

# **Development, Food Security and a Need for Effective Water Policy: A Fresh Re-Look for Existing Concern**

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## **Abstract**

Global climate change coupled with the unthoughtful development model has caused much concern for the availability of fresh water. Without any qualification, one needs to understand how important water is for life's existence. There are urgent needs for reforms in the water sector. In recent years, water issues have been the focus of increasing national and international concern and debate. The present level of water pollution warrants that steps to be taken to prevent further contamination of water resources. More serious action needs to be taken in water resource management, waste water treatment and the provision of safe public water supplies. The present paper, while addressing these pressing issues, also helps us to reflect as to how water resources are managed at the present; contributes to the discussion on sustainable water use; stimulates and encourages some thinking and research; and endorses change. It has to be understood that the decisions made at the present regarding how water is used will definitely have a profound effect on our future supplies.

**Key words:** Global Climate, Water Pollution, Sustainable Water, Climate Change, Food Security, Right to Development, Right to Environment, Developing Countries, Privatization of Water, Green Blue Water Initiative

## I. Introduction

Recent times saw a continuous clash of two rights—one right to development and the other right to environment. They open up vague contours, especially when right to development does not seem as developed a right with any specific conclusion.<sup>1</sup> The concern for ecological soundness and sustainability of resources leads to demands for the re-examination of what constitutes the word ‘development.’ Dams, inter linking rivers, construction projects and so on are all manifestation of the very idea of development. How just and correct such step is, or whether it calls for sustainable use of resources are few questions that need to be addressed. Development must not bring disasters; rather, it should combine resource usage with human interest and form a responsive planning process where needs and priorities are acknowledged, and at the same time, protect the interest of various stakeholders. Human intervention with nature must not further the intensity of natural phenomena.

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1. See Catarina de Albuquerque (Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation), Rep. of the Independent Expert on the Issue of Human Rights Obligations Related to Access to Safe Drinking Water and Sanitation, U.N. Doc. A/HRC/15/31 (July 1, 2010); John Ruggie (Special Representative of the Secretary-General on Human Rights and Transnational Corporations and Other Business Enterprises), Promotion and Protection of All Human Rights, Civil, Political, Economic, Social and Cultural Rights, Including the Right to Development: Protect, Respect and Remedy: A Framework for Business and Human Rights: Rep. of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, U.N. Doc. A/HRC/8/5 (Apr. 7, 2008); John Ruggie (Special Representative of the Secretary-General on Human Rights and Transnational Corporations and Other Business Enterprises), Rep. of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, John Ruggie: Guiding Principles on Business and Human Rights: implementing the United Nations “Protect, Respect and Remedy” Framework, U.N. Doc. A/HRC/17/31, (Mar. 21, 2011); Allan Rosas, *The Right to Development*, in ECONOMIC, SOCIAL AND CULTURAL RIGHTS: A TEXTBOOK 119 (Asbjørn Eide, Catarina Krause & Allan Rosas eds., 2d rev. ed. 2001); P. van Weerelt, *The Right to Development: From Rhetoric to a Global Strategy*, in THE INTERNATIONAL DEBATE ON HUMAN RIGHTS AND THE RIGHT TO DEVELOPMENT, INEF-REPORT 30, at 48 (Franz Nuscheler ed., 1998); Günther Handl, *Human Rights and Protection of Environment*, in ECONOMIC, SOCIAL AND CULTURAL RIGHTS: A TEXTBOOK, *supra* note 1, at 303; NICOLE JÄGERS, CORPORATE HUMAN RIGHTS OBLIGATIONS: IN SEARCH OF ACCOUNTABILITY (2002); STEFANO BURCHI, BALANCING DEVELOPMENT AND ENVIRONMENTAL CONSERVATION AND PROTECTION OF THE WATER RESOURCE BASE—THE “GREENING” OF WATER LAWS (2007) (paper presented at the workshop ‘Legal Aspects of Water Sector Reforms,’ April 20-21, 2007), [www.ielrc.org/activities/workshop\\_0704/content/d0706.pdf](http://www.ielrc.org/activities/workshop_0704/content/d0706.pdf) (last visited Aug. 18, 2016).

Any instability or conflict with nature will be an unthoughtful compromise with the sustainability of the ecosystem. So much so has been the impact of development into the minds of many that a narrower path is often thought of; advocacy of alternate development paths is sponsored; infringement of fundamental rights is justified; and instead of eliminating the trauma, it is encouraged to mitigate the effect. Unfortunately, the burden of social cost falls on one set of people and the benefit goes to the relatively more prosperous and advanced group. The idea must be to bring greater equity and social justice, and in that process to minimize hardship and pain. Having said this, it does shock one's conscience as how someone could justify the sacrifice of the rights of a few in the name of development. Using public purpose as a justification would not serve, because first, it is not well defined legally, and second, more than helping the general public has it helped the governments in justifying their claim of taking private collective property and even denying just and reasonable compensation.<sup>2</sup> This should not have been tacitly presupposed; rather it should have been the business of the State to establish—on the basis of equality.

While pursuing the path of economic growth, a conflict arises between industry on one hand (backed by international laws, state laws and so on), and natural resources on the other.<sup>3</sup> The issue today is how to answer this question

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2. It is generally never defined as to who the 'public' is in the public purpose argument. My use of word 'private collective property' refers to the neglected marginalized section of society (tribes) who do not have laws backing their hold onto the property they acquired collectively. See CHHATRAPATI SINGH, COMMON PROPERTY AND COMMON POVERTY: INDIA'S FORESTS, FOREST DWELLERS AND THE LAW 48-49 (1986); Upendra Baxi, *Taking Suffering Seriously: Social Action Litigation in the Supreme Court of India*, 4 THIRD WORLD LEGAL STUD. 107,108 (1985). See PRAKASH SHARMA, PRISON PRIVATISATION: EXPLORING POSSIBILITIES IN INDIA (2017); Prakash Sharma, *Managing Correctional Market: Constitutional Limitations on Privatization of Government Functions*, 71-72 DIGNITAS 55-76 (2016), for understanding the impact of privatization on essential sovereign functions.

3. Newer forms of conflicts include those between industry versus agriculture, industry and agriculture versus drinking water; urban versus rural demands of water. It is a known fact that these industries tend to pollute and contaminate rivers by acquiring necessary resources for their production and in turn damaging the public supply system. See RAMASWAMY R. IYER, TOWARDS WATER WISDOM: LIMITS, JUSTICE, HARMONY 134, 135 (2007). See also Malgosia Fitzmaurice, *The Human Right to Water*, 18 FORDHAM ENVTL. L. REV. 537 (2007); Emilie Filmer -Wilson, *The Human Rights-Based Approach to Development: The Right to Water*, 23 NETH. Q. HUM. RTS. 213 (2005); PAUL GREASY & JONATHAN ENSOR, REINVENTING DEVELOPMENT? TRANSLATING RIGHTS-BASED APPROACHES FROM THEORY INTO PRACTICE 1 (2005) (introduction); Robert E. Robertson, *Measuring State Compliance with the Obligation to Devote the "Maximum Available Resources" to Realizing Economic, Social, and Cultural Rights*, 16 HUM. RTS. Q. 693 (1994); Mary Robinson, *What Rights Can Add to Good Development Practice*, in HUMAN RIGHTS AND DEVELOPMENT: TOWARDS MUTUAL REINFORCEMENT 25 (Philip Alston & Mary Robinson eds., 2005); Suresh D.

of profit versus life.<sup>4</sup> Development did bring some serious issues and challenges to the concept of human rights, in a sense that today people speak of human rights in terms of development; more importantly, as a basic need for satisfaction.<sup>5</sup> The correct approach should be treating the concept's universality,

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Tendulkar, *Indian Economic Policy Reforms and Poverty: An Assessment, in INDIA'S ECONOMIC REFORMS AND DEVELOPMENT: ESSAYS FOR MANMOHAN SINGH* 280 (Isher Judge Ahluwalia & I.M.D. Little eds., 1997); Prakash Sharma, *Does Privatization Serve the Public Interest? An Assessment of the Risks and Benefits of Prison Privatization*, 3 LEXIGENTIA 80 (2016).

4. Few instances like in Tamil Nadu (Tiruppur and Palar basin) was water used for economic purpose, and the process made basic needs and sustenance unstable. Interestingly, the same project is cited as a good example by the World Bank in its report. See WATER & SANITATION PROGRAM, PHASE II: BENCHMARKING URBAN WATER UTILITIES IN INDIA (2008), [https://www.wsp.org/sites/wsp.org/files/publications/Benchmarking\\_Report.pdf](https://www.wsp.org/sites/wsp.org/files/publications/Benchmarking_Report.pdf) (last visited Aug. 23, 2016). See Roopa Madhav, *Tirupur Water Supply and Sanitation Project: An Impediment to Sustainable Water Management?* (Int'l Envtl. Law Research Ctr., Working Paper No. 2008-01, 2008), <http://www.ielrc.org/content/w0801.pdf> (last visited Aug. 23, 2016); GAURAV DWIVEDI, PUBLIC PRIVATE PARTNERSHIPS: PARTNERSHIPS OR PRIVATISATION (2010), <http://www.manthan-india.org/wp-content/uploads/2015/04/PPPs-In-Water-Sector-Final-Book.pdf> (last visited May 26, 2017), for critical analysis of the same Report. In Kerala (Plachimada), the borrowers of Coca Cola Company have caused a drastic impact on water resources on the surrounding villages. Similarly, in Chhattisgarh, a stretch of river Sheonath was privatized by a company to meet water demands of industrial need. This explains how a control to a corporate body undermines communities control by a state. See also JOHN BRISCOE & R.P.S. MALIK, INDIA'S WATER ECONOMY: BRACING FOR A TURBULENT FUTURE (2006); CHHATRAPATI SINGH, WATER RIGHTS AND PRINCIPLES OF WATER RESOURCES MANAGEMENT (1991); RAMASWAMY R. IYER, WATER: PERSPECTIVES, ISSUES, CONCERNS (2003); Lalitha Kamath, Malini Ranganathan & Vinay Baidur, *Piped Water Supply to Greater Bangalore: Putting the Cart Before the Horse?*, 44 ECON. & POL. WKLY. 53 (2009); V.R. Krishna Iyer, *Plachimada Right*, 22 FRONTLINE, no. 16, July 30-Aug. 12, 2005; R. Krishnakumar, *Plachimada Loss*, 22 FRONTLINE, no. 9, Apr. 23-May 6, 2005; Karen Coelho, *The Slow Road to the Private: A Case Study of Neoliberal Water Reforms in Chennai*, in WATER GOVERNANCE IN MOTION: TOWARDS SOCIALLY AND ENVIRONMENTALLY SUSTAINABLE WATER LAWS 81 (P. Cullet, A. Gowlland-Gualtieri, R. Madhav & U. Ramanathan eds., 2010); S. Janakrajan, John Butterworth, Patrick Moriarty & Charles Batchelor, *Strengthened City, Marginalised Peri-Urban Villages: Stakeholder Dialogues for Inclusive Urbanisation in Chennai, India*, in PERI-URBAN WATER CONFLICTS: SUPPORTING DIALOGUE AND NEGOTIATION 51 (John Butterworth et al. eds., 2007).
5. The multiple universes of rights render confusion to the concept of human rights, because the meaning ascribed to the concept and the uses made of it by lawyers, judges, economists, activities, and scholars give different yet conflicting dimensions. See Parmanand Singh, *The Epistemology of Human Rights: A Theoretical Study*, 57 J. INDIAN L. INST. 4, 5 (2015); D.J. Ravindran, *Indivisibility of Human Rights: A Neglected Concept*, MAINSTREAM, October 1994, at 8; JOSEPH E. STIGLITZ, GLOBALIZATION AND ITS DISCONTENTS (2002); HAROLD JAMES, THE CREATION AND DESTRUCTION OF VALUE: THE GLOBALIZATION CYCLE (2009); Cinnamon Carlarne, *Risky Business: The Ups and Down of Mixing Economics, Security and Climate Change*, 10 MELBOURNE J. INT'L L. 439, 464 (2009); Anahita Mukherji, *Growth Pangs: A Recent UN Report on Human Rights Slammed India for Its Poor Record. Why an*

which stresses the values of democracy, and sponsors public discussion and public action to motivate policy-makers to take measures; which in a way ends or somewhat tackles the core issues faced by modern humanity.<sup>6</sup> Development must address the expansion of human capabilities and freedom so as to counter problems of malnutrition, hunger, illiteracy, social exclusion, and etc., by removing inequalities and providing equal opportunities to everyone.<sup>7</sup> Any development at the cost of nature serving only a few does not hold a justified ground at all.<sup>8</sup> Allocating market players to function in their own terms without looking upon the social costs generated by their activities; bringing mass inequalities and exclusion; and creating tension between pursuit of profit over time and environmental concerns all lead to issues challenging the very common heritage of mankind.<sup>9</sup> This amounts to unjustified inexcusable

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*Emerging Economy is Doing So Bad on Human Development Index*, THE TIMES OF INDIA (June 3, 2012, 5:43 AM), <http://timesofindia.indiatimes.com/home/sunday-times/deep-focus/Growth-pangs/articleshow/13757467.cms> (last visited May 26, 2017).

6. Modern humanity believes science and technology, in a way, is the only answer to cure problems faced by existing (remaining) environment. See AMARTYA SEN, DEVELOPMENT AS FREEDOM 158 (1999). See also AMARTYA SEN, THE IDEA OF JUSTICE (2010) (for the extended development of the same idea of people participation); JEAN DRÈZE & AMARTYA SEN, AN UNCERTAIN GLORY: INDIA AND ITS CONTRADICTIONS (2013); Axel Michaelowa & Katharina Michaelowa, *Does Climate Policy Promote Development?*, 84 CLIMATE CHANGE 1 (2007).
7. Amartya Sen's Human Development Index (HDI), which measures human well being along with three dimensions of life expectancy, educational attainment and command over natural resources, is worth a mention here. According to Sen, "creation of social opportunities makes a direct contribution to the expansion of capabilities and quality of life . . . Expansion of health care, education, social security, etc., contribute directly to the quality of life and to its flourishing . . . [I]n judging economic development it is not adequate to look only at the growth of GNP or some other indicators of overall economic expansion. We have to look also at the impact of democracy and political freedoms on the lives and capabilities of the citizens." DEVELOPMENT AS FREEDOM, *supra* note 6, at 144.
8. Recently, the Clean Power Plan, formally unveiled by the US President Barack Obama, addressing global warming while saving money is an appreciable step forward. It balances growth with nature as such. *UN Chief Welcomes Climate Change Plan Unveiled by President Obama*, UN NEWS CTR. (Aug. 3, 2015), <http://www.un.org/apps/news/story.asp?NewsID=51554#.VcBk-pOqqko> (last visited Aug. 25, 2016). However, there is an issue of moving the same plan outside the developed nation and implementing in developing countries. Expecting other countries to invest in such plans while there are other pressing issues, which need current attention would be unfair.
9. Expecting the market to form policies, which will act as some self-regulating mechanisms, is a misnomer. See HANS LINDAHL, FAULT LINES OF GLOBALIZATION: LEGAL ORDER AND THE POLITICS OF A-LEGALITY (2013); SASKIA SASSEN, A SOCIOLOGY OF GLOBALIZATION (2007); BOAVENTURA DE SOUSA SANTOS, TOWARD A NEW LEGAL COMMON SENSE (2d ed. 2002). See also Oren Perez, *Using Private-Public Linkages to Regulate Environmental Conflicts: The Case of International Construction Contracts* 29 J. L. & SOC. 84 (2002); Peter Rogers, Radhika de Silva, & Ramesh Bhatia, *Water is an Economic Good: How to Use Prices to Promote Equity; Efficiency; and Sustainability*, 4 WATER POL'Y 1 (2002).

disregard to the nature, calling for criminal prosecution.<sup>10</sup> Criminal prosecution in the matters related with environmental misuse (disregard), though mentioned in our statutory laws, has inadequate impact.<sup>11</sup>

Policies must address short and long term goals: a short term goal of not allowing any project which justifies taking of rights of a few, and a long term goal of finding a solution for the same; it should never be *vice versa*. However, the main aim of this paper is not to discuss much onto the issues of development, but it finds its place in legal writings; especially in the era of globalization, allowing multinationals engaged in self-regulatory activities on a global scale. To the present market-oriented world, the message must be clear: either climate or development. It is a trite economic principle that self-regulation in principle can supersede the usual sanctity for service of money. The next few headings will focus on 'right based' aspects covering some form of development and thus forming the inter-connection between the climate change, water and food security.

## II. State of Water Quality: Reforms Across Countries

The issue for realization of adequate amount of water, especially in the developing countries, is probably the most serious of all—it requires serious deliberation across the world. So much so has this issue gained importance that it came as one of the most important issues in the election held in Delhi, the national capital of India!<sup>12</sup> Understanding the issue in terms of economics,

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10. This is covered under the term named as 'Environment Crime.' Environmental enforcement until the 1980s was generally covered under civil enforcements. Some of the essentials of criminal law are compared and analyzed in KATHLEEN F. BRICKEY, ENVIRONMENTAL CRIME: LAW, POLICY, PROSECUTION 13-16 (2008). See Judson W. Starr, *Turbulent Times at Justice and EPA: The Origins of Environmental Criminal Prosecutions and the Work That Remains*, 59 GEO. WASH. L. REV. 900, 907-12 (1991); Richard J. Lazarus, *Meeting the Demands of Integration in the Evolution of Environmental Law: Reforming Environmental Criminal Law*, 83 GEO. L.J. 2407, 2423-54 (1995); Kathleen F. Brickey, *Environmental Crime at the Crossroads: The Intersection of Environmental and Criminal Law Theory*, 71 TUL. L. REV. 487, 503 (1996). See John C. Coffee, Jr., *Does Unlawful Means Criminal?: Reflections on the Disappearing Tort/Crime Distinction in American Law*, 71 B.U.L. REV. 193 (1991), for distinction between civil and criminal law.

11. Evidently, it is found in various researches not to be sufficient enough to call for a deterrent effect towards environment degradation. See Mac Darrow & Amparo Tomas, *Power, Capture and Conflict: A Call for Human Rights Accountability in Development Cooperation*, 27 HUM. RTS. Q. 471 (2005); Richard P. Hiskes, *The Right to a Green Future: Human Rights, Environmentalism and Intergenerational Justice*, 27 HUM. RTS. Q. 1346 (2005).

12. In Delhi, Aam Aadmi Party (AAP), a party formed through revolution of masses against corruption and bad governance, has promised to ensure up to 20 kilolitres (20,000 litres) of

human demand for water is on rise with limited supply. Even the supply of this limited resource cannot be altered by human action. One must agree that ever since the issue of climate change has crept in, the concern has not lived up to the mark as it would have been. We see spry changes in the pattern of environment, but hardly find the same in the legislations concerning environment. However, this article does not cover all the aspects of the water issues (political, economic, etc.); the primary issue covered is in relation with the climate change pertaining to right to water.

The United Nations Framework Convention on Climate Change (UNFCCC) sets out procedures for countries across the world to cooperate on climate change. The UNFCCC's Kyoto Protocol places binding obligations on countries to reduce emissions of greenhouse gases. Furthermore, under the Paris Agreement, all nations in the UNFCCC including India aim to keep global temperature rises below 2 degrees Celsius.<sup>13</sup> These interesting measures realize the importance of Earth environment, but also raise concerns over its commitments.<sup>14</sup> In India, a

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free water to every household per month, and the scheme will be extended to group-housing societies. He said the mandatory annual 10 per cent hike in water tariff will be abolished; and AAP will make water a legal right. Press Trust of India, *50 pc Cut in Power Tariff, Free Wifi, Water Among AAP Promises*, THE INDIAN EXPRESS, (Jan. 31, 2015, 8:34 PM), <http://indianexpress.com/article/cities/delhi/50-pc-cut-in-power-tariff-free-wifi-water-among-aap-promises> (last visited Aug. 25, 2016). Similarly, some vile battles are on-going over water across the world, from California and the Southwest in USA to Yangtze in China.

13. Stricter intellectual property rights regime makes it almost difficult for transfer of environmentally sound technologies. See Lavanya Rajamani, *The Reach and Limits of the Principle of Common But Differentiated Responsibilities and Respective Capabilities in the Climate Change Regime*, in HANDBOOK OF CLIMATE CHANGE AND INDIA: DEVELOPMENT, POLITICS AND GOVERNANCE 118 (Novroz K. Dubash ed., 2013). The idea of shared responsibility, which asks developed economy to 'disseminate' technological innovations on mutual basis, has yet not received justifiable approach. See LAVANYA RAJAMANI, *DIFFERENTIAL TREATMENT IN INTERNATIONAL ENVIRONMENTAL LAW* 131, 206 (2006); Duncan French, *Developing States and International Environmental Law: The Importance of Differentiated Responsibilities*, 49 INT'L & COMP. L.Q. 35 (2000); Prakash Sharma, *Climate Change and ESTs: In Context with International Legal Framework of IPRs and Technology Transfer*, 3 NUSRL J.L. & POL'Y (forthcoming July 2017).
14. The UK is the first country to set legally binding carbon budgets. Even prior to Paris accord, UK has legislated its Climate Change Act, 2008, which sets legally binding targets to reduce carbon dioxide emissions in the UK by at least 80% by 2050, from the 1990 levels. The Act requires the government to set legally binding emissions targets, called carbon budgets, every five years. It also established an independent expert body, the Committee on Climate Change (CCC), to advise the government on the level of those emissions targets. It also reports to the parliament regarding progress made on reducing emissions. The Act introduced carbon budgets, which put legally binding limits on the amount of greenhouse gases the UK can emit over a five-year period. They are meant to set out a cost-effective path to achieving longer-term climate targets. So far, five carbon budgets have been put into

separate Ministry of New and Renewable Development has formed. It sets national goals for biomass and solar generation, and makes ambitious targets to increase the share of renewables in the total energy mix.<sup>15</sup> Efforts through effective policy and legislations are the need of the hour. Having said this, the world urgently needs sustainable ways to produce and consume food. The development goals related to poverty and hunger, nutrition and health, economic and social growth, peace and security, and preserving the world's environment will require investments in agriculture. This explains how water is fundamental, besides being interconnected to the nexus of food, energy and climate.

Effective quality water does have some added benefits, which ultimately have its impact on development, provided that significant amount of initial investment is infused.<sup>16</sup> Institutional reforms are pivotal for countries like India—lately considering steps to enhance and sustain the economic and environmental contributions of their water sector.<sup>17</sup> Availability and quality of water is a major challenge to developing countries. In Africa and almost the entire Middle East, which are racing towards their limits to fresh water, water

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law which runs up to 2032. Climate Change Act 2008, c. 27 (UK), [http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf) (last visited May 3, 2017).

15. There appears a huge challenge, especially with respect to forming a sufficient political intent that addresses environmental concerns. Interestingly, the global per capita emissions is negligible for India, but 13 of the 20 most polluted cities in the world are in India. See Mallica Joshi, *Half of World's 20 Most Polluted Cities in India, Delhi in 11th Position*, HINDUSTAN TIMES (June 4, 2016, 7:57 PM), <http://www.hindustantimes.com/delhi-news/four-out-of-top-five-polluted-cities-are-in-india-delhi-not-among-them/story-Gn2htcLbESB3BpeYJ4mY8K.html> (last visited June 1, 2017).
16. There are broadly three types of benefits of clean water. The first is the amenity benefit, which refers to the use of water for recreational purposes and the value attached to it looking and smelling cleaner. The second is the benefit of lower costs of treatment of the water source before drinking and the possible benefits to those who use it without treatment. The last are the benefits attached to cultural and religious values of certain rivers. These may be partly 'use values' but also 'non-use values'; and even for a poor country, these values may be significant enough to warrant investment in clean-up. Unfortunately, there is no comprehensive review of projects generating each type of benefit, but there are useful and representative case studies. Further readings of those case studies are mentioned in Anil Markandya, *Water Quality Issues in Developing Countries*, in ECONOMIC DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY: NEW POLICY OPTIONS 307 (Ramón López & Michael A. Toman eds., 2006).
17. Undertaking them will not be an easy task, keeping in mind the technical and political economy constraints. See R. Maria Saleth & Ariel Dinar, *Water Institutional Reforms in Developing Countries: In Sights, Evidences, and Case Studies*, in ECONOMIC DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY: NEW POLICY OPTIONS, *supra* note 16, at 273. See also R. Maria Saleth & Ariel Dinar, *Institutional Changes in Global Water Sector: Trends, Patterns, and Implications*, 2 WATER POL'Y 175 (2000).

availability remains a serious concern regarding sustainability of sustained health and environment. Water-related diseases cause death, particularly among children in the developing countries.<sup>18</sup> The condition is worse in other countries, like in Asia and Latin countries, experiencing expansion in urban settlements, industries and intensive agriculture.<sup>19</sup> This leads to a situation where water politics will play a major role. Although this is not a new phenomenon, it is new in a sense that it will bring water politics into the picture, as tension rise over limited supplies in the face of growing demands. Water dispute and tensions have the potential of destabilizing any particular region.<sup>20</sup>

Reforms across countries regarding the importance and urgency of reorienting the institutional foundation of their water sector are increasingly recognized.

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18. Prime reasons for deaths in developing nations due to water-related diseases are inadequate sanitation, agricultural and industrial run off, and floods. Diseases like diarrhoea, cholera and typhoid, which are associated with water, are on rampant in developing nations, especially amongst women and children. See WORLD WATER ASSESSMENT PROGRAMME ET AL, WATER, A SHARED RESPONSIBILITY: THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2, at 204, 210, 219 (2006), [http://unesdoc.unesco.org/images/0014\\_/001454/145405e.pdf](http://unesdoc.unesco.org/images/0014_/001454/145405e.pdf) (last visited Aug. 27, 2016); John Eyles & Ranu Sharma, *Infectious Diseases and Global Change: Threats to Human Health and Security*, 8 AVISO 1,8 (2001); UNITED NATIONS CHILDREN'S FUND & WORLD HEALTH ORG., DIARRHOEA: WHY CHILDREN ARE STILL DYING AND WHAT CAN BE DONE 1 (2009); GUY HUTTON, LAURENCE HALLER & JAMIE BARTRAM, ECONOMIC AND HEALTH EFFECTS OF INCREASING COVERAGE OF LOW COST HOUSEHOLD DRINKING-WATER SUPPLY AND SANITATION INTERVENTIONS TO COUNTRIES OFF-TRACK TO MEET MDG TARGET 10, at 20 (2007); Guy Hutton & Jamie Bartram, *Global Cost of attaining the Millennium Development Goal for Water Supply and Sanitation*, 86 BULL. WORLD HEALTH ORG. 1, 13 (2008); JÉRÉMIE TOUBKISS, COSTING MDG TARGET 10 ON WATER SUPPLY AND SANITATION: COMPARATIVE ANALYSIS, OBSTACLES AND RECOMMENDATIONS VI (2006). The former UN Secretary General, Kofi Annan, summed up on the dependence of good health on access to water and sanitation. He said “[w]e shall not finally defeat AIDS, tuberculosis, malaria, or any other infectious diseases that plague the developing world until we have also won the battle for safe drinking water, sanitation and basic health care.” Press Release, Secretary-General, The Biggest Enemy of Health in Developing World is Poverty, Secretary General Tells World Health Assembly, U.N. Press Release SG/SM/7808 (May 17, 2001), <http://www.un.org/News/Press/docs/2001/sgsm7808.doc.htm> (last visited Aug. 26, 2016).
19. Malin Falkenmark & Gunnar Lindh, *Water and Economic Development, in WATER IN CRISIS: A GUIDE TO THE WORLD'S FRESH WATER RESOURCES* 80 (Peter H. Gleick ed., 1993).
20. India-Pakistan sharing an issue over the Indus water have created a situation where tension of constant nature has given rise to a sour relationship between the two states. Similar situation, though not so severe, prevails with India-Nepal and India-Bangladesh. Given the political alterations in the preceding decades, one is likely to see more problems in the coming decades. See Sheila Rai & Sanghamitra Patnaik, *Water Disputes in South Asia, in WATER RESOURCE CONFLICTS AND INTERNATIONAL SECURITY: A GLOBAL PERSPECTIVE* 132 (Dhirendra Vaipeyi ed., 2014).

The reform does have some impact as to raising the awareness—enough to have some legal repercussions. These reforms can be seen in two levels; one at the macro level and the other at the sub-sectoral level.<sup>21</sup> Water scarce countries in the Middle East, Australia, Israel, North Africa, and some parts of the US have already established a well defined institutional set up capable to cater supply side approach. Importance of water and the institutional steps to realize the importance are well founded in these countries.<sup>22</sup> India, along with countries like Brazil and Spain, is quickly approaching its limit of fresh water availability. Problems like increase in demand, pollution, and ecological constraints call for effective water allocation by institutions by catering of both existing and future water supplies. For the effective management of the ecosystem ‘Adaptive Management’ is one aspect, which can be considered.<sup>23</sup> It calls for an integration of legal policies with the institutional setup, while adopting measures through monitoring, assessing, modeling, updating and revising management decisions. An effective approach in this regard will definitely bring about better-desired results. This section covers some of the elements that need to be introduced, and accordingly, understood for understanding the broader aspect of this paper.

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21. Macro level includes efforts as to the declaration of water laws and water policies, preparation of national and regional water plans and administrative reorganizations. Sub-sectoral level reforms include irrigation management transfer and urban water sector reforms. GUY LE MOIGNE ET AL., *COUNTRY EXPERIENCES WITH WATER RESOURCES MANAGEMENT: ECONOMIC, INSTITUTIONAL, TECHNOLOGICAL AND ENVIRONMENTAL ISSUES* (1992) (a detailed document by World Bank), <http://documents.worldbank.org/curated/en/874231468741336360/pdf/multi-page.pdf> (last visited May 26, 2016). *See also* CHENNAT GOPALAKRISHNAN, CECILIA TORTAJADA & ASIT K. BISWAS, *WATER INSTITUTIONS: POLICIES, PERFORMANCE AND PROSPECTS* (2005).
  22. RAY CHALLEN, *INSTITUTIONS, TRANSACTION COSTS AND ENVIRONMENTAL POLICY: INSTITUTIONAL REFORM FOR WATER RESOURCES* (2000).
  23. Adaptive management provides a framework for governing water resources in a way that can account for the various uncertainties like pollution, population, legal and economic issues. *See* C.S. HOLLING, *ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT* (1978); J. B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 *MINN. J.L. SCI. & TECH.* 21 (2005). *See also* Holly Dorms, *Adaptive management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection*, 41 *WASHBURN L.J.* 50 (2001). For an Indian perspective, *see* S. Janakarajan, M. Llorente and M.H. Zérah, *Urban Water Conflicts in Indian Cities: Man-Made Scarcity as a Critical Factor*, in *URBAN WATER CONFLICTS: AN ANALYSIS OF THE ORIGINS AND NATURE OF WATER-RELATED UNREST AND CONFLICTS IN THE URBAN CONTEXT* 91 (2006).

## A. India and Its Approach Towards Water Laws

In India, policies regarding water and their influence in the making of water laws have not gone well with the ultimate aim for which it has been formed.<sup>24</sup> Water laws in India are concussive in a sense that on one hand they do not provide any specific measure as to the realization of ‘water as a right,’ nor do they set out any broad principle and parameter that would guide the actors involved in the water supply chain. Commercialization and privatization of water is quite common in the drinking water sector,<sup>25</sup> and a further proposal to shift the operations of the public sector service providers to the hands of private commercial players is already proposed.<sup>26</sup> It is a cause of concern for the state as it will bring self-profit-driven market into the picture, which focuses on the vested interest in acquiring maximum profit, and leaves the underprivileged and marginalized section at the mercy of market forces (*bazaar*). Evidently, the reality of today is to go by privatization, but here comes the role of state: through governmental intervention, the state should, and must, percolate the profit of economic growth (through market economy) to the disadvantaged section of the society (substantive justice), and in that process, must not in any case take away rights or opportunities available to anyone. Even in case privatization as a policy matter is adopted by the state, the duty to provide water (which is a right, as sponsored by courts in India) in such situation must imply that water supply should not be disconnected, come

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24. States in India have their own peculiar specificities, yet those issues are overlooked now and then. See PHILIPPE CULLET, *WATER LAW, POVERTY, AND DEVELOPMENT: WATER SECTOR REFORMS IN INDIA* 94-97, 191-94 (2009). See also JOHN BRISCOE & R. P. S. MALIK, *HANDBOOK OF WATER RESOURCES IN INDIA: DEVELOPMENT, MANAGEMENT, AND STRATEGIES* 10-11 (2007).

25. Melina Williams, *Privatization and Human Rights to Water: Challenges for the New Century*, 28 MICH. J. INT’L L. 469 (2007); Naren Prasad, *Privatization of Water: A Historical Perspective*, 3 L. ENV’T & DEV. J. 217 (2007). See Andrés. Olleta, *The World Bank’s Influence on Water Privatisation in Argentina: The Experience of the City of Buenos Aires*, in *WATER GOVERNANCE IN MOTION: TOWARDS SOCIALLY AND ENVIRONMENTALLY SUSTAINABLE WATER LAWS*, *supra* note 4, at 230. See also GOV’T OF INDIA MINISTRY OF WATER RES., NATIONAL WATER POLICY § 13 (2002), [http://cgwb.gov.in/documents/nwp\\_2002.pdf](http://cgwb.gov.in/documents/nwp_2002.pdf) (last visited Aug. 26, 2016). GOV’T OF INDIA MINISTRY OF WATER RES., NATIONAL WATER POLICY (2012) § 12.3 (2012), <http://wrmin.nic.in/writereaddata/NationalWaterPolicy/NWP2012Eng6495132651.pdf> (last visited Aug. 26, 2016). See GOV’T OF INDIA MINISTRY OF WATER RES., DRAFT NATIONAL WATER FRAMEWORK BILL, 2013 § 13 (2013), <http://www.indiaenvironmentportal.org.in/files/file/Draft%20national%20framework%20bill,%202013.pdf> (last visited Aug. 26, 2016).

26. However, in rejecting the privatization project for Delhi, the people of Delhi have clearly made it a politically unacceptable proposal through protest. See Amit Bhaduri & Arvind Kejriwal, *Urban Water Supply: Reforming the Reformers*, 40 ECON. & POL. WKLY., 5543 (2005).

what may be the situation.<sup>27</sup> In any case, as of now, state alone in India commands the necessary institutional and economic resources to ensure the realization of any rights (here in this paper it means right to water).<sup>28</sup> State as a sole owner of the natural resources, which accordingly is answerable to the allocations of the same, has responsibility towards every components of the nature, including animals, plants and others; it must not act as a facilitator for private players who owe no duty towards nature, since they lack the capacity of benefiting them in terms of money.<sup>29</sup> Realization of right to water implies a duty for the state to provide; the same is furthered in fact by the policies so adopted by the state, and the suggestions through international legal instruments, which too have headed for right to access water.<sup>30</sup> Furthermore, realization of right to water must be backed through public reasoning and public discussion, which do play a major role in the formulation of social goals and values (here in the context of water).

Constitutionally speaking, water is a subject covered under ‘State’ list,<sup>31</sup> subject to the Union intervention (mostly in the form of administrative directions).<sup>32</sup> Accordingly, both the central as well as the state governments

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27. See Joseph E. Stiglitz, *A Social Democratic Agenda for a More Dynamic Indian Economy*, in *AN INDIAN SOCIAL DEMOCRACY: INTEGRATING MARKETS, DEMOCRACY AND SOCIAL JUSTICE II*, at 280 (Sunil Khilnani & Manmohan Malhoutra eds., 2013). In England and Wales, where water supply services are entirely privatized, they are still bound to supply water. The disconnection or withdrawal from access is prohibited. See *R v. Director General of Water Services, ex parte Lancashire County Council* [1999] Env. LR 114 (QBD).

28. See Jean Drèze, *Democracy and Right to Food*, 39 *ECON. & POL. WKLY.* 1723 (2004).

29. C.M. JARIWALA, *ENVIRONMENT AND JUSTICE* 192 (2004). See also Sudheendra Kulkarni, *The Flowers of Papa Francesco*, *OUTLOOK* (Aug. 3, 2015) (Pope Francis in a landmark worded encyclical titled “On Care for Our Common Home.” The Pope also said in a mass “Human beings and nature must not be at the service of money. Let us say No to an economy of exclusion and inequality, where money rules, rather than service. That economy Kills. That economy excludes. That economy destroys Mother Earth. The first task is to put the economy at the service of people.”), <http://www.outlookindia.com/magazine/story/the-flowers-of-papa-francesco/294917> (last visited June 1, 2017).

30. See Comm. on Economic, Social and Cultural Rights, General Comment No. 15 (2002): *The Right to Water* (Arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), U.N. Doc. E/C.12/2002/11, 12(c) (ii) (Jan. 20, 2002).

31. INDIA CONST., 7th schedule, list II, entry 17 (“Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of Entry 56, List I.”).

32. INDIA CONST., 7th schedule, list I, entry 56 (“Regulation and development of inter-state rivers valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest.”). States have the power to legislate whereas Union does not have a specific mandate to legislate; this is a politically sensitive area, attracting irrelevant attention. It is quite evident that the Union holds greater power, backed by financial incentives, and thereby inducing states to

took various measures.<sup>33</sup> However, lack of clear and well-defined framework of laws covering all the measures adopted leaves too much room for arbitrary, shortsighted and opaque decision making process.<sup>34</sup> Evidently, in the absence of effective checks and balances with no penal provisions, political influences on decisions and their implementations have contributed for adverse effect on effective utilization of water resources. Moreover, as interpreted by the Indian courts, the right to water is part of right to life.<sup>35</sup> However, the same judicial declaration through their judgment, recognizing welfare rights as fundamental rights, have not resulted into a regime of positive entitlement. Although right to water was not recognized specifically in the Indian Constitution, it did find its place through the courts, while putting it at par with fundamental rights<sup>36</sup> and state legislations concerning urban areas. A continuous failure to ensure that right to all its citizens is a serious reflection on the state's policies and plans. In India, through Article 47 of the Constitution, though not specifically mentioned, the primary responsibility to ensure the realization of the right to water rests on the state. The concept of 'eminent domain' is very much present in the Indian Constitution, but with a twist of 'democracy purporting to be committed to social justice.'<sup>37</sup> However, we have seen much of a disregard

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comply with their proposed principles and schemes. See Philippe Cullet, *Rethinking the Right to Water to Ensure Its Realisation for All*, 54 *J. Indian L. Inst.* 27, 29-30 (2012).

33. Measures like The Inter-State Water Disputes Act, 1956, No. 33 of 1956, amended by The Inter-State Water Disputes (Amendment) Act, 2002, No. 14 of 2002 (India); The River Boards Act, 1956, No. 49 of 1956 (India); various state-legislated irrigation acts; the formation of tribunals under central Act of Inter-State Water Disputes Act. See CHHATRAPATI SINGH, *Water Rights in India*, in WATER LAW IN INDIA 8 (1992).
34. A. Vaidyanathan & Bharath Jairaj, *Legal Aspects of Water Resource Management*, in WATER AND THE LAWS IN INDIA 3, 4 (Ramaswamy R Iyer ed., 2009).
35. See Rampal v. State of Rajasthan, AIR 1981 (Raj.) 121 (India); F.K. Hussain v. Union of India, AIR 1990 (Ker.) 321 (India); L.K. Koolwal v. State of Rajasthan, AIR 1988 (Raj.) 2 (India); Hamid Khan v. State of Madhya Pradesh, AIR 1997 (MP) 191 (India) (right of pure drinking water); Vishala Kochi Kudivella Samrakshana Samithi v. State of Kerala, 2006 (1) KLT 919 (India); Lucknow Grih Swami Parishad v. State of Uttar Pradesh, 2000 (3) AWC 2139 (India); Bheemagiri Bhaskar v. Rev. Div. Officer, AIR 2001 (AP) 492 (India); Chameli Singh v. State of U.P., AIR 1996 SC 1051 (India) (right to get water is part of the right to life guaranteed by Article 21 of Indian Constitution).
36. See Subhash Kumar v. State of Bihar, AIR 1991 SC 420 (India). In addition to the same a Committee on review of the Indian Constitution has recommended to bring new Article 30D, that recognized right to safe drinking water. See GOV'T OF INDIA, REPORT OF THE NATIONAL COMMISSION TO REVIEW THE WORKING OF THE CONSTITUTION (2002).
37. For more information, see GRANVILLE AUSTIN, WORKING A DEMOCRATIC CONSTITUTION: THE INDIAN EXPERIENCE 69 (1st ed. 2000). Mark Galanter's work find its worth mentioning here as how nicely he explains about prevailing competing inequalities between tribals and others and their rationale in legislations leading to affirmative actions. See MARC GALANTER, LAW AND SOCIETY IN MODERN INDIA (1989). See also Baxi, *supra* note 2, at 91; SINGH, *supra* note 2, at 26.

of its duties by the state over natural resources, claiming sovereign powers over them.<sup>38</sup> This power of acquisition to its utter disregard in modern times is used for the mere purpose of adding to State revenues, which in turn is justified for public purpose (though it never happens).

## B. Move Towards Water Governance

Water governance is a new concept with regards to water management. It calls for policies, which ultimately benefit decision-making, resulting in a well-planned package for managing the whole nexus of land, water, and ecosystem with society. It calls for dialogues amongst the various stakeholders, including the marginalized section of the society. This form of governance looks for three important components: namely to secure, to avoid, and to foresee.<sup>39</sup> Human activities on the land, which is beyond rivers and oceans, should be incorporated with water-related governance attempt.<sup>40</sup> Another aspect would be going for river parliaments as proposed in India, which includes involvements of all the stakeholders.<sup>41</sup> An expansion of ‘blue’ water governance to incorporate ‘green’ water to ultimately develop into rainwater governance, which many people refer to it as Green Blue Water Initiative

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38. In India, Justice Chandrashekhar Aiyer in *Kameshwar Singh v. State of Bihar*, AIR 1952 SC 252 (India), observed “Property of the individual cannot be appropriated by the state under the power of eminent domain for mere purposes of adding to its revenues; taxation is the recognised mode to secure this end. If the latter was the real object it must be observed that to take one man’s property compulsorily for giving it away to another in discharge of government’s obligation is not a legitimate and permissible exercise of the power of acquisition”. See SINGH, *supra* note 2, at 24, 50, 51. See also Usha Ramanathan, *A Word on Eminent Domain*, in *DISPLACED BY DEVELOPMENT: CONFRONTING MARGINALISATION AND GENDER INJUSTICE* 133 (Lyla Mehta ed., 2009).

39. To secure as in securing socially acceptable and environmentally feasible water supply and sanitation, food production, energy production, etc.; to avoid as in avoiding hazards from floods, droughts and bacteriological pollutants; and to foresee as in foreseeing impacts such as adding pollution load to the water which will reduce both the usability of the downstream water and the biodiversity, or impacts from increased consumptive use of the upstream which will reduce the river flow and its dilution capacity, degrading water habitat, which both affects biodiversity. See MALIN FALKENMARK & JOHAN ROCKSTRÖM, *BALANCING WATER FOR HUMANS AND NATURE: THE NEW APPROACH IN ECOHYDROLOGY* 181-207 (2004).

40. See Johan Rockström, Mats Lannerstad & Malin Falkenmark, *Assessing the Water Challenge of a New Green Revolution in Developing Countries*, 104 PNAS 6253 (2007) (proceedings of the National Academy of Sciences of the United States of America). See also KEN CONCA, *GOVERNING WATER: CONTENTIOUS TRANSNATIONAL POLITICS AND GLOBAL INSTITUTION BUILDING* 18 (2006).

41. S. Narain, *We All Live Downstream: Urban Industrial Growth and Its Impact on Water Systems*, in *PROCEEDINGS OF THE 9TH STOCKHOLM WATER SYMPOSIUM* (1999).

(GBI), is the need of the hour.<sup>42</sup> One of the brighter aspects of such initiative is seen in clubbing water governance with poverty irradiation and its use in food production. A proactive approach is the only solution so as to curb water quality deterioration. Rivers in many developing countries are treated as a mode of transferring sewer waste from one part to another. Initiatives with penal nature should be implemented so that a deterrence effect is caused against polluting.<sup>43</sup>

### III. Climate Change and Its Impact on Food Production

Water plays a crucial role in the universe, more so for the planet Earth and, even more for the living beings on Earth or elsewhere. In its manifestation water is highly variable. So far as India is concerned, most of the water is received during the period of monsoon.<sup>44</sup> It is in the same period generally as when the maximum cultivation of crops takes place. The importance of water is well-known, ranging from cleansing, cooking, power production (hydro-electricity) and so on, yet the most important aspect felt of lately is its paramount in food production. Water sustains not merely human life, but also the lives of animals; it supports ecological system of which is an integral part of human sustenance. Human needs are unlimited, and water and food are common needs to all humanity. Having said that, the two essentials of living require a clear distinction: the two cannot be equated for a simple reason that while food can be substituted, water cannot.<sup>45</sup> Technical and infrastructure requirements of the two are also different. In any sense, the substitutes for food must not only ensure prevention of starvation but also provide a balanced

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42. The Green Blue Water Initiative (GBI) programme looks at how to manage land and water resources in a more holistic way to meet human development and ecosystem requirements. The programme has a strong poverty reduction focus, looking at how to improve water management amongst the rural pauperize. For more information, see *Green Blue Water Initiative (GBI)*, STOCKHOLM ENV'T INST., <http://www.sei-international.org/projects?prid=257> (last visited Aug. 29, 2016).

43. However, such efforts would be challenging as we need to find out who did what and for what purpose, besides the absence of laws clear enough to settle the liability. See Hector Garduño, *Water Right Administration in Developing Countries: A Prerequisite for Satisfying Urban Water Needs*, in PROCEEDINGS OF THE 9TH STOCKHOLM WATER SYMPOSIUM, *supra* note 41.

44. Most of the water that the land receives is through rainfall, which comes for a relatively short period of time. Generally, the range of precipitation varies widely over the country, ranging from 100 millimetres in some parts of Rajasthan or adjacent places to 11,000 millimetres in the northeast.

45. UNITED NATIONS DEVELOPMENT PROGRAM, HUMAN DEVELOPMENT REPORT 2006: BEYOND SCARCITY: POWER, POVERTY AND THE GLOBAL WATER CRISIS 154 (2006).

diet.<sup>46</sup> Food insecurity is a serious issue, leading to a mass number of displacement and migration of people.<sup>47</sup> The right to freedom from hunger (like many other rights) is an internationally recognized human right.<sup>48</sup> Here, the right to food is not specifically mentioned, but a reading of Article 11(1) and (2) of ICESCR justifies the claim. Earlier, the Commission on Human Rights requested the Special Rapporteur on the right to food to take into account the interdependency of the right to water and the right to food.<sup>49</sup> Though internationally recognized, there are no backups from the state, resulting in migration and displacement; a deprivation of the rights is contrary to the well-established norms of international law. We still face this issue of undernourished people across the world;<sup>50</sup> there are continued infringements on basic energy need for sustenance.

The talk of turbulent future, especially with regard to water, holds some deep concerns. We can feel the impact of water crisis and the food scarcity.<sup>51</sup>

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46. Comm. on Economic, Social and Cultural Rights, Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights: General Comment 12 (Twentieth Session, 1999) The Right to Adequate Food (Art. 11), U.N. Doc. E/C.12/1999/5 (May 12, 1999) [hereinafter General Comment No. 12].

47. For climate migrants or environmentally displaced persons, see Benoit Mayer, *The International Legal Challenges of Climate-Induced Migration: Proposal for the International Legal Framework*, 22 COLO. J. INT'L ENVTL. L. 357 (2011); Bonnie Docherty & Tyler Giannini, *Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees*, 33 HARV. ENVTL. L. REV. 349 (2009); DAVID HODGKINSON & LUCY YOUNG, "IN THE FACE OF LOOMING CATASTROPHE": A CONVENTION FOR CLIMATE CHANGE DISPLACED PERSONS (2012), [www.ccdpconvention.com/documents/Updated%20treaty%20proposal.pdf](http://www.ccdpconvention.com/documents/Updated%20treaty%20proposal.pdf) (last visited Apr. 16, 2016).

48. International Covenant on Economic, Social and Cultural Rights art. 11(1), Dec. 16, 1966, S. Treaty Doc. No. 95-19, 933 U.N.T.S. 3 (recognizing right to food as "right of everyone to . . . adequate food"); *id.* art. 11(2) (further recognizing it as a "fundamental right of everyone to be free from hunger"). See also General Comment No. 12, *supra* note 46.

49. Comm. on Human Rights, The Right to Development: Rep. of the High Commissioner for Human Rights Submitted in Accordance with Commission Resolution 2000/5, UN Doc. E/CN.4/2001/25 (Jan. 5, 2001); Comm. on Human Rights, The Right to Food: Report by the Special Rapporteur on the Right to Food, Mr. Jean Ziegler, Submitted in Accordance with Commission on Human Rights Resolution 2000/10, U.N. Doc. E/CN.4/2001/53 (Feb. 7, 2001).

50. The rate of undernourished people is rising between 2006 and 2009; an unacceptably high number of people i.e. 925 million are deprived of sufficient food, constituting an infringement on their basic energy needs for sustenance. See FOOD & AGRICULTURE ORG. OF THE UNITED NATIONS, THE STATE OF FOOD INSECURITY IN THE WORLD: ADDRESSING FOOD INSECURITY IN PROTRACTED CRISES 4 (2010). Every year about 20 million people die from the consequences of undernourishment. See POVERTY-ENVIRONMENT PARTNERSHIP, LINKING POVERTY REDUCTION AND WATER MANAGEMENT 13, 65 (2006), [http://www.who.int/water\\_sanitation\\_health/resources/povertyreduc2.pdf?ua=1](http://www.who.int/water_sanitation_health/resources/povertyreduc2.pdf?ua=1).

51. In India, especially during the summers, issue concerning water causes great pain to the public at large. Protests on city streets are quite common; worst when political anger is

Poverty is connected with access to water. For instance, we can find severe poverty in places with uncertain and unpredictable rainfall or flooding (effects of climate change).<sup>52</sup> Various factors such as population, economic development, and urbanization have been the prime reasons for causing concerns for the near future. Policy matters of the state through legislations have added some new obligations, which in a way cause some concerns, especially in light of climate change and water scarcity. Nevertheless, such decisions of the state are within the purview of their laws and should be acknowledged too. The issue remains as to how to succeed. In India, courts have recognized right to food as an enforceable fundamental right, which is further backed through effective legislation.<sup>53</sup>

The pressure on available supply of fresh water, though finite, is likely to become austere in the near future. Constructions of massive sized dams and interlinking of rivers are adding fuel to the problem. The issue here is not just about the availability of water, i.e., in bringing more of the finite quantum of water available in nature into usable form, but about the restoration and

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given to the public. In Delhi, there is an acute shortage of water every summer. Mail Today Bureau, *Delhi Faces Acute Water Shortage as Temperature Rise*, MAILONLINE (May 11, 2015, 11:26 PM), <http://www.dailymail.co.uk/indiahome/indianews/article-3077319/Delhi-faces-acute-water-shortage-temperatures-rise.html> (last visited Aug. 27, 2016). In the US, there are serious droughts like the situation occurred in the state of California, but some predict it to be even worse. Zack Guzman, *The California Drought is Even Worse Than You Think*, CNBC (Jul. 16, 2015, 12:39 PM), <http://www.cnbc.com/2015/07/16/the-california-drought-is-even-worse-than-you-think.html> (last visited Aug. 27, 2016). Even countries surrounded by water, Maldives for example, face similar situation. Associated Press, *No Water in Maldives' Capital, Government Seeks Help*, THE INDIAN EXPRESS (Dec. 5, 2014, 6:05 PM), <http://indianexpress.com/article/world/asia/no-water-in-maldives-capital-government-seeks-help> (last visited Aug. 27, 2016). See also PETER H. GLEICK, WATER IN CRISIS (1993); Richard Conniff, *California Desert in Disguise*, NAT'L GEOGRAPHIC, Nov. 1993, at 38.

52. Hunger with malnourishment to a large extent is a rural phenomenon. See Uwe Kracht, *Whose Right to Food? Vulnerable Groups and the Hungry Poor*, in FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME I: LEGAL AND INSTITUTIONAL DIMENSIONS AND SELECTED TOPICS 119, 126 (Wenche Barth Eide & Uwe Kracht eds., 2005). Research shows that poverty is significantly less in areas with irrigated systems as compared to non-irrigated areas. See DAVID MOLDEN, WATER FOR FOOD WATER FOR LIFE: A COMPREHENSIVE ASSESSMENT IN WATER MANAGEMENT IN AGRICULTURE 65, 71 (2007).
53. PUCV v. Union of India, (2013) 2 SCC 663 (Recognizing right to food as an enforceable fundamental right, the court broadened the scope of this right to food as an enforceable fundamental right, and not only to be free from hunger, but also to the right to be free from malnutrition, especially for women, children and the elderly. the Court's activism in this case stemmed from the general apathy of the governments in implementing welfare schemes.). But see Parmanand Singh, *Hunger Amidst Plenty: Reflection on Law, Poverty and Governance* 48 J. INDIAN L. INST. 57 (2006); B.B. Pande, *Re-Orienting the Rights Discourse to Basic Human Needs*, in HUMAN RIGHTS AND BASIC NEEDS: THEORY AND PRACTICE 150 (Mahendra Singh, Helmut Goerlich & Michael von Hauff eds., 2008).

continuous use of resources in its pure form. Even if we focus our self with the availability of water and start concentrating on developing such techniques, which can provide us the desired result of availability of water,<sup>54</sup> the main issue still remains unaddressed. The agricultural sector uses 70 percent of global water use, though not the entire proportion is used for the production of food.<sup>55</sup> On one side, the transfer of technique would be costly, i.e., the governments of developing countries cannot easily muster, and even if the technique is acquired, the requisite planning and weaknesses in its execution would be an issue.<sup>56</sup> Also, agriculture is the worst affected sector due to climate change, as it requires time to adapt to the sudden changes, and it requires special attention. Besides, in order to fulfill food requirements, we need to concentrate on agriculture, which in a way is associated with the issue of having less water.<sup>57</sup> The growth of crops for bio-fuel production is another concern, adding further strain on water resources.<sup>58</sup> Therefore, unless we are not in a position of adapting to the rapid changes of climate, no sort of any success can be achieved. This also calls for prioritization of needs based on availability of resources.

The ethical debate of one human helping another in need is always sketched too far; humans help another until one's needs are satisfied. Also, what if governments or international organizations fail to eradicate hunger? Who is to blame? Does the moral blame lie on the people and not on the government or international organization alone? Though irrelevant to the purpose of this paper, it does bring some clarity to thoughts on responsibility, as to how much

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54. CHRISTIAN ERNI, SHIFTING CULTIVATION, LIVELIHOOD AND FOOD SECURITY: NEW AND OLD CHALLENGES FOR INDIGENOUS PEOPLES IN ASIA (2015); Katie Sykes, *Hunger Without Frontiers: The Right to Food and State Obligations to Migrants*, in THE INTERNATIONAL LAW OF DISASTER RELIEF 190 (David C. Caron, Michael J. Kelly & Anastasia Telesetsky eds., 2014).

55. WORLD WATER ASSESSMENT PROGRAMME ET AL., *supra* note 18, at 243-45, 247.

56. M. Windfuhr, *Experiences from Case Related with Food Work: Lessons Learned for Implementation*, in FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME II: EVOLVING ISSUES AND EMERGING APPLICATIONS 331 (2007).

57. It is in this perspective we need the Voluntary Guidelines on the Right to Food which stresses the importance on access to water resources. See FOOD & AGRICULTURE ORG. OF THE UNITED NATIONS, VOLUNTARY GUIDELINES TO SUPPORT THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF NATIONAL FOOD SECURITY (2005). However, the General Comment on Right to Food No. 12, itself does not mention the essential nature of water for agricultural production. See General Comment No. 12, *supra* note 46. See also Malcolm Langford, *Ambition That Overlaps Itself? A Response to Stephen Tully's Critique of the General Comment on the Right to Water*, 24 NETH. Q. HUM. RTS. 433, 442 (2006).

58. See Matthew Craven, *Some Thoughts on the Emergent Right to Water*, in THE HUMAN RIGHT TO WATER 37 (Eibe Riedel & Peter Rothen eds., 2006).

one bears it for someone whom he has no responsibility for at all.<sup>59</sup> The answer to this cannot be explained in direct or indirect consequences of one's actions. Take this example: any small or temporary change in food supply brings a state of panic amongst the vulnerable marginalized section of society. Those living in developed nations owe some duties to them, though not directly responsible for the cause. Now, for the wealthy ones in the society, this slight change in food supply would not matter. But sooner or later this will affect them, though not in a predicted way. So the responsibility is not for the others but for themselves, and if not acknowledged now, this will surely cause some serious issues in the future, besides the equity-demand on protection of the minimum rights for those unable to protect their own.<sup>60</sup> It is quite understandable that right to food is difficult to determine, but bare minimum standards in terms of variation of the diet must be ensured.<sup>61</sup> Collective cooperation is required to handle dangers brought by climate change, since amongst the various rights, which are threatened by climate change, right to food (which comes below right to life) holds an important place.<sup>62</sup>

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59. See HENRY SHUE, BASIC RIGHTS: SUBSISTENCE, AFFLUENCE, AND U.S. FOREIGN POLICY 29 (2d ed. 1996) (saying, regarding protection of rights, that all rights cannot be protected against the threats caused specially by predictable dangers). Regarding the controversy of who is to be blamed, see ANDREW KUPER, GLOBAL RESPONSIBILITIES: WHO MUST DELIVER ON HUMAN RIGHTS? 155-81 (2005).

60. See MARK SAGOFF, ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT (1st ed. 1988). On Principle of Equity (minimum bare needs which needs to be granted), see Thomas Nagel, *Poverty and Food: Why Charity is Not Enough*, in FOOD POLICY: THE RESPONSIBILITY OF THE UNITED STATES IN THE LIFE AND DEATH CHOICES 54 (Peter G. Brown & Henry Shue eds., 1977). See also Henry Shue, *Solidarity Among Strangers and the Right to Food*, in WORLD HUNGER AND MORALITY 113 (William Aiken & Hugh LaFollette eds., 1996).

61. Rolf Künneemann, *The Right to Adequate Food: Violations Related to Its Minimum Core*, in EXPLORING THE CORE CONTENT OF SOCIO-ECONOMIC RIGHTS: SOUTH AFRICAN AND INTERNATIONAL PERSPECTIVES 71, 79 (Danie Brand & Sage Russel eds., 2002); M. Falkenmark & M. Lannerstad, *Consumptive Water Use to Feed Humanity – Curing a Blind Spot* 9 HYDROLOGY & EARTH SYS. SCI. 15, 26 (2005); Jannik Boesen & Paul Erik Luridness, *Fresh Water as a Human Right and Global Public Good*, in TOWARDS NEW GLOBAL STRATEGIES: PUBLIC GOODS AND HUMAN RIGHTS 393 (Erik Andre Andersen & Birgit Lindsnaes eds., 2007).

62. See Simon Caney, *Climate Change, Human Rights and Moral Threshold*, in HUMAN RIGHTS AND CLIMATE CHANGE 69 (Stephen Humphreys ed., 2009) (Caney carefully shows how climate change will specifically threaten at least three rights i.e. right to life, right to health and right to subsistence). See also PAUL BAER, TOM ATHANASIOU & SIVAN KARTHA, THE RIGHT TO DEVELOPMENT IN A CLIMATE CONSTRAINED WORLD: THE GREENHOUSE DEVELOPMENT RIGHTS FRAMEWORK (2007); Oxfam Int'l, *Climate Wrongs and Human Rights: Putting People at the Heart of Climate Change Policy*, OXFAM BRIEFING PAPER, September 2008, at 117; THE WORLD BANK, WORLD DEVELOPMENT REPORT 2010: DEVELOPMENT

Climate changes have already marked its impact on the global food systems, affecting the food security. Concern as of now is its impact on the vulnerable section of the global community, who need immediate support.<sup>63</sup> If the concerns are not taken seriously, the impact would gradually shift onto the lesser vulnerable groups, meaning risk is there for everyone. Climate change is real and it will definitely cause serious issues in the near future. Displacement and migration occurs commonly for want of food security. The question, now that it is real and will affect us all, is: ‘Do we have requisite measures to curb it or get through it? Are we addressing the issue seriously?’ The current ongoing process of climate change and global warming leaves too much of ambiguity as to the future. Adaptive measures for reducing and responding to the risks to which different ecosystems and livelihood groups are exposed to, and to curb the same through innovative schemes, techniques and strategies will be an option.

### **A. Development and Climate Change: Its Impact on Food Production**

Moving further to our main issue regarding the impact on food production *vis a vis* water scarcity and climate change, first we need to understand the importance of water, and secondly, understand the steps and measures taken with regards to its protection, especially its association with food production. Water is an integral part of environment, and its protection has impact on climate and other interrelated things. Agriculture, which is closely associated with the availability of water, is important for food security. First, it provides food, and secondly, it accounts for the primary source of livelihood for a substantive number of people around the world. Climate change continuously questions the available resource allocation process, and due to the ever-increasing demand on non-sustainable uses, competition over basic necessary resources is likely to increase.<sup>64</sup> The impact of climate change onto the livelihood of people sustaining on agriculture is alarming. It is a concern, which not only developing or third world nations have to tackle but the world

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AND CLIMATE CHANGE 53(2010) (Box 1.4; the Report mentions three important rights as Right to food: the right to water and the right to shelter as rights which needs to be focused on as they are essential rights for human sustenance).

63. LORENZO COTULA, MOUSSA DJIRÉ & RINGO W. TENGA, THE RIGHT TO FOOD AND ACCESS TO NATURAL RESOURCES 16 (Lorenzo Cotula ed., 2008).

64. This complex issue needs to be explored in full. See R. Compagnucci et al., *Hydrology and Water Resources*, in CLIMATE CHANGE 2001: IMPACTS, ADAPTATION, AND VULNERABILITY 193 (James J. McCarthy, Osvaldo F. Canziani, Neil A. Leary, David J. Dokken & Kasey S. White eds., 2001).

at large.<sup>65</sup> Interestingly, the focus that emerges out of climate debate does emphasise to view the issue of food security as a relation between people and food in terms of a network of entitlements relations.<sup>66</sup> Some of the relations are simple (people's entitlement to food) while others are complex (availability, production). The influence of market in public policy also holds some importance, though this is not the part of this paper to further dwell upon—we will rest this issue for a future writing.

Producers in developing countries who are not well equipped enough to deal with climate change risk subjecting their safety and welfare to be compromised. The impact of such a situation would be felt severely to the developed nations, and more so to the countries with high population as they not only have to feed their own population but also have to make sure that their export which is largely based on agriculture remains unaffected.<sup>67</sup> Furthermore, frequent extreme weather patterns (such as droughts, heat and cold waves, heavy storms, and floods), rising sea levels and increasing irregularities in seasonal rainfall patterns (including flooding) have immediate impacts on food production.<sup>68</sup> The entire food system is getting insecure due

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65. Kerstin Mechlem, *Harmonizing Trade in Agriculture and Human Rights: Options for the Integration of the Right to Food into the Agreement on Agriculture*, 10 MAX PLANK Y.B. UNITED NATIONS L. 127 (2006); Christian Courtis, *The Right to Food as a Justiciable Right: Challenges and Strategies*, 11 MAX PLANK Y.B. UNITED NATIONS L. 317 (2007); POVERTY-ENVIRONMENT PARTNERSHIP, *supra* note 50.

66. Henry Shue, *Four Questions of Justice*, in AGRICULTURAL DIMENSIONS OF GLOBAL CLIMATE CHANGE 214 (Harry M. Kaiser & Thomas E. Drennen eds., 1993); Harry M. Kaiser, S.J. Riha, D.G. Rossiter, and D.S. Wilks. *Agronomic and Economic Impacts of Gradual Global Warming: A Preliminary Analysis of Midwestern Crop Farming*, in ECONOMIC ISSUES IN GLOBAL CLIMATE CHANGE: AGRICULTURE, FORESTRY, AND NATURAL RESOURCES 91 (John M. Reilly & Margot Anderson eds., 1992). *See also* Siri Damman, *The Right to Food of Indigenous Peoples*, in FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME I, *supra* note 52, at 285; Carolyn Stephens, *Healthy Cities or Unhealthy Islands? The Health and Social Implications of Urban Inequality*, 8 ENV'T. & URBANIZATION 9 (1996); Michael J. Dennis & David P. Stewart, *Justiciability of Economic, Social, and Cultural Rights: Should There Be an International Complaints Mechanism to Adjudicate the Rights to Food, Water, Housing, and Health?*, 98 AM. J. INT'L L. 462 (2004).

67. INTER-GOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS (2014), [https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf) (last visited Aug. 28, 2016).

68. Simon Maxwell & Rachel Slater, *Food Policy Old and New*, 21 DEV. POL'Y REV. 531 (2003); Smita Narula, *The Right to Food: Holding Global Actors Accountable Under International Law*, 44 COLUM. J. TRANSNAT'L L. 691 (2006); Violeta Petrova, *All the Frontiers of the Rush for Blue Gold: Water Privatization and the Human Right to Water*, 31 BROOK. J. INT'L L. 577 (2006); Human Rights Council, Annual Rep. of the United Nations High Commissioner for Human Rights and Rep. of the Office of the High Commissioner and the Secretary-General: Rep. of the Office of the United Nations High Commissioner for Human Rights on the Relationship Between Climate Change and Human Rights, U.N. Doc

to the vulnerability of food security consisting of various components including food availability, food accessibility, food utilization and food system stability. The growing scarcity of water is likely to put increasing pressure on food prices, even without climate change in a strict sense –climate change do have its impact, but this is more in a secondary form.

The recognition of right to water is stressed in the earlier heading and it was argued that realization of the same has conveyed upon the governments of state to treat it as a legal obligation. It caused limitations on governments, which are under the legal duty to provide water to everyone. Though here governments do have some flexibility in the implementation of the same. Similar is with the state of right to food in India, especially after introduction of a bill which ensured realization of food right through efforts of the legislation.<sup>69</sup> The bill is an effort with regards to food accessibility—an effort, somewhat in line with the water entitlement. The recognition of right to food over the years has put government in India under new obligations (similar is the position of government with respect to water). A question arises as to whether the government attempts to provide food at a reasonable price<sup>70</sup> to the staggering majority of the population throughout the country were because it felt it was under a legal obligation to do so, or because it felt compelled to act for a purely political motive; it remains as a perpetual debate.<sup>71</sup> Should not

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A/HRC/10/61, (2009). *See also* HOWARD C. KUNREUTHER & ERWANN O. MICHEL-KERJAN, CLIMATE CHANGE, INSURABILITY OF LARGE-SCALE DISASTERS AND THE EMERGING LIABILITY CHALLENGE (2006) (paper prepared for the University of Pennsylvania Law Conference on Climate Change, 16-17 November 2006, Philadelphia, PA, USA), <http://opim.wharton.upenn.edu/risk/library/06-22.pdf> (last visited May 29, 2017).

69. Right to Food had been enforced by directing the states to implement the poverty alleviation schemes. India is a signatory to many international treaties involving right to food, besides its Constitution also indirectly referring to right to food. There is an obligation for the Indian Government (Centre and states) to fulfill the right to food of the people. Politics did not bring about this important legislation, but it is a welcoming step in a country where the majority is deprived of nutrition and healthy diet. *See Agriculture / Rural Development*, PRS LEGISLATIVE RESEARCH (the Act and Bills are available), <http://www.prsindia.org/billtrack/the-national-food-security-bill-2011-2834> (last visited Aug. 29, 2016).
70. Interesting to note here that a few foreign newspapers claimed India's initiative to food security, a step with throwaway prices, without knowing the ground reality of the state. On the contrary, the same has given some positive responses. In fact, evidence from the field shows that the Food Security Act in India contributes to significant famine alleviation. *See Mihika Chatterjee, Food Security in India is Not Doomed After All: Evidence from the Field Shows that the Food Security Act in India Contributes to Significant Famine Alleviation*, AL JAZEERA (Nov. 11, 2013), <http://www.aljazeera.com/indepth/opinion/2013/11/food-security-india-not-doomed-after-all-20131110572633972.html> (last visited Aug. 29, 2016).
71. At least it caused an uproar and the WTO is not willing to accept the same. *See RE: World Says YES to Food Security in South, WTO Says No*, THIRD WORLD NETWORK (referring to the article that was initially published in South-North Development Monitor), <http://www>.

trade rules be shaped around the food security policies which countries need, rather than policies having to grovel around WTO rules? It is relevant to know how international food aid affects domestic production and distribution as well as the world food prices. Interestingly, such step of the Indian government was not appreciated by the market-driven economic world. Political as it might be, but now the government is under some legal obligations to do so, provided in the guise of flexibility, which is available in every Act or bill or in the process of implementation, the intent for which it was formed must not be diluted. If, along the way, a few hundred million starving marginalized population get some food to eat, water to drink, is that really so bad?

The enjoyment of food entitlement, which determines access to food depends largely upon factors like allocation mechanisms and their affordability. Climate change does have an impact upon the accessibility. Food utilization is another aspect, which needs to be taken into consideration, since it encompasses the nutritional value of the diet. Climate change and usage of water have impact on these aspects. The social values of foods along with the quality and safety of the food supply are issues which have direct bearing on the standards of food, and therefore the impact climate change can produce on them will reduce access to entitlements and might further undermine their food security.<sup>72</sup> Food system stability is yet another aspect, which needs proper attention as it determines food availability and access of food to the people.<sup>73</sup> Fluctuations in weather will lead to situations of food emergencies which neither the world at large (even at the age of globalization, mutual cooperation etc.) nor the nation on its own (at present) is capable enough to tackle as they are neither prepared enough nor willing to be prepared. The state allocating right to food does have an array of options available through which it can achieve right to food without requiring any further provision of water. A

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twn.my/title2/susagri/2015/sa392.htm (last visited Aug. 29, 2016). India's refusal to tow the line of developed countries has caused worldwide uproar. See Shobha Shukla, *Should India Sacrifice Agriculture for Trade?*, RELIEFWEB (Sept. 21, 2014) (referring to the article that was initially published in Citizen News Service), <http://reliefweb.int/report/india/should-india-sacrifice-agriculture-trade> (last visited Aug. 29, 2016).

72. Ministerial Conference on Environment and Development in Asia and the Pacific, Review of the Implementation of Agenda 21, International Environmental Conventions, the Regional Action Programme for Environmentally Sound and Sustainable Development, 1996-2000, and the Programme of Action for the Sustainable Development of Small Island Developing States (Item 5 of the Provisional Agenda): Current and Critical Environment and Development Concerns of the Small Island Developing States of Asia and the Pacific, U.N. Doc. E/ESCAP/SO/MCED(00)/4 (June 16, 2000).

73. Cynthia M. Rosenzweig & Martin L. Parry, *Potential Impact of Climate Change on World Food Supply: A Summary of a Recent International Study*, in *AGRICULTURAL DIMENSIONS OF GLOBAL CLIMATE CHANGE*, *supra* note 66, at 87; On food supplies, see CYNTHIA ROSENZWEIG ET AL., *CLIMATE CHANGE AND WORLD FOOD SUPPLY* (1993).

collective urge of UN recently to make 2015 a year of global action by agreeing on a sustainable development agenda for the next 15 years and to eradicate poverty and hunger by 2030 is yet another major step in this regard, though similar steps were taken in the past.<sup>74</sup> Such an approach definitely compels states to bear positive obligation and ensure survival requirements for all people in need. Such proposals backed by collective endorsement lends legitimacy and authority to the claim, besides compelling states to form a coherent framework on which priorities are set for the realization of basic essential human rights and needs. The overall aim must be towards the realization of basic human rights, and must step forward in this regard—in conformity with avowedly undisputed international norms.

### **B. Sustainable Methods: An Approach Towards Climate Adaptation and Food Security**

The National Food Security Act, 2013 (Act, 2013) targets more than 800 million people with publicly financed food distribution, and will distribute coarse grains such as millet, sorghum, and maize, in addition to rice and wheat. India promotes climate resilience through its Act, 2013. Policy engagement efforts focused at mainstreaming climate-smart approaches within relevant policies have been understood as an effective way of scaling up climate-smart approaches. The approach suits India's approach towards development. Such an approach is in conformity with the Indian constitutional ethos and also with the international standards.<sup>75</sup> The right to food can be implicitly recognized to right to life, the right to health and the right to economic, social and cultural development—thus inseparably linked to the dignity of human beings and is therefore essential for the enjoyment

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74. Claiming it a bold, ambitious and transformative agenda, Secretary General, Ban Ki-moon urged member states to work together for the same. The agreement reached by member states on “Transforming our World: The 2030 Agenda for Sustainable Development,” marks the culmination of efforts that began three years ago with the 2012 UN Conference on Sustainable Development. The new agenda expands on the success of the Millennium Development Goals (doubtful, yet laudable), which had a target date of 2015. The adoption of the same is yet to be done by the member states, but it appears to be a mere formality as such. *See Member States Lauded for Reaching Agreement on New UN Sustainable Development Agenda*, UN NEWS CENTRE (Aug. 3, 2015), <http://www.un.org/apps/news/story.asp?NewsID=51553#.VcBduZOqqko> (last visited Aug. 30, 2016). Similar approach was adopted in MDG, Target 7, which aims at eradication of extreme poverty by 2015.

75. *See* INDIA CONST. art. 21. *See also* Universal Declaration of Human Rights, G.A. Res. 217A(III), U.N. Doc. A/810, art. 25 (1948); International Convention on Economic, Social and Cultural Rights art. 11, Dec. 16, 1966, S. Treaty Doc. No. 95-19, 993 U.N.T.S. 3; Convention on the Rights of the Child arts. 24, 27, Nov. 20, 1989, 1577 U.N.T.S. 3.

and fulfillment of other rights such as health, education, work and political participation.

The world's agricultural sector faces a great balancing act. At one hand it needs to meet human needs, and on the other hand, ensure minimal environmental impact. The solution that can be realized is to adopt measures of sustainable methods. Such methods at least do not undermine economic and social development *vis-a-vis* environmental protection. Efficient measures can boost production, reduce input costs, or create new opportunities. However, efficiency is referred not in terms of economics but in terms of environment protection. It is in this regards in which even the measures of linking rivers in India has obtained judicial consent.<sup>76</sup> The judicial role has also extended to ensuring strict vigilance over the procurement of public distribution system.<sup>77</sup> Efforts on part of vigilant Indian judiciary have ensured that any impact of water/food scarcity on the least fortunate people is minimized. One distinguished or rather remarkable development that took place over the last few decades is the recognition of the 'right' (for water/food and climate protection), which has put the government under obligations. Whether such 'rights' in reality have been adopted or implemented, either by obligation or compulsion, will be a historical debate. Nevertheless, since the early 1990s at least, the government has been under a legal obligation to do so. This could be further strengthened through legislations. The UK legislation of 2008 could be of some help. Such legislation ensures responsibility of the various actors involved. The idea has to be such wherein democratic ethos can be advanced. Furthermore, even though the international policy framework has been calling on the government to facilitate rather than to provide, the legislation must make it clear that the government has no right or legitimacy to withdraw from the responsibilities for which it has been elected. The adoption of legislation providing content to the right will not be sufficient to ensure that things change on the respective grounds. The actual realization of the right will thus require a strong civil society campaign to ensure that all actors involved in making 'rights' into some reality have to abide by the basic framework provided by the courts and by a new legislation. A collaborative effort in ensuring measurable and sustainable improvement has to be central in every struggle.

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76. *See* In re Networking of Rivers, 2012 (3) SCALE 74 (The Court opined that how the government of India has always shown considerable concern regarding the management of water resources in the country and had framed, for this purpose, the National Water Policy (NWP) which is being updated on a yearly basis. The National Water Policy seeks to make available water supply to those areas, which face shortages.).

77. *People's Union for Civil Liberties v. Union of India*, 2011(4) SCALE 54.

## IV. Conclusion

The much anticipated impact of climate change possesses an additional stress on food production. The existing system is under tremendous pressure to satisfy the needs of a rapidly growing and progressively wealthier world (however this would be debatable).<sup>78</sup> Damaging the integrity of ecosystems undermines the food-producing systems, which they support. The assessment of viable and effective adaptations to the impacts of climate change on water and agriculture will require a sound understanding and integration of agriculture with water management; with prioritization. Economics must not be allowed in matters concerning life. Even firm believers in the market mechanism in the past and even in the present often were disappointed by the failure of the market to deliver its promise. Encouragement to use sustainable methods calls for a multi-faceted agro-ecological intensification of food production. Such an approach ensures protection of natural resources, even at the times of climatic change and the extremes. The aim must be towards actual realization of the basic rights, associated with the bare essentials for human condition. It implies that a 'right' needs to be saved and protected with further backing from the state and its machineries. The adoption of legislation providing content to the right is not sufficient (as we have seen in the Act, 2013 ensuring right to food for the marginalized underprivileged section of the country). Realization of rights must address the concept of equality, as it is specifically addressed in the Indian Constitution. It must include both formal as well as substantive equality, while the latter talks about preferential treatment and the former entitles each and every human a right similar to one another with the same extent. Also, let's give every life sustaining on this planet a hope for an eclectic discourse about how together we are going to shape the future of our planet.

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78. It can be a debatable issue in a sense that, though the wealth and expenditure of the world has increased drastically in the recent years, the actual distribution of wealth has not been even. One who is underprivileged is hardly able to manage his/her food, whereas for the rich, it hardly matters if any amount of their food goes for waste. Besides, the concern of obesity in the developed countries as compared to the developing and third world countries does raise many doubts.

## **Bibliography**

### **PRIMARY SOURCES**

#### **Cases**

- Bheemagiri Bhaskar v. Rev. Div. Officer, AIR 2001 (AP) 492 (India).  
Chameli Singh v. State of U.P., AIR 1996 SC 1051 (India).  
F.K. Hussain v. Union of India, AIR 1990 (Ker.) 321 (India).  
Hamid Khan v. State of Madhya Pradesh, AIR 1997 (MP) 191 (India).  
In re Networking of Rivers, 2012 (3) SCALE 74.  
Kameshwar Singh v. State of Bihar, AIR 1952 SC 252 (India).  
L.K. Koolwal v. State of Rajasthan, AIR 1988 (Raj.) 2 (India).  
Lucknow Grih Swami Parishad v. State of Uttar Pradesh, 2000 (3) AWC 2139 (India).  
People's Union for Civil Liberties v. Union of India, 2011(4) SCALE 54.  
PUCL v. Union of India, (2013) 2 SCC 663.  
R v. Director General of Water Services, ex parte Lancashire County Council [1999] Env. LR 114 (QBD).  
Rampal v. State of Rajasthan, AIR 1981 (Raj.) 121 (India).  
Subhash Kumar v. State of Bihar, AIR 1991 SC 420 (India).  
Vishala Kochi Kudivella Samrakshana Samithi v. State of Kerala, 2006 (1) KLT 919 (India).

#### **Legal Instruments**

- Catarina de Albuquerque (Special Rapporteur on the Human Right to Safe Drinking Water and Sanitation), Rep. of the Independent Expert on the Issue of Human Rights Obligations Related to Access to Safe Drinking Water and Sanitation, U.N. Doc. A/HRC/15/31 (July 1, 2010).  
Climate Change Act 2008, c. 27 (UK), [http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf) (last visited May 3, 2017).  
Comm. on Economic, Social and Cultural Rights, General Comment No. 15 (2002): The Right to Water (Arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights), U.N. Doc. E/C.12/2002/11 (Jan. 20, 2002).

- Comm. on Economic, Social and Cultural Rights, Substantive Issues Arising in the Implementation of the International Covenant on Economic, Social and Cultural Rights: General Comment 12 (Twentieth Session, 1999) The Right to Adequate Food (Art. 11), U.N. Doc. E/C.12/1999/5 (May 12, 1999).
- Comm. on Human Rights, The Right to Development: Rep. of the High Commissioner for Human Rights Submitted in Accordance with Commission Resolution 2000/5, UN Doc. E/CN.4/ 2001/25 (Jan. 5, 2001).
- Comm. on Human Rights, The Right to Food: Report by the Special Rapporteur on the Right to Food, Mr. Jean Ziegler, Submitted in Accordance with Commission on Human Rights Resolution 2000/10, U.N. Doc. E/CN.4/ 2001/53 (Feb. 7, 2001).
- Convention on the Rights of the Child arts. 24, 27, Nov. 20, 1989, 1577 U.N.T.S. 3.
- GOV'T OF INDIA MINISTRY OF WATER RES., DRAFT NATIONAL WATER FRAMEWORK BILL, 2013 (2013), <http://www.indiaenvironmentportal.org.in/files/file/Draft%20national%20framework%20bill,%202013.pdf> (last visited Aug. 26, 2016).
- GOV'T OF INDIA MINISTRY OF WATER RES., NATIONAL WATER POLICY (2002), [http://cgwb.gov.in/documents/nwp\\_2002.pdf](http://cgwb.gov.in/documents/nwp_2002.pdf) (last visited Aug. 26, 2016).
- GOV'T OF INDIA MINISTRY OF WATER RES., NATIONAL WATER POLICY (2012) (2012), <http://wrmin.nic.in/writereaddata/NationalWaterPolicy/NWP2012Eng6495132651.pdf> (last visited Aug. 26, 2016).
- Human Rights Council, Annual Rep. of the United Nations High Commissioner for Human Rights and Rep. of the Office of the High Commissioner and the Secretary-General: Rep. of the Office of the United Nations High Commissioner for Human Rights on the Relationship Between Climate Change and Human Rights, U.N. Doc A/HRC/10/61 (2009).
- INDIA CONST.
- International Covenant on Economic, Social and Cultural Rights, Dec. 16, 1966, S. Treaty Doc. No. 95-19, 933 U.N.T.S. 3.
- John Ruggie (Special Representative of the Secretary-General on Human Rights and Transnational Corporations and Other Business Enterprises), Promotion and Protection of All Human Rights, Civil, Political, Economic, Social and Cultural Rights, Including the Right to Development: Protect, Respect and Remedy: A Framework for Business and Human Rights: Rep.

- of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, U.N. Doc. A/HRC/8/5 (Apr. 7, 2008).
- John Ruggie (Special Representative of the Secretary-General on Human Rights and Transnational Corporations and Other Business Enterprises), Rep. of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, John Ruggie: Guiding Principles on Business and Human Rights: implementing the United Nations “Protect, Respect and Remedy” Framework, U.N. Doc. A/HRC/17/31, (Mar. 21, 2011).
- Ministerial Conference on Environment and Development in Asia and the Pacific, Review of the Implementation of Agenda 21, International Environmental Conventions, the Regional Action Programme for Environmentally Sound and Sustainable Development, 1996-2000, and the Programme of Action for the Sustainable Development of Small Island Developing States (Item 5 of the Provisional Agenda): Current and Critical Environment and Development Concerns of the Small Island Developing States of Asia and the Pacific, U.N. Doc. E/ESCAP/SO/MCED (00)/4 (June 16, 2000).
- The Inter-State Water Disputes Act, 1956, No. 33 of 1956, *amended by* The Inter-State Water Disputes (Amendment) Act, 2002, No. 14 of 2002 (India).
- The River Boards Act, 1956, No. 49 of 1956 (India)
- Universal Declaration of Human Rights, G.A. Res. 217A(III), U.N. Doc. A/810 (1948).

### **Webliography**

- Agriculture / Rural Development*, PRS LEGISLATIVE RESEARCH (the Act and Bills are available), <http://www.prsindia.org/billtrack/the-national-food-security-bill-2011-2834> (last visited Aug. 29, 2016).
- GAURAV DWIVEDI, PUBLIC PRIVATE PARTNERSHIPS: PARTNERSHIPS OR PRIVATISATION (2010), <http://www.manthan-india.org/wp-content/uploads/2015/04/PPPs-In-Water-Sector-Final-Book.pdf> (last visited May 26, 2017).
- Green Blue Water Initiative (GBI)*, STOCKHOLM ENV'T INST., <http://www.sei-international.org/projects?prid=257> (last visited Aug. 29, 2016).

- GUY LE MOIGNE ET AL., COUNTRY EXPERIENCES WITH WATER RESOURCES MANAGEMENT: ECONOMIC, INSTITUTIONAL, TECHNOLOGICAL AND ENVIRONMENTAL ISSUES (1992), <http://documents.worldbank.org/curated/en/874231468741336360/pdf/multi-page.pdf> (last visited May 26, 2016).
- INTER-GOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: SYNTHESIS REPORT: SUMMARY FOR POLICYMAKERS (2014), [https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_SPM.pdf](https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf) (last visited Aug. 28, 2016).
- WATER & SANITATION PROGRAM, PHASE II: BENCHMARKING URBAN WATER UTILITIES IN INDIA (2008), [https://www.wsp.org/sites/wsp.org/files/publications/Benchmarking\\_Report.pdf](https://www.wsp.org/sites/wsp.org/files/publications/Benchmarking_Report.pdf) (last visited Aug. 23, 2016).
- WORLD WATER ASSESSMENT PROGRAMME ET AL, WATER, A SHARED RESPONSIBILITY: THE UNITED NATIONS WORLD WATER DEVELOPMENT REPORT 2 (2006), <http://unesdoc.unesco.org/images/0014/001454/145405e.pdf> (last visited Aug. 27, 2016).

## SECONDARY SOURCES

### Books

- A. Vaidyanathan & Bharath Jairaj, *Legal Aspects of Water Resource Management, in WATER AND THE LAWS IN INDIA 3* (Ramaswamy R Iyer ed., 2009).
- Allan Rosas, *The Right to Development, in ECONOMIC, SOCIAL AND CULTURAL RIGHTS: A TEXTBOOK 119* (Asbjørn Eide, Catarina Krause & Allan Rosas eds., 2d rev. ed. 2001).
- AMARTYA SEN, DEVELOPMENT AS FREEDOM (1999).
- AMARTYA SEN, THE IDEA OF JUSTICE (2010).
- ANDREW KUPER, GLOBAL RESPONSIBILITIES: WHO MUST DELIVER ON HUMAN RIGHTS? (2005).
- Andrés. Olleta, *The World Bank's Influence on Water Privatisation in Argentina: The Experience of the City of Buenos Aires, in WATER GOVERNANCE IN MOTION: TOWARDS SOCIALLY AND ENVIRONMENTALLY SUSTAINABLE WATER LAWS 230* (P. Cullet, A. Gowlland-Gualtieri, R. Madhav & U. Ramanathan eds., 2010).
- Anil Markandya, *Water Quality Issues in Developing Countries, in ECONOMIC DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY: NEW POLICY*

- OPTIONS 307 (Ramón López & Michael A. Toman eds., 2006).
- B.B. Pande, *Re-Orienting the Rights Discourse to Basic Human Needs*, in HUMAN RIGHTS AND BASIC NEEDS: THEORY AND PRACTICE 150 (Mahendra Singh, Helmut Goerlich & Michael von Hauff eds., 2008).
- BOAVENTURA DE SOUSA SANTOS, TOWARD A NEW LEGAL COMMON SENSE (2d ed. 2002).
- C.S. HOLLING, ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT (1978).
- C.M. JARIWALA, ENVIRONMENT AND JUSTICE 192 (2004).
- CHENNAT GOPALAKRISHNAN, CECILIA TORTAJADA & ASIT K. BISWAS, WATER INSTITUTIONS: POLICIES, PERFORMANCE AND PROSPECTS (2005).
- CHHATRAPATI SINGH, COMMON PROPERTY AND COMMON POVERTY: INDIA'S FORESTS, FOREST DWELLERS AND THE LAW (1986).
- CHHATRAPATI SINGH, WATER RIGHTS AND PRINCIPLES OF WATER RESOURCES MANAGEMENT (1991).
- CHHATRAPATI SINGH, *Water Rights in India*, in WATER LAW IN INDIA 8 (1992).
- CHRISTIAN ERNI, SHIFTING CULTIVATION, LIVELIHOOD AND FOOD SECURITY: NEW AND OLD CHALLENGES FOR INDIGENOUS PEOPLES IN ASIA (2015).
- Cynthia M. Rosenzweig & Martin L. Parry, *Potential Impact of Climate Change on World Food Supply: A Summary of a Recent International Study*, in AGRICULTURAL DIMENSIONS OF GLOBAL CLIMATE CHANGE 66 (Harry M. Kaiser & Thomas E. Drennen eds., 1993).
- CYNTHIA ROSENZWEIG ET AL., CLIMATE CHANGE AND WORLD FOOD SUPPLY (1993).
- DAVID MOLDEN, WATER FOR FOOD WATER FOR LIFE: A COMPREHENSIVE ASSESSMENT IN WATER MANAGEMENT IN AGRICULTURE (2007).
- FOOD & AGRICULTURE ORG. OF THE UNITED NATIONS, THE STATE OF FOOD INSECURITY IN THE WORLD: ADDRESSING FOOD INSECURITY IN PROTRACTED CRISES (2010).
- FOOD & AGRICULTURE ORG. OF THE UNITED NATIONS, VOLUNTARY GUIDELINES TO SUPPORT THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF NATIONAL FOOD SECURITY (2005).
- GOV'T OF INDIA, REPORT OF THE NATIONAL COMMISSION TO REVIEW THE WORKING OF THE CONSTITUTION (2002).
- GRANVILLE AUSTIN, WORKING A DEMOCRATIC CONSTITUTION: THE INDIAN EXPERIENCE (1st ed. 2000).
- GUY HUTTON, LAURENCE HALLER & JAMIE BARTRAM, ECONOMIC AND

- HEALTH EFFECTS OF INCREASING COVERAGE OF LOW COST HOUSEHOLD DRINKING-WATER SUPPLY AND SANITATION INTERVENTIONS TO COUNTRIES OFF-TRACK TO MEET MDG TARGET 10 (2007).
- Günther Handl, *Human Rights and Protection of Environment*, in ECONOMIC, SOCIAL AND CULTURAL RIGHTS: A TEXTBOOK 303 (Asbjørn Eide, Catarina Krause & Allan Rosas eds., 2d rev. ed. 2001).
- HANS LINDAHL, FAULT LINES OF GLOBALIZATION: LEGAL ORDER AND THE POLITICS OF A-LEGALITY (2013).
- HAROLD JAMES, THE CREATION AND DESTRUCTION OF VALUE: THE GLOBALIZATION CYCLE (2009).
- Harry M. Kaiser, S.J. Riha, D.G. Rossiter, and D.S. Wilks. *Agronomic and Economic Impacts of Gradual Global Warming: A Preliminary Analysis of Midwestern Crop Farming*, in ECONOMIC ISSUES IN GLOBAL CLIMATE CHANGE: AGRICULTURE, FORESTRY, AND NATURAL RESOURCES 91 (John M. Reilly & Margot Anderson eds., 1992).
- Hector Garduño, *Water Right Administration in Developing Countries: A Prerequisite for Satisfying Urban Water Needs*, in PROCEEDINGS OF THE 9TH STOCKHOLM WATER SYMPOSIUM (1999).
- HENRY SHUE, BASIC RIGHTS: SUBSISTENCE, AFFLUENCE, AND U.S. FOREIGN POLICY 29 (2d ed. 1996).
- Henry Shue, *Four Questions of Justice*, in AGRICULTURAL DIMENSIONS OF GLOBAL CLIMATE CHANGE 214 (Harry M. Kaiser & Thomas E. Drennen eds., 1993).
- Henry Shue, *Solidarity Among Strangers and the Right to Food*, in WORLD HUNGER AND MORALITY 113 (William Aiken & Hugh LaFollette eds., 1996).
- Jannik Boesen & Paul Erik Luridness, *(Fresh) Water as a Human Right and Global Public Good*, in TOWARDS NEW GLOBAL STRATEGIES: PUBLIC GOODS AND HUMAN RIGHTS 393 (Erik Andre Andersen & Birgit Lindsnaes eds., 2007).
- JEAN DRÈZE & AMARTYA SEN, AN UNCERTAIN GLORY: INDIA AND ITS CONTRADICTIONS (2013).
- JÉRÉMIE TOUBKISS, COSTING MDG TARGET 10 ON WATER SUPPLY AND SANITATION: COMPARATIVE ANALYSIS, OBSTACLES AND RECOMMENDATIONS VI (2006).
- JOHN BRISCOE & R. P. S. MALIK, HANDBOOK OF WATER RESOURCES IN INDIA: DEVELOPMENT, MANAGEMENT, AND STRATEGIES (2007).

- JOHN BRISCOE & R.P.S. MALIK, INDIA'S WATER ECONOMY: BRACING FOR A TURBULENT FUTURE (2006).
- Joseph E. Stiglitz, *A Social Democratic Agenda for a More Dynamic Indian Economy*, in AN INDIAN SOCIAL DEMOCRACY: INTEGRATING MARKETS, DEMOCRACY AND SOCIAL JUSTICE II, at 280 (Sunil Khilnani & Manmohan Malhoutra eds., 2013).
- JOSEPH E. STIGLITZ, GLOBALIZATION AND ITS DISCONTENTS (2002).
- Karen Coelho, *The Slow Road to the Private: A Case Study of Neoliberal Water Reforms in Chennai*, in WATER GOVERNANCE IN MOTION: TOWARDS SOCIALLY AND ENVIRONMENTALLY SUSTAINABLE WATER LAWS 81 (P. Cullet, A. Gowlland-Gualtieri, R. Madhav & U. Ramanathan eds., 2010).
- KATHLEEN F. BRICKEY, ENVIRONMENTAL CRIME: LAW, POLICY, PROSECUTION (2008).
- Katie Sykes, *Hunger Without Frontiers: The Right to Food and State Obligations to Migrants*, in THE INTERNATIONAL LAW OF DISASTER RELIEF 190 (David C. Caron, Michael J. Kelly & Anastasia Telesetsky eds., 2014).
- KEN CONCA, GOVERNING WATER: CONTENTIOUS TRANSNATIONAL POLITICS AND GLOBAL INSTITUTION BUILDING (2006).
- LAVANYA RAJAMANI, DIFFERENTIAL TREATMENT IN INTERNATIONAL ENVIRONMENTAL LAW (2006).
- Lavanya Rajamani, *The Reach and Limits of the Principle of Common But Differentiated Responsibilities and Respective Capabilities in the Climate Change Regime*, in HANDBOOK OF CLIMATE CHANGE AND INDIA: DEVELOPMENT, POLITICS AND GOVERNANCE 118 (Novroz K. Dubash ed., 2013).
- LORENZO COTULA, MOUSSA DJIRÉ & RINGOW. TENGA, THE RIGHT TO FOOD AND ACCESS TO NATURAL RESOURCES (Lorenzo Cotula ed., 2008).
- M. Windfuhr, *Experiences from Case Related with Food Work: Lessons Learned for Implementation*, in FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME II: EVOLVING ISSUES AND EMERGING APPLICATIONS 331 (2007).
- Malin Falkenmark & Gunnar Lindh, *Water and Economic Development*, in WATER IN CRISIS: A GUIDE TO THE WORLD'S FRESH WATER RESOURCES 80 (Peter H. Gleick ed., 1993).
- MALIN FALKENMARK & JOHAN ROCKSTRÖM, BALANCING WATER FOR HUMANS AND NATURE: THE NEW APPROACH IN ECOHYDROLOGY (2004).
- MARC GALANTER, LAW AND SOCIETY IN MODERN INDIA (1989).

- MARK SAGOFF, *ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT* (1st ed. 1988).
- Mary Robinson, *What Rights Can Add to Good Development Practice*, in *HUMAN RIGHTS AND DEVELOPMENT: TOWARDS MUTUAL REINFORCEMENT* 25 (Philip Alston & Mary Robinson eds., 2005).
- Matthew Craven, *Some Thoughts on the Emergent Right to Water*, in *THE HUMAN RIGHT TO WATER* 37 (Eibe Riedel & Peter Rothen eds., 2006).
- NICOLE JÄGERS, *CORPORATE HUMAN RIGHTS OBLIGATIONS: IN SEARCH OF ACCOUNTABILITY* (2002).
- P. van Weerelt, *The Right to Development: From Rhetoric to a Global Strategy*, in *THE INTERNATIONAL DEBATE ON HUMAN RIGHTS AND THE RIGHT TO DEVELOPMENT*, INEF-REPORT 30 (Franz Nuscheler ed., 1998).
- PAUL BAER, TOM ATHANASIOU & SIVAN KARTHA, *THE RIGHT TO DEVELOPMENT IN A CLIMATE CONSTRAINED WORLD: THE GREENHOUSE DEVELOPMENT RIGHTS FRAMEWORK* (2007).
- PAUL GREADY & JONATHAN ENSOR, *REINVENTING DEVELOPMENT? TRANSLATING RIGHTS-BASED APPROACHES FROM THEORY INTO PRACTICE* (2005).
- PETER H. GLEICK, *WATER IN CRISIS* (1993).
- PHILIPPE CULLET, *WATER LAW, POVERTY, AND DEVELOPMENT: WATER SECTOR REFORMS IN INDIA* (2009).
- POVERTY-ENVIRONMENT PARTNERSHIP, *LINKING POVERTY REDUCTION AND WATER MANAGEMENT* (2006), [http://www.who.int/water\\_sanitation\\_health/resources/povertyreduc2.pdf?ua=1](http://www.who.int/water_sanitation_health/resources/povertyreduc2.pdf?ua=1).
- PRAKASH SHARMA, *PRISON PRIVATISATION: EXPLORING POSSIBILITIES IN INDIA* (2017).
- R. Compagnucci et al., *Hydrology and Water Resources*, in *CLIMATE CHANGE 2001: IMPACTS, ADAPTATION, AND VULNERABILITY* 193 (James J. McCarthy, Osvaldo F. Canziani, Neil A. Leary, David J. Dokken & Kasey S. White eds., 2001).
- R. Maria Saleth & Ariel Dinar, *Water Institutional Reforms in Developing Countries: In Sights, Evidences, and Case Studies*, in *ECONOMIC DEVELOPMENT AND ENVIRONMENTAL SUSTAINABILITY: NEW POLICY OPTIONS* 273 (Ramón López & Michael A. Toman eds., 2006).
- RAMASWAMY R. IYER, *TOWARDS WATER WISDOM: LIMITS, JUSTICE, HARMONY* (2007).
- RAMASWAMY R. IYER, *WATER: PERSPECTIVES, ISSUES, CONCERNS* (2003).
- RAY CHALLEN, *INSTITUTIONS, TRANSACTION COSTS AND ENVIRONMENTAL*

- POLICY: INSTITUTIONAL REFORM FOR WATER RESOURCES (2000).
- Rolf Künemann, *The Right to Adequate Food: Violations Related to Its Minimum Core*, in EXPLORING THE CORE CONTENT OF SOCIO-ECONOMIC RIGHTS: SOUTH AFRICAN AND INTERNATIONAL PERSPECTIVES 71 (Danie Brand & Sage Russel eds., 2002).
- S. Janakrajan, John Butterworth, Patrick Moriarty & Charles Batchelor, *Strengthened City, Marginalised Peri-Urban Villages: Stakeholder Dialogues for Inclusive Urbanisation in Chennai, India*, in PERI-URBAN WATER CONFLICTS: SUPPORTING DIALOGUE AND NEGOTIATION 51 (John Butterworth et al. eds., 2007).
- S. Janakarajan, M. Llorente and M.H. Zérah, *Urban Water Conflicts in Indian Cities: Man-Made Scarcity as a Critical Factor*, in URBAN WATER CONFLICTS: AN ANALYSIS OF THE ORIGINS AND NATURE OF WATER-RELATED UNREST AND CONFLICTS IN THE URBAN CONTEXT 91 (2006).
- S. Narain, *We All Live Downstream: Urban Industrial Growth and Its Impact on Water Systems*, in PROCEEDINGS OF THE 9TH STOCKHOLM WATER SYMPOSIUM (1999).
- SASKIA SASSEN, A SOCIOLOGY OF GLOBALIZATION (2007).
- Sheila Rai & Sanghamitra Patnaik, *Water Disputes in South Asia*, in WATER RESOURCE CONFLICTS AND INTERNATIONAL SECURITY: A GLOBAL PERSPECTIVE 132 (Dhirendra Vaipeyi ed., 2014).
- Simon Caney, *Climate Change, Human Rights and Moral Threshold*, in HUMAN RIGHTS AND CLIMATE CHANGE 69 (Stephen Humphreys ed., 2009).
- Siri Damman, *The Right to Food of Indigenous Peoples*, in FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME I: LEGAL AND INSTITUTIONAL DIMENSIONS AND SELECTED TOPICS 285 (Wenche Barth Eide & Uwe Kracht eds., 2005).
- Suresh D. Tendulkar, *Indian Economic Policy Reforms and Poverty: An Assessment*, in INDIA'S ECONOMIC REFORMS AND DEVELOPMENT: ESSAYS FOR MANMOHAN SINGH 280 (Isher Judge Ahluwalia & I.M.D. Little eds., 1997).
- THE WORLD BANK, WORLD DEVELOPMENT REPORT 2010: DEVELOPMENT AND CLIMATE CHANGE (2010).
- Thomas Nagel, *Poverty and Food: Why Charity is Not Enough*, in FOOD POLICY: THE RESPONSIBILITY OF THE UNITED STATES IN THE LIFE AND DEATH CHOICES 54 (Peter G. Brown & Henry Shue eds., 1977).

- UNITED NATIONS CHILDREN'S FUND & WORLD HEALTH ORG., DIARRHOEA: WHY CHILDREN ARE STILL DYING AND WHAT CAN BE DONE 1 (2009).
- UNITED NATIONS DEVELOPMENT PROGRAM, HUMAN DEVELOPMENT REPORT 2006: BEYOND SCARCITY: POWER, POVERTY AND THE GLOBAL WATER CRISIS (2006).
- Usha Ramanathan, *A Word on Eminent Domain*, in *DISPLACED BY DEVELOPMENT: CONFRONTING MARGINALISATION AND GENDER INJUSTICE* 133 (Lyla Mehta ed., 2009).
- Uwe Kracht, *Whose Right to Food? Vulnerable Groups and the Hungry Poor*, in *FOOD AND HUMAN RIGHTS IN DEVELOPMENT VOLUME I: LEGAL AND INSTITUTIONAL DIMENSIONS AND SELECTED TOPICS* 119 (Wenche Barth Eide & Uwe Kracht eds., 2005).

### **Journal/Articles/Papers**

- Amit Bhaduri & Arvind Kejriwal, *Urban Water Supply: Reforming the Reformers*, 40 *ECON. & POL. WKLY.*, 5543 (2005).
- Anahita Mukherji, *Growth Pangs: A Recent UN Report on Human Rights Slammed India for Its Poor Record. Why an Emerging Economy is Doing So Bad on Human Development Index*, *THE TIMES OF INDIA* (June 3, 2012, 5:43 AM), <http://timesofindia.indiatimes.com/home/sunday-times/deep-focus/Growth-pangs/articleshow/13757467.cms> (last visited May 26, 2017).
- Associated Press, *No Water in Maldives' Capital, Government Seeks Help*, *THE INDIAN EXPRESS* (Dec. 5, 2014, 6:05 PM), <http://indianexpress.com/article/world/asia/no-water-in-maldives-capital-government-seeks-help/> (last visited Aug. 27, 2016).
- Axel Michaelowa & Katharina Michaelowa, *Does Climate Policy Promote Development?*, 84 *CLIMATE CHANGE* 1 (2007).
- Benoit Mayer, *The International Legal Challenges of Climate-Induced Migration: Proposal for the International Legal Framework*, 22 *COLO. J. INT'L ENVTL. L.* 357 (2011).
- Bonnie Docherty & Tyler Giannini, *Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees*, 33 *HARV. ENVTL. L. REV.* 349 (2009).
- Carolyn Stephens, *Healthy Cities or Unhealthy Islands? The Health and Social Implications of Urban Inequality*, 8 *ENVT. & URBANIZATION* 9 (1996).

- Christian Courtis, *The Right to Food as a Justiciable Right: Challenges and Strategies*, 11 MAX PLANK Y.B. UNITED NATIONS L. 317 (2007).
- Cinnamon Carlarne, *Risky Business: The Ups and Down of Mixing Economics, Security and Climate Change*, 10 MELBOURNE J. INT'L L. 439 (2009).
- D.J. Ravindran, *Indivisibility of Human Rights: A Neglected Concept*, MAINSTREAM, October 1994, at 8.
- DAVID HODGKINSON & LUCY YOUNG, "IN THE FACE OF LOOMING CATASTROPHE": A CONVENTION FOR CLIMATE CHANGE DISPLACED PERSONS (2012), [www.ccdpconvention.com/documents/ Updated%20 treaty%20proposal.pdf](http://www.ccdpconvention.com/documents/Updated%20treaty%20proposal.pdf) (last visited Apr. 16, 2016).
- Duncan French, *Developing States and International Environmental Law: The Importance of Differentiated Responsibilities*, 49 INT'L & COMP. L.Q. 35 (2000).
- Emilie Filmer-Wilson, *The Human Rights-Based Approach to Development: The Right to Water*, 23 NETH. Q. HUM. RTS. 213 (2005).
- Guy Hutton & Jamie Bartram, *Global Cost of attaining the Millennium Development Goal for Water Supply and Sanitation*, 86 BULL. WORLD HEALTH ORG. 1, 13 (2008).
- Holly Dorms, *Adaptive management, the Endangered Species Act, and the Institutional Challenges of New Age Environmental Protection*, 41 WASHBURN L.J. 50 (2001).
- HOWARD C. KUNREUTHER & ERWANN O. MICHEL-KERJAN, CLIMATE CHANGE, INSURABILITY OF LARGE-SCALE DISASTERS AND THE EMERGING LIABILITY CHALLENGE (2006) (paper prepared for the University of Pennsylvania Law Conference on Climate Change, 16-17 November 2006, Philadelphia, PA, USA), <http://opim.wharton.upenn.edu/risk/library/06-22.pdf> (last visited May 29, 2017).
- J. B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21 (2005).
- Jean Drèze, *Democracy and Right to Food*, 39 ECON. & POL. WKLY. 1723 (2004).
- Johan Rockström, Mats Lannerstad & Malin Falkenmark, *Assessing the Water Challenge of a New Green Revolution in Developing Countries*, 104 PNAS 6253 (2007).
- John C. Coffee, Jr., *Does Unlawful Means Criminal?: Reflections on the Disappearing Tort/Crime Distinction in American Law*, 71 B.U.L. REV. 193 (1991).

- John Eyles & Ranu Sharma, *Infectious Diseases and Global Change: Threats to Human Health and Security*, 8 AVISO 1,8 (2001).
- Judson W. Starr, *Turbulent Times at Justice and EPA: The Origins of Environmental Criminal Prosecutions and the Work That Remains*, 59 GEO. WASH. L. REV. 900 (1991).
- Kathleen F. Brickey, *Environmental Crime at the Crossroads: The Intersection of Environmental and Criminal Law Theory*, 71 TUL. L. REV. 487 (1996).
- Kerstin Mechlem, *Harmonizing Trade in Agriculture and Human Rights: Options for the Integration of the Right to Food into the Agreement on Agriculture*, 10 MAX PLANK Y.B. UNITED NATIONS L. 127 (2006).
- Lalitha Kamath, Malini Ranganathan & Vinay Baidur, *Piped Water Supply to Greater Bangalore: Putting the Cart Before the Horse?*, 44 ECON. & POL. WKLY. 53 (2009).
- M. Falkenmark & M. Lannerstad, *Consumptive Water Use to Feed Humanity – Curing a Blind Spot* 9 HYDROLOGY & EARTH SYS. SCI. 15 (2005).
- Mac Darrow & Amparo Tomas, *Power, Capture and Conflict: A Call for Human Rights Accountability in Development Cooperation*, 27 HUM. RTS. Q. 471 (2005).
- Mail Today Bureau, *Delhi Faces Acute Water Shortage as Temperature Rise*, MAILONLINE (May 11, 2015, 11:26 PM), <http://www.dailymail.co.uk/indiahome/indianews/article-3077319/Delhi-faces-acute-water-shortage-temperatures-rise.html> (last visited Aug. 27, 2016).
- Malcolm Langford, *Ambition That Overlaps Itself? A Response to Stephen Tully's Critique of the General Comment on the Right to Water*, 24 NETH. Q. HUM. RTS. 433 (2006).
- Malgosia Fitzmaurice, *The Human Right to Water*, 18 FORDHAM ENVTL. L. REV. 537 (2007).
- Mallica Joshi, *Half of World's 20 Most Polluted Cities in India, Delhi in 11th Position*, HINDUSTAN TIMES (June 4, 2016, 7:57 PM), <http://www.hindustantimes.com/delhi-news/four-out-of-top-five-polluted-cities-are-in-india-delhi-not-among-them/story-Gn2htcLbESB3BpeYJ4mY8K.html> (last visited June 1, 2017).
- Melina Williams, *Privatization and Human Rights to Water: Challenges for the New Century*, 28 MICH. J. INT'L L. 469 (2007).
- Member States Lauded for Reaching Agreement on New UN Sustainable Development Agenda*, UN NEWS CENTRE (Aug. 3, 2015), <http://www.un.org/apps/news/story.asp?NewsID=51553#.VcBduZOqqko> (last visited Aug. 30, 2016).

- Michael J. Dennis & David P. Stewart, *Justiciability of Economic, Social, and Cultural Rights: Should There Be an International Complaints Mechanism to Adjudicate the Rights to Food, Water, Housing, and Health?*, 98 AM. J. INTL. L. 462 (2004).
- Mihika Chatterjee, *Food Security in India is Not Doomed After All: Evidence from the Field Shows that the Food Security Act in India Contributes to Significant Famine Alleviation*, AL JAZEERA (Nov. 11, 2013), <http://www.aljazeera.com/indepth/opinion/2013/11/food-security-india-not-doomed-after-all-20131110572633972.html> (last visited Aug. 29, 2016).
- Naren Prasad, *Privatization of Water: A Historical Perspective*, 3 L. ENV'T & DEV. J. 217 (2007).
- Oren Perez, *Using Private-Public Linkages to Regulate Environmental Conflicts: The Case of International Construction Contracts* 29 J. L. & SOC. 84 (2002).
- Oxfam Int'l, *Climate Wrongs and Human Rights: Putting People at the Heart of Climate Change Policy*, OXFAM BRIEFING PAPER, September 2008, at 117.
- Parmanand Singh, *Hunger Amidst Plenty: Reflection on Law, Poverty and Governance* 48 J. INDIAN L. INST. 57 (2006).
- Parmanand Singh, *The Epistemology of Human Rights: A Theoretical Study*, 57 J. INDIAN L. INST. 4, 5 (2015).
- Peter Rogers, Radhika de Silva, & Ramesh Bhatia, *Water is an Economic Good: How to Use Prices to Promote Equity; Efficiency; and Sustainability*, 4 WATER POL'Y 1 (2002).
- Philippe Cullet, *Rethinking the Right to Water to Ensure Its Realisation for All*, 54 J. Indian L. Inst. 27 (2012).
- Prakash Sharma, *Climate Change and ESTs: In Context with International Legal Framework of IPRs and Technology Transfer*, 3 NUSRL J.L. & POL'Y (forthcoming July 2017).
- Prakash Sharma, *Does Privatization Serve the Public Interest? An Assessment of the Risks and Benefits of Prison Privatization*, 3 LEXIGENTIA 80 (2016).
- Prakash Sharma, *Managing Correctional Market: Constitutional Limitations on Privatization of Government Functions*, 71-72 DIGNITAS 55-76 (2016).
- Press Release, Secretary-General, The Biggest Enemy of Health in Developing World is Poverty, Secretary General Tells World Health Assembly, U.N. Press Release SG/SM/7808 (May 17, 2001), <http://www.un.org>.

- org/News/Press/docs/2001/sgsm7808.doc.htm (last visited Aug. 26, 2016).
- Press Trust of India, *50 pc Cut in Power Tariff, Free Wifi, Water Among AAP Promises*, THE INDIAN EXPRESS, (Jan. 31, 2015, 8:34 PM), <http://indianexpress.com/article/cities/delhi/50-pc-cut-in-power-tariff-free-wifi-water-among-aap-promises> (last visited Aug. 25, 2016).
- R. Krishnakumar, *Plachimada Loss*, 22 FRONTLINE, no. 9, Apr. 23-May 6, 2005.
- R. Maria Saleth & Ariel Dinar, *Institutional Changes in Global Water Sector: Trends, Patterns, and Implications*, 2 WATER POL'Y 175 (2000).
- RE: *World Says YES to Food Security in South, WTO Says No*, THIRD WORLD NETWORK (referring to the article that was initially published in South-North Development Monitor), <http://www.twn.my/title2/susagri/2015/sa392.htm> (last visited Aug. 29, 2016).
- Richard Conniff, *California Desert in Disguise*, NAT'L GEOGRAPHIC, Nov. 1993, at 38.
- Richard J. Lazarus, *Meeting the Demands of Integration in the Evolution of Environmental Law: Reforming Environmental Criminal Law*, 83 GEO. L.J. 2407 (1995).
- Richard P. Hiskes, *The Right to a Green Future: Human Rights, Environmentalism and Intergenerational Justice*, 27 HUM. RTS. Q. 1346 (2005).
- Robert E. Robertson, *Measuring State Compliance with the Obligation to Devote the "Maximum Available Resources" to Realizing Economic, Social, and Cultural Rights*, 16 HUM. RTS. Q. 693 (1994).
- Roopa Madhav, *Tirupur Water Supply and Sanitation Project: An Impediment to Sustainable Water Management?* (Int'l Env'tl. Law Research Ctr., Working Paper No. 2008-01, 2008), <http://www.ielrc.org/content/w0801.pdf> (last visited Aug. 23, 2016).
- Simon Maxwell & Rachel Slater, *Food Policy Old and New*, 21 DEV. POL'Y REV. 531 (2003).
- Shobha Shukla, *Should India Sacrifice Agriculture for Trade?*, RELIEFWEB (Sept. 21, 2014) (referring to the article that was initially published in Citizen News Service), <http://reliefweb.int/report/india/should-india-sacrifice-agriculture-trade> (last visited Aug. 29, 2016).
- Smita Narula, *The Right to Food: Holding Global Actors Accountable Under International Law*, 44 COLUM. J. TRANSNAT'L L. 691 (2006).
- STEFANO BURCHI, BALANCING DEVELOPMENT AND ENVIRONMENTAL

CONSERVATION AND PROTECTION OF THE WATER RESOURCE BASE—THE “GREENING” OF WATER LAWS (2007) (paper presented at the workshop ‘Legal Aspects of Water Sector Reforms,’ April 20-21, 2007), [www.ielrc.org/activities/workshop\\_0704/content/d0706.pdf](http://www.ielrc.org/activities/workshop_0704/content/d0706.pdf) (last visited Aug. 18, 2016).

Sudheendra Kulkarni, *The Flowers of Papa Francesco*, OUTLOOK (Aug. 3, 2015), <http://www.outlookindia.com/magazine/story/the-flowers-of-papa-francesco/294917> (last visited June 1, 2017).

*UN Chief Welcomes Climate Change Plan Unveiled by President Obama*, UN NEWS CTR. (Aug. 3, 2015), <http://www.un.org/apps/news/story.asp?NewsID=51554#.VcBk-pOqqko> (last visited Aug. 25, 2016).

Upendra Baxi, *Taking Suffering Seriously: Social Action Litigation in the Supreme Court of India*, 4 THIRD WORLD LEGAL STUD. 107 (1985).

V.R. Krishna Iyer, *Plachimada Right*, 22 FRONTLINE, no. 16, July 30-Aug. 12, 2005.

Violeta Petrova, *All the Frontiers of the Rush for Blue Gold: Water Privatization and the Human Right to Water*, 31 BROOK. J. INT’L L. 577 (2006).

Zack Guzman, *The California Drought is Even Worse Than You Think*, CNBC (Jul. 16, 2015, 12:39 PM), <http://www.cnbc.com/2015/07/16/the-california-drought-is-even-worse-than-you-think.html> (last visited Aug. 27, 2016).