵

It thus recognised the landowner's right over water resources beneath his land and his right to use it, implying that those who enjoyed community rights over the land were left out, and wealthy landlords could turn to water lords enjoying immunity from the law.⁵⁶ This nature of groundwater rights, influenced by and derived from the judicial developments in England without considering the hydrogeological situations of local areas and the hydrological link between surface water and groundwater, dominates the groundwater legal framework in India, with the most cited provision in Indian Easement Act 1882.⁵⁷ Indian Easement Act recognises the landowners' absolute "right to collect and dispose within his limits of all water under the land, which does not pass in a defined channel."⁵⁸

Despite adequate attention by the central and state governments through statutory interventions to the land-water nexus in groundwater exploitation and regulation, the current statutory framework grandfathers this land-based regulation and deprives the landless of their right to access groundwater. Many scholars have criticised the inequitable groundwater regulations and highlighted the need for revamping the existing property-groundwater nexus.⁵⁹

The inequitable land distribution patterns and the current land rights based groundwater regulations impair water security for the poor and marginal farmers and landless tenants, for whom groundwater is a significant water source.⁶⁰ In this context, the State subsidies try to promote equitable groundwater access and mitigate the impacts of this land-based regulation by equipping small scale farmers with the necessary inputs for

⁵⁵ Koonan, 'Legal Regime Governing Groundwater' (n 53) 183,185.

⁵⁶ Singh, *Water Rights and Principles* (n 54) 88.

⁵⁷ Cullet, *Water Law, Poverty, and Development* (n 54) 47.

⁵⁸ Indian Easement Act 1882 s 7 Illustration (g); NS Soman, 'Legal Regime of Underground Water Resources' (2008) Cochin University Law Review 147.

⁵⁹ Philippe Cullet, 'Governing Groundwater: Fostering Participatory and Aquifer-Based Regulation' in Amarjit Singh, Dipankar Saha and Avinash C Tyagi (eds), *Water Governance: Challenges and Prospects* (Springer 2019) 117; Daniel Aguilar, 'Groundwater Reform in India: An Equity and Sustainability Dilemma' (2011) 46 Texas International Law Journal 623.

⁶⁰ Vani (n 34) 449.

groundwater access.⁶¹ However, some scholars deny this argument citing the inequitable benefits and burden-sharing in subsidies and water.

The benefits of these subsidies also confine to large, resource-rich farmers in the agriculture sector and affluent households in domestic drinking water supply depriving the benefits to resource-less and poor.⁶² The rich grab the benefits of subsidies and groundwater, but the poor bear the water issues and scarcity concerns, reflecting an inequitable use and burden-sharing in groundwater access, allocation and regulation. These inequitable benefits and burden sharing where the benefits skew towards the rich necessitates a re-examination of the policies on subsidies and current groundwater regulation to ensure everyone the social rights like the fundamental right to water and food.

1.2.3 Ecological Harm of Groundwater Exploitation Superseded: Necessitating Source sustainability and Ecological Justice in Regulation

The contribution of groundwater to the lives and livelihoods of millions is immense, particularly to rural India's irrigation and drinking water needs. Its support for drinking water exceeds more than 80 per cent of water demand⁶³ and contributes the lion's share of water to agricultural growth and rural development. Nevertheless, the current groundwater regulations restrict the scope of its access and benefits to the landowners, depriving the benefits to the landless.

As pointed out through this thesis, the role of subsidies in mitigating the impacts of this inequitable groundwater access is highly relevant for water and food security, with its positive externalities. The positive externalities of subsidies in ensuring equity in groundwater access helped address the socially embedded discriminations in

⁶¹ Aditi Mukherji, Tushaar Shah and P Banerjee, 'Kick-Starting a Second Green Revolution in Bengal' (2012) 47 (18) Economic & Political Weekly 27.

⁶² M Dinesh Kumar, 'Distressed Elephants: Policy Initiatives for Sustainable Groundwater Management in India' (2016) 5 (1) IIM Kozhikode Society & Management Review 51; M Dinesh Kumar and R Maria Saleth, 'Inequality in the Indian Water Sector: Challenges and Policy Options' (2018) 12 (2) Indian Journal of Human Development 265; Dinesh M Kumar, Niranjana Narayanamoorthy and Nitin Bassi, 'Future Strategies for Agricultural Growth in India' in M Dinesh Kumar, MVK Sivamohan and Nitin Bassi (eds), *Water management, food security and sustainable agriculture in developing economies* (Routledge 2013) 165,179.

⁶³ Shankar, Kulkarni and Krishnan (n 7).

groundwater access.⁶⁴ However, these subsidies also create negative externalities on equitable groundwater access and sustainability of resources, necessitating a comprehensive groundwater regulation.⁶⁵

The impacts of groundwater exploitation on aquifers triggered by subsidies have severe consequences on the source and supply sustainability. The drinking water supply schemes, constituting the most significant and crucial element of water laws and policies, ⁶⁶ prioritise water as a human right highlighting its contribution to other human rights. Sustainability in supply gets adequate attention in these schemes due to the recognition of water as a fundamental right and the duty bestowed upon the State to fulfil the same. Similarly, food security demands focus on water security in irrigation by ensuring sustainability in access to groundwater, aided mainly by subsidies.⁶⁷

In this context, the impacts of excessive groundwater reliance on the resources and aquifers are highly crucial. The sustainability of resources and essentiality for supply sustainability demands attention in the regulatory framework, which foregrounds the rights of non-human species and nature to exist and maintain ecological balance. The thesis adopts the concept of sustainability to argue for resource conservation, which differs from sustainable development discourse. The sustainable development discourse argues for balancing human rights to development and environmental protection and received adequate attention from environmental law and water sector scholars.⁶⁸ But its anthropocentric bias in prioritising human economic growth can only support supply sustainability without emphasising the ecological harm caused.

Sustainability used here derives its understanding from environmental law that foregrounds the concerns and rights of non-human species and nature, arguing for their existence through equitable and reasonable utilisation of resources and balancing human and ecosystem resource demands.⁶⁹ This understanding is essential to derive a

⁶⁴ Sarbani Mukherjee and Durba Biswas, 'An Enquiry into Equity Impact of Groundwater Markets in the Context of Subsidised Energy Pricing: A Case Study' (2016) 5 (1) IIM Kozhikode Society & Management Review 63.

⁶⁵ See chapter 3, and 6 for more detailed discussion on positive and negative externalities of subsidies.

⁶⁶ Cullet, 'Drinking Water Reforms' (n 38) 160.

⁶⁷ Kumar, Sivamohan and Narayanamoorthy (n 20) 38.

⁶⁸ Balooni and Venkatachalam, 'Managing Water for Sustainable Development' (n 51) ; Saptarishi Bandopadhyay, 'Sustainable Development: Indian Environmental Jurisprudence' in Shibani Ghosh (ed), *Indian Environmental Law: Key Concepts and Principles* (Orient Blackswan 2019) 107; Daniel Bachhuber, 'India, Water and Sustainable Development' (2009) Consilience 1; Seema Bathla and Mamta Mukherjee, 'Issues and Options for Sustainable Development of Water Resource and Use in India' (2001) 31 (1) Social Change 61.

⁶⁹ Sam Adelman, 'Justice, Development and Sustainability in the Anthropocene' in Philippe Cullet and Sujith Koonan (eds), *Research Handbook on Law, Environment and the Global South* (Routledge 2019)

water justice framework (chapter 2) and unpack the groundwater situation in India (chapter 3). It also helps to examine the positive and negative externalities of subsidies on groundwater resources. Focus on source sustainability also contributes to realising fundamental rights to water, food, and the environment and reconceptualising existing groundwater regulations.

1.3 Filling the Gaps in Water Law Research: Exploring the Potential for Wider Application

Discourse on the groundwater situation in India includes detailed scholarships on groundwater's nature and availability,⁷⁰ its role in food and water security,⁷¹ support to drinking water supply, overexploitation and its consequences.⁷² While many of these scholarships contribute to our understanding of the significance of groundwater irrigation to ensure equitable water access among small and marginal farmers⁷³, some others unpack the conflicts and inequities in differentiated water access⁷⁴, and others have highlighted steps and the need for re-examination of State interventions like subsidies as the panacea for groundwater exploitation⁷⁵ and need to reconceptualise

14; Brian Barry, 'Sustainability and Intergenerational Justice' in Andrew Dobson (ed), *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice* (OUP 2003) 93; Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Routledge 2017).

⁷⁰ Department of Water Resources, 'National Compilation on Dynamic Groundwater Resources' (n 17); Tushaar Shah and others, (n 15).

⁷¹ Sharma (n 27); Mukherji, 'Groundwater Development and Agrarian Change in Eastern India' (n 15).

⁷² Vijay Shankar, Kulkarni and Krishnan, 'India's Groundwater Challenge and the Way Forward' (n 7) 37; Nitin Bassi, 'Groundwater Depletion in India' (n 18) 36; S Janakarajan and Marcus Moench, 'Are Wells a Potential Threat to Farmers' Well-Being? Case of Deteriorating Groundwater Irrigation in Tamil Nadu' (2006) 41 (37) *Economic & Political Weekly* 3977; Planning Commission of India, (n 16).

⁷³ Tushaar Shah and KV Raju, 'Ground Water Markets and Small Farmer Development' (1988) 23 (13) *Economic & Political Weekly A* 23; FA Shaheen and RL Shiyani, 'Equity Redistribution: Groundwater Bore-Wells in North Gujarat' (2005) 40 (26) *Economic & Political Weekly* 307; Prakash (n 17).

⁷⁴ Llamas and Martínez-Santos (n 18); Janakarajan, 'Unequal Power, Unequal Contracts and Unexplained Resistance' (n 6) 69; Janakarajan and Moench (n 72) 3977.

⁷⁵ Himanshu Kulkarni and Mihir Shah, 'Punjab Water Syndrome: Diagnostics and Prescriptions' (2013) 48 (52) *Economic & Political Weekly* 64; Dubash, 'The Electricity-Groundwater Conundrum' (n 28); Shah and Verma (n 28); 'Tushaar Shah and Others, "Groundwater Governance Through Electricity Supply Management: Assessing an Innovative Intervention in Gujarat, Western India" (2008) 95 *Agric*

groundwater governance.⁷⁶ Some of these studies have also focused on groundwater markets, intertwining in societal relations that have socio-economic consequences and thus creating a hydro social network among water users in the community, particularly in the Gangetic plains and Gujarat.⁷⁷ There is equally strong literature on contribution to drinking water supply, the legal regulation of groundwater in India, its limitations and solutions to climate change.⁷⁸

Among these academic discourse across various disciplines, the role of groundwater irrigation in sustaining water and food security through power subsidies led water markets, its contribution to the drinking water sector, and the legal framework's failure to address groundwater exploitation received adequate attention. This thesis explores the new dimension- impacts and implications of subsidies in social and distributive equity and environmental sustainability in groundwater access and regulation. Certain factors contribute to adopting this scholarly analysis.

Firstly, the current scholarship on the role of subsidies in ensuring equitable groundwater access discusses the contribution of power subsidies in irrigation from a political-ecological or economic discourse.⁷⁹ This scholarship doesn't include the implications of subsidies on social and distributive equity, legal analysis of the context, and subsidies' role in the drinking water supply. Secondly, the discussions on the land-water nexus in groundwater hitherto focused on equity and inclusiveness in access and

Manage 1233, 1241; BD Dhawan, 'Management of Groundwater Resource: Direct versus Indirect Regulatory Mechanisms' (1987) 22(36–37) *Economic & Political Weekly* 1553.

⁷⁶ Philippe Cullet, 'Groundwater Law in India: Towards a Framework Ensuring Equitable Access and Aquifer Protection' (2014) 26 (1) *Journal of Environmental Law* 55.

⁷⁷ R Maria Saleth, 'Groundwater Markets in India: A Legal and Institutional Perspective' (1994) 29 (2) *Indian Economic Review* 157; Aditi Mukherji, 'Groundwater Markets in Ganga-Meghna-Brahmaputra Basin: Theory and Evidence' (2004) 39 (31) *Economic & Political Weekly* 3514; Kei Kajisa and Takeshi Sakurai, 'Efficiency and Equity in Groundwater Markets: The Case of Madhya Pradesh, India' (2005) 10 (6) *Environment and Development Economics* 801; Navroz K Dubash, 'Ecologically and Socially Embedded Exchange: "Gujarat Model" of Water Markets' (2000) 35 (16) *Economic & Political Weekly* 1376.

⁷⁸ Philippe Cullet, 'Governing Groundwater' (n 59) 117; Philippe Cullet, 'Model Groundwater (Sustainable Management) Bill, 2017: A New Paradigm for Groundwater Regulation' (2018) 2 *Indian Law Review* 263; Philippe Cullet, Lovleen Bhullar and Sujith Koonan, 'Regulating the Interactions between Climate Change and Groundwater: Lessons from India' (2017) 42 (6) *Water International* 646; Philippe Cullet, 'The Right to Water in Rural India and Drinking Water Policy Reforms' in Malcolm Langford and Anna FS Russell (eds), *The Human Right to Water* (CUP 2017) 677; Philippe Cullet, 'Right to Water in India – Plugging Conceptual and Practical Gaps' (2013) 17(1) *International Journal of Human Rights* 56; Sujith Koonan, 'Legal Regime Governing Groundwater' (n 53) 183; MS Vani, 'Groundwater Law in India: A New Approach' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 435.

⁷⁹ Shah, Singh and Mukherji (n 13); Shaheen and Shiyani (n 73).

allocations.⁸⁰ Nevertheless, since land rights are an essential condition to avail subsidies in drinking water and irrigation schemes, the interactions of subsidies with the land-water nexus and consequent impacts of these interactions on fundamental rights to water, food and the environment require more attention. Lastly, the current discourse neglects the effects of subsidies on source sustainability, which threatens ecological water balance. The environmental harm caused by subsidies necessitates an ecological justice perspective on groundwater regulation to harmonise anthropogenic and environmental water needs. This thesis aims to analyse these scholarship gaps to examine the role of subsidies in groundwater access with a water justice framework based on three spheres- distributive justice, social justice and ecological justice.

The following section describes an overview of the conceptual understanding of subsidies, their justifications and typologies used in the thesis.

1.4 Water-related Subsidies: Conceptual Underpinnings

Subsidies are standard utility features, including the worldwide water sector, which imposes substantial budgetary and off-budget expenditure.⁸¹ These are powerful policy instruments aimed at achieving redistribution and access to resources. The provision of subsidies aims to achieve several purposes, including increasing production/consumption, redressing market imperfections, internalising externalities, and achieving social goals of income redistribution.⁸² They are different from the transfer of funds, which results in an increase in income to beneficiaries, with its characteristic

⁸⁰ Cullet, 'Model Groundwater (Sustainable Management) Bill, 2017' (n 78); Cullet, 'Groundwater Law in India' (n 76); Singh, *Water Law in India* (n 54).

⁸¹ Staff Reporter, 'Union Budget 2019: After LPG Connections, Govt May Focus on Water to Bring Smiles to Rural India' *Business Today* (5 July 2019) <<https://www.businesstoday.in/business/union-budget-2019/story/budget-2019-after-lpg-connections-govt-may-focus-on-water-to-bring-smiles-to-rural-india-211451-2019-07-04>>; Press Trust of India, 'Delhi Government Hikes Water, Sanitation Budget By 70 Per Cent, More Funds For Unauthorised Colonies' (*NDTV*, 24 May 2020) <<https://www.ndtv.com/delhi-news/delhi-government-hikes-water-sanitation-budget-by-70-2199517>>; PC Bansil, 'Agricultural Subsidies: A Global View' in Bruno Dorin, *Agricultural Incentives in India: Past Trends and Prospective Paths Towards Sustainable Development* (Manohar Publishers & Distributors 2004) 39.

⁸² DK Srivastava and Tapas K Sen, 'Government Subsidies in India' (National Institute of Public Finance and Policy 1997) 2.

is that subsidies are targeted on goods or services to influence the choice of such goods and services towards such subsidised goods or services.⁸³

The government's subsidisation of good or service is based on its 'externality' when it distributes the benefits to the community beyond confining to its beneficiaries, and such determination depends on 'elasticities of social and private demand, the extent of externalities, associated costs and relative preferences of society to distributional objectives.'⁸⁴ Consequently, the government classifies goods and services into merit[merit one and merit two] and non-merit goods in India.⁸⁵ India subsidises the environment, ecology, non-commercial irrigation, food, rural development, water, and sanitation for *merit* goods.⁸⁶

1.4.1 Significance of Water-related Subsidies

Identifying and classifying services like water and food as a merit good signifies their importance and justification for subsidising them. This subsidisation has several objectives that add to its explanation. Firstly, the right to water and food are human rights, and in India, they are fundamental rights under Part III of the Constitution. Hence, ensuring access to safe and clean drinking water and water for irrigation to ensure food security forms the State's duties in a welfare state. Access to water has several connotations, including realising other human rights like health, education and sanitation. Clean and safe drinking water access and food security of a household

⁸³ *ibid* 5.

⁸⁴ DK Srivastava and HK Amarnath, 'Central Budgetary Subsidies in India' (National Institute of Public Finance and Policy 2001) 5,7.

⁸⁵ Sudipto Mundle and Satadru Sikdar, 'Subsidies, Merit Goods and the Fiscal Space for Reviving Growth: An Aspect of Public Expenditure in India' (National Institute of Public Finance and Policy 2019).

⁸⁶ In India, Expenditure on merit and non-merit goods drastically changed during last few decades. Data shows that central government chooses subsidisation of economic services over social services while reverse is true for states. Incidence of central subsidies for economic services in 2016-17 was 5.8 % but for social services was only 4.5 %. Case of state subsidies shows preference to social service that included only four merit goods- food, primary education, health, water supply and sanitation. Subsidies for such merit goods was 4.1 % of GDP in 2015-16 while for economic services, state spend 3.3%. The share of such merit subsidies increased from around 36% in 1987-88 to over 44% in 2015-16.

contribute to overall development, including health improvement and gender empowerment.⁸⁷

Secondly, subsidies are essential in the drinking water sector due to the influence of neoliberalism in water governance. This neo-liberalist water governance focuses on efficiency and cost recovery to ensure universal access to drinking water.⁸⁸ The neoliberal water reforms demand a limited State role in the water supply but only facilitate the necessities, including infrastructure and finance and handover maintenance to its beneficiaries.⁸⁹ The market-led water supply schemes support privatisation and reduction in subsidies for drinking water.⁹⁰

The principal heralds of water sector reforms are developments in international environmental law post-Rio Declaration of 1991 and conditionalities attached to loans from international financial institutions like the World Bank and ADB, which also influenced water supply schemes in India.⁹¹ The World Bank propelled the changes and ensured its implementation through loans to both centres and states, highlighting that subsidised, centralised water supply schemes hindered better water supply management.⁹² Adopting a socio-economic nature of water warranted a cost recovery process from beneficiaries based on a demand-driven approach to creating a sense of ownership.⁹³

Even though neoliberalism argues for a reduction in subsidies, India's social, economic, and political situations necessitate the continuation of subsidies despite changing the State's role from provider to facilitator in the water supply. The constitutional

⁸⁷ Bethany A Caruso and others, 'Gender Disparities in Water, Sanitation, and Global Health' (2015) 386 (1994) *Lancet* 650; See generally, Aidan A Cronin, Pradeep Kumar Mehta and Anjal Prakash (eds), *Gender Issues in Water and Sanitation Programmes: Lessons from India* (SAGE 2015).

⁸⁸ Madeline Baer, *Stemming the Tide: Human Rights and Water Policy in a Neoliberal World* (OUP 2017) 6.

⁸⁹ Karen Bakker, 'Neoliberal Versus Post Neoliberal Water: Geographies of Privatization and Resistance' (2013) 103 *Annals of the Association of American Geographers* 253.

⁹⁰ Willem Assies, 'David versus Goliath in Cochabamba: Water Rights, Neoliberalism, and the Revival of Social Protest in Bolivia' (2003) 30 (3) *Latin American Perspectives* 14.

⁹¹ Global Water Partnership, 'Dublin-Rio Principles' (*Global Water Partnership*) <<https://www.gwp.org/contentassets/05190d0c938f47d1b254d6606ec6bb04/dublin-rio-principles.pdf>>.

⁹² Philippe Cullet, 'New Policy Framework for Rural Drinking Water Supply: Swajaldhara Guidelines' (2009) 44 (50) *Economic & Political Weekly* 47, 49.

⁹³ Department of Drinking Water Supply, 'Guidelines on Swajaldhara, 2002' (Government of India, 2002) s 1.2.

obligations of the welfare state and fundamental rights jurisprudence justify the subsidies in the water sector.

Thirdly, water-related subsidies aim at poverty alleviation and improvement of lives, particularly in the agriculture sector.⁹⁴ The subsidised components in agriculture, including water, infrastructure, credit and procurement, aid in food security and economic stability of farming communities and society. Subsidies help them access resources like groundwater and the infrastructure needed, which otherwise would be impossible for many.

Fourthly, these subsidies help the economically weaker access these resources and water supply schemes and aim to redistribute resources and income to these sections of the population. States introduce measures like cross-subsidisation for vertical equity among different economic or geographical areas.⁹⁵ Lastly, the subsidies help to unpack the social inequities and economic divide in resource access and promote participatory resource conservation, as seen in water conservation in Rajasthan.

Essentially, justification of subsidies often finds it messed among the twin concepts of equality and distributive justice, with these two possessing a predominant role in defining and determining the content and nature of subsidies.⁹⁶ While equality demands equal treatment of those situated equally, distributive justice demands redistribution of resources among all but need not be perfectly identical.⁹⁷ Hence differential treatment of unequal principle is also the basis of 'subsidies' when it accrues benefit to some over others. Thus, in all cases, subsidies differentiate people for a better objective of distributive justice. In the following sub-sections, I shall explain 'water-related subsidies' and their typology used in this thesis by which I analyse these significances.

1.4.2 Typology of Water-related Subsidies

Subsidies are economic policy instruments designed and implemented to adapt individual choices to collectively agreed goals and possess the capacity to influence

⁹⁴ Kristin Komives and others, *Water, Electricity, and the Poor: Who Benefits from Utility Subsidies?* (World Bank 2005) 2.

⁹⁵ David le Blanc, 'A Framework for Analysing Tariffs and Subsidies in Water Provision to Urban Households in Developing Countries' (UN/DESA 2008) DESA Working Paper 63 ST/ESA/2008/DWP/63.

⁹⁶ Luca Rubini, *The Definition of Subsidy and State Aid: WTO and EC Law in Comparative Perspective* (OUP 2009) 20.

⁹⁷ John Rawls, *A Theory of Justice* (OUP 1993).

and incentivise behavioural changes leading to environmental improvement.⁹⁸ Defining subsidy is a complex task, and so does define it in legal terms. Conceptual analysis of subsidies depends upon two factors; *context*, i.e., the objectives, materiality, rules and structure of any legal system that influences the 'content' of subsidies. Secondly, *characteristics*, the nature and aim that the legal system attaches to such subsidies.⁹⁹

*Any sum of money granted by the State or a public body to help an industry or business keep the price of a commodity or service low is a subsidy.*¹⁰⁰ However, this meaning is very narrow that fails to include many other incentives and disincentives by the government to regulate access to resources, price control or even market access. In a broader form, externalities on the environment from industrial growth can also be considered a form of subsidy, which is not a direct financial transfer. Among different versions and attempts to define subsidies, even though it is from a financial perspective, the WTO definition of subsidies is all-encompassing to understanding subsidies' conceptual basis. In that case, subsidies are any financial contribution by the government or any public authority within its jurisdiction which involves either a direct transfer or potential transfer of fund or liability, any foregone government revenue. It also includes providing goods/ services other than general infrastructure or payment by the government to any funding or private body to carry out any of these functions.¹⁰¹

This definition incorporated both direct and potential transfer of funds or liability, the government's provision of goods or services to any funding body or private body that implies funding to an implementing agency, a contractor, or even an individual beneficiary. They can include targeted, untargeted or cross-subsidies.¹⁰² Adopting a broader definition of subsidies is beyond this thesis's scope. Hence, in my analysis of water-related subsidies, I employ this definition of WTO to identify, examine and analyse the typology, nature and characteristics of water-related subsidies by central and state governments.

⁹⁸ Manuel Lago and others, 'Defining and Assessing Economic Policy Instruments for Sustainable Water Management' in Manuel Lago and others (eds), *Use of Economist Instruments in Water Policy* (Springer 2015) 2.

⁹⁹ Rubini (n 96) 17–18.

¹⁰⁰ Oxford Online Dictionary, 'Subsidy' << <https://en.oxforddictionaries.com/definition/subsidy>>>.

¹⁰¹ See Article 1 of Agreement on Subsidies and Countervailing Measures in Agreement on World Trade Organisation, 1994.

¹⁰² World Bank (n 1) xii.

In India, both central and state governments grant subsidies for different schemes.¹⁰³ For instance, governments provide subsidies for power like electricity, diesel and now solar power for operating water pumps, infrastructure support, institutional financial interventions, promotion of sustainable agricultural forms and even market access in case of agriculture, and support for connections and consumptions in case of drinking water. Subsidies attract significance as groundwater reliance for drinking, domestic, irrigation, and industries has increased significantly, and the water table plummets steeply.

Government policies and politics of granting these subsidies without considering the negative externalities have promoted groundwater extraction without any control. Subsidies influence and impact social equity and environmental sustainability in groundwater access in the country. Certain subsidies like those for power enable the resourceless poor and marginalised farmers to access groundwater either utilising these grants themselves or buying water from informal water markets, ensuring social and environmental equity in accessing water- resources. But the impacts of subsidies on aquifers and ecological sustainability are irreversible, demanding a sustainable and harmonious approach to evade negative environmental externalities.

The following table shows the forms and types of subsidies used for examination in this thesis.

Forms of Subsidies	Types or examples analysed in this thesis
Direct Financial Interventions	Credit for Loans
	Funds for Pumps
	Funds for agriculture
	Funds promoting organic/ traditional farming
	Funds for non-governmental entities supporting water access
Water-related services provided by the government at reduced costs	Free or flat-rate power supply
	Free or Reduced Bill Water Connections
	Free or reduced Bill water supply
	Purification Plants like Osmosis plants
	Labour cost like the cost for water Rejuvenation

¹⁰³ Subsidies are granted for various things including food, petroleum, fertiliser- urea, nutrient based subsidy, interest subsidies for short term credit to farmers, subsidies for starting industries. For details of these subsidies provided each year, check Ministry of Finance, 'India Budget | Ministry of Finance | Government of India' (*Union Budget*) <<https://www.indiabudget.gov.in/>> and various State budgets

	Water Conservation
	Support through non-governmental agencies in water conservation
	Installation of facilities like purifiers
Regulatory Subsidies	Price Control
	Water supply
	Administrative stratification based on caste, gender and economic situations for accessing government benefits
Procurement Subsidies	Crop Insurance
	Minimum Support Price

1.5 Research Framework

1.5.1 Objectives and Research Questions

This thesis maps India's social, environmental, and legal implications of water-related subsidies and groundwater exploitation. The thesis examines the interactions of water-related subsidies and groundwater access in India and its importance on social and distributive equity and environmental sustainability in access, allocations and groundwater legal regulation.

The research hypotheses are-

1. water-related subsidies positively and negatively impact social and distributive equity and environmental sustainability in groundwater access and allocations, strongly influencing fundamental rights.
2. With its substantial property rights nexus, the existing groundwater legal framework is inadequate to address these challenges and ensure equity and sustainability of the resources.

The research questions addressed in this thesis aim to address the objectives and analyse these hypotheses.

1. What are the implications of water-related subsidies on social and environmental equity in accessing groundwater in India?

- How do water-related subsidies impact social and distributive equity in realising the right to water and water for food through groundwater access?
 - Does usage of such subsidies lead to adverse environmental impacts on groundwater and aquifers?
2. How does the existing groundwater legal framework impact social and distributive equity and environmental sustainability in accessing groundwater?
- Whether the existing private property rights control over groundwater access needs to be reviewed to ensure equity and sustainability?
 - How can harmonisation of development and environmental concerns of groundwater exploitation be addressed by applying ecological principles?

1.5.2 The Rationale of this Research

Various drinking water and irrigation support schemes informed by subsidies amplify groundwater reliance and exploitation. This thesis aims to analyse this interaction of subsidies and groundwater access from a social, distributive equity and environmental sustainability through a water justice framework. This study could contribute to unpack both equity and inequity concerns associated with such subsidies and highlight the need for delinking pre-conditions of land ownership subsidies and groundwater by applying various environmental law principles, particularly by adopting an ecological justice perspective groundwater regulation.

The nature of this thesis that examines water-related subsidies from a legal dimension makes it unique and challenging, contributing to scholars and policymakers in the water sector in India to address both equity and sustainability issues in the groundwater legal framework.

1.5.3 Scope and Limitations

Groundwater supports all the country's water needs, forming the backbone of irrigation and domestic water needs and increasing support to industrial water demands. Groundwater depletion and deterioration impacts water tables, aquifers and compromise public health concerns. Water-related subsidies, as discussed earlier, has a significant role in not only groundwater exploration but also exploitation. A detailed

analysis of groundwater dynamics in India is not novel, as various experts have already done it. However, this analysis still holds relevance considering its increasing reliance on the Indian economy and welfare measures.

This thesis analyses groundwater dynamics emphasising water-related subsidies that contribute to the fundamental right to water, water and food security in agriculture and addresses poverty alleviation and rural development. However, these positive equity dimensions correspond with severe negative externalities. Hence, this thesis examines equity and inequities in groundwater access created by water-related subsidies.

This analysis is limited to irrigation and domestic water supply only, and covering all water-related subsidies is beyond this thesis's scope. This thesis confines its examination to groundwater-related subsidies, including implicit and explicit subsidies. It focuses on input subsidies like credit, power and infrastructure development which has an essential role in choosing crops and irrigation in agriculture. Subsidies in drinking water schemes include customer benefits in connections and bills and subsidised services provided by third-party or water providers on behalf of the State. This thesis also investigates those subsidies that different governments grant for water conservation and Rejuvenation, including direct financial transfers and subsidised services like MGNREGA.¹⁰⁴

1.5.4 Methodology

This socio-legal study examines the interaction of water-related subsidies and equity in India's access and regulation of groundwater.¹⁰⁵ It combines doctrinal research with fieldwork using an interpretivist approach involving structured and semi-structured interviews. Here law in books is examined and analysed through law in action/ law in society. It consists in building a conceptual understanding of 'water-related subsidies' from various sources like legal and policy instruments, how it is closely linked to groundwater scenario in India and then analysing the contentions built on this through

¹⁰⁴ Mahatma Gandhi National Rural Employment Guarantee Scheme Act 2005.

¹⁰⁵ Fiona Cownie and Anthony Bradney, 'Socio-Legal Studies: A Challenge to the Doctrinal Approach' in Dawn Watkins and Mandy Burton (eds), *Research Methods in Law* (Taylor & Francis 2017) 40; WL Twining, *General Jurisprudence: Understanding Law from a Global Perspective* (CUP 2012) 227–28; Roger Cotterrell, 'Why Must Legal Ideas Be Interpreted Sociologically?' (1998) 25(2) *Journal of Law and Society* 171; ESRC, *Review of Socio-Legal Studies: Final Report* (Economic and Social Research Council 1994); D Harris, 'The Development of Socio-Legal Studies in the United Kingdom' (1983) 3 (3) *Legal Studies* 135.

fieldwork conducted in selected states. It examines how subsidies impact the realisation of 'fundamental right to water and 'water rights in groundwater.

The researcher collected primary data like statutes, census data, groundwater reports from various sources, including government websites. This thesis relies on relevant laws and policy documents on the water enacted by the central and state governments to examine the groundwater regulatory framework. In addition to the government sources, the researcher relied on sources like IELRC to collect relevant statutes, policies and administrative guidelines and the sources like *Manu Patra* and *India kanoon* for various judicial decisions.

Reports of the Central Groundwater Board (CGWB) and Groundwater Authorities at the Centre and States enabled data gathering regarding the groundwater situation of different regions. Sources like Census of India 2011, National Family Health Survey 2015-16, National Sample Survey; 76 Round (July - December 2018), and Report on Drinking Water, Sanitation, Hygiene and Housing Condition [Report 584] provided statistical analysis of access and distribution scenario of drinking water supply.

National Portal of India at india.gov.in helped the research access various subsidies schemes by different central ministries like the Ministry of Agriculture and Farmer's Welfare, Ministry of Drinking Water and Sanitation and Jal Shakti, and Ministry of Housing and Urban Affairs. Various state government websites provided information on the implementation status of these schemes and various state programmes. The researcher also relied on World Bank and Asian Development Bank web links to search for sponsored water supply schemes.

Adopting a doctrinal approach to examine the impact of these subsidies and groundwater legal framework by examining preliminary data on various types of government subsidies and secondary literature comprising scholarly works from different disciplines like political economy, economics, development studies, and the law was insufficient to unpack everyday injustices in water access and allocations.¹⁰⁶ Hence, fieldwork was conducted between December 2018- June 2019 in two states, Kerala and Rajasthan, to understand broadly how the law and policy are in 'action'.¹⁰⁷

This brief fieldwork aimed to understand the nature of equity or inequities associated with accessing groundwater, realities and perceptions on impacts of subsidies in realising the right to water and water rights in everyday access to groundwater, experiences of various stakeholders like scheduled caste and tribes, women and economically weaker sections of people like small and marginal farmers, farm labourers from the beneficiary side and concerned designated officers from a donor

¹⁰⁶ All weblinks used in the thesis are updated in January 2022.

¹⁰⁷ In chap 4 and 5, for months between December and June, cited in footnotes for fieldwork, the year is 2018-19.

perspective. These themes were mainly chosen because there has been little scholarly attention on these issues from legal scholarship. It also aimed to understand and analyse the everyday understanding of the consequent impact of land-water nexus in groundwater legal regulation.

Kerala, and Rajasthan, two states in India with different geographical and hydrogeological situations, distinct socio-economic backgrounds and hydro-social networks, provide a diverse perspective to this study. These two states exemplify two contrasting social and hydrological conditions in the country, with the former representing wet, humid, and water-rich areas and the latter being a dry, water-scarce state. Despite being rich in surface water resources, reliance on groundwater in Kerala is enormous, but unlike Rajasthan, which has severe conditions of overexploitation, groundwater development in Kerala is below 60 per cent.¹⁰⁸ However, reliance on groundwater in Rajasthan due to minimal annual rainfall is vast, with several blocks categorised as overexploited.

Additionally, these two states also differ in the groundwater legal framework. While Kerala enacted groundwater legislation in 2002¹⁰⁹, Rajasthan has not passed specific groundwater exploitation laws. Kerala, the state with a bountiful supply of surface water resources like rivers, numerous lakes and lagoons, relies on groundwater for drinking, domestic needs, industrial use and agriculture. Anthropogenic activities like illegal sand mining and urbanisation result in pollution and quantity depletion of surface water and increase the reliance on groundwater which, presently, is the primary drinking water source in rural areas.¹¹⁰

In Kerala, Alappuzha and Palakkad were fieldwork districts. Alappuzha is a coastal district with fluoride contamination, salt-water intrusion and groundwater pollution due to agro-industries like coir. Irrigation water use in areas like Kuttanad is peculiar and unique, with paddy land reclaimed from backwaters. Excessive pollution from agriculture runoff and chemical fertilisers have contaminated nearby aquifers, which are relied on for drinking water supply. This district provided a unique experience of reliance on groundwater for daily water use, implementing water-related subsidies, and an extensive water supply system in rural and urban areas.

Palakkad is the rice bowl of Kerala, selected to study social equity dimensions of groundwater access among scheduled castes and scheduled tribes, especially in irrigation water access. It is the hottest and driest district in the State. Like Alappuzha,

¹⁰⁸ For more details, see chapter 4

¹⁰⁹ Kerala Groundwater (Control and Regulation) Act 2002.

¹¹⁰ Central Groundwater Board, 'Aquifer System of Kerala' (Ministry of Water Resources, 2012); E Shaji, 'Groundwater Quality of Kerala – Are We on the Brink?' (School of Environmental Sciences, Mahatma Gandhi University 2011).

a study in this district that is heavily groundwater-dependent helped to realise the ground realities of implementation of water-related subsidies in agriculture and drinking water supply, especially in one of the most critically situated blocks in Kerala, Chittoor.

Rajasthan, the largest state in India, is different from Kerala in water availability and socio-economic situation. The largest State in India, lying in the north-western part, has groundwater use and issues with more than 100% groundwater development, above the available groundwater and its recharge capacity.¹¹¹ The State is peculiar due to its hot and desert-type climate. This water scarcity and absence of significant surface water projects lead to over-reliance on groundwater.¹¹² Unlike Kerala, caste dimensions and indifferences play a substantial role in groundwater access, especially irrigation.¹¹³ Similarly, gender dimensions also influence groundwater access and socio-economic life, including education,¹¹⁴ totally different in the most literate State of Kerala.

The researcher chose two districts with different situations in Rajasthan- Jhunjhunu and Alwar where groundwater development is higher than the recharge level¹¹⁵ and quality issues.¹¹⁶ In Jhunjhunu, the most crucial source of water is wells, and hence the reliance on groundwater is enormous. Alwar has several water conservation schemes led by communities or NGOs and state-led schemes with subsidies.

This fieldwork aimed to solicit views of different stakeholders, including government officials, technical experts, NGOs, water user- irrigation and drinking water supply beneficiaries and local bodies representatives to learn on the mode of accessing groundwater, accessibility issues, awareness on 'rights' in water and subsidies available as well as implementation challenges. Structured and semi-structured interviews with open-ended questions provided a structure for interacting with stakeholders. The

¹¹¹ Central Groundwater Board, 'Dynamic Groundwater Resources of India as of 2013' (Ministry of Water Resources, Government of India 2017) 28.

¹¹² M Dinesh Kumar and others, *Groundwater Management in Rajasthan: Identifying Local Management Actions* (Institute for Resource Analysis and Policy (IRAP) 2009).

¹¹³ Kathleen O'Reilly and Richa Dhanju, 'Public Taps and Private Connections: The Production of Caste Distinction and Common Sense in a Rajasthan Drinking Water Supply Project' (2014) 39 (3) *Transactions of the Institute of British Geographers* 373; Trevor Birkenholtz, 'Groundwater Governmentality: Hegemony and Technologies of Resistance in Rajasthan's (India) Groundwater Governance' (2009) 175 (3) *Geographical Journal* 208.

¹¹⁴ Rai Kookana and others, 'Groundwater Scarcity Impact on Inclusiveness and Women Empowerment: Insights from School Absenteeism of Female Students in Two Watersheds in India' (2016) 20 (11) *International Journal of Inclusive Education* 1155.

¹¹⁵ CGWB, 'Dynamic Groundwater Resources of India as of 2013' (n 111)

¹¹⁶ CGWB, 'Overview of Ground Water Quality' <<http://cgwb.gov.in/wqoverview.html>>.

researcher used a mixed-method comprising random sampling, stratified sampling and snowball techniques depending on the situation though all results collected from these interviews were similar. Discussions with government officials and NGOs were both pre-booked and directly contacted.

While the researcher used the prior local knowledge to contact interviewees in Kerala, aid from local NGOs and known residents helped access more people and specific government departments in Rajasthan. The researcher employed email and telephone to discuss with some stakeholders not available in person.

1.6 Structure of the Thesis

This thesis consists of 8 chapters divided into three parts. Part I comprises chapters 2 and 3 that examine the conceptual framework of water justice and the interaction of water subsidies with the groundwater situation in India. Part II includes chapters 4 and 5 that look at the implications of water-related subsidies on social and distributive equity and environmental sustainability in groundwater access in Kerala and Rajasthan. Part III comprises chapters 6 and 7, which discusses the impacts of subsidies on fundamental rights with its negative externalities and highlights the need for a reconceptualization of the current land-water nexus in groundwater and adopting an ecological justice-based governance pattern.

Chapter 2 discusses the theoretical framework of water justice. This chapter developed a relational, contextualised and customised tripartite framework of water justice based on three spheres- distributive, social and ecological justice to examine implications of subsidies on groundwater situation in India influenced by peculiar socio-economic conditions. It also helps to incorporate the concerns and needs of human water demands and the consequences of such over-dependence and exploitation while addressing the needs for water conservation and ecological sustainability.

The groundwater situation in India, the role and contributions of subsidies in access and allocations and the impacts of groundwater regulation on such access is the theme of Chapter 3. It examines various means and mechanisms of accessing groundwater, social and environmental inequities associated with such access influenced and determined by caste, gender and economic divisions of society and how current regulation impacts it. The chapter also highlighted the development of existing regulations to argue its inefficiency in addressing groundwater exploitation.

Chapters 4 and 5 include the analysis of socio-legal research conducted to examine interactions of water-related subsidies on groundwater access, exploitation, and conservation in Rajasthan and Kerala. While Chapter 4 granted special attention to the

influence and implications of changes in the State's role in drinking water supply on nature and justification of subsidies, Chapter 5 examined the contribution of subsidies in assuring participatory groundwater recharge and conservation measures, highlighting the positive externalities.

Chapter 6 discussed the impacts of subsidies on the realisation of social rights jurisprudence, particularly the fundamental rights to water, food and environment and argued for a need for a reconceptualization of property rights influence on subsidies and groundwater regulation. Chapter 7, picked from the previous chapter, highlights the current law's inefficiency to address subsidies and groundwater exploitation challenges on ecological sustainability. It pointed to the paradigm shift from private control over groundwater access to public trust and water as commons. This shift from public trust to commons is essential for addressing environmental sustainability issues and adopting ecological justice in groundwater regulation. The RON and application of legal personhood to aquifers can lead the steps for moving away from current property rights regulation to ecological justice-based regulation, harmonising human and nature's rights. Chapter 8 summarises key findings and suggestions for further research.

Part 1

Water Justice

Chapter 2

Conceptualising Water Justice: Charting the Future for Effective Water Governance

2.1 Introduction

Mainstream water governance discourse focuses on the rights-duties paradigm in water access and allocations and the consequent inequities. However, injustices in water access are a 'silent crisis', endured by the poor, authorised by those with resources, technology and power and created by conscious actions of political processes and institutions.¹¹⁷ These injustices pervade the spheres of access, use, allocations, distribution, management and control of water resources. This silent crisis in the water sector, influenced by factors like power, politics, technology and governance, necessitates a broader analysis of such injustices and the customisation of water justice discourse. A vast array of literature has contributed to this more comprehensive understanding of water injustices with discussions and debates on nature and form of justice theories that could comprehensively unpack and address these injustices beyond the 'rights- duties' paradigm confined within the State realm.¹¹⁸

Spheres of water injustices span sectors, necessitating a reconceptualisation of water governance informed by water justice frameworks. Intense resource exploitation, consequent degradation of quality and quantity of natural resources, competition over natural resources, and increased interventions of the market and international financial institutions significantly influence rights-duties discourse.¹¹⁹ From everyday water injustice on streets, and countryside to water and land grabbing by international

¹¹⁷ See UNDP, *Human Development Report 2006- Beyond Scarcity: Power, Poverty and the Global Water Crisis* (Palgrave Macmillan 2006) 1.

¹¹⁸ See for instance, Matthew Goff and Ben Crow, 'What Is Water Equity? The Unfortunate Consequences of a Global Focus on "Drinking Water"' (2014) 39 (2) *Water International* 159; Tom Perreault, 'What Kind of Governance for What Kind of Equity? Towards a Theorization of Justice in Water Governance' (2014) 39 (2) *Water International* 233.

¹¹⁹ Rutgerd Boelens, Jeroen Vos and Tom Perreault, 'Introduction: The Multiple Challenges and Layers of Water Justice Struggles' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 3.

commercial entities, it has crossed boundaries and necessitates the immediate attention of scholars across multiple disciplines to find solutions for man-induced water scarcity.

The current water governance patterns across the globe, with their anthropocentric focus, prioritise access and allocations for human uses.¹²⁰ This anthropocentric focus continues despite the changes in water governance involving pluralistic stakeholders. The involvement of multiple actors in water governance shifted it from a state-centric, technocratic and top-down approach to a pluralistic pattern influenced by a neo-liberalism, involving civil society participation in a decentralised way.¹²¹ Nevertheless, the participants and governance format changes never change their anthropocentric focus, fail to address the growing inequalities in water access and allocations, and relegate the concerns of its impacts on the environment,

The impacts of these anthropocentric water use on ecological sustainability necessitate adopting a water justice framework balancing anthropocentric and eco-centric water rights. This framework in water governance brings forth new perspectives to water law and regulations and provides space to incorporate a more nuanced approach based on environmental law principles that reflect and promote ecological sustainability.

This chapter discusses various theoretical and scholarly contributions to the development of 'justice discourse' in water to formulate a water justice framework that drives the rest of this thesis. It provides the conceptual framework for water justice to analyse interactions and implications of policy instruments like subsidies on social and distributive equity and environmental sustainability in groundwater access and regulation in India. Implications of subsidies on groundwater access are manifold, where it simultaneously acts as a critical determinant in accessing groundwater to ensure water security for drinking and food generation and a contributor to groundwater depletion. Hence, a water justice framework that examines this groundwater and subsidies nexus in the peculiar situation of India is essential to unpack social, distributive and ecological injustices caused by it and advocate equity and sustainability.

¹²⁰ Joseph W Dellapenna and Joyeeta Gupta (eds), *The Evolution of the Law and Politics of Water* (Springer 2009) 7-8.

¹²¹ See generally Jeroen Vos, Rutgerd Boelens and Tom Perreault(eds), *Water Justice* (CUP 2018) for discussions on various instances on changes in water governance and impacts on water justice.

2.2 Addressing Water Inequities: Towards a Contextual and Relational Water Justice in Water Governance

Water reflects the hybridity of social and natural features where it influences, produces human relations and social actions, and gets controlled and directed through it.¹²² It is thus a socially and politically influenced entity, potentially reproducing social power relations in access and allocations.¹²³ Water and its governance is essentially about intersections of power, experienced and determined by social and economic factors like caste, class and gender to decide, control, allocate, manage water and affect the people's lives.¹²⁴

This political and social influence in water governance asserts the inherent social inequity in its access and allocations, which determines in/exclusions in water access, underlining the power equations in water. Inequitable water access and distributions based on power relations trigger everyday conflicts with the poor facing the burden of water scarcity. Everyday injustices in water include water quantity and quality issues, modes of water access and distribution, and the discourse shaping water control.¹²⁵

Understanding and addressing these injustices is incomplete without adopting a justice framework that critically examines the engagement of these social, political and economic factors with the institutional framework of water governance influenced by human rights-based constitutional obligations and market-oriented neoliberalism. This engagement with different contextual factors is also essential to unpack the impacts of inequitable water allocations on ecological sustainability.

Water justice literature helps to understand the depth of injustice and inequality in the water sector and identify possible approaches to address these inequalities in governance based on fairness, equity, recognition and social relations.¹²⁶ Understandings of water justice have significantly changed over centuries. Scholars from political ecology, geography and development studies enrich this understanding

¹²² Perreault, 'What Kind of Governance for What Kind of Equity?' (n 118) 233,234.

¹²³ *ibid* 235.

¹²⁴ Farhana Sultana, 'Water Justice: Why It Matters and How to Achieve It' (2018) 43 (4) *Water International* 483, 485.

¹²⁵ KJ Joy and others, 'Re-Politicising Water Governance: Exploring Water Re-Allocations in Terms of Justice' (2014) 19 (9) *Local Environment* 954.

¹²⁶ Frances Cleaver, 'Everyday Water Injustice and the Politics of Accommodation' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 246.

through a vast array of literature based on doctrinal and empirical studies.¹²⁷ From state-dominated, technocentric discussions on problems and solutions for water issues based on legal rights mechanisms, debates on injustices have transcended beyond state frontiers to grassroots levels to search for bottom-up, participatory, localised and pluralistic solutions to these injustices.¹²⁸

The present anthropocentric water governance patterns with an inherent bias toward human water demands and water rights also necessitate a more profound understanding of 'epistemologies of water or the complex and contradictory relations between water, knowledge, power, law and justice'.¹²⁹ However, the current liberal, normative and predominant treatise on justice cannot help to conceptualise a water justice framework to analyse 'injustices' in water as:

"It cannot respond to indigenous and peasants throughout the world who are still experiencing the full presence of injustice in the form of poverty, landlessness, dispossession, political and religious oppression, and genocide. Philosophical formulas become hollow without systematic explorations of the sources of injustice, including those within indigenous and peasant societies." ¹³⁰

Understanding water injustices warrants understanding physical factors like hydrological and climatic impacts affecting water availability and its interactions with 'socio-technical and legal-cultural determinants' of access and allocation of water.¹³¹ Hence, water justice discourse requires an intersection of these conventional justice theories and a 'relational, grounded, historical, comparative, diversified and contextual

¹²⁷ Mario Enrique Fuente-Carrasco, David Barkin and Ricardo Clark-Tapia, 'Governance from below and Environmental Justice: Community Water Management from the Perspective of Social Metabolism' (2019) 160 *Ecological Economics* 52; Rutgerd Boelens, *Water, Power and Identity: The Cultural Politics of Water in the Andes* (Routledge 2015); Vishal Narain, 'Whose Land? Whose Water? Water Rights, Equity and Justice in a Peri-Urban Context' (2014) 19 (9) *Local Environment* 974.

¹²⁸ Boelens, Vos and Perreault (n 119) 4.

¹²⁹ Upendra Baxi, 'Intergenerational Justice, Water Rights, and Climate Change' in Philippe Cullet and Sujith Koonan (eds), *Research Handbook on Law, Environment and the Global South* (Routledge 2019) 4.

¹³⁰ Pat Lauderdale, 'Justice and Equity: A Critical Perspective' in Rutgerd Boelens and Gloria Dávila (eds), *Searching for Equity: Conceptions of Justice and Equity in Peasant Irrigation* (Assen: Van Gorcum 1998) 5–6.

¹³¹ Margreet Z Zwarteveen and Rutgerd Boelens, 'Defining, Researching and Struggling for Water Justice: Some Conceptual Building Blocks for Research and Action' (2014) 39 (2) *Water International* 143, 144.

approach¹³² that embeds and addresses social equity and environmental sustainability. Adopting such a dynamic and contextual approach with applying the principles evolved through these current debates would help to unpack the injustices in water access and allocations caused by the interaction of subsidies and water.

2.2.1 Unpacking Water Injustices: Situating the Context for Water Justice Discourse

Water injustices can be material and social. Increasing water scarcity, overexploitation of water resources, and pollution are compounded by expanding water demands and unsustainable water consumption, leading to more complex situations of deepening the crisis, competition, and conflict for resource extraction.¹³³ Water scarcity and allied issues, overt or covert in nature, are also manipulated and exacerbated by technology, legal regulations, policies and power interactions, leading scholars to describe water scarcity as politically created.¹³⁴ Privatisation, marketisation and commodification processes in the water sector accentuate the injustices toward the poor.¹³⁵

Contributions to water justice literature are numerous.¹³⁶ Nevertheless, it is essential to analyse the context for the evolution of a distinct water justice framework that examines the (in) justices in the water sector to address the growing challenges of access and allocations of water.

¹³² See generally, Joy and others (n 125); Vos, Boelens and Perreault (n 119).

¹³³ Rutgerd Boelens, Margreet Z Zwarteveen and Dik Roth, 'Legal Complexities in the Analysis of Water Rights and Water Resources Management' in Dik Roth and others (eds), *Liquid Relations: Contested Water Rights and Legal Complexity* (Rutgers University Press 2005) 1.

¹³⁴ Lyla Mehta, 'Contexts and Constructions of Water Scarcity' (2003) 38 (48) *Economic & Political Weekly* 5066.

¹³⁵ Karen J Bakker, *Privatizing Water: Governance Failure and the World's Urban Water Crisis* (Cornell University Press 2010); Patrick Bond, 'Water Commodification and Decommodification Narratives: Pricing and Policy Debates from Johannesburg to Kyoto to Cancun and Back' (2004) 15 (1) *Capitalism Nature Socialism* 7.

¹³⁶ Farhana Sultana and Alex Loftus (eds), *The Right to Water: Politics, Governance and Social Struggles* (Routledge 2020); Rutgerd Boelens, *Water Justice in Latin America: The Politics of Difference, Equality, and Indifference* (CEDLA and University of Amsterdam 2015); Rose Francis, 'Water Justice in South Africa: Natural Resources Policy at the Intersection of Human Rights, Economics, and Political Power' (2005) 18 (1) *Georgetown International Environmental Law Review* 149.

Firstly, analysis of such (in)justices unveils the historically embedded and politically driven context of water 'injustices' before initiating the debate on the content of theories that reflect, challenge and address these injustices:

"Understanding (in)justice encompasses the examination of both *formally accredited justice* (formal schemes of interpretation and legitimisation, and legal-positivist constructs of 'rightness') and *socially perceived justice or equity* (location-, time-, and group-specific constructs of 'fairness') that are used by different societal groups".¹³⁷

Secondly, framing a contextual water justice framework is particularly significant in contemplating the influence of socio-political and legal processes. It shapes and determines not only exclusions and inclusions in access and control over water use and allocations but also the unequal distribution of vulnerabilities of such decisions among communities creating newly defined power patterns in water management.¹³⁸

Thirdly, the socio-natural characteristic of water with increased interdependencies of water with social relations and processes, creating 'hydro-social cycles'¹³⁹ where human decisions have substantial effects on biophysical aspects of water, with potential ramifications on human water use patterns stipulates the context of water injustices that could influence these relations.¹⁴⁰ Through Lima's situation, Ioris points out that "water scarcity gets manifestly connected with the scarcity of political influence and socio-economic deprivation, which operate together to form a geography of multiple scarcities."¹⁴¹

Fourthly and most significantly, the human rights jurisprudence on water recognising the right to safe and clean drinking water for all conceptualised as freedoms and entitlements calls upon the States to ensure availability, quality and accessibility, including equitable access without discrimination.¹⁴² Social discrimination is one of the causes and results of water injustices, depriving a considerable section of the society

¹³⁷ Zwarteveen and Boelens (n 131) 147.(Emphasis in Original)

¹³⁸ Joy and others (n 125) 955.

¹³⁹ Jessica Budds, Jamie Linton and Rachael McDonnell, 'The Hydro social Cycle' (2014) 57 *Geoforum* 167; Jamie Linton and Jessica Budds, 'The Hydro social Cycle: Defining and Mobilizing a Relational-Dialectical Approach to Water' (2014) 57 *Geoforum* 170; Rutgerd Boelens, 'Cultural Politics and the Hydrosocial Cycle: Water, Power and Identity in the Andean Highlands' (2014) 57 *Geoforum* 234.

¹⁴⁰ Antonio AR Ioris, 'Water Scarcity and the Exclusionary City: The Struggle for Water Justice in Lima, Peru' (2016) 41 (1) *Water International* 125, 127.

¹⁴¹ *ibid* 130.

¹⁴² Committee on Economic, Social and Cultural Rights, 'General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant)' (2003) UN Doc E/C.12/2002/11 15.

of their human right to water.¹⁴³ Therefore, It is essential to unveil a justice framework that examines these social inequities in water access and allocation peculiar to each jurisdiction.

Lastly, as spatial and temporal injustices vary across sectors and water users, human rights violations in water and consequent injustices can transgress the contours of environmental space and threaten its sustainability. Though it's pointed out that environmental injustices and rights violations are parallel occurrences, and the struggle to access water also constitutes struggles for environmental justice and sustainability,¹⁴⁴ the adoption of environmental justice in water justice limits its scope to anthropocentric reflections.¹⁴⁵ Instead, any discussion on water justice and the right to water should move beyond this anthropocentric focused environmental justice to closely knit with the ecological justice paradigm that recognises the rights of nature.

2.2.2 Locating Pillars of Water Justice: Drawing Lessons from Tripartite Spheres

The current water justice discourse derives its inspiration from the environmental justice framework that challenged the stereotypical, normative and universal standards of justice.¹⁴⁶ The water justice discourse draws its content from the interactions of politics and power relations with water governance that shape 'human knowledge of and intervention in the water world, leading to forms of governing nature and people, at once and at different scales, to produce particular hydro-social order.'¹⁴⁷ Recognising the hydro-social characteristic of water, the inequalities in the water sector require a relational, grounded, contextual approach to accommodate diversity in such disparities and perceptions of injustices, power asymmetries, and cultural non-recognition.

¹⁴³ Deepa Joshi (n 50). Here she illustrates the inequity and injustice faced by lower caste people and particularly women of those communities in accessing water through her case study in a Himalayan Village.

¹⁴⁴ Lyla Mehta and others, 'Global Environmental Justice and the Right to Water: The Case of Peri-Urban Cochabamba and Delhi' (2014) 54 *Geoforum* 158.

¹⁴⁵ See generally, Bunyan Bryant, *Bunyan Bryant, Environmental Justice: Issues, Policies, and Solutions* (Island Press 1995).

¹⁴⁶ David Schlosberg, 'Theorising Environmental Justice: The Expanding Sphere of a Discourse' (2013) 22 (1) *Environmental Politics* 37.

¹⁴⁷ Boelens, *Water Justice in Latin America: The Politics of Difference, Equality, and Indifference* (n 135) 9.

Adopting a relational, context-specific approach to justice allows expanding and customising justice in water that moves beyond the stereotypes. As noted by Prof Sen, Justice should not be universal and normative but capable of reacting to human situatedness, capabilities, and behaviour in everyday situations.¹⁴⁸ Thus, Sen's capabilities approach inspires to frame water justice to incorporate a broader understanding of water inequalities and their impacts on human rights and freedoms. It provides ways to move the discussions beyond the State-centred technocratic solutions to inequalities and injustices in water access and allocations to address the disparities created through the socio-hydrological nature of water.¹⁴⁹

The capability approach focuses on how social arrangements and situations influence the realisation of human freedoms. This approach promotes moving beyond the focus on the normative distributive element of justice to the reality of examining the impacts of such distributions and understanding how this distribution equips people to enhance their capability.¹⁵⁰ The focus should be on the freedoms produced by the commodities than the commodity.¹⁵¹

In water security, the capability approach recognises the hydro-social nature of water to contextualise a relational perspective incorporating the political structure and process of determining the social relations of access and allocations.¹⁵² Thus, water justice discourse argues for adopting a justice framework beyond normativity, informed on the reasons and effects of everyday injustice and its experiences on the affected. Hence, the scholars point out that *distributive, recognitional and procedural justice* constitutes the three spheres of water justice, deriving environmental justice's inspirations¹⁵³. Some others add the *socio-ecological justice* as the fourth sphere to include future generations' lives and livelihood sustenance.¹⁵⁴

¹⁴⁸ See Amartya Sen, *The Idea of Justice* (HUP 2011).

¹⁴⁹ Wendy Jepson, Amber Wutich and Leila M Harris, 'Water-Security Capabilities and the Human Right to Water' in Farhana Sultana and Alex Loftus (eds), *The Right to Water: Politics, Governance and Social Struggles* (Routledge 2020)84.

¹⁵⁰ David Schlosberg and David Carruthers, 'Indigenous Struggles, Environmental Justice, and Community Capabilities' (2010) 10 (4) *Global Environmental Politics* 12, 15.

¹⁵¹ See Amartya Sen, *Development as Freedom* (OUP 1999).

¹⁵² Wendy Jepson and others, 'Advancing Human Capabilities for Water Security: A Relational Approach' (2017) 1 *Water Security* 46.

¹⁵³ Dick Roth and others, 'Water Governance as a Question of Justice: Politics, Rights, and Representation' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 43.

¹⁵⁴ Margreet Z Zwarteveen and Rutgerd Boelens, 'Defining, Researching and Struggling for Water Justice' (n 131) 147.

Distributive justice is the fairness in distributing benefits and burdens in society.¹⁵⁵ It aims to achieve an equilibrium in the socio-economic structure of the society by integrating the conflicting interests and claims of its members.¹⁵⁶ Though it is the 'economic dimension of social justice' with equitable distribution of material goods in society,¹⁵⁷ this concept is not confined to equitable distribution of material resources only but also includes corrective justice and the welfare of every individual through preferential treatment of weaker sections like destitute, women, children, and people of underprivileged section of the society.¹⁵⁸ Its social and political dimensions cast a duty on the State to implement justice in distributing goods and services and balance the potential conflict between individual rights and collective justice.¹⁵⁹

Distributive justice demands equity and fairness in water access and allocations.¹⁶⁰ Equity, fairness and justice in water considerations must assess their link with various social and political factors, including gender, income, indigeneity, and race.¹⁶¹ The mere mechanic assertion of equity and equality is insufficient to examine water injustices. It requires 'not just an understanding of the unjust distribution and a lack of recognition, but, importantly, how the two are tied together in political and social processes.'¹⁶²

The distributive justice holds value only if recognition of harm suffered by communities and water users is unleashed, demanding more elaborate expansion of attempts to recognise various cultural, social, symbolic and institutional conditions linked to and contribute to these injustices. Consequently, the water injustices influenced by inherent and historically embedded discriminations demand *recognitional justice* to foreground

¹⁵⁵ David Miller, *Principles of Social Justice* (HUP 1999) 2.

¹⁵⁶ Sudesh Kumar Sharma, *Distributive Justice under Indian Constitution: With Reference to Right to Equality and Property* (Deep and Deep Publications 1989) 45.

¹⁵⁷ Nicholas Rescher, *Distributive Justice, A Constructive Critique of the Utilitarian Theory of Distribution* (Bobb Merrill Company 1966) 5.

¹⁵⁸ Sharma (n 156) 46.

¹⁵⁹ Hilde Bojer, *Distributional Justice: Theory and Measurement* (Routledge 2003) 5.

¹⁶⁰ Marian J Neal, A Lukaszewicz and GJ Symec, 'Why Justice Matters in Water Governance: Some Ideas for a "Water Justice Framework"' (2014) 16 Water Policy 1, 3.

¹⁶¹ Leila M Harris and others, 'Water Justice: Key Concepts, Debates and Research Agendas' in Gordon Walker, Jayajit Chakraborty and Ryan Holifield (eds), *The Routledge Handbook of Environmental Justice* (Routledge 2018) 339.

¹⁶² David Schlosberg, 'Reconceiving Environmental Justice: Global Movements and Political Theories' (2004) 13 (3) Environmental Politics 517, 528.

all material insults and degradation of individuals and communities and highlights the association of distribution and recognition.¹⁶³

Distributive fairness and recognition of historical injustices in water are complete only if the stakeholders, including water users, participate in enacting and implementing water policies and regulations. This public participation of stakeholders constitutes the third sphere of water justice: *procedural justice*. The three spheres of water justice are interconnected- procedural justice is incomplete and meaningless unless it guarantees distributive equity and fairness to water users and the recognition of injustices and communities, and the participatory process is democratic and meaningful.¹⁶⁴ Public participation involves "purposeful activities in which citizens take part concerning government" and consists of four components: the purpose of the involvement, type of action, people involved, and government entities targeted.¹⁶⁵

Essentially, the water injustices result from distributive injustices, lack of recognition and procedural justice. Instances of lack of access to a network of water supply, intersectoral water allocations,¹⁶⁶ reliance on private water markets in cities,¹⁶⁷ rising number of groundwater markets in irrigation,¹⁶⁸ and the dispute between canal water users are a few instances where injustices occur due to distributive inequality. Lack of access to safe and clean drinking water in peri-urban areas¹⁶⁹ and gender inequality in the water¹⁷⁰ adds to the complexities of inequities. This tripartite water justice discourse

¹⁶³ Nancy Fraser, 'Rethinking Recognition' (2000) 3 (3) *New Leftist Review* 107; Iris Marion Young, *Justice and the Politics of Difference* (Princeton University Press 2022).

¹⁶⁴ Schlosberg (n 162) 517.

¹⁶⁵ Nancy Perkins Spyke, 'Public Participation in Environmental Decision Making at the New Millennium: Structuring New Spheres of Public Influence.' (1999) 26 *Boston College Environmental Affairs Law Review* 263, 266.

¹⁶⁶ François Molle and Jeremy Berkoff, *Cities versus Agriculture: Revisiting Intersectoral Water Transfers, Potential Gains, and Conflicts* (Comprehensive Assessment of Water Management in Agriculture 2006).

¹⁶⁷ Ruth Meinzen-Dick, 'Private Tubewell Development and Groundwater Markets in Pakistan: A District-Level Analysis' (1994) 33 (4) *The Pakistan Development Review* 857.

¹⁶⁸ AV Manjunatha and others, 'Impact of Groundwater Markets in India on Water Use Efficiency: A Data Envelopment Analysis Approach' (2011) 92 *Journal of Environmental Management* 2924.

¹⁶⁹ Narain (n 127) 974.

¹⁷⁰ Deepa Joshi, 'Misunderstanding Gender in Water: Addressing or Reproducing Exclusion' in Anne Coles and Tina Wallace (eds), *Gender, Water and Development* (BERG 2005) 135.

is helpful to conceptualise water justice and deciphering the spatial and temporal dimensions of inequities.¹⁷¹

A relational, contextual and situational justice discourse influenced by the capability approach helps to unpack India's social and distributive inequities in access to groundwater and subsidies. Subsidies are essential State aid for the socially and economically weaker sections to improve their capabilities and freedoms by realising the right to drinking water and water for food. The tripartite spheres inspire to draw a water justice framework that addresses the relational, contextual and situational injustices in land rights-based groundwater access and allocations in India triggered and compounded by subsidies. The customised approach is essential to foreground the social and distributive inequities in water access influenced by historic injustices based on caste, gender, land ownership and its consequent impacts on environmental sustainability.

2.3 Building the Blocks of Water Justice: Towards Equitable Sustainability in Water Governance

The relational and contextual approach to addressing injustices in water helps to unpack and analyse the factors that shape it. This relational approach formed by the distributive, recognitional and procedural spheres is essential to examining everyday water injustices. This thesis also follows a tripartite sphere of water justice discourse that suits the jurisdictional context of India to identify, discuss and analyse the social inequities and environmental sustainability issues created by interactions of subsidies and groundwater access and allocations.

The above three spheres of water justice presume the causes of water injustices in distributive inequality, lack of recognition of communities that suffer the environmental burden and inadequate participatory rights in decision making. Nevertheless, inequalities and injustices in water do not end here. They could also be the cause and factor of social discrimination in water access and allocations and ecological damage resulting from quality and quantity depletion of water resources. Adopting a broad approach to the analysis of injustices enables perceiving complexities and multiplicities of injustices like Walker argued for the integration of 'spatiality of different forms of different things working at different scales' to accommodate pluralism in environmental justice.¹⁷² This pluralist approach to water justice asserts that justice principles are

¹⁷¹ Joy and others (n 125) 955.

¹⁷² Gordon Walker, 'Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice' (2009) 41 (4) *Antipode* 614, 615.

pluralistic visions and distributive plurality in goods, agents, and factors reflects cultural and historic pluralism.¹⁷³

Michael Walzer's pluralistic approach to justice helps to adopt a multifaceted water justice framework in this thesis. The framework adopted here asserts that spatial and temporal dimensions of injustices differ in different territorial jurisdictions due to various legal, geographical, hydrological, social and cultural factors. Hence, this thesis intends to examine injustices created by subsidies in groundwater access by a tripartite water justice framework where *distributive, social, and ecological justice* form its three spheres.

2.3.1 Dispossession in Water by Accumulation: Constituting Social and Distributive (in) Justices

Water is closely entangled with society, technology and nature influencing and determining different social or political hierarchies, conflicts and collaborations.¹⁷⁴ This close entanglement between humanity and water can essentially decide inclusions and exclusions in water access, and any changes in this relationship could affect the sustainability of water access for some groups while strengthening others.¹⁷⁵ For instance, the construction of large dams for irrigation and the drinking water demands of cities increases coherence among that water users while de-stabilising the indigenous community life, impacting their human rights, cultural configurations, and the entire ecosystems.¹⁷⁶ These megastructures improve the capacity of several million to realise their fundamental rights like water, and water for food and ensure the country's economic growth. However, it estranges rights to life, livelihood, water, shelter and the environment from many others, primarily the poor. Thus, access to safe water entwines social relations, power, the materiality of water, and technological developments, complicating water access inequities.

¹⁷³ Michael Walzer, *Spheres of Justice* (University of California Press 1983) 6.

¹⁷⁴ Rutgerd Boelens and others, 'Hydrosocial Territories: A Political Ecology Perspective' (2016) 41 (1) *Water International* 1, 3–4.

¹⁷⁵ Erik Swyngedouw, 'The Political Economy and Political Ecology of the Hydro-Social Cycle' (2009) 142 (1) *Journal of Contemporary Water Research & Education* 56, 56–57.

¹⁷⁶ Varsha Bhagat-Ganguly, 'Dams and Displacement: The Case of the Sardar Sarovar Project, India' in Philippe Cullet and Sujith Koonan (eds), *Research Handbook on Law, Environment and the Global South* (Edward Elgar 2019) 371; Barbara Rose Johnston, 'Large-Scale Dam Development and Counter Movements: Water Justice Struggles around Guatemala's Choxoy Da,' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 169.

Factors like 'proportionate equality and prior appropriation' determining water access rights contribute to distributive injustice in water allocations.¹⁷⁷ This simultaneous conferment and denial of rights from the same source point to the accumulation by dispossession, where the rich accumulates the benefits of water access by dispossession of the poor from their access.¹⁷⁸ The influence of technology, power, politics, gender, caste and land decide the extent of the accumulation and dispossession where indigenous and lower classes constitute the class of victims of injustices in most cases.¹⁷⁹

Technology in water access distinguishes the perception of 'good and bad development or water' mediating hydro-social assemblages, reflecting everyday water injustices through exclusions and inclusions and embodying socio-ecological relations.¹⁸⁰ For instance, technology-enabled water users to access better water resources, including deeper aquifers. Landowners accumulate water, regulate groundwater markets, and create and manage technical and financial resources in local water networks.¹⁸¹ The influence of technology and credit in water access is undeniable; however, the benefits confine to the rich and powerful, creating skewed water access patterns.

Policy measures like subsidies act as the primary tool to widen this inequity and accentuate dispossession by water accumulation, even though it enables small scale farmers to access water who otherwise could not afford credit, infrastructure and water technologies. Wealthy farmers exploit this uneven distribution of water and utilise the government subsidies to grow profitable water-rich crops, but small-scale farmers and landless tenants without government support confine themselves to water less, profitless crops.¹⁸²

The grabbing of benefits of water access through these factors and developments is a form of *dispossession by accumulation* where the poor get dispossessed of their rights.

¹⁷⁷ Anindita Sarkar, 'Socio-Economic Implications of Depleting Groundwater Resource in Punjab: A Comparative Analysis of Irrigation Systems' in Mihir Shah and PS Vijay Shankar (eds), *Water: Growing Understanding, Emerging Perspectives* (Orient Blackswan 2016) 314.

¹⁷⁸ Alf Gunvald Nilsen, *Dispossession and Resistance in India: The River and the Rage* (Routledge 2010) 18 .

¹⁷⁹ For discussion on Accumulation by Dispossession, See William Harvey, 'The "New" Imperialism: Accumulation by Dispossession' (2004) 40 *Socialist Register* 63.

¹⁸⁰ Farhana Sultana, 'Water, Technology, and Development: Transformations of Development Techno natures in Changing Waterscapes' (2013) 31 (2) *Environment and Planning D: Society and Space* 337, 341, 349.

¹⁸¹ Prakash (n 18).

¹⁸² Anindita Sarkar, 'Socio-Economic Implications of Depleting Groundwater Resource in Punjab: A Comparative Analysis of Different Irrigation Systems' (2011) 46 (7) *Economic & Political Weekly* 59.

It is different from *accumulation by dispossession* by Harvey, which investigates the accumulation of production by dispossession of the producer.¹⁸³

The proposition of dispossession by accumulation helps to foreground these distributive injustices in groundwater access in India ¹⁸⁴ because, in India, technology and financial resources aided through state subsidies benefit the rich to accumulate groundwater, accessed and regulated by land rights. Such accumulation from the exploitation of aquifers dispossesses many landless or small-scale farmers in agriculture or the rural water users in case of intersectoral water allocations from enjoying their water rights.¹⁸⁵ Hence, accumulation precedes dispossession, which could correctly depict the inequities in water access resulting from water subsidies.

Generally, the equities in water have four overlapping sections –social, gender, spatial and inter-generational. ¹⁸⁶ Adopting a comprehensive approach to water justice can address these equity concerns. The power and politics that determine the implementing areas of water supply programmes and the land-grabbing policies influence spatial equity in groundwater access. Land grabbing as a means for water access also leads to dispossession of the poor by land accumulation, distributive inequity and social injustice. Such land grabbing for water involves reallocating water resources, deciding inclusions and exclusions, and determining benefits¹⁸⁷ where it acts as a means of control holding by different actors, including multinational corporations and states.¹⁸⁸

Social discriminations in groundwater access compound these distributive inequities in access and allocations determined by land rights and the skewed access and distribution of subsidies. Such discrimination is rampant in different parts of the country, with the lower castes socially excluded from access to water sources¹⁸⁹ which curtails their

¹⁸³ Harvey (n 179).

¹⁸⁴ I discuss groundwater access and allocations problems in India and its water justice dimensions in the following chapter.

¹⁸⁵ Philippe Cullet, Lovleen Bhullar and Sujith Koonan, 'Inter-Sectoral Water Allocation and Conflicts: Perspectives from Rajasthan' (2015) 50 (34) *Economic & Political Weekly* 61.

¹⁸⁶ Sanjiv J Phansalkar, 'Water, Equity and Development' (2007) 3 (1) *International Journal of Rural Management* 1, 6.

¹⁸⁷ Gert Jan Veldwisch, Jennifer Franco and Lyla Mehta, 'Water Grabbing: Practises of Contestation and Appropriation of Water Resources in the Context of Expanding Global Capital' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 63.

¹⁸⁸ Lyla Mehta, Gert Jan Veldwisch and Jennifer Franco, 'Introduction to the Special Issue: Water Grabbing? Focus on the (Re)Appropriation of Finite Water Resources.' (2012) 5 (2) *Water Alternatives* 193.

¹⁸⁹ Swarup Dutta, Ishita Sinha and Adya Parashar, 'Dalit Women and Water: Availability, Access and Discrimination in Rural India' (2018) 4 (1) *Journal of Social Inclusion Studies* 62; Swarup Dutta, Sukanta

capabilities to enjoy the fundamental right to water. Lower caste communities like Dalits and Backward Castes often face dispossession from natural and economic resources¹⁹⁰ like inequity in groundwater access through their lack of land ownership, capital and technology to install pumps and the inherent discriminations in access to village water sources like wells.¹⁹¹ These discriminations extend to access to subsidies of State-run water supply schemes.

Gender discrimination in land ownership and consequent groundwater access is another form that reflects the dispossession of a crucial society from enjoying the benefits. Women lack the right to access irrigation water and participate in such decision forums even though women own land or work rigorously in farmlands due to the masculinity involved in technology and irrigation decision-making.¹⁹² Similarly, the groundwater legal framework with its land ownership nexus technically excludes landless and women farmers in water access.

However, these discriminations are not due to a lack of recognition because the Constitution guarantees the right to equality, bans untouchability, and asserts protective discrimination to encourage the development of these communities. Essentially inequities in water access and allocations resulting from discrimination based on social biases, gender, caste, and religion lie outside the paradigm of the tripartite concept of water justice used hitherto.

Furthering the injustice here is the role of law and policy on water resources, which grandfathers the existing land-based regulations. This regulation forfeits distributive and social justice concerns in water access and allocation. Additionally, the groundwater-based State supply emphasises equality in water supply without focusing on equity. Thus, several social, economic, law and policy factors determine the scope and extent of dispossession by accumulation and the inherent divide between groundwater users.

The influence of these factors in groundwater access and the consequent dispossession demands more relational and contextual spheres of water justice framework that addresses situations in India. Therefore, including the social justice sphere in the water justice framework is essential to understanding the groundwater access issues in India.

Behera and Ashok Bharti, 'Access to Drinking Water by Scheduled Castes in Rural India: Some Key Issues and Challenges' (2015) 9 (1) Indian Journal of Human Development 115.

¹⁹⁰ Samantha Agarwal and Michael Levien, 'Dalits and Dispossession: A Comparison' (2020) 50 Journal of Contemporary Asia 696.

¹⁹¹ Tiwary and Phansalkar (n 49).

¹⁹² Margreet Zwarteveen, 'Men, Masculinities and Water Powers in Irrigation' (2008) 1 (1) Water Alternatives 111, 123.

The social justice sphere depicts social and gender inequities in water access and allocations, foregrounding the concerns of depressed classes of society. Social justice also enables the equitable distribution of resources while protecting citizens' social and economic rights. Hence, while distributive justice is a recognised water justice sphere, social justice must complement it. It projects the social inequities in everyday water struggles while envisaging distributive justice in water access and allocation.

As pointed here, water justice's distributive and social justice spheres attempt to address and redress everyday water injustices among different water uses and users. The human right to water is the major driving factor for these spheres that aim to achieve the universal and equitable realisation of sufficient quality and quantity of water to enable the realisation of other human rights.

Nevertheless, these elements only possess an anthropocentric characteristic that focus only on human rights and justice among water users. The water justice framework adopted by political ecologists based on distribution, participation and recognition also shares these anthropocentric traits, without reference to the impacts of these activities on other species. With this anthropocentric bias, water justice is skewed towards humans and suppresses the consequences of such human water uses on water quality and quantity and sustainability of the ecosystem.

Therefore, it is inevitable to expand water justice discourse to include and incorporate the concerns of environmental harm caused due to water consumption, exploration and exploitation by humans to water resources and nature. Hence, it is essential to add *ecological justice* as an element of water justice to share benefits and burdens equitably among water users, define our duties and responsibilities to protect water and nature, recognise source sustainability, and protect the planet's sustainability.

2.3.2 Expanding the Scope of Water Justice: From Anthropocentric Water Demands to Ecological Justice and Sustainability

Justice theories arguing for distributive justice, fairness and just process in human actions prioritise human relations in its centre. Environmental conservation also receives these anthropocentric reflections as seen through the adoption of human rights mechanisms as justification for the right to the environment.¹⁹³ The inherent anthropogenic bias continued even with all environmental causes in international

¹⁹³ See Donald K Anton and Dinah L Shelton, *Environmental Protection and Human Rights* (CUP 2011).

discussions with the North-South debates¹⁹⁴ and global environmental justice arguments influenced by climate change concerns¹⁹⁵, transboundary waste trade and deforestation.¹⁹⁶ Even though the environmental justice movements, derived from human-induced ecological impacts, attempted to promote environmental conservation, they manifest human rights by arguing for equitable distribution of environmental goods among different sections.¹⁹⁷

Environmental justice highlighted for environmental protection is insufficient to address the impacts of human water uses on ecological sustainability. It requires a more nuanced approach that recognises Nature's rights and human beings' corresponding duties to balance equity and sustainability. This ecological justice approach, which focuses on justice in the relationship between humans and nature, differs from environmental justice that focuses on distributing environmental goods among humans.¹⁹⁸ Though ecological justice and environmental justice are alternatives in many cases,¹⁹⁹ understanding the subtleties of distinction requires more attention to foreground the negative externalities of groundwater exploitation on aquifers and the ecosystem.

A. Shifting from Anthropocentric Bias in Water Governance: Justifications and Challenges

The Anthropocene era saw developments in human activities, significantly impacting the environment.²⁰⁰ The Anthropocene denotes a gradual shift from a relatively stable

¹⁹⁴ Sumudu Atapattu and Carmen G Gonzalez, 'The North-South Divide in International Environmental Law: Framing the Issues' in Shawkat Alam, Sumudu Atapattu and Jona Razzaque (eds), *International Environmental Law and the Global South* (CUP 2015) 10.

¹⁹⁵ Rowena Maguire and Xiaoyi Jiang, 'Emerging Powerful Southern Voices: Role of BASIC Nations in Shaping Climate Change Mitigation Commitments' in Shawkat Alam and others (eds), *International Environmental Law and the Global South* (CUP 2015) 214; Jutta Brunnee, 'Climate Change, Global Environmental Justice and International Environmental Law' in Jonas Ebbesson and Phoebe N Okowa (eds), *Environmental law and justice in context* (CUP 2009) 316.

¹⁹⁶ Carmen G Gonzalez, 'Beyond Eco-Imperialism: An Environmental Justice Critique of Free Trade' (2001) 78 *Denver University Law Review* 979.

¹⁹⁷ Bunyan Bryant, *Environmental Justice: Issues, Policies, and Solutions* (Island Press 1995).

¹⁹⁸ Nicholas Low and Brendan Gleeson, *Justice, Society, and Nature: An Exploration of Political Ecology* (Routledge 1998) 2.

¹⁹⁹ Loretta Capeheart and Dragan Milovanovic, *Social Justice: Theories, Issues, and Movements* (Rutgers University Press 2020) 93.

²⁰⁰ Paul J Crutzen and Eugene Stoermer, 'The "Anthropocene."' (2000) 41 *IGBP Newsletter* 17.

Holocene to a critically unstable phase where human activities dominate the biophysical and geological activities²⁰¹, leading to dub humans as 'geological agents'.²⁰² It witnesses significant human-induced changes to geology 'impacting mass extinctions, loss of resilience' and threatening Earth's functional integrity, leading to a human-dominated system.²⁰³

With the climate change concerns and their impacts on social and economic equality, widen, the issues of anthropocentric development forms have attracted wider attention and criticism.²⁰⁴ Although considerations of environmental harm and irreparable damage initiated the discussions on environmental protection, these discussions and recognition of the need for ecological protection often reflect anthropocentrism. Various terminologies like the Human right to a Clean Environment, Environmental Human Rights, Constitutional Environmental Rights exemplify this human-centred environmental protection.²⁰⁵

This Anthropocene era witnessed the critical impacts of human activities on the functioning of the broader ecosystem at planetary levels, even though human activities have influenced it for long centuries.²⁰⁶ It epitomises "a world of intertwined drivers, complex dynamic structures, emergent phenomena, and unintended consequences, manifest across different scales of analysis and subject to multiple and linked biophysical and social constraints."²⁰⁷

Anthropocentric activities cause environmental impacts and witness the interlinkage between ecological sustainability and social and distributive inequity. Any threat to ecological sustainability has potential effects on human developmental actions, equity

²⁰¹ Paul J Crutzen, 'Geology of Mankind' 415 *Nature* 23.

²⁰² Bruce H Wilkinson, 'Humans as Geologic Agents: A Deep-Time Perspective' (2005) 33 (3) *Geological Society of America* 161, 163.

²⁰³ Louis J Kotze, 'Human Rights and the Environment in the Anthropocene' (2014) 1 (3) *The Anthropocene Review* 252, 254.

²⁰⁴ Alf Hornborg, *Nature, Society, and Justice in the Anthropocene: Unravelling the Money-Energy-Technology Complex* (CUP 2019) 37.

²⁰⁵ Chris Jeffords and Joshua C Gellers, 'Constitutionalizing Environmental Rights: A Practical Guide' (2017) 9 *Journal of Human Rights Practice* 136; Chris Jeffords and Lanse Minkler, 'Do Constitutions Matter? The Effects of Constitutional Environmental Rights Provisions on Environmental Outcomes: Constitutions and the Environment' (2016) 69 (2) *Kyklos* 294; Tim Hayward, *Constitutional Environmental Rights* (OUP 2004).

²⁰⁶ Will Steffen and others, 'Planetary Boundaries: Guiding Human Development on a Changing Planet' (2015) 347 (6223) *Science* 1259855.

²⁰⁷ Xuemei Bai and others, 'Plausible and Desirable Futures in the Anthropocene: A New Research Agenda' (2016) 39 *Global Environmental Change* 351, 352.

and poverty reduction efforts.²⁰⁸ It compels us to acknowledge the role of the biosphere and ecosystem in human society, sustaining the equitable distribution of resources, despite the dominant position of human beings on planetary boundaries.²⁰⁹ This closer interconnection between equity and sustainability inspires us to rethink these two concepts' isolated, reductionist linear cause-effect analysis and evolve an equitable sustainability framework.²¹⁰

Nevertheless, the evolution of a framework that ensures equity and sustainability arguing for eco-centric water justice in Anthropocene faces several challenges. Firstly, as environmental rights are either prefixed or suffixed with human rights, they are recognised as essential to realise other human rights or a pre-condition for better enjoyment of human rights.²¹¹ It underlines the human-centric orientation given to environmental protection.

Secondly, the concept of sustainability is intertwined with sustainable development, implying that our current understanding of sustainability equates to sustainable development. Sustainability means sustainable development, which, unfortunately, is not complete because the knowledge of sustainable development based on the Brundtland Report relegates the environmental considerations and prioritise human needs over ecological demands.²¹² Even though sustainable development possesses three pillars- social equality, economic development and ecological sustainability, the emphasis skew towards the first two pillars, reflecting an anthropocentric perspective.

Thirdly, sustainable development and human right to the environment relegate the rights of nature(*starting now* RoN) and human duties towards nature conservation.²¹³ Several Constitutions, including India, have recognised the right to the environment as justiciable, but hardly a few contain a duty to protect the environment, and if

²⁰⁸ Anantha K Duraiappah, 'Poverty and Environmental Degradation: A Review and Analysis of the Nexus' (1998) 26 (12) World Development 2169.

²⁰⁹ Carl Folke and others, 'Social-Ecological Resilience and Biosphere-Based Sustainability Science' (2016) 21 (3) Ecology and Society 40.

²¹⁰ Melissa Leach and others, 'Equity and Sustainability in the Anthropocene: A Social–Ecological Systems Perspective on Their Intertwined Futures' (2018) 1 Global Sustainability 1.

²¹¹ For development of Human Right to Environment, Sumudu Atapattu, 'The Right to a Healthy Life or the Right to Die Polluted?: The Emergence of a Human Right to a Healthy Environment Under International Law' (2002) 16 (1) Tulane Environmental Law Journal 65; Richard P Hiskes, *The Human Right to a Green Future: Environmental Rights and Intergenerational Justice* (CUP 2008).

²¹² Linda Hajjar Leib, *Human Rights and the Environment: Philosophical, Theoretical and Legal Perspectives* (Brill Nijhoff 2010) 111.

²¹³ Alice Bleby, 'Rights of Nature as a Response to the Anthropocene Special Edition on Environmental Law' (2020) 48 (1) University of Western Australia Law Review 33.

included, it is a non-justiciable moral duty.²¹⁴ The human-centric environmental protection rights should provide space to recognise the RON to incorporate the sustainability concerns from an eco-centric perspective.

Fourthly, discussions on environmental rights correlate to property rights. Arguments relate property rights to the solutions for environmental degradation, pointing to its another anthropocentric characteristic.²¹⁵ It indicates that individual property rights can address the problems of the tragedy of commons.²¹⁶

Lastly, our concerns have hitherto been confined to conflicts that could arise between different users and uses of natural resources and the technical, top-down solutions to these problems. We hardly recognise the changes in relationships between man and Nature due to resource degradation, which may take the form of other environmental harms.

Hence, the challenges of the Anthropocene era led to insight for re-framing regulatory mechanisms, stressing the need for rethinking our development perspectives and drawing attention to our relationship with planet Earth. This relationship demands respect to and following planetary functionalities instead of encroaching planetary boundaries²¹⁷ and re-arranging our engagement with nature in 'ethical, sustainable and ecologically just ways'.²¹⁸

Understanding injustice to the environment in this Anthropocene is equally perilous. Our hitherto political theories of justice only advocate justice among humans, marginalising intra-species justice to ideas of morality.²¹⁹ The predomination of perspectives of ensuring justice among entities/relations in creatures who are moral equals remains a constraint to extending the justice perspectives to nature.²²⁰ However, considering the impacts of human activities on the environment in the Anthropocene, including the damage-causing to natural resources like aquifers and climate change impact accelerations, we should move beyond the hitherto conceptions of justice to

²¹⁴ Constitution of the Republic of Ecuador 2008 ss 10, 71–74; Constitution of India Articles 48 A, 51A(g).

²¹⁵ Dirk Jan Kraan, 'The Role of Property Rights in Environmental Protection' in DJ Kraan and RJ in 't Veld (eds), *Environmental Protection: Public or Private Choice* (Springer 1991) 167.

²¹⁶ Hardin Garrett, 'The Tragedy of the Commons' (1968) 162 (3859) *Science* 1243.

²¹⁷ Kotze (n 203) 256–257.

²¹⁸ Donna Houston, 'Crisis Is Where We Live: Environmental Justice for the Anthropocene' (2013) 10 (3) *Globalizations* 439, 440.

²¹⁹ See for instance, Rawls (n 97).

²²⁰ Barry (n 69) 95.

accommodate the concerns of this environmental degradation, protect and conserve natural resources and to recognise the RON.

It denotes a need for re-conceptualising our justice perspectives from anthropocentric to eco-centric, harmonising the needs and rights of humans and nature through re-framing laws, redefining rights and duties and re-politicising environmental issues like water scarcity. Such recognition of our responsibilities to nature and the environment would constitute ecological justice, a non-anthropocentric concept of justice recognising the environment's intrinsic value shifting the focus from instrumental recognition of the environment to an anthropocentric traditional western concept of human rights.²²¹

B.Situating the Ecological Justice in Equity and Sustainability: Towards a Strong Eco-centric Emphasis in Water Justice

Environmental justice connected justice, society and the environment, demanding fairness and equity in benefit and burden-sharing among different sections of the population.²²² While environmental justice includes distributive, recognition and procedural justice, the idea of justice here, more anthropocentric in nature, is skewed towards the betterment of human rights.²²³ This thesis moves away from anthropocentric focused environmental justice. Instead, it adopts the ecological justice paradigm to water justice discourse to reflect eco-centric water governance and promote equitable sustainability, potentially impacting social and distributive equity in human rights.

Low and Gleeson propose two core principles constituting ecological justice: 'every natural entity is entitled to enjoy the fullness of its form of life' and secondly, 'all life forms are mutually dependent and dependent on non-life forms'.²²⁴ These two principles of the right to life and dependency argue for moral consideration for non-human species and base themselves on three 'rules of thumb':- 'life has moral precedence over non- life', 'individualised life forms take moral precedence over life forms that only exist as communities' and, 'humans take precedence over other life

²²¹ Klaus Bosselmann, 'Strong and Weak Sustainable Development: Making the Difference in the Design of Law' (2007) 13 South African Journal of Environmental Law and Policy 39, 42.

²²² Julian Agyeman, Robert D Bullard and Bob Evans, 'Exploring the Nexus: Bringing Together Sustainability, Environmental Justice and Equity' (2002) 6 (1) Space and Polity 77.

²²³ Schlosberg (n 145).

²²⁴ Low and Gleeson (n 198) 157.

forms.²²⁵ While all life is mutually dependent, they believe there can't be egalitarianism among species, but every species deserves its own space.

Spheres of water justice discussed elsewhere in this chapter, with their tripartite form, cannot ensure inter-species fairness because all spheres redirect their focus towards equity in water access among human beings. Inter-species justice, thus, could only be part of ecological justice, while intergenerational and intragenerational justice could also be part of the anthropocentric approach²²⁶ highlighted by this water justice discourse. Unless the water justice discourse considers the ecological justice paradigm, it cannot address the environmental damage caused by unsustainable water consumption and allocations.

Ecological justice in water justice based on an eco-centric approach that can ensure source sustainability by recognising RON and rights of water resources²²⁷ can also contribute to supply sustainability for social and distributive justice among water users and uses. Several factors justify the focus on sustainability of water resources based on ecological justice in water justice.

Firstly, the right to water discourse focus on human rights and sustainability of supply for human water demands, relegating the concerns of the water resources, the source sustainability and rights of rivers/ aquifers. This approach that neglects the problems of the source threatens source sustainability, severely impairing the supply sustainability and turns a cause factor for everyday water injustices, a fact left unnoticed in policy cycles.

Secondly, water/ environmental law impacts, policies, and regulations on the environment and ecosystem warrant attention to sustainability.²²⁸ The policy-sustainability link in statute derives from the international focus on social, economic and environmental considerations developed through sustainable development norms.²²⁹ Even though the objective highlighted is the need to balance economic development and environmental protection, the former receives more attention in the legislation.

²²⁵ *ibid* 158–159.

²²⁶ Bosselmann (n 221) 47.

²²⁷ See for ecological justice and sustainability interactions, Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Routledge 2017) 115–117.

²²⁸ Philippe Cullet, *Water Law, Poverty, and Development: Water Sector Reforms in India* (OUP 2009) 56.

²²⁹ *ibid* 56–58.

Thirdly, ecological sustainability can help ensure distributive and social justice in water access and allocation with intra and intergenerational aspects of human water needs. Human exploitation of water resources (in this thesis context, groundwater exploitation) raises twin challenges: sustainability and equity. But these are not mutually exhaustive but interlinked. Inequities, social and distributive, create sustainability challenges. Likewise, sustainability of water resources creates challenges on equity in access to water, particularly affecting the poorer and deprived sections, compromising intra-generational equity.

It thus also forms essentiality to ensure intergenerational equity in water.²³⁰ As highlighted by Weiss, "Today's environmental damage will affect tomorrow's productivity and competitiveness, either because it imposes high remedial costs on future generations, reduces available options, or requires future generations to pay more for the same goods and services,"²³¹ sustainability also has an intergenerational aspect. Weiss put forward three principles of conservation, access, quality, and options for intergenerational equity.²³²

The damage caused to the sustainability of resources deteriorates quality, quantity, and water access options for future generations. Since there is uncertainty about the content of quality and quantity required by future generations, the feasibility of ecological justice arises here, which points out that the present generation must 'pass on the integrity of the planetary ecosystem as it has inherited it (ecological integrity)'²³³. It points to the necessity of resource conservation to ensure justice for present and future generations, which is possible through ecological justice.

Intergenerational equity has an element of ecological justice embraced, explicit through one of the aspects in theory: 'the relationship with coming generations of the same species' and 'our relationship with nature,'²³⁴ categorised as vertical and horizontal. This thesis adopts the horizontal and vertical relationship to argue for ecological justice in groundwater exploitation. The first aspect embraces the anthropocentric element of justice with distributive and social justice as conservation objectives. However, the

²³⁰ Barry (n 69) 111.

²³¹ Edith Brown Weiss, 'Intergenerational Fairness for Fresh Water Resources' (1999) 25 *Environmental Policy & Law* 231, 232.

²³² *ibid* 234.

²³³ Bosselmann (n 227) 119.

²³⁴ Weiss, 'The Coming Water Crisis: A Common Concern of Humankind' (n 36); See also Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational and United Nations University 1989).

second aspect, its horizontal factor, directs our attention towards justice to Nature, which demands recognition of RoN.

Lastly, the current water demand and supply approaches, adopting either technocentric top-down solutions or market-based solutions, also demand sustainability in water governance. Intersectoral water allocations from rural-urban areas, agriculture, and drinking and industries' water use overlook ecological water needs and impact water resources' sustainability. It exhausts water resources and deprives the rights of present and future generations to access water. Hence, water justice demands equitable water sharing or access and allocation of water resources among different sections of users and uses. However, it warrants an eco-centric approach that can foreground equitable sustainability, balancing the RoN and human rights.²³⁵

2.4 Determining the Content and Scope of Water Justice: Designing a Framework to unpack (in)justices in Groundwater Access and Allocations

The water justice spheres, *social, distributive and ecological justice*, used here help to unpack injustices in the hydro-social networks influenced by factors like politics, power, economic status and governance, deciphering social and distributive injustices among different sections of populations and the sustainability injustices to water and Nature. It would help address these injustices more equitably and reasonably and recognise both human rights and Nature's rights by harmonising the needs of all stakeholders. However, while these three elements identified constitute the context for such understanding and unpacking of water injustices, it is essential to analyse the contents of water justice- How it's possible to address these injustices and the factors and mechanisms involved and its scope.

The contents of water justice possess twin elements: elements to ensure equity and sustainability. The factors to ensure equity include recognising the rights-duties paradigm in water to address social and distributive equity among present generations. The realisation of the second element of sustainability is possible by exploring the third sphere of water justice- ecological justice. Adopting environmental principles in water governance can ensure the sustainability of the source and lead the ways to recognise the RON, the first step toward ecological justice.

²³⁵ Andrew Dobson, 'Environment Sustainable: An Analysis and a Typology' (1996) 5 (3) *Environmental Politics* 401, 423.

2.4.1 Recognition of Rights and Duties Paradigms in Water: Towards Equitable and Inclusive Access and Allocations

The widening of injustices in water access and allocations caused by social, economic, and political influences necessitates legal interventions through recognition of rights (human right to water and water rights) and different stakeholders' duties to ensure equity and inclusiveness in water. It is particularly significant due to increased interventions of international financial institutions inspired by neoliberalism that cause changes in the State's role and consequent impacts on equity in water access.

Water, recognised as a human right, is a 'public good' in most international and domestic instruments²³⁶, which denotes the intention of the drafting committees to make the State responsible for ensuring that the human right to water is safeguarded even in the case of private participation.²³⁷ The human right to water and its components have been criticised for its content, suspected of its ability to address challenges of privatisation and efficiency,²³⁸ inability to comprehend the equity concerns and address social struggles²³⁹ and implementation failure.²⁴⁰ This criticism points to the loss of mainstream rights discourse to have a bottom-up approach reflecting local experiences and the forgotten battles of people.²⁴¹ Furthermore, these scholars highlight the

²³⁶ See for instance, General Comment 15 of 2002 and National Water Policies of India.

²³⁷ Stephen C McCaffrey, 'The Human Right to Water' in Edith Brown Weiss, Laurence Boisson de Chazournes and Nathalie Bernasconi-Osterwalder (eds), *Fresh Water and International Economic Law* (OUP 2008) 104.

²³⁸ Karen Bakker, 'The "Commons" Versus the "Commodity": Alter-Globalization, Anti-Privatization and the Human Right to Water in the Global South' (2007) (3) 39 *Antipode* 430; Priya Sangameswaran, 'Neoliberalism and Water Reforms in Western India: Commercialization, Self-Sufficiency, and Regulatory Bodies' (2009) 40 (2) *Geoforum* 228.

²³⁹ Pooja Parmar, 'Revisiting the Human Right to Water' (2008) 28 (1) *Australian Feminist Law Journal* 77.

²⁴⁰ PB Anand, 'Right to Water and Access to Water: An Assessment' (2007) 19 *Journal of International Development* 511; Priya Sangameswaran, 'Review of Right to Water: Human Rights, State Legislation, and Civil Society Initiatives in India' (Centre for Interdisciplinary Studies in Environment & Development 2007).

²⁴¹ Renata Moreno-Quintero and Theresa Selfa, 'Making Space for the Cauca River in Colombia: Inequalities and Environmental Citizenship' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 134.

significance of legal pluralism in water rights and the drawbacks of legal rights in implementation.

Despite all these objections, the human right to water makes it possible for achieving universal access to drinking water, particularly for those lacking access to essential services.²⁴² The recognition of the right to water is not just a declaration but a process of public engagement and involves accountability and responsibility of the State.²⁴³ Rights guarantee an institutional framework to achieve goals of social struggle and act as an essential tool against the State's action where powerful actors could be held accountable²⁴⁴ despite the arguments that they are political ideals acting as 'means of organising power, contesting power and adjudicating power',²⁴⁵ and their categorisation as 'individualised, atomised, universalistic, state-centric and anthropocentric'.²⁴⁶

Discussions on the justification of recognition of rights lead to a distinction between the right to water and water rights. Right to water refers to the formal legal recognition of a person's or population's right to water, and human right to water means every person, irrespective of citizenship, race, location, or ability to pay, has the right to be assured access to water for life, basic needs and dignity.²⁴⁷ Water rights differ from the above right by infusion of property rights. In many cases, these properties linked to water rights conflict with the right to water, especially in the case of landless, poor and marginalised water access.

Unique property and characteristics of water complicate the determination of rights, but such rights contextualise inclusions and exclusions in control over resources.²⁴⁸ Water rights are also related to issues of social justice.²⁴⁹ Since water allocations are a

²⁴² Anand (n 240) 517.

²⁴³ *ibid* 522.

²⁴⁴ Don Mitchell, *The Right to the City: Social Justice and the Fight for Public Space* (Guilford 2003) 25.

²⁴⁵ *ibid* 22.

²⁴⁶ Perreault (n 118) 240.

²⁴⁷ Oriol Miroso and Leila M Harris, 'Human Right to Water: Contemporary Challenges and Contours of a Global Debate' (2012) 44 (3) *Antipode* 932.

²⁴⁸ Bryan Randolph Bruns and Meinzen-Dick, 'Framework for Water Rights: An Overview of Institutional Options' in Bryan Randolph Bruns, Claudia Ringler and Ruth Meinzen-Dick (eds), *Water Rights Reform: Lessons for Institutional Design* (IFPRI 2005) 5.

²⁴⁹ Peter Mollinga, 'Water Rights in Farmer Managed Irrigation Systems in India: Equity, Rule Making, Hydraulic Property and the Ecology' (2009) 1 *South Asian Water Studies Journal* 1, 3.

negotiated participatory process involving different stakeholders where decisions are beyond technical specifications, economic efficiency or legal regulation, water rights form the basis for claims to a resource. It is highly significant to recognise legal pluralism in such a context.²⁵⁰ In such a case, like water justice, it demands a relational and grounded approach where understanding of water rights should begin from the local perspectives of water users, their everyday water interactions, water struggles, their conceptions of water rights, and solutions to water disputes.²⁵¹

Legal pluralism coordinates the interactions of water rights and the right to water. Water rights understood as a bundle of rights comprised of access, withdrawal, management, exclusion and alienation rights, are closely entwined with property rights as property rights often act as preconditions for access to resources.²⁵² Inequities in property rights create inequities in water rights, impacting distributive and social justice. While the State is the custodian of all-natural resources, its failure in negotiations and fixing rights and responsibilities give rise to crucial impacts on the sustainability of these resources.²⁵³

Hence, recognition of rights in water, with all terminology human right to water and water rights, helps to recognise social struggles of people to realise their human rights because the human right to water is not only an end in itself but also a means to recognise other rights. Sen's vision of human rights is very significant here. Sen notes that the significance of human rights is related to the freedoms attached to it, including both opportunity and process, where he places the thresholds of 'special importance and social influenceability for freedom to qualify as a human right.'²⁵⁴ He stresses on economic and social freedoms associated with such human rights. He argues that "If they cannot be realised because of inadequate institutionalisation, then working for institutional expansion or reform can be a part of the obligations generated by recognising these rights. The current unreliability of any accepted human right, which

²⁵⁰ Ruth Meinzen-Dick and Bryan Randolph Bruns, 'Negotiating Water Rights: Introduction' in Bryan Randolph Bruns and Ruth S Meinzen-Dick (eds), *Negotiating Water Rights* (IFPRI 2000) 23.

²⁵¹ *ibid* 25.

²⁵² Edella Schalger and Elinor Ostrom, 'Property-Rights Regimes and Natural Resources: A Conceptual Analysis' (1992) 68 (3) *Land Economics* 249.

²⁵³ Nirmal Sengupta, 'Negotiation with an Under-Informed Bureaucracy: Water Rights on System Tanks in Bihar' in Bryan Randolph Bruns and Ruth Meinzen-Dick (eds), *Negotiating Water Rights* (IFPRI 2000) 137.

²⁵⁴ Amartya Sen, 'Elements of a Theory of Human Rights' (2004) 32(4) *Philosophy & Public Affairs* 315, 319.

can be promoted through institutional or political change, does not convert that claim into a *non-right*.”²⁵⁵

The human right to water thus entitles them to enjoy freedoms and entitlements and helps to realise their other rights. Understanding how social injustices are created and often trigger water injustice is essential. Hence, understanding the right to water from human rights perspectives helps us articulate these society-water interactions and the consequent differences and conflicts.²⁵⁶ However, the mere recognition of rights in water and human right to water doesn't ensure effective implementation.

Since the international recognition of human rights has entrusted the States to implement this right depending on financial, technical and human resources capacity, this right has a persuasive impact. However, many jurisdictions have recognised this right in their constitutions or as a derived right. Anand points out that a right to water involves a formal recognition of power and claims that he refers to as '1st order rights' and formal and informal constraints influencing privileges, duties, immunities, and responsibilities.²⁵⁷ The responsibilities of stakeholders are to be defined in all cases to unpack and address water injustices adequately.

It is essential to recognise rights and define duties in water as either water rights or human rights for better enjoyment of other rights and the relationship between them and the broader environment. Over a couple of decades, this relationship has been explored, and in recognition of this interaction, many environmental law principles have been imbibed in water law to realise the human right to water and the environment and make sure that water resources are protected.²⁵⁸

2.4.2 Public Trust Doctrine in Water Governance: First Step for Equitable Sustainability

Public Trust Doctrine (*from now on* PTD) is the most widely used principle for environmental governance to address the externalities caused by groundwater allocation rules based on land ownership.²⁵⁹ It recognises state trusteeship in property

²⁵⁵ *ibid* 316. Emphasis in Original.

²⁵⁶ Farhana Sultana and Alex Loftus, 'The Right to Water in a Global Context Challenges and Transformations in Water Politics' in Farhana Sultana and Alex Loftus (eds), *Water Politics: Governance, Justice and the Right to Water* (Routledge 2020) 7.

²⁵⁷ Anand (n 240) 517–518.

²⁵⁸ Cullet, *Water Law, Poverty, and Development* (n 54) 51.

²⁵⁹ *ibid* 42; P Cullet, 'Groundwater Law in India: Towards a Framework Ensuring Equitable Access and Aquifer Protection' (2014) 26 (1) *Journal of Environmental Law* 55; Koonan (n 53) 187.

beneficial for the general public.²⁶⁰ Since its origin in Roman Law, PTD has evolved through English and US case laws and expanded its revolutionary ambit to every natural resource. Justinian principle, where navigable water, sea and shore and air are common to humanity, influenced the development of this doctrine worldwide, especially Anglo-American jurisprudence.²⁶¹ US jurisprudence that expanded its scope from the traditional trio of commerce, navigation and fishing has shaped its application to protect water resources.²⁶² *National Audubon Society v Superior Court of Alpine City* (Mono Lake) case turned to be the turning point for its application to preserving the environment and water resources other than navigable water.²⁶³

The expansionist approach adopted helped to revolutionise the application of this doctrine for natural resources governance. Its three pillars ensure a legal right in the general public, enforceability against the State, and an interpretation consistent with contemporary concerns for environmental quality.²⁶⁴ PTD gained reverence as the only principle for sustainable resource management with restrictions imposed on the government: The property is subject to the trust, used only for public purposes, which the government should be held available for use for the public and maintained for particular services.²⁶⁵

The application of PTD in natural resources management, particularly water resources, is booming in India, with the S.C of India applying it in many cases²⁶⁶. It held that the State is the trustee of all-natural resources meant for public use, and the public is the

²⁶⁰ Ved P Nanda and William K Ris, 'The Public Trust Doctrine: A Viable Approach to International Environmental Protection' (1975) 5 (2) Ecology Law Quarterly 291, 296.

²⁶¹ Richard Ausness, 'Water Rights, The Public Trust Doctrine, and The Protection of In Stream Uses' (1986) University of Illinois Law Review 407, 409.

²⁶² Erik Swenson, 'Public Trust Doctrine and Groundwater Rights' (1998) 53 University of Miami Law Review 364; Jack Tuholske, 'Trusting the Public Interest: Application of the Public Trust Doctrine to Groundwater Resources' (2007) 9 Vermont Journal of Environmental Law 189.

²⁶³ John Franklin Smith, 'The Public Trust Doctrine and National Audubon Society v. Superior Court: A Hard Case Makes Bad Law or the Consistent Evolution of California Water Rights' (1984) 6 Glendale Law Review 201; *Nat'l Audubon Soc'y v Superior Court of Alpine City (Mono Lake)* (658 P2d 709, 712 (Cal 1983)).

²⁶⁴ Joseph L Sax, 'The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention' (1970) 68 Michigan Law Review 471, 476.

²⁶⁵ *ibid* 477.

²⁶⁶ *Centre for Public Interest Litigation v Union of India* (2012) 3 SCC 1; *Intellectual Forum, Tirupati v State of Andhra Pradesh* AIR 2006 SC 1350; *Karnataka Industrial Area Development Board v Kenchappan* (2006) 6SCC 371; *MI Builders v Radhey Shyam Sahu* 1999 SCC 464; *RELIANCE Industries Limited v Reliance Natural Resources Limited* (2010) 7 SCC 1.

beneficiary of all-natural resources, including running water. The State must protect natural resources, and it cannot convert these resources for private use or ownership.²⁶⁷

The application of PTD in India is a customisation of the principle to adapt to the local situations and address the peculiar environmental problems of a developing country like India. The court held that since jurisprudence in India developed from the English Legal system, it includes PTD as an integral part of the Indian Legal system, and the State is the trustee of all-natural resources meant for public use. It also adopted the expanded and developed version of the U.S. legal system that moved from the English system, extending only to specific traditional services such as navigation, commerce and fishing.²⁶⁸ This expanded U.S. version enabled the courts to apply PTD to water and other natural resource governance in India.²⁶⁹

The expanded application of PTD in the U.S. applies beyond the traditional trio of navigation, fishing, and commerce to many other uses in the water sector, like preservation of environmental values,²⁷⁰ including protecting all water resources, including groundwater.²⁷¹ The S.C application of PTD to water led to the expansion of its applicability to other natural resources through subsequent cases.

In *Kamal Nath*, the court explained the scope of PTD with reliance on Prof Sax's observation that:

"[i]t seems that the delicate mixture of procedural and substantive protections which the courts have applied in conventional public trust cases would be equally applicable and equally appropriate in controversies involving air pollution, the dissemination of pesticides-, the location of rights of way for utilities, and strip mining or wetland filling on private lands in a state where governmental permits are required."²⁷²

The S.C. drawing inspiration from this Anglo-American development led to its application to all-natural resource management in India. PTD enunciates a solid basis

²⁶⁷ *MC Mehta v Kamal Nath* MANU/SC/1007/1997.

²⁶⁸ *ibid* [27–28].

²⁶⁹ *MI Builders Pvt Ltd v Radhey Shyam Sahu and Ors* MANU/SC/0999/1999 [63]. In this case the court observed that the PTD has grown out of Art 21, indicating the expanded nature of PTD in India.

²⁷⁰ *Nat'l Audubon Soc'y v. Superior Court of Alpine City (Mono Lake)* (n 263).

²⁷¹ *In re Water Use Permit Applications (Wai 'Hole Ditch)* 9 P3d 409 (Haw 2000).

²⁷² *M.C. Mehta v. Kamal Nath* (n 267) para 22.

to a non-individual property-based perspective on water rights, ensures distributive justice among water users, and uses and safeguards ecological justice.²⁷³

Considering the significance of PTD in water governance, scholars have highlighted its merits in groundwater regulation, articulating that PTD 'is not a panacea' yet as it conveys a practical approach for application in groundwater.²⁷⁴ The courts worldwide also found PTD helpful and applicable for groundwater regulation. The Hawaii Supreme Court decision in applying PTD to groundwater can be a beacon for water policymakers worldwide which observed that "Modern science and technology have discredited the surface-ground dichotomy" the court ruled that considering the vital significance of all water to the public, the public trust applies to all water resources including groundwater.²⁷⁵

The PTD delinks its conservation from individual property rights and vests property rights in the State for the benefit of every person, which can help control individual control over natural resources like groundwater and reduce the inequities created by uncontrolled exploitation. It can narrow the everyday inequality in access and allocations with more State control over water resources, recognised rights and duties, and lead to conservation of water sources, contributing to source sustainability.

2.4.3 Adopting Precautionary Approach in Water Management and Governance: Help Mitigate Water Injustices

The precautionary principle in water management and governance helps to check the uncontrolled quality and quantity depletion of water resources and the consequent injustices. This principle used when risks are potential and uncertain is squarely capable of dealing with such situations where groundwater depletion critically impairs the recharging capacity of aquifers.

Sadeleer places this principle as the 'endpoint of range or public measures' intended to 'counter ecological damage.'²⁷⁶ Climate change impacts and early negotiations foregrounded precautionary principles and cast its development as a critical environmental principle, extraordinarily essential and fruitful to address present-day

²⁷³ Singh, *Water Rights and Principles* (n 54) 76.

²⁷⁴ Tuholske (n 262) 221.

²⁷⁵ *In re Water Use Permit Applications (Wai 'Hole Ditch)* (n 268).

²⁷⁶ Nicolas de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (2nd edn, OUP 2020) 135.

ecological challenges. The philosophical and spiritual relationship between humanity and the ecosystem is the underpinning of this approach²⁷⁷ that demands an "acknowledgement of all potential outcomes, even scientifically uncertain ones."²⁷⁸

The precautionary approach is "concerned with the wrongness of imposing harms on uninformed, unwilling persons (including future generations) and the environment, the inadequacy of science in judging the possibility, nature, and extent of harms from proposed actions or the introduction of new or novel technologies and techniques, and, thus, the inadequacy of cost-benefit analysis as a policy tool for assessing whether or not proposed actions should be allowed to proceed."²⁷⁹

This approach received attention in pollution cases where the courts applied it more stringently as the precautionary 'principle' to prevent, abate, and control pollution. S.C explained its scope and content of 'principle' in the domestic context in the *Vellore Case*²⁸⁰ as possessing three components: Firstly, the government and the statutory authorities should anticipate potential harm and adopt environmental protection measures to prevent the degradation. Secondly, lack of scientific certainty cannot be a reason for postponing the environmental protection measures when damage to the environment is severe and irreversible. Lastly, the industry has to prove that its activities are environmentally friendly.²⁸¹ The National Green Tribunal (NGT), governed by the NGT Act 2010, deriving from its statutory mandate, has also applied it in pollution cases.²⁸²

²⁷⁷ James Cameron and Juli Abouchar, 'The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment' (1991) 14 (1) Boston College International and Comparative Law Review 1.

²⁷⁸ Katie Steele, 'The Precautionary Principle: A New Approach to Public Decision-Making?' (2006) 5 (1) Law, Probability and Risk 19, 21.

²⁷⁹ H Sterling Burnett, 'Understanding the Precautionary Principle and its Threat to Human Welfare' (2009) 26 (2) Social Philosophy and Policy 378, 379.

²⁸⁰ *Research Foundation for Science v Union of India* (2005) 13 SCC 186; *M C Mehta v Union of India* 2004 (12) SCC 118; *Arjun Gopal v Union of India* WRIT PETITION (CIVIL) NO 728 OF 2015; *A.P. Pollution Control Board vs Prof.M.V. Nayudu (Retd.)* (n 43).

²⁸¹ *Vellore Citizen's Welfare Forum v Union of India* 1996 5 SCC 647, 658.

²⁸² *Vardaman Kaushik v Union of India* MANU/GT/0109/2017; *Indian Council for Enviro-Legal Action v National Ganga River Basin Authority* MANU/GT/0239/2015; *Manoj Mishra v Union of India* MANU/GT/0007/2015; Gitanjali Nain Gill, 'Precautionary Principle, Its Interpretation and Application by the Indian Judiciary: "When I Use a Word It Means Just What I Choose It to Mean-Neither More nor Less" Humpty Dumpty' (2019) 21 (4) Environmental Law Review 292; Gitanjali Nain Gill, 'The National Green Tribunal of India: A Sustainable Future through the Principles of International Environmental Law' (2014) 16 (3) Environmental Law Review 183.

Excessive groundwater exploration, its significant future consequences on human water needs, and ecological sustainability are beyond predictions and therefore warrant prudent actions. Similarly, addressing aquifer pollution is as tricky as understanding aquifers, as it is a slow and time-consuming process. This hydrogeological complexity points to adopting preventive and precautionary approaches with stringent enforcement of the laws.

Adopting a precautionary approach by applying the principle in water governance, particularly in groundwater regulation, is essential to mitigate the impacts caused by hitherto uncontrolled over-exploitation triggered by land rights and subsidies on social and distributive equity and environmental sustainability through the damage caused to aquifers. It is necessary to assure intra-and intergenerational equity in groundwater access, recognise RoN and move towards eco-centric water governance. The core element of this approach which reminds the State not to use a lack of scientific data to avoid adopting environmental protection measures applies to the degradation of aquifers which demands time-bound actions.

The precautionary approach in water governance can assure sustainability of resources with measures that focus on preventing harm to natural resources and adopting conservation measures. This source sustainability can ensure the availability of sufficient quantity and quality of water for Nature and human use. In the latter case, it is essential to assure equity in water use and allocations, which points to the precautionary approach's significant contribution to equity and sustainability.

2.5 Summary

Everyday water injustices result from inequitable access and allocations, influenced by water governance, social, economic and political choices. This injustice widens and gets widened by the inherent social and economic disparities and discriminations in society. To address these injustices through a justice framework requires a deviation from the universal, normative theories of justice. Instead, it requires a relational, contextual, situational approach to justice that considers the real-life situations, factors and contexts that accentuate such injustices and possible means to address them. Water justice discourse follows a relational approach on a tripartite form where distributive, recognitional and procedural spheres constitute its spheres for addressing water injustices. This chapter developed a conceptual framework for the thesis, inspired by this tripartite form but with customised modifications to address the local situation of the selected jurisdiction.

While this tripartite form attempts to address the inequities in access and allocations, it possesses an anthropocentric bias. It recognises and upholds the need to ensure fairness

in access and allocations among different water users. Though it provides the conceptual framework for addressing injustices, it doesn't consider the environmental harm caused by unsustainable water use. This increasing ecological harm resulting from human water use also impacts the social and distributive equity, creating a cycle of injustices. It, therefore, requires to move beyond this anthropocentric bias in water justice to incorporate the concerns of ecological harm. Adopting ecological justice in water justice discourse helps address this concern and ensure equitable sustainability. Hence, this chapter develops a tripartite form of water justice- distributive justice, social justice, and ecological justice- to analyse the impacts and implications of water-related subsidies on social equity and environmental sustainability in India. This customised water justice helps address India's peculiar water and social situations. However, the chapter points that implementation of this water discourse is possible only with twin elements- recognition of rights-duties in water to ensure equity and the adoption of environmental principles for water governance to provide the source and environmental sustainability.

Chapter 3

Subsidies and Groundwater Access in India: From Assuring Water and Food Security to Challenging Social Equity and Environmental Sustainability

3.1 Introduction

The significant contribution of groundwater to drinking water supply and irrigation is crucial in ensuring the water and food security of the nation. The State interventions like subsidies support groundwater access in these sectors. These subsidies are inevitable to expand groundwater access to many when the substantial land-water nexus in groundwater access and allocations confine its benefits to the landowners.

The land-water nexus in groundwater derives from the common law principles of 'absolute ownership doctrine', which considers groundwater a chattel attached to the land.²⁸³ It recognised the absolute right of the landlords to capture and collect water with immunity from liability to his neighbours for his extraction based on the *ad coleum* principle.²⁸⁴ The consequence of this land rights-based access is private governance of common-pool resources and inequitable access and allocations, including exclusions of landless and those following community water rights like tribals.²⁸⁵

This private governance of a common pool resource that forms the primary source of irrigation and drinking water critically impairs the country's water security and food security, affects the fundamental right to water and food and impacts many small and marginal scale farmers' lives and livelihoods.²⁸⁶ The inequitable access and allocations that affect water for food and livelihood strengthen the demands for recognition of the

²⁸³ Andreas Charalambous, *Transferable Groundwater Rights: Integrating Hydrogeology, Law and Economics* (Routledge 2013) 60.

²⁸⁴ Tony George Puthucherril, 'Riparianism in Indian Water Jurisprudence' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 97,114–115.

²⁸⁵ Singh, *Water Rights and Principles* (n 54) 39.

²⁸⁶ The World Bank, 'Improving the Lives of India's Farmers: How Power Sector Reforms Will Help?' (The World Bank 2002) 6.

water for sustaining livelihood in the broader ambit of the human right to water.²⁸⁷ It also enhances the need for State interventions in groundwater access and allocations.

The drinking water and agriculture sector subsidies result from recognising groundwater's voluminous contribution and significance in these sectors and the inequities resulting from land-water nexus in allocations. With a multi-fold aim of ensuring irrigation, employment generation, food security and rural development, subsidies in the agriculture sector help equitable groundwater access to many directly and indirectly.²⁸⁸ It also constitutes an integral component of all drinking water schemes, enabling it to devolve and decentralise the benefits of these schemes to remote areas and uncovered habitats.

The significance of subsidies in ensuring equitable water access is also due to differential access created by discrimination and exclusions, determined by land rights, caste, gender, and economic power despite recognising water as a fundamental right.²⁸⁹ These exclusions in water, especially of the weaker sections of society, whom Baxi describes as 'constitutionally baptised', leads to a situation where '*the Constitutional-haves get water rights, and the constitutional have-nots get water policy enunciations*'.²⁹⁰ Thus, the socially disadvantaged classes like Dalits, who faced historical social and economic discrimination, including denial of land ownership and water access, still face discrimination in water access and government benefits despite the constitutional guarantees of the right to equality and non-discrimination.

In such a context of inequitable benefits and burden-sharing in water, the State uses subsidies to reach out to the poor and achieve equitable and inclusive access to drinking water.²⁹¹ However, the land rights and social and political factors that determine

²⁸⁷ Upendra Baxi, 'The Human Right to Water: Policies and Rights' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 157.

²⁸⁸ Scott and Sharma (n 23).

²⁸⁹ For instance, see Staff Reporter, 'Dalits Allege Discrimination in Drinking Water Supply' *The Hindu* (Madurai, 4 April 2017) <<https://www.thehindu.com/news/cities/Madurai/dalits-allege-discrimination-in-drinking-water-supply/article17785420.ece>>; O'Reilly and Dhanju, 'Public Taps and Private Connections' (n 113) 373.

²⁹⁰ Baxi (n 288) 158. Emphasis in Original.

²⁹¹ I stress here on equitable access to water than free supply of water because, many a times, with changing water supply programmes often funded by international financial institutions, water is treated as a commodity where beneficiaries are supposed to pay for their use. However, due to subsidies and other interventions at the stage of water connections as well as billing process, the State has been able to bring in inclusiveness by targeting more on weaker sections of the society. This has been reflected through my fieldwork in states of Kerala and Rajasthan, discussed in Chapter 4 and 5 respectively.

subsidies benefits restrict its scope and dilute its objectives, negatively affecting equitable water access for the poor.²⁹²

Therefore, the significance and contribution of these subsidies to groundwater access and consequent positive impacts on the realisation of several social rights like the fundamental right to water and food also warrant a closer examination of inequities created by it. The implications of subsidies in creating and mitigating these water injustices and simultaneously contributing to widening inequities and sustainability issues discussed in this thesis add a new dimension to the scholarly discourse in this sector.

This chapter examines the equity-inequities conundrum in water justice created by subsidies in groundwater access. It begins with reviewing the contribution of subsidies to food and water security in agriculture and its role in realising the fundamental right to drinking water. Subsequently, the chapter explores the other side of the coin—examining social and distributive inequities and their ecological impacts. The chapter then analyses the reason for expanding subsidies and the causes of inequities, where the premise of analysis is the substantial land-water nexus regulating groundwater, extended to access the subsidies benefits. Based on this premise, the chapter critically looks into the trajectory of causes of these inequities that pervaded decades to understand and examine its role in perpetuating inequities in groundwater access and subsidies benefits.

3.2 Subsidies in Drinking Water Supply: Aiming at Right to Water, Sanitation, Public Health

The drinking water sector in India is pluralistic with the confluence of many like conventional water sources, State drinking water supply and informal water markets. The contribution of groundwater to the drinking water security of rural areas is highly significant.²⁹³ While rural regions mainly depend upon groundwater for their water needs primarily obtained by an individual or community wells, the reliance on

²⁹² M Gulati and S Pahuja, 'Direct Delivery of Power Subsidy to Manage Energy–Ground Water–Agriculture Nexus' (2015) 5 *Aquatic Procedia* 22.

²⁹³ Kulkarni and Vijay Shankar, 'Groundwater Resources in India: An Arena for Diverse Competition' (n 37) 990.

groundwater in urban areas is also high even though some areas' formal urban water supply heavily relies on rivers and dams.²⁹⁴

The significance and contribution of groundwater to drinking water security and its impacts on public health led the State to enact several water supplies schemes despite the absence of any statutory recognition of the right to water.²⁹⁵ The State schemes focus primarily on the rural areas by developing and implementing supply schemes through fragmented policy instruments, quality standards, and local self-government.²⁹⁶

The social and economic disparities among regions and water users and the spatial and temporal variability in the hydrogeological distribution of water raise challenges to implementing these schemes. Consequently, the sector witnesses the influx of subsidies to make water access more inclusive and equitable. These subsidies emphasise multi-fold objectives, including ensuring drinking water in rural areas, shifting the focus from community water taps to household piped supply, improving public health through safe drinking water, and promoting clean sanitation. The following sub-section explores the role of subsidies in groundwater-based drinking water schemes that aim to achieve these multi-fold objectives.

3.2.1 Focussing Equitable and Inclusive Water Supply: Integral Role of Subsidies

The trajectory of implementing drinking water supply schemes in India reflects the government's significant attention on the rural drinking water supply. The central government's priority has always been to ensure adequate drinking water in quality and quantity affected villages, which later applied to other areas as a part of welfare schemes.²⁹⁷ The water supply schemes also tried to incorporate water sector reforms based on the constitutional power distribution with states and local governments

²⁹⁴ See for instance, Chirodip Majumdar and Gautam Gupta, 'The Debate over Municipal Water Pricing: Evidence from Kolkata, India' (2007) 23 (4) *Water Resources Development* 571, 572.

²⁹⁵ Philippe Cullet, 'Realisation of the Fundamental Right to Water in Rural Areas: Implications of the Evolving Policy Framework for Drinking Water' (2011) 46 (12) *Economic & Political Weekly* 56,57.

²⁹⁶ Philippe Cullet, 'The Right to Water in Rural India and Drinking Water Policy Reforms' in Malcolm Langford and Anna FS Russell (eds), *The Human Right to Water* (CUP 2017)677, 680.

²⁹⁷ Planning Commission of India, '1st Five Year Plan (1951-1956)' (Government of India 1951).

sharing implementation responsibility.²⁹⁸ Despite decentralisation, the national level water supply programmes form the backbone of the water supply in India.

The State tries to achieve its constitutional objectives of distributive and social justice in groundwater and thus ensure the fundamental right to water. Firstly, to ensure inclusiveness and equity, the groundwater-based schemes focus on sourcing the water supply from local water resources. The water supply schemes since the Accelerated Rural Drinking Water Supply Programme (ARDWSP), supply schemes depend on groundwater sourced from regional areas.²⁹⁹ The choice of groundwater available from local areas enables decentralised implementation of the plans to reach more beneficiaries in the neighbourhood and achieve distributive equity in spatial limits of water access. The subsequent changes in programmes and their guidelines tried to reduce the spatial barriers and bring water supply points closer to the habitats to ensure equitable access to these schemes.³⁰⁰

Secondly, over time, the focus of the water supply schemes also changed from rural habitations to individual household tap connections.³⁰¹ This shift of attention brings inclusiveness in the water supply where more households could access the benefits of groundwater access, overcoming social and economic barriers, particularly the depressed classes. With the timely changes in guidelines of various schemes, the focus of attention changed from uncovered 'rural habitations' with water supplied through handpumps or standpoint for the community³⁰² to household tap connections³⁰³ in rural households and public places.³⁰⁴ This paradigm shift contributes to equity in water access and thereby realises the fundamental right to water and other human rights like

²⁹⁸ Cullet, 'Realisation of the Fundamental Right to Water in Rural Areas' (n 296).

²⁹⁹ See for guidelines on spatial dimensions, Department of Drinking Water Supply, 'Accelerated Rural Water Supply Programme Guidelines (1999–2000)' (Government of India 1999). The guidelines provide that water sources should be within 1.6 km or 100meter elevation in hilly areas to ease access.

³⁰⁰ Department of Drinking Water& Sanitation, 'Guidelines on National Rural Drinking Water Programme Rajiv Gandhi Drinking Water Mission' (Government of India, 2013) 2. For instance, NRDWP envisaged to supply water within their household premises or at a horizontal or vertical distance of not more than 50 meters from their household without barriers of social or financial discrimination.

³⁰¹ Department of Drinking Water Supply, 'National Rural Drinking Water Programme, Movement Towards Ensuring People's Drinking Water Security in Rural India: Framework for Implementation 2010' (Government of India 2010); Department of Drinking Water& Sanitation, 'Operational Guidelines for the Implementation of Jal Jeevan Mission' (Government of India, 2019).

³⁰² 'Guidelines on ARWSP'(n 300).

³⁰³ 'Guidelines on NRDWP' (n 301).

³⁰⁴ 'Operational Guidelines for JJM' (n 302).

health and education by reducing time and effort spent on water collection. With a focus on public spaces, these schemes don't leave out the homeless, migrants and others.

Lastly, these schemes' distributive equity and social justice focus are evident through the manifestation of attention on SC/ST habitations/ households and women who hitherto faced subjugation by caste dynamics and power exclusions in water access.³⁰⁵ These manifestations include financial devolution with funds earmarked for coverage of their habitats and decentralised participatory mechanisms where women are encouraged to participate in decision-making and scheme implementation.³⁰⁶ The particular target accorded to these sections of populations tries to mitigate the historical exclusions, ensure their basic needs, and help them realise their human rights. Furthermore, water supply schemes specially target the SC/ST and women households with targeted subsidies to make these schemes accessible and beneficial.

Therefore, subsidies are the State tools to ensure water supply schemes are inclusive, accessible, equitable, and beneficial to a broader community and mitigate the inequitable groundwater allocations. It addresses the exclusions and injustices in water supply schemes arising from the economic divide, social stratifications and discriminations in the society despite the schemes target uncovered habitats vigorously. These discriminations often determine the scope of scheme implementation and beneficiaries.³⁰⁷ For instance, Dalit households and slums often remain outside the connected networks due to local social discrimination³⁰⁸, which constitutes water injustice and violates fundamental rights.

The subsidies dominate the water supply irrespective of institutional and structural changes in scheme implementation. For instance, subsidies are part of all water supply schemes regardless shift of the focal point from an individual per capita water needs to household water security.³⁰⁹ Similarly, subsidies are integral in schemes despite the change in the State's role or changes in the nature of subsidies under the influence of

³⁰⁵ 'Guidelines on ARSWP' (n 300); 'Guidelines on NRDWP'(n 301); 'Operational Guidelines for JJM' (n 302).

³⁰⁶ Amrtha Kasturi Rangan, 'Participatory Groundwater Management: Lessons from Programmes Across India' (2016) 5 (1) IIM Kozhikode Society & Management Review 8.

³⁰⁷ Deepa Joshi (n 50); Tiwary and Phansalkar (n 49).

³⁰⁸ Staff Reporter, 'Dalits Allege Discrimination in Water Supply in Tamil Nadu's Madurai' *Hindustan Times* (10 September 2019) <<https://www.hindustantimes.com/india-news/dalits-allege-discrimination-in-water-supply-in-tamil-nadu-s-madurai/story-0Ht8zifliGu2YlvsRAkXL.html>>; Staff Reporter, 'Dalits Allege Discrimination in Drinking Water Supply' *The Hindu* (Madurai, 4 April 2017) <<https://www.thehindu.com/news/cities/Madurai/dalits-allege-discrimination-in-drinking-water-supply/article17785420.ece>>.

³⁰⁹ 'Operational Guidelines for JJM' (n 302). JJM focuses on household water security in contrast to individual water security (individual per capita water needs) in previous water schemes.

International Financial Institutions (IFIs) in water supply schemes.³¹⁰ The commodification of water and prioritising efficiency and cost-recovery to equity and inclusiveness did influence the States' water policies³¹¹ but did not wholly change the welfarist approach of the State. This welfarist approach continues considering the country's socio-economic and political conditions, which drives the inclusion of subsidies/ incentives in water schemes, including demand-driven, cost-efficient strategies.³¹²

Thus, on one side, subsidies enable many to be a part of the State water supply mechanisms or access the land rights-regulated groundwater sources. On the other sides, it aids the State to implement its duty to ensure equitable and inclusive water supply.

3.2.2 Subsidies in Drinking Water: Recognising Intersections of Sanitation and Public Health

Better access to clean and safe drinking water creates material impacts on public health,³¹³ with its closer interactions with and on nutrition and sanitation. Contamination caused by poor sanitation affects drinking water, health and the environment.³¹⁴ More than half of India's population lacks access to safe drinking water, and most states in India face water contamination from natural and anthropogenic factors.³¹⁵ Inadequate access to sanitation facilities also creates negative

³¹⁰ For more detailed discussion, see Sec 4.3 and 6. 2 and 6.3

³¹¹ Priya Sangameswaran, 'Rural Drinking Water Reforms in Maharashtra: The Role of Neoliberalism' (2010) 45 (4) *Economic & Political Weekly* 62; Sangameswaran, 'Neoliberalism and Water Reforms in Western India' (n 238).

³¹² Detailed discussion on paradigm shift in state's approach- See 4.3, 4.5, 6.4 and 6.5.

³¹³ World Health Organisation, 'Guidelines for Drinking Water Quality' (4th edn, WHO 2017) 1.

³¹⁴ Department of Drinking Water& Sanitation, 'Guidelines for Swachh Bharat Mission (Gramin)' (Government of India, 2018) 8.

³¹⁵ UNICEF, 'Clean Drinking Water: Ensuring Survival and Improved Outcomes across All Outcomes for Every Child.' (*UNICEF*) <<https://www.unicef.org/india/what-we-do/clean-drinking-water>>; Radheshyam Jadhav, '4 Cr Rural Indians Drink Metal-Contaminated Water' *BusinessLine* (Pune, 20 February 2019) <<https://www.thehindubusinessline.com/news/4-cr-rural-indians-drink-metal-contaminated-water/article26323628.ece>>.

impacts on public health.³¹⁶ Lack of sanitation, open defecation and inappropriate waste management contaminate water resources and enter the food chain resulting in health problems.³¹⁷ Its social and development impacts and implications on human rights are so complex that it deprives many human capabilities.³¹⁸ Children, especially girls, are deprived of education facilities, the dignity of women compromised, and, in many cases, social stratification marginalises specific communities.³¹⁹ Additionally, the environmental consequences of lack of sanitation can cause social inequity and ecological unsustainability.³²⁰

The water schemes acknowledge the intertwining between access to safe drinking water, public health, and sanitation when subsidies in such projects make its outreach more comprehensive and more decentralised. Through the drinking water schemes, the government focuses on the interactions between water, sanitation and public health and mitigate the water quality issues in affected areas. For instance, the tubewells-based drinking water supply emphasised public health concerns in rural areas caused by pollution and lack of focus on adequate sanitation.³²¹ However, the lack of a rights-based approach in water supply and sanitation schemes with sweeping powers and responsibilities on the executive raises several implementation hurdles and complexities, particularly in assuring an inclusive and equitable implementation strategy.³²²

Nevertheless, the State adopts a paternalistic approach in the water and sanitation sector to implement its constitutional mandate by endorsing the trilogy of water, health and

³¹⁶ Sundar Burra, Sheela Patel and Thomas Kerr, 'Community-Designed, Built and Managed Toilet Blocks in Indian Cities' (2003) 15 (2) *Environment and Urbanization* 11.

³¹⁷ Jay P Graham and Matthew L Polizzotto, 'Pit Latrines and Their Impacts on Groundwater Quality: A Systematic Review' (2013) 121 (5) *Environmental Health Perspectives* 521.

³¹⁸ Inga Winkler, 'The Human Right to Sanitation' (2016) 37 (4) *University of Pennsylvania Journal of International Law* 1331, 1338.

³¹⁹ Sujith Koonan, 'Sanitation Interventions in India: Gender Myopia and Implications for Gender Equality' (2019) 26 (1) *Indian Journal of Gender Studies* 40.

³²⁰ For discussion on environmental consequences of right to sanitation, See Lovleen Bhullar, 'The Environmental Dimension of the Right to Sanitation' in Philippe Cullet, Sujith Koonan and Lovleen Bhullar (eds), *Right to Sanitation in India: Critical Perspectives* (OUP 2019) 262; Loretta Feris, 'The Human Right to Sanitation: A Critique on the Absence of Environmental Considerations' (2015) 24 (1) *Review of European Community & International Environmental Law* 16.

³²¹ Sujith Koonan and Adil Hasan Khan, 'Water, Health and Water Quality Regulation' in Philippe Cullet and others (eds), *Water Law for the Twenty-First Century: National and International Aspects of Water Law Reform in India* (Routledge 2010) 287,292.

³²² K Sivaramakrishnan, 'Drinking Water Supply: Right and Obligation' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 251.

sanitation and includes subsidies in these schemes to make them inclusive. For instance, better sanitation facilities improve drinking water quality and public health.³²³ Subsidies equip the people to benefit from these State schemes and encourage them to improve their lives and health by accessing better quality and quantity of water and connecting to sanitation networks.³²⁴ Consequently, the groundwater-based plans catered by tube-wells systems slowly moved to piped supply to address health challenges generated from the consumption of untreated water sources.

Like subsidies in drinking water schemes, the government adopted subsidies and later incentives to encourage people to build individual toilets.³²⁵ Incentives, a form of subsidies, is increased proportionately with an increase in the scale of the toilet-building challenges in every sanitation programme.³²⁶ While the increased attention to clean and safe drinking water supply through formal drinking water and to promote sanitation facilities can improve public health concerns of the society, the subsidies in such schemes also perform administrative roles. The Central government uses subsidies as grants-in-aid to the States to encourage them to implement these water supply schemes' administrative directives. The State government enjoys the responsibility for water resources and management under the Constitutional division of powers.

In addition to the objective of effective implementation through State governments, the Central government also aims to promote water justice by emphasising social and distributive equity in allocating the benefits of these schemes. For instance, sanitation programmes prioritise households like economically weaker BPL families, SC/ST, physically disabled, landless labourers with homestead, small farmers and marginal farmers, women-headed households and homes with the girl child.³²⁷ These households are also assisted with water availability by this scheme. Though the aim of incentives under this programme is not to provide total cost but to facilitate a positive behavioural change in beneficiaries to construct their toilet, the subsidy component enables such

³²³ S Murty Bhallamudi and others, 'Nexus between Sanitation and Groundwater Quality: Case Study from a Hard Rock Region in India' (2019) 9 *Journal of Water, Sanitation and Hygiene for Development* 703.

³²⁴ Philippe Cullet, Sujith Koonan and Lovleen Bhullar (eds), *Right to Sanitation in India: Critical Perspectives* (OUP 2019); The World Bank, (n1).

³²⁵ Under Swachh Bharat [Gramin], an incentive amount of up to INR 12,000 is available for construction of individual households' toilets. In addition to this amount sanctioned by the Centre to 'beneficiaries' to be provided by the state governments, each state government can enhance the amount if required.

³²⁶ Philippe Cullet, 'Policy as Law: Lessons from Sanitation Interventions in Rural India' (2018) 54 *Stanford Journal of International Law* 241, 248.

³²⁷ Guidelines for Swachh Bharat Mission (Gramin) (n 315).

households to realise their right to sanitation by government aid, which otherwise would never have been possible.

Thus, the water-related subsidies can positively impact public health by providing access to clean drinking water and sanitation facilities. Hence, nowadays, the government promotes piped drinking water to households and community pipelines supplied from local sources and facilitates sanitation provisions in homes to reduce the issues of groundwater pollution and public health. Nevertheless, these pipelines supplying untreated water aggravate the problems, demanding more attention and a systematic approach focussing on efficiency in water supply than merely focusing on equity and inclusiveness by disbursing subsidies.

3.3 Groundwater based Irrigation: Aided by Subsidies with Multifaceted Objectives and Targets

Groundwater access closely follows landownership patterns, which follow social and economic factors like caste hierarchy, power relations and financial status in most parts of the country.³²⁸ Land remains the primary factor in determining groundwater access and forms the significant cause of inequities in allocations. Skewed land ownership compounds the inherent injustice in the groundwater access regulated by this land-water nexus. Traditionally, the affluent farmers in the country enjoyed groundwater access through their investments like tube-wells when the poor, small and marginalised communities could not afford technology and credit to access groundwater. This control over water became the main factor in determining land price and power in some areas on the corollary.³²⁹

The increased State subsidies helped the disadvantaged sections enjoy the benefit of groundwater irrigation sourced either individually owned or through cooperative structures.³³⁰ Subsidies also pave the ways to reach the last mile farmer without adequate resources for irrigation through informal water markets in rural areas. Such subsidies, particularly energy subsidies, helped revolutionise agricultural growth and secure a nation's food security by broader energy-water-food nexus. The water and food

³²⁸ Prakash (n 18) 75.

³²⁹ Janakarajan and Moench (n 72) 3977.

³³⁰ KV Raju and others, *State of the Indian Farmer: A Millennium Study* (Academic Foundation 2004) 159.

security targeted by these subsidies also contribute to poverty alleviation and rural development by promoting economic stability in agriculture.

3.3.1 Subsidised Energy-Groundwater and Food Interaction: Assuring Water and Food Security and Agricultural Productivity

Input subsidies in India's heavily subsidised agricultural sector aim to improve farm productivity, food production, and sustainable income for farming communities.³³¹ These subsidies help achieve distributive equity in accessing the natural, economic, financial and technological resources required for agriculture. Among these subsidies, the role of energy subsidies in creating a link between it and water and food is crucial for farming communities' water and food security, contributing to agricultural productivity and poverty reduction.

The contribution of energy subsidies in equitably distributing the groundwater access benefits among the poor and marginalised strengthened after the introduction of the green revolution, before which only the rich enjoyed access to technology for groundwater access.³³² Energy subsidies triggered groundwater exploration and aided several farmers to adopt improved irrigation technologies.³³³ The flat-rate energy charges incentivising the landlords to pump more water helped mitigate the land-related inequity in groundwater access through informal water markets, which benefited both water users and buyers.³³⁴ It provides enormous support to farmers' water and food security, reverberating food security and rural development.

The energy subsidies have created a strong interaction between energy- groundwater and food. The discussion here deviates from the hitherto discourse on the energy-water-food nexus. The Energy-water-food nexus involves conversations that revolve around synergies and trade-offs and increasing efficiency by an integral approach in governance of energy, water, and food sector to ensure sustainable development.³³⁵

³³¹ M Dinesh Kumar and A Narayanamoorthy, 'Fixing Agricultural Power Tariff without Hurting Farmers' (2021) 37 (6) International Journal of Water Resources Development 1035.

³³² M Dinesh Kumar, Christopher A Scott and OP Singh, 'Inducing the Shift from Flat-Rate or Free Agricultural Power to Metered Supply: Implications for Groundwater Depletion and Power Sector Viability in India' (2011) 409 (1) Journal of Hydrology 382.

³³³ Scott and Shah, 'Groundwater Overdraft Reduction' (n 23) 149, 150.

³³⁴ A Mukherji and others, 'Metering of Agricultural Power Supply in West Bengal, India: Who Gains and Who Loses?' (2009) 37 (12) Energy Policy 5530, 5531.

³³⁵ See generally, Jeremy Allouche and others, *The Water–Food–Energy Nexus : Power, Politics, and Justice* (Routledge 2019).

This subsection aims to unpack the closer interactions of energy, groundwater, and food in agriculture and the role of subsidies in creating that interaction.

Energy subsidies assure water security for farmers who can now employ groundwater extraction techniques with more diesel/electricity to access deeper groundwater.³³⁶ Access to groundwater triggered by subsidised energy increased the irrigation potential for farmers where individual efforts to explore groundwater without resorting to the State canal water supply progressed with energy subsidies, creating equity in groundwater access among resource fewer and landless farmers.³³⁷

The food demands of growing populations, the concerns of poverty alleviation in rural areas, and the social and economic divide in agriculture resource access drive the State policies on energy subsidies for agriculture, which aims to reduce inequities and promote socio-economic development.³³⁸ Access to better irrigation enabled by this subsidised energy and choice of water-intensive food crops by farmers supported India's food generation but later turned many areas into critical groundwater zones.³³⁹

The interlink created between subsidised energy, groundwater access and food generation creates positive externalities. Firstly, it is crucial for the food security of small and medium-scale farmers, the tenants and the landless. These energy subsidies aided groundwater access positively impacted subsistence farmers by improving land productivity and agricultural development.³⁴⁰

Secondly, the food security created through this interlink reduce rural poverty. Poverty as the deprivation and denial of resources, choices, power, safety and human capability impairs the enjoyment of a basic living standard and affects civil, political, social,

³³⁶ K Singh, 'Electricity Subsidy in Punjab Agriculture: Extent and Impact' (2012) 67 (4) Indian Journal of Agricultural Economics 617.

³³⁷ Rajendra Kondepoti, 'Agricultural Groundwater Management in Andhra Pradesh, India: A Focus on Free Electricity Policy and Its Reform' (2011) 27 (2) International Journal of Water Resources Development 375.

³³⁸ M Dinesh Kumar, Christopher A Scott and OP Singh, 'Raising Agricultural Productivity with Reduced Use of Energy and Groundwater Role of Market Instruments and Technology' in M Dinesh Kumar and others (eds), *The Water, Energy and Food Security Nexus Lessons from India for Development* (Routledge 2014) 97, 98.

³³⁹ M Dinesh Kumar and OP Singh, 'Market Instruments for Demand Management in the Face of Scarcity and Overuse of Water in Gujarat, Western India' (2001) 3 (5) Water Policy 387, 393.

³⁴⁰ M Dinesh Kumar, Christopher A Scott and OP Singh, 'Can India Raise Agricultural Productivity While Reducing Groundwater and Energy Use?' (2013) 29 (4) International Journal of Water Resources Development 557, 567.

cultural and economic rights.³⁴¹ The acute poverty in rural areas deprives their intrinsically significant capabilities,³⁴² including the right to realise many human rights like water and food.³⁴³ Thus, poverty is the material deprivation, vulnerabilities and exposure to risk that includes powerlessness, depriving the capabilities of human beings to enjoy their freedoms and entitlements.³⁴⁴

In this context, the interaction between energy- groundwater- food attracts significance. This interaction is an equation that results in an inverse relationship between irrigated areas and the poverty levels. The subsidised energy for irrigation improves land use patterns, boosts the adoption of better technology and seeds to increase productivity.³⁴⁵

Lastly, the positive impacts of these subsidies are undeniable in ensuring food productivity and food security of the farmer and the nation, considering the recognition of food as a fundamental right in the country. The State has obligations and responsibilities to provide ways to realise this right to its citizens.³⁴⁶ The right to food dimension should not consider assuring adequate quality and quantity of food to every citizen but also ensure the dignity of the people who engage in food production through equipping them to realise their capabilities in accessing sufficient resources. Subsidies are one of the tools employed by the State to achieve this target by increasing support to agriculture even though the subsidies like energy subsidies in irrigation turns to be regressive with land-owning farmers capturing it, denying the benefits to the needful.³⁴⁷

³⁴¹ Committee on Economic, Social and Cultural Rights, 'Report on the Twenty-Fifth, Twenty-Sixth and Twenty-Seventh Sessions of the Committee on Economic, Social and Cultural Rights' (2002) UN Doc E/2002/22 197,199; Committee on Economic, Social and Cultural Rights, 'Poverty and the International Covenant on Economic, Social and Cultural Rights: Statement / Adopted by the Committee on Economic, Social and Cultural Rights on 4 May 2001' (2001) UN Doc E/C.12/2001/10.

³⁴² Sen, *Development as Freedom* (n 151) 87.

³⁴³ Siddiqur Rahman Osmani, 'Poverty and Human Rights: Building on the Capability Approach' (2005) 6 (2) *Journal of Human Development* 205, 214–215.

³⁴⁴ The World Bank, *World Development Report 2000/2001: Attacking Poverty* (OUP 2001) 15.

³⁴⁵ A Narayanamoorthy and Susanto Kumar Beero, 'Is Irrigation Development Still Relevant in Reducing Rural Poverty in India? An Analysis of Macro-Level Data' in M Dinesh Kumar and others (eds), *The Water, Energy and Food Security Nexus: Lessons from India for Development* (Routledge 2014) 87–89.

³⁴⁶ *People's Union for Civil Liberties v Union of India* Writ Petition (Civil) No 196 of 2001.

³⁴⁷ Kondepoti (n 338).

3.3.2 Subsidies and Informal Groundwater Markets: Enabling Equitable Groundwater Access and Allocation for Landless

The inequitable groundwater access excludes small and marginal farmers without resources and the landless tenants from its benefits, for whom the informal groundwater markets in rural areas act as a last resort for them to access groundwater.³⁴⁸ These water markets are constant, reliable sources of sustainable irrigation for small and marginal farmers, landless tenant farmers and sharecroppers who depend primarily on rainfall.³⁴⁹

These water markets involve 'transactions where the value of water is different from the value of land and improvements, where buyers and sellers act voluntarily, and prices are negotiable between buyers and sellers.'³⁵⁰ Its contributions to improving efficiency, equity and sustainability in water use and allocations justifies these markets.³⁵¹ Though water markets differ in form and practise, the nature of informal groundwater markets in India is unique, with closer ties to local water availability, social patterns, caste and gender relations.³⁵²

In India, groundwater markets are arrangements for the sale of water between farmers, which involve tube-well owning farmers supplying water at a cost higher than the average pumping cost.³⁵³ They are common in different parts but particularly dense in arid and semi-arid regions like Gujarat, where the owners of the water extraction machine owners' rent-seeking behaviour drive this trend of thick water markets than its natural water scarcity hydrogeology.³⁵⁴

³⁴⁸ Shah and Raju (n 73).

³⁴⁹ *ibid.*

³⁵⁰ Bonnie C Saliba and David B Bush, *Water Markets in Theory and Practice: Market Transfers, Water Values, And Public Policy* (Westview Press 1987) 1 cited in Micheal Hantke- Domas, 'Water Markets' in Alistair Rieu- Clarke, Andrew Allan and Sarah Hendry (eds), *Routledge Handbook of Water Law and Policy* (Routledge 2017) 65, 67.

³⁵¹ Mark W Rosegrant and Hans P Binswanger, 'Markets in Tradable Water Rights: Potential for Efficiency Gains in Developing Country Water Resource Allocation' (1994) 22 (11) *World Development* 1613; Ariel Dinar, Mark W Rosegrant and Ruth Meinzen-Dick, 'Water Allocation Mechanisms: Principles and Examples' (Policy Research Working Paper Series 1779, The World Bank 1997).

³⁵² Tushaar Shah, *Groundwater Markets and Irrigation Development: Political Economy and Practical Policy* (OUP 1993); Farhat Naz, 'Gendered Groundwater Market in Rural Gujarat, India: An Unequal and Patriarchal Space' (2016) 46 (1) *Indian Anthropologist* 31.

³⁵³ Saleth, 'Groundwater Markets in India: A Legal and Institutional Perspective' (n 77)159.

³⁵⁴ *ibid* 168.

Water demands for resourceless farmers drove them towards these informal arrangements, which take the form of commercial deals involving cash transactions or feudal relationships that demand cashless services.³⁵⁵ These water markets are 'socially embedded' where caste and class relations dominate the arrangements with sellers typically from land-owning higher caste who can afford water extraction mechanisms, and buyers belonging to lower caste, resourceless, economically weaker small and marginal farmers.³⁵⁶

The influence of water-related subsidies, particularly like those of energy, credit and technology, has revolutionised agriculture, reviving it from stagnancy and transforming it with positive impacts on productivity and equity through informal groundwater markets³⁵⁷ These markets act as 'poverty alleviation measures' by ensuring equity among small and marginal farmers, tenants and the landless.³⁵⁸ However, these markets also lead to the creation of 'water lords' in villages with the domination of land-owning higher castes farmers in its functions.³⁵⁹ Nevertheless, their role in equity in groundwater access and promoting agricultural development is undeniable.

Water-related subsidies, especially energy subsidies, have far-reaching consequences on groundwater access and allocations, irrigation potential efficiency and equity.³⁶⁰ The availability of subsidised water pumps, electricity or diesel, and institutional credit shifts the choice to groundwater and widens its access and extraction scope. It sprouted water markets for the sale of excess water extracted, enabling the diffusion of benefits of groundwater access to many small-scale farmers who hitherto could not access deeper aquifers due to lack of resources or to land fewer farmers.

Significantly, with the subsidies more targeted and focused on lower sections, there is a gradual shift from these individual seller-based markets to tubewells' collective ownership by lower castes' farmers.³⁶¹ These targeted subsidies help the lower caste farmers create their collectives and initiatives beyond any differentiation to access

³⁵⁵ Farhat Naz, 'Water, Water Lords, and Caste: A Village Study from Gujarat, India' (2015) 26(3) Capitalism Nature Socialism 89.

³⁵⁶ Navroz K Dubash, 'Ecologically and Socially Embedded Exchange' (n 77) 1376.

³⁵⁷ Tushaar Shah and Vishwa Ballabh, 'Water Markets in North Bihar' (1997) 32 (52) Economic & Political Weekly A183.

³⁵⁸ Shah, *Groundwater Markets and Irrigation Development: Political Economy and Practical Policy* (n 353); Shah and Raju (n 73).

³⁵⁹ Naz (n 356).

³⁶⁰ Aditi Mukherji, 'The Energy-Irrigation Nexus and Its Impact on Groundwater Markets in Eastern Indo-Gangetic Basin : Evidence from West Bengal, India' (2007) 35 (12) Energy Policy 6413.

³⁶¹ Prakash (n 18).

groundwater, highlighting social equity. Despite all these efforts to target the lower section and empower them, these sections bear the brunt of water scarcity resulting from water and subsidies grabbed by the rich.

The State tries to mitigate the impacts of groundwater exploitation on social and distributive equity in water access among the poor by promoting environmentally benign energy sources like renewable energy.³⁶² The solar-powered pumps promoted to reduce diesel and electric pumps also involve heavy subsidies whereby the water extracted from this free solar energy boosts groundwater markets more robust than previous.³⁶³ The State initiatives on solar power sprung from the perception of clean energy initiatives to tackle the impacts of climate change on water.³⁶⁴ Though these efforts are costly compared to traditional energy sources, State has subsidised these efforts for equitable benefit sharing among economically weaker sections of society.³⁶⁵ Groundwater markets aided by subsidies thus help achieve social and distributive equity in access to groundwater, regulated by land rights, equitably sharing groundwater access benefits.

3.3.3 Sustainable Irrigation Asset Creation through MGNREGA: Leading to Poverty Alleviation, Rural Development

The contribution of groundwater to poverty alleviation in the rural areas where farmers depend on subsistence farming with small and fragmented landholding is highly significant³⁶⁶ due to the decrease in the share of agriculture in the economy. In this context, access to sufficient irrigation is crucial since water can be the leading cause of poverty and impoverishment and a driver of poverty eradication.³⁶⁷ Irrigation laws and

³⁶² International Energy Agency, 'Jawaharlal Nehru National Solar Mission (Phase I, II and III) – Policies' (IEA) <<https://www.iea.org/policies/4916-jawaharlal-nehru-national-solar-mission-phase-i-ii-and-iii>>.

³⁶³ Tushaar Shah and others, 'Solar Pumps and South Asia's Energy-Groundwater Nexus: Exploring Implications and Reimagining Its Future' (2018) 13 Environmental Research Letters 115003, 115009.

³⁶⁴ Nitin Bassi, 'Solarizing Groundwater Irrigation in India: A Growing Debate' (2018) 34 (1) International Journal of Water Resources Development 132, 134.

³⁶⁵ Tushaar Shah, Shilp Verma and Neha Durga, 'Karnataka's Smart, New Solar Pump Policy for Irrigation' (2014) 49 (48) Economic & Political Weekly 10.

³⁶⁶ Tushaar Shah, 'Groundwater and Human Development: Challenges and Opportunities in Livelihoods and Environment' (International Water Management Institute 2006) 15.

³⁶⁷ Philippe Cullet, *Water Law, Poverty, and Development: Water Sector Reforms in India* (OUP 2009) 18.

agricultural policies of the State have fostered irrigation and agriculture, contributing to addressing poverty, malnutrition and development of rural areas.³⁶⁸

Access to water is a pre-condition for ensuring the right to water, food, and health. As highlighted in the previous subsection, the role of subsidies in this poverty alleviation is as crucial as its contribution to groundwater access, equipping economically and socially weaker sections to access resources at lesser investment, improve agricultural production, and access and enjoy better facilities like education, health, and nutrition.³⁶⁹ Better agrarian development in any region also boosts agriculture-based labour and industries.

The scope of the contribution of subsidies to eradicating poverty and reducing impoverishment is manifest and manifold. Firstly, the energy subsidies that attracted discussion elsewhere create a loop between energy, water, and food generation in agriculture groundwater use, implying that the energy subsidies heavily provide sufficient help to access water and produce food, which reduces poverty among farmers.³⁷⁰ Secondly, in addition to these direct agricultural subsidies, specific livelihood betterment schemes linked to agriculture and water also contribute to rural development, food security and poverty alleviation. These schemes with heavy subsidies have significant connotations on water access through the conservation activities involved.³⁷¹

For instance, MGNREGA programmes, ensuring 100 days of guaranteed employment in unskilled manual labour to every rural household in a financial year, targets social equity by enhancing rural livelihood security, durable and productive asset creation, environment protection, and women empowerment.³⁷² It incorporates subsidies for water conservation, groundwater recharge, and creating water access mechanisms like ponds and bunds.³⁷³

³⁶⁸ *ibid* 29.

³⁶⁹ QK Ahmad, 'Towards Poverty Alleviation: The Water Sector Perspectives' (2003) 19 (2) *International Journal of Water Resources Development* 263.

³⁷⁰ Narayanamoorthy and Beero (n 346).

³⁷¹ Planning Commission of India, *Midterm Appraisal: Eleventh Five Year Plan (2007– 2012)* (OUP 2011) 251.

³⁷² Nitin Bassi, M Dinesh Kumar and A Narayanamoorthy, 'Ghost Workers and Invisible Dams: Checking the Validity of Claims about Impacts of NREGA' in M Dinesh Kumar and others (eds), *The Water, Energy and Food Security Nexus: Lessons from India for Development* (Routledge 2014) 39.

³⁷³ Neelakshi Mann and Varad Pande, *MGNREGA SAMEEKSHA: An Anthology of Research Studies on the Mahatma Gandhi National Rural Employment Guarantee Act, 2005(2006–2012)* (Orient Blackswan 2012) 27.

It has fostered water management in rural areas by constructing water conservation and harvesting schemes, irrigation canals, renovation and rejuvenation of traditional water bodies, soil and land development.³⁷⁴ In many instances, this livelihood securitisation with its allied water conservation programmes proved helpful in water recharge and construction of irrigation wells, which enhanced irrigation and consequent agricultural growth.³⁷⁵

The provision of irrigation facilities envisages social inclusion to SC/ST households or land beneficiaries of land reforms, BPL families, specific government housing schemes, and equal participation and benefits for women.³⁷⁶ MGNREGA targets equity and social justice with its goals of social protection, asset creation, inclusive employment schemes with a particular focus on SC/ST and women, and the impact on livelihood security and empowerment of democracy.³⁷⁷

The works undertaken by this scheme, enacted with a rights-based approach with the central government subsidising most of the funds required, including wages, support rural development and food and water security of the region.³⁷⁸ Subsidies in these schemes by incentivising the creation of irrigation-related assets focus on participatory water conservation schemes, equitable access to natural resources, and ensuring local livelihood.

Implemented with a welfarist and social justice approach, subsidies in these programmes help realise the constitutional obligations of addressing distributive justice, rural development and poverty alleviation. This equitable distribution of natural and material resources of the nation among every citizen and targeted poverty reduction

³⁷⁴ Tashina Esteves and others, 'Agricultural and Livelihood Vulnerability Reduction through the MGNREGA' (2013) 48 (52) *Economic & Political Weekly* 94.

³⁷⁵ Ankita Aggarwal, Aashish Gupta and Ankit Kumar, 'Evaluation of NREGA Wells in Jharkhand' (2015) 47 (35) *Economic & Political Weekly* 24; Krushna Ranaware and others, 'MGNREGA Works and Their Impacts' (2015) 50 (13) *Economic & Political Weekly* 53; Tashina Esteves and others, 'Agricultural and Livelihood Vulnerability Reduction through the MGNREGA' (2013) 48 (52) *Economic & Political Weekly* 94; Jithendra, 'Economic Survey Recommends Using MGNREGA to Revive Water Bodies' [2016] *DownToEarth* <<https://www.downtoearth.org.in/news/economy/economic-survey-recommends-using-mgnrega-to-revive-water-bodies-52958>>.

³⁷⁶ Ministry of Rural Development, 'The National Rural Employment Guarantee Act 2005 (NREGA): Operational Guidelines' (Government of India, 2008).

³⁷⁷ Rhonda Breitkreuz and others, 'The Mahatma Gandhi National Rural Employment Guarantee Scheme: A Policy Solution to Rural Poverty in India?' (2017) 35 (3) *Development Policy Review* 397, 399.

³⁷⁸ See N Mukundan, *Rural Development and Poverty Eradication in India*. (New Century Publications 2009).

from a welfare orientation justifies the State subsidies. Eliminating all social inequalities and ensuring equality in accessing these resources and State benefits, moving beyond income disparities to equip every citizen to enjoy their substantive freedoms and capabilities also forms the rationale of such subsidies.

3.4 Turning the Coin to Unveil Injustices: Exploring the Inequitable Access

Subsidies positively impacted equitable and inclusive groundwater access and allocation for drinking and irrigation. It assured the right to drinking water for millions, water and food security, economic growth for farming communities, reduced poverty and promoted rural development.

Nevertheless, certain factors restrict its scope and potential to ensure water justice in groundwater access and widen social differences and economic disparity among water users. Social, cultural and economic factors like land ownership, caste, religion, and gender that determine access and allocation in groundwater also extend to assessing the scope of accessing subsidies, leading to inequitable benefit and burdening sharing in groundwater access that significantly impacts ecological sustainability.

This section explores these causes or factors that contribute substantially to broadening the amplitude of inequities by reducing the scope of subsidies in groundwater access. It unpacks the factors like caste, gender and economic disparities that cause and compound social and distributive inequities in groundwater access. It also highlights the impacts on ecological sustainability when excessive groundwater extraction causes groundwater depletion and deterioration, potentially impairing social and distributive justice in water.

3.4.1 Social and Gender Inequality in Groundwater Access: Compounded by Subsidies, Compromising Water Justice

The significance of natural resources in human life and livelihoods creates an intrinsic relation between natural resources distribution and social and distributive justice. Social stratifications based on caste, gender, race, and class determine resources access and allocations, which lead to the social justice movements against the socially unequal

resource access where state dominance over resource management causes the removal of traditional communities from accessing resources and their accrued benefits.³⁷⁹

Social justice emphasises the nature of equality and the criteria to determine the just or unjust.³⁸⁰ India's historically embedded caste discriminations create unfair resource access, deprives social and economic equality and sprout gender discrimination in resource allocations, despite the constitutional safeguards³⁸¹ and statutory protections.³⁸² These caste discriminations influence and determine land ownership patterns and consequently groundwater access and distributions.

The social and economic factors compound the hydrogeological and spatial diversities in water availability in various parts. The spatial distribution of community hamlets, their social and economic situations, discriminatory practices in assessing public water utilities, or insufficient access to welfare programmes complicates water availability's hydrogeological diversities.³⁸³ Accordingly, everyday social injustices in water access and allocations, defined by caste, gender, economic status, class, ethnicity, determine the inclusions and exclusions in water access and distribution.³⁸⁴

The social inequity in groundwater access based on caste manifests in irrigation water sharing and compounds in the drinking water sector. In groundwater-based irrigation, caste affiliations determine the membership of tubewell collectives and groundwater sharing, leading to inequitable resource access and use.³⁸⁵ The skewed nature of land ownership results in lower caste farmers remaining as sharecroppers and water buyers, tied to the labour market and sharing irrigation costs with landlords. These social relations where landlords turn to water sellers/ water lords for tenants who provide labour in return is a "part of the changing fabric of history and as the relationship that is a product of certain social and economic contingencies."³⁸⁶

³⁷⁹ Kishan Khoday and Usha Natarajan, 'Fairness and International Environmental Law from Below: Social Movements and Legal Transformation in India' (2012) 25(2) Leiden Journal of International Law 415, 418.

³⁸⁰ Robert Pinker, 'Social Policy and Social Justice' (1974) 3 (1) Journal of Social Policy 1, 2.

³⁸¹ Constitution of India, Article 14-16.

³⁸² Protection of Civil Rights Act 1955; Scheduled Caste & Scheduled Tribes (Prevention of Atrocities) Act 1989.

³⁸³ Tiwary and Phansalkar (n 49).

³⁸⁴ Roth and others (n 153) 44.

³⁸⁵ Prakash (n 18); Navroz K Dubash, *Tubewell Capitalism: Groundwater Development and Agrarian Change in Gujarat* (OUP 2002); Dubash, 'Ecologically and Socially Embedded Exchange' (n 77) 1376.

³⁸⁶ Prakash (n 18).

In drinking water, caste and religion determine the purity and pollution of water, based on communities' access rules, where water becomes a "metaphor to accentuate differences and social distance" between various communities.³⁸⁷ Stipulation of pure and polluted invariably invades access and distribution of groundwater in several parts of the country, and the caste differences prevent lower caste people from accessing water sources of upper castes and vice versa.³⁸⁸

For instance, though untouchability is illegal, reports on practices of untouchability and discriminations are across the country.³⁸⁹ Incidents of denial of water to untouchables, beating, torturing, and even murders for the use of water facilities find attention in reports.³⁹⁰ These discriminations against the lower caste communities based on caste and religion in groundwater access and allocations violate social justice and deny fundamental rights and human dignity,³⁹¹ and are violative of constitutional principles upheld by the courts:³⁹²

“Untouchability, therefore, is founded upon prejudicial hatred towards Dalits as in independent institution. It is an attitude to regard Dalits as pollutants, inferiors and out-castes. It is not founded on men's rea. The practice of untouchability in any form is, therefore, a crime against the Constitution. The abolition of untouchability is the arch of the Constitution to make its preamble meaningful and to integrate the Dalits in the national mainstream.”³⁹³

The State interventions like subsidies to ensure equitable and inclusive water access and allocations widen social inequality and discrimination. For instance, the benefits of subsidies attached to landownership aggravate the social and economic differences

³⁸⁷ Lyla Mehta, *The Politics and Poetics of Water: Naturalising Scarcity in Western India* (Orient Longman 2005) 138.

³⁸⁸ Ibid 138.

³⁸⁹ Amit Thorat and Omkar Joshi, 'The Continuing Practice of Untouchability in India: Patterns and Mitigating Influences' (2015) 55 (2) *Economic & Political Weekly* 36.

³⁹⁰ Upendra Baxi, 'Untouchable's Access to Water: Two Moralities of Law Enforcement?' in Upendra Baxi (ed), *Law and Poverty: Critical Essays* (NM Tripathi Private Limited 1988) 186.

³⁹¹ Oliver Mendelsohn, *Law and Social Transformation in India* (OUP 2014); Rajesh Tiwari, 'Explanations in Resource Inequality-Exploring Schedule Caste Position in Water Access Structure' (2006) 2 (1) *International Journal of Rural Management* 85; Deepa Joshi and Ben Fawcett, 'The Role of Water in an Unequal Social Order in India' in Anne Coles and Tina Wallace (eds), *Gender, Water and Development* (BERG 2005) 39.

³⁹² *State Of Karnataka vs Appa Balu Ingale and Others* AIR 1993 SC 1126.

³⁹³ *ibid* 21.

between water users and widen the inequity as the benefits of subsidies confine to land-owning communities or individuals.

The land reforms did not substantially change land ownership patterns and unequal distribution.³⁹⁴ Consequently, the large land-owning farmers from upper castes are usually the biggest beneficiaries of subsidies granted to support resources fewer farmers.³⁹⁵ Additionally, lower caste and resourceless farmers who cultivate minor crops like millets benefit less from most of these subsidies except energy subsidies as major crops like paddy and wheat benefit from all significant subsidies.³⁹⁶

Furthermore, the excessive use of subsidies to extract groundwater has threatened the security and sustainability of water in India's dry and semi-arid regions.³⁹⁷ The consequences of groundwater depletion by extreme extraction can trigger water conflicts between different users and uses, aggravating rural poverty among the population.³⁹⁸

Eventually, caste remains a primary factor in determining land ownership patterns. It also influences access to drinking water sources, pumps ownership in irrigation, access to technology, credit and other government aid for irrigation, and participation in groundwater markets. The impacts of caste interactions on access to subsidies are also crucial in determining groundwater access, influencing water and food security.

These interactions of caste on groundwater and subsidies influence the social justice sphere of the water justice framework and instigates a detailed analysis of these interactions.

Social justice imbibes equality and equal treatment as its main facet and connotes non-discrimination based on race, caste, colour or creed.³⁹⁹ Nevertheless, widespread gender inequalities in access to drinking water and irrigation constitute everyday water

³⁹⁴ SN Singh, 'Caste as an Intervening Variable in Social Justice' in CP Barthwal (ed), *Social Justice in India* (Bharat Book Centre 1998) 52, 54; VR Krishna Iyer, *Some Half-Hidden Aspects of Indian Social Justice* (Eastern Book Company 1979) 25.

³⁹⁵ Naz (n 356).

³⁹⁶ Government supports major crops and cereals cultivation through credit, technology and market support. This discrimination extends to Market Support Prices for only certain crops like rice and wheat.

³⁹⁷ Bassi (n 365) 134.

³⁹⁸ See generally Anjal Prakash and RK Sama, 'Social Undercurrents in a Gujarat Village: Irrigation for the Rich Versus Drinking Water for the Poor' in KJ Joy and others (eds), *Water Conflicts in India: A Million Revolts in the Making* (Routledge 2008) 38.

³⁹⁹ Sanjay Gupta, 'Administration of Social Justice in India: An Overview' in CP Barthwal (ed), *Social Justice in India* (Bharat Book Centre 1998) 141.

injustices.⁴⁰⁰ For instance, informal and localised rural groundwater markets are highly patriarchal, and men remain the decision-makers on water supply and pricing, despite women constituting a significant labour force in agriculture.⁴⁰¹

Similarly, in drinking water distribution, water policies amplify these gender discrepancies in water access without addressing the nature and context of exclusions.⁴⁰² As long as these gender discriminations in our social hierarchy, influenced by factors like religion, caste, and power, remain unaddressed, gender gaps in water widen.⁴⁰³ This gender disparity in access, distribution and even control of water resources opens the broader debate of Constitutional rights.⁴⁰⁴

Caste and gender exclusions are severe in the groundwater sector as inequity in accessing land, and material resources perpetuate the widening gender inequality in access to water.⁴⁰⁵ Gender equality and recognition of women's rights are essential for sustainable development and securing natural resource justice.⁴⁰⁶ However, even after the Constitution mandates equitable distribution of material resources, land ownership pattern is not favourable to lower caste people and women, influencing groundwater access, allocation and regulation. Scholars have pointed to the discrepancies in land ownership and consequent compromise of women's land rights, which formed women's social injustices.⁴⁰⁷ The women's labour and knowledge in agriculture remains invisible with a blind spot for assessment of her contribution and rights due to inherent

⁴⁰⁰ Rhodante Ahlers and Margreet Zwarteveen, 'The Water Question in Feminism: Water Control and Gender Inequities in a Neo-Liberal Era' (2009) 16 *Gender, Place & Culture* 409.

⁴⁰¹ Naz (n 353) 38. Through her ethnographic research in Mathnaa village, Gujrat, she tried to highlight that cultural and social elements play crucial role in water governance in everyday life.

⁴⁰² Deepa Joshi and Margreet Zwarteveen, 'Gender in Drinking Water and Sanitation: An Introduction' in Margreet Zwarteveen, Sara Ahmed and Suman Rimal Gautam (eds), *Diverting the Flow: Gender Equity and Water in South Asia* (University of Chicago Press 2012) 161; Deepa Joshi, 'Caste, Gender and the Rhetoric of Reform in India's Drinking Water Sector' (2011) 46 (18) *Economic and Political Weekly* 56; Deepa Joshi, 'Misunderstanding Gender in Water: Addressing or Reproducing Exclusion' in Anne Coles and Tina Wallace (eds), *Gender, Water and Development* (BERG 2005) 135.

⁴⁰³ Joshi and Fawcett, 'The Role of Water in an Unequal Social Order in India' (n 392) 39.

⁴⁰⁴ See Articles 14, 15(1) and 15(3).

⁴⁰⁵ Margreet Zwarteveen and Ruth Meinzen-Dick, 'Gender and Property Rights in the Commons: Examples of Water Rights in South Asia' (2001) 18 (1) *Agriculture and Human Values* 11; Margreet Zwarteveen, 'Men, Masculinities and Water Powers in Irrigation.' (2008) 1 *Water Alternatives* 111.

⁴⁰⁶ Caroline Sweetman and Maria Ezpeleta, 'Introduction: Natural Resource Justice' (2017) 25 (3) *Gender & Development* 353.

⁴⁰⁷ Bina Agarwal, 'Gender and Legal Rights in Agricultural Land in India' (1995) 30 (12) *Economic & Political Weekly* A39.

gender bias in land distribution, which critically impacts her right to access many benefits.⁴⁰⁸

Thus, gender-biased land rights determine women's access to groundwater, influencing irrigation support in farming. The socio-economic disparity created by caste, an institution weakened and kept alive simultaneously by power politics, significantly impacts the wellbeing of people.⁴⁰⁹ Water-related subsidies have not addressed social injustices in the water sector and assure water justice in groundwater.

3.4.2 Economic Disparities in sharing Subsidies' Benefits: Reflections of Distributive Inequity in Groundwater Access

Subsidies are justified for contributing to distributive equity in accessing newer technology and enabling access to merit goods. Evidence of substantial contributions in ensuring distributive justice in natural resources reflects in irrigation, where farming communities can now access inputs like technology, energy and water for agriculture only because of government subsidies.⁴¹⁰ Similarly, in the drinking water sector, the socially and economically weaker sections like Dalits, BPL families and women-led households benefit from groundwater based piped supply due to subsidies granted to service delivery, customer connections and billings.

Yet, the picture is not as fair as this when inequities champion water access with several factors determining the beneficiaries of subsidies, including land ownership, caste and politics. These factors lead to distributive injustices as it excludes a considerable portion of the population from availing the benefits. This section highlights the impacts of land ownership and politics in creating economic disparities among subsidies beneficiaries, potentially depriving the poor of benefits.⁴¹¹

Like the caste-based discriminations in access to groundwater structures like wells and pumps that add to social injustices, land ownership is also a significant contributor to widening distributive inequity in access to subsidies and groundwater. Skewness in ownership distribution with variation in land size and quality owned by various

⁴⁰⁸ Vandana Shiva, 'Women's Indigenous Knowledge and Biodiversity Conservation' in Maria Mies and Vandana Shiva (eds), *Ecofeminism* (Rawat Publications 2010) 164,167.

⁴⁰⁹ David Mosse, 'Caste and Development: Contemporary Perspectives on a Structure of Discrimination and Advantage' (2018) 110 *World Development* 422.

⁴¹⁰ Jyothi Krishnan, *Enclosed Waters: Property Rights, Technology and Ecology in the Management of Water Resources in Palakkad, Kerala* (Orient Blackswan 2009) 237.

⁴¹¹ The caste element is discussed in previous subsection.

communities widen the economic disparities.⁴¹² For instance, in rural areas, the average land owned by an SC household is only 0.272 hectares, which is lesser than that possessed by ST (0.650 hectares) and OBC (0.603 hectares), while other categories, primarily upper-caste own on an average 0.816 hectare per household.⁴¹³

The land is an essential determining factor for availing subsidies' benefit in irrigation and drinking water as land ownership documents are integral components of different programmes. This land criterion negatively impacts the objectives of subsidies and, consequently, water justice. Firstly, it leads to inequitable distribution of subsidies where the benefits confine to affluent farmers in affluent areas. For instance, the most common energy subsidies that boomed groundwater exploration have multifold objectives like achieving water and food security and agricultural development for farmers and vote bank politics for politicians.⁴¹⁴ But it created economic disparities between beneficiary areas and water users, widening distributive inequities⁴¹⁵ despite supporting the poor directly or indirectly through informal groundwater markets.⁴¹⁶

These subsidies led to economic disparities and inequality among farmers. The rich from affluent communities and areas corner the benefits in several places.⁴¹⁷ For instance, nearly 80% of electricity subsidies in Karnataka benefit wealthy farmers, and out of this subsidised energy, only 9 % directly benefitted the poor, whereas 91 % benefitted the rich.⁴¹⁸ The situation across the country is similar, with subsidies helping

⁴¹² Department of Agriculture Co-operation & Farmer's Welfare, *Agriculture Census 2015-16 : All India Report on Number and Area of Operational Holdings* (Government of India 2019). Agriculture Census defines land holdings between 0.5- 1.0 hectare as marginal, between 1.0- 2.0 hectare as small and large as above 10.0 hectare. Average landholding in India in 2015-16 was 1.08 hectares, and 86% of landholdings are small and marginal in nature whereas extensive holdings constitute only 0.57% of total land.

⁴¹³ Ministry of Statistics and Programme Implementation, 'Report No: 571, Household Ownership and Operational Holdings in India: NSSO 70th Round' (Government of India 2013).

⁴¹⁴ Navroz K Dubash and Sudhir Chella Rajah, 'Power Politics: Process of Power Sector Reform in India' (2001) 36 (35) *Economic & Political Weekly* 3367, 3369.

⁴¹⁵ Singh, 'Electricity Subsidy in Punjab Agriculture' (n 337) 617.

⁴¹⁶ Shah and Raju (n 73).

⁴¹⁷ Varinder Jain, 'Political Economy of the Electricity Subsidy: Evidence from Punjab' (2006) 41 (38) *Economic & Political Weekly* 4072.

⁴¹⁸ Stephen Howes and Rinku Murgai, 'Incidence of Agricultural Power Subsidies: An Estimate' (2003) 38 (16) *Economic & Political Weekly* 1533, 1534.

those in affluent areas cultivate water-intensive crops like rice and wheat, depriving many small and marginal farmers relying on minor crops of the State support.⁴¹⁹

Secondly, it excludes the poor and the needy from these benefits. For instance, the land ownership deed requirement for household connection excludes many, including the homeless, tenants, and migrants.⁴²⁰ Similarly, the irrigation subsidies also don't benefit the poor and needy. For example, poor farmers suffer from their financial ability to get electricity connections, farm supply availability, and electricity supply duration. In many places, corruption attached with availing connections adds to these technical difficulties to determine the benefits of energy subsidies. Farmers finance such energy connections by selling assets, which has boosted the development of a 'capitalistic form of agriculture' based on a feudal land system with the majority of farmers now turning landless or tenants and dividing the society into 'haves and have-nots'⁴²¹.

Furthermore, the politics of elite farmers is crucial in policymaking on subsidies for irrigation, particularly the energy subsidies and their continuation⁴²² determining the implementing areas and the scope of benefits to each beneficiary. For instance, energy policies influence the quantum of irrigation water access, and any efforts to modify energy tariffs have adverse effects on small and marginal farmers. The Gujarat model Jyoti Gram Scheme is no exception, an acclaimed successful model that changed and controlled free electricity supply to agriculture. The socio-economic impacts of these schemes were borne by such water buying farmers, tenants and landless cultivators in several ways, including reduced water access due to shrinking of groundwater markets, increase in irrigation costs, and loss of labour on farms.⁴²³

3.4.3 Negative Externalities on Groundwater Quality and Quantity: Ecological Sustainability threatened

The negative externalities of excessive subsidy use like groundwater depletion in quality and quantity negatively impact the sustainability of these resources, threaten the aquifers and ecosystem, and create potential effects on human water use and the

⁴¹⁹ Sucha Singh Gill and Kulwant Singh Nehra, 'Subsidy and Efficiency of Groundwater Use and Power Consumption in Haryana' (2015) 53 (50) Economic and Political Weekly 32.

⁴²⁰ See chapter 4 and 5 for detailed discussion

⁴²¹ Jain 'Electricity Subsidy' (n 418) 4075.

⁴²² Atsushi Kato and Atsushi Fukumi, 'Political Economy of Agricultural Electricity Tariffs: Rural Politics of Indian States' (2020) 145 Energy Policy 111755.

⁴²³ Shah and Verma (n 28) 62.

distributive and social justice in water access. Thus, it affects the three spheres of water justice with severe consequences on water availability for human water use. Hence, it is imperative to analyse such impacts of these subsidies on resource availability and source sustainability because of their significance to the right to water and food security with an intra and intergenerational equity focus.

Groundwater is now the lender of last resort for every water use⁴²⁴, supporting nearly every water needs but at the same time on the verge of exhaustion. Inequitable benefit and burden-sharing in access, allocations, distribution, and control over groundwater based on the land rights have reverberations on the present water uses and users and on water resources and future generations' water access.⁴²⁵ The use of subsidies accentuated the groundwater extraction levels, leading to plummeting water tables and quality depletion in several areas.

Groundwater depletion has received significant attention from scholars who highlight the overuse of subsidies in irrigation, like energy subsidies, as a substantial contributor.⁴²⁶ Its consequences include quantity depletion, deterioration of quality, exhaustion of options of sources.⁴²⁷ The quality depletion of groundwater from excessive subsidies use requires more attention to unpack the environmental sustainability issues. It is also essential to explore the need to highlight the ecological justice sphere of water justice as the quality deterioration causes significant social, health and environmental impacts on the rights of the present generation and future generations.

Anthropogenic and natural factors contribute to the quality deterioration of groundwater.⁴²⁸ Groundwater is highly vulnerable to pollution from land-use patterns

⁴²⁴ Himanshu Kulkarni and PS Vijay Shankar, 'Groundwater: Towards an Aquifer Management Framework' (2009) 44 (6) Economic & Political Weekly 13.

⁴²⁵ Edith Brown Weiss, 'The Coming Water Crisis: A Common Concern of Humankind' (2013) 1 (1) Transnational Environmental Law 153; Weiss, 'The Coming Water Crisis: A Common Concern of Humankind' (n 36); Weiss, 'Intergenerational Fairness for Fresh Water Resources' (n 231).

⁴²⁶ Dubash, 'The Electricity-Groundwater Conundrum' (n 28).

⁴²⁷ SK Srivastava and Ramesh Chand, 'Revisiting Groundwater Depletion and Its Implications on Farm Economics in Punjab, India' (2017) 113 (3) Current Science 422; SK Archaya and BabarA Shah, 'Groundwater Arsenic Pollution Affecting Deltaic West Bengal, India' (2010) 99 (12)Current Science 1787.

⁴²⁸ M Dinesh Kumar and Tushaar Shah, 'Groundwater Pollution and Contamination in India: The Emerging Challenge' (IWMI-Tata Comment 2006).

in agriculture, industry and domestic water needs⁴²⁹, including chemical fertilisers, plastic pollution, sewerage and waste dumping.⁴³⁰ Fertiliser subsidies have resulted in environmental damage by polluting groundwater resources in many states.⁴³¹ It also includes salination, waterlogging, and seawater intrusion in several areas.

Groundwater pollution has severe health, economic and social effects.⁴³² The depletion of water resources imperils equity among different users and different sectors of water use⁴³³ that can cause impacts on drinking water and agricultural water availability and quality and jeopardise water supply aquifers. Water scarcity, water pollution and consequent insecurity reflect the unequal water distribution and water services among communities.⁴³⁴ These quality issues can also trigger rising inter-sectoral water conflicts, adversely affecting different water uses and users.⁴³⁵

The negative externalities on social equity and environmental sustainability caused by these subsidies outweigh their positive impacts on groundwater access equity. Such negative impacts are a severe concern for water, public health, and ecological damage. For instance, the enormous environmental costs like the case of arsenic pollution following the use of electricity subsidies compromise the equity created by subsidies among the small and marginal farmers.⁴³⁶ Similarly, since the primary source of electricity is still coal, subsidies indirectly also cause an increase in greenhouse gas

⁴²⁹ S Janakarajan, 'Conflict over Water Pollution in the Palar Basin: The Need for New Institutions' in KJ Joy and others (eds), *Water Conflicts in India: A Million Revolts in the Making* (Routledge 2008) 145.

⁴³⁰ For types of groundwater pollution, See A Zaporozec, 'Ground-Water Pollution and Its Sources' (1981) 5 *Geo Journal* 457.

⁴³¹ Ashok Gulati and Pritha Banerjee, 'Rationalising Fertiliser Subsidy in India: Key Issues and Policy Options' (Working Paper 307, Indian Council for Research On International Economic Relations 2015); R Prasad, 'Efficient Fertiliser Use: The Key to Food Security and Better Environment' (2009) 47 (1) *Journal of Tropical Agriculture* 1.

⁴³² Lawrence Ng, 'A Drastic Approach to Controlling Groundwater Pollution' (1989) 98 (4) *Yale Law Journal* 773.

⁴³³ Intersectoral water allocation increases with increasing water demands from different sectors, particularly urban drinking water and industrial uses. This increasing demands along with decreasing water supply leads to imbalances in water supply and also triggers potential water conflicts among water users and uses.

⁴³⁴ Rutgerd Boelens, Jeroen Vos and Tom Perreault, 'Introduction: The Multiple Challenges and Layers of Water Justice Struggles' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 3.

⁴³⁵ Paul P Appasamy, 'Water Quality Conflicts: A Review' in KJ Joy and others (eds), *Water Conflicts in India: A Million Revolts in the Making* (Routledge 2008) 135, 137.

⁴³⁶ Mukerjee and Biswas, 'An Enquiry into Equity Impact of Groundwater Markets' (n 64) 63.

emissions.⁴³⁷ Therefore, addressing these public health and environmental impacts of subsidies is inevitable and requires a reconceptualization of law and policy to address these growing challenges, for which unpacking the causes of inequities is essential.

3.5 Unpacking the Causes of Inequities: Tracing the Roots to Groundwater Regulatory Framework

The inequities created by excessive use and subsidies in groundwater exploration compromise the equity envisaged by applying such subsidies in the access and allocation of groundwater. Examination of such inequality points to the influence of land rights in groundwater regulation, whose ownership determines groundwater access and subsidies benefits. This land-water nexus has remained the primary cause of such inequities in groundwater, leading to its overexploitation and consequent deterioration. The development of current groundwater regulation traces to this age-old land-water nexus from the common law, a customary practice that originated in the Roman era. Implanted by the colonial administration in India, the post-independent groundwater regulatory framework continues this legal principle despite recognising the increasing contribution of groundwater to the country's water needs and the consequent impacts of this uncontrolled depletion. Hence, it's essential to trace the origin of this cause of inequity and the context of its continuation that perpetuates everyday injustices in groundwater access.⁴³⁸

3.5.1 Property Linked Groundwater Rights in Common Law: Derivation from *Dominium* over Land

For centuries, natural resources, particularly water resources management in India, were pluralistic and evolved through customary local practices, laws, and community

⁴³⁷ Reena Badiani, Katrina K Jessoe and Suzanne Plant, 'Development and the Environment: The Implications of Agricultural Electricity Subsidies in India' (2012) 21 (2) The Journal of Environment & Development 244, 245.

⁴³⁸ This chapter based on the reason for such inequity being land-water nexus, examines only the development and continuation of that nexus in regulation of groundwater in India which determines and influences groundwater access. Chapter 6 in detail analyses the problematisation of this link and its contextualisation in the light of these subsidies and its broader connotation to realisation of water justice in India.

management.⁴³⁹ Groundwater management is no exception to these village-level community practises through cultural diversities, social differentiation, economic differences, and demarcations of water sources.⁴⁴⁰ These natural resources governance, management, and conservation principles were tailor-made to adapt to local hydrogeological, climatic and social situations. Colonial administration changed the conception and management of natural resources from a community resource to either State-owned or privately managed commodity.⁴⁴¹

The development of groundwater based well irrigation in many parts of the country can be traced back to centuries before the colonial advancement. The British administration mainly focused on expansive, 'intensive irrigated agriculture' exploring the 'hydraulic opportunities' to establish and sustain a 'colony agriculture' through an extensive network of canal systems on surface water sources.⁴⁴² Since then, riparian rights that are incidental to adjoining land ownership have been in practice in accessing water from surface water with state assertion of proprietary rights. The *ad coleum* principle governed groundwater access, leaving it under individual control.⁴⁴³

The present groundwater legal framework that causes water injustices owes its origin to the colonial era principles of industrial revolution Britain. This section examines the trajectory of the development of groundwater rights in common law as a species of land rights, the jurisprudence that strengthened its implementation and the impacts of such implantation in India.

English water law developed from Roman principles of *res communis* whereby water was common to all, and no ownership was allowed even for the Crown. It maintained the right of the landowner to use all water that reaches his land irrespective of its consequences in other riparian lands⁴⁴⁴, thus significantly linking riparian rights to land rights. Though some scholars have pointed out that land was not a pre-condition to exercise water rights if there are legal rights to access water resources, land ownership

⁴³⁹ Chhatrapati Singh, 'Water Rights in India' in Chhatrapati Singh (ed), *Water Law in India* (Sweet & Maxwell Ltd 1991) 11, 15.

⁴⁴⁰ *ibid* 13.

⁴⁴¹ Lavanya Rajamani, 'Community Based Property Rights and Resource Conservation in India's Forests' in Aileen McHarg and others (eds), *Property and the Law in Energy and Natural Resources* (OUP 2010) 454.

⁴⁴² Tushaar Shah, *Taming the Anarchy: Groundwater Governance in South Asia* (Resource for the Future, IWMI 2009).

⁴⁴³ Tony George Puthucherril, 'Riparianism in Indian Water Jurisprudence' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 97.

⁴⁴⁴ Dante Augusto Caponera and Marcella Nanni, *Principles of Water Law and Administration: National and International* (3rd edn, Routledge 2019) 73.

remains the primary factor in realising water rights. Water rights in common law were evolved from this land-water nexus predominantly through cases related to the lawful use of land rights under the property law.⁴⁴⁵ Water rights became a part of the substantive laws on property rights and derivate law in the torts law, including the law of negligence, nuisance, and trespass to property.⁴⁴⁶

Notwithstanding its historical development, the common law applied two distinct regulations for surface and groundwater, as emphasised in *Richards v. Chasemore*. The case held that the principles applied to flowing water like rivers or streams where the right to flow is incidental to property don't apply to underground water percolating water without any prescribed course or limits but apply only to that water which comes out of the soil in every direction.⁴⁴⁷

The common law recognised the interconnection between overlying land and underground water resources, granting the overlying landowner absolute ownership over these water resources.⁴⁴⁸ The courts held that all that lies below the ground belongs to the above lying landowners, including the rock, soil and water extracted. He could use it for his will, and if that intercepts his neighbour's water, he is non-labile for those deeds as it would constitute 'damnum sine injuria'.

Thus, underlying groundwater has 'no distinct character of ownership' from the above land, and any diminution in its quantity could never grant the neighbour a legal right to sue the landowner for his water extraction. However, these principles were not absolute. The common law maintained a distinction between percolating groundwater and flowing in defined channels where surface water regulations applied to the latter. These principles developed and used in England when no or limited hydrogeological understanding existed was implanted in colonial India, which differs in its homeland's hydrogeological, social, climatic, economic, and political situations.

⁴⁴⁵ Joshua Getzler, *A History of Water Rights at Common Law* (OUP, 2006); Michael Taggart, *Private Property and Abuse of Rights in Victorian England: The Story of Edward Pickles and the Bradford Water Supply* (OUP 2010).

⁴⁴⁶ Getzler (n 446) 46.

⁴⁴⁷ *Chasemore v. Richards* (1859) 7 H.L. Cas. 349, 374.

⁴⁴⁸ *Acton v. Blundell* (1843) 12 M. & W. 324.

A. Action for Water Rights in Courts: Pre-conditioned by Action for Land

Early litigations in the common law that dealt with water access/rights addressed or considered the legal exercise of rights over land in adjudicating the claims, with a substantial number of cases on water rights referencing such land rights.⁴⁴⁹ In actions for water based on actions for land, the courts established the doctrine of the landowner's absolute right to enjoy and use the land through which water percolates or uses the water in any manner without liability.⁴⁵⁰

Debates on water and land rights intersections pervaded several judicial discussions in cases like *Dickinson v The Grand Junction Canal Company*⁴⁵¹, *Mason v. Hill*⁴⁵², *Race v Ward*⁴⁵³. The judgment in *Dickinson* held:

"The right to have a stream running in its natural course is not by a presumed grant from long acquiescence on the part of the riparian proprietors above and below, but is *ex jure naturae*, and an incident of property as much as the right to have the soil itself in its natural state, unaltered by the acts of a neighbouring proprietor, who cannot dig to deprive it of the support of his land."⁴⁵⁴

The dictum in *Mason* entitled landowner damages for water diverted from springs on his land and collected in a reservoir, for the possessor of land through which a natural stream flows has a right to the advantage of the stream flowing in its natural course.⁴⁵⁵ However, the court held in another case that well or spring water was an easement to be claimed by custom and not soil produce to make it a *profit a pendre*.⁴⁵⁶ Property rights and water nexus are therefore manifest in these cases where water rights sprang from land rights and entitlements.

⁴⁴⁹ *Chesmore v Richards* (1859) 7 HLC 349.

⁴⁵⁰ *Acton v Blundel* 12 M & W 324.

⁴⁵¹ *Dickson v Grand Junction Canal Co* (1852) 7 Ex 282.

⁴⁵² *Mason v Hill* 110 ER 692 (1833).

⁴⁵³ *Race v Ward* (1857) 7 El & Bl 384.

⁴⁵⁴ *Dickson v Grand Junction Canal Co.* (n 168) para 299.

⁴⁵⁵ *Mason v Hill* (n 453).

⁴⁵⁶ *Race v Ward* 709

3.5.2 Groundwater Regulation in India: Remnants of the Past Implanted Principles

Remnants of colonial rule find in the legal systems of many erstwhile colonies. Even after decolonisation, the colonial-era regulations operate in several spheres, including natural resources like forests and groundwater.⁴⁵⁷ If these laws once helped the imperial rulers to exercise control over natural resources and exclude access for locals⁴⁵⁸, the current democratic rule did not attempt to change the *status quo*. Instead, its uses continue to strengthen the State's *dominium* over things and *imperium* over individuals⁴⁵⁹ through grandfathering the previous practises or introducing vote bank targeted policies to widen its power hegemony.

Groundwater regulation in India follows the remnants of colonial administration with common law principles still governing access to that resource despite groundwater supporting the lion's share of water demands.⁴⁶⁰ The judiciary's approach to groundwater regulation had remained the same since the 19th century when the courts in India applied the English common law principles of land-water nexus and regarded water rights as species of land rights. The Madras High Court upheld this land-water nexus in *Kesava Bhatta v Krishna Bhatta* while dealing with a conflict over water flowing in a water channel among two neighbouring landowners and observed that:⁴⁶¹

"The general rule is that the owner of land has got a natural right to all the water that percolates or flows in undefined channels within his land and that even if his object in digging a well or a pond from his field or land, it does not matter in the least because it is the Act and not the motive which must be regarded. No action lies for the obstruction or diversion of percolating water even if the result of such abstraction be to diminish or take away the water from a well in an adjoining land."⁴⁶²

⁴⁵⁷ Art 372(1): Notwithstanding the repeal by this Constitution of the enactments referred to in article 395 but subject to the other provisions of this Constitution, all the law in force in the territory of India immediately before the commencement of this Constitution shall continue in force therein until altered or repealed or amended by a competent Legislature or other competent authority.

⁴⁵⁸ Rajamani, 'Community Based Property Rights' (n 442) 457.

⁴⁵⁹ For discussion on *Dominium and Imperialism*, See Morris R. Cohen, 'Property and Sovereignty' (1927) 13 Cornell Law Review 8.

⁴⁶⁰ Philippe Cullet, 'Groundwater Law in India' (n 259) 57–58.

⁴⁶¹ AIR 1946 Mad 334.

⁴⁶² *ibid*.

The executive or the legislature did not attempt to change the *status quo* and regulate groundwater through these age-old principles. Notwithstanding these legal regulations, the government supports groundwater extraction through subsidies, particularly agricultural development. Introduction of tubewells and subsequent promotion of the green revolution in northern states like Punjab, Uttar Pradesh with subsidised credit, technology, seeds and power led to groundwater exploration, which Shah notes to be an 'atomised revolution'.⁴⁶³

However, negative externalities of this groundwater revolution surpassed the benefits attached to it, compelling the central government to initiate measures to control exploitation, in an apparent departure from constitutional norms on separation of legislative powers between the centre and state governments. Neither the land laws nor the irrigations laws extended any State control over groundwater, which necessitated a separate groundwater legal framework as articulated by model bills circulated by the central government. Nevertheless, the outdated, unscientific, socially, hydro geologically alien legal principles govern the most sought water resources in the country.

3.5.3 Perpetuating Unsustainable Regulation: Outdated, Unscientific, Socially, Hydrologically Alien Legal Principles

The common law principles and case laws have a tremendous influence on present groundwater regulation in India. Statutory reference to the nature of groundwater rights links to Indian Easement Act 1882, where groundwater is assumed to be an easement right.⁴⁶⁴ However, some scholars argue that the right to groundwater cannot be an easement but only "natural incidence to the land which a landowner may enjoy, which other easements may restrict."⁴⁶⁵

The Easements Act defines easement as a right the owner or occupier of land possesses for its beneficial enjoyment, to do or prevent something in or on or in respect of any other land which doesn't belong to him⁴⁶⁶ mandating the necessity of two grounds: dominant heritage (own land) and servient heritage (another land not owned by the right

⁴⁶³ Shah, *Taming the Anarchy: Groundwater Governance in South Asia* (n 443).

⁴⁶⁴ Hector Garduno and others, 'India Groundwater Governance- Case Study' (World Bank, 2011) 13; Singh, *Water Law in India* (n 54) 18. Sec 7 of Easement Act 1882 is the statutory provision, cited as recognising groundwater as an easement right.

⁴⁶⁵ Vani (n 34) 444.

⁴⁶⁶ Indian Easement Act 1882 s 4.

holder) in easement rights. Consequently, the easement is a right incident to dominant heritage with a corresponding burden on servient heritage; only grant, statute, or custom can create it.⁴⁶⁷

Thus, groundwater rights are not easements rights, contemplating its nature and non-requirement of two heritages [land] for the enjoyment of groundwater access. Conspicuously, the groundwater laws enacted by the states neither addressed the debates on the application of easement rights nor delinked the land-water nexus; instead, they grandfather these applications and assumptions. Hence, those principles, developed in a foreign jurisdiction when naïve hydrogeological understandings influenced the determination of water rights, dominate water access and allocations in India.

Increased water demands, consequent stress on aquifers, water scarcity, depleting water tables, as well as deteriorating water quality, drove the central government to initiate national water policies, water laws including Water Pollution Act 1978, Environment (Protection) Act 1986, model groundwater laws for the states like Model Groundwater Bill, 1970/92/2005, Model Groundwater (Sustainable Management) Act 2016 and Draft National Water Framework Bill 2016. States adopted the Groundwater Model Bill of 1970/ 2005 to enact groundwater laws due to its flexibility mechanism and devolution of powers.⁴⁶⁸

This bill introduced a regulatory mechanism by establishing statutory body/ authority and licencing systems to move from private control to government regulations over groundwater.⁴⁶⁹ It provides for the establishment of Groundwater Authority under State governments to advise the government to control/ regulate groundwater extraction in any part of the State,⁴⁷⁰ permit system for all wells in notified areas except for manually operated pumps or wells,⁴⁷¹ registration of all wells and drilling devices in the state⁴⁷² and rainwater harvesting for groundwater recharge.⁴⁷³ Yet, this law allows the *status*

⁴⁶⁷ *State of Bihar v Subodh Gopal Bose* 1968 AIR 281.

⁴⁶⁸ Cullet, 'Groundwater Law in India' (n 259) 59.

⁴⁶⁹ Koonan, 'Legal Regime Governing Groundwater' (n 53) 191.

⁴⁷⁰ Model Bill to Regulate and Control the Development and Management of Groundwater, 2005 s 5.

⁴⁷¹ *ibid* 6.

⁴⁷² *ibid* 7–9.

⁴⁷³ *ibid* 19.

quo in groundwater use⁴⁷⁴ and proves inadequate for the country's overall regulation of groundwater situation.

Critics point to the command-and-control approach of current regulation, inadequate scientific understanding of groundwater and aquifer recharge, unsuitability to adapt to local variations in India, socially inequitable nature limiting access only to landowners, and absence of the aquifer-based management mechanisms.⁴⁷⁵ The present regulation is alien to the ground realities of the country. It did not consider differences in hydrogeological, climatic and social features between the origin and implanted countries.

For instance, groundwater typologies in India based on hydrogeological settings are diverse and complex.⁴⁷⁶ Shah et al. in their work, draw attention to the heterogeneity of availability as well as the movement of groundwater in seven different hydrological locations what they describe to be *groundwater typologies* and argue that the CGWB classification of groundwater blocks based on groundwater development is not conclusive as they overlap one or more such hydrological settings.⁴⁷⁷

Shankar et al., elaborating on this argument, argued that even the current methodology of groundwater estimation based on either rainfall infiltration or groundwater level fluctuation and specific yield method provides a preliminary analysis unless it includes aquifer based research.⁴⁷⁸ According to them, groundwater typologies are a 'social physical category' because the historical context of groundwater access and social process that regulate water use and the consequent choices made influences aquifer properties that determine the groundwater typology of a place.⁴⁷⁹

This groundwater typology and its social, physical characteristics derived from interactions of social elements are absent in groundwater laws. Further, groundwater is a separate category to be treated separately from surface water as per these legal provisions. Groundwater demands special attention due to its' fragile, fugitive and invisible nature', yet the hydrological understanding of water where surface water

⁴⁷⁴ *ibid* 7.

⁴⁷⁵ Philippe Cullet, 'The Groundwater Model Bill-Rethinking Regulation for the Primary Source of Water' (2012) 47 (45) *Economic & Political Weekly* 40, 42; Shankar, Kulkarni and Krishnan (n 7) 44; Kulkarni and Shankar, 'Groundwater' (n 425).

⁴⁷⁶ Himanshu Kulkarni, Mihir Shah and PS Vijay Shankar, 'Shaping the Contours of Groundwater Governance in India' (2015) 4 *Journal of Hydrology: Regional Studies* 172, 178.

⁴⁷⁷ *ibid* 176.

⁴⁷⁸ Shankar, Kulkarni and Krishnan (n 7) 41.

⁴⁷⁹ *ibid* 42.

deterioration and depletion could also modify groundwater availability necessitates a coordinated, interconnected approach in surface water-groundwater protection.

Those regulatory principles based on absolute proprietorship, developed in a different spatial and temporal scenario, cannot address changing social, hydrological and economic situations.⁴⁸⁰ These factors have changed since its application, and the present conditions demand a revamped regulatory framework that addresses climatic, hydrogeological, social, cultural and economic variabilities and diversities in the country, assuring socially and environmentally equitable and sustainable access and conservation.

Currently, the States have adopted the laws based on the 2005 Model Bill, which don't address these factors. Furthermore, the current regulation fails to incorporate the local hydrogeological, climatic, social, economic, and political conditions even it upholds constitutional division and devolution of power. For instance, two states examined here, Kerala and Rajasthan, differs in hydrogeological, social, economic, historical and climatic elements. Groundwater development in both states also varies, with the former a water affluent State and the latter an arid State with scarce surface water sources. Despite the level of over-extraction and the peculiar social and economic situations that influence groundwater situations, Rajasthan lacks comprehensive legislation to regulate its over-extraction.⁴⁸¹ Whereas Kerala enacted the groundwater law in 2002 on the 1970/ 1992 version of the 2005 model bill ⁴⁸², but hydrologists in Kerala vehemently argued for amending the state law adopted from tailor-made central Model legislation framed to suit the issues developed in and peculiar to North India in post-green revolution years.⁴⁸³

The groundwater legal framework adopts a piecemeal approach as in addition to specific groundwater laws in several states, Water (Prevention and Control of Pollution) Act, 1974 and Environmental Protection Act (EPA)1986 also applies to address groundwater pollution. For instance, the Central Groundwater Authority (CGWA) derives its authority from Sec 3(3) of EPA to ensure regulation and control of groundwater development and management.⁴⁸⁴ While state groundwater authorities derive their powers from groundwater laws, CGWA derives its powers and functions

⁴⁸⁰ NS Soman, 'Legal Regime of Underground Water Resources' (n 58) 150.

⁴⁸¹ Rajasthan Water Resources Regulatory Act, 2012. This act however neither address the issues of groundwater exploitation nor it is based on the Model Law.

⁴⁸² Kerala Groundwater (Control and Regulation) Act 2002.

⁴⁸³ In personal Communication with Hydrologists of District Groundwater Authority, Alappuzha and Palakkad between February-March.

⁴⁸⁴ *MC Mehta v Union of India* (1997)11 SCC 312.

from EPA 1986.⁴⁸⁵ While upholding a command-and-control approach, these laws lack a rights-based approach despite the Supreme Court judgments upholding the right to water as a fundamental right.

The current legal framework is also socially inequitable and environmentally unsustainable. The landowners benefiting from water access through land rights compromises the social justice sphere in a country where social differences are numerous, and subjugation of women in their social, land and economic rights is rampant.⁴⁸⁶ Women, who significantly contribute to farm labour, lack customary access to land ownership, which denies them rights to access State-owned water sources or participation in water user associations formed on a land ownership basis.⁴⁸⁷ Indeed, this lack of land ownership has deprived them of the benefits of policy measures, including subsidies.⁴⁸⁸

Environmental sustainability issues arise from groundwater contamination from fertilisers, pesticides, untreated sewage, and industrial effluents,⁴⁸⁹ whose impacts are irreversible, with severe long-term impacts on water use and the ecosystem. Neither the Model Bills nor the enacted State laws address these causes and effects of groundwater pollution.

Similarly, these legislations don't focus on the environmental impacts of subsidies which are policy instruments granted for vote-bank politics with short term political gains. Even though attempts like the Jyoti Gram Project in Gujrat tried to regulate address excessive use of energy subsidies, the delinking of energy-water nexus is yet to receive due attention in other parts of the country.⁴⁹⁰ Such efforts are inevitable to

⁴⁸⁵ CGWB, 'About Central Ground Water Board Authority' <<http://cgwb.gov.in/aboutcgwa.html>>.

⁴⁸⁶ Margreet Zwarteveen, 'Linking Women to The Main Canal: Gender and Irrigation Management' (International Institute for Environment and Development 1995); Rhodante Ahlers and Margreet Zwarteveen, 'The Water Question in Feminism: Water Control and Gender Inequities in a Neo-Liberal Era' (2009) 16 (4) *Gender, Place & Culture* 409; Deepa Joshi and Margreet Zwarteveen, 'Gender in Drinking Water and Sanitation: An Introduction' in Margreet Zwarteveen, Sara Ahmed & Suman Rimal Gautam (eds). *Diverting The Flow: Gender Equity and Water in South Asia* (Zubaan 2012) 161.

⁴⁸⁷ Sumi Krishna and Seema Kulkarni, 'Gender and Water- Why We Need Alternatives to Alternative Discourses' in KJ Joy and S Janakarajan (eds), *India's Water Futures-Emergent Ideas and Pathways* (Routledge 2019) 238.

⁴⁸⁸ See 5.2.2.

⁴⁸⁹ S.N Jain, 'The Water Pollution Act,1974: The Basic Legal Issues' in Paras Diwan (ed), *Environmental Protection: Problems, Policy , Administration, Law* (Deep & Deep Publications 1987) 184.

⁴⁹⁰ Shah and Verma (n 28).

reduce subsidies promoting groundwater exploitation which negatively impacts human water use.

Rainwater recharge and harvesting found their merit in groundwater law to promote groundwater recharge and conservation and reduce excessive groundwater reliance. However, adopting these piecemeal approaches is insufficient to address the present crisis, demanding broader aquifer-based management from an environmental justice perspective to ensure source and supply sustainability. Aquifer level protection is conspicuously absent in the current curative approach of groundwater regulation.

Similarly, the current water supply framework based on supply sustainability is also environmentally unsustainable. A study conducted by Thakar et al. shows that in groundwater supply schemes, 'increase in supply follows a step-wise pattern where the increase indicates the initiatives and the flat steps indicate supply limits (temporary). When demand reaches the limit of supply at any stage, a new supply initiative emerges.'⁴⁹¹ Overlapping groundwater-based water supply schemes in the same area increases pressure over aquifers.⁴⁹² Neither the State nor the implementing agency considers this pressure over aquifers while planning drinking water schemes. It is unfortunate that despite pressure over aquifers, the supply schemes haven't achieved universal supply coverage.

Therefore, the present law is inadequate to meet India's hydrogeological, social, climatic, and economic conditions and fails to meet the negative externalities of the present challenges of water scarcity, climate change and local water issues.⁴⁹³ This legal framework that lacks a socially equitable and environmentally sustainable approach calls upon the need to include ecological water demands, recognising rights of water resources in water governance. The reconceptualization in water governance delinks groundwater-land nexus is essential to ensure the fundamental right to water and water for food and promote groundwater conservation, thereby ensuring water justice.

⁴⁹¹ B Kakade and others, 'Integration of Drinking Water Supply-Sanitation and Watershed Development' (2001) DFID-WHIRL Project Working Paper 5.

⁴⁹² During the field work in Kerala and Rajasthan, I learnt from conversations with different stakeholders, while people express that they get or don't get water from a water point in the village or dwelling area, they are not aware of implemented schemes. Officials cited that technically if a village is covered under a particular scheme, then new schemes would not cover it unless there is acute water issues. Political interventions often add their localities to more than one scheme. Hence in many places, we saw overlapping of water supply schemes in same village that in long term increases pressure on aquifers. Such situations could in future lead to 'tragedy of commons' in many Indian villages.

⁴⁹³ See for discussion on inequities in water, Veena Srinivasan and Seema Kulkarni, 'Examining the Emerging Role of Groundwater in Water Inequity in India' (2014) 39 (2) Water International 172.

3.6 Summary

The contribution of groundwater to the fundamental right to water and food through water and food security is highly significant, despite the land-water nexus in its access and allocations. In this context, the role and influence of subsidies in mitigating the impacts of inequitable groundwater access and assuring an equitable and inclusive allocation framework are remarkable. The groundwater-based drinking water schemes and intense State support in the agriculture sector involving subsidies helped devolve the benefits to all, assuring social and distributive justice in groundwater access. While these subsidies in the drinking water sector try to achieve equitable and inclusive drinking water to address the issues of water, sanitation, and public health, subsidies in the agriculture sector target the water and food security of farmers, poverty alleviation, the rural development and livelihood. Nevertheless, the land rights-based groundwater access limits the scope of subsidies and restricts its benefits to land-owning sections. This chapter examined the positive and negative externalities of subsidies in groundwater access and its implications on water justice. The chapter highlights that the land-water nexus in groundwater regulation is the cause of inequitable access and allocations. These common-law based regulations, implanted to an alien hydrogeological, climatic, social and political situation, fail to acknowledge the social, economic and political diversities and adequately address the local groundwater situations, demanding a closer examination for reconceptualising the regulatory framework to assure the right to water and water justice.

PART II
LESSONS FROM THE FIELD

Chapter 4

Subsidies in the Changing Roles of the State: Reflections on Water Justice in Kerala

4.1 Introduction

The role of the State in drinking water supply and ensuring food security derives from the constitutional objective of establishing a welfare state, informed by the constitutional principles of social and economic equality and justice. The contribution of subsidies in aiding the State in implementing this objective has a tremendous influence on helping millions to realise their fundamental right to water and food. This contribution remains unchanged irrespective of any change in nature of the State's role or approach in the performance of its constitutional duties. The subsidies remain an integral part of drinking water schemes regardless of the paradigm shift of the State's role from a provider to facilitator with the influence of neoliberalism and the promoter of agricultural developmental plans to assure food security.

This chapter explores the contribution and influence of subsidies in these two roles of the State, promoting social and distributive equity in groundwater access for drinking water supply and water for food in the state of Kerala, a region rich in water but deficient in agricultural self-sufficiency.⁴⁹⁴ Subsidies and the changes in the role of the State in water supply in Kerala are significant because of the increased reliance on conventional water sources and the unsuccessful attempts of the State to achieve universal coverage of drinking water supply in the state. Similarly, subsidies aid in promoting and reviving the lost agricultural heritage to encourage self-sufficiency in production and ensure food security. The chapter provides a detailed analysis of these contexts that aim for the same objective – social and distributive equity in groundwater access.

⁴⁹⁴ Ministry of Environment and Forests, 'Economy: Agriculture – Status of Environment Related Issues: Kerala ENVIS Centre, Ministry of Environment and Forests, Govt. of India' (*ENVIS Centre: Kerala State of Environment and Related Issues*) <http://www.kerenvis.nic.in/Database/Agriculture_832.aspx>. The Statistical data shows that agricultural growth witnessed negative growth rate in 12th Five Year plan in contrast to the positive growth gained during Xth Plan.

Nevertheless, the economic discrepancies and the political choices supersede the social differences in access to groundwater and the subsidies creating negative externalities on social and distributive equity and environmental sustainability, whose impacts are severe on the poorer sections. Hence, this chapter also analyses the social, political and economic factors that influence groundwater and subsidies allocations and to what extent the current state legislation on groundwater regulation addresses the concerns raised by negative externalities on equity and sustainability.

4.2 Groundwater Reliance in Kerala: Less Exploitation, More Potential to Explore

Kerala is a humid and wet state with plentiful water resources in the southern part of India. The state receives an average of 3000 mm of rain from two monsoons, the South West monsoons and retreating North East monsoons.⁴⁹⁵ Despite this heavy rainfall and plentiful surface water resources, groundwater caters to the state's drinking water needs.⁴⁹⁶ It supports more than 80% of the domestic water requirements of rural areas, fulfils half of the urban water demands,⁴⁹⁷ and contributes to half of the irrigation water needs in the state.⁴⁹⁸ Yet, the potential for groundwater development remains enormous.⁴⁹⁹ While the total annual groundwater availability in the state is 5211.75 MCM, the yearly groundwater recharge is 5769.23 MCM, and groundwater development is 51.27%, less than many other states.⁵⁰⁰

Kerala tops the SDG index developed by the NITI Aayog.⁵⁰¹ The demographic factors like life expectancy and health status, and socio-economic development is higher than

⁴⁹⁵ Kerala ENVIS Centre, 'Climate' (*ENVIS Centre: Kerala State of Environment and Related Issues*, 19 March 2021) <http://kerenvis.nic.in/Database/CLIMATE_829.aspx>.

⁴⁹⁶ Rose Mary George, 'Bore Wells Vs. Open Wells: Water Crisis and Sustainable Alternatives in Kerala' (2016) 7 (2) *Journal of Management & Public Policy* 19.

⁴⁹⁷ Dr Ajaykumar Varma, 'Groundwater Resource and Governance in Kerala: Status, Issues and Prospects' (Forum for Policy Dialogue on Water Conflicts in India 2017) 118.

⁴⁹⁸ Kerala ENVIS Centre, 'Water' (*ENVIS Centre: Kerala State of Environment and Related Issues*, 1 December 2020) <http://www.kerenvis.nic.in/Database/WATER_820.aspx>.

⁴⁹⁹ Central Groundwater Board, 'Groundwater Yearbook of Kerala 2019-2020' (Ministry of Jal Shakti 2020).

⁵⁰⁰ Department of Water Resources, 'National Compilation on Dynamic Groundwater' (n 17).

⁵⁰¹ Priscilla Jebaraj, 'Kerala Tops SDG Index; Bihar at Last Rank' *The Hindu* (New Delhi, 30 December 2019) <<https://www.thehindu.com/news/national/kerala-himachal-pradesh-ap-lead-performers-in-niti>>.

in other states in India, with higher investments in human resource, women's education and gender equality reforms, improving the overall public health parameters. The contribution of social reforms of the 19th century and land reforms of the post-independence era to the state's economic prosperity and social development is remarkable. Nevertheless, the social and economic disparities in society persist. The hydrological situation and the social and environmental dynamics of the state provide an excellent framework for examining and analysing the influence of water-related subsidies on social equity in groundwater access and its impacts on environmental sustainability.

4.2.1 Coverage Gaps in a Water Abundant State: Lagging in Rural Household Pipe Supply

Groundwater availability varies across places depending upon geomorphologic and hydrogeological conditions and constitutes the primary water source for all uses.⁵⁰² Groundwater is also vulnerable to pollution and depletion due to the growing population, rapid urbanisation and increasing consumerism in the state. More than 65% of the people in rural areas and 59 % of urban homes use groundwater as the only drinking water source from dug wells.⁵⁰³ Dug well density is vast, with approximately 200 wells per sq. km in coastal areas, 150 wells sq. km in mid regions, and 70 wells per sq. km in hilly areas.⁵⁰⁴

In addition to these traditional water sources, people rely on government piped supply, particularly in urban areas like cities and towns. Schemes of KWA or LSGs like GPs and Municipalities cover rural water supply. Nonetheless, coverage of piped drinking water in the State is far less than in many other states. In rural areas, only 9.4% of households possess pipe drinking in their dwelling, and 2.6% have pipes in their premises when the national-level statistics report 11.3% and 10.3%, respectively.⁵⁰⁵ Similarly, 18.8 % of urban households possess piped water into the dwelling, and 5.9

aayogs-sdg-india-index-2019/article30432342.ece>; NITI Aayog, 'SDG India Index: Baseline Report 2018' (NITI Aayog 2018).

⁵⁰² Kerala State Planning Board, 'Economic Review 2016' (Government of Kerala 2016) 74.

⁵⁰³ Registrar General & Census Commissioner, 'Census of India 2011' (Government of India, 2011).

⁵⁰⁴ TJ Mathew, 'Work Study Report on Groundwater Department' (Government of Kerala 2013).

⁵⁰⁵ Ministry of Statistics & Programme Implementation, 'NSS Report No.584: Drinking Water, Sanitation, Hygiene and Housing Condition in India, NSS 76th Round' (July –December 2018) (Government of India 2019) 63.

% of households have pipes in their premises compared to all India's average of 40.9% and 16.0%.⁵⁰⁶

Easy groundwater availability near households and corruption, bureaucratic influence, disconnections and disruptions in government supply contribute to peoples' dependence on wells and conventional water sources.⁵⁰⁷ Sufficient water availability in rural areas causes less state focus on rural piped drinking water. Even after adopting and implementing central and state schemes, coverage of piped supply extends only to 34% of households.⁵⁰⁸

It also factors the lack of adequate attention of the state on the water supplies in rural areas, with a focus only on urban areas until the introduction of ARDWSP. However, the deterioration of the quality of the conventional water bodies in rural areas due to natural and anthropogenic factors and its implication on public health drives the government to initiate more schemes for piped water supply.

4.2.2 Subsidies for Agriculture: State support to Revive and Revitalise Farm Productivity

Groundwater contributes substantially to the agricultural sector of the state. The success of social and land reforms in the state has reflected the distribution of groundwater irrigation structures. According to the 5th Minor Irrigation Census, most tubewells are under private ownership and ownership is shared among communities belonging to OBC, SC and ST.⁵⁰⁹ This pattern of ownership seen in tubewells is significant to examining equity in groundwater access, considering the social and economic transformation of the State.

Groundwater development in Kerala is 51.27 % which is comparatively less than many other states.⁵¹⁰ The availability of sufficient surface water resources for irrigation, recharge of groundwater by monsoons, and the shift in economic patterns where Kerala society has moved from a producer to a consumer society contribute to this less

⁵⁰⁶ *ibid* 64.

⁵⁰⁷ In communication with groundwater dependent water users in Alappuzha and Palakkad Districts.

⁵⁰⁸ Kerala State Planning Board, 'Economic Review 2020' (Government of Kerala 2021).

⁵⁰⁹ 'Report of 5th MI Census | Department of Water Resources, RD & GR | Government of India' <<http://jalshakti-dowr.gov.in/report-5th-mi-census>>.

⁵¹⁰ Groundwater Department, 'Groundwater Resources – Ground Water' (*Groundwater Department, Government of Kerala*) <<https://groundwater.kerala.gov.in/groundwater-resources/>>.

exploration. The share of agriculture in the state economy drastically declined in the last few years, linked to changes in land-use patterns.⁵¹¹ There is an increase in area under non-agricultural use, and only 53 per cent of area is classified as the net sown area in 2018-19, with more preference for commercial crops.⁵¹²

State grants subsidies to promote self-reliance in agriculture to avoid crop imports from neighbouring states, consequent health concerns, and demand for more employment. Paddy cultivation in Kerala's rice belts Palakkad and Alappuzha, aided by subsidies, resulted in better agricultural production and negative consequences on the environment like pollution and depletion of water resources due to excessive use of pesticides and chemicals fertilisers.⁵¹³ For instance, increasingly high dependence on groundwater for irrigation has resulted in plummeting water tables and water scarcity in several areas of Palakkad district, especially Chittoor block, which is categorised as 'over exploited' by the state groundwater authority.⁵¹⁴ Anthropogenic and natural factors added to climate change impacts increase saltwater intrusion and pollution of aquifers in the coastal areas of Alappuzha severely threatening low-lying areas like Kuttanad block.

The influence of subsidies in irrigation characterised by the hydrological vastness and social, economic and political enlightenment provides a framework to examine its impacts on social, distributive and ecological justice. It is more contextualised when economic disparities thrive more deeply than social inequities, which haven't lost their root in the post-reform period in the annals of Kerala's social history. Fieldwork conducted in Palakkad and Alappuzha accentuates that these disparities influence access to water and benefits associated with a drinking water supply and agricultural development.

⁵¹¹ Department of Agriculture Co-operation & Farmer's Welfare, 'Agricultural Statistics at a Glance 2019' (Government of India 2020) 31.

⁵¹² State Planning Board, 'Economic Review 2019' (Government of Kerala 2020).

⁵¹³ In communication with two expert members in SPCB, Trivandrum dated 17th January.

⁵¹⁴ Central Groundwater Board, 'Report on Mapping of Hard-Rock Aquifer System and Aquifer Management Plan, Palakkad District, Kerala' (Ministry of Water Resources, Government of India 2016).

4.3 Contextualising the Role of State in Drinking Water Supply: Shifting between Constitutional Responsibilities and Contractual Obligations

The State has adopted a welfarist approach in drinking water schemes, whereby its role has been predominantly a water supplier.⁵¹⁵ Everything related to water supply from developmental infrastructure like large scale irrigation projects, water policies, drinking water programmes, operation, and management of supply schemes possessed a welfarist approach.⁵¹⁶ Cost recovery was nominal. This approach of more welfare, and less cost recovery in water supply remained unchallenged even after the constitutional devolution of powers entrusted water resources, supply, and management to local self-governments till the federal and State governments resorted to loans from international financial agencies like WB and ADB for continued implementation of developmental projects.

IFIs interventions in water supply schemes influence the nature of the State's role from a provider with complete responsibility for supply-driven top-down water supply schemes to a facilitator with a community-based bottom-up demand-driven approach.⁵¹⁷ Confusions and complexities result from the incomplete devolution of powers of the State in water supply management. As facilitator, the State did not convey to communities or local water users the ownership of water infrastructure but only vested the right to manage the supply and maintain the infrastructures.

The change in the State's water supply role does not influence or impact water supply schemes from a water user perspective. Vesting of sole responsibility of water management in one statutory body- KWA for all water schemes is a factor here.⁵¹⁸ However, this ambiguity in State's role with the disparity between policy and implementation provides a challenging premise for examining its impacts on the fundamental right to water and water justice.

⁵¹⁵ PB Anand, 'Semantics of Success or Pragmatics of Progress? An Assessment of India's Progress with Drinking Water Supply' (2007) 16 (1) *The Journal of Environment & Development* 32, 34.

⁵¹⁶ *ibid* 35–36.

⁵¹⁷ Mathias Finger and Jeremy Allouche, *Water Privatisation: Trans-National Corporations and the Re-Regulation of the Water Industry* (Spon Press 2002) 62.

⁵¹⁸ In communication with Chief Engineers, KWA, Alappuzha and Palakkad Districts, Ward Members of Attapadi Panchayat, Alathur Panchayat in Palakkad and Cherthala Municipality and Alappuzha Municipality during January- June.

4.3.1 State as a Facilitator in Managing Water Supply Schemes: Promoting Efficiency over Equity

Schedule VII of the Constitution delegates the legislative authority over water to State governments, and the 73rd and 74th Amendment Acts, 1992 devolves this power to panchayats and municipalities. This division of control in a welfare state devolving power and responsibility to local self-government aims to localise water governance and management to address regional water issues.⁵¹⁹

Consequent enactment of Kerala Panchayati Raj Act 1992 and Kerala Municipalities Act 1994 vested water resources, water supply machinery, all existing water supply schemes managed hitherto by KWA, collection of water charges, and preparing and executing water supply and sewerage schemes in the domain of LSGs.⁵²⁰ The Constitution thus envisages the State to be the guardian and supplier of water. Ever since the inception of water supply schemes, the State has performed this role with a top-down approach, and the devolution of power to local authorities never changed the *status quo*.⁵²¹ There was minimal public participation of various stakeholders in such schemes.

The development of state-supported drinking water in main towns began in the 19th century under the erstwhile Travancore Royal administration.⁵²² Post-independence, the constitution of PHED in 1956 continued this legacy in urban areas by the present KWA established under Kerala Water and Waste-Water Ordinance 1984/ Kerala Water Supply and Sewerage Act 1986 for urban water supply, affirming the role of the State in the drinking water supply.⁵²³

Top-down management with heavy subsidies for water users characterised State water supply systems, including KWA water supply. The drawbacks of this top-down water supply management including financial and technical challenges of KWA, exclusion of several areas from coverage, financial burdens of subsidies and the conditionalities of loans by IFIs like WB, ADB and Japan Bank for International Cooperation (JBIC),

⁵¹⁹ MS Vani, 'Community Engagement in Water Governance.' in Ramaswamy R Iyer (ed), *Water and the Laws in India* (SAGE 2009) 167, 170.

⁵²⁰ Kerala Panchayati Raj Act 1992 s 218; Kerala Municipalities Act 1994 s 22.

⁵²¹ Bhanwar Singh and Radhika Ramasubban, 'Managing Improved Water Supply: Lessons from the Kerala Water Authority' in Ruth Meinzen-Dick and Mark Svendsen, *Future Directions for Indian Irrigation: Research and Policy Issues* (IFPRI 1991) 215,220.

⁵²² See generally, TK Velu Pillai, *Travancore State Manual*, vol IV (Government Press 1940).

⁵²³ Kerala Water Authority, 'About KWA' (*Kerala Water Authority*) <<https://kwa.kerala.gov.in/about-kwa/>>.

inspired the state government to constitute several other agencies in the water sector and revamping of KWA to a demand-led water supply system.⁵²⁴

The WB has an instrumental role in these sectoral water reforms in India, advocating that "subsidised water and highly centralised water management in rural sector have resulted in poor water service at high cost", thus impeding efficient water use.⁵²⁵ Community-based water supply received impetus in such international schemes in India from the success of Olavanna Model in Olavanna GP in Kozhikode in the 1980s where water users in the locality started water supply scheme with the individual financial and physical contributions.⁵²⁶

Interventions of IFIs demanding changes in water supply policies as a precondition for loans brought changes in the State's approach to water governance.⁵²⁷ Conditionalities attached to loans and grants by IFIs influence water policies borrowing countries, mainly developing or underdeveloped countries, through the 'conditionality attached to its loans'.⁵²⁸ Earlier, the focus of all schemes and water supply units was 'equity in water supply and access' in an inclusive model with top-down management. These conditionalities have shifted the State's role as a water supplier to a facilitator managing water schemes. Nonetheless, ownership of water schemes and infrastructure remains vested in the State. It envisages a reduced role for the 'State' expecting supply only on demands and consumers ready to pay for all services.

Since the loans, and conditionalities arose, and WB suggested new models for addressing increasing water scarcity, a shift occurred from equity to efficiency with more decentralisation and private partnerships.⁵²⁹ This model guaranteeing efficient

⁵²⁴ S Mohammed Irshad, 'Foreign Funding-Induced Development, Institutional Weakening and Access to Water: A Case Study from Kerala, India' (2013) 15 (2) Water Policy 281, 282.

⁵²⁵ The World Bank, 'India - Water Resources Management Sector Review: Initiating and Sustaining Water Sector Reforms' (The World Bank 2012).

⁵²⁶ UNDP, *Human Development Report 2006- Beyond Scarcity: Power, Poverty and the Global Water Crisis* (Palgrave Macmillan 2006) 105; Joy Elamon, 'People's Initiative in Water-Olavanna Village in Kerala, India Shows the Way' in Belén Balanyá (ed), *Reclaiming Public Water: Achievements, Struggles and Visions from Around the World* (Transnational Institute 2005) 45; Water and Sanitation Programme, 'Villagers Treat Water As an Economic Good, Olavanna, Kerala, India.' (Department of International Development 1999).

⁵²⁷ Andres Olleta, 'The Role of the World Bank in Water Reforms' in Philippe Cullet, *Water law for the twenty-first century: national and international aspects of water law reform in India* (Routledge 2010) 230, 232–236.

⁵²⁸ See generally, *ibid* 230.

⁵²⁹ Priya Sangameswaran, 'Discourses in Water and Water Reform in Western India' in Philippe Cullet and others (eds), *Water Governance in Motion: Towards Socially and Environmentally Sustainable Water Laws* (CUP 2010) 53, 62.

water supply with the least leakages, continuous water instead of intermittent supply, and community management for localised water issues is now in operation in several cities in India.⁵³⁰ The State's role shrunk to a facilitator with a limited role from an exclusive water provider, emphasising water supply and management efficiency.⁵³¹

The WB supports community management and public-private partnerships in water management to promote efficient water supply by creating a sense of ownership among water users to avoid water wastage and address water stress. In rural water supply schemes, aiding agencies lay down implementation guidelines where the role of government is minimal, which often results in decreased participation of user communities vested with management and supply of water supply.⁵³² The WB promotes Dublin principles of decentralised participatory water management and water as an economic good in demand-driven projects implemented in Kerala like 'Jalanidhi'.

KRWSSA was constituted in 2004 as an autonomous institution to implement the World Bank-funded Jalanidhi project, a demand-driven community-managed water supply scheme.⁵³³ KRWSSA aimed to implement a decentralised, community-managed water supply scheme to cover rural areas without piped supply and ensure the cost recovery process. Water supply schemes are currently fragmented and shared between KWA, KRWSSA and LSGs. This fragmented and uncoordinated water supply system has excluded several areas in piped supply.

These community-led water schemes project a pro-poor and inclusive approach, particularly in rural, uncovered areas. Studies point out that such water supply schemes with reduced subsidies don't benefit the poor but exclude them from enjoying their basic water needs.⁵³⁴ In Kerala, the community-led Jalanidhi implemented in all districts except Alappuzha is a community managed, demand-driven, pro-poor integrated water supply programme expected to rectify the ineffectiveness of KWA water supply and extend inclusiveness in rural areas.⁵³⁵ This project did not benefit several sections, including the impoverished and socially backward communities, tribal belts like

⁵³⁰ Susanna Ghosh Mitra, 'Power and Policy Processes in Drinking Water Supply in Karnataka, India' (2008) 51 (1) Development 96.

⁵³¹ Olleta (n 528) 230, 237.

⁵³² KR Nisha, 'Household Participation in Community-Based Rural Water Supply Systems: Experience from Kerala, India' (2013) 15 (4) Water Policy 515.

⁵³³ 'Kerala Rural Water Supply and Sanitation Agency' <https://jalanidhi.kerala.gov.in/page/render/reference/About_Jalanidhi>.

⁵³⁴ Irshad (n 525) 286.

⁵³⁵ 'Kerala Rural Water Supply and Sanitation Agency' (n 534)

Attapady and Chittoor, and the peri-urban regions of Palakkad town due to their inability to pay for water and maintenance of water schemes.⁵³⁶ For such deprived sections, denial of access to clean and safe, recurrent water supply due to economic disparities happens when efficiency overrides equity. Such schemes now implemented in other states in India have only helped affluent citizens improve their lifestyles.⁵³⁷

The shift in State's role as a facilitator also influences the nature of the role played by its statutory body, KWA. The KWA, in addition to its statutory duty of water supply and management, also coordinates with local panchayats in the operation and maintenance of the latter's water supply structures. Therefore, piped supply by KWA has made significant changes in areas covered only with traditional water resources like wells or insufficient quality water with timed water supply, especially in summer months, by reducing efforts for fetching water from distant places.⁵³⁸ However, this equity achieved by KWA piped supply is compromised when KWA implements Japan aided Water supply schemes in Cherthala municipality and adjoining panchayats in Alappuzha. The dominance of efficiency over equity with the cost recovery process for maintenance in Japan assisted piped water supply areas has ostracised many colonies inhabited by lower caste-like Dalits and Kunbis.

Preference for efficiency over equity in community-led schemes replacing supply-driven subsidised State supply adds to inherent inequity in groundwater access created by the current legal framework.⁵³⁹ These schemes with a cost recovery process are a financial burden for water users. For them, denying the subsidies for accessing water connections impacts their capacity to realise their water right. However, such schemes are cost-saving for the State by reducing subsidies, supply, and maintenance.⁵⁴⁰ As the State moves away from the water supply, its duties envisaged in the Constitution and judicial discourse on the fundamental right to water dilutes while the rights of citizens are compromised.

⁵³⁶ In communication with tribal hamlets, tribal promoters, NGOs working among tribals in Attapadi during the Month of February-March 2020.

⁵³⁷ Mitra (n 531) 100.

⁵³⁸ Bhanwar Singh and Radhika Ramasubban (n 522) 219-220.

⁵³⁹ Inherent inequity based on groundwater regulation limits the access benefits to land owners which has now shifted to those who has the ability to pay for water.

⁵⁴⁰ In communication with KWA engineers in State Head office and district offices at Alappuzha and Palakkad dated between 1st June-21th June. The KWA approaches community led schemes as better than the supply oriented conventional schemes. In the former, their role and responsibility is reduced from previous. Similarly, reduction in subsidies and step up for beneficiary contribution improve the exchequer.

Water scarcity, especially in the summer months, bacterial contamination in traditional water sources and elements of fluoride and iron, and issues in the supply-oriented approach of KWA led to the introduction of more demand-driven programmes emphasising beneficiary groups. Jalanidhi scheme, revered as the most successful community-managed water scheme, aiming to ensure an equitable, inclusive and decentralised water supply system, especially SC, STs and BPL categories, is a groundwater-based scheme that includes groundwater recharging, tribal development, environment sanitation, and water security plans in it.⁵⁴¹ Implementing a project with a cost recovery process is a tweaked attempt to enforce the commodification of natural resources by overcoming society's opposition.⁵⁴²

The cost-recovery principle impairs equity as these projects don't favour the poor section of society.⁵⁴³ In many Jalanidhi areas, including tribal hamlets, people have moved away from this scheme to panchayat run, more reliable and equitable projects.⁵⁴⁴ This shift from provider to facilitator is now reverting to State-centric schemes but decentralized participatory forms in line with central sector schemes. The state governments exercise a vital role in the present decentralized CSS, JJM, where its role extends to planning strategy for water security, drafting plans, and creating water supply infrastructure for the State, and the GPs enjoy the power to plan, implement, manage, own, operate, and maintain village water supply systems.⁵⁴⁵

Nevertheless, ambiguity exists in the role of the State as provider/facilitator. Despite the State's (re)-centralisation confining the responsibility in its statutory bodies in water supply, the State's role as provider or facilitator is unclear. KWA mainly implements all the schemes in urban and rural areas where KRWSSA does not exist. This fragmentation of the KWA and KRWSSA does not impact government water schemes because KWA is the sole agency representing the State and local governments in most rural areas. However, considering the constitutional division of powers read with part III of the Constitution concerning the right to water, any shift in State's role is ambiguous in its duty towards citizens and responsibility in the water supply.

⁵⁴¹ 'Kerala Rural Water Supply and Sanitation Agency' (n 534).

⁵⁴² Madhav Govind and Abhilash Babu, 'Community Participation or Manufactured Consent? Strategies for Implementation of Drinking Water Project "Jalanidhi" in Kerala (India)' (2017) 13 (1) *International Journal of Rural Management* 1, 5.

⁵⁴³ *ibid* 6.

⁵⁴⁴ Discussions with tribal promoters in Sholayur GP, Panchayat President, KWA officials, Chittoor GP Member in Palakkad on 20th February.

⁵⁴⁵ Department of Drinking Water & Sanitation, 'Operational Guidelines for JJM' (n 302).

4.3.2 The disappearance of Public Taps and Focus on IHTC: Targeting Better Access without Inclusiveness

Rural areas in Kerala relied on conventional water sources till the introduction of community taps through the erstwhile ARDWSP.⁵⁴⁶ Less demand and supply of piped water were primarily due to the availability of and reliance on traditional and private household' water sources. Even today, the reliance on alternate water sources continues despite the state attempts to cover rural areas within piped networks. Universal coverage of piped household connections in rural and small towns is yet to achieve. Statistics show that among 67.15 lakh rural households in Kerala, as per the 2011 census, only 49.65 lakh households are included in piped supply coverage.⁵⁴⁷

There has been a substantial shift in preference towards piped water in households with private and public investments. Families in Alappuzha and Palakkad own private pipes for water sourced from bore wells or tubewells or even motorised open wells to overhead tanks.⁵⁴⁸ Some households connect to the public system supplied by KWA or LSGs pipelines as primary water sources (primarily in urban areas) or secondary (in smaller towns and rural areas). Thus, individual household tap connections gained acceptance in Kerala through these private efforts or State interventions in ensuring adequate drinking water in rural areas.

The State promotes piped water supply to connect to the water grid of safe and portable, affordable drinking water considering its significance and contribution to public health. The piped water system covered the urban areas of Alappuzha since 1939 when only Trivandrum, Kochi, and Alappuzha had connected to government pipelines under the erstwhile Princely State.⁵⁴⁹ While public water points were free to access, household connections charged a nominal cost. It could be a form of the first subsidised water supply programme in the State.

KWA started tubewell-based schemes in the 1960s, which later turned into the present piped water schemes in towns. After implementing Panchayati Raj, the KWA intertwines many projects with GP-funded plans to supply piped water to every home in its jurisdiction. Most of the schemes are groundwater-based, pumped by bore wells

⁵⁴⁶ In communication with elders in villages in Cherthala, Aroor and Chittoor who vividly remember relying on ponds and wells till community pipes installations provided them government water.

⁵⁴⁷ Ministry of Jal Shakti, 'Jal Shakti Ministry Reviews Implementation of Jal Jeevan Mission in Kerala' (*Press Information Bureau*, 29 October 2020).

⁵⁴⁸ Interviews with families in Alappuzha and Palakkad conducted between 10th January – 30th March.

⁵⁴⁹ Planning Commission of India, *Kerala Development Report* (Academic Foundation 2008) 226.

in government lands. KWA pipe connections have eased water stress in many urban areas where supplies charge nominal tariffs.⁵⁵⁰

KWA is the implementing agency for CSS, state schemes, and IFIs aided new water schemes. In Alappuzha, KWA works closely with GP schemes and JIBC-assisted water supply schemes, whereas Palakkad focuses on urban areas, and KWRSA operates Jalanidhi in rural areas. In Palakkad, the water stress district, piped water schemes cover 80% of the metropolitan regions and 40 % of the rural areas.⁵⁵¹ In rural areas, special panchayat schemes exist along with the state scheme of Jalanidhi.

The role of subsidies in government water supply in Kerala to promote individual household connections is remarkably significant. The State supports water supply through direct or indirect subsidies to motivate more water users to connect to the formal water system. For instance, the Central grants and funds from the planned expenditure of State budgets subsidise the KWA to implement the water supply schemes.⁵⁵² KWA, therefore, bills the customers at a very nominal level, ensuring the devolution of these subsidised water supply benefits.

It also takes the form of a free water supply for deprived sections, particularly the BPL, SC/ST families⁵⁵³ without cross-subsidies on large scale water users.⁵⁵⁴ These sections in urban areas benefit from centrally sponsored schemes for urban development. For example, the AMRUT scheme includes an assured piped water supply and sewerage in urban areas.⁵⁵⁵ Subsidies are allotted to SC/ST households to provide individual water

⁵⁵⁰ Interview with KWA water users, in Cochin between 27th -29th January.

⁵⁵¹ In communication with Assistant Engineer, KWA, Palakkad on 28th March.

⁵⁵² Planning Commission, *Kerala Development Report* (n 550) 229.

⁵⁵³ Field note from discussion with Assistant Engineer, KWA substantiated by District Panchayat officials. BPL family is provided 4000 INR and SC and ST 6000 INR as onetime payment for a new water connection at home premises.

⁵⁵⁴ The government supplies free water for BPL families connected to KWA water connections but consumes less than 15000 litres per month. Water Resource Department, 'Kerala Gazette No. 41: G. O. (Ms.) No. 88/2014/WRD' (Government of Kerala, 2017) <http://www.egazette.kerala.gov.in/pdf/2017/41/part_1/25th%20september.pdf>.

⁵⁵⁵ See, Ministry of Housing and Urban Affairs, 'Atal Mission For Rejuvenation And Urban Transformation' (*Atal Mission For Rejuvenation And Urban Transformation*) <<http://amrut.gov.in/content/innerpage/the-mission.php>>.

connections in urban areas.⁵⁵⁶ Similarly, municipality schemes and panchayats provide free connections and supplies to these sections.⁵⁵⁷

However, tribal areas don't benefit from the government schemes. Leakages in implementation, bureaucratic interference, and corruption are rampant in those areas. Local GP water supply support tribal hamlets more than any other scheme. Tribal areas like Attapady in Sholyur Panchayat depend on piped water supply from GP borewells in every hamlet.⁵⁵⁸ Community-managed Jalanidhi projects ceased to operate in tribal areas, and now these areas shifted to GP sources local water supply schemes.⁵⁵⁹

Open wells supply drinking water to most of Kerala's rural and urban homes. Switching from wells to piped lines is gradual in Palakkad, unlike Alappuzha, where change is rapid because of quality depletion from pollution and saltwater intrusions.⁵⁶⁰ In contrast, in Palakkad, coverage of rural areas is difficult considering the spatial differences between individual homes. This spatial distance between individual households is a hurdle in geographically larger districts.

Subsidies enhanced access to piped supply in household premises, which otherwise would never be possible due to technical costs, making life easier. Tribal ladies in Palakkad expressed their satisfaction from pipe supply projects, "now more time is available for our production activities, and our health improved. Many tribal community members are employed in better jobs since time spent on water collection is reduced. We manage GP owned borewell operated schemes in our hamlets, providing us with a sense of ownership under our 'moopan' [community leader]."⁵⁶¹

Though this trend of household connections positively impacts many lives, emphasis on individual water connections overrides and replaces public tap connections from water maps. Firstly, these piped connections left traditional alternate sources like homes and public wells unused, leading to the deterioration of these structures and healthy water. In Alappuzha, several households do not use their wells even though the water is clean and safe because of individual piped connections from KWA. Secondly, policy attention to personal household connections assists slow deterioration of public taps in

⁵⁵⁶ KWA Executive Engineer, Head Office, Thiruvananthapuram dated 19th March.

⁵⁵⁷ Communication with Executive Engineer Water Authority, Palakkad dated 25th February.

⁵⁵⁸ Field work Notes from Sholayur Grama Panchayat, Tribal areas, Palakkad District collected during March.

⁵⁵⁹ Discussions with Sholayur GP President and tribal promoters on 2nd March.

⁵⁶⁰ Fieldwork Notes prepared after the communications with KWA, GWA, local panchayats and municipalities officials from both districts.

⁵⁶¹ Interviews from various tribal ladies and Moopan in Sholyur Panchayat dated 2nd March.

several localities either by lack of awareness or maintenance or even destructive attitude of people. Thirdly, public taps also disappear due to deliberate removal by the state government on account of preconditions attached by IFIs for loans. The implementing agency cites 'efficiency in water supply' to remove public taps and avoid resistance from local areas.⁵⁶²

Furthermore, exclusions also occur when RO plants replace public taps in certain areas. For instance, under UIDSMT (Urban Infrastructure Development for Small and Medium Towns as part of erstwhile JNNRUM), GPs in Alappuzha established Reverse Osmosis Plants to provide clean water in quality affected areas at a very nominal rate.⁵⁶³ Local people prefer these RO plants attached to KWA tanks/ pipes in KWA premises to public taps for their quality, which causes the deterioration of public fixtures.

Removal of public taps reflects the shift in the State's approach to water supply- from a supplier to a facilitator. It also connotes that the State backsteps from its duty to help people realise their fundamental rights but create a situation where the ability to pay is the precondition to access water supply and avail government aid(subsidies). This duty breach contrasts human rights jurisprudence in water. Removal of public taps affects the water needs of the homeless people, Dalit and OBC colonies, and migrant labourers, who cannot afford individual connections. The State, in its role as a facilitator, doesn't address the human rights of these people who are often outside the coverage area.

The new central government scheme, Jal Jeevan Mission,⁵⁶⁴ aims to attain functional household connections to all rural households by 2023-2024.⁵⁶⁵ JJM is a demand-driven, community-managed, and cost-recovery-focused scheme, but it also focuses on an equity-based drinking water supply planned to cover all quality affected areas by piped water. In addition to household connections, this scheme also targets public places like Anganwadis, schools and hospitals. This project which focuses simultaneously on individual relationships and selected public spaces, should also include other water users like the homeless and migrants for inclusiveness.⁵⁶⁶ Unless households' connections complement the public, universal access to water in Kerala and the country will remain a target in an election manifesto.

⁵⁶² Govind and Babu (n 543) 13; Irshad (n 525) 285.

⁵⁶³ In rural areas, one Rupee/ litre is charged in rural areas. But in urban areas, the same RO plants supply water free of charges, creating disparity in water delivery. Field work observations.

⁵⁶⁴ This mission started after the end of this field work but demands attentions due to its focus piped water connections in individual households and public places on a demand driven basis.

⁵⁶⁵ See 'Operational Guidelines for JJM' (n 302).

⁵⁶⁶ Detailed impacts are yet to be explored as this project is in implementation phase.

Subsidies for drinking water to bring inclusiveness in access to piped supply are particularly interesting for examining the right to water and water for food. The same source of water supplies water for drinking and irrigation in Kerala, which, considering its quality issues, raises concerns for the quality of public health and the food generated. Hence, the State attempts to support piped supply for household drinking purposes in addition to immense support granted to agriculture.

4.3.3 Incentivising 'Demands' to promote Piped Water Supply: Side-lining the 'Rights.'

Traditional sources like open wells, ponds and modern bore wells quench the drinking water needs of rural and semi-urban households in Kerala. In addition, individuals' groundwater-based piped supply initiated at private households' levels reduced the demand and dependence on formal water supply in rural and smaller towns.⁵⁶⁷ However, urban water demands depend on State water supply systems the State supplied by KWA through individual household pipe connections, even though these urban areas also rely on the traditional alternate water sources with or without resorting to state water pipe supplies.

Consequently, coverage of government piped water supply in Kerala is far behind many other states in India.⁵⁶⁸ Government-directed water supply, concentrated in municipal cities, is a secondary water source in smaller towns and still a dream in many villages.⁵⁶⁹ Most households invest in installing piped water supply in homes from conventional water sources like ponds, or borewell pumped overhead tanks without any government assistance. Nevertheless, the piped water supply remains a top priority in the State budget and plans.

Specific key observations arise in the water supply discourse in Kerala. Firstly, the piped water supply in the State always targeted water demands of urban areas only.⁵⁷⁰ Even in cities within KWA coverage, several informal habitats remain excluded from the formal water supply system where the quality and quantity of drinking water remain

⁵⁶⁷ In communication with households in towns of Cherthala, Alappuzha, Chittoor and Alathur.

⁵⁶⁸ NSS Report No.584 (n 506).

⁵⁶⁹ Special Correspondent, '10 Lakh Rural Houses to Get Piped Water This Fiscal' *The Hindu* (Thiruvananthapuram, 17 June 2020) <<https://www.thehindu.com/news/national/kerala/10-lakh-rural-houses-to-get-piped-water-this-fiscal/article31853298.ece>>.

⁵⁷⁰ Kerala Water Authority (Water Supply) Regulations 1991.

a public health concern.⁵⁷¹ These habitats rely on unsafe sources of drinking water sources. Earlier, ARDWSP focused on ensuring community pipes and public standpoints for rural households since the 1970s, but with the increase in demand-led schemes, the focus shifted to connections at household levels.⁵⁷²

Nevertheless, coverage in rural areas is inadequate because of demand and supply. Lack of demand arises due to the easy availability of alternate water sources that people perceive to be more reliable and safer than the State supply, prone to disconnections and non-supply.⁵⁷³ On the other hand, the lack of supply arises from the inadequate efforts of the KWA to cover informal habitats and rural areas.⁵⁷⁴

Secondly, the approach followed by KWA is demand-based, where the 'consumer' should approach for a connection by remitting all bills, implying that the State has to provide drinking water only upon a request. The schemes of KWA under CSS and IFI-supported plans are demand-based in which state water supply ends at community units. The State's duties never extended to individual households without the ability to pay for the connections. For instance, under ARWSP, in small towns and rural areas, the endpoint of 'free water' in piped water supply was community taps and water points supplied through PHED/ KWA pipelines.⁵⁷⁵ Such programmes also required individual requests with prescribed fees remitted to avail household connections. This demand-based water supply at fixed charges prevents the elderly and the economically and socially weaker sections of society to access the benefits of pipe connections in homes.

Thirdly, the inability to bear the expenses of connections and payment of bills widen the inability of beneficiaries to lead a better life. It compromised equity in coverage of piped water supply programmes. Deprived classes like the poor, Dalits, migrants and

⁵⁷¹ Dr Dipu Sukumaran, 'Challenges in Urban Drinking Water Management in Kerala: Case Study of Kochi Municipal Corporation' (KSCSTE-Centre for Water Resources Development and Management (CWRDM) 2019) 136–138.

⁵⁷² T V Ramachandra and others, 'Waterscape of Kerala - Characterisation of Surface, Well and Tap Water in All Districts' (Centre for Ecological Sciences, IISc 2013) CES Technical Report 133 49.

⁵⁷³ Fieldwork Notes. In communication with sections of people (in Alappuzha, Cherthala and Palakkad Towns and nearby village areas) without the KWA connections on query for their reasons not to avail such connections during January- March.

⁵⁷⁴ Field work Notes. In several areas of the districts, KWA water supply is inadequate. In several areas, pipes are broken or efforts are halted with potholes on roads creating accidents. The problem with coverage is influenced by bureaucratic apathy, nepotism and political hegemony. On query with regard to violation of the fundamental right to water due to inadequate State supply, many of State officials pointed that Kerala has adequate water sources and KWA has financial and technical constraints to ensure this right.

⁵⁷⁵ Field work Notes. In communication with residents of Ambedkar Colonies (Dalit Colonies) in the Alappuzha, Cherthala and in Palakkad Town between January-March, and June.

women face the brunt of this inequity without access to clean and safe drinking water, consistent water supply for drinking and domestic water uses, and proper sanitation. In Dalits colonies in Alappuzha and Palakkad, the government fixes one pipe for a couple of homes in common.

The economic burden of these people, usually daily wage workers, hinders their ability to avail themselves of individual connections, who instead resort to unsafe drinking water from polluted traditional water bodies. Lack of maintenance of pipelines and pipes in these hamlets leads to recurrent leakages, disruption in supply and the consequent pollution of supplied water.⁵⁷⁶ The situation is the same in tribal hamlets of Palakkad district, where rampant leakages in subsidies for tribal area water supply deprives many tribal homes of their allocated benefits.⁵⁷⁷

The deprivation of access to water for all basic needs has severe impacts on their lives and livelihood. Women spend their productive time fetching water from community pipes.⁵⁷⁸ The nature of subsidies granted widens this economic burden. Subsidies for BPL, SC/ST sections benefit them at the water connection applications stages but not for water bills. Uniform billing patterns follow for all water users, preventing many from accessing billed piped drinking water. This inequitable water access created by social and economic disparities impairs social and distributive justice in realising the fundamental right to water despite State interventions through subsidies.

Lastly, water supply programmes lack right based approach in implementation. The water users are consumers in the state water supply, where only statutory consumer rights apply. The application of only consumer rights to water contrasts the judiciary's approach. The absence of a rights-based approach in the water supply system has led to inconsistent water supply and inactions in recurrent pipe breaks and water leakages. In acute water shortage areas, piped water is supplied once in two or three days.⁵⁷⁹ The lack of a complaint redressal mechanism and the proper maintenance works are features of this welfare-oriented water supply without a rights-based framework.

The absence of a rights-based water supply approach in a demand-led system hinders water justice. Similarly, the lack of demand from the people due to the availability of alternate water sources also reduces the scope of expansion of the formal water supply. Hence, this demand-based approach of the State in water supply adopts a customised

⁵⁷⁶ In communication with inhabitants of Dalit colonies in Cherthala, Ambalapuzha, Ezhupunna in Alappuzha and Alathur, Chitoor and Palakkad in Palakkad.

⁵⁷⁷ In communication with tribal promoter in Attapadi dated 25th February.

⁵⁷⁸ Some of the Dalit women expressed their concerns on lack of access to water and sanitation depriving them their educational and employment opportunities.

⁵⁷⁹ M Suchitra and MP Basheer, 'Waterhunt: Going Thirsty in the Kerala Backwaters' [2015] *Down To Earth* <<https://www.downtoearth.org.in/coverage/waterhunt-15181>>.

approach where welfare orientation drives the State, and the State extends subsidies as incentives to increase coverage and induce more people to access safe drinking water.

Subsidies as incentives benefit the beneficiary only after availing individual household connections. The dual character of water supply schemes reflects here. Based on the welfare-oriented approach, subsidies are an integral part of any water scheme. However, this welfare measure benefits only after fulfilling all preconditions, thus limiting the benefits to those who could bear the expenses.

4.3.4 Overriding Quality Concerns from Groundwater Contamination: Mismanaged Sanitation and Policy Interventions

The absence of a rights-based approach in drinking water schemes relegates public health concerns. The consequences of the lack of a rights-based approach on public health are significant and crucial in the groundwater sector with inequitable benefit and burden-sharing in access and allocations. Contamination of groundwater sources like open wells from anthropogenic activities like improper sanitation facilities near water bodies throughout the State is the leading cause of water-borne diseases like diarrhoea and cholera.⁵⁸⁰ Unsanitary conditions, polluted water bodies, and water hyacinths in lakes were breeding sites for mosquitoes, carriers of lymphatic filariasis in Alappuzha that are presently under control.⁵⁸¹

E-coli bacteria contamination in drinking water in Kerala exceeds BIS standards for drinking water⁵⁸² and WHO standards⁵⁸³. Neither the KWA and GP supplied water satisfies this standard, nor is it possible to ensure the same in privately owned water sources like wells and ponds. In addition to the inability to realise the fundamental right to clean and safe drinking water, these public health issues of contaminated water violate the right to life and health. Additionally, while Alappuzha and Palakkad face

⁵⁸⁰ Mohan Ananth and others, 'Contamination of Household Open Wells in an Urban Area of Trivandrum, Kerala State, India: A Spatial Analysis of Health Risk Using Geographic Information System' (2018) 12 Environmental Health Insights 1; PU Megha and others, 'Sanitation Mapping of Groundwater Contamination in a Rural Village of India' (2015) 6 (1) Journal of Environmental Protection 41.

⁵⁸¹ C Maya, 'Five Districts Being Readied for Filariasis Elimination' *The Hindu* (Thiruvananthapuram: 6 May 2014) <<https://www.thehindu.com/news/national/kerala/five-districts-being-readied-for-filariasis-elimination/article5979900.ece>>.

⁵⁸² Bureau of Indian Standards, 'Indian Standard Drinking Water- Specification (Second Revision): IS 10500: 2012' (Bureau of Indian Standards 2012).

⁵⁸³ WHO guidelines (n 314).

water contamination by traces of nitrate from agriculture, fluoride limits exceed the permissible amount in Alappuzha.⁵⁸⁴

Reasons could be traced both to natural causes and anthropocentric water use. The public health impacts of groundwater pollution arise from unsustainable consumption patterns, including groundwater over-extraction and inadequate and improper sanitation. Groundwater contamination caused by sanitation-related problems like untreated septage, and sewage compromises public health, especially in urban areas. The proximity of drinking water sources to latrines due to high population density, unhygienic utilisation of open and dug wells, waste disposal near water bodies add to groundwater contamination.⁵⁸⁵

The sanitation mission in the country projects the race to build toilets without any attention to waste disposal techniques.⁵⁸⁶ Kerala is presently an Open Defecation Free (ODF) State since 2016, but in practice, it is not an open defecation State.⁵⁸⁷ Even though the open defecation practice continues due to the lack of toilets in informal households, improper waste management with the dumping of urban septic wastes in rural waterbodies/farms is more harmful to public health, water and food security.⁵⁸⁸ The sanitation programmes should inevitably focus on toilets and on-site sanitation technologies to ensure sustainable waste management.⁵⁸⁹

The improper implementation of sanitation subsidies also adds to the crisis. Subsidies under sanitation programmes of the central government don't reach the beneficiaries in the State because the majority of households don't avail the subsidies for toilets—the lesser the demands for subsidies, the higher the reallocation of subsidies to other

⁵⁸⁴ Central Groundwater Board, 'Ground Water Information Booklet of Alappuzha District, Kerala State' (Ministry of Water Resources, Government of India 2013).

⁵⁸⁵ Mohan Ananth and others, 'Contamination of Household Open Wells in an Urban Area of Trivandrum' (n 581) 8.

⁵⁸⁶ Sujith Koonan, 'Assessing the Realization of the Right to Sanitation in Rural Areas' in Philippe Cullet, Sujith Koonan and Lovleen Bhullar (eds), *Right to Sanitation in India: Critical Perspectives* (OUP 2019)143.

⁵⁸⁷ Press Trust of India, 'Kerala Becomes Open Defecation Free State' *Business Line* (New Delhi, 1 November 2016) <<https://www.thehindubusinessline.com/news/national/kerala-becomes-open-defecation-free-state/article9291523.ece>>.

⁵⁸⁸ Staff Reporter, 'Septage Dumping Continues in Alappuzha' *The Hindu* (Alappuzha, 28 April 2019) <<https://www.thehindu.com/news/national/kerala/septage-dumping-continues-in-alappuzha/article26974331.ece>>; TNN, 'Human Waste Disposal in Kuttanad Paddy Fields Causes Health Concern' *The Times of India* (Alappuzha, 28 February 2013) <<https://timesofindia.indiatimes.com/city/kochi/human-waste-disposal-in-kuttanad-paddy-fields-causes-health-concern/articleshow/18721564.cms>>.

⁵⁸⁹ Bhallamudi and others (n 324).

programmes.⁵⁹⁰ Consequently, the poor and marginalized urban areas remain outside the sanitation subsidies mapping, making these categories the most vulnerable to health crises.⁵⁹¹

The demand-driven approach to water supply also overrides public health concerns, despite adopting certain piecemeal efforts to address water pollution. Nevertheless, such measures do not mitigate water quality issues in project areas but widen the social divide in water access. For instance, KWA and GPs install RO plants in their coverage areas without analysing the local water sources, needs, availability, and crisis where the demand-based water supply follows.⁵⁹² The quality zones do not benefit from this coverage, whereas in installed regions, lack of proper maintenance results in a polluted water supply in RO plants forming the breeding units of mosquitoes. Water-borne diseases caused by mosquitoes are endemic to Kerala, particularly in Alappuzha, and these water supply units bear the potential of compounding such health issues.⁵⁹³

Similarly, the discriminative approach of nature and water quality supplied by KWA/GPs compounds public health concerns. KWA provides free RO water in their premises in towns and some villages on behalf of GPs.⁵⁹⁴ However, it charges water bills for individual water connections where beneficiaries raise quality issues. Additionally, inequitable water prices for water in RO plants installed in polluted areas broaden the rural-urban water divide. The vast spatial range between project areas and a high-water tariff is characteristic of rural areas. Water charges vary between INR

⁵⁹⁰ In communication with village panchayat members in Thuravoor dated 22nd January, municipal ward members in Cherthala dated 19th January. Interviewees also include people living in these localities. The elected representatives opined that in Kerala due to the culture of considering toilets as necessities of a house, every home construct toilet when the house is built. There is no separate process for building toilets with government help unless the family are very poor. The subsidies for toilets began after 2014 but majority of houses already had toilets before. This lack of demand reduced the infiltration of subsidies to beneficiaries.

⁵⁹¹ This general lack of demand from people is taken for granted and the funds are reallocated for other purposes. Consequently, the needy remains excluded from the map. On demand, if the panchayat or LSG constructs the toilets for the needy, it is considered as a welfare measure than an entitlement of the beneficiary.

⁵⁹² RO plants were seen in major towns but the perception of people now changed due to lack of maintenance of RO plants. People rely less on these plants because of the polluted water. Similarly, in rural areas like Kuttanadu, in some areas, RO plants are installed. The installations don't consider the hydrogeological, scientific and social factors into considerations. RO plants were absent in areas with acute water issues.

⁵⁹³ Interviews done with water users of RO plants in February pointed that many of them stopped rely on the plants while others rely due to lack of other water sources. Latrines or sanitation near the installations are sometimes overriding factors in determining locations of private RO plants, working for profit without quality concerns,

⁵⁹⁴ In communication with Assistant Engineer, KWA, Alappuzha Office dated 27th January.

0.50-1.00 per litre in villages.⁵⁹⁵ In urban areas, the number of RO plants sanctioned is more than quality affected rural areas, and the urban tariff is comparatively lesser than rural RO plants.

Affluent town areas receive water free of cost in RO plants attached to KWA water tanks.⁵⁹⁶ For instance, in the Alappuzha district, RO plants are installed in Alappuzha town and certain panchayats in Kuttanad. The contrast in price occurs in all these areas. Unfortunately, people who use public RO plants in public spaces are poor and cannot afford paid bottled water. Communication with KWA and Panchayat RO plants users reveals that those who cannot afford a private household mini purifier depend on these plants with the presumption and assumption that it is safe.⁵⁹⁷ Thus, demand-driven water supply, predominantly supported by groundwater sources, compounds the economic disparity and the inherent social divide in access to water, which overrides demands over rights-duties in the fundamental right to water, health and life.⁵⁹⁸

The state water laws and policies and health policies need coordination to address the issues raised by the trilogy of sanitation- groundwater contamination- health impacts. The law and policy on water and sanitation should read the interconnections between them and the effects on each other Targeting water and sanitation subsidies to beneficiaries can bring together participants in State's efforts to mitigate the public health impacts. However, a comprehensive water law that addresses these issues is essential to implementing a rights-based approach to access to water.

4.4 Subsidies for Promoting Agriculture: Water Conservation and Environmental Impacts Side-lined

The State government targets self-sufficiency in agricultural production through subsidies from CSS and top-up incentives in the local plans because access to sufficient

⁵⁹⁵ In communication with RO plant operators, panchayat members in Thakazhy, Karuvatta and Ambalappuzha dated between January and February.

⁵⁹⁶ In communication with residents of Alapuzzha and Palakkad towns between January and March.

⁵⁹⁷ Interviews with RO plant users in Alappuzha town dated 5th February.

⁵⁹⁸ The quality affected areas in Cherthala town, coastal areas of Thuravoor, Ezhupunna and Azheekal remain outside the purview of RO plants. Communication with District Panchayat officials in Alappuzha and the KWA Engineer at its district office points to the lesser demands from people or their representatives from these areas hinder installations of RO plants.

water for food is significant for small and marginal farmers who depend on sustenance farming. Since the land reforms, subsidies have been an integral part of agriculture in the State, helping farmers access water, inputs, credit and market in agriculture. Such State aid was inevitable for the farming community in the post-independence period when land reforms changed land ownership patterns and agriculture. The political and social situations with the tremendous influence of socialism and communism are the leading cause for these revolutionary land use patterns in Kerala, where there is an intrinsic link between agriculture and land reforms.⁵⁹⁹

Despite the infiltration of subsidies, the agriculture sector saw a dramatic transformation due to changes in land-use patterns. With the increase in purchasing power, the State slowly moved to consumerism and services. Conversion of agricultural lands to construction activities reduced food generation, impairing food self-sufficiency of the State and closed the options for groundwater recharge possible through seepage of rainwater.⁶⁰⁰ Kerala attempts to revitalise agriculture by devising subsidies granted by central and centrally sponsored schemes and customised state government schemes to bring back the lost agricultural tradition and increase employment and independence in food generation.

Such subsidies helped ensure social and distributive equity in groundwater access in irrigation, assure sustainable livelihood in agriculture, support self-sufficiency in food generation of the State, and food security of households. However, the State relegates the impacts of subsidies on environmental sustainability, threatened by water pollution and depletion of water sources. Environmental impacts follow subsidies because of the piecemeal and fragmented approach government departments adopt.

4.4.1 Revival of Land Productivity for Food Self Sufficiency: Unleashing the Potential of Land beyond an Investment

Agriculture is an entry in List II of Schedule VII of the Constitution upon which the states enjoy the power to make laws. Consequently, there are several state-level, local laws and schemes for agriculture in each State. Nevertheless, due to the significance and contribution of agriculture to the nation's economy, livelihood, and food security, the central government's measures in agricultural development boost the state schemes. The states implement centrally sponsored schemes (CSS), programmes envisaged by

⁵⁹⁹ John S Moolakkattu, 'Land Reforms and Peaceful Change in Kerala' (2007) 19 (1) Peace Review 87.

⁶⁰⁰ Kerala State Planning Board, 'Kerala Development Report 2021: Initiatives, Achievements, Challenges' (Kerala State Planning Board 2021) 11.

the central government with fund sharing between the centre and states.⁶⁰¹ Present agricultural schemes are mostly CSS and involve heavy subsidies as direct benefit transfers.

The State government vigorously implements subsidised CSS and State schemes to revive the lost land productivity to foster self-sufficient agricultural production because land reforms initiated in the State were not as successful as expected.⁶⁰² Though it was successful in social and distributive equity inland distribution, it failed to enhance productivity and address the State's food security demands, still contingent on imports from Andhra Pradesh and Tamil Nadu.⁶⁰³

Radical changes in land distribution patterns occurred with land reforms, and 'Land to the tiller' followed. It guaranteed land security to tillers by imposing land ceiling limits, making the Kerala land reforms the most peaceful and prosperous land reforms in Kerala.⁶⁰⁴ The reformist Land Reforms Act 1969 made strategic land ownership and use changes. Firstly, it abolished tenancy, intermediary rights over land, and landlordism and distributed land to cultivating tenants. The ownership transfer included any structures, wells, or embankments on such transferred land. Secondly, it enforced land ceiling laws to impose maximum land one can own and redistribute surplus land among the landless.⁶⁰⁵

Land reforms initiated to achieve the constitutional objective of distributive justice failed to achieve their goals and became the main reason for inequities in land ownership in the State. Land distribution empowered intermediate and small-scale tenants with land, but these reforms perpetuated injustices associated with land ownership. Land ownership was never equitable as the landlords' used loopholes in the legislation to evade land transfers.⁶⁰⁶

⁶⁰¹ BK Chaturvedi, 'Report of the Committee on Restructuring of CSS' (Planning Commission of India 2011) 3.

⁶⁰² Department of Agricultural Development & Farmers' Welfare, 'Schemes – Karshika Keralam' (*Karshika Keralam*) <<https://keralaagriculture.gov.in/category/schemes/>>.

⁶⁰³ Pulapre Balakrishnan, 'Imagining an Economy of Plenty in Kerala' (2008) 43 (20) *Economic & Political Weekly* 14, 15.

⁶⁰⁴ Moolakkattu (n 600) 88.

⁶⁰⁵ Suma Scaria, 'Revisiting Land Reforms: Kerala Experience' in Varsha Ganguly (ed), *Land Rights in India: Policies, Movements, and Challenges* (Routledge 2016) 146, 149.

⁶⁰⁶ P Radhakrishnan, 'Land Reforms in Theory and Practice: The Kerala Experience' (1981) 16 (52) *Economic & Political Weekly* A129, 135.

Many landless labourers, women, and farmers from depressed classes did not benefit.⁶⁰⁷ Neither the tiller acquired the productive land nor adequate water access.⁶⁰⁸ Access to the land being the pre-condition for exercising water rights, particularly the right to access groundwater, this inequitable and skewed land ownership patterns necessitated more support for those tillers whose grievances remained unresolved. Inability to access sufficient water also adds to social and distributive inequity.

Even after the positive externalities of land reforms continue, this distributive injustice in land ownership patterns instigates more support for the downtrodden communities to engage in agriculture. Nexus between caste and landless continues to be a feature of Kerala agricultural land patterns.⁶⁰⁹ Lack of adequate means of livelihood and loss incurred in agriculture compels the small and marginal farmers to either sell their lands for non-agricultural purposes or shift to commercial crops.⁶¹⁰ Social demography, migration, conversion of agricultural lands to non-agricultural purposes, fragmentation of landholdings, and emphasis on commercial crops like rubber significantly influenced the nature of land in the State, which now is not a 'factor of production but a 'commodity of speculative investment'.⁶¹¹ An investment approach to land sees a rise in the number of fallow lands along with a real estate boom.⁶¹²

This conversion of agricultural lands to commercial or residential uses drastically reduces food generation contributing to food stress and increasing importing of food crops.⁶¹³ The diversification of crops and the shift in cropping patterns where farmers

⁶⁰⁷ KN Nair and Vineetha Menon, 'Lease Farming in Kerala: Findings from Micro Level Studies' (2006) 41 (26) *Economic & Political Weekly* 2732, 2732.

⁶⁰⁸ Krishnan (n 411) 147–151.

⁶⁰⁹ See, KT Rammohan, 'Caste and Landlessness in Kerala: Signals from Chengara' (2008) 43 (37) *Economic & Political Weekly* 14.

⁶¹⁰ In communication with Agricultural officer, Palakkad District dated 17th February.

⁶¹¹ Suma Scaria, 'Changes in Land Relations: The Political Economy of Land Reforms in a Kerala Village' (2010) 45 (26) *Economic & Political Weekly* 191, 197.

⁶¹² Observations from the ground situation in Alappuzha and Palakkad and certain communications conducted with people who live near paddy lands also underline this.

⁶¹³ Ministry of Statistics and Programme Implementation, 'Key Indicators of Situation of Agricultural Households in India: NSS 70th Round' (Government of India 2013) 11,14. . Kerala had the least percentage share of agricultural households, in rural areas (27.3%) and 61% of agrarian households earn income from non-farming activities.

prefer commercial cash crops impacts food security and causes pollution of water resources and the atmosphere due to excessive chemical fertilisers.⁶¹⁴

The high cost of labour is another reason many abandon agriculture and convert those lands to non-agriculture purposes, which also negatively impacts water conservation like the reclamation of wells and ponds. The intrusion of trade union activities disintegrated the State's agricultural economy by compelling many to leave agriculture.⁶¹⁵ Hence, all these factors discussed above, like inequitable land distribution patterns, inequitable access to groundwater for irrigation in distributed lands, rise in labour cost, and trade union activities, are leading causes of land conversions. These factors bring more government subsidies to agriculture to continue engagement in agriculture. Subsidies ease the hardship of such inequities.

Subsidies also boost agriculture in the State to evade dependence on imports of crops. Such state aid is part of both plan and non-plan expenditure of the state budget for crop development, soil and plant health management, inputs and service delivery, agricultural extension and modernisation, bio-diversity conservation and farm management.⁶¹⁶ These schemes aim to establish sustainable farming techniques, food security, public health through healthy food and reintroduce a producer society. Furthermore, subsidies help farmers and landowners engage and improve their lands and adopt conservation patterns and measures, which would otherwise be impossible with increased labour costs.

The State provides impetus to crops like paddy in subsidies for credit, energy, inputs, pumps and market support.⁶¹⁷ Support is granted for sustainable paddy cultivation, particularly rice varieties, and promotes paddies on plain lands, two crops, and collective farming.⁶¹⁸ These schemes target small and marginal farmers who bring distributive justice to government schemes. Similarly, subsidies granted for irrigation pumps enable these farmers to access more groundwater and switch from government-

⁶¹⁴ N Karunakaran, 'Shift to Rubber Cultivation and Consequences on Environment and Food Security in Kerala' (2013) 32 (4) Journal of Rural Development 395, 396, 407.

⁶¹⁵ Many land-who presently stopped all farming activities expressed their concerns over increased trade union interventions, resulting in a decline in land productivity.

⁶¹⁶ See Agriculture Development & Farmers' Welfare Department, 'Annual Plan 2018-2019' (Government of Kerala 2018).

⁶¹⁷ Department of Agriculture and Farmers' Welfare, 'Paddy Area Development Schemes 2018-19 {2401-00-102-90 Plan}' (*Karshika Vivarsanketham Oru Viralthumbil*, 27 June 2018) <http://www.krishi.info/scheme/scheme_detail/303>. During the period of this fieldwork between December 2018- June 2019, subsidy was provided for gold loans for agriculture by majority of public sector banks. However, it was discontinued after June 2019.

⁶¹⁸ *ibid.*

supplied canal water.⁶¹⁹ Groundwater dependence allowed them to have individual access to water with flexible and personal control over time and irrigation than the bureaucratic, state-managed canal water.⁶²⁰

It also creates a situation where technology access is now socially equitable to ensure environmental sustainability by conserving water for present and future generations.⁶²¹ For instance, under State Horticultural Scheme, only small and marginal farmers receive drip irrigation, agricultural mechanisation, and solar pump subsidies.⁶²² Additionally, women benefit from subsidies in SC/ST sections through specially targeted programmes promoting household-level agriculture.⁶²³

Equitable distribution of subsidies among beneficiaries to help farming communities invest more can prevent agricultural land conversion. The adverse effects of subsidies to resource depletion and environmental sustainability are also crucial. Nevertheless, the focus remains on self-sufficiency in agricultural production and equity in groundwater access without considerable attention to environmental sustainability.

4.5 Inequities, Subsidies and Groundwater Access: Results of Non-Recognition of Rights-Duties in Water

Subsidies provided by the Central and State governments are crucial in determining equity in groundwater access. Ensuring sufficient water for food generation fosters the food security and self-sufficiency of the State. Nevertheless, political, social and economic interventions and the changes in State's role in policy decisions and their implementation restrict the scope of these subsidies' contribution to the realisation of water justice in groundwater access. Additionally, the State policies on subsidies and the water-related laws and policies never address the negative impacts on the environment created by these subsidies, which influence groundwater access.

⁶¹⁹ Krishnan (n 411) 87.

⁶²⁰ In conversation with farmers in Palakkad district, members of Grama Panchayat, Alathur village dated 19th March.

⁶²¹ 'Karshika Vivarasanketham Oru Viralthumbil' <http://krishi.info/scheme/scheme_detail/298>.

⁶²² Department of Agriculture and Farmers' Welfare, 'State Horticulture Mission 2018-19 Area Development Schemes' (*Karshika Vivarasanketham Oru Viralthumbil*, 28 June 2018) <http://www.krishi.info/scheme/scheme_detail/306>.

⁶²³ Source- Discussions with Agricultural Officer, Palakkad dated 24th March.

4.5.1 Determination of Project Coverage Areas and Beneficiaries by Political Affiliation: Overriding Rights and Water Needs

Discrimination and favouritism pervade the implementation of subsidised schemes. Caste and economic status determine the selection of implementation areas and beneficiaries of agricultural promotion plans. Discrimination occurs at the local level and in political choices in policymaking and implementation.⁶²⁴ The choice of beneficiaries in the agricultural developmental scheme depends on the ward and panchayat members' choices, leading to inequitable subsidies distributions overriding programmes' original and eligible beneficiaries, compromising the access to water for food and livelihood security of the small and marginal farmers.⁶²⁵

Politics and political choices influence the implementation of water-related schemes in drinking water schemes, extending to determining beneficiary areas and beneficiaries. For instance, Japan aided Water Supply Programme was inaugurated in 2003 by the then Chief Minister, A.K Antony, in his constituency, Cherthala, in Alappuzha District.⁶²⁶ It aimed to supply drinking water, restore existing supply schemes in urban areas of Thiruvananthapuram and Kozhikode, and build new supply schemes in rural areas of Meenad in Kollam Pattuvam in Kannur and Cherthala. The rationale for choosing these coverage areas is unclear, but the politics behind this selection is straightforward, with all these constituencies represented by the then ruling coalition.⁶²⁷

Though the State extended this programme to many other smaller towns and those adjoining these coverage areas, its coverage doesn't include the most water-stressed regions. Conspicuously, Plachimada in Palakkad saw the agitation on groundwater extraction by the Coco-Cola company during the same time, but it did not attract

⁶²⁴ Several interviewees expressed concerns over biases by government officials, municipal and local panchayat representatives. Affluent households and high castes override lower castes and economically weaker families to benefit from subsidies.

⁶²⁵ Fieldwork Notes. Here, the agricultural status of applicant doesn't matter and formalities prescribed in guidelines are not satisfied.

⁶²⁶ Press Trust of India, 'Japan-Aided Water Scheme Launched in Kerala | Thiruvananthapuram News - Times of India' *Times of India* (Cherthala, 17 August 2003) <<https://timesofindia.indiatimes.com/city/thiruvananthapuram/Japan-aided-water-scheme-launched-in-Kerala/articleshow/134758.cms>>.

⁶²⁷ Election Commission of India, 'Statistical Report on General Election, 2001 to the Legislative Assembly of Kerala' (Election Commission of India 2001) <<https://eci.gov.in/files/file/3760-kerala-2001/>>.

policymakers' attention. It is also interesting to highlight that Vypeen island in Cochin city fights for clean and safe drinking water.⁶²⁸

Similarly, government piped water supply household connections are hardly available in several tribal hamlets in Palakkad and Dalits and backward communities' hamlets in Palakkad and Alappuzha.⁶²⁹ Most of the schemes in the State adopt an individual demand-based approach. For SC/ ST communities and economically weaker sections of higher castes, economic disabilities and the inability to bear expenses for water connections deprive their chances to connect to household connections. This deprivation based on economic disparities violates the rights to equality and water by restricting the privilege of safe drinking water to those who can afford it.

The political choices and consequent discriminations in determining implementing areas also extend to water conservation activities in various panchayats. For instance, Mararikulam panchayat in the Alappuzha uses its agro-based products, coir geotextile for canal banks and farm-land and pond banks protection.⁶³⁰ These conservation activities help prevent soil leaching on banks of water bodies.⁶³¹ But, other than this coastal village, other areas of the district where soil erosion is rampant are outside the purview of this project where the determining factor for choosing the project area is political affiliation.⁶³²

Any discrimination in selecting beneficiaries and targeted outflow of benefits leads to exclusions of needy and eligible communities. For instance, subsidised gold loans for agriculture development enables farmers to access sufficient credit for irrigation and allied activities. Many banks' priority lending schemes include gold loans for

⁶²⁸ Anu Kurvilla, 'Vypeen's Never-Ending Water Woes' *The New Indian Express* (Kochi, 18 December 2019) <<https://www.newindianexpress.com/cities/kochi/2019/dec/18/vypeens-never-ending-water-woes-2077542.html>>. Interviews done with some of High Court lawyers from Vypeen who vehemently protest for their right to water dated 1st March.

⁶²⁹ In communication with Dalit families in colonies in Cherthala dated 2nd January and Tribals in Attapadi dated 16th March.

⁶³⁰ Panchayat Members of Mararikulam Grama Panchayat cite this scheme to be a panchayat implemented programme funded by the MLA funds. GP governing council and MLA represent the same political party. Whereas discussions with Soil Survey and Soil Conservation Department officials pointed it to be part of CSS schemes.

⁶³¹ Department of Soil Survey & Soil Conservation, 'Soil & Water Conservation Measures' <<http://www.keralasoils.gov.in/index.php/2016-04-27-09-26-39/soil-water-conservation-techniques>>.

⁶³² Mararikulam village is part of Alappuzha Constituency represented by ruling party. At the time of this fieldwork when this project was implemented, it was represented by the then Finance Minister of the state.

agriculture with a 4% interest subsidy where the regular rate exceeds 7%.⁶³³ Such projects have been helpful for many farmers to continue in the agriculture sector using mechanical, purchasing high-power motor pumps and other activities to sustain their livelihoods. However, big land-owning farmers and non-farming communities reap the benefits of such credit schemes.⁶³⁴

The benefits of subsidies don't penetrate to lower sections of communities whose benefits are such schemes. The beneficiaries from upper strata misuse the benefits by converting them to other non-targeted purposes to avail of these subsidies with their influential powers.⁶³⁵ Purchase of gold as a long-term investment and the possibility of its subsequent mortgage against this cheap interest loan, requirements of the limited number of documents and speedy, hassle-free loan process make subsidised agriculture loans penetrate non-farming Kerala communities.

Bank officials prioritise privileged customers and large farmers over other eligible and resourceless farmers for target attainment and business expansion. Small and marginal farmers and new farmers often face discrimination in benefit access.⁶³⁶ Large-scale misuse of this scheme led to the withdrawal of subsidies attached to this programme, but the programme continues at a higher interest rate. Withdrawal of this subsidy due to increasing misuse has jeopardised several small and marginal farmers, compelling them to pay 7 % of interest without assistance.⁶³⁷

Though social reformation in the State contributed to strengthening social justice, inequities persist. Political discriminations and choices override all other biases in access to water. Such interventions lack scientific understanding of the project area's

⁶³³ State Bank of India, 'Multi-Purpose Agricultural & Rural Banking Gold Loan Online in India' (*State Bank of India*) <<https://www.sbi.co.in/web/agri-rural/agriculture-banking/gold-loan/multi-purpose-gold-loan>> .

⁶³⁴ T Ramakrishnan, 'Crop Loans: Where "Aberrations" Are the Norm' *The Hindu* (Chennai, 8 February 2020) <<https://www.thehindu.com/news/national/tamil-nadu/crop-loans-where-aberrations-are-the-norm/article30766410.ece>>; Abhijit Lele, 'RBI Begins Probe into Diversion of Agriculture Loans' *Business Standard India* (20 July 2015) <https://www.business-standard.com/article/finance/rbi-begins-probe-into-diversion-of-agriculture-loans-115072000132_1.html>.

⁶³⁵ Personal Communications with some of beneficiaries of the scheme. Most of the interviewees did not own any agricultural land.

⁶³⁶ Communications with farmers in Alappuzha and Palakkad. They expressed concerns over misuse of such schemes whereby they are denied access to many benefits from government. Most of such farmers are small scale.

⁶³⁷ Staff Reporter, 'Withdrawal of Subsidised Agri-Loans Hits Farmers' *The Hindu* (Kozhikode, 22 May 2020) <<https://www.thehindu.com/news/national/kerala/withdrawal-of-subsidised-agri-loans-hits-farmers/article31651603.ece>>.

hydrological, social, and climatic situations.⁶³⁸ Consequent discriminations and inequities dilute objectives of welfare-oriented measures like subsidies in water whose benefits don't reach the targeted beneficiaries. Exclusions of water-stressed areas, the poor and marginalised from supply map of water schemes connotes the inequity in access to a fundamental right inevitable for life and livelihood.

4.5.2 Absence of Rights-based Approach in Drinking Water Schemes: Ambiguity in the Terminologies Adopted

Drinking water supply schemes lack a rights-based approach in framework and implementation. The recognition of the rights-duty interface in the right to water and the terminology of 'rights' and 'duties' is absent in water supply schemes. However, officials and water supply documents consistently use the 'consumer'.⁶³⁹ Consumer rights are recognised under Consumer Protection Act 1986/2019 ⁶⁴⁰, limiting the horizons of dispute redressal to statutory rights and forum only. Considering water users as consumers (statutory rights) instead of (fundamental) right holders deprives them of the benefits of fundamental rights jurisprudence on the right to water. Lack of a rights-based approach narrows the possibility of implementing the State's duty to respect, protect, and fulfil the right to water in violation.⁶⁴¹

Additionally, the nature of subsidies is also problematic. Subsidies are policy instruments granted with a welfare orientation characterised as 'benefits' targeted only to the project's beneficiaries with a spatial and temporal limitation. They are not entitlements that water users can claim. Lack of recognition of entitlement in subsidies does good for policymakers who can narrow the scope of implementing subsidies without any claims from beneficiaries and save exchequers. But the same doesn't follow human rights jurisprudence. Subsidies are helping aids for significant sections of our population to realise human rights to access basic human needs like food and water.⁶⁴² Lack of entitlements deprives them of access to these rights and basic needs without discrimination.

⁶³⁸ In communication with geologists with Groundwater Authority, Alappuzha dated 2nd February.

⁶³⁹ Kerala Water Authority (Water Supply) Regulations 1991.

⁶⁴⁰ Consumer Protection Act 2019. It replaced the 1986 version.

⁶⁴¹ Cullet, 'Right to Water in India – Plugging Conceptual and Practical Gaps' (n 78).

⁶⁴² Clarissa Brocklehurst, Jan Janssens and Pete Kolsky, 'Designing Water-Pricing Policy, Tariffs and Subsidies to Help the Poor' (2002) 21 (2) Waterlines 4.

Similarly, this approach dilutes the meaning and significance of the human right to water, where right holders are merely consumers or beneficiaries. The lack of awareness of the fundamental right to water among the general public, who only considers the water supply duty of the State but not their legal right available against the State compounds the issues. Interviewees vehemently pointed that water is essential for life, but none of them recognised it as their right and justiciable. They believe many of them have resorted to political actions like hunger strikes, petitions to government officials, or even bribes for connections than asserting their rights or approaching the judiciary for violation of their rights.

4.5.3 (Re)-centralisation of Powers in Statutory Body: Violation of Constitutional Principles of Decentralisation and Devolution of Powers

KWA is the leading implementation agency for all central, centrally sponsored schemes and world bank supported state schemes in Kerala.⁶⁴³ It also acts on behalf of local governments for water supply and management. Entrusting KWA, a statutory body responsible for water supply leads to centralising and decentralising power violations of the constitutional tenets. The constitutional provisions provide for decentralisation and devolution of powers and responsibilities of water supply and management. Jalanidhi project planned as decentralised, community managed, bottom-up approach driven water supply plan also reflects this centralisation of the authority vested in the separately created agency, KRWSSA. Yet, on ground level, it is the same KWA that manages water supply and performs the functions of KRWSSA in project areas.⁶⁴⁴

Delegation of responsibility to KWA by all agencies, elected and government, violates constitutional principles of decentralisation. Consequently, elected local governments responsible for water supply evade its responsibility, and this duty violation is an infringement of fundamental rights. Conversations with KWA officials, panchayat and municipal elected members confirm this centralisation. This decentralisation of powers in KWA eases water supply and management for other institutions responsible for water. The same water collected from various KWA water sources is supplied under different schemes, turning us to think on- 'old wine in new bottle'.

⁶⁴³ See for example: Kerala Water Authority, 'AMRUT – KWA' (*Kerala Water Authority- AMRUT Schemes*) <<https://kwa.kerala.gov.in/amrut/>>.

⁶⁴⁴ In communication with KWA Chief Engineer, Palakkad dated 18th March.

4.5.4 Grandfathering (In)justices in Groundwater Access: Law and Policy Widening the Gaps

Groundwater development in Kerala is average, with monsoons and reliance on surface water allowing groundwater recharge.⁶⁴⁵ The restricted application of the green revolution only in northern India also contributed to this situation. Therefore, these situations demand a customised approach in Kerala's groundwater legislation to address local water management and protection.

Factors like political influence in policy framing, corruption, nepotism, and favouritism of officials and concentration of authority in KWA are root causes for perpetuating injustice in access to groundwater-related water schemes and subsidies in Kerala. Water law and policy broadens the inequities created by these political, socio-economic factors in implementing water supply and agricultural development schemes.

Firstly, the Kerala Ground Water (Control and Regulation) Act, 2002, is inadequate and unsuitable to address the current hydrogeological, climatic, social and economic conditions. Water availability dynamics and water use patterns driven by social, cultural, and hydrological conditions are different from other Indian states. The State's intraregional water distribution varies between hill areas, plains, to coastal zones based on the rainfall, climatic variations, and aquifer distributions. Hydrogeologists in the State disagreed with provisions of existing legislation, pointing to its inefficiency in addressing specific local groundwater issues.⁶⁴⁶ Aquifer distribution in Kerala is not uniform, due to which even the local areas in the same taluk differ in water availability and face different quality and quantity issues.⁶⁴⁷

Secondly, the groundwater law fails to address both social and hydrogeological local issues of the State. It establishes groundwater authority and permit-licence for groundwater extraction in notified areas where extraction levels exceed safe limits. In Kerala, groundwater development is within safe limits, but quality deterioration expands across all aquifer systems.⁶⁴⁸ This law is merely a copy of draft legislation intended to address the growing exploitation of aquifers in North India after the green Revolution. The draft Model lawsuits alluvial belts' water conditions without adequately addressing coastal or peninsular water concerns.

⁶⁴⁵ Varma, 'Groundwater Resource and Governance in Kerala' (n 498) 118.

⁶⁴⁶ In communication with hydrogeologists at District and State Groundwater Authorities in January.

⁶⁴⁷ Groundwater Board, 'Aquifer System of Kerala' (n 110).

⁶⁴⁸ P. Nandakumaran and K. Balakrishnan, 'Groundwater Quality Variations in Precambrian Hard Rock Aquifers: A Case Study from Kerala, India' (2019) *Applied Water Science* 1.

Thirdly, water-related laws and policies do not consider the land use patterns, population density, and social and environmental conditions influencing water access and allocations. For instance, waterlogging, land subsidence, seawater intrusions in coastal zones and low-lying areas like Kuttanad, fluoride contamination, sand mining in river beds, increasing deforestation, open sewage contamination in densely populated urban areas and dumping of plastics in water bodies are some of the unique challenges of this State.⁶⁴⁹

Fourthly, water inequities created by groundwater pollution lacks attention from policymakers, including the acute problem of sanitation-related contamination and non-industrial water pollution. Untreated disposal of waste materials in water bodies is increasing in the State with people switching to piped water and rising consumerism in the State. Increasing groundwater contamination due to unsustainable water management in the State enhances public health concerns because drinking water in the State has traces of excess fluoride, iron, and other elements, causing severe health concerns, severely affecting the poorer sections.

Interestingly, the public health concerns of contaminated water remain unaddressed in State's water law, although the State's water policy argues for it. The State Water Policy 2008 calls for equitable, sustainable, and productive water resources management to 'ensure public health, promote growth, and minimise water imbalance'.⁶⁵⁰ Current legislation also overlooks the risk of contaminated groundwater to the human right to water and water for food. Consequently, water and food security for small and marginalised farming communities remain unaddressed.

Fourthly, there is a massive gap between the law and law implementation. Lack of implementing power for groundwater authority contributes to this gap.⁶⁵¹ The Authority is responsible for notifying any groundwater over the exploited area.⁶⁵² In Kerala, where no areas are yet overexploited (though some are semi-critical), authority remains a typical government office and focuses only on awareness generation through seminars and talks. This legal lacunae in the power of groundwater authority create hurdles in adopting preventive and precautionary approaches to address the expanding groundwater pollution and deterioration in the State.

⁶⁴⁹ These problems are not uniform throughout the State. Each area differs but the law being uniform, the implementing agencies do not consider these local issues.

⁶⁵⁰ Kerala State Water Policy 2008.

⁶⁵¹ This has been asserted by Groundwater Authority Officials during the conversation. It is pointed that despite suggestions from groundwater authority for groundwater management, current legislation deprives them the authority to enforce their suggestions.

⁶⁵² Kerala Groundwater (Control and Regulation) Act 2002 ss 6, 7.

Similarly, fragmented approaches of law implementation without coordination with other water laws also broaden groundwater depletion issues. Pollution control boards mandated under pollution laws and the KWA water supply act in isolation without any coordination to examine the quality of supplied water. Gaps in law and its implementation cannot address social and distributive inequity concerns in groundwater and subsidies access. Climate change impacts on groundwater complicate water justice concerns. It is inevitable to re-examine the existing groundwater legislation from a water justice perspective with an adequate focus on social, cultural, climatic, and hydrogeological contexts. This re-examination is necessary to ensure the human right to water for all and promote agricultural development in the State through self-sufficiency in food generation.

4.6 Summary

Subsidies form an inevitable part of Kerala's drinking water supply and agricultural development programmes. The State promotes agrarian activities through subsidies to induce more participation and engagement in farming, revitalize the lost agricultural tradition and reduce food crops imports from neighboring states. This support to agriculture arises from the welfarist attitude of the State, which also extended to drinking water supply schemes until the influence of neoliberalism, promoted by external financial agencies. However, despite the change in the State's role in drinking water with the impact of IFIs, the subsidies remain an essential part of drinking water schemes in the State, considering its necessity for millions to ensure their drinking water. The subsidies, thus, try to ensure social and distributive equity in groundwater access and allocation for drinking and water for food.

Nevertheless, these government subsidies don't consider the negative externalities on social and distributive equity, public health and environmental sustainability. The ultimate goal of subsidies is to address anthropocentric water demands assuring inclusive and equitable water access. Factors like political interventions and socio-economic discriminations determine the beneficiaries and implementation of schemes that compromise the positive externalities of subsidies. State's inadequate and inappropriate groundwater law compounds inequities, demanding a comprehensive intervention in regulation to incorporate local hydrogeological, social and political elements influencing water access.

Chapter 5

Positive Externalities of Subsidies and Groundwater Conservation in Rajasthan: Reflections of Anthropocentric Bias and Less Ecological Sustainability

5.1 Introduction

The positive impacts of subsidies on groundwater access and allocations include their positive externalities on water conservation through participatory groundwater recharge measures.⁶⁵³ Such conservation measures augment the State's efforts to enhance groundwater availability for realising the right to water and water for food and ensure equity, inclusiveness and sustainability among these different water users and use. The State of Rajasthan, an arid state in the north-western part of India, provides a glimpse of the contribution of water conservation measures aided by the water-related subsidies to the right to water and ensuring equity and inclusiveness in water access.⁶⁵⁴ These efforts significantly address scarcity and the inequitable benefits sharing of groundwater access determined by skewed land ownership, caste, gender and economic status.⁶⁵⁵ The actions of non-governmental organisations and schemes of local self-government also supplement these top-down measures envisaged by various governments.

⁶⁵³ National Rainfed Area Authority, 'Common Guidelines for Watershed Development Projects' (Planning Commission of India, 2011).

⁶⁵⁴ IANS, 'Rajasthan No.1 in Water Conservation: NITI Ayog' *Business Standard India* (20 June 2018) <https://www.business-standard.com/article/news-ians/rajasthan-no-1-in-water-conservation-niti-ayog-118062000279_1.html>.

⁶⁵⁵ As per the census 2011 data, the sex ratio in Rajasthan is 1000: 928 which improved to 1000: 967 in 2013-15. See 'Census of India Website : Office of the Registrar General & Census Commissioner, India' <<http://censusindia.gov.in/>>; NITI Aayog, 'Sex Ratio (Females/ 1000 Males) | NITI Aayog' (*NITI Aayog*) <<https://www.niti.gov.in/content/sex-ratio-females-1000-males>> .

Water conservation, protection, and perseveration efforts in Rajasthan augment groundwater recharge to balance the extraction rate, with reflections on social and distributive justice in groundwater access. Nevertheless, two key observations arise amid this significant contribution of the State in implementing water conservation schemes. First, the State lags in the drinking water supply⁶⁵⁶ even though the conservation efforts aim to ensure adequate water supply. The inequitable groundwater access determined by social and economic factors contributes to this water supply issue and widens the problems in accessing the benefits of groundwater and the subsidies. The second observation highlights the anthropocentric bias in these conservation schemes where the focus is on supply sustainability for human water use without emphasis on source sustainability and ecological justice dimension in water governance.

This chapter explores the positive externalities of subsidies that supported conservation measures based on these two observations. Firstly, it explores the inequitable groundwater access in Rajasthan, including the case of formal water supply and the factors that trigger these inequities despite several successful water supply and conservation attempts. Secondly, it explores the anthropocentric water conservation measures adopted by the State and non-state actors, including community and NGOs, that override environmental sustainability. The chapter argues that despite the participatory conservation efforts supported by subsidies promoting groundwater recharge and protection, its anthropocentric bias and neglect of environmental sustainability widen the inherent social and economic divide in access to groundwater and subsidies.

The first section of this chapter describes the groundwater situation in Rajasthan and examines the factors that influence this situation, including subsidies and socio-economic conditions that widen the inequity in access and allocations. Despite the disparities and negative externalities caused by subsidies, its positive externalities include State-initiated conservation schemes that have crucially influenced the approach of beneficiaries to groundwater recharge. The second section analyses the positive impacts of these subsidies led interventions bringing more public participation in water conservation. It also briefly provides a glimpse of the parallel efforts of the community initiatives in water conservation with voluntary public involvement on a community spirit deviating from individual focused State efforts. The final section wraps with the arguments on the need to move beyond the anthropocentric focus in these conservation schemes to address the arid State's inherent water scarcity and ecological sustainability.

⁶⁵⁶ Rakesh Mohan Chaturvedi, 'NITI Aayog Report: Rajasthan Ranks Low on Drinking Water for Villages' *The Economic Times* (16 June 2018) <<https://economictimes.indiatimes.com/news/politics-and-nation/niti-aayog-report-rajasthan-ranks-low-on-drinking-water-for-villages/articleshow/64615150.cms>>.

5.2 Groundwater Exploitation in Rajasthan: Contextualising Factors and Situations

Groundwater is the primary source of drinking and irrigation in Rajasthan.⁶⁵⁷ Despite covering 10.4% of India's land area, Rajasthan, the largest state in India, has minimal surface water resources, constituting only 1.2% of its overall water availability.⁶⁵⁸ Wells, canals and tubewells are significant sources of irrigation in the State, but per capita, water availability in the Rajasthan is minimal, with only 780 cubic meters.⁶⁵⁹

This geographically vast State experiences climatic and hydrological variability, making it the most water-stressed State where the Aravalli Hills forms the water divide between arid and semi-arid regions. This hydrological and climatic variability that determines water availability, use patterns and exploitation levels is a challenge to adopt uniform practices of groundwater regulation in the State.

Determinants including property rights, caste and gender influence groundwater access, more complicated by interactions of power and politics, leading to exclusions in access and allocations. The influence of these factors on access to government welfare schemes like subsidised water supply, agriculture development programmes, and water conservation schemes is also crucial to unpack the social and distributive inequities in groundwater access.

5.2.1 Groundwater Dependent Water Use: Extraction overrides Recharge and Impacts Side-lined

The groundwater supports more than 90% of drinking water and 70% of irrigation in Rajasthan and acts as a reliable water resource for increasing industrial demands.⁶⁶⁰ It is the backbone of rural water supply schemes, usually a composite of different plans comprising 'piped and tank schemes, regional schemes, traditional source schemes or the State schemes like Janta Jal Yojana(JJY)' with the subsidy in all drinking water

⁶⁵⁷ MS Rathore, 'Natural Resource Use: Environmental Implications' in Vijay S Vyas and others (eds), *Rajasthan: The Quest for Sustainable Development* (Academic Foundation 2007) 37, 56.

⁶⁵⁸ Planning Commission of India, *Rajasthan Development Report* (Academic Foundation 2006) 39.

⁶⁵⁹ Rajasthan State Water Policy 2010.

⁶⁶⁰ MS Rathore, *Groundwater Exploration and Augmentation Efforts in Rajasthan - A Review* (Institute of Development Studies 2003) 3.

schemes exceeding 76 % of total recurrent costs involved.⁶⁶¹ It also meets the urban water demands. The State water supply relying on groundwater skews towards urban areas where more than 60 % have access to tap water while only 19% of rural households enjoy the water at the tap heads.⁶⁶²

Irrigation in the State is also heavily groundwater dependent. The conspicuous absence of large surface water irrigation schemes and factors like erratic rainfall, high evaporation rate due to hot and dry climatic conditions, and frequent droughts increase water demands with subsequent reliance on groundwater.⁶⁶³

The heavy reliance on groundwater and unsustainable extraction patterns results in over-exploitation in several blocks. The central Groundwater Board categorised 140 zones among 236 blocks as overexploited where the stage of development exceeds 100 per cent, 50 as critical and 14 as semi-critical, with the stage of groundwater extraction in the whole State reaching 125 %.⁶⁶⁴

The groundwater exploitation and consequent plummeting of the water table have significantly risked its quality and quantity. Fluoride contamination is prevalent in all state districts, with more than 10% of villages having excessive fluoride contents in drinking water—aquifers in areas where fluoride bearing minerals in rocks have elements of fluoride in groundwater.⁶⁶⁵ Though geological, hydrological, and other natural factors have contributed to groundwater fluoride accumulation, this is more aggravated by fertiliser and pesticide-intensive agricultural practices.⁶⁶⁶

Eastern parts of the State where due to permeable rocks, water quality and quantity is better than other rainfall deficient and hard-rock areas constitute the most groundwater-dependent and most exploited areas.⁶⁶⁷ However, these greener areas and their water

⁶⁶¹ Planning Commission, 'Rajasthan Development Report' (n 658) 50.

⁶⁶² NSS Report No.584 (n 506) 63.

⁶⁶³ M. Dinesh Kumar, VK Srinivasu, Nitin Bassi, Kairav Trivedi and Manoj Kumar Sharma, 'Groundwater Management in Rajasthan: Identifying Local Management Actions' (Institute for Resource Analysis and Policy 2009).

⁶⁶⁴ Central Groundwater Board, 'State Profile: Ground Water Scenario of Rajasthan' <http://cgwb.gov.in/gw_profiles/st_Rajasthan.htm>.

⁶⁶⁵ W. W Wenzel and W.E. H Blum, 'Fluoride Speciation and Mobility in Fluoride Contaminated Soils and Minerals' [1992] 153 Soil Sci 357.

⁶⁶⁶ C.Vikas, R.K Kushwaha and M.K Pandit, 'Hydrochemical Status of Groundwater in District Ajmer[NW India] with Reference to Fluoride Distribution [2009] 73 Journal of Geological Society of India 773, 779.

⁶⁶⁷ Planning Commission, 'Rajasthan Development Report' (n 658) 67.

scarcity issues did not receive significant attention from policymakers and scholars who significantly turned the attention to water scarcity in dry regions of the northwest Rajasthan.⁶⁶⁸ For instance, the groundwater pollution caused by mineral extraction industries like copper mines of Khetri in the Jhunjhunu district has contaminated the environment, including soil and water.⁶⁶⁹ Khetri block is categorised as 'over exploited' with an extraction rate of more than 200%, irrigation being a significant user of groundwater with 9.1164 MCM when available groundwater is only 5.0267 MCM.⁶⁷⁰ The quality issues of water pollution in these mines and its consequences on public health did not attract adequate policy attention.⁶⁷¹

5.2.2 Conditionality of Land Ownership and Bias towards Upper Castes: Limiting the Scope of Groundwater Access and Subsidies Benefits

Subsidised schemes for drinking water and agricultural promotion target women, SC/ST, small and marginal farmers to enhance inclusiveness in the distribution of government aid. However, the social discriminations based on caste and gender and the policy guidelines of prescribed land ownership requirements restrict the scope of access to groundwater and subsidies to landowning upper-caste men.

There is closer interaction between caste, gender and patriarchy in the Rajasthani society, which play a crucial role in social and political life. Contemplations on interactions of caste factor with land and water are perplexing problems that restrict the realisation of many fundamental rights of citizens and restrict the economic and social development in society

Historically, the societal division into different castes and consequent 'ritualistic purity and pollution' differentiated even water bodies demarked for 'pure upper-caste Hindu' from 'polluted low castes' who cannot drink water from each other's wells or accept

⁶⁶⁸ Chandni Singh, Henny Osbahr and Peter Dorward, 'The Implications of Rural Perceptions of Water Scarcity on Differential Adaptation Behaviour in Rajasthan, India' (2018) 18 *Regional Environmental Change* 2417, 2420.

⁶⁶⁹ Anita Punia, N Siva Siddaiah and Saurabh K Singh, 'Source and Assessment of Metal Pollution at Khetri Copper Mine Tailings and Neighboring Soils, Rajasthan, India' (2017) 99 (5) *Bulletin of Environmental Contamination and Toxicology* 633.

⁶⁷⁰ CGWB, 'Report on Aquifer Mapping and Groundwater Management, Jhunjhunu District, Rajasthan' (Ministry of Water Resources, River Development and Ganga Rejuvenation Government of India 2017).

⁶⁷¹ In personal communication with villages in Rajota Village in Khetri Block, Sarpanch and the Junior Engineer PHED dated between 20th -26th April.

food from lower communities.⁶⁷² These divisions based on caste equations and hierarchies influence land ownership and access to water in the State. Thus, caste determinations in water pervade the access, allocations, and water distribution in irrigation and drinking water.

S Cs, which constitutes 17.8% of the State's total population, ⁶⁷³ face adverse social and economic differentiations. In rural areas, the caste differences in access to drinking water sources are rampant, where different caste hamlets connect to separate tubewells or community taps.⁶⁷⁴ Urban areas also practice discrimination in water access. Upper caste families in Jhunjhunu, Alwar, and Jaipur neither allow lower caste members to access their private wells nor share the household spaces. The concept of purity and pollution predominates here.⁶⁷⁵

These interactions between caste and water also determine exclusions and inclusions in water management and access to subsidies. The community-led water management envisaged under various schemes promoted with strong decentralisation drive to empower local self-governments, intended to customise the water supply and management and ensure equity and inclusiveness among water users. However, it has only strengthened upper-caste men's leadership and the concentration of control over the structure, access, allocation and management in such men, in apparent deviation from constitutional principles of decentralisation, equality and justice.⁶⁷⁶

Decentralisation and community participation in water management is also not inclusive because sometimes, it compels socially and economically backward communities to contribute to the scheme irrespective of their economic status.⁶⁷⁷ Exclusions of lower caste communities like Dalits in access and control of these water schemes due to the pre-condition of payment are in contrast to devolution of powers

⁶⁷² See for example, Stanley A. Freed, 'Caste Ranking and the Exchange of Food and Water in a North Indian Village' (1970) 43 (1) *Anthropological Quarterly* 1.

⁶⁷³ Directorate of Census Operations Rajasthan, 'Rajasthan Population Enumerations-2011 Data: Scheduled Castes and Scheduled Tribes Population' (Government of India 2011).

⁶⁷⁴ It was seen in villages across districts of Jhunjhunu and Alwar and substantiated by personal communication with some of villagers in Chirawa and Khetri of Jhunjhunu.

⁶⁷⁵ In communication with some families belonging to Brahmin and other upper castes in these towns during fieldwork dated between May-June.

⁶⁷⁶ O'Reilly and Dhanju, 'Public taps and private connections' (n 113).

⁶⁷⁷ Preeti Sampat, 'Swajaldhara or 'Pay'-Jal-Dhara: Right to Drinking Water in Rajasthan' (2007) 42 (52) *Economic & Political Weekly* 102, 106–107.

and realisation of equity and accountability in participation.⁶⁷⁸ Moreover, lower caste people maintain silence in these districts' water user associations and water committees.⁶⁷⁹

Social differences and economic subjugations never receive adequate attention in implementing these subsidised schemes.⁶⁸⁰ The impacts of these subjugations are crucial for lower caste women in groundwater access who face twin problems- water scarcity and social discrimination in water access.⁶⁸¹

Caste differences and discriminations in access and allocations of groundwater extend to access to subsidies in irrigation where land ownership is a determining factor. In Alwar and Jhunjhunu, land ownership and irrigation wells follow caste hierarchies. Affluent upper-caste male farmers in critical groundwater zones own sophisticated tubewells and maintain informal groundwater markets where the primary customers are small and marginal farmers, socially backward communities and women farmers.⁶⁸² In these local water markets, spatial proximity between fields and social relationships between farmers determine water allocation.⁶⁸³

Contemplations on interactions of caste factor with land and water are perplexing problems that restrict the realisation of many fundamental rights of citizens, mainly lower caste and the women and curtail the economic and social development in society. Land ownership that determines and controls access to groundwater create specific impacts on women farmers.⁶⁸⁴ The subjugation of women in property rights is common

⁶⁷⁸ NC Narayanan and Lalitha Kamath, 'Rural Water Access: Governance and Contestation in a Semi-Arid Watershed in Udaipur, Rajasthan' (2012) 47(4) Economic & Political Weekly 65, 66.

⁶⁷⁹ Interviews conducted with some Dalits and Tribal families in Khetri and Jhunjhunu in April.

⁶⁸⁰ Personal communications with beneficiaries of JJY and PHED officials, in Jaipur and Districts of Jhunjhunu and Alwar. Some Dalit households particularly farm workers and women stated about the payment for water and they were unaware of government subsidies. In some villages, they said NGOs help them to get water provided they do some contributions in the form of labour in the construction of water tanks or laying of pipelines. PHED officials repeatedly stressed the benefits attached with government schemes for BPL and SC/ST families. The unavailability of many subsidies to SC/ST and BPL by leakage was also shared by some NGOs and activists.

⁶⁸¹ In communication with women of scheduled caste communities in Reini Alwar, and Chirawa, Jhunjhunu.

⁶⁸² In communication with some NGOs who explained the inequality faced by small and marginal farmers in groundwater access due to lack of financial and technological resources and compelled to rely on rich farmers for water.

⁶⁸³ Narayanan and Kamath (n 679).

⁶⁸⁴ Deepa Joshi and Ben Fawcett, 'The Role of Water in an Unequal Social Order in India' in Anne Coles and Tina Wallace (eds), *Gender, Water and Development* (BERG 2005) 39, 49.

despite being the most robust workforce in agriculture. Land ownership patterns in Rajasthan influenced by patriarchy skew towards the upper caste and the men. Patriarchy in the society deprived women of the right to own land, restricting them as silent contributors to farm labour. The situation of lower caste women who constitute the major agricultural labour force is worse than in other communities.⁶⁸⁵

Any struggle for gender rights on the land is for resource access and a fight for women's rights and identity.⁶⁸⁶ Women belonging to upper caste landowning families and the lower caste women labourers stated that their lands or lands upon which they work belong to men. In several cases, women forfeited their rights over land to male family members before marriage. In matrimonial homes, the status quo of these women does not change as the land is either owned by husband or son—the male members of the family act as caretakers of widow's land. Lack of awareness of land rights and amendments in succession laws have contributed to these inequitable land ownership patterns.⁶⁸⁷

Land rights and the resulting access to state support like subsidies can help the women farmers of any caste economically independent and financially stable. Nevertheless, only limited sections of society, particularly women from some upper castes, enjoy these benefits derived through the interaction of land reforms, educational upliftment and social dynamics.⁶⁸⁸ Women from lower sections face water and government aid discrimination, like subsidies access, due to inherent bias in land ownership.⁶⁸⁹

The absence of land ownership deprives them of groundwater access, regulated by land ownership. The same is the primary factor for access to government subsidies in agriculture, and the situation leads to deprivation of groundwater and subsidies to women farmers, particularly widows, compelling them to depend more on informal water markets.

⁶⁸⁵ Census data shows that more than 43.5 percent of women agricultural labourers belong to STs, 28.3% to Scheduled Caste and only 22.7 % belong to other communities.

⁶⁸⁶ Bina Agarwal, *A Field of One's Own: Gender and Land Rights in South Asia* (CUP 1994) 421.

⁶⁸⁷ Some of them who have heard about the laws and rights, expressed their inability to challenge the feudal patriarchal family set up.

⁶⁸⁸ In communication with some women of affluent families belonging to upper caste highlighted that due to education they gained, they now own some tracts of land even though majority of land belongs to male members.

⁶⁸⁹ Itishree Pattnaik and others, 'The Feminization of Agriculture or the Feminization of Agrarian Distress? Tracking the Trajectory of Women in Agriculture in India' (2018) 23 (1) *Journal of the Asia Pacific Economy* 138, 146.

Perpetuation of land-based inequities occurs despite the State's efforts to promote land ownership to women by subsidising registration fees.⁶⁹⁰ However, in some other instances, the government policy of supporting registration fees for land transfer favouring women brought specific changes as some of its beneficiaries shared while Benami transactions surged.⁶⁹¹ Technically, the number of transactions with women being landowners rose. Nevertheless, those transactions did not mean to vest ownership in women but to misuse the subsidies and the benefit accrued to male members. Thus, subsidies fail to achieve their purpose of women empowerment and equality in land ownership but extenuate inequality and male domination.

Despite policy changes and laws for women's rights over land, the cause of such unequal possession and ownership is patriarchal social webs that pervades all religions and castes in Rajasthan.⁶⁹² Hence, the existing land-water nexus that subjugates lower castes and women in availing benefits attached to land rights prevents them from accessing all government support to address their economic dependency, poverty eradication, and empowerment.

Social differences in land ownership patterns control patterns in determining beneficiaries of agricultural subsidies. Consequently, the subsidies benefit more to these landowning upper caste farmers.⁶⁹³ Land factor in access to groundwater and the subsidies hinders social and distributive equity in groundwater and the subsidies access, poverty eradication and addressing rural unemployment. The government support to groundwater-based irrigation and crop diversification contributed to the over-exploitation of groundwater and added to the inherent social inequity of discrimination in water access.⁶⁹⁴

The closer interaction between land and government subsidies is evident in programme guidelines of all agricultural schemes, where the primary criteria for such benefits are land ownership. The land is the central condition to avail state government subsidies in agriculture that spread across energy, irrigation, inputs, implements, credit, insurance,

⁶⁹⁰ Planning Commission, 'Rajasthan Development Report' (n 658).

⁶⁹¹ In communication with Programmes Director, ARAVALI (Association for Rural Advancement through Voluntary Action and Local Involvement) Jaipur dated 25th April.

⁶⁹² Kanchan Mathur, 'Persisting Inequalities: Gender and Land Rights in Rajasthan' (2016) IDSJ Working Paper 175 13.

⁶⁹³ In communication with some small and marginal farmers, farm labourers, and women it is understood that they are side-lined in delivering the benefits of subsidies. Some even faced discrimination from officers in charge on the basis of caste and economic status.

⁶⁹⁴ Vidya Sagar, 'Agricultural Development: Issues and Approaches' in Vijay S Vyas and others (eds), *Rajasthan: The Quest for Sustainable Development* (Academic Foundation 2007) 2015, 207, 221.

and organic farming.⁶⁹⁵ For some schemes, the minimum land ownership criteria exclude tenant farmers, leaseholders and women who do not own land from accessing these benefits, but the minimum land requirement is beneficial for small and marginal farmers.

Some centrally sponsored schemes, including water management and organic farming, also has land pre-conditions. The land measurements differ in each programme to make it more inclusive and equitable. Irrigation support subsidies like the construction of farm ponds under the RKVY requires the beneficiary to own a minimum of 0.5 hectares of cultivable land to access the subsidies, including the top-up contributions granted by the state government.⁶⁹⁶ In contrast, the land measurement for subsidies under the organic farming scheme of PMKSY varies between 0.4 and 1.0 hectares.⁶⁹⁷ PMKSY adopts a cluster approach of integrating small and marginal farmers to promote eco-friendly low-cost technology to shift from chemical fertilisers.⁶⁹⁸

Schemes like RKVY, NFSM and NMOOP also benefit those who own land and pump sets. These schemes include subsidies for irrigation pipelines⁶⁹⁹, pump sets,⁷⁰⁰ borewells,⁷⁰¹ linings of tanks or ponds or installing tubewells⁷⁰² to ensure equitable access to enough water quality in the farmlands and water access mechanisms.⁷⁰³ However, many of these schemes do not fix the land measurement in land criteria. For

⁶⁹⁵ Department of Agriculture, 'Facilities for Farmers' (*Department of Agriculture, Government of Rajasthan*) <<http://www.agriculture.rajasthan.gov.in/content/agriculture/en/Agriculture-Department-dep/farmer-facilities/facilities-for-farmers.html>>.

⁶⁹⁶ Ministry of Agriculture Cooperation and Farmers Welfare, 'Rashtriya Krishi Vikas Yojana (Raftaar)' (*RKVY*) <<https://rkvy.nic.in/>>.

⁶⁹⁷ Department of Agriculture & Farmers' Welfare, 'Pradhan Mantri Krishi Sinchayee Yojana' (*PMKSY*) <<https://pmksy.gov.in/>>.

⁶⁹⁸ Department of Agriculture, 'Organic Farming' (*Department of Agriculture, Government of Rajasthan*) <<http://www.agriculture.rajasthan.gov.in/content/agriculture/en/Agriculture-Department-dep/farmer-facilities/facilities-for-farmers/organic-farming.html>>.

⁶⁹⁹ Under NFSM, half of the cost for pipe lines is subsidised for maximum 600 metres of pipe line.

⁷⁰⁰ 50 percent of funds or 10000 INR for pump-sets up to 10HP is subsidised under NFSM.

⁷⁰¹ Half of the cost involved up to 25000 INR per unit under NMOOP.

⁷⁰² NMSA subsidises funds for linings of tanks or ponds constructed under MNREGA and construction of tubewells along with funds for installation of water lifting devices either run by diesel, electricity or solar power.

⁷⁰³ Department of Agriculture & Cooperation, 'Pattern of Assistance in Various Schemes of Dept. of Agriculture & Cooperation, Min. of Agriculture, Govt. of India' (*Ministry of Agriculture and Farmers Welfare*) <<http://rkvy.nic.in/static/schemes/WaterHarvestingIrrigation.html>>.

instance, NFSM, NMOOP, and Sub Mission on Agricultural Mechanism promote the mechanisation of agriculture and improve production by subsidising 50 % of funds for all landowning farmers. Nevertheless, these schemes target women, SC/ ST farmers, small, marginal and semi- medium farmers and BPL families to purchase approved agricultural implements from recognised agents.⁷⁰⁴

The idea of incentivising all 'landowning farmers' in some schemes or targeting specific farming communities with minimal land help small and marginal farmers to access the benefits of subsidies. However, as the primary factor for all subsidies, land ownership is the major contributing factor for excluding several sections from government welfare schemes. Women and lower caste members face discrimination, and lower caste women are the worst affected. Such sections do not accrue the benefits of subsidies targeted to them for many reasons like lack of awareness of benefits, implementation leakages including intermediaries and their commission despite present-day direct benefit transfer schemes and accrual of subsidies in farmers' bank accounts.⁷⁰⁵ Some beneficiaries have also shared bribes and commissions for government officers to sanction small-scale farmers subsidies to these programmes, while many wealthy large-scale farmers found it easier to avail such benefits.

Even in a very minimal area, land ownership as the criteria for subsidies has raised several concerns of exclusions. Firstly, as pointed here, discrimination towards small and marginal farmers and women, who are the most vulnerable and most deserving categories for government support, is rampant in implementation. Secondly, preference over large-scale landowning communities, preferably upper caste, in the distribution of subsidies has diluted the distributive equity and affirmative justice protected by Part III of the Constitution. Lastly, like the existing land-water nexus in groundwater that confines landowners' access to water, the subsidies-land nexus also impedes many farmers like leaseholds, tenants, and women farm labourers from accessing benefits.

⁷⁰⁴ Ministry of Agriculture and Farmer's Welfare, 'NFSM: National Food Security Mission' (*National Food Security Mission*) <<https://www.nfsm.gov.in/>>; Department of Agriculture, 'Agri Implements' (*Department of Agriculture, Government of Rajasthan*) <<http://www.agriculture.rajasthan.gov.in/content/agriculture/en/Agriculture-Department-dep/farmer-facilities/facilities-for-farmers/agri-implements.html>>; Ministry of Agriculture and Farmer's Welfare, 'National Mission on Oilseeds and Oil Palm (NMOOP)' (*National Mission on Oilseeds and Oil Palm*) <<http://nmoop.gov.in/Default.aspx>>; Ministry of Agriculture and Farmers' Welfare, 'Sub-Mission on Agricultural Mechanisation Operational Guidelines (Twelfth Five Year Plan)' (2014) <<https://agrimachinery.nic.in/Files/Guidelines/smam.pdf>>.

⁷⁰⁵ Field work notes. Though many have opened bank accounts to access the benefits of targeted subsidies under several social welfare schemes after Aadhar and the bank accounts turned mandatory for subsidies, yet many, particularly women do not know the operations of digital platforms including ATMs. They rely on cash, and the brokers and intermediaries engage in fraudulent activities of misusing the subsidies received. Some of the interviewees were not aware of the subsidies they receive in agriculture because of limited amount handover to them by these agents after deducting their commissions.

5.2.3 Ability to Pay as Pre-condition: The Series of Exclusions in Access to Water and Subsidies

Affordability to pay for water is the pre-condition for accessing the drinking water after neoliberal water governance, infringing the rights of several million to realise their fundamental right to water. The unaffordability of people to pay for water also limits the scope of the State in its efforts to ensure coverage of drinking water supply schemes. Despite the subsidies in water supply schemes, the price attached to water supply restricts the scope of water delivery. It compromises distributive equity and social justice in water allocations as a significant portion of the population who cannot afford it remains excluded.

Rural areas largely depend on hand pumps and borewells even though groundwater based piped water supply benefitted many villages.⁷⁰⁶ The State attempts to include more villages to piped drinking water supply maps by extending subsidies or incentives to households.⁷⁰⁷ PHED and local self-government-led drinking water supply schemes include heavy subsidies for connection and consumption bills to target the lower sections of society like BPL, SC/ ST and slum dwellers. Additionally, as per the revised tariff plans implemented on 1 April 2019, urban dwellers with a metered connection could use 15000 litres per month without charges and rural households' monthly consumption up to 40 litres per capita per day.⁷⁰⁸

These revised tariffs are not free from flaws. The affordability to pay remains the primary criterion because these fixed tariffs' significant benefits are applicable only for 'metered connections' even though it envisaged removing the previous charges for flat-rate charges in 15mm domestic connections. Removal of flat-rate charges is beneficial for poorer sections of society. Nevertheless, skewed benefits favour only the affluent in urban areas who can connect for metered connections. Secondly, benefits accrue more to urban customers than rural areas. Urban dwellers benefit from 15000 litres of

⁷⁰⁶ Field work notes. Some villagers I visited had government piped connections where common tap connections helped many with some individuals also having FTHC. While some remote villages are yet to be covered by piped connections. Both Jhunjhunu and Alwar shares these situations.

⁷⁰⁷ Public Health Engineering Department, 'Domestic Consumers' (Government of Rajasthan PHED) <<https://phedwater.rajasthan.gov.in/content/raj/water/public-health-engineering-department/en/citizencorner/-new-water-connection/domesticconsumers.html#>>.

⁷⁰⁸ Public Health Engineering Department, 'Revised Water Tariff 08.03.2019' (Government of Rajasthan) <<https://phedwater.rajasthan.gov.in/content/dam/doitassets/water/Public%20Health%20Engineering%20Department/pdf2017/citizencorner/water%20tariff.pdf>>. This amended rate is effective since 1 April 2019 which also removed present tariff of consumption up to 8 KL of Rupees 22 for connection sizes of range 15 to 25 MM and Present tariff for each connection per family up to two taps of 27. 50 Rupees.

water per month, while the rural households with less than 40 lpcd only benefit from waivers. National Rural Water Supply Scheme envisaged the supply of 55 lpcd per household through piped connections.⁷⁰⁹ Hence, underrating subsidies compromise the target or adequate water quantity envisaged by national schemes.

Differential access to water supply schemes creates inequities among water users in rural and urban areas.⁷¹⁰ In rural areas, the availability of traditional or multiple water sources is not the reason for lesser demands for piped supply, but the economic factors predominate here.⁷¹¹ Even after deducting subsidies, expenses incurred for individual connection, infrastructure like pipelines, and monthly bills affect their meagre wages/savings. The pre-condition of the payment in water access limits the water supply to poorer sections, increasing the vulnerability of women.⁷¹² This spatial and economic differentiation in water supply affects women's rights, especially in rural areas which rely on traditional water sources and community hand pumps.⁷¹³

The vulnerability of poorer sections deepens in the summer months when water scarcity is rampant. Additionally, in the summer months, water scarcity and inadequate water supply coverage lead the poorer sections of the community to rely on paid water carts or tankers.⁷¹⁴ The experience of intrinsically improvised rural areas in their reliance on water markets contrasts with consistent arguments of PHED and village panchayat authorities underlining their extra efforts during dry months to cater water needs of villagers by free tanker supplies.⁷¹⁵ Such individual or collective efforts of rural households for private water markets reflect inadequate coverage of state water supply and dereliction of the State's duties in aiding human right to water and its objective of distributive justice.

⁷⁰⁹ 'Guidelines on NRDWP' (n 301).

⁷¹⁰ Rashmi Tiwari, 'Inequality, Sufficiency and Sustainability of Urban Drinking Water in Uttar Pradesh' (2017) 47 (2) Social Change 214.

⁷¹¹ Several households in rural Jhunjhunu, Alwar rely on traditional sources and collect water from distant water sources. In cities like Jaipur, downtrodden sections like rikshawallahs, migrant labourers' families and small street vendors shared their inability to connect to piped sources due to lack of permanent homes and incapacity to pay the bills.

⁷¹² Interview conducted with women in Chirawa Block, Jhunjhunu District.

⁷¹³ Kathleen O'Reilly, "'Traditional' Women, 'Modern' Water: Linking Gender and Commodification in Rajasthan, India' (2006) 37(6) Geoforum 958.

⁷¹⁴ In communication with villagers in Chidawa, Khetri. This is corroborated by some representatives of NGOs like Dalmia Seva Sansthan.

⁷¹⁵ In communication with officials of village office, Departments of Irrigation, PHED, Watershed Management. Engineers of these departments consistently stressed on the point of extra efforts.

Limited efforts of these authorities benefit some areas, however. This little water supply by authorities involves corruption and nepotism. For instance, villagers in the Khetri block expressed their distress on flawed service delivery. In some areas, villagers collected between INR 5- 50 from each house to pay the tanker's driver to serve their villages. They pointed to bribes paid to officials and hindered caste's influence in determining beneficiary villages in the tanker water supply.⁷¹⁶ The caste influence extends to the limit where PHED department officials accept bribes and prefer upper to lower caste villages for tanker supply allocations.⁷¹⁷

Social discriminations and economic disparities have left many unmapped in water supply arenas. Piped and treated drinking water has benefitted the affluents only. The health issues reported in the rural side result from inequity in access to safe and clean drinking water.⁷¹⁸

Differential access is also evident in access to subsidies. For example, rural households depend on borewells and tubewells for drinking water. Subsidies in domestic piped connections credit the beneficiary after targeted beneficiaries take individual connections by remitting all bills. Hence, the prerequisite for benefiting from subsidies is an individual's ability to pay all expenses for personal connections. Thus, this demand-based water supply system helps only the resource-rich and significantly compromises millions of rights.

5.2.4 Absence of Adequate Drinking Water Supply in Rural Households: Compromises Women's Right to Water

All government water supply schemes based on tubewells to individual household tap connections target specifically the rural sector.⁷¹⁹ Water supply schemes have a tremendous influence on women's lives, livelihood, and dignity and aid in realising their

⁷¹⁶ In communication with women of Khetri Block in April.

⁷¹⁷ In communication with a village sarparch who belongs to scheduled caste who requested anonymity for his place and name.

⁷¹⁸ Pavitra Mohan, 'Inequities in Coverage of Preventive Child Health Interventions: The Rural Drinking Water Supply Program and the Universal Immunization Program in Rajasthan, India' (2005) 95 (2) American Journal of Public Health 241.

⁷¹⁹ 'Operational Guidelines for JJM' (n 302).

rights. Water access issues in rural areas generate concerns about women,⁷²⁰ as it compromises their right to water and other human rights, including health.⁷²¹ Lack of adequate drinking water supply enhances the risk and time for searching distance water sources.⁷²² The problem is rampant in small households in villages where wells dry and alternate water resources are absent. For example, an agricultural farm labourer in the Gopalpura village of Alwar district said she spent 2 hours collecting water from a nearby well, walking two kilometres up and down before leaving for work.

Access to household water supply contributes to improving sanitation facilities and health. Lack of adequate sanitation in such households also adds to their vulnerability of water access in environmental, social, and gender stress factors.⁷²³ In addition, gender-based attacks are rampant, demanding household sanitation and change in society's attitude.⁷²⁴ Awareness of the right to sanitation and its impacts on health has inspired many women from smaller households to demand better sanitation facilities in their premises.⁷²⁵ Application for subsidised toilet building also increased in several areas, but in some other cases, sanitation subsidies are mere financial aid for families, and people continue to resort to open defecation even in peri-urban areas.⁷²⁶

⁷²⁰ S Irianti and P Prasetyoputra, 'The Struggle for Water in Indonesia: The Role of Women and Children as Household Water Fetcher' (2019) 9 (3) *Journal of Water, Sanitation and Hygiene for Development* 540, 541.

⁷²¹ Jo-Anne L Geere, Paul R Hunter and Paul Jagals, 'Domestic Water Carrying and Its Implications for Health: A Review and Mixed Methods Pilot Study in Limpopo Province, South Africa' (2010) 9 *Environmental Health* 52.

⁷²² A Cassivi and others, 'Access to Drinking Water: Time Matters' (2018) 16 (4) *Journal of Water and Health* 661, 662.

⁷²³ Krushna Chandra Sahoo and others, 'Sanitation-Related Psychosocial Stress: A Grounded Theory Study of Women across the Life-Course in Odisha, India' (2015) 139 *Social Science & Medicine* 80.

⁷²⁴ Apoorva Jadhav, Abigail Weitzman and Emily Smith-Greenaway, 'Household Sanitation Facilities and Women's Risk of Non-Partner Sexual Violence in India' (2016) 16 *BMC Public Health* 1139.

⁷²⁵ A female maid working in a rich family expressed that she demanded her family to apply for sanitation facilities provided by the government. She lives in a colony in peri-urban area of Jhunjhunu and said she was empowered on right to sanitation and its impacts on health by many other women who led local NGO.

⁷²⁶ In communication with some villagers in both districts who benefited from these subsidies and NGOs in Chirawa who pointed to these discrepancies. The beneficiaries consider subsidies as a financial incentive only.

The social attitude of women bearing the burden of water collection is a characteristic feature of patriarchal society in rural areas in developing countries ⁷²⁷, including the Rajasthani community. Access to household drinking water connections also depends on the attitude of male members. For male members, subsidies are financial benefits from the State rather than access to water supply or infrastructure required for connection. A woman should perform her water collection duties for family needs, and men are breadwinners. Women and their rights are always a gift from the male members.⁷²⁸

Non-targeting subsidies in water connection have compounded affordability issues and left many families from the coverage map. The primary condition attached for the new water connection and, to avail, the subsidies is land ownership.⁷²⁹ The conditionality of land ownership, inability to afford government water supply and the consequent absence of household water connections lead the poor and marginalised to depend on public water pipes, maintained either by the State or NGOs in some villages.⁷³⁰

The schemes for drinking water envisaged by various governments are not successful in attaining the targets, adding to women's burden of water collection. For example, the Janta Jal Yojana, in operation till early 2019, was a decentralised, participatory, community-managed water supply scheme, framed with cooperation from civil society organisations, GPs and voluntary organisations under the direction of PHED. However, this fully subsidised programme implemented at the GP level by either PHED or GP directly has not extended public tap supply to households.⁷³¹

The State water supply system covers only 19.63% of the households in the State.⁷³² The latest Jal Jeevan Mission in the State covered only 8.04 % of new tap connections.⁷³³ The urban-rural divide in supply coverage is also wider. According to the 74th Round of the National Sample Survey Report, 61% of urban homes in

⁷²⁷ Christopher Boone, Peter Glick and David E Sahn, 'Household Water Supply Choice and Time Allocated to Water Collection: Evidence from Madagascar' (2011) 47 (12) *The Journal of Development Studies* 1826.

⁷²⁸ This was general perception of male members in many households.

⁷²⁹ 'Revised Water Tariff 08.03.2019' (n 709).

⁷³⁰ In communication with Senior Hydrogeologist, GW Department, Alwar; Assistant Engineer, Water Department, Reini, Alwar; Assistant Engineer, Jhunjhunu City, PHED in April-May.

⁷³¹ Rural Development & Panchayati Department, 'Panchayati Raj - Janta Jal Yojana' (*Government of Rajasthan*) <<http://www.rajpanchayat.rajasthan.gov.in/en-us/schemes/jantajalyojana.aspx>>.

⁷³² Rakesh Mohan (n 657).

⁷³³ Department of Drinking Water & Sanitation, 'JJM Dashboard' (*Jal Jeevan Mission- Har Ghar Jal*) <<https://ejalshakti.gov.in/jjmreport/JJMIndia.aspx>>.

Rajasthan have access to piped water in their households. 22.8 % of households enjoy piped access in their premises. The figures are far less in rural areas- only 19.2% of households have water inside their homes, and 10.2 % have it in their premises.⁷³⁴

The exclusion of the poor and marginalised highlights the need for inclusion, raising their right to lead a dignified life with equitable access to resources. The rural-urban water divides in supply coverage, differential access to supply determined by land ownership and ability to pay for drinking water compromises their fundamental rights.

The impact of this divide and drinking water concerns are rampant in 'dark zone' villages. In such heavily groundwater-dependent villages, government water schemes in villages inhabited by economically weaker or socially backward communities are either absent or in a neglected phase, leading to interventions from NGOs. Chirawa Block in Jhunjhunu is an example of dependency on non-state entities. An over-exploited block, Chirawa has many villages with incidents of diverse water connections. While some areas are fully covered, others partially covered, but government supply ended at common points in villages in some areas.

In the first two villages, villagers could fund their pipe connections, whereas, in the third category, people were economically weaker to bear the expenses. As noted by villagers, bore wells/ tubewells were not portable in some areas, and inadequate government help compelled them to seek help from local NGOs.⁷³⁵ NGOs substitute the State in water supply, management, and distribution, assisting villages with pipelines, tanks, RO plants, and water harvesting measures. However, not all such towns had these interventions ⁷³⁶, nor is the State inactive in all quality affected areas.

The general pipelines lack maintenance works that add to concerns of quality of water supply in rural areas. PHED installed RO plants or Solar Filtration units supplies water at cheaper rates in some quality affected areas. However, such efforts usually triggered by political pressures or interventions are not yet uniform, and people complained that water from such plants is unsafe than normal water due to lack of maintenance.⁷³⁷ This apathy of state authorities in the proper care of water infrastructure diminishes trust.⁷³⁸

⁷³⁴ NSS Report No.584 (n 506).

⁷³⁵ Communication with rural households in Chirawa Block of Jhunjhunu district between 1-20 April.

⁷³⁶ For instance, an NGO official in Chirawa shared their views on confining the activities of DSS in that block when pointed to gross groundwater exploitation in other blocks of the same district.

⁷³⁷ In communication with people in Jhunjhunu and Alwar towns and Chirawa and Gopalpura villages between April- May.

⁷³⁸ Shashi Kolavalli and John Kerr, 'Scaling up Participatory Watershed Development in India' (2002) 33 (2) Development and Change 213, 221-225.

Women's rights, including health, education and sanitation impacted by the absence of drinking and domestic water supply in villages/ households, get complicated by two factors; firstly, the inability to pay for water and engage in water management schemes and secondly, the land-water nexus in determining water access and allocations in irrigation.

These two factors also exercise a crucial role in access to subsidies in drinking water and conservation schemes which restricts the benefits of subsidies to those who could pay and those who own land. This influence is despite the significant attention provided by the State for water supply and conservation in Rajasthan and women actively participating in conservation schemes.

Therefore, analysis of the groundwater situation and the role of subsidies in social and distributive equity in its access and allocation also requires examining the State's contribution to sustaining groundwater resources through participatory conservation schemes informed by subsidies especially targeting women and disadvantaged sections. The following section discusses the contribution of participatory water conservation measures to the right to water and food for food, how subsidies ensure equity and inclusiveness in its implementation and provide a glimpse of community initiatives in water conservation.

5.3 Participatory Water Conservation Measures in Rajasthan: Positive Externalities on Right to Water and Water for Food

Institutions in water governance always determine the nature and scope of water management and influence actors' behaviour and decisions.⁷³⁹ Water management is always pluralistic, with several actors involved in cooperation and conflicts over water resources sharing vibrant 'water knowledge' ranging from traditional water use, management and conservation techniques to involvement of State and many non-state actors like NGOs, which promote community participation.⁷⁴⁰

Droughts, water scarcity, groundwater depletion, and increasing demand for water have necessitated state interventions and local initiatives in water management,

⁷³⁹ Emeline Hassenforder and Sylvain Barone, 'Institutional Arrangements for Water Governance' (2019) 35 (5) International Journal of Water Resources Development 783.

⁷⁴⁰ Stephanie Buechler and Gayathri Devi Mekala, 'Local Responses to Water Resource Degradation in India: Groundwater Farmer Innovations and the Reversal of Knowledge Flows' (2005) 14 (4) The Journal of Environment & Development 410.

conservation, and rejuvenation in Rajasthan. These State and local initiatives in water conservation makes Rajasthan the forerunner in water conservation efforts. Such efforts fostering public participation in implementing these schemes create positive externalities on water and irrigation use, influencing the right to water and water for food.

The State interventions in water conservations include implementing the centrally sponsored schemes and customised state schemes to alleviate the impacts of water problems and ensure sustainable water supply. The State emphasises water management and conservation through State-led and community efforts to groundwater recharge by renovating traditional water bodies and undertaking watershed management through stand-alone water conservation schemes or part of land development programmes.⁷⁴¹

The State strategies have always been a top-down approach that focuses on the supply and demand-side approach in conservation. Supply-side management involves attempts to harvest rainfall and prevent runoff, promoting the wise use of available resources and artificial groundwater recharge along with the help of treated water. On the other hand, demand-side conservation techniques include crop diversification, enhancing micro-irrigation techniques and optimal water use.⁷⁴²

However, this top-down State's water supply and conservation efforts did not achieve inclusiveness in several areas that remain in the off-grid coverage network, which led to local level community-led or NGO led water supply and conservation efforts.⁷⁴³

Rajasthan has many community-led/ NGO organised water conservation histories that work parallel to the state-oriented community based natural resources management.⁷⁴⁴ Such grass-root organisations in water conservation argue for the use and implementation of 'new traditionalism where the emphasis is on the revival of community, local and indigenous values incorporated for water conservation.⁷⁴⁵ These Community-led/NGO organised water conservation schemes parallel the State's water

⁷⁴¹ Guidelines for Watershed Development (n 654).

⁷⁴² Government of Rajasthan, 'Water Conservation Efforts by Rajasthan State' (Ministry of Jal Shakti, 2019) <http://jalshakti-dowr.gov.in/sites/default/files/WaterConservation-Rajasthan.pdf>

⁷⁴³ Field work in Rajasthan showed that several villages still remain out of coverage in formal water supply. NGOs cover the gap for water supply with community participation.

⁷⁴⁴ Saurabh Gupta, *Politics of Water Conservation: Delivering Development in Rural Rajasthan, India* (Springer 2016); Saurabh Gupta, 'Demystifying "Tradition": The Politics of Rainwater Harvesting in Rural Rajasthan, India' (2011) 4 (3) *Water Alternatives* 347.

supply and conservation efforts, ensuring water justice through social and distributive equity.

The efforts by the State and communities foster participatory water conservation mechanisms even though the strategies differ. While the State grants direct subsidies or incentives to beneficiaries for participation, the community-led efforts focus on voluntary actions. Nevertheless, these community-led efforts and NGO organised water conservation measures also benefit from subsidies indirectly.⁷⁴⁶

Subsidies in groundwater conservation schemes contribute to positive externalities on water resources protection, distributive and social equity in access and allocations of water and reducing poverty in the areas. These subsidies target inclusiveness and equity in all sections' efforts and reflect an equitable burden-sharing in water conservation. Therefore, it is crucial to explore the positive impacts of water conservation activities undertaken by the State and communities on groundwater access and allocations. It is also inevitable to examine the contribution of State subsidies in water conservation to equity in groundwater access, food security, poverty alleviation and environmental sustainability.

5.3.1 Groundwater Recharge and Conservation: Envisaging an Integrated Approach for Water and Food Security, and Poverty Alleviation

Erratic rainfall, water scarcity, groundwater exploitation necessitates state interventions and community participation in water conservation in Rajasthan. Indiscriminate use and exploitation of land and natural resources, intensive groundwater-based irrigation, deforestation, and mining activities compound the water stress.⁷⁴⁷

The burgeoning population exerts more pressure on natural resources, resulting in harmful land use and management externalities, including water availability and groundwater recharge. The water stress created by anthropocentric and natural factors warrants holistic water conservation measures to address water scarcity's hydrogeological, social and economic problems. Therefore, water conservation schemes target holistic and integrated soil and water development to ensure adequate

⁷⁴⁶ In communication with NGOs in Jaipur, Alwar and Jhunjhunu between April-June. Even though they do not avail direct subsidies, there are monetary and technical aid from the State to these NGOs who function in place where the State supply is less or absent.

⁷⁴⁷ KN Joshi, 'Land Use and Land Degradation in Rajasthan' in Vijay S Vyas and others (eds), *Rajasthan: The Quest for Sustainable Development* (Academic Foundation 2007)77, 91–93.

water for drinking water and irrigation, achieve food security and realise poverty alleviation in rural areas.⁷⁴⁸

Groundwater conservation efforts of the State adopts a comprehensive approach in land-water management. Firstly, water conservation patterns in the State follow the land management approach to include 'conservation, regeneration and sustainable use of resources and ensure equity among human and non-human components of the ecosystem, based upon the idea of human responsibility to protect natural resources for which people's participation is inevitable.'⁷⁴⁹ It acknowledges the closer interrelationship between soil, land use, and water in water conservation to maintain ecological sustainability.⁷⁵⁰ Furthermore, such integrated management aims to improve the environmental balance and ensure the social and economic welfare of lives and the livelihood of poor farmers and landless farm labourers.⁷⁵¹

Secondly, all water conservation schemes implemented by various governments under different names adopt this integrated approach in groundwater recharge and conservation. Nevertheless, the confluence of several ongoing plans produces ambiguity in implementation. For instance, MJSA, now subsumed under RGJSY, complements existing centrally sponsored programmes like DDP, IWDP and DPAD involving fund sharing between the centre and states. IWDP is a fully funded central programme implemented in non-DDP and DPAD districts, including Jhunjhunu and Alwar, where acute water shortage and low wage rates are conditions for implementation.⁷⁵² Both these districts are marked as dark zones by CGWB with more than 100 per cent of the stage of groundwater development. Ambiguity arose when officials in charge of these schemes stressed upon IWDP than MJSA, pointing that they still follow the IWDP scheme instead of MJSA, while the state government claims the success of MJSA.⁷⁵³

Thirdly, public participation in water management is the earmark of all these schemes. For instance, the MJSA / RGJSY aim 'conservation and harvest of 'four water- rainfall, runoff, groundwater and in-situ moisture' with either watershed or cluster catchment

⁷⁴⁸ 'MJSA : Mission and Objective' <<http://mjsa.water.rajasthan.gov.in/mjsa/mission.html#>> .

⁷⁴⁹ Department of Land Resources, 'Integrated Wasteland Development Programme' (*Department of Land Resources*) <<https://dolr.gov.in/integrated-wasteland-development-programme>>.

⁷⁵⁰ Swarn Lata Arya, 'Women and Watershed Development in India: Issues and Strategies' (2007) 14 (2) *Indian Journal of Gender Studies* 199, 200.

⁷⁵¹ *ibid* 202.

⁷⁵² Department of Land Resources (n 750).

⁷⁵³ In conversation with AEE, Department of Irrigation, Jhunjhunu and Alwar, dated between 23rd April-15 May.

approach as the focus unit.⁷⁵⁴ It includes a collaborative and participatory approach in decision making at the village level, harvesting available water by building structures for rainwater harvesting and prevention of runoff, reclamation of forest, land and water resources in the watershed, and envisages self-sufficient water villages along with enhancement of the irrigated area.⁷⁵⁵ These schemes assure public participation through heavy subsidies, granted two main objectives- to devolve conservation responsibilities to the beneficiaries and act as tools to influence people's political goals.

Lastly, this public participation envisages ensuring the beneficiaries water and food security through groundwater recharge and assured sustainable irrigation. Involvement at the village level watershed projects assures the beneficiaries livelihood options like enhanced farming opportunities and employment in local projects, thereby contributing to rural development. The watershed projects envisage twin aims that contribute to rural development- Increased productivity and conservation.⁷⁵⁶

Thus, every scheme and policy on groundwater conservation envisaged as an integrated approach in soil and water conservation points to holistic use and development of land and water. It recognises the interaction of land and water – the impacts of use and depletion over the other. For example, groundwater exploration enhances consistent irrigation to increase land productivity. In contrast, exploitation decreases land productivity, warranting a holistic approach towards water and land conservation, reclamation and rejuvenation through the renewal of old traditional practices mixed with technocratic elements leading to groundwater recharge.

5.3.2 Water Conservation by Communities and NGOs: Complements State's Efforts through Community Participation

Water governance and management worldwide have witnessed a tremendous shift from a top-down approach of State centred technocratic to more privatised, less state-oriented water user-focused approaches where water users emerge as active participants and decision-makers in everyday water management.⁷⁵⁷ The neoliberalist economic

⁷⁵⁴ Mohammed Iqbal, 'A Joint Effort to Conserve Water in Rajasthan' *The Hindu* (Jaipur, 27 November 2019) <<https://www.thehindu.com/news/national/other-states/a-joint-effort-to-serve-water-in-rajasthan/article30100029.ece>>.

⁷⁵⁵ 'MJSA : Mission and Objective' (n 749).

⁷⁵⁶ John Kerr, 'Watershed Development, Environmental Services, and Poverty Alleviation in India' (2002) 30 (8) *World Development* 1387, 1389.

⁷⁵⁷ Lucero Radonic, 'Re-Conceptualising Water Conservation: Rainwater Harvesting in the Desert of the Southwestern United States' (2019) 12 (2) *Water Alternatives* 699.

models focusing on efficiency over equity promoted reforms in the water emphasised decentralised, community-based solutions to water governance. Though these neoliberalist models influenced the State's role in water governance in India, switching to more community participation and demand-based water supply in water conservation, both the State and communities adopt a similar pattern- a holistic approach to land water management in water conservation.

The State-run efforts in water conservation focus on targeted individuals to promote water conservation schemes. Even though these schemes support community participation based on demand-led plans, the approach adopted is always technocratic solutions derived and implemented through bureaucratic decisions. However, Community-led participation in water governance is a bottom-up model which is usually a result of either annoyance against policies, water supplies or inadequate or insufficient state interventions.⁷⁵⁸ The local communities and NGOs have often filled the lacunae in ineffective state interventions in states like Rajasthan.⁷⁵⁹

These communities and NGOs perform either on behalf of the government in implementing water supply and conservation programmes or act independently in their localities. Societies and NGOs have ensured that beneficiaries are active stakeholders in these projects. Unlike government programmes targeting individual beneficiaries through targeted subsidies, these organisations focus on community-based participatory management schemes.⁷⁶⁰ Community-led water management efforts spring locally to revive traditional water harvesting or recharging techniques.⁷⁶¹

Community managed programmes create a sense of togetherness among these people, share the benefit and burden in use and conservation and address local issues in a familiar spirit.⁷⁶² In community-led water conservation efforts, the participation of beneficiary communities brings in traditional indigenous water conservation

⁷⁵⁸ Arwin van Buuren, Ingmar van Meerkerk and Cecilia Tortajada, 'Understanding Emergent Participation Practices in Water Governance' (2019) 35 (3) International Journal of Water Resources Development 367.

⁷⁵⁹ In communication with officials in Dalmia Seva Sansthan, in Chirawa Block, Jhunjhunu District between April-June.

⁷⁶⁰ Discussions with officials in Tarun Bhagat Sangh, in Alwar District during the field visit conducted between April -June. They substantiated this argument and these organisations attempt to convince local people on fruitfulness of revival of traditional systems which, according to them only could help to address local water issues.

⁷⁶¹ Pragati Jain and Prerna Jain, 'Viewpoint: Defeating the Water Crisis: Community Matters!' (2020) 35 (6) Local Economy 539.

⁷⁶² Buuren, Meerkerk and Tortajada (n 759).

knowledge and the ability of sustainable water use and management, which could successfully prevent the exploitation of shared resources.⁷⁶³ In addition, this community participation turns down the highly acclaimed 'tragedy of commons', arguing that community actions could deplete common pool resources.

These community-led water conservation schemes complement the States' efforts to ensure drinking water and water for food. It emphasises the participatory mode of activities, underlining that coordinated efforts instead of individual actions can lead to effective groundwater management, equity and inclusiveness in access and allocations and groundwater conservation.

5.3.3 Targeting Beneficiaries through Subsidies and Top-Up Incentives: Steps to Assure Public Participation and Equity in Water Conservation

Subsidies are integral parts of water conservation programmes to assure public participation.⁷⁶⁴ The influence of subsidies to induce public involvement in water conservation is particularly significant in the arid State of Rajasthan, where groundwater exploitation is rampant, social and economic disparities and discriminations determine access and allocations of land and groundwater.

The social and economic inequities in groundwater access also influence and determine beneficiaries of conservation schemes. For instance, the State led watershed management programmes on public and private lands primarily target and benefit the landowning class, excluding the landless, women and discriminating the small and marginal farmers.⁷⁶⁵ In most cases, the poor and downtrodden bear the brunt of all water scarcity and share water conservation responsibility.⁷⁶⁶ Studies have shown that landowning communities and big landowners supported water conservation schemes

⁷⁶³ Priya Sangameswaran, 'Community Formation, "Ideal" Villages and Watershed Development in Western India' (2008) 44 (3) *The Journal of Development Studies* 384.

⁷⁶⁴ 'Operational Guidelines for JJM' (n 301); Ministry of Agriculture Cooperation & Farmers Welfare, 'Pradhan Mantri Krishi Sinchayee Yojana' (*PMKSY*) <<https://pmksy.gov.in/>>.

⁷⁶⁵ Chhaya Datar and Aseem Prakash, 'Engendering Community Rights: A Case for Women's Access to Water and Wasteland' (2001) 8 (2) *Indian Journal of Gender Studies* 223, 239.

⁷⁶⁶ Jaquelin Cochran and Isha Ray, 'Equity Re-examined: A Study of Community-Based Rainwater Harvesting in Rajasthan, India' (2009) 37 (2) *World Development* 435.

more vibrantly than the resistive approach of the poorer sections due to the latent benefits attached to it.⁷⁶⁷

Subsidies are essential to address this inequitable participation in watershed management where the benefits of productivity and conservation skew towards large landholders.⁷⁶⁸ Even though the economically more vital farmers have benefitted from the efforts of poor farmers in community spirit, such subsidies could ensure sustained participation from the small and marginal farmers by focusing on livelihood promoting asset creation schemes.⁷⁶⁹

Granting subsidies devolve the responsibility of protection and recharge to as many users as possible by enlarging the participation of more sections of society. Incentives attract more small and marginal farmers to adopt water-efficient irrigation technology and install water harvesting measures like farm ponds, lining these ponds for individual persons.⁷⁷⁰

The State's approach in water conservation patterns also witnessed the change over time with the top-down method characterised by subsidies without any responsibility for beneficiaries changing to contributory and participatory, demand-led, the cost-sharing mode-based conservation activities. Here it requires the beneficiaries of central sector programmes and state government schemes like MJSA in Rajasthan to share a minimal cost to bring accountability, responsibility, and sustainability through a 'sense of ownership'.⁷⁷¹

Nevertheless, subsidies are essential in implementing all schemes considering the policies' welfare objective and beneficiaries' economic conditions. For instance, MJSA implements its objectives through state funds and contributions from beneficiaries, NGOs, and other stakeholders. This scheme, where the State subsidises 90% of costs and 10% to be collected from beneficiaries, prioritises those villages with already sanctioned watershed programmes, those without potable and safe drinking water or not supplied by pipes but only by tankers, famine-affected areas, rainfed irrigated areas

⁷⁶⁷ Kathleen O'Reilly and Richa Dhanju, 'Hybrid Drinking Water Governance: Community Participation and Ongoing Neoliberal Reforms in Rural Rajasthan, India' (2012) 43 (3) *Geoforum* 623.

⁷⁶⁸ Kerr (n 757).

⁷⁶⁹ Interview with villagers in Chidawa, Jhunjhunu, Sariska and Alwar dated between April-May.

⁷⁷⁰ Department of Agriculture & Farmers' Welfare 'Pattern of Assistance in Various Schemes of Dept. of Agriculture & Cooperation, Min. of Agriculture, Govt. of India' <<http://rkvy.nic.in/static/schemes/WaterHarvestingIrrigation.html>>.

⁷⁷¹ 'MJSA : Mission and Objective' (n 748). Interview with village officers and beneficiaries of schemes in Jhunjhunu dated 27th April.

or forest areas or those willing to participate or contribute to the scheme.⁷⁷² On the other hand, if the village population consists of many SC, ST or BPL families, beneficiaries' contribution is reduced to 5 %, with 95 % of costs devolving as subsidies.⁷⁷³

Implemented by GPs, this decentralised scheme is customised to address local water issues. For instance, in the Jhunjhunu district, where groundwater is 'over exploited', except in Khetri, the cluster approach of villages is followed.⁷⁷⁴ In Khetri, where mineral mining led to groundwater resource deterioration, steps like rooftop harvesting, mini percolation tanks, earthen check dams, and the staggering trench have helped recharge groundwater levels.⁷⁷⁵ It is also helpful in Alwar, an industrial and mining district with all 14 blocks categorised as overexploited.⁷⁷⁶ These participatory, subsidised schemes also contributed to water awareness among the people in many areas, yet, stage of development of groundwater remains intact in 'dark zones'.

Targeting the beneficiaries through subsidies, simultaneously, making them accountable is adopted in all programmes. Subsidies have motivated many farmers to participate, but according to many others, even subsidies cannot help them to involve in these government programmes due to their inability to donate the prescribed amount. Nevertheless, with the realisation of the need for water, some join.⁷⁷⁷ In subsidies, targeting small and marginal farmers, targeting all individual persons has enabled equitable access to government support and promoting water management.⁷⁷⁸ Had such contributions been absent, these water users would find it challenging to spend personal expenses on water conservation. Most of them spend beyond their financial capacity

⁷⁷² Government of Rajasthan, 'Changing Waterscape of Rajasthan' (Commissionerate of Watershed Development and Soil Conservation Government of Rajasthan 2018).

⁷⁷³ Senior Engineer and, Junior Engineer, Water Shed Development and Soil Conservation Department, Panchayat Samiti, Jhunjhunu dated 30th April.

⁷⁷⁴ Irrigation Department Officials and Village Sarpanch in Jhunjhunu and Khetri Block dated 25th April-16th May.

⁷⁷⁵ Junior Executive Engineer, Khetri Block and farmers in the block dated 25th April.

⁷⁷⁶ Assistant Engineer, Zilla Parishad, Alwar, and, Clerk, Zila Parishad Alwar dated 25th May. Some farmers who I met in the office also expressed that this programme has helped them to save water for drought seasons.

⁷⁷⁷ In communication with stakeholder participants of JJY in Jhunjhunu and Alwar Districts in May-June. In Gopalpura village of Alwar, people participated in NGO led schemes with their need for irrigation water.

⁷⁷⁸ In communication with some farmers who own less than 2 hectares of land but beneficiaries of centrally sponsored agricultural schemes dated between April – June.

for irrigation.⁷⁷⁹ Therefore, subsidies for water conservation are helpful to achieve multifarious targets of such schemes that include increased land productivity, agricultural income, and food security.

5.4 Inequities and Anthropocentric Bias in Water Governance in Rajasthan: Articulating Comprehensive Groundwater Regulations with Eco-centric Conservation Schemes

The groundwater over-exploitation, the social and distributive inequities in groundwater access created by social, economic and political interventions in climatic and hydrogeological variables, and the anthropocentric bias in the conservation schemes articulate a comprehensive groundwater regulation in Rajasthan that adopts ecocentric water governance.

Generally, in the arid State of Rajasthan, with a patriarchal society, land, caste, and gender determine groundwater access and allocations. However, politics and power equations determine the spatial and temporal scope of water supply schemes, agricultural development programmes and conservation activities, overriding the hydrogeological, climate variables and environmental sustainability.

Land ownership, the primary condition for accessing groundwater due to the latter's nexus with property, is also the principal condition to avail the central and State government subsidies in drinking water and irrigation though they differ in the minimum amount of land owned.⁷⁸⁰ Such nexus between subsidies and land has substantial ramifications on equity in access to these government aids and consequently access to groundwater in a patriarchal and caste-dominated society like Rajasthan. Moreover, such interaction of land with water and subsidies aggravates the society's inherently social and economic divide with significant developmental impact.

The current water supply and conservation programmes prioritise anthropocentric water demands, efforts to mitigate the social and distributive inequity in groundwater access and ensure sustainable water supply for drinking and irrigation. These schemes don't prioritise or focus on ecological water demands. Integrating environmental needs

⁷⁷⁹ In communication with BDO of Jhunjhunu Block dated 16th May.

⁷⁸⁰ For list of all schemes with subsidies, see generally Department of Agriculture & Farmers Welfare, 'Programmes & Schemes | | Mo A&FW | GoI' (Ministry of Agriculture and Farmers Welfare) <<https://agricoop.nic.in/en/programmes-schemes-listing>>.

is essential to shift from anthropocentric water use and governance to ensure ecological justice in groundwater regulation.⁷⁸¹ Such integration is also necessary to ensure distributive and social justice in access and allocation as the absence of environmental concerns in water conservation contributes to widening social and distributive inequity in the groundwater sector.

This section summarises the necessity of adopting a comprehensive groundwater regulation in Rajasthan with due consideration to the emphasis provided by the State on conservation schemes. It substantiates this necessity by pointing to the intervening factors that limit the scope of groundwater access and subsidies provided for such access. It also highlights how the human water use-focused conservation schemes dilute the objectives of such plans, articulating for such a regulation beyond the present limited groundwater extraction control measures.

5.4.1 Caste, Gender, Politics and Bureaucratic Power in Determining Beneficiaries: Compromises Right to Water

The social, economic and political factors that determine groundwater access and allocation also extend their influence on determining the beneficiaries of all water schemes- drinking water supply schemes and conservation programmes and the subsidies benefits attached to it. This intervention creates a considerable gap in the implementation of various subsidised plans. For instance, all drinking water supply and agricultural developmental schemes prioritise sections like BPL families, women-headed households, SC/ST hamlets, and small and marginal farmers despite the criteria like income and land availing subsidies.

However, the inherent social and economic divide in the society create inequities in implementing these schemes, and such prioritisation in guidelines fail to ensure inclusiveness among these disadvantaged sections.⁷⁸² Caste, power and politics determine the implementation, including beneficiaries, compromises substantive and procedural rights in water management and transcend the ladders of the official structure.

The land-water- subsidy nexus widens the social and economic divide in the society helping the big land-owning farmers to benefit from government support. This inequitable and unsustainable relation extends to the benefits of water conservation

⁷⁸¹ See Sec 7.2.

⁷⁸² See generally, Kathleen O'Reilly and Richa Dhanju, 'Hybrid Drinking Water Governance' (n 767)623. Poorer section often object to the conservation efforts in first instance due to the realisation that their efforts shall not benefit their water demands.

schemes in addition to drinking water and irrigation schemes.⁷⁸³ Here the policy guidelines of land ownership requirements and farmers' contact with government officials support them.

Caste prejudices and nepotism by implementing officers discriminate SC/ST sections in government schemes. Preference to affluent upper-caste farming communities compromises the subsidies granted to help the people of lower strata and fulfil the welfare objective of the State. Bureaucrats and local elected representatives at the village level also perpetuate such discrimination.⁷⁸⁴

Caste and politics dominate the local decision-making units, including Village Water and Sanitation Committees and Water User Associations leading to the limited representation of SC/ST and women. The upper-class domination limits decision-making participation in such associations, extending for the involvement in watershed schemes.⁷⁸⁵ This restricted participation in water user associations, often determined by the ability to contribute physically or financially, deprives them of water access, violating their right to water and procedural fairness in decision making.⁷⁸⁶

Caste differences and politics also influence urban water supply schemes. It dominates in water connection applications where officers prioritise upper caste and affluent localities in newer connections. Untouchability continues in limited forms in urban areas. For stakeholder interviews, people of the same or similar ranking caste introduced their community members and extended them among some officials.

Power, caste and politics added with inequitable land distribution patterns contribute to the expansion of inherent gender inequalities. Women work primarily on their small tracts of land or as farm labourers on higher communities' land on very meagre daily wages. Interviews conducted among women farmers in Jhunjhunu and Alwar districts point to the indiscriminate distribution of land.⁷⁸⁷ This inequitable land ownership

⁷⁸³ See sec 5.3.

⁷⁸⁴ Interview conducted with farmers and farm labourers belonging to SC/ST communities in Chirawa, Jhunjhunu dated 18th April and farmers in Gopalpura, Sariska in Alwar dated 5 May.

⁷⁸⁵ Pranietha Mudliar and Tomas Koontz, 'The Muting and Unmuting of Caste across Inter-Linked Action Arenas: Inequality and Collective Action in a Community-Based Watershed Group' (2018) 12 (1) *International Journal of the Commons* 225.

⁷⁸⁶ O'Reilly and Dhanju, 'Public Taps and Private Connections' (n 113) 377.

⁷⁸⁷ Women farmers, farm labourers and women in households in the districts of Jhunjhunu and Alwar, dated between May- June.

denies women their contribution benefits despite active participation in land development and conservation activities.⁷⁸⁸

The lack of adequate drinking water sources in the neighbourhood or households adds to their burden and widens the inequalities, compromising their right to water, health, sanitation, education and livelihood.⁷⁸⁹ This discrimination in rights, mainly depriving them of education, denies the awareness of subsidies benefits to women-headed households and farmers.

Implementation strategies widen the persistent gender disparities. Communication with various departments like PHED and irrigation show that officials often pointed to priorities for women in policy guidelines. However, their answers to queries on its efficiency in implementation were neither inspiring nor positive.⁷⁹⁰

Gender inequality exists in all facets of water management, including the decision level. The disparity in land ownership that prevents the laborious women farmers from accessing benefits of subsidies or participation in decision-making in water allocations on farms or village level committees extends to top-level technical, bureaucratic, and elected officials. Most of the engineers and officers of PHED/ Irrigation/ Watershed Development Departments, panchayat representatives met during the fieldwork were men.⁷⁹¹ Some women officers did not respond appropriately or look at their male counterparts to answer.⁷⁹² The lack of adequate women representation in the decision-making sector prevents foregrounding their knowledge, experience and concerns.

Thus, in addition to the inherent inequity in groundwater access and allocation created by the land-water nexus, the social, political and economic factors intervene in determining access to groundwater and subsidies and in the determination of implementation of schemes. These factors that dilate the gender discrimination in groundwater access compromises several fundamental rights necessitating a re-examination of current structures.

⁷⁸⁸ Swarn Lata Arya, 'Women and Watershed Development in India' (n 751) 199.

⁷⁸⁹ Women farmers stated their domestic water and family burdens, including inadequate sanitation facilities in remote households.

⁷⁹⁰ In communication with some male officers in different water-related departments and some NGOs.

⁷⁹¹ Some male officials and representatives hesitated to answer the questions on women, raised by a woman.

⁷⁹² Interviews conducted in Jhunjhunu and Alwar between May-June.

5.4.2 Overriding Hydrogeological Factors in Subsidies' Implementation: Creating Spatial Divide and Broadening Economic Inequities in Beneficiaries.

Hydrogeological factors and water need never receive adequate attention in implementing many schemes. The political decisions and choices override hydrogeological factors in determining water supply and agriculture development schemes.

The government's approach to new projects, inspired by the election promises or vote bank politics, neither consider the hydrogeological factors, water needs or ecological sustainability issues, nor the financial constraints to the economy. The vote-bank politics influence the decision to extend or introduce new schemes with subsidies to attract more votes by ensuring short-term, unsustainable economic benefits to the masses.⁷⁹³ However, in contrast to its welfare orientation, these choices that influence the determination of beneficiaries of subsidies increase the spatial divide between the implementing areas and the economic disparity between beneficiaries.

In drinking water schemes, inequitable implementation based on politics and caste choices broadens the social and economic divide between urban-rural regions and the rich and the poor. The heavily subsidised government water supply schemes and water conservation schemes do not cover many groundwater quality and quantity affected villages.⁷⁹⁴ The political pressure on officers to select higher caste, affluent and politically significant areas in the coverage network leads to exclusions of quality affected areas.⁷⁹⁵ While some of the villages visited had public tanks with pipes but no individual household connections, others have pipelines by NGOs.

Often, the schemes fail to target economically poorer and socially deprived areas. Inadequate government supply in such villages is neither due to lack of demand nor private or public water availability but the inability of the people to pay for water

⁷⁹³ ANI, 'Rajasthan: CM Promises Rs 2,300 Crore Electricity Subsidy to Farmers for next 5 Years' *Business Standard India* (17 December 2019) <https://www.business-standard.com/article/news-ani/rajasthan-cm-promises-rs-2-300-crore-electricity-subsidy-to-farmers-for-next-5-years-119121701287_1.html> .

⁷⁹⁴ In communication with villagers in Chirawa Block of Jhunjhunu dated 22nd April. The villagers rely on the water schemes initiated by NGO for drinking and irrigation. Consequently, they engage in the conservation activities with community participation to ensure sustainable water supply. On discussion with the district PHED officials in Jhunjhunu, some lower level officials acknowledge their inability to cover several remote villages in water supply and conservation schemes due to the financial and logistic constraints.

⁷⁹⁵ In communication with SC and OBC community members in Khetri Block, Jhunjhunu and Gopalpura Village in Alwar in May 2019. The discrimination is rampant in summer seasons.

despite the availability of subsidies for connections and bills. Subsidies fail to address this economic disparity in access to the water supply. The situation is more aggravated in inner villages and remote households. Similarly, subsidies do not benefit the urban poor and slum dwellers due to their inability to bear connection and billing expenses.

Similarly, even though the PHED officials point to the government policies on supply of 15000 lt. Per household per month at free cost, the lack of universal coverage restricts this benefit to those bill-paying customers alone. The homeless and the migrants are beyond the entire water supply coverage framework, who don't benefit from this subsidy in drinking water.

Failure to pay for their human right to water compromises people's rights to clean and safe drinking water, health and life and excludes many from the welfare policies' beneficiary list.⁷⁹⁶ The economic difficulty of right holders in realising their fundamental right to water in India has not yet been a point of discussion either in the judiciary that proclaimed this right or the executive that promulgates water policies and water supply schemes. Often, efficiency is prioritised to equity in State projects even though guidelines emphasise equity and inclusiveness.⁷⁹⁷ Thus, the widening of economic disparities and social differences in access to groundwater is a dilution of subsidies that aim to mitigate the inequalities and injustices among different water users.

5.4.3 'Groundwater Recharge for Next Irrigation': Human Water Demands Overrides Source Sustainability in Conservation schemes

Drinking water and agriculture schemes aim to assure water users sustainable supply of water for water and food security, helping them realise their fundamental right to water, health, sanitation, food and livelihood. However, with a focus on supply sustainability, these schemes and the policies on subsidies often undermine their impacts on environmental sustainability, including source sustainability of water resources. For example, subsidies in the agricultural sector enabled many farmers to engage modern technology in irrigation to ensure more effective irrigation techniques in already

⁷⁹⁶ Alex Loftus, 'Reification and the Dictatorship of the Water Meter' (2006) 38 (5) *Antipode* 1023.

⁷⁹⁷ See generally, Sriroop Chaudhuri and others, 'Water for All (Har Ghar Jal): Rural Water Supply Services (RWSS) in India (2013–2018), Challenges and Opportunities' (2020) 16 (2) *International Journal of Rural Management* 254.

groundwater stress areas like Jhunjhunu and Alwar. The deeper the search for water, the more comprehensive and graver, is the exploitation of aquifers.

The inadequate attention to environmental harm caused by subsidies negatively impacts the water sources. Subsidies prioritise the human water demands and their sustainability than conservation for water source sustainability. Firstly, Economic benefits to beneficiaries and the political gain for the ruling party drive the policies on subsidies in groundwater. It overlooks the harm of groundwater exploitation and environmental impacts—negative externalities including water and soil contamination and consequent repercussions on public health and the environment.⁷⁹⁸ Water policies and rural/ urban drinking water supply programmes in Rajasthan fail to address this link between subsidies- water sustainability- public health in a groundwater-dependent state.

Secondly, the policies on subsidies never consider the local hydrogeological and climatic variations. Unfortunately, the State follows a uniform pattern in implementing policies on subsidies throughout the State without considering these local water issues. Thereby, the groundwater exploration aided by subsidies in these dark zones only amplifies the water crisis by confining the benefits of water access to the few 'privileged', leaving the poor and downtrodden to bear the brunt of drought and water scarcity.

The State's interest in the decentralised conservation schemes converges with the accumulation of benefits through dispossession by the rich.⁷⁹⁹ The State failed to convince the lower caste farmers and beneficiaries of its intention in groundwater conservation. It adopts technical solutions to groundwater exploitation without realising the social, economic, and political factors that intensify it.⁸⁰⁰

Furthermore, inadequate and unscientific implementation of various schemes, including conservation schemes, contribute to the current water crisis. For instance, Alwar and Jhunjhunu, the two most groundwater-dependent and categorised dark zone districts, promote subsidies for groundwater extraction and recharge programmes.⁸⁰¹ Conservation can complement extraction, but if the latter exceeds the former, it challenges the purpose of preservation. Simultaneous subsidies for the same beneficiary

⁷⁹⁸ Trevor Birkenholtz, 'Irrigated Landscapes, Produced Scarcity, and Adaptive Social Institutions in Rajasthan, India' (2009) 99 (1) *Annals of the Association of American Geographers* 118.

⁷⁹⁹ O'Reilly and Dhanju, 'Public Taps and Private Connections' (n 113) 377.

⁸⁰⁰ Birkenholtz, 'Groundwater Governmentality: Hegemony and Technologies of Resistance in Rajasthan's (India) Groundwater Governance' (n 113) 208, 216–217.

⁸⁰¹ Communication with LSG representatives in April- May in various villages in districts.

for extraction and protection lead to a more disastrous situation where extraction exceeds recharge measures.

The more the water recharged, the more water extracted for irrigation. Groundwater conservation is promoted mainly to address droughts and water demands during drought years without focusing on aquifer protection or water for nature. The community-based efforts also concentrate on anthropogenic water demands, sometimes without considering conservation techniques' scientific techniques and feasibility for that locality and override equity in participation.⁸⁰²

Public participation in community-led water conservation schemes also reflects this anthropocentric bias. The motivation for the people to join participatory water conservation schemes is the monetary benefits attached. It included access to help from trickle-down subsidies to the beneficiaries and assurance of rural livelihood in the State-run plans on water conservation. According to villagers in both districts, if they get good rainfall in one year and groundwater recharge is possible with different mechanisms, they would have water for irrigation for the next three years.⁸⁰³ Here water is conserved for quenching anthropogenic water demands only.

Additionally, policies on water conservation primarily aim for land productivity and irrigation for agriculture. State interventions in protection that include watershed development, rainwater harvesting, water storage units like anicuts and tanks, and reclamation of ponds through subsidising the beneficiaries, including local bodies for works on government lands and private lands, aim to address local rural areas development, poverty alleviation and land productivity.⁸⁰⁴ This land productivity-water conservation integration approach neglects many traditional water sources like wells, neglecting the source sustainability in several areas. For example, conventional wells near main roads that were once water sources for travellers in the old era were in a dilapidated situation without attention from village or state government plans.⁸⁰⁵ Currently, the wells act as waste dump-yards, but the local politicians insist on keep the wells in structure without renovation to grab and re-route the funds available.

Question of sustainability impacts of schemes arises in the discrepancies in the approach of NGOs and the State. For example, NGOs employ different strategies for water supply and conservation in quality affected or water-stressed areas. People rely

⁸⁰² Cochran and Ray, 'Equity Re-examined: A Study of Community-Based Rainwater Harvesting in Rajasthan' (n 767) 435.

⁸⁰³ Field work notes- Jhunjhunu and Alwar. The same perspective is shared by the representatives of certain NGOs and the village committee members during the interactions.

⁸⁰⁴ In conversation with BDO, Water Department officials, and the local representatives during April-June in both districts.

⁸⁰⁵ Field work Observations from Chirawa Block.

on these NGOs for water supply in several areas, as seen in Chirawa block or support their participatory groundwater management like in Alwar. Nonetheless, there is a lack of coordination or confidence between the State and NGOs in water management.⁸⁰⁶ The NGOs also prioritise human water use even though the operational guidelines emphasise ecological restoration through voluntary actions.

Additionally, the limited jurisdiction of operations adopted by the NGOs restricts the scope of attention to environmental sustainability. For instance, the TBS in Alwar, who responds and intervenes only to demands from villages, demanding manual labour/ cash contribution from the public in efforts fragments actions across different landscapes without considering the local hydrogeological and climatic conditions.⁸⁰⁷ Furthermore, source sustainability in NGO projects is ambiguous because they focus only on conservation without considering the extent of extractions, social and economic interventions that trigger these over extractions.⁸⁰⁸

5.4.4 Need for a Comprehensive Groundwater Regulation: To Balance Extraction and Promote Conservation.

The inevitable contribution of subsidies in social and distributive equity in groundwater access and allocation in patriarchal, caste rigid and arid State of Rajasthan also negatively impacts the sustainability of supply and sources. However, the State focuses on conservation activities despite the current groundwater exploitations. As pointed in previous subsections, the influence of social, economic and political factors broadens the inequities created by the groundwater regulatory framework and the inherent social differences in access, allocation, control and management. Hence, it is essential to adopt a comprehensive groundwater regulation in the State that balance the extraction and conservation of groundwater in the State

Currently, the State of Rajasthan lacks a comprehensive legal regulation that can balance human water extraction and promote effective water conservation. The State did not enact groundwater legislation in line with the central government's model groundwater law to regulate groundwater extraction. It doesn't mean the absence of policy and legal initiatives. The state water policy argues for regulation of groundwater

⁸⁰⁶ Gupta, 'Demystifying "Tradition"' (n 745) 357.

⁸⁰⁷ Mark Everard, 'Community-Based Groundwater and Ecosystem Restoration in Semi-Arid North Rajasthan (1): Socio-Economic Progress and Lessons for Groundwater-Dependent Areas' (2015) 16 *Ecosystem Services* 125, 128.

⁸⁰⁸ Gupta, 'Demystifying "Tradition"' (n 745) 357.

but does not call upon the State to enact a law customised to the requirements and situations of the State.⁸⁰⁹

The State enacted Rajasthan Water Resources Regulatory Act 2012, envisaged a regulatory authority to control water extraction. Though enforcement of this law is pending, it is a welcome step in recognising the entitlements in water and the constitution of the regulatory Authority. However, the Authority's power to establish a water tariff system and fixing criteria for water charges in entitlements in irrigation and drinking water bases its operation on the principle of full recovery of maintenance and operation costs.⁸¹⁰ The Authority promotes efficiency in water use to reduce water wastage instead of equity and inclusiveness.⁸¹¹ Despite recognising the entitlement, the Act admits water as an economic good than a human right.

This commodity nature of water in water allocations and management relegates the ecological justice approach and highlights only the human water needs where the ability to pay shall be the criteria for water allocations. This commodification of nature can neither ensure the human right to water to all nor address the groundwater exploitation issues.

Many policies and schemes aim to universalise the drinking water supply at every home. In the agriculture sector, these schemes promote equitable access to water, technology and other implements in irrigation and fair distribution of natural, material and economic resources to enhance water security and food production. However, negative externalities follow, and Rajasthan faces severe groundwater overexploitation. Nevertheless, as highlighted in the previous subsection, the State is a forerunner in water conservation schemes to enhance groundwater recharge, land reclamation, and livelihood sustenance.

Due to their anthropocentric focus, the conservation schemes are inadequate to promote groundwater recharge and assure ecological water demands. The policies and plans on water conservation target the supply sustainability and poverty eradication of rural communities through participatory watershed management and other schemes. This anthropocentric bias in water conservation without focus on ecological sustainability and the lack of adequate legal regulation on groundwater overexploitation also necessitates legal and policy interventions in the groundwater sector.

The State also adopts the neoliberalist influence in water conservation schemes, inspired by the National Water Policy 2012, which argues for adopting community and

⁸⁰⁹ Rajasthan State Water Policy 2010.

⁸¹⁰ Rajasthan Water Resources Regulatory Act, 2012 s 11.

⁸¹¹ *ibid.*

private participation in a public-private partnership in water conservation.⁸¹² Though these participatory mechanisms can bring together all stakeholders, the present schemes aim to promote the adoption of measures by stakeholders before applying for subsidies which now changed to incentives.

Furthermore, the private sector participation in water governance and conservation through State's policies can only lead to the accumulation by dispossession, whereby the poor get dispossessed of the benefits of groundwater conservation in private hands.⁸¹³ These efforts do not foreground ecological sustainability in water conservation. Environmental sustainability is inevitable for source sustainability and adopting an ecological justice perspective to water governance.

Hence, comprehensive legislation is required to control groundwater extraction and promote conservation efforts, where this ambiguity in conservation techniques also receive adequate attention in policymaking. It is inevitable to envisage the local situations of the State with varied climatic and hydrological conditions, its impacts on women's access to water and the environmental sustainability in such legislation.

5.5 Summary

Subsidies' positive impacts include their contribution to participatory groundwater conservation schemes. The arid State of Rajasthan is a forerunner of these conservation schemes, with subsidies granted to beneficiaries to participate in such projects. The hydrogeological and climatic conditions in the State and over-exploitation of limited groundwater resources for anthropogenic water demands necessitate water conservation measures. Currently, the groundwater development exceeds the safe limit in several areas with increasing reliance on groundwater for irrigation and drinking water. Nevertheless, the pattern of this reliance reflects an inequitable benefit and burden sharing where only the landowning communities belonging to the upper caste enjoy the use of groundwater access, but the whole society bears water scarcity. The caste and gender factors that influence land ownership patterns in the State heavily influence groundwater access and allocations. The power and politics determined by this caste element act as intervening factors in determining beneficiaries of government water supply and agriculture development programmes and its subsidies. These social, economic, and land factors deprive the poor, marginalised and women of their right to water and water for food in irrigation and their inability to pay for water for domestic

⁸¹² National Water Policy 2012 s 12.3.

⁸¹³ Mangala Subramaniam, 'Neoliberalism and Water Rights: The Case of India' (2014) 62 (3) *Current Sociology* 393, 402.

water connections denies water supply, widening the water crisis of the poor. The State subsidies to address this inequitable water access and allocation also extend to promoting water conservation measures to mitigate the water crisis. The role of subsidies in these conservation activities that aim to foster water and food security and poverty alleviation is inevitable as it brings participation, inclusiveness and equity among participants. However, these efforts reflect an anthropocentric bias to ensure water supply sustainability rather than water source sustainability. Additionally, the socio-economic and political factors that influence water supply and subsidies also influence water conservation schemes, aggravating environmental concerns. This anthropocentric bias in water conservation schemes narrow the plans' objectives and fails to ensure ecological justice in water governance, which necessitates adopting comprehensive groundwater regulation in the State that balances extraction and conservation addressing all social and economic factors.

PART III

ARTICULATING A PARADIGM SHIFT

Chapter 6

Subsidies and Realization of Fundamental Right to Water: Balancing Rights-Duties in Judicial and Executive Discourse

6.1 Introduction

Over the decades, subsidies have been an integral component of the country's drinking water and agriculture sector. These subsidies in various forms contributed to the water and food security of individual households and the nation, enabling beneficiaries access to sufficient water, technology, and credit. Social and distributive equity created by these subsidies includes equitable groundwater access, moving beyond caste, gender, and economic status barriers. At the same time, its impact on environmental sustainability is a concern. Analysing the role of subsidies in that context points to its influence and impact on realising several fundamental rights, including civil and political rights like life and social rights like water, food, and environment.

However, the land and subsidies nexus in accessing the benefits of subsidies limits its scope and objectives and critically impacts and influences access and allocations of water for drinking water and food generation and environmental sustainability. The State's changing role in the drinking water supply from a provider to facilitator with a restricted judicial explanation of rights-duties paradigm adds to inequities created by subsidies in accessing drinking water.

This chapter explores the role of subsidies in realising the social rights to water, food in the context of water for food and the environment and the contextual and institutional constraints that impede its adequate implementation. The broader structure of the chapter includes: Firstly, it examines the influence of subsidies in the realisation of these social rights. Secondly, it analyses the factors that hinder the role of subsidies, the land-water-subsidies trilogy being the major identified factor. The chapter then examines the influence of the changing role of the State and the undefined content and scope of the fundamental right to water by the judiciary on the part of subsidies in social rights jurisprudence. Lastly, it explores how the human rights-based social rights jurisprudence contrasts and balances with neoliberal interventions in water supply and how PTD can be a balancing factor here.

6.2 Determining the Scope of Implementing Social Rights: Tracing the Role of Subsidies

Even though social rights attracted significant attention in international and domestic jurisdictions like India, they couldn't gain adequate focus without judicial reviews. The failure of philosophical and legal discourse to explain the significance of their recognition and its implication on governance and public policy added to this neglect of social rights until recently.⁸¹⁴ The judicial review of constitutional provisions and adoption of harmonisation between social and economic rights enshrined in Part IV and the civil and political rights under Part III foregrounded the social rights jurisprudence in India.⁸¹⁵

The Constitution included social rights in Part IV, DPSP, intending to be guidelines for governments to establish a welfare state. Envisaged initially as non-justiciable, Part IV has fundamentally significant directives that demand positive action from the State. The judicial activism has transformed the non-justiciable nature of SER to being fundamental and integral for the interpretation, evolution, and implementation of many fundamental rights.⁸¹⁶ The integrated and harmonious approach of the Supreme Court to implement social rights depicts how an expanded understanding of the explicitly guaranteed civil and political rights could help in the elaboration of the scope of realisation of social rights.⁸¹⁷

The harmonious interpretations reflect as signs of courts' willingness to move beyond the *status quo* in international human rights jurisprudence that categorised the hierarchy of rights and recognised the essential and equal role of social rights in the enjoyment of civil and political rights. Recognition of social rights as fundamental rights highlights

⁸¹⁴ David Bilchitz, *Poverty and Fundamental Rights: The Justification and Enforcement of Socio-Economic Rights* (OUP 2008) 2.

⁸¹⁵ *Minerva Mills v Union of India* 6 SCC 325 (1980).

⁸¹⁶ SP Sathe, *Judicial Activism in India* (2nd ed., OUP 2003).

⁸¹⁷ For discussions on expansion of social rights to ensure social citizenship even without explicit constitutional reference, see Dennis M Davis, Patrick Macklem and Guy Mundlak, 'Social Rights, Social Citizenship, and Transformative Constitutionalism: A Comparative Assessment' in Joanne Conaghan, Richard Michael and Karl Klare (eds), *Labour Law in an Era of Globalization: Transformative Practices and Possibilities* (OUP 2000) 511.

the necessity of positive State actions and determines the scope and nature of such measures to realise fundamental rights.

Subsidies are policy measures to implement these positive efforts in fundamental rights, but with inevitable negative repercussions. Such State interventions like subsidies help millions realise their fundamental right to water and food but negatively impact the right to the environment through its externalities.⁸¹⁸ This section examines the cross-sectional impacts of subsidies in realising three social rights- water, food, and environment. The influence of subsidies granted to access social rights is most substantial on these three fundamental rights- right to water, right to food in the context of peasants, small and marginal farming communities, and the right to the environment.

6.2.1 Fundamental Right to Water: Handicapped by the Groundwater-Land Ownership Nexus

The judicial activism in India helped develop the fundamental right to water discourse and recognised the right-duty paradigm to govern the relationship between the State and citizens in enjoying this right.⁸¹⁹ The right to water recognised by the courts is a part of the expanded social rights interpreted from the non-justiciable social rights with the enforceable civil and political rights. Interpretation of art 21 of Part III with art 48 A of Part IV provided ways to recognise the fundamental rights of a clean environment, water, and sanitation. Correspondingly, the courts entrusted the State with the duty to protect, preserve, and conserve the environment since any significant environmental harm could result in irreparable damage to the quality and quantity of water bodies that can imperil the fruitfulness of fundamental rights.⁸²⁰

The reading of social rights into civil and political rights hold the State accountable and responsible for its positive duties for Part IV. Thus, fundamental rights discourse on water demands the State to respect, protect, and fulfill this right's realization.⁸²¹ This duty extends not only to the provision of an adequate quantity of drinking water but

⁸¹⁸ Subsidies (explicit and implicit) reign spheres of most of social rights like education, water, food and health. Here the discussion is confined to water related subsidies that influence right to water, food and environment.

⁸¹⁹ *Subhash Kumar v. State of Bihar* (n 42); *Vishala Kochi Kudivela Sambrakshasamiti v State of Kerala* (n 42). For detailed discussion on right to water discourse in India, refer to chapter 1

⁸²⁰ *Minerva Mills v. Union of India* (n 818); *MC Mehta v Union of India* 1987 AIR 965; *MC Mehta v Union of India* 1987 AIR 1086; *Narmada Bachao Andolan v. Union of India* (n 43); *Virender Gaur v State of Haryana* (1995) 2 SCC 577; *Subhash Kumar v. State of Bihar* (n 42).

⁸²¹ *Vishala Kochi Kudivela Sambrakshasamiti v State of Kerala* (n 42).

also to preserving the quality of water sources and preventing water-borne health hazards.⁸²²

Despite the plethora of judgments upholding the right to water and as a reminder to the State of its duties, the significant number of uncovered habitats in rural areas with inadequate clean and safe drinking water coverage is attributable to two fundamental factors. The first factor is recognising the right to water as a human right confined to judicial decisions, with neither the proper directions and guidance for its implementation nor the statutory recognition of this rights-duty framework for the executive to determine the nature and scope of drinking water schemes.

The second factor denotes the lack of a unitary and coordinated approach in surface water and groundwater regulation without considering its hydrogeological interlink.⁸²³ Consequently, while public trust applies to surface water governance, groundwater regulation continues to be governed by the common law principles with severe consequences on equity in access and allocation and environmental sustainability.⁸²⁴

These two factors- the absence of recognition of fundamental rights in water schemes and the grandfathering of property-linked groundwater access- dilate equity concerns in drinking water access and allocations. The welfare orientation of the government and the realisation of the necessity and significance of drinking water supply drives the executive-led schemes, though none of the schemes recognises the right to water.⁸²⁵ The absence of a statutory framework recognising the fundamental right to water in India has not impacted water supply in rural areas but contributes to aiding people to realise their human right to water.

Nevertheless, the property-linked groundwater access and allocations limit the scope of expanded social rights jurisprudence by confining the benefits to very few. The land-water nexus in groundwater is a constraint on the country's universal realisation of the fundamental right to water, even though, to an extent, the groundwater-dependent State drinking water schemes have tried to ensure equity in the water supply. The absence of groundwater legislation that addresses this inequitable access and the unsustainable regulatory framework in heavily groundwater-dependent states like Rajasthan, and the inadequacy of the groundwater legislation in states like Kerala adds to the crisis.

Land ownership is the primary marker for access to water and government aid in the country. The variations in hydrogeological and climate conditions and the local social

⁸²² *D. Viswanatha Reddy and Company v Government of Andhra Pradesh* (n 46); *P.R. Subas Chandran v Govt. of A.P. and Others* (n 45).

⁸²³ Cullet, *Water Law, Poverty, and Development* (n 54) 141.

⁸²⁴ Sec 3.4.

⁸²⁵ Philippe Cullet, 'Realisation of the Fundamental Right to Water in Rural Areas' (n 296) 57.

and economic differences could not change this land rights influence in government schemes on water and subsidies. This land factor also marks the cause for social and economic inequalities that have crucial impacts on determining beneficiaries of access and allocations in water and subsidies. Land ownership patterns determined by religion, caste, gender and economic status and consequent social inequities have ramifications on groundwater access regulated by land ownership.⁸²⁶

Thus, this inequitable access to the most dependable water source is crucial in drinking water access and realising fundamental rights. Substantial property rights in groundwater cause inequitable benefit and burden-sharing in access, allocation, and distribution. The groundwater access benefits are limited to landowners. However, the burden of consequences of their over-exploitation spread across the region and generations. Such effects impede human rights like water and food and the right to enjoy a clean and safe environment.

6.2.2 Property Rights, Water Rights and Right to Food: Human Right to Water for Food

Access to sufficient water for irrigation is necessary for food generation. The contribution of groundwater for irrigation is as significant as its role in drinking water. The property rights linked to groundwater access and allocations challenge irrigation water use. Political, economic, and social interventions in water access and distribution impede water security in irrigation for many small and marginal scale farmers, women farmers and landless tenants.⁸²⁷

The mainstream discussions on the right to water emphasise water for drinking and domestic needs.⁸²⁸ In rural and peri-urban areas where the line of difference between drinking water use and irrigation or productivity use is minimal, the lack of discussions on the right to water for food and livelihood in the right to water discourse minimises

⁸²⁶ Tiwary and Phansalkar, (n 49) 43.

⁸²⁷ High Level Panel of Experts, *Water for Food Security and Nutrition: A Report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security* (FAO 2015) 13.

⁸²⁸ Barbara Van Koppen and others, 'Rights-Based Freshwater Governance for the Twenty-First Century: Beyond an Exclusionary Focus on Domestic Water Uses' in Eiman Karar (ed), *Freshwater Governance for the 21st Century* (Springer 2017) 129, 130.

the scope of realising their rights.⁸²⁹ Adequate access to water for irrigation contributes to productivity, food security, and poverty reduction in rural areas.⁸³⁰ Safer drinking water is essential for good health and nutrition strengthened by good food, while access to water for irrigation is crucial for the nation's food security and ensures producers' right to food and water.⁸³¹ Considering the role of water in the lives and livelihoods of rural society, particularly for small and marginal farmers, tenants and women, and with a thin margin of differences in various water-use reflected, the human right to water should include the right to water for food, health and wellbeing.⁸³²

The right to food is a human right recognised by UDHR, 1948. The General Comment 12 on the Right to Food following the covenant on social and economic rights requires the states to respect, protect and fulfil the obligation of ensuring the right to food.⁸³³ The interlink between food and water also received adequate attention in the discourse on the right to water. The General Comment 15 recognises the relation of water with other covenant rights, including the right to food and notes the need to 'ensure sustainable access to water for irrigation to realise the right to food' and calls upon the States to ensure adequate water is available for subsistence farming of communities including small and marginal farmers, women and indigenous communities.⁸³⁴ These duties connote that the state parties should protect water resources and prevent water diversions from irrigation to aid small scale farmers.⁸³⁵ Thus, these international documents substantiate the need to recognise the right to water for food in the human right to water, considering the thin line of differences between them.

In India, the right to food is a fundamental right, essential for enjoying a meaningful life.⁸³⁶ Development of this right embraces a similar approach adopted in many other

⁸²⁹ Ralph P Hall, Barbara Van Koppen and Emily Van Houweling, 'The Human Right to Water: The Importance of Domestic and Productive Water Rights' (2014) 20 Science and Engineering Ethics 849, 853.

⁸³⁰ Helle Munk Ravnborg and others, 'Reversing the Flow: Agricultural Water Management Pathways for Poverty Reduction' in David Molden (ed), *Water for Food, Water for Life* (Earthscan 2007) 149.

⁸³¹ Experts (n 828) 18.

⁸³² Lyla Mehta and Daniel Langmeier, 'The Rights to Water and Food: Exploring the Synergies' in Farhana Sultana and Alex Loftus (eds), *Water Politics: Governance, Justice and the Right to Water* (Routledge 2020) 68,77,78.

⁸³³ Committee on Economic, Social and Cultural Rights, 'General Comment No. 12: The Right to Adequate Food (Art. 11)' (1999) UN Doc E/C.12/1999/5.

⁸³⁴ 'General Comment No. 15: The Right to Water' (n 142).

⁸³⁵ Mehta and Langmeier (n 833) 71.

⁸³⁶ *People's Union for Civil Liberties v. UOI* (n 347).

implied fundamental rights carved from the broader meaning of the right to life, resulting from an expanded social rights jurisprudence. However, the right to food discourse in India adopts a nutrition-based approach. The SC mandated the State to implement its duty to raise the level of nutrition of its citizens, improve their standard of living and improve public health.⁸³⁷ The judicial approach emphasising positive obligations contrasts with hitherto policies on food that focused on availability and economic accessibility rather than adequacy.⁸³⁸

The judicial decisions and subsequent legislations led to the recognition of the right to food as entitlement, unlike the right to water still regulated only by policy frameworks. Water policies' prioritisation of drinking and domestic water needs often do not consider the interlink between multiple water uses like water for food and livelihood. Agriculture consumes a lion's share of groundwater and contributes to food security and the economy. The recognition of water for livelihood would widen the scope of water rights. However, recognition of water for food as a part of the right to water acknowledges the food-water security of millions. The closer ties between water security and food security for agricultural productivity require recognising the right to water for food as part of the right to water.⁸³⁹

The discourse on the right to food centred on providing adequate nutrition to citizens neglects the significance of this interlink between water and food and the importance of sufficient water for irrigation and food production. If the current nutrition-based discussions in the right to food discourse include the need to recognise water for food, it can focus on small and marginal farmers and women farmers who face discrimination in access to water for irrigation. For these sections depending on subsistence farming, recognising a right to water for food can assure them benefits of access to water sources.

The gender-based constraints on women farmers like inequities in access to land, technology, inputs like water and subsidies impact farm productivity.⁸⁴⁰ In rural areas of Rajasthan, where most of the population depends on subsistence agriculture with rampant caste and gender-based discrimination, water for food is as essential as water and nutrition-based food security. Groundwater exploration and agricultural productivity were directly proportional in such states until the former exceeded limits. The depletion of water tables due to exploitation negatively impacted farm productivity.

⁸³⁷ Constitution of India, Article 47.

⁸³⁸ Jean Ziegler and others, *The Fight for the Right to Food: Lessons Learned* (Palgrave Macmillan 2011) 267.

⁸³⁹ Amanda Cahill, "'The Human Right to Water – a Right of Unique Status": The Legal Status and Normative Content of the Right to Water' (2005) 9 (3) *The International Journal of Human Rights* 389, 396, 404.

⁸⁴⁰ Bina Agarwal, 'Food Security, Productivity, and Gender Inequality' in Ronald J Herring (ed), *The Oxford Handbook of Food, Politics and Society* (OUP 2015) 279, 280.

While more resourceful farmers invest in more sophisticated pumps and reap the benefits, the small-scale farmers who depend on sustenance farming bear the brunt.

It is also crucial in Kerala, where agricultural employment is lesser than in Rajasthan, but a considerable section still relies on agriculture for their livelihood. The State grants significant attention to promoting self-sufficiency in food generation in Kerala, where more tend consumerism is seen. In such areas where a limited number of farmers rely on agriculture and present household-based agriculture receive promotion, the same water source caters to drinking water and irrigation needs, and recognition of water for food is essential.

Non- recognition of the right to water for food deprives the subsistence farmers of their water and food security. Therefore, there are arguments for recognising a human right to water for food to guarantee sufficient water for food crops in agriculture, which is more than present recognition of the human right to water for an individual's personal and domestic needs.⁸⁴¹

Recognition of the right to water for food is also a matter of concern and discussion considering the increase in inter-sectoral water allocation from rural areas to urban areas and agricultural use to non-agricultural use.⁸⁴² Groundwater access regulated by the individual land ownership triggers the intersectoral water allocations. The uncontrolled exploration leads to plummeting water tables which aggravates the inequity created by the land-water nexus in groundwater and consequent water scarcity faced by small and marginal farmers, depriving them the benefit of food security. Hence, this groundwater-property nexus grants freedom to individual landowners to use water beneath their land, but for a small-scale farmer, this excessive use by others deprives his two SER- water and food.

6.2.3 Subsidies and Environmental Impacts on Groundwater and Aquifers: Infringement of the Right to Environment

The remarkable contribution of groundwater to the water and food security of the country makes it vulnerable to excessive use and exploitation. Excessive dependence on groundwater in India, aided by subsidised energy, credit, and technology, lead to groundwater depletion and pollution, creating negative externalities on the environment and aquifers. Impacts of degradation of its quality and quantity depletion impede water

⁸⁴¹ Inga T Winkler, 'Water for Food: A Human Rights Perspective' in Anna FS Russell and Malcolm Langford (eds), *The Human Right to Water: Theory, Practice and Prospects* (CUP 2017) 84, 122.

⁸⁴² See Molle and Berkoff (n 166).

and food security and affect environmental sustainability. Ramifications of groundwater exploitation include the effects on the right to water and food and infringes a clean and pollution-free environment.

The right to the environment, like the right to water and food, is an expanded social right under DPSP interpreted as essential for meaningful enjoyment of life.⁸⁴³ Recognition of many such social rights for the enjoyment of civil and political rights is seemingly a paradigm shift in the judiciary's approach towards SER from an 'avoidance to embrace'.⁸⁴⁴ The phenomenon of transition from avoidance to embrace is manifest through the change from the era of 'being a vigilante in upholding constitutionalism and separation of powers' to an epoch of courts being 'alive to its social responsibilities and accountability to the people' where its innovative tool of PIL aids 'democratisation of remedies'.⁸⁴⁵

Supreme Court linked the origin of duty to protect the right to environment, air and water to the inalienable common law right to clean environment, which is now a constitutional and statutory duty.⁸⁴⁶ The recognition of the right to the environment empowered by applying principles like precautionary principle, polluter pays principle, and public trust doctrine reformed environmental law. Applying these principles helped address water pollution and better manage water resources. For instance, since the Court applied the public trust doctrine to water resources in *M.C. Mehta v Kamal Nath*⁸⁴⁷, public trust is integral in water governance except groundwater regulation.

The consequences of a polluted environment have severe impacts on several human rights. For instance, in the case of women, who bear the responsibility to collect water, any environmental degradation affects their rights like the right to life and livelihood due to the inability to access adequate quantity and quality of water or access to polluted water.⁸⁴⁸ In Rajasthan, arid climate and water scarcity add to her water collection burden, creating severe consequences on her health, life, and livelihood. Pollution caused by agro-based industries like coir and spice results in severe health consequences for women in Kerala.

⁸⁴³ *Virender Gaur v State of Haryana* (n 821).

⁸⁴⁴ Katharine G Young, 'A Typology of Economic and Social Rights Adjudication: Exploring the Catalytic Function of Judicial Review' (2010) 8 (3) *International Journal of Constitutional Law* 385, 386.

⁸⁴⁵ PN Bhagwati and CJ Dias, 'The Judiciary in India: A Hunger and Thirst for Justice' (2012) 5(2) *NUJS Law Review* 171, 172–173.

⁸⁴⁶ *Vellore Citizen's Welfare Forum* (n 282).

⁸⁴⁷ *M.C Mehta v Kamal Nath* (n 267).

⁸⁴⁸ Mary Grey, 'Thirsty for Water--Thirsty for Life: Gender and Poverty in Rural Rajasthan' (2004) 9 (1) *Ecotheology: Journal of Religion, Nature & the Environment* 86.

Groundwater pollution is a slower process with the concentration of pollutants reduced with time and the distance covered. However, the effects of groundwater pollution are diffuse, and consequences spread over time, turning it to be worse than surface water pollution.⁸⁴⁹ Indiscriminate use of fertilisers and pesticides in agriculture causes nitrate infiltration in soil and water in rural areas, while industrial effluents and municipal waste are causes of groundwater pollution in industrial and urban areas.⁸⁵⁰ The current regulation of groundwater based on land rights hinders applying principles of precaution, and polluter pays to address groundwater pollution. Pollution control laws address industrial water pollution, but the diffuse pollution caused by agricultural water use and fertilisers also raises concerns and challenges to the enjoyment of the environment.

Understanding the role of subsidies in perpetuating environmental harm is vital to addressing ecological degradation caused by groundwater overexploitation. For instance, the excessive reliance on groundwater through subsidised components like fertilisers triggered the looming crisis of groundwater depletion and aquifer pollution by agricultural runoff and leaching.⁸⁵¹ Negative externalities of the modernisation of agriculture on socio-economic equality in successful states have been well noted⁸⁵², along with its impacts on environmental sustainability.⁸⁵³ However, the role of subsidies in threatening ecological sustainability through groundwater depletion and its implications on social rights need more attention.

In addition to the pressure exerted by irrigation on groundwater, the subsidies in drinking water schemes and the target for coverage of more areas in the water supply also exert pressure on local aquifers. Moreover, the State government's policies on agriculture and drinking water, which add top-up subsidies apart from the central sector schemes, act as incentives for water users to extract more and drill deeper. These subsidies could negatively impact the realisation of the fundamental right to a clean and safe environment, which demands more attention owing to the crucial contribution of a clean environment to the right to water and food. Unfortunately, the efforts for water conservation in many parts of India are minimal, and these minimal efforts cannot

⁸⁴⁹ Zaporozec (n 431) 458.

⁸⁵⁰ Kumar and Shah (n 429) 2.

⁸⁵¹ Archaya and Shah (n 428) 1787.

⁸⁵² For discussion on post Green Revolution groundwater depletion, See Anindita Sarkar, 'Socio-Economic Implications of Depleting Groundwater Resource in Punjab' (n 182) 59.

⁸⁵³ Karanjot Kaur Brar, *Green Revolution: Ecological Implications* (Dominant Publishers & Distributors 1999); Vandana Shiva, *The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics* (Zed Books 1991).

mitigate the impacts of these substantial extraction levels as the magnitude of extraction supersedes recharge rates.

6.3 Impacts of a Policy Tool on Social Rights: Subsidies and Realisation of Fundamental Rights

The judicial efforts in expanding the ambit of fundamental rights to include social rights from DPSP enabled several sections of the population to realise their fundamental rights like water and food. The state interventions through subsidies in the water sector aided in implementing such rights. However, the nexus between land ownership and subsidies and the shift in responsibilities of the State in water supply, allocation and conservation determines the extent of influence of subsidies on access to groundwater for drinking and irrigation.

The groundwater regulatory framework creates irreparable ramifications for environmental sustainability and equitable water allocations by determining beneficiaries of state drinking water and agriculture subsidies. Consequent exclusion of land-less and marginalised from the benefits of welfare-oriented state aid dilutes the objectives of subsidies, impairs constitutional principles of social and distributive justice, and compromises the realisation of social rights like the right to water and food guaranteed by the Constitution. This section explores the effects and consequences of the conditionality of land ownership to access subsidies and the shift in nature of the State in water governance on the influence of subsidies on the realisation of social rights jurisprudence and its implementation.

6.3.1 Land-Groundwater-Subsidies Interconnection: Objectives Diluted, Constitutional Principles Relegated

There is a closer interconnection between land ownership, groundwater access, and the benefits of subsidies. This interaction between subsidies and groundwater has created positive externalities on equity in groundwater access, but the nexus between subsidies and land ownership has aggravated the inequities in groundwater access. Subsidies-groundwater-land interaction creates negative externalities on environmental sustainability, including aquifer depletion overriding its limited positive effects on social and distributive equity in access to water.

The nexus between subsidies-land-groundwater raises concerns about its influence and impacts on social rights. Attaching subsidies to the land ownership dilutes its objectives

of devolving the benefits of access to natural and economic resources to the resourceless and the lower sections of the society. Similarly, it relegates the constitutional principle of social and economic justice in accessing and distributing these resources. This section highlights the context of these twin issues- dilution of policy objectives and the relegation of the constitutional tenets arising from attaching subsidies with land ownership and argues for delinking the land-subsidies nexus to widen its outreach.

Subsidies are policy instruments envisaged with a welfare objective. As a welfare measure, subsidies successfully extend the coverage of drinking water supply schemes and support efforts in the agricultural sector. These subsidies in drinking water and the agrarian sector create positive externalities on the right to water, water for food security, poverty alleviation, employment generation and rural development.⁸⁵⁴ In rural water supply schemes, subsidies targeted equity and inclusiveness in coverage of drinking water supply overcoming social and economic barriers. Several small and marginal farmers explored the benefits of groundwater access through subsidised credit, energy and technology.⁸⁵⁵ Informal water markets in rural areas also sprouted from these subsidies, acting as help to tenant farmers or landless cultivators.⁸⁵⁶

However, land ownership attached as a pre-requisite for subsidies in programmes in the agriculture sector and drinking water connection compromises its objectives- achieve distributive and social justice in the distribution of natural, material and economic resources. Ownership of land prescribed limits is the inevitable essentiality of most agricultural schemes. Evidence of property ownership is mandatory to access to benefits of agrarian development schemes and the drinking water connections. Additionally, the drinking water schemes characterised by paying for water limit the beneficiaries of subsidies. Consequently, a vast section of the population, including landless farmers, tenant cultivators, homeless, migrants, people in peri-urban areas and slum dwellers, for whom these subsidies matter significantly, remain excluded from the benefits of government schemes.

The objectives of all welfare schemes include inclusiveness, and subsidies are tools to ensure the same. However, limiting subsidies' benefits to the landowners (generally or beyond a particular land ownership limit) is a marker of the restricted scope of these schemes, and such actions hinder the devolution of these benefits to the needy. Thus, it dilutes the objectives of these schemes by compromising inclusiveness, and equity as subsidies attached to land patterns reflect the perspective of benefiting the rich, a form of inequality and unfairness. While excluding the poor and benefitting the rich dilutes

⁸⁵⁴ Sec 3.3.

⁸⁵⁵ Shah and others (n 364).

⁸⁵⁶ Ruth Meinzen-Dick, 'Private Tubewell Development and Groundwater Markets in Pakistan' (n 167) 857.

the subsidies and policy schemes objectives, these instances relegate the Constitutional principles of distributive and social justice.

The Constitution mandates the State to promote the welfare of its people by securing justice based on social, economic, and political justice and by reducing inequality by eliminating inequalities in status, facilities, and opportunities.⁸⁵⁷ The State shall also direct its policies to ensure that ownership and control of material resources of the community are equitably distributed and prevent the concentration of wealth and means of production to a few. Fixing land ownership to access benefits of subsidies that aim to aid as many access resources and improved technology or market dilutes its objectives and relegates the constitutional principles on the welfare state and fundamental rights.⁸⁵⁸

Observing that the preamble and article 38 of the Constitution highlight social justice as 'its arch to ensure life to be meaningful and liveable with human dignity and social justice being complementary to equality, Supreme Court has held social justice to be a dynamic fundamental right.⁸⁵⁹ It also held that the right to equality u/a 14 envisages social and economic justice, and law 'must seek to serve as a flexible instrument of socio-economic adjustment to bring about peaceful socio-economic revolution under the rule of law.'⁸⁶⁰

Subsidies are welfare tools in different spheres, including access to natural, material, and economic resources to envisage social justice and economic equality. Furthermore, these subsidies are means for economic empowerment for many small and medium farmers, including women farmers in India, where most farmers depend on sustenance farming. Economic empowerment is their fundamental right, as noted by the court:

“Economic empowerment to the poor, Dalits and Tribes, is an integral constitutional scheme of socio-economic democracy and a way of life of political democracy. Therefore, economic empowerment is a basic human right and a fundamental right as part of the right to live, equality, and of status and dignity to the poor, weaker sections, Dalits and Tribes.”⁸⁶¹

⁸⁵⁷ Preamble of the Constitution of India incorporates the spirit of a welfare nation.

⁸⁵⁸ Constitution of India, Article 39(c).

⁸⁵⁹ *Consumer Education & Research center v Union of India* MANU/SC/0175/1995 [20, 21]; *Air India Statutory Corporation v United Labour Union* MANU/SC/0163/1997; *Ashok Kumar Gupta v State of UP* MANU/SC/1176/1997.

⁸⁶⁰ *Dalmia Cement (Bharat) Ltd v Union of India* MANU/SC/1585/1996 [15, 24].

⁸⁶¹ *Murlidhar Dayanadeo Kesekar v Vishwanath Pandu Barde* MANU/SC/1046/1995 [23].

Measures like subsidies are inevitable to address poverty and impoverishment, economic disparities, and social inequality. Subsidies in irrigation possess multifield aims- to secure water security and generate food security, economic growth, poverty alleviation and rural development. Similarly, water subsidies help economically and socially backward sections access government piped supply for sustained water in their premises or technology and credit to ensure sustainable irrigation addressing their social challenges.

The social and economic differences in access to natural resources like land and groundwater and the discrimination in access to subsidies are rampant in water stress, groundwater-dependent Rajasthan. Gender discriminations widen these social and economic disparities in society.⁸⁶² Such discrimination hinders people's ability to develop and exercise their fundamental right to life and livelihood. The economic discrimination predominates in inequitable access to land, water, and subsidies in Kerala, where these differences are apparent in implementing state schemes in drinking water and agriculture.

Subsidies attached to land ownership only widen the gaps, aggravating the inequities in groundwater access influenced by inherent social injustice based on caste and gender, which determines land rights.⁸⁶³ Generally, human rights mechanisms develop from the issues associated with private property rights in land, a causal factor for many atrocities and violations.⁸⁶⁴ The removal of private property as a fundamental right from Part III of the Constitution to a legal right is an example of efforts to implement distributive justice in land rights and avoid litigations on social and economic welfare-oriented land reforms. After decades of land reforms, its benefits have not been universal, with land ownership skewed towards upper castes.⁸⁶⁵

If these welfare measures link to land ownership, which is the prime cause of all these inequalities, the State relegates its constitutional obligations and violates fundamental rights to social justice and economic empowerment. The essentiality of proof of land ownership to access subsidies in welfare schemes violates the constitutional responsibility of the State to protect weaker sections like SC/ST from all social injustices and all forms of exploitation.⁸⁶⁶ The State's actions lead to inequitable

⁸⁶² Sec 5.2.2. and 5.2.4.

⁸⁶³ For discussion on land rights and policies, see Varsha Bhagat-Ganguly (ed), *Land Rights in India: Policies, Movements and Challenges* (Routledge 2016).

⁸⁶⁴ Jérémie Gilbert, *Natural Resources and Human Rights: An Appraisal* (OUP 2018) 36.

⁸⁶⁵ Prashant K Trivedi, 'Issues and Challenges of Land Dependents: The Case of Dalits in Uttar Pradesh' in Varsha Bhagat-Ganguly (ed), *Land Rights in India: Policies, Movements and Challenges* (Routledge 2016) 134.

⁸⁶⁶ Constitution of India, Article 46.

benefit-sharing among citizens and widen the existing social gaps between sections through denial of opportunities for empowerment and development by depriving them of access to water for drinking and irrigation and government support.

Furthermore, attaching subsidies and land rights also compromises public health concerns in drinking water when landless, peri-urban residents, slum dwellers, migrants, and the poor cannot access any treated water sources like piped drinking water. According to art 47, raising the level of nutrition and standard of living of people and improving public health are primary duties of the State. It is particularly significant with changing role of the State in water supply and the nature of water delivery. Replacing individual water requirements/ per capita water demands with household water security and removing all public taps due to conditionalities attached with international loans focusing on IHTC, public taps are memories and simultaneously deny the right to clean drinking water for those unable to pay for individual water connections.⁸⁶⁷ Hence, like the groundwater-land nexus results in inequitable water access and allocations, attaching land rights to avail subsidies does not satisfy the objectives of schemes guaranteeing subsidies but also contributes to violating several rights of citizens as it relegates the State's Constitutional obligations, hampering the realisation of social and distributive justice in water.

6.3.2 Financial Support to Incentives: Changing Nature of Subsidies vis a vis State Responsibilities in Drinking water

The fundamental right to water recognises the State's duty to respect, fulfil, and protect water rights, including water conservation. The state water supply schemes envisage a welfarist approach to providing water to its citizens lack a rights-based approach. Recognition of the significance of water to life and livelihoods constituted the spirit and justifications of all these schemes.

However, with the shift of the State's role in water supply from a supplier to a facilitator triggered by the neo-liberalism influenced interventions of IFIs, water management patterns also witnessed changes. The burden of everyday water management, including protecting water sources, devolved from the State to the scheme's beneficiaries.⁸⁶⁸ Subsequent changes in subsidies policies followed, which, along with the changes in State's role, exert a strong influence and acute impacts on social rights like drinking water, water for food, and the right to a clean and safe environment. This section

⁸⁶⁷ See Sec 4.3.1 and 4.3.2.

⁸⁶⁸ Sangameswaran (n 312) 62.

discusses the user's changing mode of responsibility concerning access to subsidies arising from this shift in the State's role.

Neoliberal water governance promoted by IFIs emphasises good governance with equity, transparency, accountability, and participation for financial sustainability and efficiency in water governance.⁸⁶⁹ Participation reflects decentralisation of responsibility, with devolution reaching the lowest level targeting the end-users. In such cases, State performs a limited role- that of a facilitator. The neo-liberal governance agenda promotes more user participation and a cost-recovery process focuses on efficiency than equity. Any changes in the State's role influenced by these neo-liberal agendas critically impact the fundamental rights jurisprudence in India that envisaged a more State's duty-oriented water supply.

With changes in State's position, the responsibility of management and conservation of water schemes installed by the State now vests in the user. The water supply schemes promoted by the IFIs in India emphasise these increased roles and responsibilities for water users in managing water supply schemes even though the State remains the water source owner and provides technical assistance. However, its position now changes to a facilitator of running projects than the water supplier in previous welfare-oriented water schemes with a limited role for water users and minimal cost recovery.

The shift in responsibility of water supply extended to conservation schemes dilutes the duties of the State in water supply and conservation.⁸⁷⁰ In such scenarios, to get the benefits of government aid, a mandatory prior-performance of conditions, including a proof for conservation efforts by the applicant, changes the nature of government aid from top-down subsidies to incentives for his efforts. Here, the responsibility for water conservation remains in the water user/ public who shall be incentivised by the State in a later phase.

In all such cases where water user has more responsibility in water management to conservation, the State cannot be held responsible and accountable for non-performance of its obligations, which contrasts with the philosophy of fundamental rights. If the State delegates its water management and conservation duties to the beneficiaries, it implies the non-performance of State's obligations, which is unchallengeable owing to the absence of entitlement in water.

The apparent shift in water management and conservation responsibility raises concerns about the rights and duties in water supply envisaged by the Constitutional interpretations of the judiciary. It reflects a conspicuous absence of clear distinction

⁸⁶⁹ Cristy Clark, 'Of What Use Is a Deradicalized Human Right to Water?' (2017) 17 (2) Human Rights Law Review 231, 236.

⁸⁷⁰ *Vishala Kochi Kudivela Sambrakshasamiti v State of Kerala* (n 42); *M.C. Mehta v. Kamal Nath* (n 267).

between the rights-duties of the State and the public in water management and conservation but follows a delegation of responsibility to the right holder. The reason for a change in State's role in water supply accounts to present the structure of the right to the water. Firstly, there is currently no recognition of the fundamental right to water in any statute or state water supply schemes. Secondly, neither judiciary nor legislature has defined the scope and nature of the State's duties in realising the fundamental right to water. These two factors contribute and substantiate the adoption of any measures by the executive for water supply which enjoys the freedom and responsibility to adopt and implement any such schemes.

Additionally, the terminology used for water users in water supply schemes denotes the non-recognition of the right to water in water schemes and the approach of the State. All these programmes identify the right holders as beneficiaries. The terminology is in the similar form for water supply schemes⁸⁷¹ and sanitation programmes.⁸⁷² The concept of beneficiaries negates the significance of the rights and entitlements in water. It often reminds us of two connotations- a paternalistic State, which enjoys the responsibility of water supply to its citizens (in the welfare-oriented schemes) and the economic nature of water (in neo-liberal IFI sponsored projects).

Such absence of rights in water supply schemes and a change in the State's role with increased user responsibility in a country like India with diversities in natural, social, economic, and climatic factors widens the distributive and social inequities in water access. It denies many equities and justice in water access, especially the poor. Access to water supply schemes where the State performs a minimal role always skews the rich/ powerful sections, and upper caste people discriminate against the socially and economically downtrodden sections.⁸⁷³

The State's minimal role also points to the reduction in the influx of subsidies but an increase in payment for water services. In most cases, subsidies continue to make the process inclusive, considering the social and economic disparities in the country but a different form- incentives, demanding prior performance from beneficiaries. Conditionality of beneficiary contribution to programmes also justifies this changed form of subsidies. However, the beneficiary contribution creates an economic burden for the poor and downtrodden, limiting the scope of their access to water and resulting in equity. The poor and landless who do not benefit from the land-water nexus in groundwater now bear the burden of payment for water connections and the responsibility of water conservation.

⁸⁷¹ See Sec 4.5.2.

⁸⁷² Philippe Cullet, 'Policy as Law: Lessons from Sanitation Interventions in Rural India' (n 327) 241, 254-256.

⁸⁷³ Secs 4.4. and 5.3

6.4 Vacuum in Right-Duties in Social Rights: Rationalising Shift in State's Role and Approach

Judicial contribution to the expansion of SER in India strengthened the fundamental right jurisprudence and made the State accountable for its actions on matters beyond the apparent rights in Part III to Part IV. The courts' judicial activism created several positive impacts on social rights, which hitherto were under the domain of the executive and the legislature in the form of scope for attracting attention to many neglected rights, enactment of laws and policies for such rights, formulation of benchmarks and indicators, and the development of domestic human rights jurisprudence in accord with international principles.⁸⁷⁴

Though the scope of judicial activism in the water created a fundamental right essential to enjoy the right to life, it did not define the content and nature of rights-duties in the right to water. The courts' contribution in water jurisprudence did not benefit the normative content of the right to water but for water resources management in applying environmental law principles and creating institutional mechanisms.⁸⁷⁵

Judicial silence on the content of the right to water created a vacuum in nature, filled differently by the judiciary and the executive. The drinking water schemes of the government and the judicial decisions assert these divergent approaches.⁸⁷⁶ The courts' approach points to the adoption of public trust for water management where the State holds water resources in the capacity of a trustee. On the other hand, the executive adopts a different approach where water is either a 'socio-economic good'⁸⁷⁷ or a 'public good'⁸⁷⁸ than an entitlement. This diversity in nature of the right to water possesses

⁸⁷⁴ S Muralidhar, 'India: The Expectations and Challenges of Judicial Enforcement of Social Rights' in Malcolm Langford (ed), *Social Rights Jurisprudence: Emerging Trends in International and Comparative Law* (CUP 2008) 102, 117-118.

⁸⁷⁵ *M.C Mehta v Kamal Nath* (n 267); *Vellore Citizen's Welfare Forum* (n 282). In most of these cases, courts applied the principles like polluter pays, precautionary principle, and public trust doctrine for water governance which mainly cater to pollution control and management.

⁸⁷⁶ Philippe Cullet, 'The Right to Water in Rural India and Drinking Water Policy Reforms' in Malcolm Langford and Anna FS Russell (eds), *The Human Right to Water: Theory, Practice and Prospects* (CUP 2017) 677, 683, 686.

⁸⁷⁷ Department of Drinking Water (n 93).

⁸⁷⁸ 'Guidelines on NRDWP'(n 301).

significant connotations on the rationale and justifications of subsidies and changes in subsidies associated with drinking water and agricultural development schemes.

6.4.1 State as a Trustee of Water Resources: Emphasis of Water as Public Trust by the Courts

The court's attention to the increasing concerns of rising pollution and depletion of water resources led to judicial interventions based on environmental law principles.⁸⁷⁹ Such developments result from the prudent judicial envisioning to arrest the growing anthropogenic encroachments over water and the eco-system. These interventions incorporated substantive principles like intergenerational equity, sustainable development, polluter pays principles, and procedural principles like public trust doctrine, precautionary approach and public participation in decision making.⁸⁸⁰

Litigations on water pollution and environmental harm, primarily through public interest litigations, laid the way for expanded judicial 'law making' with the adoption or incorporation of environmental law principles. This judicial activism has led to significant advancements in environmental governance with developments in policies and laws.⁸⁸¹ Adjudication of these ecological and water litigations saw a deviation from what Jeff King addresses as 'Constitutional Avoidance' to 'Constitutional Inclusion', meaning a shift from traditional private law or statutory remedies to Constitutional remedies in such cases.⁸⁸² In India, this has fostered recognition of the right to water, the State's duties and reiteration of water as a public trust.

Water governance and management received considerable attention from the courts with applying these principles, and it witnessed an upgrade from tortious liability to constitutional remedies in infringement of the right to water. The constitutional protection of the right to water attributed to upholding the right to water as a fundamental right and applying public trust doctrine to water governance led to significant changes in water governance in the country.

⁸⁷⁹ Michael R Anderson, 'International Environmental Law in Indian Courts' (1998) 7(1) Review of European Community & International Environmental Law 21, 27.

⁸⁸⁰ *M.C Mehta v Union of India* (n 823); *MC Mehta v Union of India* (1997) 2 SCC 353; *M.C Mehta v Kamal Nath* (n 267); *Vellore Citizen's Welfare Forum* (n 282).

⁸⁸¹ L Rajamani, 'Public Interest Environmental Litigation in India: Exploring Issues of Access, Participation, Equity, Effectiveness and Sustainability' (2007) 19 (3) Journal of Environmental Law 293, 295.

⁸⁸² Jeff King, *Judging Social Rights* (CUP 2012) 289–325.

The PTD is the most crucial principle applied in judicial evaluation in environmental and natural resource litigations.⁸⁸³ The courts consistently applied PTD in water governance, reiterating the State's duties in implementing the fundamental right. The public trust doctrine is the most rational and significant development in fundamental rights jurisprudence on the water, with both interconnected. Firstly, in both the fundamental right to water and the PTD, courts upheld the State's duty to implement the right to water and protect water resources. Secondly, the public trust doctrine enables equitable water access to every person, a pre-condition for realising the fundamental right to water. PTD acts as a tool for implementing the State's duties in the fundamental right to water.

PTD plays a significant role in natural resource governance like water because, according to this doctrine, water is a public trust, and the State must protect water resources as the trustee.⁸⁸⁴ The significant element of PTD applicable to water governance is the nature of the State's duty defined under this doctrine that helps to address water management problems. Firstly, the PTD considers natural resources as public resources than private resources. Applying this to groundwater governance, PTD can help delink the land-water nexus and bring it under the purview of state control from the hitherto individual land-based control. The public nature of natural resources vests upon the State sweeping powers over its management for the benefit of the public. In such a case, the State can mitigate the negative externalities of groundwater access and allocation and current regulation on social and distributive equity and the water resources.

Secondly, even though the State enjoys broader powers over natural resource management, the PTD restricts the powers of the State, which therefore acts as a sword over its actions. As per the doctrine, the public is the beneficiary of a country's natural resources, and the State cannot convert public resources to private ownership.⁸⁸⁵ Similarly, the use of trust property should be for general purposes and available for their use. It bars the State from selling that property and requires appropriate maintenance without losing its use and values.⁸⁸⁶ It, thereby, holds the State accountable for its actions.

Thirdly, the State as a trustee of natural resources held for the benefit of the public, ought to ensure the options, quality and quantity of the natural resources for the present and future generations. It connotes the duty of the States to adopt adequate measures for environmental protection. Hence, the responsibility for environmental protection is

⁸⁸³ Sax (n 264) 474.

⁸⁸⁴ *M.C Mehta v Kamal Nath* (n 267).

⁸⁸⁵ *ibid* 27.

⁸⁸⁶ Sax (n 264) 477.

also an integral part of public trust. Applying it to groundwater regulation can assure required interventions in groundwater exploration, leading to its conservation and preservation because groundwater would constitute a public trust.

These duties vested in the State by PTD, along with the protection of rights of the public over natural resources, make it the perfect mechanism to implement social rights like the right to water, food and environment because all these natural resources are trust properties held by the State as a trustee for the public. Supreme Court explained this premise of trust in natural resources:

“Natural resources belong to the people, but the State legally owns them on behalf of its people and from that point of view natural resources are considered as national assets, more so because the State benefits immensely from their value. The State is empowered to distribute natural resources. However, as they constitute public property/national asset, while distributing natural resources, the State is bound to act in consonance with the principles of equality and public trust and ensure that no action is taken which may be detrimental to public interest. Like any other State action, constitutionalism must be reflected at every stage of the distribution of natural resources”.⁸⁸⁷

This doctrine creates a right among the public to access and enjoy specific natural resources and a duty upon the State to ensure an equitable distribution of natural resources based on the principle of equality, public trust, and public interest.

PTD guarantees procedural justice for implementing the substantial right, the fundamental right to water. Its application has been emphasised in the water sector in India owing to the nature of the right to water, and the scope of PTD explained in *Kamal Nath* enables its application to address the impairment of the right to water by anthropogenic activities like pollution, encroachment, and deterioration of its quality by activities like use of fertilisers, the influx of untreated industrial waste and ineffective implementation of statutes.

The courts have reiterated the application of PTD in water management and reminded the State of its legal duty to protect natural resources, including the conduct of mandatory EIA for every project. State as a trustee cannot transfer any trust properties to private property, and any such transfer interfering with people's right to access light, air, and water can invoke affirmative action by courts for its protection.⁸⁸⁸ The reiteration of PTD in water governance is a reminder that water cannot be a private resource but a public resource. It implies that State cannot allow private management of water resources, which aids the State to delink the property nexus from groundwater

⁸⁸⁷ *Centre for Public Interest Litigation v Union of India* MANU/SC/0089/2012 [63].

⁸⁸⁸ *Association for Environment Protection v State of Kerala* MANU/SC/0622/2013 [9].

regulation. Similar instances of progressive approach by Courts throw light to an expansionary interpretation of water in PTD discourse extending its application to groundwater.⁸⁸⁹

However, the courts' emphasis on PTD hasn't been successful in ensuring its application to groundwater regulation, adding to the concerns of impacts of groundwater exploitation. Firstly, the courts have explained the nature and scope of its extent in water governance even though it adopted the vision of Prof Sax. It applied PTD with environmental principles like polluter pays principle and sustainable development, narrowing its scope and nature in water governance but open venues of broader interpretations in ecological protection.⁸⁹⁰ Reading PTD with regulations addressing environmental pollution helps mitigate the impacts of water pollution, but such application cannot handle the more general issues of groundwater exploitation and consequent depletion of the water tables.

Secondly, its application to groundwater regulation is dubious due to the current groundwater regulations in India based on land-water nexus, even though PTD is an integral part of the Indian legal system. Successful application of PTD in groundwater is possible provided the delink of property nexus in groundwater followed in Common Law occurs.⁸⁹¹ Thirdly, the PTD doesn't delink the property rights in natural resources, yet another factor limiting its scope. Such property rights are also dubious because, while it asserts that the State is the trustee of all-natural resources, it doesn't vest any property rights in public.⁸⁹² The property rights are integral to PTD, restricting the scope of its application in the Commons like water. Despite all loopholes and restricted content of PTD that allow the Executive to interpret and apply different approaches in surface water and groundwater regulations, the courts opine that PTD is the best possible way to ensure water governance and management equity and sustainability.

6.4.2 Influence of Neoliberalism on Water Governance and the State's Role: Water is a 'Good', not an 'Entitlement'

⁸⁸⁹ *The State of West Bengal v Kesoram Industries Ltd* MANU/SC/0038/2004 [389,390]; See also the Single Bench Decision in *Perumatty Gram Panchayat v State of Kerala* WP (C) No 34292/2003 which was however, overruled on Appeal.

⁸⁹⁰ Jona Razzaque, 'Application of Public Trust Doctrine in Indian Environmental Cases' (2001) 13 (2) *Journal of Environmental Law* 221, 233.

⁸⁹¹ Tuholske (n 262) 221,222.

⁸⁹² Razzaque (n 891) 233.

Water governance in India provides an ambiguous view of applications of different principles in the drinking water sector. While the courts are consistent in upholding water as a public trust with the sweeping role of the State in ensuring the rights of beneficiaries, the Executive follows a non-rights-based approach. The vacuum created from the non-definition of the scope of rights and duties in water by the Courts justifies the Executive's choice of its strategy towards drinking water supply programmes, including the changes in its role.

In the absence of a rights-based approach to water, non-statutory executive policies reign the implementation of water supply programmes.⁸⁹³ The central government schemes on water supply schemes and the national water policies manifest the attention granted to the significance of clean drinking water, despite recognising the fundamental right to water in such projects.

The influence of neo-liberalism and consequent changes in the State's role in water supply schemes results from this vacuum in the rights-duties paradigm in implementing the fundamental right to water. The intervention of IFIs with the conditionality of reforms for loans triggered these water reforms.⁸⁹⁴ Such influence on State's drinking water policies brought structural, institutional and conceptual changes in water schemes. The structural reforms include devolution of responsibility, the democratisation of decision-making through public participation, and embedded marketisation in payment for water.⁸⁹⁵ The institutional and conceptual framework changes are more significant as the former turned the State from a provider to a facilitator, and the latter underscored water as an economic good, accessible only with the user's ability to pay.

These changes in water governance, particularly the institutional and conceptual changes led by the neoliberalist agenda of IFIs, influence the enjoyment of social rights. Social rights heavily depend on the State's action for its progressive realisation.⁸⁹⁶ Neoliberalism in natural resources emphasises commodification, privatisation and commercialisation, opens the market, and compromises the enjoyment of social rights of many downtrodden sections.⁸⁹⁷ Such policies weaken social rights discursively and

⁸⁹³ Philippe Cullet and Sujith Koonan, *Water Law in India: An Introduction to Legal Instruments* (OUP 2017) 150 .

⁸⁹⁴ Charles Gore, 'The Rise and Fall of the Washington Consensus as a Paradigm for Developing Countries' (2000) 28 (5) *World Development* 789.

⁸⁹⁵ O'Reilly and Dhanju, 'Hybrid Drinking Water Governance' (n 785) 626.

⁸⁹⁶ Adam Mcbeth, 'Privatising Human Rights: What Happens to the State's Human Rights Duties When Services Are Privatised?' (2004) 5 (1) *Melbourne Journal of International Law* 133.

⁸⁹⁷ Paul O'Connell, 'The Death of Socio-Economic Rights: The Death of Socio-Economic Rights' (2011) 74 (4) *The Modern Law Review* 532, 534.

structurally, characterising them to less preferred rights by the government and markets. The structure and implications of economic liberalisation and globalisation also limit the scope of socio-economic rights realisation.⁸⁹⁸

The conceptual changes in the water sector are evident through the trajectory of changes adopted in different water supply schemes. From a welfare state perspective, with the responsibility of a sole water provider, the conceptual framework on the nature of water changed over time. From a 'basic need' of life in ARDWSP, State moved to consider water as a 'socio-economic good' in RGNDWM in 1999⁸⁹⁹; from a 'social right' to 'socio-economic good' in Swajaldhara, 2002⁹⁰⁰ to a public good 'with everyone enjoying the right to demand water, and it is the activity of the government to fulfil the basic needs of people' ⁹⁰¹ under NRDWP. Since NRDWP, the focus of attention shifted from individual water security to household level deviating from the water jurisprudence adopted by courts recognising the fundamental right to water for every individual.⁹⁰² The current programme, JJM that incorporates 'basic need' approach even though implemented on a demand-driven, community managed, decentralised basis⁹⁰³ attaches prioritisation for individual household-level piped water connections and public water connections and the water security of households than per capita water needs of individuals.⁹⁰⁴

From an erstwhile paternalistic welfare-oriented water supplier/ provider, these policy changes reduced its role to a facilitator, foregrounding community-led water management. Structural policy reforms triggered by conditionalities of external loans demanded further devolution from local bodies to user associations or communities, which coincide with arguments for the efficient administration of a scarce resource by applying good governance principles.⁹⁰⁵ Programmes like Jalanidhi in Kerala provided

⁸⁹⁸ Marius Pieterse, 'Beyond the Welfare State: Globalisation of Neo-Liberal Culture and the Constitutional Protection of Social and Economic Rights in South Africa' (2003) 14 Stellenbosch Law Review 3, 16.

⁸⁹⁹ 'Guidelines on ARWSP' (n 300).

⁹⁰⁰ 'Guidelines on Swajaldhara, 2002' (n 93).

⁹⁰¹ 'Guidelines on NRDWP'(n 301) s 2.

⁹⁰² *ibid* s 9.1.

⁹⁰³ 'Operational Guidelines for JJM' (n 302).

⁹⁰⁴ Sriroop Chaudhuri and others, 'Water for All (Har Ghar Jal)' (n 798) 254.

⁹⁰⁵ Kathryn Furlong, 'Neoliberal Water Management: Trends, Limitations, Reformulations' (2010) 1 (1) *Environment & Society* 46, 48–49.

a glimpse of externalities like loan conditionalities on the State's role in the water supply.

The changes in the conceptual framework on the nature of water from a basic need/ social right to an economic good added with institutional changes in the role of the State impact the policies on subsidies. The subsidies now turn to be incentives for the users' actions than the State's grants/ interventions for enabling them to access the water connections. This transformation of the State's role and consequent changes in subsidies contrasts with the duties envisaged in fundamental rights jurisprudence, where the State is the pivotal point of water supply. There is consistent domination of the right-based approach in water in judicial discourse, and public trust doctrine has been a procedural aspect for better water governance. Subsidies were policy instruments for the State to implement their duty of fundamental right to water. Any changes in the nature and scope of subsidies can deny several million people the means to realise their fundamental rights.

6.4.3 Subsidies in Water Supply Schemes: Balancing the Role of State and Filling the Vacuum

The previous subsection showed the ambiguous approaches towards water governance by two significant entities- the Court and the Executive. While the Court applied PTD to ensure the protection of water resources to protect the fundamental right to water, the vacuum created by the lack of defined nature of rights and duties in the right to water and the influence of IFIs in water policies led the Executive to deviate from this rights-based approach in water governance. The Courts emphasised a more proactive role of the State in implementing this right, but the neoliberalist agenda of IFIs envisaged minimal State role.

Despite all structural, institutional, and conceptual changes in State's role, subsidies remain an integral component in the water policy-based executive framed water supply programmes. This subsection examines whether subsidies could act as a bridge between the Court upheld duties of the State in water supply and neoliberalist influenced the limited role of the State as a facilitator.

The minimal role of the State in the water supply leads to inequity and injustice among the marginalised and the poor who cannot access safe and clean drinking water without government interventions. While this inequity violates their fundamental right to water, in the rural areas where the margin of difference between drinking water and irrigation water is minimal, changes in the State's role impacts water for food and drinking water in such areas. In irrigation, such limited groundwater access determined by land rights and inequity in the right to water has severe connotations to sustenance farming and

farmers' right to food.⁹⁰⁶ Their rights are affected by increased intersectoral water allocations from agricultural to non-agricultural or rural-urban water uses unless it involves adequate management of sectoral distribution.⁹⁰⁷ The conversion of agricultural land to non-agricultural uses and exploitation by packaged drinking water companies deprive small scale farmers of their right to water and food.⁹⁰⁸ Hence, the limited role of the State could never assure efficiency in water supply unless informed by equity and sustainability.

In such context, subsidies could act as a bridge between the two contrasting conceptual frameworks on water that promotes the same idea in different forms- ensuring the right to water using human rights framework (the fundamental rights jurisprudence of the Court) and market-based cost recovery method with a focus on the ability to pay (IFI supported schemes). In both cases, the policies adopted by the State can lead the line between these two situations where the State is integral but in different forms- supplier of water/ duty bearer of fundamental rights and the facilitator/ with responsibility devolved to the water user. Subsidies have been integral in all drinking water programmes in India since its inception and have helped millions access water supply schemes. Since the Courts haven't defined the nature of the performance of duties and components included in such implementation, subsidies have been the State tools to implement their responsibilities and help the water users realise their rights. Despite the State's role shrunk to the facilitator, subsidies continue because of its role as a people's aid. The State provide subsidies to the water users to avail the water supply but with the added responsibilities of schemes management at the user level.

Such subsidies could also mitigate the inequities created by the land-groundwater nexus, which hitherto confined the benefit of groundwater access to resourceful and the landowners. The groundwater-dependent state water supply has tried to maximise groundwater benefits through subsidised drinking water schemes.

Additionally, in a welfare state like India, converting water to an economic good is not feasible considering the poverty levels and inability of millions to pay for their fundamental right like water. Subsidies are necessity for many sections to avail their fundamental rights. Governments continue subsidies system due to this necessity and political reasons despite the State's transition to facilitator also changed the nature of subsidies to incentives, which demand people's performance before claiming subsidies.

⁹⁰⁶ See generally, Lorenzo Cotula, 'The Property Rights Challenges of Improving Access to Water for Agriculture: Lessons from the Sahel' (2008) 9 (1) *Journal of Human Development* 5.

⁹⁰⁷ Ruth Meinzen-Dick and Claudia Ringler, 'Water Reallocation: Drivers, Challenges, Threats, and Solutions for the Poor' (2008) 9 (1) *Journal of Human Development* 47, 58–60.

⁹⁰⁸ Many a times, these conversions are without external force but done for monetary benefits by farmers who find the conversions more profitable than agriculture considering the rising land values.

6.5 Expanded Social Rights vs Neoliberal Interventions in Water Governance: Can PTD bridge the Gap and Substantiate Subsidies?

As pointed in the previous section, subsidies are State tools to aid people in accessing formal water supply. They also balance the State's Constitutional obligation of ensuring fundamental rights and the policy formalities of water schemes. It is particularly significant owing to its role in guaranteeing expanded social rights in India like water, food and environment, amid the changes in State's role. Despite the positive externalities caused by subsidies in water access, it is inevitable to examine whether they succeed in ensuring equitable, inclusive and sustainable groundwater access. It also demands an examination of how adopting water governance informed by PTD can mitigate the impacts of inequitable groundwater access, unpack the land-water nexus that hinders the successful application of subsidies and ensure equity and sustainability in groundwater access.

The factors that hinder the equitable application of subsidies among its beneficiaries and consequent negative externalities outweigh the positive impacts caused. Several factors contribute to the limited role of subsidies in access to water for the enjoyment of social rights.

Firstly, land ownership as a factor determining groundwater access also extends to determining beneficiaries of subsidies. Subsidies attached to land ownership narrow its scope and limit the chances of a meaningful enjoyment of social rights envisaged by the courts, thus infringing the 'fundamental right u/a 21'. Conditionality of land right to access groundwater and subsidies violates SER and CPR- right to water, food, and life and livelihood. It also violates the right to equality when, in addition to this land criteria, caste, gender, and economic status also determine access to groundwater, beneficiaries of water supply schemes and subsidies. For instance, while all these factors determine beneficiaries of water supply schemes in Rajasthan, economic disparities and power equations predominate the determination of water supply schemes in Kerala.⁹⁰⁹

The second factor is the contradictory approach between water as a fundamental right and water as a socio-economic good. It impedes the scope of subsidies. The State as a facilitator can only compound the inequities caused by the land-water nexus. Lack of a

⁹⁰⁹ See Secs 4.2, 4.5 and 5.2 and 5.4

right-based approach limits the range of State interventions like subsidies that helped realise that right. For instance, water supplied by the State is increasingly treated as good to buy than a right to be recognised. Water as an economic good applies to the State water supply, but the land-water nexus controls the access to conventional groundwater sources. Fundamental rights jurisprudence available against the State cannot address the inequities in groundwater access in private lands, limiting the options and scope for millions to access groundwater. Increasing reference to water as an economic good further reduces their scope of accessing State water supply due to their inability to pay for water.

Thirdly, the State's transition from a provider to a facilitator and then reverted slowly to mid-position highlights a diverse approach but added to hurdles in implementing subsidies. The neoliberal water policy in India is embedded neoliberalism which forms a midway between State authority and market-driven water management.⁹¹⁰ The ambiguous approach towards the water and programme implementation strategy reflects this embedded form of neoliberalism. However, it highlights a social rights framework due to the constraints of constitutional commitments. For instance, the latest JJM implemented in states also reflects the socio-economic nature of water where guidelines project water as a basic need, but the implementation strategy reflects an economic perspective.⁹¹¹ Such ambiguity adds concerns to the nature of subsidies attached to the programmes.

Lastly, non-recognition of a rights-based approach in water by the State is an apparent effort to evade the constitutional and human rights obligations. This non-recognition and influence of IFIs justify the choice of the Executive to reduce the water-sector subsidies, which could create severe repercussions on social rights. It also explains the adoption of water as an economic good, smoothenes the State's transition from a provider to a facilitator, and legitimises the 'ability to pay'⁹¹² in addition to the justification for reducing subsidies in water.

Any subsidy reduction critically impairs several sections of the population's social rights/ fundamental rights, for subsidies help many realise their fundamental rights. Adopting a rights-based approach in a state water scheme can guarantee more protection than a socio-economic or essential service approach whenever a

⁹¹⁰ See for discussion on neoliberalism in water, Madeline Baer, *Stemming the Tide: Human Rights and Water Policy in a Neoliberal World* (OUP 2017).

⁹¹¹ Operational Guidelines for JJM (n 302).

⁹¹² For instance, Swajaldhara scheme where users were to pay costs for capital and maintenance. See AJ James, 'From Sector Reform to "Swajaldhara" — Scaling up in India' (2004) 23 (2) *Waterlines* 11.

contradiction arises between these two approaches.⁹¹³ It thus highlights the need for a rights-based approach in the water supply that can justify the need for subsidies, considering the role played by subsidies in groundwater access and allocation. In that context, the application of PTD can act as a bridge between social rights and neoliberalist water governance and justify the necessity of subsidies.

The executive highlights the justification for structural, conceptual and institutional changes in water governance and consequent subsidies as to inadequate judicial discourse on rights-duties in water. However, the judicial non-explanation of right-duty is not a judicial fault but a deliberate attempt to avoid judicial activism turning to judicial encroachment over other branches of government.⁹¹⁴ Nevertheless, the courts' attempt to explain the nature of the water right reflects in applying principles like PTD, reiterated as an integral component of the law.

PTD could guide the executive in formulating water schemes even though entitlement is absent in water supply schemes. It could lead the changes in groundwater regulation which hitherto caused inequitable access and allocations with its old land-water nexus. The State as trustee holds natural resources for the benefit of all, irrespective of any differences, which could assure equity in groundwater access.

The trusteeship projected in PTD requires the State to protect and preserve the resources from harm and prevent them from converting for private use. This restriction of conversion to personal use can justify its applicability in groundwater governance to unpack the private control over it and prevent the structural, institutional and conceptual changes in water influenced by neoliberalism. The State, a trustee, cannot be a facilitator and water, a public trust, cannot be an economic good. Instead, the State can only be the duty bearer to promote public interests whose actions should not impair such public interest, and water shall be the basic need, a connotation essential for the realisation of social rights. In that case, the trustee should adopt all measures that help the beneficiaries enjoy their rights, including subsidies for assisting them to access water.

⁹¹³ Wouter Vandenhole and Tamara Wielders, 'Water as a Human Right – Water as an Essential Service: Does It Matter?' (2008) 26 (3) Netherlands Quarterly of Human Rights 391.

⁹¹⁴ See generally, Sathe (n 817).

6.6 Summary

This chapter examined the influence of subsidies on the realisation of social rights in India. Subsidies are instrumental in helping millions to access water to realise their social rights like the fundamental right to water and food. However, the negative externalities resulting from excessive subsidies to access groundwater led to environmental damage, which has severe repercussions over the right to the environment. It also impacts the right to water and food, creating a loop of harm in realising social rights. Adding to these negative externalities of subsidies, the structural, institutional and conceptual changes that occur in the approach of the State in water supply schemes, influenced by neoliberalist, IFI interventions, combined with the land-subsidies nexus in accessing subsidies, limits the role of subsidies in the realisation of social rights. Despite the limited role of subsidies due to the neoliberalist interventions in water supply schemes, subsidies continue to balance the concerns between State's differential duties arising from constitutional objectives and contractual commitments. Changing the State's role from provider to facilitator can be attributed to the judicial non-definition of scope and content of the right to water and the neoliberal interventions of IFIs in water policy, which granted the executive freedom of choice in the water supply leading to ambiguities and concerns. In this context, adopting a public trust doctrine based on water governance that considers State as a trustee and water as trust property could fill gaps and address the problems of these ambiguities in responsibilities of the State, which could be a starting point for the State to move towards a rights-based approach in water.

Chapter 7

Ecological Water Justice in Groundwater Regulation: Balancing the Human Water Demands and Rights of Nature

7.1 Introduction

Subsidies contribute to social and distributive justice in groundwater access by aiding equitable access and allocation of water. Subsidies are an essential access aid to natural, technological and financial resources for many, helping them realise their right to water and food. Their contribution to the water and food security of the country, rural development, and poverty alleviation discussed in previous chapters point to its essentiality in establishing and maintaining a welfare state.⁹¹⁵ Nevertheless, the interaction of subsidies and groundwater in drinking water and irrigation also leads to excessive dependence and extraction of groundwater, creating pressure on aquifers. This uncontrolled extraction and unsustainable consumption patterns trigger environmental harm caused by groundwater quantity and quality depletion.

Studies from Kerala and Rajasthan examined the implications of subsidies on equities in groundwater access and their consequences on environmental sustainability.⁹¹⁶ Increased demands for irrigation and drinking water needs and consequent over-exploitation of groundwater have negatively impacted its quality and quantity, impairing aquifer sustainability, and necessitating legal and policy interventions to balance the growing developmental needs, human rights and environmental sustainability.

Adopting such a balanced approach should foreground the ecological justice component of water justice through incorporating Rights of Nature (RoN) and environmental water demands in water law discourse.⁹¹⁷ Such an ecocentric approach is essential to mitigate the harm caused by human actions, adopt a precautionary

⁹¹⁵ See Sec 3.2, 3.3 for their role in right to water and water for food and Sec 5.3 for role in water conservation.

⁹¹⁶ Sec 4.2, 4.3, 5.3

⁹¹⁷ For discussion on Rights of Nature in Anthropocene, see Bleby (n 213).

approach to prevent more damage caused by developmental activities and ensure environmental sustainability.

This chapter examines the need to balance the anthropogenic water demands and groundwater extraction and the ecosystem water demands to ensure ecological sustainability in light of the current groundwater situation in India. The chapter argues that recognising ecological justice in groundwater governance is necessary to balance environmental water needs and human water extraction. For this recognition, RoN, including granting legal personhood to aquifers and recognition of the water as commons in water governance, can lead the way.

The chapter examines the justification for adopting an ecological justice perspective to groundwater regulation. It then examines how recognising RoN and water as commons beyond the traditional PTD can lay the steps for this perspective. Finally, the chapter looks into how this ecological justice foregrounds source sustainability in groundwater governance, ensuring groundwater conservation and protection by adopting a precautionary and preventive approach to regulating groundwater quality and quantity depletion.

7.2 Adopting Eco-centric Approach in Groundwater Regulation: Completing the Water Justice Spheres

The water justice framework deployed in this thesis, consisting of three spheres- social justice, distributive justice and ecological justice balances the anthropogenic water demands and environmental sustainability. The first two pillars ensure social and distributive equity in access to groundwater among different water users. The third pillar assures our duty of water conservation and obligations towards the Nature and ecosystem by recognising ecological water demands, contributing to our responsibility towards present and future generations by ensuring sustainable access, quality, and water resources options.

This chapter argues for adopting the ecological justice sphere of water justice in water governance as it has vital impacts on water resources and supply sustainability. The focus on source and supply sustainability also assures intra-generational and intergenerational equity in groundwater. Thus, even though the ecological justice sphere in water justice is a deviation from the anthropogenic understanding of justice, it closely intertwines with social and distributive justice by its role and contribution to ensuring equitable groundwater access. This section explains the rationale and justification for adopting the ecological justice framework in water governance on three themes of its contribution- preserving source sustainability, strengthening social and distributive justice, and assuring intergenerational equity.

7.2.1 Focus on Sustainability of the Water Source: A Necessary Step for Ecological Justice

Support granted by groundwater to the developmental needs of the country is enormous.⁹¹⁸ Groundwater based irrigation supported by heavy subsidies for sectors like energy, credit and technology has transformed the rural economy by improving agricultural productivity.⁹¹⁹

Groundwater development help to fight the issues of poverty, impoverishment and economic instability of a country, but this development, turning groundwater-dependent areas into 'red zone', raises the alarm for the sustainability of water supply and its source. The groundwater-based drinking water supply patterns and irrigation schemes focus on the uninterrupted water supply system, raising concerns over the source and its sustainability. Water users are concerned only with consistent water availability, and once water is scarce, the search for other new potential aquifers starts, with more investments pouring in.⁹²⁰

The supply focused groundwater extraction patterns point to shifting the focus from supply sustainability to source sustainability as the latter is essential to balance the anthropocentric and eco-centric water demands. It is also inevitable to assure supply sustainability because any threat to the source hinders the quality and quantity of water available. A balanced approach between extraction and conservation is imperative to ensure sustainability, adopting ecological justice in water governance.

Source sustainability emphasises conserving the source of water and ensuring its preservation. Sustainability of water sources and their protection turns significant due to the imbalance created by demand and supply, with potential for complication by an unpredictable increase in water demands of expanding population, differential transformation in social and economic situations and impacts of climate change.⁹²¹ The necessity of the focus on source sustainability evolves from the current groundwater governance.

Firstly, drinking water supply and irrigation support programmes focus on 'supply sustainability', meaning an uninterrupted water supply without adequate attention to the

⁹¹⁸ The World Bank, *Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India*. (The World Bank 2010) 1.

⁹¹⁹ Scott and Shah, 'Groundwater Overdraft Reduction through Agricultural Energy Policy' (n 23) 150.

⁹²⁰ See generally, Prakash (n 18).

⁹²¹ Rajiv Sinha and Alexander L Densmore, 'Focus on Sustainable Groundwater Management' (n 22) 53.

water source. For instance, water supply schemes in India are groundwater based sourced from local aquifers. The emphasis on supply sustainability reflects an increase in the number of water extraction structures erected and managed by LSG/PHED/KWA with a corresponding expansion of coverage areas without adequate measures for groundwater recharge.⁹²²

Secondly, even though the conservation programmes emphasise source sustainability, this limited focus possesses an anthropocentric dimension. For instance, in Rajasthan, water conservation measures aim to generate water for the next cropping season, where the only objective is sustainable irrigation. Conservation efforts do not seek to protect the ecosystem and source sustainability, and the rights of water resources are absent.⁹²³

Thirdly, the water supply section in local governments like panchayats/ municipalities and water supply boards justify the cause for non-recharging through their statutory mandate of water supply. For instance, KWA officials cited that as per the law, the 'Authority shall be responsible for *all the works connected with the water supply to the consumers* served by Water Supply Systems vested in or transferred to or acquired by the Authority.'⁹²⁴

Fourthly, fragmented roles and responsibilities and lack of coordination among different water-based departments are reasons for the lack of source conservation-based approaches in water supply schemes. Groundwater departments and watershed agencies of Kerala and Rajasthan undertake conservation schemes in many areas without including the most exploited regions in their coverage.⁹²⁵ Additionally, the projects implemented are alien to local topographic features, hydrogeological Nature, and top-down bureaucratic or technocratic approaches.

In furtherance of this, change in the role of the State in water supply – from supplier to a facilitator supporting demand-driven water supply schemes like Swajaldhara, Jananidhi was envisaged to include community participation and develop a sense of ownership that can promote financial stability and scheme sustainability.⁹²⁶ Here too, scheme sustainability is prioritised over source sustainability.

Lastly, perceptions of water users relying on alternate water bodies like traditional wells are also problematic. Admission to formal water supply schemes in rural areas has caused the neglect of many traditional water bodies to deteriorate, with people in both

⁹²² See for instance, sec 4.3 and 4.5

⁹²³ See sec 5.2 and sec 5.3.3

⁹²⁴ Kerala Water Authority (Water Supply) Regulations s 3.

⁹²⁵ Secs 4.5.1 and 5.4.2

⁹²⁶ Department of Drinking Water (n 93).

states responding that standard water supply schemes ease their workload and consider it safer than conventional open sources. Additionally, in Kerala, an increase in labour charges and local politics compel people to refrain from groundwater recharge and water bodies rejuvenation. It resulted in the gradual drying of many water bodies.

Therefore, shifting the focus to source sustainability from supply sustainability to ensure water justice is inevitable due to influence of many factors shaping access and use of resources. Technology, for instance, can transform water access, regulate its flow, influence water quality and quantity, and thereby shape water justice, but technological advancement permutes natural process, transforming Nature's services into economic commodities accessible on payment.⁹²⁷

In India, technological development and its application in agriculture aided by the intrusion of subsidies for pumps and energy with the expansion of institutional credit promoted dependence on groundwater both collectively and through private efforts with a significant boost to small scale and medium scale farmers.⁹²⁸ These technological advancements and other inputs in the irrigation or drinking water sector help to extract groundwater aided through subsidies focused on measures to ensure sustainable supply.

Neither the water user nor the policymaker takes steps to shift the focus to source sustainability, which has resulted in inequitable access and allocations. Groundwater extraction by individuals, collectives, or markets aided by these technological interventions relegates the environmental impacts of water exploitation.⁹²⁹ Groundwater extraction that side-lines the rights of nature/ aquifer is unsustainable and calls upon the stakeholders to rethink on 'ecological justice' paradigm of water justice.

The source sustainability evolved by recognising ecological justice is possible only by harmonising human water demands and environmental protection. The current discourse on balancing human water extraction and environmental conservation centres around sustainable development, which articulates integrating economic growth and environmental protection through sustainable utilisation of natural resources and the equitable allocation of resources both within the present generation and between present and future generations, received global attention.⁹³⁰

⁹²⁷ Joyeeta Gupta, 'Sharing Our Water: Inclusive Development and Glocal Water Justice in the Anthropocene' in Rutgerd Boelens, Tom Perreault and Jeroen Vos (eds), *Water Justice* (CUP 2018) 259.

⁹²⁸ Tushaar Shah, 'Crop per Drop of Diesel? Energy Squeeze on India's Smallholder Irrigation' (2007) 42 (39) *Economic & Political Weekly* 4002.

⁹²⁹ Balooni and Venkatachalam, 'Managing Water for Sustainable Development' (n 51) vii.

⁹³⁰ Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (4th edn, OUP 2021) 116.

Rising concerns about the impacts of anthropogenic developmental activities on environmental degradation led to the acceptance of sustainable development as a norm in India, which now forms an integral component of environmental jurisprudence.⁹³¹ Its application aims to tackle the ill-effects of an unsustainable form of development, damaging the ecosystem and thus projecting ecological justice in our governance. It follows the premise that if the State cannot "strike a just balance between the tapping of the natural resources for the socio-economic development and the preservation and protection of the ecology, the environment and the natural wealth and resources by the adoption of a long-term perspective planning", then any such inactions transforming ecological integrity would amount to a violation of fundamental rights.⁹³²

Sustainable development, highly regarded as a part of customary international law, considers the needs of economic growth and ecology as mutually integrated and disregards 'the traditional concept that development and ecology are opposed to each other is no longer acceptable'.⁹³³ This harmonious construction of balancing the resource extraction and conservation in sustainable development led to its acceptance as an integral part of Indian environmental law jurisprudence to combat rising water and air pollution and ecological damage caused by anthropogenic activities. The judicial discourse on environmental protection always used this norm of sustainable development to integrate development and environmental demands in governance:

"Both development and environment must go hand in hand, in other words, there should not be development at the cost of environment and vice versa, but there should be development while taking, due care and ensuring the protection of environment..... In other words, to prevent ecological imbalance and degradation, that developmental activity is sought to be regulated."⁹³⁴

Despite the substantial role of sustainable development in integrating the ecological demands in the development of natural resources governance, this concept remains insufficient to foreground ecological justice in water governance, particularly to address the harm caused by groundwater exploitation and increasing climate change concerns. Even though the concept calls upon the State to adopt environment-friendly policies by regulating human activities through laws and rules, it possesses an anthropocentric perspective. The objective of such a balance in sustainable

⁹³¹ *Vellore Citizen's Welfare Forum* (n 282).

⁹³² *Kinkri Devi v State of Himachal Pradesh* MANU/HP/0002/1988 [8].

⁹³³ *Vellore Citizen's Welfare Forum* (n 282).

⁹³⁴ *Indian Council for Enviro Legal Action v Union of India* (1996)5 SCC 281 [31].

development is to protect human rights, and this does not provide an eco-centric perspective in developmental policies because it:

"[c]learly postulates an anthropocentric bias, least concerned with the rights of other species which live on this earth. Anthropocentrism is always human interest focussed thinking that non-human has only instrumental value to humans, in other words, humans take precedence and human responsibilities to non-human are based benefits to humans. Eco-centrism is nature-centred, where humans are part of Nature and non-humans have intrinsic value. In other words, human interest does not take automatic precedence and humans have obligations to non-humans independently of human interest. Eco-centrism is, therefore, life-centred, nature-centred where Nature includes both humans and non-humans."⁹³⁵

This judicial observation criticising the anthropogenic bias of sustainable development postulates that adopting an eco-centric approach is essential for protecting natural resources with recognition of RoN and other species' rights. An ecological justice perspective in groundwater regulation can assure justice to natural resources, recognise our duties towards the ecosystem and control the rate of unsustainable groundwater extraction.

For adopting an ecological justice perspective, the current groundwater regulation in India requires a paradigm shift in strategy with a focus shift from supply to source sustainability. For this, the presently accepted norm- sustainable development can initiate the leading step to bring changes in water governance. Firstly, it enables to amend of existing water laws and policy through a 'spotlight' on unsustainable water uses. Secondly, it acts as a 'positive label' to supplement actions promoting efficient and socially inclusive water use. Thirdly, it can prevent water allocation to unsustainable water uses by acting as 'concrete standard' for distributions and thus promote sustainable water use, emphasising environmental protection and social justice.⁹³⁶

7.2.2 Assuring Interconnected Benefits: Justification for Ecological Justice in Water Governance

⁹³⁵ *Centre for Environment Law, WWF-I v Union of India* MANU/SC/0373/2013 [39].

⁹³⁶ Dan Tarlock, 'Do Water Law and Policy Promote Sustainable Water Use' (2011) 28 (3) *Pace Environmental Law Review* 642, 652.

The current groundwater governance that emphasises anthropocentric water demands by adopting steps for supply sustainability cannot assure source sustainability. The recognition of source sustainability in water governance is necessary to break the human rights centred water extraction and move towards an ecological justice framework. Ecological justice is essential in water governance, particularly groundwater regulation, for various reasons, beneficial for the ecosystem balance and recognition of human rights.

Recognition of ecological justice in water governance leads to several interconnected dimensions. While ecological justice is possible through RoN, adopting ecological justice can also be the way to guarantee RoN, thus assuring an interconnected benefit to natural resource conservation. It can give Nature an equally significant recognition and protection in human developmental actions. It brings Nature and her components as an equal subjects in the human-nature relation from the subject-object dichotomy and recognises human duty towards Nature.⁹³⁷ In groundwater regulation, it helps to address and mitigate environmental harm caused by exploitation by identifying aquifers' rights and controlling future human encroachments by applying precaution and prevention.

Its recognition and incorporation also assure water justice. The ecological justice sphere highlights the necessity of protecting the source sustainability of water resources. While preserving the water resources, this element also enhances social and distributive justice situations in present generation water users. Source conservation assures sustainable water for human needs, especially for the poor who cannot invest more in water access. Focus on ecological justice through source sustainability also promotes conservation activities, mostly with people's participation improves their livelihood, contributes to poverty alleviation by access to better irrigation, and ensures safe access to drinking water.⁹³⁸ It can improve social and distribute justice among the different sections of water users.

Furthermore, ecological justice in water also matters due to the characteristic feature of human water use patterns, which can impact both source and environment sustainability and human health. Human water use follows a linear way, with used water going back to the ecosystem without any treatments, causing water pollution that can raise concerns over ecosystem degradation and public health. The groundwater exploitation and pollution from domestic, agricultural, and industrial water use lead to pollutants' penetration into deeper aquifers, negatively impacting human health.

⁹³⁷ Synneva Geithus Laastad, 'Nature as a Subject of Rights? National Discourses on Ecuador's Constitutional Rights of Nature' (2020) 47 (3) *Forum for Development Studies* 401, 402.

⁹³⁸ J Kerr, 'Watershed Development, Environmental Services, and Poverty Alleviation in India' (n 757) 1387.

As water justice demands a limit on our use and abuse of water and its ecosystem, which would impact present and future generations,⁹³⁹ adopting an eco-centric focus in our water governance can reduce these inflows as it recognises the rights of Nature for her existence and our duty not to encroach. It also promotes efficiency in water use, combined with improved technology and the options of reuse, which can help address the imbalance between demand and supply.⁹⁴⁰ It also positively impacts the ecosystem health by reducing the pressure of extraction and exploitation of water resources.

Such an ecological justice perspective is also beneficial for human rights though its primary focus is on integrating Nature's water demands into our governance. Recognition of ecological justice also contributes to the realisation of several human rights. S.C upheld the right to a clean environment as a fundamental right.⁹⁴¹ Even though this recognition of the environment as a fundamental right showcases an anthropocentric dimension, its realisation is highly indebted to ecological sustainability. For instance, excessive use of chemical fertilisers and pesticides in agriculture degrades the ecosystem in rural areas.⁹⁴² The leaching of chemical fertilisers and pesticides contaminates land reducing its productivity, water bodies, and aquifers.⁹⁴³ Our land-use patterns and economic policies influence water degradation, which would convert water to be less accessible to the poor if not controlled.⁹⁴⁴ Such environmental consequences of human actions impair ecological sustainability, hindering realizing the human right to the environment and other related rights.

Ecological justice and its contribution to human rights don't mean an anthropocentric focus. However, it connotes that only the protection of the ecosystem for the benefit of Nature can ensure its sustainability, which is essential for human survival and resource use. The latent benefits of protecting water resources through ecological justice include water availability for the sustainable use of human beings, which benefits both present and future generations' rights through conserving adequate quantity, options and quality of groundwater.⁹⁴⁵ These interconnected benefits of ecological justice in water justice

⁹³⁹ Joyeeta Gupta, 'Sharing Our Water' (n 928) 259, 260.

⁹⁴⁰ Nikolaos Voulvoulis, 'Water Reuse from a Circular Economy Perspective and Potential Risks from an Unregulated Approach' (2018) 2 Current Opinion in Environmental Science & Health 32, 38.

⁹⁴¹ *Virendra Gaur v State of Haryana* (1995) 2 SCC 577.

⁹⁴² CH Hanumantha Rao, 'Agricultural Development and Ecological Degradation: An Analytical Framework' in Rohan D'Souza (ed), *Environment, Technology and Development: Critical and Subversive Essays* (Orient Blackswan 2012) 166.

⁹⁴³ Justice TS Doabia, *Environmental & Pollution Laws in India*, vol 1 (3rd edn, Lexis Nexis 2017) 906.

⁹⁴⁴ Sairam Bhat, *Natural Resources Conservation Law* (SAGE LAW 2010) 93. 99-100.

⁹⁴⁵ Upendra Baxi (n128) 1,4.

to recognition of ecosystem water demands and protection of social and distributive equity in water access underline the need for a more ecocentric focus in our current groundwater regulation.

7.2.3 Water Justice Spanning Across Generations: Substantial Contribution of Ecological Justice

The increase in water demands exerts pressure on all-natural resources, including land and water. Irrigation water demands exploded with the need for food security of the nation after the green revolution and consequent self-sufficiency in food production.⁹⁴⁶ Remarkable support of groundwater to the economy and societal development is, however, jeopardised by the resultant depletion of water tables and quality deterioration.

The dichotomy between groundwater extraction and environmental consequences triggered by subsidies like over-drafting, excessive use of fertilisers, chemicals and influx of untreated sewage create profound tensions in water/environmental rights discourse. Such crisis leads to discussions on the extent of present generations' rights over resources and the planetary boundaries to be marked for exercising such rights.⁹⁴⁷ These discussions on the current generations' activities and their impacts on groundwater resources sustainability intensify the demand for ecological justice dimensions of water justice that can balance both environmental water needs and human water needs and the water demands of various generations.

The ecological justice component of water justice harmonises the human and ecosystem water needs. As highlighted elsewhere in this chapter, it also strengthens groundwater access's social and distributive equity. One such reflection of this contribution is the spanning of water justice across generations through a balance between water uses and the demands of different ages. It thereby assures intergenerational and intragenerational equity in groundwater access within a cycle of the anthropogenic and ecocentric form of water justice, constituting an interconnected benefit of ecological justice in water governance. This section, therefore, justifies adopting ecological justice through its contribution to intergenerational equity.

⁹⁴⁶ For increase in crop production and its related issues in Punjab which benefitted the most from Green Revolution, RS Mann, 'Cropping Pattern in Punjab (1966–67 to 2014–15)' (2017) 52 (3) Economic & Political Weekly 7.

⁹⁴⁷ Lynda Collins, 'Environmental Rights for the Future? Intergenerational Equity in the EU' (2007) 16 (3) Review of European Community & International Environmental Law 321, 322.

The ecological justice component of water justice connects equity in groundwater access between generations. Human generations have the right to benefit from the cultural and natural inheritance of the past generations and possess the responsibility to protect the heritage for their future generations.⁹⁴⁸ The element of intergenerational equity in water governance recognises the duty of the present age to ensure adequate protection of the environment and natural resources. It can strengthen the need to adopt source sustainability and the move towards the water as commons, from water as a public, which is a significant step towards recognising ecological justice in water governance.

Ecological justice strengthens intergenerational water justice by promoting source and supply sustainability. As highlighted in the previous subsection, sustainable development, hailed as the guiding principle of balancing growth and environment, cannot be successful unless it focuses on source sustainability because the model is 'more descriptive than normative and describes a destination without providing a map to get there.'⁹⁴⁹ Hence, only emphasising source sustainability achieved through ecological justice can ensure the conservation of options (prevent aquifer exhaustion and falling of water table in different areas), quality (reduce pollution and quality depletion) and access (ensure equitable access to groundwater for all).⁹⁵⁰

Source depletion widens the social and distributive inequity in access and allocation of groundwater among water uses and users, which also exhaust source, options and quality entitled for future generations. Furthermore, the environmental damage caused is irreversible, with repercussions on human rights and RON. Uncontrolled and unsustainable consumption pattern threatens the aquifer and groundwater, which needs to be controlled and regulated, as depletion of water resources can lead to competition and conflicts threatening equity, both intra and intergenerational.⁹⁵¹ Groundwater depletion causes severe consequences on current and future generations' water uses. Therefore, it is essential to balance groundwater development for human and environmental water needs by conserving resources to achieve water justice among all water users of all generations.

The application of intergenerational equity in groundwater regulation could help to address social and distributive equity and environmental sustainability. However, our current ambiguous approaches to water conservation hinder the three components of

⁹⁴⁸ PS Jaswal and others, *Environmental Law, Environmental Protection, Sustainable Development and the Law* (Allahabad Law Agency 2021) 108.

⁹⁴⁹ Collins (n 948) 322.

⁹⁵⁰ For more discussion on Intergenerational Equity, See Chapter 2. Edith Brown Weiss, 'The Planetary Trust: Conservation and Intergenerational Equity' (1984) 11 (4) *Ecology Law Quarterly* 295.

⁹⁵¹ Kulkarni and Shankar, 'Groundwater Resources in India' (n 294).

intergenerational equity – preservation of access, quality and options. The situation in Rajasthan provides the first situation where, despite vigorous water conservation activities, the inequities in groundwater persists.⁹⁵² The water conservation activities focus only on ensuring sustainability in irrigation for the next crop season. Big landlords extract the recharged water with sophisticated technologies while the poor, who participate in water conservation always left with water scarcity. In addition to ecological justice, these activities threaten the social and distributive equity achieved through subsidies.

The situation in Kerala provides us with the second situation where due to the availability of surface water and groundwater, policymakers and water users add inadequate attention to water conservation activities. Individual water sources in rural and urban areas like wells and ponds verge destruction due to filling water bodies for construction or waste dumping.⁹⁵³ The relegation of traditional water sources, conservation and maintenance activities are common, and people resort to the government water supply for drinking and irrigation.

Intergenerational equity is significant in water justice due to the present legal framework on water governance based on public trust. The water policies and legal provisions that support a top-down bureaucratic approach without recognising customary practices and community-led activities also add to these ambiguities that compromise ecological justice and intergenerational equity. One such ambiguity arises from the application of PTD in groundwater resources.⁹⁵⁴

PTD connotes that the State acts as a trustee of natural resources for the benefit of all people, including future generations. Therefore, PTD includes intergenerational equity and intragenerational equity among the present population. Even though the PTD points to environmental protection duty, and the same can be a starting point to change the current groundwater regulation, intergenerational equity highlighted by adopting ecological justice brings more attention to the ecosystem than the mere assurance of resources for the future generations.

Recognition of intergenerational water justice in water governance could drive the shift from the PTD to water as commons because while PTD holds the State as trustee, intergenerational equity holds the entire present generation as trustee of natural

⁹⁵² See Secs 5.2 and 5.4

⁹⁵³ See Secs 4.3 and 4.5

⁹⁵⁴ National Water Policy 2012 and Draft National Water Framework Bill 2016 recognise PTD. Para iv of sub section 1.3 and sub section 2.2 of Water Policy refers to recognition and application of public trust doctrine to all water resources including groundwater.

resources, thus moving beyond State sovereignty overuse of natural resources and its obligation for equity and fairness in its access and allocations.

Thus, to ensure water justice for present and future generations, the source of sustainability is mandatory, for which ecological justice only can help. Ecological justice matters as its contribution to both the water rights of Nature and human rights is very substantial, and that can balance all water uses and conservation activities without compromising the rights of both Nature and human beings.

7.3 Recognition of Rights of Nature in Aquifers: Step towards Ecological Justice in Groundwater Regulation

The contribution of subsidies to equitable and inclusive groundwater access and allocation for drinking water and irrigation is significant for realising the human right to water and food due to its role in food and water security. Nevertheless, subsidies also widen the social difference and economic disparities in contrast to its aim and objectives due to the conditionality of land ownership in accessing its benefits. It excludes several sections of the population without adequate land ownership in accessing subsidies, leading to widening inequities.

Furthermore, excessive subsidies' benefits also create inequities in groundwater access and allocations. For instance, excessive use of subsidised energy like electricity and diesel has supported the uncontrolled exploitation of aquifers in different parts. Its consequences pervade water access and allocation's social and economic spheres and threaten environmental sustainability caused by groundwater quality and quantity depletion.⁹⁵⁵ This environmental degradation caused by water depletion and consequent unavailability of groundwater challenges the subsidies induced social and distributive equity in groundwater, building a loop of negative externalities, including the intergenerational inequity in access to options, quality and quantity of groundwater.

These negative externalities on the environment potentially challenging social and distributive justice point to the necessity of introspection into the present regulatory and policy framework on groundwater and subsidies and argue for recognising Nature's rights for aquifer protection. RoN can lead the way to ensure the ecological justice sphere of water justice that can balance the human right to water, incorporating inclusive water access, allocation, governance, and ecosystem sustainability. It can also substantiate the recognition of the rights of aquifers in groundwater regulation.

⁹⁵⁵ Jain, 'Electricity Subsidies' (n 418) 4075; Kulkarni and Shah, 'Punjab Water Syndrome' (n 75) 64.

7.3.1 Expansion of the Rights of Nature to include Aquifers Rights: New Phase in Water Justice balancing Nature-Human Water Demands

Human survival closely connects with Nature with the latter's integral support for human development and sustenance.⁹⁵⁶ Humans interact with Nature through technology, labour, institutions, and regulations, and this human-nature relation embodies different perceptions of ownership and property rights.⁹⁵⁷ For humans, Nature is a resource with attributes of a capital influenced by human goals and values.⁹⁵⁸ The commodification of Nature threatened its sustenance and quality, and consequently, it led to the revolutionary discourse in the environmental law jurisprudence to protect Nature and the ecosystem through recognising the RoN.⁹⁵⁹ This RoN jurisprudence is a milestone in environmental law that received significant attention from jurisdictions worldwide through Constitutions, legislation and judicial decisions.⁹⁶⁰

The RoN approach in environmental law extends the historical concept of rights, which considers human beings a part of Nature and recognises that all non-human entities can possess rights.⁹⁶¹ The non-human entities progress to legal rights holders, which equip them to demand justification for human encroachment affecting their rights and

⁹⁵⁶ Birnie, Boyle and Redgwell (n 931) 583.

⁹⁵⁷ Susan Hanna and Svein Jentoft, 'Human Use of the Natural Environment: An Overview of Social and Economic Dimensions' in Susan Hanna, Carl Folke and Karl-Göran Mäler (eds), *Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment* (Island Press 1996) 35–36.

⁹⁵⁸ *ibid* 40.

⁹⁵⁹ Clarence Morris, 'The Rights and Duties of Beasts and Trees: A Law Teacher's Essay for Landscape Architects' (1964) 17 (2) *Journal of Legal Education* 185; Christopher D Stone, *Should Trees Have Standing? Law, Morality, and the Environment* (3rd ed, OUP 2010).

⁹⁶⁰ Constitution of the Republic of Ecuador 2008; Law of the Rights of Mother Earth, 2010; Te Awa Tupua Act 2017; *Mohd Salim v State of Uttarakhand* MANU/UC/0050/2017; *Human Rights and Peace for Bangladesh and others v Secretary of the Ministry of Shipping* Writ Petition No 13989 of 2016.

⁹⁶¹ Susan Emmenegger and Axel Tschentscher, 'Taking Nature's Rights Seriously: The Long Way to Biocentrism in Environmental Law' (1993) 6 (3) *Georgetown International Environmental Law Review* 545, 571.

integrity.⁹⁶² The recognition of RoN is a glimpse of emerging meta-norms on human-nature relations that challenge anthropocentric dominance in that relation.⁹⁶³

RoN is granted with a desire and necessity to end ecological destruction.⁹⁶⁴ Such rights reflect biocentrism, which raises Nature's status from an object to a subject of law with all rights, including the right to life and existence.⁹⁶⁵ Biotic rights that incorporate rights of Nature are "morally justified claims or demands on behalf of non-human organisms, either individuals or aggregates (populations and species), against all moral agents for the vital interests or imperative conditions of well-being for non-humankind".⁹⁶⁶ Here, Nature, the right holder, casts corresponding duties and obligations on others.⁹⁶⁷ The burden is upon humans to ensure that Nature's rights do not encroach. It also implies that responsibility for enforcing this right is bestowed upon human beings reflecting biocentric perspective to maintain the environment in an ecologically- balanced state.⁹⁶⁸

Granting rights to Nature would make it more 'visible and cause other rights to view it with increased respect'.⁹⁶⁹ Some scholars highlight that these rights also create new property rights with a new bundle of rights devolving rights and authority to the Nature granting her three rights- the right to sue and be sued, enter into contracts, and hold property.⁹⁷⁰ The new bundle of rights equips the natural bodies with entitlements and rights to management, exclusion and alienation.⁹⁷¹ Even though confining discussions of RoN from a property perspective restrict its scope on the enforceability of these

⁹⁶² *ibid* 572.

⁹⁶³ Craig M Kauffman and Pamela L Martin, 'Constructing Rights of Nature Norms in the US, Ecuador, and New Zealand' (2018) 18 (4) *Global Environmental Politics* 43.

⁹⁶⁴ Peter Burdon and Claire Williams, 'Rights of Nature: A Constructive Analysis' in Douglas Fisher (ed), *Research Handbook on Fundamental Concepts of Environmental Law* (Routledge 2016)196, 207.

⁹⁶⁵ Susana Borrás, 'New Transitions from Human Rights to the Environment to the Rights of Nature' (2016) 5 (1)*Transnational Environmental Law* 113, 114.

⁹⁶⁶ James Nash, 'The Case for Biotic Rights' (1993) 18 *Yale Journal of International Law* 235, 238.

⁹⁶⁷ Wesley Newcomb Hohfeld, 'Some Fundamental Legal Conceptions as Applied to Judicial Reasoning' (1913) 23 *Yale Law Journal* 16.

⁹⁶⁸ Dinah Shelton, 'Nature as a Legal Person' [2015] *Vertigo* - la revue électronique en sciences de l'environnement <<https://journals.openedition.org/vertigo/16188?lang=en#ftn29>>.

⁹⁶⁹ Peter Burdon and Claire Williams, 'Rights of Nature: A Constructive Analysis' in Douglas Fisher (ed), *Research Handbook on Fundamental Concepts of Environmental Law* (Routledge 2016) 196, 204.

⁹⁷⁰ Julia Talbot-Jones and Jeff Bennett, 'Toward a Property Rights Theory of Legal Rights for Rivers' (2019) 164 *Ecological Economics* 106352, 106354.

⁹⁷¹ Erin O'Donnell and Julia Talbot-Jones, 'Creating Legal Rights for Rivers: Lessons from Australia, New Zealand, and India' (2018) 23 (1) *Ecology and Society* 7.

rights without human beings, it provides new insight into the content of RON where humans recognise Nature's space and her rights.

The RoN is a broader discourse that includes the rights of Nature and its components and leads to recognition of the indigenous communities dependent on it. The recognition of RoN can be the starting point of deviation from anthropocentric water governance to eco-centric water regulation based on ecological justice. While ecological justice is essential for sustainability, RoN can be its tool.

Nature has the legal right to assure its ecosystem for all entities dependent on it. Every species has an inherent right to live and be protected by law.⁹⁷² Since RoN has led to the recognition of rights of non-human entities like rivers⁹⁷³, glaciers⁹⁷⁴, and animals⁹⁷⁵, it can also assure the rights of aquifers, which is also an inevitable part of ecological justice in water governance. The courts in India extended fundamental rights to animals, underlining the necessity of moving towards eco-centric management by balancing human rights and non-human rights.⁹⁷⁶

Rivers benefitted the most from the RoN discourse, with several jurisdictions now granting rivers legal personhood. The granting of legal personhood to rivers, partly a reflection of the rights of nature approach, that addresses growing human encroachments is a paradigm shift towards a pluralist understanding of environmental law to recognise the human-nature interconnectedness.⁹⁷⁷

The concept of legal personhood to water resources is highly significant to address the encroachment of water resources and their depletion. Depleting water bodies, including rivers and aquifers, reflect anthropocentric encroachment of natural resources, commodifying Nature to realise human rights and development. Legal personhood for water resources with the responsibility of humans to ensure the RoN is a step towards

⁹⁷² *Animal Welfare Board v A Nagaraja* (2014) 7 SCC 547.

⁹⁷³ *Mohammed Salim v State of Uttarakhand* MANU/UC/0050/2017; *Human Rights and Peace for Bangladesh and others v Secretary of the Ministry of Shipping* (n 963); Mohammad Sohikul Islam and Erin O'Donnell, 'Legal Rights for the Turag: Rivers as Living Entities in Bangladesh' (2020) 23 (2) Asia Pacific Journal of Environmental Law 160.

⁹⁷⁴ *Lalit Miglani v State of Uttarakhand* MANU/UC/0067/2017.

⁹⁷⁵ *Animal Welfare Board v. A Nagaraja* (n 973); *Karnail Singh v State of Haryana* 2019 SCC OnLine P&H 704.

⁹⁷⁶ *TN Godavarman Thirumulpad v Union of India* MANU/SC/0122/2012; *Centre for Environment Law, WWF-I v Union of India (UOI)* MANU/SC/0373/2013.

⁹⁷⁷ Erin O'Donnell, 'Rivers as Living Beings: Rights in Law, but No Rights to Water?' (2020) 29 (4) Griffith Law Review 643, 647.

addressing these anthropocentric human exploitations of Nature and evolving a nature-centred approach where Nature and humans are equal for sustainability.⁹⁷⁸

Legal personhood acknowledges both anthropocentric and ecocentric ontologies on the relation between Nature and humanity and moves beyond these two dominant understandings to include a co-living or an inalienable connection between Nature and society.⁹⁷⁹ This co-relation that recognises the water resources' rights also recognises the rights of people who depend on it.⁹⁸⁰ For instance, the New Zealand Model of recognising the rights of rivers involves extending the recognition of indigenous communities living in harmony with Nature.⁹⁸¹

The legal personhood to water resources, including aquifers, can ensure water justice, recognising the interconnectedness of social and distributive justice with ecological justice. Mainstreaming of rights of people depending on water sources also provide ways to enable social and distributive justice in access to water, possible only through an ecological justice perspective, which is particularly significant in addressing the growing challenges of river destruction in India displacing millions.⁹⁸²

An ecological justice approach in water governance through recognising RoN has necessary connotations and justifications for water justice. Ecological imbalance results from human encroachments, with severe impacts on the environment, ecosystem and human rights like life, environment, water and food. Any damage to the ecosystem or exhaustion of natural resources create negative externalities on fundamental rights, impairs the social and distributive equity in access to these resources and equality in the enjoyment of fundamental rights.

In the water sector, where the fundamental right to water and food relies heavily on equitable access and allocations and sustainable water supply, focusing on the RoN, rights of rivers, aquifers and other water bodies are essential to ensure source sustainability. Uncontrolled exploitation of aquifers and groundwater for irrigation and drinking water supply, leading to depletion of water tables in different parts of the country. The water access and allocations rules in water policies and the consumption

⁹⁷⁸ David R. Boyd, *The Rights of Nature: A Legal Revolution That Could Save the World* (ECW Press 2017) 133.

⁹⁷⁹ Aikaterini Argyrou and Harry Hummels, 'Legal Personality and Economic Livelihood of the Whanganui River: A Call for Community Entrepreneurship' (2019) 44 (6) *Water International* 752, 757.

⁹⁸⁰ James DK Morris and Jacinda Ruru, 'Giving Voice to Rivers: Legal Personality as a Vehicle for Recognising Indigenous Peoples' Relationships to Water?' (2010) 14 (2) *Australian Indigenous Law Review* 49.

⁹⁸¹ David R. Boyd (n 981) 134.

⁹⁸² Bhagat-Ganguly (n 175).

patterns reflect an anthropocentric bias where water allocation prioritises the water needs of humans and their livelihood needs, including water for cattle.⁹⁸³ Emphasis on human water use and demands in water policies is an anthropocentric vision of the economic value of Nature, which will justify the human exploitation of rivers and groundwater.⁹⁸⁴

The concerns of this anthropocentric groundwater exploitation and its impacts on social and distributive justice and environmental sustainability warrant an ecological justice approach in groundwater regulation for which the extension of legal personhood to aquifers and groundwater is essential. The private managed groundwater resources exclude the landless and downtrodden from benefits of the groundwater extraction, but the inequitable burden-sharing with these poorer sections bearing the brunt of water scarcity necessitates a shift to adopt legal personhood to aquifers. The legal personhood to aquifers implies recognising rights of depending communities who usually hail from these poorer sections.

Groundwater exploitation exhausts aquifers and diminishes their capacity to recharge. Recharging groundwater by natural and human-induced activities like conservation can help restore water, but these activities also involve inequitable access.⁹⁸⁵ Kerala and Rajasthan's case studies are evidence of inequity in groundwater access, allocation and conservation, most often skewed towards the rich and powerful. The water conservation in these states also reflects an anthropocentric perspective of water use for human demands only. Legal personhood to aquifers can change anthropocentric biased water conservation patterns that skew the rich, focusing on supply sustainability to a situation where the schemes on conservation patterns prioritise aquifer and its sustainability.

However, the effectiveness of devolving rights to rivers/ aquifers in water governance largely depends on the scope and content of the framework adopted.⁹⁸⁶ For instance, the New Zealand model of the legal personhood of the river incorporated a sustainable economic development model integrating the indigenous communities' environmental, cultural, social, and economic benefits.⁹⁸⁷ The model adopted by the courts in India does not embed these considerations but only a spiritual and paternalistic vision of

⁹⁸³ Department of Drinking Water Supply, 'ARWSP' (n 300).

⁹⁸⁴ For discussion on values of water- use values, see Jeffrey M Peterson and Nathan Hendricks, 'Economics of Water' in Ken Conca and Erika Weinthal (eds), *The Oxford handbook of water politics and policy* (OUP 2016) 351.

⁹⁸⁵ NC Narayan and Lalitha Kamath, 'Rural Water Access: Governance and Contestation' (n 679) 65.

⁹⁸⁶ Gabriel Eckstein and others, 'Conferring Legal Personality on the World's Rivers: A Brief Intellectual Assessment' (2019) 44 (6) *Water International* 804, 813.

⁹⁸⁷ Argyrou and Hummels (n 980) 763.

protecting the sacred rivers.⁹⁸⁸ Reasons for such shift pronounced in these judgments are anthropocentric, but the attempts are still inspiring for further ecological water needs. Even though granting legal personhood to aquifers involves human actions with the human-centred approach of constructing Nature/aquifers as the legal subject,⁹⁸⁹ such structure can nevertheless provide more power to the State to regulate groundwater access and exploitation. The State can adopt this legal construction of aquifers as legal persons to delink the land-water nexus in groundwater and assert more power over the most relied on the water source to distribute the benefits equitably.

7.3.2 Water as a Commons: Step beyond Public Trust and towards Aquifer Protection

Recognising RoN in water governance can help adopt an ecological justice discourse that deviates from the present human rights-focused water conservation and control. The contribution of the judiciary to water governance that attempts to foreground environmental protection is significant with the application of several environmental law principles like public trust doctrine, and polluter pays principle and precautionary principle that helps to balance human water extraction and ecological water demands and mitigate the ecological impacts of human activities on water resources.

The PTD received considerable attention and application in water governance.⁹⁹⁰ The PTD in water governance is a significant step in ecological justice, assuring balanced human rights and environmental protection approach. The PTD has been an integral part of the water governance in India since its application to water conservation and preservation in *M.C. Mehta*.

It is a step considered the most viable in ensuring environmental protection. The doctrine protects the resources for public use, focusing on distributive and social justice in resource access. PTD assures that every human being has equal right to access common pool resources like light, air and water by restricting the State from transferring public property to private use and calls the State to take affirmative actions to ensure its protection:

⁹⁸⁸ *Mohd. Salim v. State of Uttarakhand* (n 963); Stellina Jolly and KS Roshan Menon, 'Of Ebbs and Flows: Understanding the Legal Consequences of Granting Personhood to Natural Entities in India' (2021) 10 *Transnational Environmental Law* 467.

⁹⁸⁹ Ngaire Naffine, 'Who Are Law's Persons? From Cheshire Cats to Responsible Subjects' (2003) 66 (3) *The Modern Law Review* 346.

⁹⁹⁰ See sec 6.4.1.

"[n]atural resources including forests, water bodies, rivers, seashores, etc. are held by the State as a trustee on behalf of the people and especially the future generations. These constitute common properties and people are entitled to uninterrupted use thereof. The State cannot transfer public trust properties to a private party, if such a transfer interferes with the right of the public. The court can invoke the public trust doctrine and take affirmative action for protecting the right of people to have access to light, air and water and also for protecting rivers, sea, tanks, trees, forests and associated natural ecosystems."⁹⁹¹

PTD is a crucial landmark in environmental jurisprudence to move beyond restricted human-centric regulations and foreground conservation and preservation of natural resources, enabling the focus on ecological sustainability. Additionally, even though it doesn't recognise the RoN directly, it assures that environmental governance considers ecological protection, reiterating the duty of human beings towards environmental protection.

Nevertheless, restricting water as a PTD doesn't ensure successful adoption and implementation of an ecological justice approach in water governance that embeds recognition of RoN. Firstly, the PTD reflects an anthropocentric bias when it aims to ensure environmental protection even though it incorporates the needs of present and future generations in resource access.⁹⁹² Environment protection in PTD seeks to assure the enjoyment of environmental human rights.⁹⁹³ It foregrounds human rights to the environment as the justification of resource conservation, where water as a public trust aims to achieve the uninterrupted human right to water rather than source protection. Therefore, the PTD, with this anthropocentric bias, can only be a stepping stone but not a complete measure for ecological justice in water governance

Secondly, PTD discourse did not detach property rights from its ambit. It aims to guarantee substantial and procedural fairness in specific resources that are to be held in common by the State for the benefit of all. PTD only envisages the shift of ownership or possession of those resources from private individuals to the State without detaching the property rights.

⁹⁹¹ *Fomento Resorts and Hotels Ltd v Minguel Martins* MANU/SC/0063/2009 [40]. Emphasis added.

⁹⁹² *ibid.*

⁹⁹³ David Takacs, 'The Public Trust Doctrine, Environmental Human Rights, and the Future of Private Property' (2008) 16 New York University Environmental Law Journal 711, 733.

Similarly, despite the most significant step in environmental protection, PTD could not bring ecological aspects to the land-based groundwater regulation, restricting its scope in assuring ecological justice.⁹⁹⁴

Thirdly, State as the trustee in PTD, turns water governance more State-centric and top-down. Community water rights and their role in water management remain unaddressed in the formal water governance mechanisms. For instance, it is unclear how PTD can regulate groundwater access through informal groundwater markets based on local community rules. The mainstream discussions on PTD don't consider these informal water access mechanisms functioning beyond the state rules. It also neglects the rights of such groundwater users and those persons affected by groundwater exploitation.

Fourthly, the PTD focuses on the duty of the State/ trustee to adopt measures to preserve the trust property for the beneficiaries' benefit, but it doesn't contemplate the scope and nature of the rights of beneficiaries.⁹⁹⁵ Here the beneficiary of this trusteeship is human beings- both present and future generations. Nature is not a beneficiary but the trust property. It doesn't highlight the rights of trust property, whose protection is essential for human beings.

Furthermore, in trusteeship, the courts upheld the trustee's legal duty to protect the natural resources⁹⁹⁶, and the freedom is on the trustee to adopt necessary feasible measures. This extended scope provided the state freedom not to change the *status quo* regulation on groundwater because the PTD in the courts' discourse emphasised larger water bodies like rivers.

Lastly, the application of PTD to private land or privately held resources is doubtful.⁹⁹⁷ After the *M.C Mehta* case, State is the trustee of all water sources for the benefit of the people. The court did not delve into the application of PTD to privately-held resources even though a broader interpretation of 'all water resources' could include these private resources in its ambit.

For instance, private water bodies like wells primarily support drinking and irrigation water than the State water supply in Kerala. State hardly intervenes in the form and patterns of personal water use and conservation. In such cases, adopting a broader interpretation to PTD to include 'all waters' in implementation can increase people's

⁹⁹⁴ Scott W Reed, 'The Public Trust Doctrine: Is It Amphibious' (1986) 1 Journal of Environmental Law and Litigation 107.

⁹⁹⁵ Dinah Shelton, 'Nature as a Legal Person' [2015] Vertigo - la revue électronique en sciences de l'environnement paras 17–18 <<https://journals.openedition.org/vertigo/16188?lang=en#ftn29>>.

⁹⁹⁶ *M.C. Mehta v. Kamal Nath* (n 267) para 27.

⁹⁹⁷ Alison Rieser, 'Ecological Preservation as a Public Property Right: An Emerging Doctrine in Search of a Theory' (1991) 15 Harvard Environmental Law Review 393, 398–399; Reed (n 995) 119.

options to realise their fundamental right to water through private water resources. However, practicality overrules normativity when caste, religion and economic situations determine the access to personal water resources, and the concept of ritual purity and pollution still controls water access in households.

The groundwater rights in India determined by land nexus also limits the scope of PTD in adopting eco-centric water governance, adding to the concerns of its application over privately-held resources. The groundwater access managed by the land-water nexus contrasts the public trust nature of natural resources, including water. These ambiguities in the application of PTD in groundwater regulation widen the inequities created by subsidies in groundwater access and connotes the need to move beyond PTD in water governance, particularly groundwater regulation. Additionally, since PTD cannot manifest the rights of nature in its ambit, whereby it cannot assure ecological justice in water governance, it is essential to move beyond the PTD and recognise water as commons to enable the application of legal personhood to water resources, including aquifers and consequently uphold ecological water justice.

Closely interlinked conceptual and institutional elements constrain the application of PTD in groundwater governance articulated with an ecological justice and sustainability framework based on legal personhood for aquifers. Legal personhood to waterbodies is a clear manifestation of implementation of RON⁹⁹⁸, if extended to aquifers, can ensure adequate protection against exploitation, assure safety to those sections of society depending on groundwater and affected by depletion like small and marginal farmers, the poor and socially downtrodden. Though the courts in India attempted to extend legal personhood to rivers, glaciers and water, the extent of such protection to aquifers and the human being dependent on it remains unclear, like its viability in implementation.⁹⁹⁹

Similarly, the pluralistic nature of the drinking water sector where private water sources in rural areas, formal and informal water supply mechanisms work in parallel, adding to complexities in water governance also demands a broader perspective that moves beyond the State centred PTD to include both the RoN and human water demands. For instance, the situation in Kerala shows water users tend to rely on private resources more, and the choice for state supply is secondary, acting as buffer stock. In Rajasthan, where spatial distances between villages hinder state water supply coverage, water users depend heavily on shared water sources.

Regulation of these water sources with formal water governance principles is not feasible. It points to the fact that the State cannot be in the sole control of water

⁹⁹⁸ See previous section for detailed discussion

⁹⁹⁹ Ipshita Chaturvedi, 'Why the Ganga Should Not Claim a Right of the River' (2019) 44 (6) *Water International* 719.

resources.¹⁰⁰⁰ Water governance involves community participation and customary practices in rural areas, different from the State water laws and principles. PTD cannot regulate this pluralistic water governance, and in addition, the existing groundwater situation informed by infiltration of subsidies and widening inequities warrant recognition of water as commons.

Water as commons is beneficial for the ecological justice approach. It also shifts the focus from a restricted state-oriented water regulation to incorporate community practices, informal water allocation rules and global hydrological distributions.¹⁰⁰¹ Water as commons shall help recognise pluralistic water governance by including community interests in water access and the formal state control mechanism and highlighting the duty to conserve the resources for the common good.¹⁰⁰²

In such a case to govern water as commons, the common heritage principle provides the ways to move towards the water as commons. The common problems of humankind include those concerns over natural resources that lead to creating a legal system whose rules impose duties on society as a whole and each member of the community.¹⁰⁰³ Resources that are a common heritage (CHM) are also common concerns of humankind (CCM). The common heritage of mankind applies to those resources that spread or traverse beyond the political boundaries and requires the State to protect natural resources without appropriation, but cooperation to ensure intragenerational and intergenerational equity in its access and allocation.¹⁰⁰⁴

This principle is a significant step in granting aquifers legal personhood since the aquifers and groundwater constitute a common heritage. Groundwater is a common heritage as it knows no political boundary and is a critical element of life. Transboundary harm to aquifers can create domestic and international repercussions on water and food security. In that context, aquifers/ groundwater is a common heritage, and any harm to these resources is a concern for mankind. Even though applying CHM to groundwater is challenging and complex because of its transboundary characteristics,

¹⁰⁰⁰ Philippe Cullet, 'Fostering the Realisation of the Right to Water: Need to Ensure Universal Free Provision and to Recognise Water as a Common Heritage' (2019) 31 National Law School of India Review 111, 123.

¹⁰⁰¹ *ibid* 123–124.

¹⁰⁰² Michael Bowman, 'Environmental Protection and the Concept of Common Concern of Mankind' in Malgosia Fitzmaurice, David Ong and Panos Merkouris (eds), *Research Handbook on International Environmental Law* (Edward Elgar 2010) 493, 503.

¹⁰⁰³ Dinah Shelton, 'Common Concern of Humanity' (2009) 1 *Iustum Aequum Salutare* 34, 37.

¹⁰⁰⁴ Prue Taylor, 'The Concept of the Common Heritage of Mankind' in Douglas Fisher (ed), *Research Handbook on Fundamental Concepts of Environmental Law* (Routledge 2016) 317–319.

CHM has its merits in aiding the State to address the impacts of groundwater exploitation caused due to land-water nexus.

The common heritage of mankind can help regulate this individual control over groundwater and ensure adequate State control with the State as custodian of groundwater.¹⁰⁰⁵ However, the resource management by the State as a custodian is for the benefit of humanity.¹⁰⁰⁶ It follows the understanding that any common resource which doesn't belong to individual ownership should be preserved, protected and allocated for public use.¹⁰⁰⁷ In that sense, CHM shares some common features with public trust.

However, since the CHM doesn't focus on property rights but the management of resources, CHM can fill the void created by PTD. The concept of CHM incorporates the principle of non-appropriation, benefit and burden-sharing and intergenerational equity.¹⁰⁰⁸ CHM mandates that sovereign claims and appropriations are not possible, and the States should equitably share benefits of all shared resources among all, and every nation and individual have the responsibility to protect shared resources.

The application of CHM in water justifies several reasons. The characteristic of water that transcends political boundaries makes it challenging to exercise complete sovereign control at the State level, which demands a cooperative and integrated approach in water management.¹⁰⁰⁹ Primarily, at the individual State levels, water management has substantial property rights influence, which hinders this collaborative approach. In such a case, CHM could be a starting point for addressing property-related equity issues in access and allocations.¹⁰¹⁰ The shared responsibility to protect and preserve under CHM also contributes to the justification of ecological justice that includes RoN.

The principles of non-appropriation, benefit and burden-sharing, and intergenerational equity are inevitable to regulate groundwater exploitation in India and mitigate the negative consequences. Groundwater regulation applying these principles can control the private appropriation of resources, reduce the inequitable benefits and burden

¹⁰⁰⁵ Cullet, *Water Law, Poverty, and Development* (n 54) 185–187.

¹⁰⁰⁶ Stéphanie Kpenou, 'Fresh Water as Common Heritage and a Common Concern of Mankind' in Mara Tignino and Christian Bréthaut(eds), *Research Handbook on Freshwater Law and International Relations* (Edward Elgar 2018)2, 5.

¹⁰⁰⁷ Cullet, *Water Law, Poverty, and Development* (n 54) 187.

¹⁰⁰⁸ Prue Taylor, 'The Concept of the Common Heritage of Mankind' in Douglas Fisher (ed), *Research Handbook on Fundamental Concepts of Environmental Law* (Routledge 2016) 306,317.

¹⁰⁰⁹ Cullet, *Water Law, Poverty, and Development* (n 54) 187, 188.

¹⁰¹⁰ *ibid* 189.

sharing which skew towards landowners and affluent communities and promote intergenerational equity through water conservation.

However, the implementation of CHM faces constraints from the local hydrogeological distribution of groundwater that has challenged over ecological justice sphere of water justice. The groundwater problems in India, where every local unit differs in groundwater availability, water table levels, and aquifer distribution, make it difficult to maintain uniform rules. For instance, Kerala and Rajasthan shared standard rules for water governance, but the most significant drawback of such uniform regulations across India, as pointed by many hydrogeologists and water experts, is that local conditions differ.

Customised regulation to address local conditions is now needed to address issues caused by subsidies in groundwater access and regulation issues. Subsidies are granted uniformly and applied without considering local water and climatic conditions to access groundwater which puts an extra burden on the ecosystem in areas like arid regions of Rajasthan and Palakkad in Kerala.

Furthermore, even though CHM provides a better stand for groundwater regulation, recognised through the draft Groundwater Bill 2016, the implementation remains incomplete unless two conditions satisfy. First, the acknowledgement of local situations and consequent decentralised water governance and subsidiarity and secondly, the recognition of RON, including rights of aquifers. The second condition demands a deviation from human rights-oriented conservation patterns to include Nature and her rights in mainstream discussions. Nevertheless, applying common heritage to groundwater and aquifers, with due attention to local situations, can help reduce the private individual induced groundwater exploitation and apply legal personhood to aquifers to ensure our duty to protect natural rights.

7.4 Assuring Water Justice in Groundwater Access: Foreground Environmental Sustainability in Regulatory Framework

Groundwater extraction that follows the land-water nexus also widens the inherent social and distributive inequities in water access and allocations. The discussions on these inequities also point to the close nexus between subsidies and land rights, which is crucial in determining groundwater extraction patterns and widening inequities.

These land rights determined access and allocation of subsidies and groundwater has resulted in inequitable benefit and burden-sharing in groundwater where the poorer sections bear the burden of over-exploitation in water scarcity, depletion and

deterioration. Such inequitable groundwater access and consequent overexploitation by a few violates fundamental rights, compromises social and distributive justice and threatens ecological justice by impairing the sustainability of groundwater resources. The groundwater regulation raises concerns about anthropogenic and natural water needs. The threat of environmental sustainability arising from subsidies interaction with groundwater access argues for integrating ecological sustainability in water governance by employing more environmental law principles to regulate groundwater extraction.

7.4.1 Precautionary Principle in Groundwater Regulation: Measure to Prevent Groundwater Exploitation and Regulate Subsidies

The subsidies for drinking water and agriculture have two objectives; constitutional and political. Constitutional goals include fulfilling the State's duty to ensure equality and equity among all in access to natural and economic resources of the country without discrimination and thereby establish a welfare state. The political objectives for subsidies cater to the promises of election manifestos and vote bank politics driven by interest groups in determining the scope and implementation of each scheme.¹⁰¹¹ Such politics and pressure groups heavily influence the choice of beneficiaries and implementing areas, which often relegate the environmental impacts of subsidies. Once introduced to bring inclusiveness in the development process, it has been a significant factor in luring political advantage for ruling parties.

In most cases, the political objectives override the constitutional responsibilities. Hence, the quantum of subsidies increases during elections without a precise analysis of their economic, environmental and social justice impacts. Therefore, regulation of subsidies granted for groundwater exploration is essential to address the environmental sustainability concerns arising from groundwater exploitation. Several factors influencing subsidies and their consequences justify the necessity of such regulation.

Subsidies promote inefficiency in water use patterns and affect the sustainability of supply and source in the long term. Policy documents and implementation guidelines don't address these environmental effects of excessive subsidies; instead, it prioritises water and food security and rural economic development. The policies on subsidies follow uniform practices in implementation without considering the local hydrogeological, climatic, socio-economic and political conditions. For instance, subsidies applied in Kerala and Rajasthan follow uniform guidelines even though the

¹⁰¹¹ Ajit Karnik and Mala Lalvani, 'Interest Groups, Subsidies and Public Goods-Farm Lobby in Indian Agriculture' (2015) 31 (13) Economic & Political Weekly 7.

situations here differ due to variations in water availability and related water use patterns, social, economic, and environmental differences.

The ecological harm calls upon the State to refocus its attention on subsidies to restrict and target them to the eligible. This situation underlines the sustainability framework based on the interpretation of the interlink between economic prosperity, social justice and ecological sustainability. Economic prosperity is complete with social justice; social justice is impossible without economic prosperity, but economic prosperity and social justice remain incomplete without environmental sustainability.¹⁰¹²

This triangular relation between economic prosperity, social justice and environmental sustainability in groundwater, and the dominant role of subsidies in influencing this relation by augmenting groundwater access and exploitation warrants attention from policymakers and water users to adopt measures to regulate the current situation and prevent future harm. These measures include adopting precautionary principles in groundwater regulation that can control exploitation, regulating subsidies policies, and extending the polluter pays principle to the pollution caused by agricultural and domestic groundwater exploration.¹⁰¹³ Such actions are necessary to combat the widespread damage caused to aquifers and groundwater quality by excessive exploration and the unregulated use of pesticides and chemicals that create pollution.

Precaution and prevention of human activities are essential to reduce their impacts on the environment in all instances, including scientific uncertainties or anticipated harm.¹⁰¹⁴ The rising concerns of environmental damage reiterate the urgency of ecological protection applying the precautionary principle that includes effective and stricter implementation of existing laws and rules to mitigate the impacts of our activities.¹⁰¹⁵ The precautionary principle is significant in groundwater regulation with its core theme of reminding the State that 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.'¹⁰¹⁶

Its relevance also extends to ensuring that all actors, including the State, industry and individual, are responsible and accountable for their actions that can cause or likely

¹⁰¹² Bosselmann (n 227) 63.

¹⁰¹³ Analysis of the application of polluter pays principle is examined in next section.

¹⁰¹⁴ Sumudu A Atapattu, *Emerging Principles of International Environmental Law* (BRILL 2007) 204.

¹⁰¹⁵ *Karnataka Industrial Area Development Board v kenchappan* (n 266).

¹⁰¹⁶ UNGA, 'Report of The United Nations Conference on Environment and Development' (1992) UN Doc A/CONF.151/26 (Vol. I).

cause ecological harm.¹⁰¹⁷ Thus with the onus of proof upon the *actor* to prove that those actions are environmentally benign¹⁰¹⁸, the precautionary principle stresses the duty of environmental protection upon every stakeholder,¹⁰¹⁹ which resembles an extension of the constitutional duty of the States and citizens in environmental protection.

The significance of the precautionary principle in environmental protection led to the inclusion of this principle in several environmental protection statutes and policies in India that benefit groundwater regulations. The State intervention, mainly through establishing regulatory authority by the central government u/s 3 of EPA 1986 to adopt necessary and expedient measures to control and prevent environmental harm, also reflects the principle of precaution and prevention.¹⁰²⁰ Similarly, the new Model Groundwater Bill 2016 also suggests applying precautionary steps by all governments and users to protect groundwater from quality and quantity depletion and reduce negative externalities on the environment, particularly on the river flow.¹⁰²¹

The contours of precautionary principles crisscross prevention, requiring the State to exercise due diligence in its developmental activities through various administrative and penal mechanisms.¹⁰²² In groundwater regulation, preventing further harm to groundwater quality and quantity is essential to mitigate social and distributive injustices in water access, impacting fundamental rights and ecological sustainability. A preventive approach in regulation can reduce the drawbacks of the curative system in environmental governance by preventing harm through reduction of risk of that harm.¹⁰²³ Thus, the preventative approach, with its three components- the risk of damage, foreseeability and magnitude of risk, is helpful in a case involving the pre-known cause-effect relationship, and the scientific know-how determines risk

¹⁰¹⁷ *M/s Laxmi Suiting & Ors v State of Rajasthan* MANU/GT/0042/2014 [72].

¹⁰¹⁸ *Vellore Citizen's Welfare Forum* (n 282). Emphasis Added.

¹⁰¹⁹ *MC Mehta v Union of India* MANU/SC/1123/1997 [9].

¹⁰²⁰ Environment (Protection) Act 1986 s 3.

¹⁰²¹ Cullet, 'Model Groundwater (Sustainable Management) Bill, 2017' (n 78).

¹⁰²² Nicolas de Sadeleer, 'The Principles of Prevention and Precaution in International Law: Two Heads of the Same Coin?' in Malgosia Fitzmaurice, David Ong and Panos Merkouris (eds), *Research Handbook on International Environmental Law* (Edward Elgar 2010) 183.

¹⁰²³ Nicolas de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (2nd edn, OUP 2020) 85,114.

assessment.¹⁰²⁴ In such cases, the motive is to prevent repeating an already occurred risk.¹⁰²⁵

The contours of preventive and precautionary principles are similar but divergent. While the precautionary principle calls upon the States to mitigate potential damage whose intensity is not measurable due to lack of scientific coherence, the preventive principle applies for foreseeable risks.¹⁰²⁶ Often implementing the precautionary principle engages with the objective of a preventative focus.¹⁰²⁷ The groundwater situation, consequent inequities, and impacts on water justice in India warrant a square application of both directions.

Nevertheless, there are instances where the environmental harm cases saw clear demarcation between preventive and precautionary principles, even though several other cases, including the approach of NGT, show preventive focus in applying the precautionary principle.¹⁰²⁸ For example, in the *Narmada* judgment, the Supreme Court hesitated to extend the precautionary principle's application to those activities whose impacts are foreseeable and can be mitigated, thus drawing an implied line between preventive and precautionary principles. In that case, observing that a large dam is not a polluting entity and cannot cause an ecological disaster, though it shall trigger environmental changes:

"[w]here the effect on ecology or environment of setting up of an industry is known, what has to be seen is that if the environment is likely to suffer, then what imitative steps can be taken to offset the same. Merely because there will be a change is no reason to presume that there will be ecological disaster. It is when the effect of the project is known then the principle of sustainable development would come into play which will ensure that imitative steps are and can be taken to preserve the ecological balance."¹⁰²⁹

Even though the court tried to extend a line of demarcation for applying a precautionary approach, it is imperative to highlight that any water/ river flow changes can turn into an ecological disaster. Some changes in water/ environment can trigger unpredictable

¹⁰²⁴ *ibid* 93–97 .

¹⁰²⁵ *ibid* 103.

¹⁰²⁶ Sumudu A Atapattu, *Emerging Principles* (n 1015) 206.

¹⁰²⁷ Lavanya Rajamani, 'The Precautionary Principle' in Shibani Ghosh (ed), *Indian Environmental Law: Key Concepts and Principles* (Orient Blackswan 2019) 208.

¹⁰²⁸ Sridhar Rengarajan and others, 'National Green Tribunal of India—an Observation from Environmental Judgements' (2018) 25 (12) *Environmental Science and Pollution Research* 11313.

¹⁰²⁹ *Narmada Bachao Andolan v. Union of India* (n 43) paras 150–151.

environmental disasters, and the absence of scientific certainty also adds to it. It is similar to the case of groundwater exploitation that has impacts on aquifer depletion and pollution. It is unclear and impossible to determine the intensity of damage caused to aquifers by uncontrolled water extraction and the influx of pollutants; wherefore, precautionary and preventive principles are equally important. Demarcating these principles in its application is not fruitful in addressing environmental harm like groundwater depletion.

Thus, adopting precautionary principles in groundwater regulation can control the overexploitation of groundwater and regulate policies on subsidies. It can help the State regulate the private extraction of the groundwater through effective measures as it requires the State to anticipate and adopt measures to prevent environmental degradation, including groundwater depletion.¹⁰³⁰

Furthermore, the characteristic of groundwater resources, including fugitiveness, justify its application. The technical difficulty in deciphering the harm caused to deeper aquifers and the longevity of damage necessitates precautionary actions to reduce the impacts of human activities on aquifers. In that case, the precautionary principle helps to 'act before the risks have materialised when only the contours of what might be risks are visible.'¹⁰³¹ This anticipatory approach in the precautionary principle essentially reflects the prevention of harm before its actual occurrence, thereby protecting the environment from the harmful impacts of anthropogenic activities.

The argument for prevention and precaution in groundwater regulation also springs from the State's approach to the water supply. The preference is for supply sustainability than source sustainability in all water supply schemes as reflected through the choice for short term measures like water source substitution in case of water supply scheme failure instead of long-term risk preventive measures.¹⁰³² The supply-focused short-term approach, which incurs heavy financial, technical and managerial burden to authorities, compounds the investment for new water supply schemes. Situations learnt in Kerala and Rajasthan add an empirical reference to this argument. The KWA shifts to freshwater sources in Kerala when the previous water scheme fails in water supply, and there is a conspicuous absence of a precautionary approach in all such efforts.

In Rajasthan, on the other hand, due to inherent water scarcity, water conservation schemes promote people's participation without considering the precautionary

¹⁰³⁰ *Vellore Citizen's Welfare Forum* (n 282) para 11.

¹⁰³¹ Joakim Zander, *The Application of the Precautionary Principle in Practise: Comparative Dimensions* (CUP 2010) 2.

¹⁰³² Sacchidananda Mukherjee, 'Issues and Options to Control Agricultural Nonpoint Source Pollution: A Case Study from India' in Sacchidananda Mukherjee and Debashis Chakraborty (eds), *Environmental Scenario in India: Successes and Predicaments* (Routledge 2012) 22.

approach. Two observations need attention. Firstly, conservation efforts are also curative. It starts when the area faces severe droughts, and once it receives rainfall, conservation slows down. Secondly, the conservation measures do not adopt natural geological, climatic, location and agricultural features in planning.

The difficulty in monitoring and evaluating the extent of aquifers' pollution is primarily due to its geological and regulatory characteristics. Geological features of an aquifer are the invisibility and the problem of accumulation of pollutants over a longer time. It is challenging to regulate non-point source pollution due to many sources, entry points, and water users.¹⁰³³

Precautionary and preventive principles in groundwater regulation also contribute to regulating the State policies on subsidies. The need to prevent further groundwater extraction reduces or withdraw subsidies to drinking water and irrigation. Such regulation can contribute to the efficiency in water use patterns which states like Gujrat have already evidenced.¹⁰³⁴ Similarly, preventive and precautionary principles also help address the negative impacts of subsidies on the ecosystem. Most of the effects caused by subsidies on groundwater and land are foreseeable and therefore preventable, requiring coordinated action in law and policy.

Therefore, the preventive principle applies because the negative externalities resulting from excessive groundwater use and subsidies are well known now. The harm caused by such subsidies is not uncertain but foreseeable and assessable though the impacts are still unknown in many deeper aquifers. Hence, the precautionary approach should also be substantiated by a preventive approach in all cases when the harm is foreseeable.

7.4.2 Accountability for Agricultural and Domestic Groundwater Pollution: Broaden the scope of Polluter Pays Principle

As pointed in the previous subsection, the application of precaution and prevention principles aid the State to introduce more control over the private extraction of groundwater. Though both these principles could regulate quality and quantity depletion, the regulation is incomplete unless groundwater pollution receives more focus as groundwater quality in different places does not satisfy the health standards. Groundwater pollution from industrial sources attracted significant attention from policymakers, but agriculture and domestic groundwater use's contribution to

¹⁰³³ *ibid* 29.

¹⁰³⁴ Tushaar Shah and Shilp Verma, 'Co-Management of Electricity and Groundwater: An Assessment of Gujarat's Jyotirgram Scheme' (2008) 43 (7) *Economic & Political Weekly* 59.

groundwater pollution remains unexplored. Hence, to address groundwater quality depletion caused by agriculture and drinking water sectors using the lion's share of groundwater, the water users should be held responsible and accountable for pollution for which the extension of polluter pays principle to these sectors is required.

The groundwater quality depletes due to the geogenic and anthropogenic factors, creating pressure on aquifers and affecting human health.¹⁰³⁵ The geogenic and anthropogenic factors influence the heavy reliance on groundwater for agriculture and drinking water. While geological factors include easy availability and access to groundwater in several areas affected by individual control over access and allocation, anthropogenic elements include increased food and water demands, the influx of subsidies in agriculture, the introduction of heavily subsidised drinking water schemes credit free loan and enhanced technology.

The groundwater pollution caused by these sectors also impacts water-related public health concerns.¹⁰³⁶ The discussions on the effects of pollutants from domestic water use point to microbial contamination and agricultural pollution to chemical contamination from geogenic and anthropogenic induced fluoride, arsenic and iron, and salinity issues.¹⁰³⁷ Contamination of drinking water and irrigation water is thus mainly through non-point pollution like nitrate pollution infiltrated into groundwater through unsustainable extraction of groundwater, excessive use of fertilisers, and lack of sanitation facilities.¹⁰³⁸ Yet, the policy attention on these types of pollution and the influence of subsidies on them is scant because the predominant discourse on groundwater pollution focuses on industrial water pollution, its health and environmental impacts.¹⁰³⁹

Legal and judicial attention to address groundwater contamination caused by industrial water discharge applied polluter pays principle to hold the polluter accountable. The PPP evolved as an economic principle based on internalising the externalities costs of polluting activities holds the polluter responsible for the actions that cause

¹⁰³⁵ SP Sinha Ray and L Elango, 'Deterioration of Groundwater Quality: Implications and Management' in Amarjit Singh, Dipankar Saha and Avinash C Tyagi (eds), *Water Governance: Challenges and Prospects* (Springer 2019) 87.

¹⁰³⁶ K Brindha and others, 'Nitrate Pollution in Groundwater in Some Rural Areas of Nalgonda District, Andhra Pradesh, India' (2012) 54 (1) *Journal of Environmental Science & Engineering* 64; Bishwajit Nayak and others, 'Health Effects of Groundwater Fluoride Contamination' (2009) 47 (4) *Clinical Toxicology* 292.

¹⁰³⁷ Dipankar Chakraborti, Bhaskar Das and Matthew T Murrill, 'Examining India's Groundwater Quality Management' (2011) 45 (1) *Environmental Science & Technology* 27, 27–29.

¹⁰³⁸ Mukherjee (n 1033) 21.

¹⁰³⁹ Jain 'The Water Pollution Act, 1974' (n 490) 184.

environmental harm and allocates responsibility and costs to him for his activities.¹⁰⁴⁰ It satisfies three significant components in ecological protection by serving as the instrument of redistribution, prevention, and curation. The elements of prevention and curation added with redistribution try to ensure rectification of pollution already caused, act as a precaution for future harms and distributes the responsibility of curation and precaution across stakeholders without confining to State.

PPP thus, envisages a vertical devolution of commitment from the State to private actors in environmental protection¹⁰⁴¹, balancing the environmental concerns with developmental needs, thus aiming to achieve sustainable development.¹⁰⁴² This vertical devolution of responsibility of curation and prevention is imperative to control groundwater exploiters accountable for the environmental damage caused by pollution, requiring an extension of PPP to agricultural and domestic groundwater uses.

It is essential to extend the pollution control regulations to domestic and agricultural pollution for several reasons. Firstly, the impacts of groundwater pollution on public health require regulation of human activities due to the lion's share of groundwater to drinking water and food security. Excessive nitrate traces can cause short term and long-term health hazards in humans.¹⁰⁴³ This chemical contamination in groundwater, if unchecked, contributes to public health crisis owing to the significance of groundwater to India's water security, and the BIS standard allows only 45 mg/litre of NO₃ in drinking water.¹⁰⁴⁴ Therefore, it is vital to extend pollution control regulation to non-point source pollution from agriculture and domestic water uses.

Secondly, expanding the ambit of PPP to include non-industrial pollution is essential to address the growing menace of groundwater pollution caused by chemical fertilisers and pesticides in agriculture and the discharge of untreated domestic sewerage wastes. As pointed through this thesis, agriculture is a heavily subsidised sector where water-related subsidies have caused both equities and inequities. Negative externalities of subsidies, particularly in the form of deterioration of groundwater quality in this most groundwater-dependent sector, are a severe concern for different water uses, users and the entire ecosystem.

¹⁰⁴⁰ J Nash, 'Too Much Market? Conflict Between Tradable Pollution Allowances and the "Polluter Pays" Principle' (2000) 24 (2) *Harvard Environmental Law Review* 465.

¹⁰⁴¹ Candis Stevens, 'Interpreting the Polluter Pays Principle in the Trade and Environment Context' (1994) 27 (3) *Cornell International Law Journal* 577, 579.

¹⁰⁴² *Vellore Citizen's Welfare Forum* (n 282).

¹⁰⁴³ WHO guidelines (n 314).

¹⁰⁴⁴ Bureau of Indian Standards (n 583).

Lastly, groundwater pollution caused by agricultural chemicals and fertilisers also leads to soil degradation and fertility loss, impacting the quality of food generated. Hence, it is inevitable to include agricultural water pollution in the scope of application of PPP and make those polluting accountable.

However, it is challenging to apply PPP to agriculture and domestic groundwater use considering India's social and economic situation. Most of the population depends on groundwater for drinking and on agriculture or allied sector for livelihood where fertilisers and pesticides are inevitable for a good outcome. So, holding the agricultural community accountable for pollution raises several challenges.

Firstly, it can impact the country's food production since many farming communities cannot afford these inputs without subsidies. So, any reduction in subsidies and extending PPP to agriculture can impair their livelihood chances, leading to an outflow of people to the non-agriculture sector. Secondly, determining the pollution threshold is complex in agriculture, where pollution is diffuse and caused by runoff and leaching, unlike the industrial sector where pollution can be of the point source.

Thirdly, the determination of the responsible 'polluter' is yet another challenge here. The heavy influx of subsidies also hinders the determination of polluters. Subsidies aimed to foster distributive and social justice among beneficiaries benefit the rich more than the needy. While the rich grab government benefits, subsidies are essential factors for livelihood sustenance for the lower sections of society.

Lastly, agriculture being the most critical source of job and spread across the country where local conditions differ, applying PPP without considering the local hydrogeological, economic, social and cultural factors is not feasible to regulate pollution.

Though expanding the polluter's responsibility to agriculture is feasible, suggestions also include alternate options like promoting agricultural subsidies for environmentally friendly agrarian policies.¹⁰⁴⁵ Removing subsidies is not a viable option in the socio-economic conditions of India. Implementing environment-friendly agrarian procedures as a pre-condition to avail irrigation subsidies and expansion of organic farming techniques under the subsidised organic farming scheme can help replace dependence on chemical fertilisers.

Agricultural Pollution is not beyond regulatory control, but the implementation of laws doesn't address these issues. In that case, the current water pollution law, the Water Act 1974, can also lead the way to include agricultural pollution in implementing pollution control measures. For instance, the Water Act definition of pollution is not confined to

¹⁰⁴⁵ Ved P Nanda, 'Agriculture and the Polluter Pays Principle' (2006) 54 The American Journal of Comparative Law 317, 318, 339.

industrial pollution but applies to *anything that alters the properties of water* and renders it harmful or injurious to health:

"such *contamination of water or such alteration* of the physical, chemical or biological properties of water or such *discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly)* as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms."¹⁰⁴⁶

This definition can thus incorporate fertilisers, pesticides, and even domestic sewerage as pollutants because such substances can affect water quality and injure the public health and safety of water users and other water uses. Similarly, this definition also considers its impacts on the life and health of animals or plants or aquatic organisations, reflecting on its intention to identify the impacts of pollution on the ecosystem and beyond human water needs.

Justification for expanding PPP to the agricultural non-point source using the legal mechanisms derives from the ability of evolution of legal principle following changing dynamics of social, economic and environmental situations, as noted by Chief Justice, P.N Bhagwati in *M.C.Mehta v Union of India*:¹⁰⁴⁷

"Law has to grow in order to satisfy the needs of the fast-challenging society and keep abreast with the economic developments taking place in the country. As new situations arise the law has to be evolved in order to meet the challenges of such new situations. Law cannot afford to remain static. We have to evolve new principles and lay down new norms, which would adequately deal with the new problems, which arise, in a highly industrial economy."

7.5 Summary

The influence of subsidies in groundwater exploration is very crucial. While it enables many to access groundwater, it also triggers groundwater exploitation threatening the aquifers and the entire ecosystem. This ecological destruction induced by anthropogenic water use patterns requires legal and policy interventions to address the

¹⁰⁴⁶ Water (Prevention and Control of Pollution) Act, 1974 s 2(e). Emphasis Added.

¹⁰⁴⁷ *M.C Mehta v Union of India* (n 823).

harm caused and adopt measures to reduce it. This chapter argued that recognising ecological justice in water justice in groundwater regulation could help address the environmental impacts of groundwater exploitation. Such recognition provides manifold contributions to balance anthropocentric and biocentric rights. It points that recognising RON and water as commons with emphasis on source sustainability of water resources and a paradigm shift of focus from public trust and sustainable development can lead the way to adopt ecological justice-based groundwater regulation. Adopting such a perspective can also assure water justice by balancing the environmental water demands and human water demands between generations. Expanding the ambit of pollution accountability to agricultural and domestic water users adopting the principles of precaution and prevention in groundwater regulation, and through a revised subsidies policy targeting the needy, which can address the ecological harm can also contribute to ensuring ecological justice in groundwater regulation.

Chapter 8

Balancing Water for Human Rights and Ecosystem: Assuring Equity and Sustainability through Water Justice

8.1 Introduction

Groundwater constitutes an essential source for drinking and irrigation in India. However, the current regulatory framework restricts the access only to landowners compromising equity, inclusiveness and sustainability in water access and allocations. The State interventions like water-related subsidies help mitigate the impacts of this inequitable access and allocations among water users and try to bring equity and inclusiveness in groundwater access, helping many realise the right to water and food. Nevertheless, its role in threatening the sustainability of the source and ecosystem is also crucial as it impairs the ecological balance and affects the right to the environment.

This thesis explored the role of water-related subsidies in groundwater access, assuring the realisation of many social rights like the fundamental right to water and food, its impact and implications on social and distributive equity and the environmental sustainability in groundwater access and regulation. For the same, it developed a relational and contextualised approach of water justice framework to unpack and examine the equities and inequities created and influenced by subsidies in the groundwater access in India. It examined how the change in the role of the State in water supply and conservation influenced the policy of subsidies and consequent impacts on the rights to water and water for food. It also focused on how the property linked groundwater rights and subsidies-land nexus limits the scope of subsidies in the realisation of fundamental rights. Analysing that this property rights nexus with groundwater and current groundwater regulation that reflects only anthropocentric focus cannot assure ecological justice sphere of water justice, it highlighted the need to move beyond the anthropocentric water governance to ecological justice where RON and legal personhood to groundwater/ aquifers could lead the way.

The following section summarises these core arguments of the thesis in three main points: the need for a broader conceptualisation of water justice to address groundwater inequities, justification for equity subsidies, inclusiveness and sustainability in groundwater access, and the need to adopt ecological justice in groundwater regulation.

8.2 Unpacking Inequitable Groundwater Access in India: Need for a Broader Conceptualisation of Water Justice

Groundwater's support to the water and food security of the country adds attention to its access and allocation. The current groundwater regulatory framework (from now on, the regulatory framework) is inequitable and create everyday water injustices in drinking water and irrigation water uses. The common law inspired framework is unsuitable to address India's peculiar hydrogeological, social, economic and cultural situation where social stratifications based on religion, caste, and gender determine water access and allocations, and economic differentiations influence beneficiaries of government schemes. Hence, it fails to address these water injustices and assure water justice in groundwater.

A broader, contextualised water justice framework is essential to address the complexities of this legal framework and address the injustices caused by the social, economic and hydrogeological situations determining groundwater access in the country. Additionally, policy instruments like water-related subsidies with positive and negative externalities on social and distributive equity in groundwater access and environmental sustainability also warrant a broader approach to water justice. Adopting a contextualised, extended and relational water justice framework in this thesis helped to examine the groundwater situation in India influenced by the applicability of subsidies and its implications on equity, inclusiveness and sustainability.

8.2.1 Inequitable Groundwater Access and Allocations: Intersection of Property Rights, and Social and Economic Factors

Groundwater allocation determined by land rights has benefited only the landowners. The social discriminations and economic discrepancies also influence the extent of groundwater access. Thus, the intersection of property rights and social and economic factors causes inequity in groundwater.¹⁰⁴⁸

The current groundwater situation could not ensure distributive and social justice in water access and allocations because the interventions in water like land, caste, religion, gender, political influence favour the upper caste landowning communities. Land ownership skews towards upper castes, and men cause disadvantages to SC/ST, small and marginal farmers, economically poorer communities, and women.

¹⁰⁴⁸ Sec 3.4 and 3.5

Discriminations and disparities violate the rights of these sections in the realisation of the fundamental right to drinking water and the right to food, particularly in rural and peri-urban spaces where people rely on the same source for multiple uses and the difference between drinking water and irrigation source is minimal.¹⁰⁴⁹

Social and economic differences that create social and distributive inequities reflect together, particularly among the lower sections, which face social and economic discrimination based on caste. The historic caste-based biases, peculiar to India, extended to water access violate the fundamental right to water and constitute untouchability and deprive small and marginal farmers of their ability to access water for food, thus violating their right to food.

The State has failed to delink the land-water nexus in groundwater despite its significant contribution to water and food security. Neither the draft bills circulated by the central government nor the state legislation enacted following this bill had attempted to address the land-water nexus.¹⁰⁵⁰ It follows a curative approach inadequate to address this property related inequities in groundwater which excludes landless sections from access to groundwater. Thus, interactions of these land rights, social and economic factors in groundwater depriving people of groundwater access violates the fundamental right jurisprudence that upholds equality, equity, inclusiveness, distributive and social justice in resource access.

8.2.2 Subsidies for Equitable Groundwater Access: Expanded Scope but Restricted Implementation

This section highlights two factors that warrant a broader understanding of the water justice framework to unpack and analyse inequities in groundwater access and allocations. The previous sub-section pointed to the disparities created by the groundwater regulation, compounded by social and economic factors leading to a peculiar groundwater situation in India. Adding to these legal, social and economic factors, State interventions like water-related subsidies are integral in groundwater access. With their positive implications and adverse impacts on equity in groundwater access and sustainability of resources, these subsidies raise particular issues peculiar to India's legal, social, economic, and hydrogeological situation.

¹⁰⁴⁹ Sec 6.2 and 6.3

¹⁰⁵⁰ Chapter 4 and Chapter 5 provides an overview on state regulatory frameworks.

A. Policy Instruments Integral to Groundwater Access: Fostering Equity and Inclusiveness in Access and Allocations

Subsidies as policy instruments of various governments aim to promote welfare measures in social security missions to achieve the welfare state by assuring inclusive growth and development. It seeks to attain constitutional objectives of distributive equality and social justice in access to natural, economic and social resources and remove discriminations and disparities in such access.

Subsidies are essential components of drinking water and agricultural developmental programmes to ensure equity and inclusiveness and provide water and food security to many.¹⁰⁵¹ The groundwater legal framework, social discriminations and economic disparities in groundwater that confined its access benefits to landowning communities, higher caste and economically robust communities necessitated State interventions to ensure equitable sharing of benefits.

The ambit of subsidies is broader in that it covers all groundwater uses. As highlighted in chapter 3, its objective to foster distributive and social justice in groundwater access and state aid, technology, and credit made it the most accepted mechanism for devolving several groundwater access benefits.

Firstly, in drinking water schemes, the significance of safe water to public health and the realisation of the fundamental rights triggered the induction of subsidies. It helped the State perform its constitutional objectives and duties of ensuring these fundamental rights equitably and inclusively. The State uses subsidies to disseminate the benefits of clean and safe drinking water to the public by widening coverage of water supply, improving sanitation facilities and public health. These subsidies fostered equitable water supply through state-supplied water, particularly in rural areas where social and economic differentiation worsened the water crisis by focusing on uncovered habitats, BPL, SC/ST women-led families.

Subsidies are significant in water supply considering the structural and conceptual framework on the right to water. The absence of any statutory recognition of this right, or change in the State's role from supplier to facilitator with the influence of IFIs, did not reduce the paternalistic attitude of the State, which used subsidies to ensure equitable water supply. The rural households' social and economic conditions with the inability to pay for water and the State's obligations not to move away from the constitutional objectives and principles form the justification for subsidies.

Secondly, the lion's share of groundwater to irrigation promoted private investments in its extraction, which remained skewed towards the landowning communities and

¹⁰⁵¹ Sec 3.2 and 3.3

economically affluent, raising concerns over the groundwater exploitation and inequitable benefit-burden sharing. This economic disparity reflected broader during the Green Revolution led to more pro-poor policies, including subsidies targeting the poor and marginalised to benefit from groundwater irrigation.

Subsidies developed a parallel regime for private investments by equipping small and marginal farmers to access technology, credit, and infrastructure for groundwater exploration. The informal groundwater markets sprout from subsidies also act as a last resort for the landless and tenant farmers. Consequently, enabling groundwater-based irrigation, subsidies aid in assuring the food security of these farmers and the nation and foster the revitalisation of lost agricultural heritage by attracting more human resources and financial investments in agriculture.¹⁰⁵²

Lastly, subsidies form an essential component of conservation schemes, extending their positive impacts on groundwater conservation. These schemes, mostly linked to land development programmes, successfully adopted participatory mechanisms, assured sustainable water supply for irrigation in drought-affected months, more gender empowerment, employment guarantee for villagers, and rural development.¹⁰⁵³

These positive externalities of subsidies are significant in distributive and social equity in groundwater access for drinking and irrigation by targeting the disadvantaged sections. It contributes to water justice by addressing India's peculiar social and economic inequalities that create inequities in groundwater access. However, the land rights influenced subsidies access, and the interventions of political, social and economic factors in determining beneficiaries and implementation areas limit the scope of success of these schemes.

B. Determinants of Access to Subsidies and Beneficiaries: Dilution of its objectives

Subsidies have helped millions to realise their fundamental right to water and assured water for food in irrigation. However, its adverse impacts like groundwater depletion and deterioration have impacted water justice in groundwater access, compromising environmental sustainability and threatening the water source. Anthropogenic water use patterns that emphasised supply sustainability than source sustainability and various social, political, economic, and policy factors intensify the gravity of these negative impacts.

¹⁰⁵² Sec 4.4

¹⁰⁵³ Sec 5.3

These factors trigger water scarcity and consequent inequities in everyday water access and allocations. It also influences subsidies access, restricting the scope of subsidies benefits to a few, diluting its objectives and denying many their chances of realising fundamental rights to water, food and environment.

The anthropocentric activities and factors that limit the applicability of subsidies raise concerns in water governance and policies on subsidies. Firstly, skewed land ownership patterns benefiting the upper caste people and men add to the lower caste and landless vulnerabilities. Experiences from Rajasthan and Kerala denotes that the official bias towards these affluent sections determines the coverage of water supply and conservation, and irrigation schemes' areas and their beneficiaries, where the wealthy and upper caste, with their political and social influence, grab subsidies in all forms.

Such biased and inequitable allocation of subsidies has negative consequences on the capability of farmers depending on subsistence farming to secure their food and water security. The land ownership influence in drinking water schemes deprives the homeless, migrants, and tenants of their choice and freedoms to improve their capability to realise their fundamental right to water.

Secondly, in furtherance of these land ownership requirements for subsidies benefits, the influence of IFIs that determine the scope of sponsored schemes and demand for the shift in focus from community pipelines to individual household connections, with a limited role for the State in water supply restricts the scope of subsidies. In such cases, even though the State continues the policies on subsidies to implement schemes, its content and nature changed from a one-time grant to undertake activities to the incentive for performed works. Additionally, with more focus on individual household connections at a cost-recovery approach, subsidies benefit more for those personal connections than community taps, even though the latter also benefit indirectly through subsidies for agencies or suppliers of water.

Thirdly, the political decisions and choice and bureaucratic preferences influenced by the socio-economic status of beneficiaries determine the implementing areas of welfare schemes widen the water injustices. Such choices exclude the regions affected by water issues like scarcity, quality deterioration and quantity depletion without political attention. However, the areas/ constituencies of ruling parties get preference over the quality affected areas as these programmes are vote grabbing measures.

Lastly, these political choices also complicate the caste-based discrepancies in subsidies distribution. Caste and politics determine the coverage areas of State water supply schemes like installing groundwater-based tanks and pipes. These caste and political preferences intertwine to deprive the lower caste of their water rights.¹⁰⁵⁴

¹⁰⁵⁴ Sec 5.2

Caste determines beneficiaries in informal groundwater markets, too, where such markets formed on an individual or collective basis choose the participants/ investors and the water buyers based on caste, religion, and land ownership. It extends to assessing the quantity of water allocated from shared wells and applies to participation in community-led water management schemes where lower caste members who cannot contribute in cash or kind remain excluded from management and access to water.

The focus on cost-recovery and efficiency in water supply and allocations, the influence of politics, caste and power in the determination of beneficiaries of subsidies and schemes exclude the needy and the deserved, widening the inherent social discriminations and economic disparities in society.

The restricted scope of subsidies also impacts environmental sustainability as these subsidies grabbed by the rich utilise the same in an unsustainable manner, causing inequitable benefit and burden-sharing in groundwater access and causing damage to groundwater and aquifers. Thus, the influence of land rights, socio-economic and political factors in subsidies have severe repercussions on fundamental rights and water justice.

8.2.3 Towards a Broader Understanding of Water Justice: Steps for Equitable Sustainability

Examination of water injustices created by property rights influenced inequitable benefit and burden-sharing in groundwater access, and allocation is possible through the application of water justice discourse. Water justice discourse move beyond the traditional environmental justice framework, which argues for the equitable benefit sharing in ecological goods and services, to incorporate and address the everyday injustice tracing its causes, reasons and solutions.

Water injustices result from conflicts and cooperation on water access and allocations with determinants including socio-economic, political, and governance factors. Water extraction levels, intense competition over access and allocations and market interventions influenced by neoliberalism propagated by the IFIs influence everyday water matters and trigger everyday injustices. These everyday water injustices and the hydro-social nature of water where water influences, produces and coordinate human relations and get controlled by human actions necessitate a deviation from universalistic approach injustice theories.

Understanding and addressing these injustices require a justice framework that examines the engagement of socio-economic and political factors with the institutional framework of water governance. The context for developing such a contextual, relative and situational approach includes the necessity of understanding and unpacking the

historically embedded and politically driven water injustices. The inherent anthropogenic bias in water governance also requires a shift to a comparative, contextual system that prioritises ecosystem water demands and harmonises human rights and nature's rights.

Water justice discourse derives inspiration from tripartite spheres of environmental justice to contextualise water injustice. It follows Sen's capability approach to draw a broader understanding of water inequalities and their impacts on human rights and freedoms and situates its content in distributive, recognitional and procedural justice. Sometimes, adding to these three spheres, social-ecological justice also forms its part.¹⁰⁵⁵

Distributive justice of water justice ensures equitable and inclusive access and allocations. Water justice also requires recognising harm suffered by communities and water users, acknowledging their cultural, social, symbolic and institutional conditions linked to and contributing to these injustices (recognitional justice). Both these spheres are complete only if stakeholders in the water get to participate in decision making, highlighting the procedural justice sphere of water justice.

This relational and contextual approach projecting three interrelated and interconnected spheres of water justice and inspired by the capability approach helped draw a framework for this thesis that unpacks and analyses the impacts of subsidies on social and distributive equity and environmental sustainability in groundwater access and allocations. India's local hydrogeological, socio-economic, political situations and groundwater governance demands a broader water justice discourse. Such a customised water justice approach also attracts merit due to the significant role of subsidies in groundwater access and allocation.¹⁰⁵⁶

Inspired by tripartite water justice discourse, the thesis adopted a customised water justice framework to address groundwater legal framework, socio-economic and political factors and subsidies that determine the extent of equity and inequity in groundwater access. Here distributive, social and ecological justice forms its three spheres that can help decipher the influence of subsidies in groundwater access and its implications on water justice.

Distributive and social justice was significant to examine water inequities in India due to the dispossession of a substantial section of people in water access by the accumulation of groundwater by a small minority- the landowners or the State, violating

¹⁰⁵⁵ Sec 2.2

¹⁰⁵⁶ Sec 2.3

their fundamental rights. The groundwater accumulation by the rich through subsidies grabbing resulted in inequitable benefit and burden-sharing among water users.

The influence of socio-economic and political factors and legal regulation in extending this dispossession and widening the water injustices highlights distributive equity's significance. Additionally, historically embedded social discriminations in water access depriving the socially downtrodden of their constitutional guarantees of fundamental rights points to the social justice sphere in water justice.

Choice of distributive and social justice in water justice sinks with constitutional and institutional frameworks. Both these spheres are constitutional objectives, and the State strives to achieve them through Part III and IV. The constitutional and statutory recognition and protection of Dalits, ST and women's rights highlights recognitional justice, but social exclusions and discriminations of these sections necessitate the social justice sphere more than recognitional justice.

The negative externalities of subsidies on groundwater and ecological sustainability required the addition of ecological justice as the third sphere of water justice as environmental sustainability falls out of the realm of policy decisions in water law and policy due to anthropogenic bias in water governance. The environmental jurisprudence, also reflecting this bias, necessitates a shift in focus to include nature's rights and ecological sustainability in the legal framework by recognising ecological justice, particularly in groundwater regulation, where the extraction exceeds recharge measures.

The ecological justice sphere articulated here emphasises ecological sustainability and recognition of nature's right to harmonise human needs and nature's rights. The impacts of groundwater exploitation on aquifers and the consequences connotes the urgent attention to our activities that potentially impair nature's capacity to regenerate. Since ecological sustainability threats can negatively affect equity in groundwater access, any framework chosen to examine the inequities in groundwater access caused by subsidies should consider this interrelation and aim for equitable sustainability, referring to this closer interlink between equity and sustainability. Hence, this thesis adopted a broader understanding of water justice based on distributive justice, social justice, and ecological justice.

8.3 Inclusive, Equitable and Sustainable Groundwater Access: Potential Role of Subsidies

The judiciary strengthened the Constitution's welfare state objective by their interpretations whereby many socio-economic rights like water, food, and the

environment, incorporated as non-justiciable DPSP, are now part and parcel of fundamental rights jurisprudence included with a harmonised interpretation approach. Harmonisation of DPSP and Fundamental Rights recognised the State's duty to adopt measures to implement socio-economic rights. The welfare schemes, including water supply programmes with a top-down, supply oriented approach, reflect this State's duty without a rights-based approach

Subsidies granted in these welfare schemes help many to access and enjoy natural and economic resources. These subsidies are lifelines to several farming communities in small and marginal sectors in agriculture. They mitigate the impacts of land-water nexus in groundwater access controlled by skewed land ownership patterns, gender and caste discriminations and economic disparities and equips small and marginal farmers to invest more in irrigation and agriculture. Subsidies also help increase drinking water supply coverage by reducing the spatial, social and economic inequities and equipping people with the capacity to access water supply.

In contrast, excessive subsidies negatively affect groundwater resources and their sustainability and compromise social and distributive equity in access and allocation, accentuating the social and economic divide of water users. Despite these negative impacts, subsidies are an integral part of drinking water and agricultural schemes and inevitable to ensure equitable resource distribution in India.

8.3.1 Focusing Source Sustainability: Foreground Subsidies for Participatory, Eco-centric Groundwater Conservation

Subsidies simultaneously boost groundwater extraction and conservation. The extraction-based subsidies received more attention and promotion from policymakers than the subsidies in protection due to their added merit in vote-bank politics. However, the groundwater over-exploitation and growing challenges of water depletion require a shift in our attention to promote conservation subsidies.

These subsidies, essentially to induce participation in state-led water conservation schemes, significantly influence source sustainability and assure human rights and ecosystem water balance. Addressing source sustainability through subsidies have significant impacts.

Source sustainability guarantees supply sustainability for drinking water and irrigation, contributing to fundamental rights. It is also essential for the State to implement its duty of assuring the fundamental right to water, for which these conservation subsidies help. It gradually shifts the hitherto focus on supply to source sustainability, acknowledging the necessity of water conservation for human water use.

Subsidy can boost user participation in water conservation, devolving all stakeholders' duty of protection. The successful implementation of participatory water conservation measures in Rajasthan utilising subsidies provides insights on the positive externalities' subsidies can create on source sustainability.

Foregrounding conservation subsidies is essential for RON and ecological justice in groundwater governance. These subsidies support activities that balance water extraction and preservation and augment groundwater recharge measures. Maintaining environmental balance in water assures minimal water flow, a sign of moving towards recognition of RON, which is essential to balance the human water needs and ecological balance. Therefore, subsidies that help water conservation need to be supported and foregrounded.

8.3.2 Equity and Inclusiveness in Groundwater Access Guaranteed: Continuation of Subsidies Justified

The negative externalities on social and distributive equity and environmental sustainability raise questions over the continuation of subsidies and demands justifications. However, subsidies are inevitable for groundwater access even though excessive use leads to groundwater exploitation.

Subsidies, the State's policy choices to ensure maximum coverage in its developmental and welfare schemes are inevitable to mitigate the deprivation of access to natural and economic resources. It helps reduce the discrepancies caused by spatial, social and economic disparities in irrigation by equipping small and marginal farmers access technology, credit, infrastructure.

In the drinking water sector, where social injustice prevents communities from accessing conventional water sources, subsidised water connections aid them to get state water supply avoiding these social hurdles. The paradigm shift in the role of the State in water governance from provider to facilitator promoting demand-driven, community-led and cost recovery-focused water supply also necessitates the continuation of subsidies in the water supply.

Subsidies are essential and inevitable components to maintain equity and inclusiveness in cost recovery-focused efficiency targeted water supply schemes, influenced by neoliberal water governance. Prioritising efficiency over equity and cost recovery is a hurdle for economically weaker sections to participate in community-led schemes and contribute to maintenance and operations.

Food security of the small and marginal households and the entire country depends upon sustainable irrigation and adequate government help in agriculture because of the

role of irrigation in food generation. Had these subsidies been absent, these sections could not access groundwater for irrigation, especially in most exploited areas.

Subsidies also support adopting water conservation and water-efficient techniques, which otherwise would have been unaffordable for many sections. Efficiency and equity in access to water-efficient practices are possible with subsidies. All these factors discussed here justify India's policy choices for water-related subsidies. However, due to the negative externalities and leakages in its implementation, water subsidies' policies warrant focussed attention that requires the adoption of targeted subsidies to assure the benefits reach the needy.

8.3.3 Subsidies for Equitable and Sustainable Groundwater Access: Articulating Relative, Contextual Analysis of Inequities in Groundwater Legal Framework

The current groundwater legal framework based on land-water nexus influences and perpetuates the inequities created by water-related subsidies. The regulation grandfathered by the State groundwater legislations is inequitable, inefficient, and inadequate to address growing challenges of groundwater exploitation created by increased reliance and uncontrolled groundwater extraction. The common law inspired groundwater legal framework results in inequitable access and allocations.

The subsidies granted to reduce this inequity aggravate the situation by favouring the affluent and upper caste. Land ownership requirement is also a conditionality to avail most water-related subsidies, limiting its scope and functionalities. Political interventions also lead to skewed benefit sharing.

The legal framework, highlighted through chapters in this thesis, doesn't fit to address the country's local hydrogeological, climatic, social, and economic dynamics. Drafted as framework legislation, the State adopted it without customising local needs. It also fails to address the problems created by these subsidies on human water use and ecological integrity. The policy on subsidies that follow a uniform pattern without considering the local situations also adds to the crisis.

This uniform approach in groundwater regulation and the subsidies policies cannot address water inequities and assure water justice. Therefore, it necessitates a relative and contextual analysis to frame the groundwater legal framework that addresses the local groundwater situation. As highlighted elsewhere, subsidies are essential in the water sector. Withdrawing subsidies can only widen the inequities. The situation demands a closer introspection for incorporating the necessity of subsidies and balancing it with controlling groundwater extraction.

For this, the groundwater legal framework, upon which the States enjoy legislative authority, should initiate such a change—moving to public trust doctrine and then adopting a commons framework for water governance help unpack the inequities in groundwater. It can also balance government efforts to balance equitable water supply and regulate exploitation. The draft Groundwater Model Bill 2017 with concepts like public trust doctrine, sustainability and decentralisation can lead the States to initiate such steps. These principles help the State move beyond the land-water nexus and break the chains of inequities created by this nexus while justifying the policies on subsidies.

8.4 Ecological Justice for Equity and Sustainability: Beyond Anthropocentric focused Groundwater Regulation

The water justice framework used here emphasised the ecological justice in water justice because the negative impacts of subsidies on groundwater and aquifers threatening the ecological unsustainability override the positive implications for equity in groundwater access and allocations. Such adverse effects potentially impair the social and distributive equity targeted and achieved by subsidies.

The arguments for ecological justice in groundwater governance involves three core points. It points that the current water governance is anthropocentric, and the ambiguity between the public trust doctrine emphasised by the judiciary and the executive's water as a commodity perspective adds to this anthropocentric emphasis. Moreover, the current groundwater legal framework that focuses on command and control is property rights-based and lacks an ecological justice framework. Groundwater regulations require a more comprehensive and conceptualised approach that reflects ecological justice by recognising RoN and aquifer rights to balance human rights and environmental rights.

8.4.1 Efficacy of Current Groundwater Regulation: Strong Anthropocentric Emphasis and Weak Eco-centric Orientation

The current groundwater regulation is inadequate and inefficient in dealing with growing social, distributive and ecological challenges in the groundwater sector, particularly the challenges of climate change. Several factors warranted a closer analysis of the efficacy of groundwater regulation from a water justice perspective, considering the role of groundwater in water and food security.

Firstly, with its substantial property rights nexus in access to groundwater and subsidies, benefits of these access limits to a smaller section, but the society bears the impacts of groundwater exploitation. It also dilutes the objectives of subsidies, increases exclusions and unsustainable water use patterns and threatens water justice. The statutory framework failed to rectify this inequitable framework.

Secondly, the statutory framework doesn't suit the spatial and temporal variabilities in the access and allocations where local hydrogeological and climatic factors influence groundwater availability and development. This legal uniformity failing to consider regional diversities also fail to address local groundwater issues.

Thus, the land remains a determining factor in groundwater access and regulation, impacting equity and inclusiveness and highlighting another significant thread. This current framework reflects a more anthropocentric focus, following a command-and-control approach. It envisaged a curative approach through a permit system. It neither adopts a precautionary approach nor addresses the impacts of exploitation on aquifers/ecosystems and fails to consider ecological water demands.

This anthropocentric focus on the other side reflects a weak eco-centric approach. The regulatory framework, water supply, and irrigation schemes focusing on supply sustainability promote social and distributive justice through subsidies without ecological justice and source sustainability.

Ecological justice in groundwater regulation is as significant and crucial as social and distributive justice. Anthropogenic activities like over-exploitation and pollution diminish groundwater quality and quantity and threaten environmental sustainability. These human activities- the ecological unsustainability paradox never attracted adequate attention in groundwater regulation.

A weak eco-centric perspective with a robust anthropocentric bias in groundwater governance has consequences on water justice. It compromises current and future generations' fundamental rights to water, food, and the environment impacting quality, quantity, and water options, triggering exclusions and a loop of everyday water injustices. Hence, it is inevitable to reconceptualise groundwater governance on ecological justice to promote source and supply sustainability, realise fundamental rights and assure water justice.

8.4.2 Contradictions over Choices in Water Governance: Subsidies Continue but Environmental Concerns side-lined

The negative externalities of subsidies on source and supply sustainability are as significant as their positive implications in groundwater access and allocations. Despite

all its positive contributions, its close nexus with land rights, changes in its structure with change in State's role in water supply and the changing political conditions subsidies create reverberations on water use patterns and environmental sustainability. Thus, the impacts of these negative externalities on fundamental rights, water justice and ecological sustainability that call upon the State to re-examine its subsidies policies justify the necessity of emphasising ecological justice in groundwater governance.

Firstly, The State doesn't recognise the rights-based approach and the environmental concerns in groundwater governance in contrast to the courts' attempts to link water and ecological concerns by applying principles like PTD, precautionary, and polluter pays principles to address water issues. It also failed to consider the courts' preference of constitutional inclusion approach to the previous constitutional avoidance approach to interpret water issues as the violation of a fundamental right and provide constitutional remedies in water governance.

This lack of State's non-attention to courts' approach and judicial non-definition of State's duty in water governance leads to diverse approaches by courts and executive to determining the contents, nature, and scope of drinking water highlights the different levels of significance attached to environmental concerns in water governance. The judicial application of PTD in water requires the State to respect, protect and preserve water resources, bringing forth environmental concerns on par with human water utilisation. But the non-application of PTD in groundwater regulation points to the lack of executive/legislature's attention on environmental matters.¹⁰⁵⁷

Secondly, the environmental concerns did not focus on subsidies policies, where the government's political motives override the State's ecological protection duty. Here overriding ecological problems, the State also relegates its obligations of assuring social justice, and economic empowerment as this interaction creates a series of exclusions and water injustices.

Lastly, the neglect of environmental concerns in neoliberalist water governance also necessitates a rethink over water and subsidies policies where political benefits drive subsidies policies in such water schemes. The lack of a rights-based approach to water governance and neoliberalist water governance also contributes to this subsidiary attention to ecological sustainability. Despite subsidies, the State focuses on efficiency over equity, inclusiveness and sustainability, creating injustices among disadvantaged sections that necessitate ecological justice approach in water governance. Therefore, in this contradictory approach between the judiciary and the State towards water governance, sandwiched between constitutional objectives and neoliberalist influences and where the environmental concerns fail to attract adequate attention, the PTD can be a starting point to adopt a more nuanced approach.

¹⁰⁵⁷ Sec 6.3

A. Ecological Justice in Water Governance: Water as Commons Approach Necessitated

The PTD can be a step to mitigate the inequities in groundwater access by moving away from individual control to State control over groundwater but an incomplete one.

Firstly, PTD could lead to state-centric, technocratic, and top-down regulations where community-led water management remains excluded. Secondly, the non-detachment of the property rights from PTD limits its scope for ensuring water justice in groundwater. Applying public trust doesn't detach property rights but vest the property rights in the State, which can ensure distributive and social justice in water access and allocations. Lastly, PTD foregrounds human rights and their enjoyment as the justification of resource conservation, reflecting an anthropocentric bias.

The groundwater exploitation triggered by land rights and subsidies leading to environmental impacts necessitates relooking into the application of PTD, calling policymakers to move beyond the property rights-based, anthropocentric focused PTD to recognise water as commons for a broader approach.¹⁰⁵⁸

Water as commons recognises the inherent properties of water, its natural flow and its moveability. It can shift the focus from a restricted state-oriented top-down water governance to include pluralistic practices of community-led engagements and ecosystem water needs and adopt an ecological justice perspective to assure water justice.

8.4.3 Balance the Water Supply and Source Sustainability: Mandating Ecological Justice in Water Governance

Ecological sustainability is essential for groundwater protection, conservation and preservation, which battle quality and quantity depletion. The current understanding of environmental protection is anthropocentric, where the right to the environment is a fundamental right and environmental conservation essential to ensure dignified enjoyment of human rights. Even though humans enjoy the benefit of environmental sustainability, considering the significance of the environment and the fact that present generations are trustees of the earth for future generations, the approach towards the

¹⁰⁵⁸ Sec 7.2.2

environment should transform. This transformation requires the harmonisation of the rights of human beings and the RoN, including intraspecies rights.

As highlighted elsewhere, the ambiguity in the approaches by the judiciary and executive towards water management constitutes one element that demands this transformation. While the PTD underscored by the Court incorporates environmental conservation, its property rights elements and strong state-centric focus limit its scope of foregrounding ecological concerns. Its anthropocentric bias also reflects in the role of the State as a trustee for resource protection for present and future generations.

Adopting ecological justice in water governance can help foreground the concerns of environmental sustainability having impacts on equity. The ecological justice sphere in water justice deviates from the other two components, focusing on human water use and needs. Social and distributive equity in water access protected and assured water justice is possible through source sustainability, which requires groundwater conservation. Only ecological justice can balance water demands because it includes the rights of all species and nature.

Recognition of RoN and legal personhood to aquifers in water governance can be the first step in shifting from the anthropocentric public trust to an eco-centric approach in water justice. RoN brings together the concerns of environmental harm on nature, the ecosystem's rights to sustain and preserve it for non-human species. Like benefited for river management in several jurisdictions, RoN should apply to groundwater and aquifers to address the growing challenges of overexploitation and pollution and its impact on the environment. However, implementation challenges requiring human interventions in RoN can limit its scope.

Nevertheless, the developing jurisprudence on RoN can foreground environmental sustainability through community participation, particularly the indigenous communities, and assure supply sustainability by preserving quality, quantity and access options for humans.

Incorporating these changes can also start with a reorientation of water conservation policies and subsidies that presently focus on anthropocentric water use to reflect an ecological justice perspective that recognises conservation for ecological sustainability. It is also inevitable to incorporate these changes and paradigm shifts in water law and policy, which demands and justifies the amendments to the current groundwater legislation, which lacks a precautionary approach and an eco-centric perspective to groundwater governance. The curative process followed is inadequate to address the rising challenges of human water demands and their impacts on water resources, including climate change impacts. Hence, it is essential to reconceptualise the groundwater regulation through a water justice framework that alludes equal importance to three spheres- distributive, social and ecological justice.

8.5 Further Research Agenda and Lessons Carried Forward: Ecological Justice in Water Governance to ensure Equitable Sustainability

Groundwater extraction for drinking and irrigation is crucial to the country's water and food security, and this reliance shall increase with time. However, the over-exploitation in many parts of the country adds concerns to the water for human needs and the ecosystem balance, raising the need for a balanced approach in water governance assuring human rights and water sources sustainability.

Water source sustainability protection is essential not only for environmental protection but also to assure supply sustainability, which points to the need for change in the approach of our law and policy towards water conservation. This thesis examined that State interventions like subsidies augment groundwater extraction and bring equity and inclusiveness in access and allocations. It articulated that negative externalities of subsidies on environmental sustainability can seriously impair water access and supply, but the conservation subsidies can help address and mitigate these supply constraints.

However, even though these conservation activities promote groundwater recharge, its objective reflects an anthropocentric bias where the water recharge focuses on sustainable supply for human needs. Water recharged in one season is extracted with more vigour next season, and extraction overrides conservation. Conservation efforts with an anthropocentric bias are inadequate to meet the rising demands of the burgeoning population and the climate change impacts on water resources.

It is essential and inevitable to reconceptualise our understanding and orientation towards water conservation to move beyond human rights focus to recognise, reflect and implement the RON in water governance. It is possible through the ecological justice sphere of water justice, which acknowledges nature as an entity on par with human beings, with equivalent rights. Ecological justice ensures human legal responsibilities and duties beyond a moral commitment to protect nature.

This thesis articulates a future research plan based on this eco-centric approach to water justice informed water law to plug nature and her rights squarely into the legal discourse. The current understanding of water justice is anthropocentric, prioritising distributive and social justice in water access and allocations. It is inevitable to address everyday water injustices in human water use because of several factors like neoliberalism and privatisation and the impact of political, social, and economic factors on creating inequities and injustices.

Nevertheless, the whole attention to distributive and social justice is unfair because the focus on allocation for human water use doesn't consider the negative impacts on the source. Guaranteeing human rights is possible only with a clean and safe environment.

But the governance approach towards environmental protection should not confine to objectives to ensure human rights only.

Recognition of the interconnection between human rights and environmental protection highlights the interconnection between equity and sustainability. It highlights the need for recognising equitable sustainability in water governance which links human rights and nature's rights and balances the water demands of human beings and the ecosystem.

The ecological justice approach with foregrounding RON and non-human species to access water for their needs is essential for equity and sustainability. The ecological justice approach to water governance is also vital to address growing challenges of climate change, whose impacts on water causes quality and quantity issues in low lying countries and lead to climate-induced migrations. It can reorient our present climate justice understanding to reflect intergenerational and intragenerational equity and fairness.

Future action plans highlighted here don't argue that human rights focus should give ecological justice. But what is essential is a balanced approach because conservation alone cannot contribute anything to the development and utilisation of natural resources without extraction. However, the extraction levels should not exceed the capacity of natural resources to regenerate. The present conservation schemes don't balance the extraction and conservation levels, focusing on conservation without measuring extraction.

The human being should respect the planetary boundaries while determining priorities in access and allocations. Respect should not confine to moral obligations. The ecological justice sphere in water justice requires recognition of RON and the legal duties of human beings towards nature. It contrasts to the universalistic normative approaches in justice theories that advocate justice between morally equals. Recognition of rights of rivers in environmental jurisprudence as a part of rights of nature is a prudent step that challenges this normative understanding of human-centred justice theories. The approach adopted by some jurisdictions in recognising and balancing rivers' rights and communities' rights can assure respect for planetary boundaries and identify pluralist, comparative and contextual approaches to water justice.

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