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# **GROUNDWATER LAW IN INDIA TOWARDS A FRAMEWORK ENSURING EQUITABLE ACCESS AND AQUIFER PROTECTION**

Philippe Cullet

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# GROUNDWATER LAW IN INDIA

## Towards a Framework Ensuring Equitable Access and Aquifer Protection

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### INTRODUCTION

Groundwater use in India has dramatically increased over the last few decades and it is now the backbone of India's food security and drinking water security. Since 1970, an overwhelming majority (80 percent) of the total addition to the net irrigated area has come from groundwater, ensuring that it accounts by now for around 60 percent of irrigation water use and is the only source of irrigation for the poorest farmers.<sup>1</sup> Groundwater is also the source of about 80 percent of drinking water needs.<sup>2</sup> As a result, India has become the world's biggest user of groundwater.<sup>3</sup>

The rapidly growing number of groundwater extraction structures (estimated at 30 million) coupled with their increasing abstraction power has created a situation where groundwater is exploited beyond dynamic resource availability.<sup>4</sup> In addition to quantitative depletion, many parts of India report severe water quality problems, causing drinking water vulnerability. Critical issues include arsenic contamination in the Ganga basin, higher levels of fluoride in many states and salinity in coastal states.<sup>5</sup> Overall, nearly 60 percent of all districts in India have problems related either to quantitative availability or to quality of groundwater or both.<sup>6</sup>

Existing groundwater regulation is focused mostly on allocation. Further, the rules concerning allocation are linked to land, thus giving groundwater law a strong property focus. This has become problematic in the context of the increasing use and growing importance of

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<sup>1</sup> PS Vijay Shankar, Himanshu Kulkarni & Sunderrajan Krishnan, 'India's Groundwater Challenge and the Way Forward' (2011) 46/2 *Economic & Political Weekly* 37 and Aditi Mukherji, Stuti Rawat & Tushaar Shah, 'Major Insights from India's Minor Irrigation Censuses: 1986-87 to 2006-07' (2013) 48/26-27 *Economic & Political Weekly* 115.

<sup>2</sup> Planning Commission, *Twelfth Five Year Plan (2012–2017) – Faster, More Inclusive and Sustainable Growth – Volume 1* (Government of India 2012) 145. This can be compared with the United States where groundwater only accounts for 20 percent of water use. Joan Kenny and others, *Estimated Use of Water in the United States in 2005* (US Geological Survey 2009) 4.

<sup>3</sup> eg World Water Assessment Programme, *The United Nations World Water Development Report 4: Managing Water Under Uncertainty and Risk* (UNESCO 2012) 85.

<sup>4</sup> *ibid* 154 and Tushaar Shah, *Taming the Anarchy – Groundwater Governance in South Asia* (Routledge 2010) 127.

<sup>5</sup> Shankar, Kulkarni & Krishnan (n 1) 40.

<sup>6</sup> Planning Commission (n 2) para 5.46.

groundwater. Indeed, the current framework is essentially incapable of providing the basis for protection measures at aquifer level. Further, the focus on allocation by individual landowners makes it difficult to ensure that drinking water is given the prominence it deserves, something that has become primordial in the context of the recognition of the human right to water.

This article argues that Indian groundwater law must be reconceived around a new set of principles and priorities. It also shows that the Planning Commission of India's Groundwater Model Bill 2011 (Groundwater Model Bill 2011) largely adopts the proposed new framework.<sup>7</sup> Firstly, groundwater law must move away from the focus on the link between land ownership and control over groundwater. In a context where groundwater is the main source of water for most water uses, it must be conceived as a common resource and the legal framework must be reconceived around new principles that promote equity in access, such as the principle of public trust. This also provides an avenue for addressing all water with the same principles since surface water is already recognised as a public trust. Secondly, governance of this common resource needs to recognise the often very localised nature of the issues that must to be addressed. The principles for regulation must thus be decentralisation and subsidiarity to ensure that local issues are given priority while not preventing macro-management where it is needed. Thirdly, groundwater law must be centred on the recognition that it is the central water body for the realisation of the human right to water. This implies not only making the link at the broadest level between the fundamental right and groundwater but also ensuring that there is comprehensive regulation of drinking water in all its aspects, including for instance quality issues. Fourthly, the protection of groundwater and aquifers must become a central component of groundwater regulation. This may seem obvious from an environmental standpoint but in the context of groundwater, existing rules are completely oblivious to the need for managing the resource at aquifer level.

This article starts by outlining the basic framework for underlying access to and use of groundwater inherited from the nineteenth century and the limited reforms that have taken place over the past four decades. It also analyses the shortcomings of the traditional rules and reform efforts. The second section outlines the bases of a new conceptual framework for groundwater regulation, informed both by the limitations of the existing groundwater rules and legal developments in the past few decades. The third section moves on to analyse the Groundwater Model Bill 2011, an instrument that largely reflects the conceptual framework proposed in the previous section. It highlight some of the key points that make it a template for the adoption of socially equitable and environmentally sustainable groundwater legislation and emphasises some of the provisions introduced to ensure that it has the capacity to make a real difference when it is implemented.

## **I. GROUNDWATER RULES AND LEGISLATION: INAPPROPRIATE AND LIMITED**

This section starts by introducing the basic framework governing allocation of groundwater in India. This should be well settled since the basic rules have not changed since the nineteenth century. Yet, a restatement of the basic rules is needed because scholarship has

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<sup>7</sup> Model Bill for the Conservation, Protection and Regulation of Groundwater 2011, in Planning Commission, *Report of the Steering Committee on Water Resources and Sanitation for Twelfth Five Year Plan* (Government of India 2012) 154 [hereafter Groundwater Model Bill 2011].

often assumed that groundwater rights are easements.<sup>8</sup> Further, these rules still play a central role today, since the limited reforms that have taken place since the 1970s have not altered them, failing in the process to reflect that the introduction of large-scale mechanised pumping had entirely changed the basis on which older rules were developed. The analysis of the basic rules of groundwater allocation provides the basis for examining the proposed reforms, partly implemented over the past few decades, and the identification of the shortcomings of the current legal framework.

## A. BASIC GROUNDWATER RULES – INTRINSIC LINK WITH LAND OWNERSHIP

Rules governing control over, and access to, groundwater in India are largely derived from English cases.<sup>9</sup> This simple statement hides a more complex situation due to the fact that the main statutory mention of groundwater rights is found in the Indian Easements Act 1882.<sup>10</sup> As a result, scholars have often referred mostly to the easements legislation when discussing groundwater rights,<sup>11</sup> even though ‘the right in groundwater can by no means be defined as an easement’.<sup>12</sup> It is thus crucial to restate the basic principles governing groundwater allocation as developed in the case law since this is the main source for understanding the current legal position.

The main rules for groundwater allocation were established in the context of disputes related to the use of land for mining or other industrial activities. The first thing that English courts did in the nineteenth century was to assert that groundwater should be treated differently from surface water. This was confirmed in *Chasemore v Richards* where the court determined that water ‘percolating through underground strata, which has no certain course, no defined limits, but which oozes through the soil in every direction in which the rain penetrates’ is not subject to the same rules as flowing water in streams or rivers.<sup>13</sup>

In a context where groundwater and surface water were seen as distinct, courts defined a different set of rights applicable to groundwater. These were not derived from existing rules for surface water that imposed significant restrictions on the powers of landowners to appropriate water flowing past their land. Rather, judges gave landowners virtually limitless control over groundwater. In *Acton v Blundell*, the court thus ruled that

the person who owns the surface may dig therein, and apply all that is there found to his own purposes at his free will and pleasure; and that if, in the exercise of such right, he intercepts or drains off the water collected from underground springs in his neighbour’s well, this inconvenience to his neighbour falls within the description of *damnum absque injuria*, which cannot become the ground of an action.<sup>14</sup>

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<sup>8</sup> eg Planning Commission, *Ground Water Management and Ownership – Report of the Expert Group* (Government of India 2007) 16 stating that ‘[t]he right to groundwater in India is, as in many other legal cultures, seen as following the right to land. The source usually referred to in support of this is the Indian Easements Act 1882’.

<sup>9</sup> eg NS Soman, ‘Legal Regime of Underground Water Resources’ (2008) Cochin ULR 147.

<sup>10</sup> Indian Easements Act 1882, s 7.

<sup>11</sup> eg Héctor Garduño and others, *India Groundwater Governance – Case Study* (World Bank 2011) 13.

<sup>12</sup> MS Vani, ‘Groundwater Law in India: A New Approach’ in Ramaswamy Iyer (ed), *Water and the Laws in India* (Sage 2009) 435, 444.

<sup>13</sup> [1859] 7 HLC 349, 374.

<sup>14</sup> [1843] 152 ER 1223, 1235.

Similarly, in *Chasemore v Richards*, the court found that the right of the owner of a mill using spring water had no action against other landowners abstracting groundwater to the extent of affecting his own use of the water. The reason was that the judges determined that such a right would ‘interfere with, if not prevent, the draining of land by the owner’.<sup>15</sup> One of the few limitations to have been placed on the rights of landowners concerns the case where groundwater cannot be accessed without touching surface water in a defined surface channel. In this case, the landowner is then barred from accessing it.<sup>16</sup>

The basic principles highlighted here did not apply in all situations. Indeed, the case law of the nineteenth century made a distinction between percolating groundwater and groundwater flowing in defined channels. Where groundwater was found to flow in defined channels, the rules applicable to surface water would also apply. This meant that the right of the landowner was then limited to use and consumption for household and drinking purpose, for watering their cattle and for irrigating their land or for purposes of manufacture.<sup>17</sup>

The application of the concept of defined channel to groundwater proved to be difficult because until the past few decades it was not easy to ascertain the existence of underground defined channels. It was nevertheless applied in several cases related to groundwater. Firstly, in the context of a river running a few inches below its natural bed in the dry season, judges determined already in 1930 that ‘it was safe to say’ that the water flowing down the river bed had a defined course.<sup>18</sup> Secondly, in a case where a landowner had built an underground trench taking off from a point fourteen feet away from the outlet of a spring, it was held that while this was not the actual water of the spring, ‘there can be little doubt that there must be a direct channel between the top of the drain and the outlet’ and there was thus no need for the channel to be ‘known’ through excavation to apply the rules concerning defined channels.<sup>19</sup>

On the whole, the rules developed were based on the limited scientific understanding of groundwater at the time, aptly summarised by a US judge who found that groundwater was a thing ‘concealed and hidden in the bowels of the earth’.<sup>20</sup> Yet, developments concerning the concept of defined channel confirm that judges were from the start ambivalent about the legal status of groundwater. Indeed, where a flow of groundwater could be identified, judges were not averse to restricting the rights of landowners over groundwater. There was thus potential in the concept of defined channel for progressively updating groundwater rules in light of evolving scientific understanding. Yet, this inbuilt reform potential contained in the early case law was not used by later judges and the basic framework thus remains unchanged to-date.<sup>21</sup>

## **B. EARLY REFORM ATTEMPTS – BUILDING ON TRADITIONAL RULES**

The limitations of the groundwater allocation rules put in place in the nineteenth century became increasingly visible in the decades after independence with the introduction of large-

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<sup>15</sup> [1859] 7 HLC 349, 371.

<sup>16</sup> *Grand Junction Canal Company v Shugar* [1870-71] LR 6 Ch App 483.

<sup>17</sup> BB Katiyar, *Law of Easements and Licences* (13<sup>th</sup> edn, Universal Law Publishing 2010) 797.

<sup>18</sup> *Malyam Patel Basavana Gowd (dead) v Lakka Narayana Reddi* AIR 1931 Mad 284 (High Court of Madras 1930).

<sup>19</sup> *Babaji Ramling Gurav v Appa Vithavja Sutar* AIR 1924 Bom 154 (High Court of Bombay 1923).

<sup>20</sup> *Frazier v Brown* 12 Ohio St 294, 302 (1861).

<sup>21</sup> A similar pattern can be noticed in the US where Joseph Dellapenna, ‘A Primer on Groundwater Law’ (2013) 49 Idaho L Rev 265, 268 finds that courts ‘were reluctant to change the rules to bring them into conformity with later scientific knowledge’.

scale mechanised pumping in the 1960s. This led to a dramatic increase in groundwater extraction which, in turn, resulted in falling water tables in many parts of the country.<sup>22</sup> This forced the government to take a more active interest in the regulation of groundwater.

In response to what was turning out to be a rapid but unregulated introduction of tubewell technology,<sup>23</sup> and in the absence of initiative by the states, the Government of India prepared in 1970 a Model Bill to Regulate and Control the Development and Management of Ground Water (Groundwater Model Bill 1970/2005) for adoption by the states. The model law form was chosen for the flexibility it provides, since it offers a framework that can be adapted to the need and situation of individual states. Further, it ensures a degree of harmonisation within the federal state, even though states are not formally bound to adopt it. The Groundwater Model Bill 1970/2005 was revised several times (1974, 1992, 1996 and 2005) but the basic scheme adopted in 1970 was retained. States took time in responding to this initiative of the central government. On the one hand, a few states took the lead in adopting groundwater legislation specifically focused on drinking water.<sup>24</sup> On the other hand, the majority of states that have legislated have done so since the beginning of the century.<sup>25</sup>

The basic scheme of the Groundwater Model Bill 1970/2005 is to provide for the establishment of a groundwater authority under the direct control of the government. The authority is given the right to notify areas where it is deemed necessary to regulate and control the development and management of groundwater. The respective state government takes the final decision.<sup>26</sup> This scheme excludes public participation or decision-making by locally elected bodies of governance, a crucial deficiency given that groundwater is primarily a local resource that needs to be managed locally according to the principle of subsidiarity. In any notified area, every user of groundwater must apply for a permit from the authority, unless the user only proposes to use a handpump or a well from which water is drawn manually.<sup>27</sup> Wells need to be registered even in non-notified areas.<sup>28</sup> Decisions of the authority in granting or denying permits are based on a number of factors, which include technical factors such as the availability of groundwater, the quantity and quality of water to be drawn, and the spacing between groundwater structures.<sup>29</sup> The authority is also mandated to take into account the purpose for which groundwater is to be drawn but the model bill does not *per se* prioritize domestic use of water over other uses.<sup>30</sup> Basic drinking water needs are indirectly considered since, even in notified areas, hand-operated devices do not require a permit.<sup>31</sup>

The states/Union Territories (UTs) that have adopted groundwater legislation have generally followed the structure of the Groundwater Model Bill 1970/2005. Some adaptation can be

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<sup>22</sup> eg Planning Commission (n 8) 4.

<sup>23</sup> eg BD Dhawan, 'Economics of Groundwater Utilisation: Traditional versus Modern Techniques' (1975) 10/25-26 Economic & Political Weekly A31, A39.

<sup>24</sup> Madhya Pradesh peya jal parirakshan adhiniyam 1986. Other states that have drinking water-specific groundwater legislation are: Karnataka Ground Water (Regulation for Protection of Sources of Drinking Water) Act 1999 and Maharashtra Ground Water Regulation (Drinking Water Purposes) Act 1993.

<sup>25</sup> These include Andhra Pradesh, Bihar, Goa, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu and West Bengal. The following Union Territories have also adopted groundwater legislation: Chandigarh, Dadra and Nagar Haveli, Lakshadweep and Puducherry.

<sup>26</sup> Model Bill to Regulate and Control the Development and Management of Ground Water 2005, s 5.

<sup>27</sup> *ibid* s 6.

<sup>28</sup> *ibid* s 8.

<sup>29</sup> *ibid* s 6(5).

<sup>30</sup> *ibid* s 6(5)(a) only provides that the purpose has to be taken into account while s 6(5)(h), which is the only sub-section referring to drinking water, only considers it as an indirect factor.

<sup>31</sup> *ibid* s 6(1).

seen in the different acts that have been adopted but this remains limited and the basic framework of the model legislation is not affected. Some of the changes that can be identified concern, for instance, the scope of the legislation with some acts applying only to notified areas while other apply to all groundwater.<sup>32</sup> Andhra Pradesh has gone further than other states in putting its groundwater legislation in a broader framework that directly links surface and groundwater in a general context of environmental conservation.<sup>33</sup> Other differences can be noted at the level of the composition of the institution set up at the state level with, for instance, a varying balance between civil servants and other members.<sup>34</sup> On the whole, these changes are limited and do not strengthen the reform potential of these acts.

### **C. SHORTCOMINGS OF THE EXISTING GROUNDWATER RIGHTS FRAMEWORK AND LEGISLATION**

The traditional groundwater allocation framework, the Groundwater Model Bill 1970/2005 and related state legislation do not constitute an appropriate framework for regulating groundwater in a socially equitable and environmentally sustainable manner. This section highlights some of the shortcomings of the existing framework. It examines first the limitations of the rights framework developed in the case law and then moves on to analyse the regulatory scheme proposed in the Groundwater Model Bill 1970/2005.

#### **1. Groundwater Allocation – Shortcomings of the Traditional Framework**

Existing groundwater allocation rules give a preponderant place to the link between land ownership and access to groundwater. Several reasons explain the need for a new conceptual framework for groundwater law. Firstly, the existing set of rules governing groundwater allocation is outdated. It is not in tune with the current scientific understanding of the connection between surface and groundwater. Current rules are based on the idea that the two bodies of water are largely unconnected and can hence be regulated separately. This needs to be revisited in view of the dramatic evolution of hydrology over the past century.<sup>35</sup> The legal framework is also dated because it does not reflect the significant qualitative and quantitative changes in groundwater use that have taken place over the past five decades.

This lack of evolution could be simply ascribed to the fact that law tends to lag behind scientific developments. In this case, however, judges have had the benefit of improved scientific knowledge for nearly a century and a reflection of this would have been expected in the case law. This state of affairs is not necessarily surprising in comparative perspective. Indeed, in England, the basic rules of allocation established in *Chasemore v Richards* were confirmed up to at least the late 1980s.<sup>36</sup> In the United States, even though the majority of

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<sup>32</sup> For the former, Kerala Ground Water (Control and Regulation) Act 2002 and for the latter West Bengal Ground Water Resources (Management, Control and Regulation) Act 2005.

<sup>33</sup> Andhra Pradesh, Act to Promote Water Conservation, and Tree Cover and Regulate the Exploitation and Use of Ground and Surface Water for Protection and Conservation of Water Sources, Land and Environment and Matters, Connected Therewith or Incidental Thereto 2002.

<sup>34</sup> In Goa, the act simply authorizes the government to nominate members without specifying their origin. Goa Ground Water Regulation Act 2002, s 3(2). In Kerala, only four of the thirteen members of the Authority are civil servants while the rest is made of a combination of people with different expertise. Kerala Ground Water (Control and Regulation) Act 2002, s 3(3).

<sup>35</sup> eg Marios Sophocleus, 'Interactions Between Groundwater and Surface Water: The State of the Science' (2002) 10/1 Hydrogeology Journal 52.

<sup>36</sup> *Stephens v Anglian Water Authority* [1987] 3 All ER 379, 384, CA.

states have abandoned these principles, they survive in some states, most strongly in Texas.<sup>37</sup> Within India, a change of legal framework has only been considered in one dispute concerning a bottling plant of the Coca Cola Company in Plachimada, Kerala. The first decision of the High Court of Kerala recognised that the present legal framework was inappropriate and the single judge determined that groundwater should be considered as a public trust.<sup>38</sup> Yet, on appeal, a two-judge bench of the same court reversed this finding and ruled that there is a need to ‘assume that a person has the right to extract water from his property unless it is prohibited by a statute. Extraction thereof cannot be illegal’.<sup>39</sup> On the whole, changes initiated by judges amount to relatively little, as confirmed recently in a case concerning children falling in wells, where the Supreme Court usefully directed the government to strengthen its capacity to oversee the construction of borewells but did not place this within the broader context of the need to reform groundwater law.<sup>40</sup> This thus calls for searching for alternative routes for introducing the necessary reforms.

Secondly, groundwater allocation rules in place are not suited for India as a whole. The fact that existing rules directly derive from English case law is not surprising since the rules were developed in the nineteenth century. What is more surprising is that the rules were never adapted to the vastly different climatic conditions prevailing in India, whose climate includes arid and semi-arid tropical areas, tropical and subtropical rainy areas with only a small part of the country having climate conditions comparable to England.<sup>41</sup> Further, these rules were never adapted to the completely different patterns of water use, for instance with regard to irrigation accounting for the overwhelming share of water use.

Interestingly, the inappropriateness of the rules for conditions prevailing in large parts of India was already recognised during colonial times. Thus, in a 1930 groundwater case, Justice Wallace determined that ‘my considered view is that conditions in England are so different to those in the district of Bellary that I deprecate calling in aid English law on this subject and confess that I do not myself find it of any assistance here’.<sup>42</sup> This early statement against English rules did not, however, lead to any real change in the basic legal framework. This is all the more surprising in a context where alternatives were developed in some parts of the United States from the beginning of the twentieth century. Thus, in California, the Supreme Court adopted the theory of correlative rights that ‘limits the right of others to such amount of water as may be necessary for some useful purpose in connection with the land from which it is taken’.<sup>43</sup> While this remains focused on allocation and does not consider social and environmental dimensions of groundwater regulation, it shows that progressive development of rules of access to groundwater by courts to reflect local conditions was possible.

Thirdly, the current groundwater rights framework that links access to water and land ownership indirectly assumes that it is only landowners that have a stake in groundwater

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<sup>37</sup> Joseph Dellapenna, ‘The Rise and the Demise of the Absolute Dominion Doctrine for Groundwater’ (2013) 35 U Arkansas Little Rock LR 291.

<sup>38</sup> *Perumatty Grama Panchayat v State of Kerala* 2004(1) KLT 731 (High Court of Kerala 2003). On the public trust, see below at p 11.

<sup>39</sup> *Hindustan Coca-Cola Beverages v Perumatty Grama Panchayat* 2005(2) KLT 554 (High Court of Kerala 2005) para 35. The only concession made was to set an upper limit of 500’000 litres per day (para 53). Note that an appeal is pending in the Supreme Court.

<sup>40</sup> *In Re: Measures for Prevention of Fatal Accidents of Small Children Due to their Falling into Abandoned Bore Wells and Tube Wells v Union of India* (Supreme Court of India, Order of 11 February 2010). Any further details on availability?

<sup>41</sup> eg SD Attri and Ajit Tyagi, *Climate Profile of India* (India Meteorological Department 2010).

<sup>42</sup> *Gowd v Reddi* (n 18) para 8.

<sup>43</sup> *Leah J Katz v Margaret D Walkinshaw* 141 Cal 116, 134 (1903).

management. This is problematic because landless groundwater users derive no benefit from the rules in place, even where groundwater is their main source of drinking and livelihood water. There was never any justification for excluding the more than 30 percent of the population that does not own any land from the purview of groundwater rights.<sup>44</sup> The rapidly increasing importance of groundwater as a source of domestic and irrigation water has made this problem even more salient. This is compounded with the fact that well ownership is clearly skewed in favour of bigger landlords.<sup>45</sup>

Fourthly, the existing legal framework suffers from an inbuilt inability to provide the basis for effective protection of groundwater. This is linked to the atomised form of regulation that is proposed whereby the legal regime limits itself at administering the respective claims of different landowners. In a context where applicable rules put virtually no restrictions on the amount of water landowners can appropriate, they do not provide the basis for linking groundwater use with sustainability of land use. This is illustrated by a case where groundwater was at the centre of a dispute involving the division of a piece of land where a single well was found in the part remaining with the original owner. The court ruled that in the absence of a clear stipulation providing for access to the well, the new owners had not acquired such a right.<sup>46</sup> The case focused entirely on the issue of the source of groundwater and landowners' claims to the same, rather than on the resource itself and the uses to which the groundwater might be put or the necessity of access to groundwater for reasonable use of the land acquired.

More broadly, existing rules also preclude the adoption of any effective measures for the protection of the aquifer level. This is due to the fact that landowners do not have to submit to broader aquifer-level protection measures. There is thus neither any framework for cooperation among landowners sharing an aquifer nor any basis for local bodies of democratic governance to take measures for the protection of the common resource and its multiple shared benefits.

## **2. Groundwater Model Bill 1970/2005 – A Failed Reform Model**

The previous sub-section has outlined the basic deficiencies in the legal framework inherited from the nineteenth century. On this basis, one would expect any intervention by the government to aim at introducing significant reforms to the existing legal framework.

At a general level, the Groundwater Model Bill 1970/2005 reflected an understanding of the need to address a perceived problem before it turned into a crisis. In 1970, it was a welcome call to states to start taking groundwater regulation much more seriously. At the same time, the framework conceived in 1970 did not address some of the most crucial problems identified. Further, it is now dated. Groundwater challenges are much more serious than they were a few decades ago and the legal framework that informs the adoption of groundwater regulation has evolved significantly since 1970. Several specific limitations of the Groundwater Model Bill 1970/2005 can be highlighted:

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<sup>44</sup> Note that while, according to National Sample Survey Organization figures, 31.12% households do not own any land, a further 29.82% of households are nearly landless, owning on average less than 0.4 hectare. See Draft National Land Reforms Policy, 2013, p 3.

<sup>45</sup> While 37% of large farmers own wells, the figure is of only 6% for marginal farmers. M Dinesh Kumar & OP Singh 'Groundwater Socio-Ecology of India – A Strategic Analysis' in M Dinesh Kumar with contributions from OP Singh, *Groundwater Management in India – Physical, Institutional and Policy Alternatives* (Sage 2007) 35, 63.

<sup>46</sup> *Gurubilli Sreeramulu v Joga Verrodu* 2001(3) ALD 367 (High Court of Andhra Pradesh 2001).

Firstly, the Groundwater Model Bill 1970/2005 failed to address the problems caused by the link between control over groundwater and land ownership. This made it incapable of proposing a regulatory scheme that went beyond the existing atomised regulation in favour of regulation at an aquifer level. Further, this stopped it from moving towards water regulation based on the unitary nature of water and the need to have similar basic principles for surface water and groundwater regulation.

Secondly, the Groundwater Model Bill 1970/2005 extended the state's control over the use of groundwater through the registration of sources of groundwater and the introduction of permits for groundwater extraction in regions where it was over-exploited. Yet, it failed to tackle existing overuse of groundwater since it provided in effect for the grandfathering of existing uses by only requiring the registration of such uses.<sup>47</sup> This implied that in situations where there was already existing water scarcity, it did not provide an effective basis for controlling existing overuse of groundwater and would provide, at most, a basis for ensuring more sustainable use in the future. It also failed to move beyond issues of appropriation and did not cover in any detailed or effective manner the increasingly significant issue of groundwater quality.

Thirdly, the institutional framework for groundwater proposed by the Groundwater Model Bill 1970/2005 failed to provide a single institution with a general mandate to look after groundwater in all its dimensions. Alternatively, it failed to ensure coordination between the different institutions that had a mandate or the capacity to address groundwater use and conservation, such as pollution control boards and groundwater authorities. The framework was also intrinsically top-down in its approach. It focused on the establishment of a state-level institution, the State Groundwater Authority,<sup>48</sup> but had no provision for any institutional presence at the panchayat,<sup>49</sup> block or district level in rural areas or municipal level in urban areas.<sup>50</sup>

On the whole, the Groundwater Model Bill 1970/2005 constituted a first step in regulating groundwater more effectively than what could be achieved through the rules developed in the case law. Yet, since it did not tackle the main underlying issues, it was bound to fail as a reform instrument. This is indeed the conclusion reached by the Planning Commission that found that the 'model groundwater legislation is simply not adequate to deal with the steadily worsening situation that we face'.<sup>51</sup>

## **II. NEW CONCEPTUAL FRAMEWORK FOR GROUNDWATER REGULATION**

The analysis carried out in the previous section has shown that the present legal framework for groundwater in India is inappropriate. There is thus a need to transform the basic legal

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<sup>47</sup> Model Bill to Regulate and Control the Development and Management of Ground Water 2005, s 7.

<sup>48</sup> *ibid* ss 3 & 2(2).

<sup>49</sup> Panchayats are defined at art 243(d) of the Constitution of India as institutions of self-government for the rural areas.

<sup>50</sup> Note that the West Bengal Ground Water Resources (Management, Control and Regulation) Act 2005, s 4 provides the possibility (not the obligation) to set up of district level groundwater resources development authorities.

<sup>51</sup> Planning Commission, *Mid-Term Appraisal – Eleventh Five Year Plan 2007-2012* (OUP 2011) para 21.52.

regime relating to groundwater.<sup>52</sup> This is a complex task because any change must be conceived in view of the fact groundwater directly affects the lives and livelihoods of millions of people, is the main source of irrigation, and is an increasingly important input for industrial activities.

At the same time, several factors confirm the need for radical changes to ensure that the situation does not worsen further in the future. Firstly, the more groundwater is over-exploited, the more there will be scope for conflicts among users. Secondly, the protection of aquifers and the conservation of groundwater are of tremendous importance in a context of falling water tables. This cannot be achieved in a context where individual landowners yield most control over the water. Thirdly, groundwater now fulfils a primary function in the realisation of the human right to water. This human rights and social dimension requires intervention to ensure that every person is provided sufficient clean basic water.<sup>53</sup>

A new legal framework for groundwater must be informed by the shortcomings of the present regime and the new context within which groundwater use and protection needs to be conceived. This includes taking into account the changing patterns of groundwater use, as well as the changes that have taken place in other areas of law directly linked to groundwater. This is in particular the case with regard to environmental law that already includes measures for groundwater protection. Indeed, the main institution concerned with groundwater at the federal level, the Central Groundwater Authority, was set up under the Environment (Protection) Act 1986.<sup>54</sup>

The need for amending the basic tenets of groundwater law must also be linked to the development of broader legal instruments that can provide a more comprehensive regulation of groundwater than what exists today with its atomised regulation. There is thus a need for legislation in this sector to ensure that the various dimensions of groundwater can be taken into account. In a context where social scientists have sometimes argued that groundwater legislation is an inappropriate response to existing problems because it cannot be effectively enforced and is of little practical value in an Indian context,<sup>55</sup> it is crucial to propose not only new basic legal principles but also to examine the way in which they can be articulated in legislation. With this in mind, this section examines some of the basic tenets of the legal framework that need to be integrated in a new groundwater legal regime. The next section builds on this analysis by examining the Groundwater Model Bill 2011 that encapsulates most of the principles proposed in this section and puts them in a form that can be implemented at the state level.

## **A. RECOGNISING THE SHARED NATURE OF GROUNDWATER – MOVING AWAY FROM INDIVIDUAL APPROPRIATION**

The link between land and groundwater has been, and remains, strong. At the same time, the link is much more tenuous than what was thought in the nineteenth century and this needs to

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<sup>52</sup> cf Planning Commission (n 8) 41 arguing that ‘no change in [the] basic legal regime relating to groundwater seems necessary’.

<sup>53</sup> For a definition of ‘basic water’, see KJ Joy & Suhas Paranjape, ‘Water Use: Legal and Institutional Framework’ in Ramaswamy Iyer (ed), *Water and the Laws in India* (Sage 2009) 213, 221.

<sup>54</sup> Ministry of Environment and Forests, Gazette Notifications SO38 and SO1024 of 14 January 1997 and 6 November 2000.

<sup>55</sup> eg Tushaar Shah and others, ‘Groundwater Governance Through Electricity Supply Management: Assessing an Innovative Intervention in Gujarat, Western India’ (2008) 95 *Agricultural Management* 1233, 1241 and BD Dhawan, ‘Management of Groundwater Resource: Direct versus Indirect Regulatory Mechanisms’ (1987) 22/36-37 *Economic & Political Weekly* 1553.

be reflected in a new legal status for groundwater. Indeed, a regulatory framework that does not recognise the aquifer-wide impacts that individual groundwater uses have is bound to fail in the long term, both in terms of equitable access to water by all persons sharing an aquifer and in term of the long-term protection of the aquifer.<sup>56</sup> In addition, the changing nature of groundwater use has made it impossible to justify handing control over the resource to individual landowners, in a context where it serves a primary function in fulfilling the human right to water, is the primary source of irrigation and a key component of sustainable ecosystem management.

A new legal regime for groundwater must thus start by breaking the intrinsic link between land rights and groundwater. Delinking land and groundwater can be achieved in two distinct ways. Firstly, delinking can be proposed as a way to allow the trading of water rights separately from land rights. From an economic point of view, the rationale is that the present model does not give landowners enough control over groundwater. There is thus a need to have 'well-defined' water rights providing a basis for trading.<sup>57</sup> This has received statutory backing in at least one State that has provided a framework for tradable water entitlements.<sup>58</sup> Secondly, delinking can be proposed as a way of recognising the shared nature of groundwater, the multiple social and environmental functions it fulfils and the intrinsic link between surface water and groundwater. At this juncture, the legal regime needs to move in this second direction. Indeed, while tradable groundwater rights may achieve economic efficiency in allocation in transferring water to economically productive use, they neither provide the basis for ensuring that every user gets better access to sufficient safe groundwater nor for taking aquifer-wide protection measures. This is confirmed by the experience with water trading in the United States and Australia, which has been found to take water away from vulnerable and less economically productive regions, activities and users.<sup>59</sup>

Given the reality of groundwater being a shared resource, the first step that needs to be taken is to include it with resources already protected under the public trust doctrine. This is in principle an easy step to take since (surface) water has been recognised as a public trust by the Indian Supreme Court since 1996.<sup>60</sup> Indeed, one case has already mentioned bringing groundwater under the purview of the public trust.<sup>61</sup>

The public trust doctrine provides an interesting avenue for reforming existing groundwater rights. It is based on the idea that 'certain interests are so intrinsically important to every citizen that their free availability tends to mark the society as one of citizens rather than of serfs'.<sup>62</sup> Further, certain interests are so directly nature's gift that they must be reserved for everyone and their public nature makes their adaptation to private use inappropriate.<sup>63</sup> What fundamentally separates the public trust doctrine from assertion of sovereign power is that the trustee can at most hold a usufructuary right in water, which is deemed to be granted with the consent of the people. The trustee cannot alienate the trust nor can it fundamentally change its

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<sup>56</sup> Shankar, Kulkarni & Krishnan (n 1) 42.

<sup>57</sup> eg M Dinesh Kumar, 'Towards Evolving Institutional Arrangements for Managing Groundwater' in M Dinesh Kumar with contributions from OP Singh, *Groundwater Management in India – Physical, Institutional and Policy Alternatives* (Sage 2007) 288, 312.

<sup>58</sup> Maharashtra Water Resources Regulatory Authority Act 2005, s 11(i)(i).

<sup>59</sup> Shiney Varghese, *Water Governance in the 21st Century – Lessons from Water Trading in the US and Australia* (Institute for Agriculture and Trade Policy 2013) 11.

<sup>60</sup> *MC Mehta v Kamal Nath* (1997) 1 SCC 388 (Supreme Court of India, 1996).

<sup>61</sup> *State of West Bengal v Kesoram Industries* (2004) 10 SCC 201 (Supreme Court of India, 2004).

<sup>62</sup> Joseph Sax, 'The Public Trust Doctrine in Natural Resource Law – Effective Judicial Intervention' (1970) 68 Michigan L Rev 471, 484.

<sup>63</sup> *ibid* 484-5.

nature.<sup>64</sup> In particular, the Indian Supreme Court clearly stated in 1996 that '[t]hese resources meant for public use cannot be converted into private ownership'.<sup>65</sup> More recently, the same Court has re-iterated that the trustee cannot convert such resources into private ownership, or for commercial use and further specified that the trustee's duty applies particularly with regard to future generations.<sup>66</sup>

In the context of groundwater, the application of the public trust doctrine would provide a basis for fostering distributive justice in the sharing of and access to water. Indeed, the trustee is bound to distribute existing water so that it neither deprives any individual or group from access to domestic water nor significantly affects ecosystem needs.<sup>67</sup> The trustee thus has a fiduciary duty of care and responsibility to the general public.

The introduction of the doctrine of public trust would be a major step forward in modernising the existing legal regime. Yet, this is no panacea. Indeed, the effective application of the public trust requires that the trustee show restraint in the use of the powers granted to it. In India, this is not a given since the state has often asserted the power of eminent domain over natural resources.<sup>68</sup> This has been particularly true with regard to land.<sup>69</sup> In this context, making groundwater a public trust needs to be introduced alongside specific safeguards ensuring that this does not simply become a semantic change without impacts on the ground. It is thus imperative that the trustee should exist at multiple levels rather than only at the State of Union level. This is conceptually easy to conceive since the 'state' includes in principle local bodies of governance, starting with gram sabhas,<sup>70</sup> ward committees, panchayats and municipalities.<sup>71</sup> This would simply require making it clear that the principle of subsidiarity implies that the trustee for a given aquifer is the body of local governance under whose control the whole aquifer is found. That the assertion of public trust may not be linked to any effective change in practice is confirmed by two recent draft water bills that refer to the public trust doctrine, while in effect proposing a concentration of power at the union level.<sup>72</sup>

## **B. REGULATING THE MULTIPLE DIMENSIONS OF GROUNDWATER – SUBSIDIARITY AND DECENTRALISATION**

Groundwater is in a sense even more local than surface water and must thus be regulated primarily at the local level. At the same time, aquifers may be very large and since groundwater replenishment depends mostly on precipitation, the national and international aspects of the water cycle also need to be considered.

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<sup>64</sup> eg Marcus Moench, 'Approaches to Groundwater Management: To Control or Enable?' (1994) 29/39 *Economic & Political Weekly* A135, A140.

<sup>65</sup> *MC Mehta v Kamal Nath* (1997) 1 SCC 388 (Supreme Court of India, 1996) para 34.

<sup>66</sup> *Fomento Resorts and Hotels Ltd v Minguel Martins* (2009) 3 SCC 571 (Supreme Court of India, 2009) paras 36, 40.

<sup>67</sup> Chhatrapati Singh, *Water Rights and Principles of Water Resources Management* (Tripathi 1991) 76.

<sup>68</sup> On eminent domain, eg Usha Ramanathan, 'A Word on Eminent Domain' in Lyla Mehta (ed), *Displaced by Development – Confronting Marginalisation and Gender Injustice* (New Delhi: Sage, 2009) 133.

<sup>69</sup> eg Preeti Sampat, 'Limits to Absolute Power – Eminent Domain and the Right to Land in India' (2013) 48/19 *Economic & Political Weekly* 40.

<sup>70</sup> Gram sabhas are defined at art 243(b) of the Constitution of India as bodies consisting of persons registered in the electoral rolls relating to a village comprised within the area of Panchayat at the village level.

<sup>71</sup> Constitution of India, part IX (The Panchayats) and part IXA (The Municipalities).

<sup>72</sup> Draft National Water Framework Bill 2013 and Draft River Basin Management Bill 2012.

The idea that groundwater regulation needs to be decentralised is well established in India since water has been a state competence from before independence.<sup>73</sup> The Constitution did not revisit this arrangement and water was thus included in the state list in recognition of the fact that different water issues arise in different parts of the country.<sup>74</sup>

Beyond decentralisation at the state level, a third tier of decentralisation has existed for a long time and was much strengthened in constitutional terms with the adoption of the 73<sup>rd</sup> and 74<sup>th</sup> amendments to the Constitution in 1992. These amendments significantly strengthened democratic governance at the local level. In rural areas, panchayati raj institutions have been given specific powers in the water context.<sup>75</sup> These include powers and responsibilities over drinking water supply, minor irrigation, water management and watershed development as well as fisheries.<sup>76</sup> Similarly, municipalities have been given powers over water supply for domestic, industrial and commercial purposes.<sup>77</sup>

These amendments have already been used in generic terms in various states, for instance, to give panchayats powers over water resources at the local level. Thus, in Uttar Pradesh, the Panchayat Raj Act was amended in 1994 and the functions of the gram panchayat now include the '[c]onstruction, repair and maintenance of public wells, tanks and ponds for supply of water for drinking, washing, bathing purposes and regulation of sources of water supply for drinking purposes'.<sup>78</sup>

At a generic level, there is thus a clear structure for local regulation of groundwater. At the same time, regulation has never gone beyond generic statements and local bodies of governance have not yet been given effective regulatory control over groundwater at the local level, whether at the gram panchayat, block panchayat or district panchayat level. The result is that there is a formal framework providing the basis for regulation based on the subsidiarity principle but the reality is that decentralisation largely stops at the state level.<sup>79</sup> This is insufficient in a context where a number of Indian states are bigger than medium-sized countries.

The need for further decentralisation is a point not subject to much disagreement. There is, however, no consensus on the form that decentralisation should take. On the one hand, the Constitution has provided a clear framework that simply needs to be further articulated and filled in at the state level. This provides a stable and permanent division into administrative units that have the capacity to administer, for instance, the different natural resources falling under their jurisdiction and to collaborate with other units where the resource base is not limited to the area under control. On the other hand, there has been a strong push for decentralisation to be undertaken according to the specific resource addressed. This has led to the setting up of a variety of different community-based bodies that are tasked, for instance, with administering certain specific water uses. This is the case of water user associations (WUAs) established to manage irrigation schemes.<sup>80</sup>

The latter model seems more appropriate from the point of view of the management of the resource under consideration. Yet, it provides an inappropriate model for groundwater for

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<sup>73</sup> Government of India Act 1935, ss 130 to 134.

<sup>74</sup> Constitution, Schedule 7, List II.

<sup>75</sup> Panchayati raj institutions include the various institutions of self-government in rural areas defined in Part IX of the Constitution of India.

<sup>76</sup> Constitution of India, art 243G and Eleventh Schedule.

<sup>77</sup> Constitution of India, art 243W and Twelfth Schedule.

<sup>78</sup> Uttar Pradesh Panchayat Raj Act 1947, s 15(xi).

<sup>79</sup> eg Rahul Banerjee, 'What Ails Panchayati Raj?' (2013) 48/30 Economic & Political Weekly 173.

<sup>80</sup> eg Maharashtra Management of Irrigation Systems by the Farmers Act 2005.

two basic structural reasons. Firstly, community bodies that are not linked to the panchayat tend to suffer from a democratic deficit. This is, for instance, the case with regard to WUAs whose membership only includes landowners,<sup>81</sup> and that fail to include reservation, for instance for women.<sup>82</sup> Secondly, regulation by a variety of bodies that have no common basis begs the question of coordination. This is true within the water sector, as well as between water and other sectors. Theoretically, the management of surface irrigation by a body completely distinct from the one managing the aquifers found in the area may seem to make sense. Yet, the need for joint management of all water and all water uses implies that ‘a’ body must take responsibility. Panchayats/municipalities may not always be demarcated in an ideal manner from the point of view of water resources but they have the advantage of being clearly demarcated in law and have the power to regulate all natural resources together, including in particular land and water. In addition, they have the advantage of being democratically elected and permanent,<sup>83</sup> something that project-based institutions cannot achieve. The need to move away from such arrangements is clearly established by the Andhra Pradesh Farmer Managed Groundwater Systems project whose institutional structure was found to be ‘withering’ only a few years after the end of the project.<sup>84</sup>

### C. GROUNDWATER AS THE PRIMARY SOURCE OF DRINKING WATER – REALISING THE HUMAN RIGHT TO WATER

The human right to water has been repeatedly recognised by the higher judiciary in India for more than two decades. The confirmation of the right at the national level thus predates its international formalisation and the domestic fundamental right does not, as such, borrow from international developments. The Supreme Court asserted already in 1991 that the ‘[r]ight to live is a fundamental right under Article 21 of the Constitution and it includes the right of enjoyment of pollution free water and air for full enjoyment of life’.<sup>85</sup> The right has been further specified in certain cases. In a groundwater-related case, the government was sued for not taking appropriate precautions to ensure that the drinking water supplied through handpumps in Mandla District (Madhya Pradesh) was free from excessive fluoride.<sup>86</sup> The High Court ruled that under Article 47 of the Constitution, the State has the responsibility to improve the health of the public by providing unpolluted drinking water.<sup>87</sup> Courts have gone even further in specifying the duties of the state and provided that it ‘is bound to provide drinking water to the public’ and that this should be the foremost duty of the government.<sup>88</sup> In this case, the judges ruled that the failure of the state to ‘provide safe drinking water’ to citizens amounted to a violation of the right to life.<sup>89</sup>

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<sup>81</sup> *ibid* s 2(1)w.

<sup>82</sup> An exception is Chhattisgarh *sinchai prabandhan me krishkon ki bhagidari adhiniyam* 2006, s 5.

<sup>83</sup> Constitution of India, art 243C(2) provides that all seats in a Panchayat are filled by direct election while art 243R(1) provides the same for municipalities.

<sup>84</sup> Shilp Verma and others, *Andhra Pradesh Farmer Managed Groundwater Systems (APFAMGS) – A Reality Check* (IWMI-Tata 37 Water Policy Research Highlight 2012) 6.

<sup>85</sup> *Subhash Kumar v State of Bihar* AIR 1991 SC 420 (Supreme Court of India, 1991) para 7.

<sup>86</sup> *Hamid Khan v State of Madhya Pradesh* AIR 1997 MP 191 (Madhya Pradesh High Court, 1996).

<sup>87</sup> *ibid* para 6.

<sup>88</sup> *Vishala Kochi Kudivella Samarkshana Samithi v State of Kerala* 2006(1) KLT 919 (High Court of Kerala, 2006) para 3. Similarly, in *Lucknow Grih Swami Parishad v State of Uttar Pradesh* 2000(3) AWC 2139 (High Court of Allahabad (Lucknow Bench), 2000) para 4, the Court ruled that ‘it is the bounden duty of the State to assure the supply of sufficient amount of qualitative drinking water to its people’.

<sup>89</sup> *Vishala Kochi Kudivella Samarkshana Samithi* (n 88) para 3.

The human right to water developed in the case law remains at the level of a general framework. Judicial decisions do not provide the specific means by which the right can be realised. While this is not supposed to be the function of the courts, there is no water legislation that provides the missing content.<sup>90</sup> Thus, there is no drinking water legislation that sets out the content of the right. As a result, there are, for instance, no binding drinking water quality standards in the country. This does not imply that there are no points of reference concerning the content of the right to water in India. Indeed, there have been drinking water quality standards as reference point for some time,<sup>91</sup> and the government set out already in the 1970s a minimum quantity of water that can be seen as equivalent to the minimum level of realisation of the human right to water.<sup>92</sup> While these are all important markers of a policy framework, they do not constitute a binding legal framework for the realisation of the human right to water, something that has been confirmed in recent years with the relatively frequent adoption of new administrative directions.<sup>93</sup>

While there is a general legislative gap concerning the human right to water that needs to be filled, the most important component concerns groundwater since it is the source of most drinking water needs for the overwhelming majority of the population. Groundwater legislation can thus contribute to fill several gaps in this area, including the introduction of binding standards for the provision of basic water and binding drinking water quality norms.

#### **D. THE WATER AND ENVIRONMENT DIMENSION – ENSURING AQUIFER PROTECTION IN A UNITARY FRAMEWORK**

One of the biggest challenges in terms of reforming groundwater law concerns its environmental aspects. Indeed, in existing groundwater rules, the environmental dimension is virtually absent. This can be ascribed to the fact that groundwater rights were developed before conservation and protection concerns arose.<sup>94</sup> At the same time, this does not explain why more recent restatements of the Groundwater Model Bill 1970/2005 have not integrated the very significant developments that have taken place since the 1970s with regard to environmental conservation and protection.<sup>95</sup>

The Indian environmental law framework includes a number of elements that provide a basis for developing groundwater legislation with a strong conservation focus. Firstly, there is a well-established human right to environmental protection in India.<sup>96</sup> Its specific content is not well defined,<sup>97</sup> but its recognition confirms that any comprehensive groundwater legislation must be based equally on the human right to water and on the human right to environmental protection.

Secondly, water protection has already been addressed in part in environmental legislation. These include acts whose specific focus is water, as in the case of the Water (Prevention and

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<sup>90</sup> eg Philippe Cullet, 'Right to Water in India – Plugging Conceptual and Practical Gaps' (2013) 17 Intl J Human Rights 56.

<sup>91</sup> Bureau of Indian Standards, *Drinking Water – Specification* (Second Revision, IS 10500) 2012.

<sup>92</sup> The Accelerated Rural Water Supply Programme of the Government of India was introduced in 1972..

<sup>93</sup> eg Government of India, National Rural Drinking Water Programme 2010.

<sup>94</sup> Even in the United States where groundwater rules have been the subject of much attention in a number of states, conservation 'has been a late bloomer'. Dellapenna (n 21) 317.

<sup>95</sup> see generally PB Sahasranaman, *Handbook of Environmental Law* (2<sup>nd</sup> edn, OUP 2012).

<sup>96</sup> eg *Subhash Kumar v State of Bihar* AIR 1991 SC 420 (Supreme Court of India, 1991).

<sup>97</sup> eg Lavanya Rajamani, 'The Right to Environmental Protection in India: Many a Slip between the Cup and the Lip?' (2007) 16 Rev Eur Community & Intl Environmental L 274.

Control of Pollution) Act 1974. Further, environmental law generally is based on the notion that water is part of environmental regulation. This was made clear in the framework Environment (Protection) Act 1986 whose definition of environment includes water.<sup>98</sup>

The inclusion of water in the scope of environmental regulation confirms that state groundwater regulation must follow environmental law principles established at the national level. This includes, for instance, the ‘principles of sustainable development, the precautionary principle and the polluter pays principle’.<sup>99</sup> Indeed, groundwater regulation that effectively ensures sustainable management of groundwater in the long term must be based on precautionary measures.

The existence of a strong body of environmental law that already applies to water should make the task of integrating an environmental dimension in groundwater law much easier. Yet, this is something that needs to be carefully monitored because recent developments in water law do not indicate that this integration has happened. In fact, while all the water laws adopted over the past fifteen years have been premised on the need to address water scarcity (an environmental issue), they do not actually integrate an environmental dimension.<sup>100</sup>

The introduction of an environmental dimension to groundwater law will provide the basis for ensuring that groundwater regulation focuses more on the protection of aquifers than on the allocation of groundwater to different landowners. This will also ensure that groundwater regulation is conceived in a broader context that does not make artificial distinctions between surface and groundwater. Indeed, as noted above, the Environment (Protection) Act 1986 does not distinguish surface water and groundwater and thus applies the same basic principles to both. The same is required in water law since there can be no environmentally sustainable or socially equitable regulation of water that is based on different principles for different bodies of water. This is obvious in view of today’s scientific knowledge but water law seems to find it difficult to progress in this direction. Indeed, the recent Draft River Basin Management Bill 2012 only suggests that states make ‘best efforts’ to manage surface water and groundwater in a ‘unified and comprehensive manner’.<sup>101</sup>

### **III. TEMPLATE FOR COMPREHENSIVE REGULATION – THE GROUNDWATER MODEL BILL 2011**

The increasing realisation that there is a groundwater ‘crisis’ that needs to be addressed has led to a progressively broader acceptance of the need to control groundwater use.<sup>102</sup> Indian states have indeed started considering more seriously since the late 1990s the need to take action to stem groundwater use beyond replenishment capacity. At the same time, they have not been particularly enthusiastic about adopting groundwater legislation.

This reluctance can be explained in part by the fact that the ever greater reliance on groundwater for all uses of water has led to a situation where governments find it easier to foster groundwater mining rather than upsetting the existing balance, however, skewed it may

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<sup>98</sup> Environment (Protection) Act 1986, s 2(a).

<sup>99</sup> National Green Tribunal Act 2010, s 20.

<sup>100</sup> eg Philippe Cullet, *Water Law, Poverty and Development – Water Law Reforms in India* (OUP 2009) 134.

<sup>101</sup> Draft River Basin Management Bill 2012, s 6.

<sup>102</sup> KV Raju, S Manasi & N Latha, *Emerging Ground Water Crisis in Urban Areas – A Case Study of Ward No 39, Bangalore City* (Institute for Social and Economic Change 2008).

be.<sup>103</sup> Indeed, it is politically increasingly difficult to challenge the various vested interests that have been created around the existing pattern of water use. This translates in practice in states giving incentives for groundwater use. These include subsidies for digging tubewells and subsidies for the electricity used to pump the water up. For a time, this can be politically easier than tackling the problem upfront through regulation of existing uses.<sup>104</sup> Yet, as witnessed in the case of Gujarat where the electricity subsidy amounted to 56% of the fiscal deficit in 2000-2001, the drain on resources can be significant.<sup>105</sup>

Political convenience notwithstanding, the groundwater crisis has become serious enough in a number of states to force them to start taking regulatory action. Four different types of responses can be identified. Firstly, in some cases the nexus between access to electricity and access to groundwater has been used to restrict groundwater use. This has, for instance, been done in Gujarat where electricity lines for irrigation and domestic consumption have been separated.<sup>106</sup> Secondly, some states that are opposed to adopting comprehensive groundwater legislation have nevertheless started using regulation as a tool for controlling groundwater use. This is borne out of the realisation that some action is necessary to avoid catastrophic outcomes in the future. This is the case of Punjab that has taken a limited but real step in this direction with the adoption of a task-specific legislation focusing on prohibiting sowing and transplanting of paddy before specific dates in order to reduce groundwater use.<sup>107</sup> This is significant because Punjab is one of the relatively more irrigated states that was the focus of the green revolution and that has created additional irrigation facilities in recent decades through exploitation of groundwater.<sup>108</sup> Thirdly, some states have included groundwater regulation measures in irrigation legislation. This is the case of Gujarat whose new irrigation legislation includes a licensing system for irrigation-related tubewells and the introduction of a water rate on percolating groundwater within 200 metres of canals.<sup>109</sup> Fourthly, some states have adopted legislation based on the limited reform framework of the Groundwater Model Bill 1970/2005.<sup>110</sup>

All the different measures taken by states until now are noteworthy and important. They confirm that states are taking the groundwater challenge increasingly seriously. Yet, none of the initiatives discussed in the previous paragraph provide a comprehensive solution that addresses groundwater use and protection in all its dimensions. The necessity for a broader approach stems from two main reasons: Firstly, in a context where groundwater is the key source of water for realising the human right to water of the overwhelming majority of the population, regulation cannot be only concerned with groundwater use for irrigation despite

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<sup>103</sup> eg Vasant P Gandhi & NV Namboodiri, *Groundwater Irrigation in India: Gains, Costs and Risks* (Indian Institute of Management 2009).

<sup>104</sup> eg M Dinesh Kumar, 'Is Power Pricing a Viable Option for Managing Groundwater Demand in India' in M Dinesh Kumar with contributions from OP Singh, *Groundwater Management in India – Physical, Institutional and Policy Alternatives* (Sage, 2007) 256 and Asian Development Bank, *Water Operational Plan 2011-2020* (2011).

<sup>105</sup> Aditi Mukherji, Tushaar Shah & Shilp Verma, 'Electricity Reforms and their Impact on Groundwater Use in States of Gujarat, West Bengal and Uttarakhand, India' in Jan Lundqvist (ed), *On the Water Front – Selections from the 2009 World Water Week in Stockholm* (Stockholm International Water Institute 2009) 100, 102.

<sup>106</sup> eg Tushaar Shah & Shilp Verma, 'Co-Management of Electricity and Groundwater: An Assessment of Gujarat's Jyotigram Scheme' (2008) 43/7 *Economic & Political Weekly* 59.

<sup>107</sup> Punjab Preservation of Subsoil Water Act 2009. Haryana adopted a similar framework, the Haryana Preservation of Sub-Soil Water Act 2009.

<sup>108</sup> Planning Commission, *Twelfth Five Year Plan (2012–2017) – Economic Sectors – Volume 2* (Government of India 2012) 5 and 43.

<sup>109</sup> Gujarat Irrigation and Drainage Act 2013, ss 34 and 51.

<sup>110</sup> See section I(B) above.

the importance of the latter. Secondly, existing policy interventions are based on the need to address groundwater scarcity but fail to provide a basis for aquifer-based protection measures. This confirms the need for groundwater regulation that severs the umbilical link between land and access to water, is centred on the realisation of the human right to water, specifically considers livelihood-related uses of groundwater and puts emphasis on protection measures.

The need for a new framework has been officially recognised. In the context of the preparation of the twelfth Five Year Plan, the Planning Commission,<sup>111</sup> which is mandated with formulating the Plan, proposed to initiate a ‘paradigm shift in the management of water resources’, including a new legal and institutional framework for water.<sup>112</sup> This led to the drafting of several draft water laws, including the Groundwater Model Bill 2011 that provides a basis for reforming groundwater law.<sup>113</sup> This initiative comes in the wake of the inaction of the Ministry of Water Resources that was the promoter of the Groundwater Model Bill 1970/2005 and has failed to provide an update or alternative to its 1970 reform proposal. At the same time, there is no hierarchy between the two and the Groundwater Model Bill 2011 has not formally replaced the earlier one. In fact, some states that had started the process of adopting groundwater legislation based on the Groundwater Model Bill 1970/2005 have taken the process forward, despite the adoption of the Planning Commission’s model legislation.<sup>114</sup>

The form of a model bill was chosen in deference to the constitutional scheme that gives states primary responsibility for legislating on water. The Groundwater Model Bill 2011 has thus been framed as a guide for states to adopt legislation based on their specific needs and circumstances. There is thus no imposition of a blanket uniform model throughout the country regardless of hydrologic or social dimensions, as argued by some commentators.

## **A. BASIC PRINCIPLES FOR GROUNDWATER REGULATION**

The Groundwater Model Bill 2011 is based on the principles highlighted in the previous section. These include changing the legal status of groundwater and including it under the public trust, grounding the proposed measures in the human right to water, fostering more effective decentralisation through the subsidiarity principle and providing for a unitary framework for water regulation that allows in particular groundwater protection at aquifer level. The basic principles of the Model Bill are found in its chapters two and three that concern principles for protection, conservation and regulation of groundwater, the right to water and the legal status of groundwater.

The first major innovation is the introduction of a new framework that strengthens local control over groundwater while ensuring a strong focus on protection measures. The shift away from exclusive private appropriation is undertaken through the inclusion of groundwater in the scope of resources covered by the public trust. Section 9 thus provides that

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<sup>111</sup> The Planning Commission was set up in 1950, *inter alia* to formulate a Plan for the most effective and balanced utilisation of country's resources. In an evolving policy framework, it now focuses particularly on building a long-term strategic vision of the future and decide on priorities of national importance.

<sup>112</sup> Planning Commission, *Report of the Steering Committee on Water Resources and Sanitation for Twelfth Five Year Plan* (Government of India 2012) iii.

<sup>113</sup> Groundwater Model Bill 2011 (n 7).

<sup>114</sup> eg Chhattisgarh Ground Water (Regulation and Control of Development and Management) Bill, 2012.

[g]roundwater is the common heritage of the people of India held in trust, for the use of all, subject to reasonable restrictions to protect all water and associated ecosystems. In its natural state, it is not amenable to ownership by the state, communities or persons.<sup>115</sup>

This strengthens local control over the resource because this is directly linked to the principle of subsidiarity, which ensures that the trustee is as local as possible to manage a given aquifer.<sup>116</sup> In practice, the Groundwater Model Bill 2011 suggests that the trustee should be the lowest possible democratically elected body that can regulate an entire aquifer. For instance, an aquifer situated entirely within a panchayat is under the direct control of the Gram Panchayat Groundwater Committee. It is only in case the aquifer is shared with another panchayat that control is shared and the Block Panchayat Groundwater Committee facilitates the coordination of the planning process between the panchayats sharing the aquifer.<sup>117</sup>

The second major change that the Groundwater Model Bill 2011 brings to the legal framework is to translate existing judicial pronouncements on the human right to water by recognising that '[e]very natural person has the fundamental right to be provided basic water of acceptable quality for leading a healthy and dignified life'.<sup>118</sup> This basic statement is supplemented by the provision of a hierarchy of groundwater uses.<sup>119</sup> This reflects the idea of prioritisation of water uses that has been in the policy discourse for many years.<sup>120</sup> The novelty lies in the fact that no legislation specifically confirms the priority implied in the recognition of the right to water by the courts. The Groundwater Model Bill 2011 thus provides that '[t]he first priority and charge on groundwater shall be meeting the right to basic water for rural and urban residents'.<sup>121</sup> Further, it devotes a separate chapter to basic water, thereby giving more specific content to the right to water. This includes, for instance, a re-assertion of the universality of the entitlements contained in the right in a context of non-discrimination. The Groundwater Model Bill 2011 also fixes a minimum quantity of water that constitutes the de facto minimum level of realisation of the human right to water and further provides that drinking water supply agencies extracting groundwater must abide by existing water quality standards, another element currently missing in the Indian legal framework.<sup>122</sup>

## **B. SUBSIDIARITY AS THE BASIS OF THE INSTITUTIONAL FRAMEWORK**

The necessity to link the recognition that groundwater is a public trust with decentralisation is taken up in detail in the Groundwater Model Bill 2011. The general endeavour is to reflect the constitutional decentralisation mandate and apply it to groundwater regulation. This is further strengthened by a specific reliance on the principle of subsidiarity.

The Groundwater Model Bill 2011 organises its institutional framework around existing units of territorial governance.<sup>123</sup> At the same time, in recognition of the fact that aquifers do not

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<sup>115</sup> Groundwater Model Bill 2011 (n 7) s 9(1).

<sup>116</sup> On the principle of subsidiarity, Groundwater Model Bill 2011 (n 7) s 5.

<sup>117</sup> *ibid* ss 18 & 20(1)b.

<sup>118</sup> *ibid* s 8.

<sup>119</sup> *ibid* s 10.

<sup>120</sup> eg National Water Policy 1987, s 8.

<sup>121</sup> Groundwater Model Bill 2011 (n 7) s 10(2).

<sup>122</sup> *ibid* s 36.

<sup>123</sup> The basic institutional framework of the Groundwater Model Bill 2011 (n 7) is defined in its chapter 5 and includes two distinct parts, a first for rural areas (ss 17 to 20) and a second urban areas (ss 21 to 24).

necessarily follow administrative boundaries, it provides mechanisms to ensure that the latter do not come in the way of effective protection of groundwater aquifers from the local to the state level.<sup>124</sup>

In keeping with the division of local laws between panchayat and municipal laws, the institutional framework is divided into rural and urban areas. In each case, the Groundwater Model Bill 2011 provides for the setting up of groundwater committees starting at the lowest level of democratic governance. These are gram panchayat groundwater committees in rural areas and ward groundwater committees in urban areas.<sup>125</sup> The Groundwater Model Bill 2011 also provides for block and municipal groundwater committees to address issues that cannot be tackled at a lower level. In the case of rural areas, this includes '[c]oordination of the planning process between panchayats sharing aquifers where the aquifer boundary does not correspond with boundaries of a single panchayat'.<sup>126</sup> Further, it provides for the setting up of district groundwater councils tasked, for instance, with the coordination of measures taken at the block and municipal level and a State Groundwater Advisory Council set up to provide advice and support to all groundwater bodies constituted under the legislation.<sup>127</sup>

### **C. AQUIFER PROTECTION DIMENSION: GROUNDWATER SECURITY PLANS AND GROUNDWATER PROTECTION ZONES**

As argued to in Section II.D, protection of groundwater is one of the missing dimensions of the existing legal regime. Further, protection must be conceived at aquifer level, something that the current fragmented regime effectively prevents. The Groundwater Model Bill 2011 takes up this challenge. Its protection regime is conceived around the need to ensure that the resource itself is protected and can provide a sustainable basis for meeting the basic needs of every person for decades to come. The protection principles integrated in the Groundwater Model Bill 2011, in particular the prevention and precautionary principles, are realised through two innovative instruments to foster groundwater protection. These are groundwater protection zones and groundwater security plans that are conceived primarily for areas that suffer from groundwater depletion and are thus to be implemented according to the needs of specific areas.

The Groundwater Model Bill 2011 first provides for the possibility to demarcate Groundwater Protection Zones. The objectives for the demarcation of groundwater protection zones link environmental and socio-economic aspects. Thus, groundwater protection zones are, for instance, demarcated to '[p]rotect the natural recharge and discharge areas of the aquifer from threats such as physical deterioration' and at the same time to '[p]rovide for sufficient quantity and safe quality water required to meet the basic water supply for human and animal needs'.<sup>128</sup> There exist two types of groundwater protection zones. Groundwater Protection Zones 1 are areas where no extraction or use of groundwater is allowed, apart from its use as basic water, except under special sanction by the appropriate authority.<sup>129</sup> In these zones, the appropriate authority is mandated to develop and apply rules regarding, among

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<sup>124</sup> The Groundwater Model Bill 2011 (n 7) includes, for instance, a District Groundwater Council (s 25) and a State Groundwater Advisory Council (s 27) that provide a coordinating structure for issues that cannot be effectively addressed at lower levels.

<sup>125</sup> *ibid* ss 17 and 21.

<sup>126</sup> *ibid* ss 20(1)b.

<sup>127</sup> *ibid* ss 26(1)e and 28(1).

<sup>128</sup> *ibid* s 11(1)a and d.

<sup>129</sup> *ibid* s 13(3).

others, forestation and deforestation, a prohibition of waste disposal of any kind and the banning of any mining lease. In Groundwater Protection Zones 2, a much less stringent set of rules is to be introduced, such as regarding distance to new wells and pumping regulation for existing wells.<sup>130</sup>

Groundwater protection zones are linked to another innovation, the introduction of Groundwater Security Plans. Section 14 provides that a groundwater security plan shall be prepared at the lowest possible administrative level that encompasses the whole aquifer. Groundwater security plans are compulsory where a groundwater protection zone has been defined and their preparation is left to the discretion of the appropriate authority in other cases.<sup>131</sup> Groundwater security plans must 'provide for groundwater conservation and augmentation measures, socially equitable use and regulation of groundwater, and priorities for conjunctive use of surface and groundwater'.<sup>132</sup> Groundwater security plans are adopted by the appropriate authority and valid for five years. They must then be revalidated or amended. These groundwater security plans constitute one of the central elements for taking the protection framework beyond the atomised regime that currently exists, where protection does not go beyond individual landowners' interests in the water found under their own piece of land.

#### **D. REGULATION OF DIFFERENT GROUNDWATER USES**

The increasing importance of groundwater as a source of water for most water uses implies that it must be regulated not only in general terms but also according to the specificities of different water uses. The Groundwater Model Bill 2011 recognises that there are differences among groundwater uses that require different regulatory responses. In other words, it rescinds the existing framework that leaves landowners with near absolute freedom to use groundwater as they please for whichever purpose they determine. The regulation of different groundwater uses is in effect a consequence of the recognition of the public nature of the resource and the separation of access to land and groundwater.

The Groundwater Model Bill 2011 starts by giving a general framework for the prioritisation of groundwater uses to guide authorities in the regulatory decisions they take.<sup>133</sup> As noted above, the first priority is meeting the right to basic water for rural and urban residents. Beyond this, two categories of uses are defined. Primary uses include direct use of groundwater for livelihoods, including agriculture and non-agriculture based livelihoods and municipal use, including public facilities for recreation. Secondary uses include commercial activities, including power generation, industry and large-scale commercial farms and private facilities for recreation.

The Groundwater Model Bill 2011 recognises that groundwater users also have a series of duties linked to their use. These include avoiding waste or contamination of groundwater, conservation through appropriate agricultural and industrial practices and measures to replenish or recharge groundwater.<sup>134</sup> It also calls for water harvesting and catchment conservation, as well as recycling and re-use of groundwater.<sup>135</sup>

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<sup>130</sup> *ibid* s 13(4).

<sup>131</sup> *ibid* s 14(3).

<sup>132</sup> *ibid* s 15(1).

<sup>133</sup> *ibid* s 10.

<sup>134</sup> *ibid* s 32.

<sup>135</sup> *ibid* ss 33 & 34.

Beyond these general stipulations, the Groundwater Model Bill 2011 regulates separately some of the main groundwater uses. With regard to the use of groundwater for livelihoods and irrigation, the starting point is that every person is entitled to use groundwater for their livelihood needs.<sup>136</sup> The Groundwater Model Bill 2011 further recognises that the ‘livelihood pattern and the resultant needs should be incorporated in groundwater security plans’.<sup>137</sup> At the same time, there is no absolute entitlement and in case of severe drought or where the area has been declared a Groundwater Protection Zone 2, limits may be imposed for restricting water use.<sup>138</sup> In the case of a Groundwater Protection Zone 2, where water intensive cash crops are grown, an undertaking must be obtained for a change from water-intensive crops.

In the case of industrial, commercial and other bulk uses of groundwater, including major or medium irrigation projects, the Groundwater Model Bill 2011 provides for a system of permits to abstract groundwater.<sup>139</sup> These permits can be granted to applicants fulfilling the conditions laid down with the exception of Groundwater Protection Zones 1 where permits cannot be granted. The Groundwater Model Bill 2011 also provides that industrial or bulk groundwater use shall be priced and a water rate shall be charged. Funds collected through water rates are to be used for groundwater conservation and augmentation activities.<sup>140</sup>

## **E. TRANSPARENCY AND DISPUTE RESOLUTION**

One of the shortcomings of existing groundwater law is that it focuses nearly only on allocation. A number of related issues are thus not considered, such as issues concerning transparency and dispute resolution. The Groundwater Model Bill 2011 addresses this dimension and includes a series of provision that seek to ensure the effective implementation of its substantive stipulations. One chapter is thus devoted to social and environment impact assessment, transparency and accountability and another to dispute resolution.

Specific attention is, for instance, devoted to impact assessment. This is a vexed question in the Indian context. On the one hand, the need for a form of environmental impact assessment has been recognised like in other jurisdictions for a couple of decades.<sup>141</sup> On the other hand, the practice of environmental impact assessment has not delivered expected results.<sup>142</sup> Taking into account the limitations of the existing framework, the Groundwater Model Bill 2011, seeks to harness the potential of impact assessment in a broader context by adding a social impact assessment dimension. Environmental and social impact assessments are thus required at separate points in the Groundwater Model Bill 2011. Section 10 provides that the use or appropriation of water for secondary purposes,<sup>143</sup> which is likely to have significant negative impacts on local sources of groundwater, shall be subjected to an environmental and social impact assessment. Similarly, the permits to abstract groundwater for industrial use or infrastructure projects are granted on the basis of an impact assessment.<sup>144</sup>

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<sup>136</sup> *ibid* s 37(1).

<sup>137</sup> *ibid* s 37(2).

<sup>138</sup> *ibid* s 37(3).

<sup>139</sup> *ibid* ss 38 & 37(4).

<sup>140</sup> *ibid* s 42.

<sup>141</sup> On the evolution of the regulatory framework in India, eg Zafar Mahfooz Nomani, *Environment Impact Assessment Laws* (Satyam Law International 2010).

<sup>142</sup> eg Manju Menon & Kanchi Kohli, ‘Environmental Decision-making in India: A Critique’ in Ramaswamy Iyer (ed), *Water and the Laws in India* (Sage 2009) 359.

<sup>143</sup> On secondary uses, see text following note 133.

<sup>144</sup> Groundwater Model Bill 2011 (n 7) s 39(4).

With regard to dispute resolution, the Groundwater Model Bill 2011 starts by encouraging mediation and conciliation. Where disputes need to go through a formal process, the Groundwater Model Bill 2011 sets up a framework that seeks to keep the process as close as possible to litigants while ensuring that the persons in charge are able to comprehend the technical issues that may arise. It does so through the provision of groundwater grievance redressal officers at the block level.<sup>145</sup> Groundwater grievance redressal officers are given jurisdiction over all complaints arising within the area for which they have been appointed. They are given the same powers and obligations as vested in a civil court. Appeals from the groundwater grievance redressal officers can be preferred to the Gram Nyayalya set up under the Gram Nyayalayas Act 2008 in rural areas and before the sub-court in urban areas.<sup>146</sup> The whole dispute resolution framework provides an avenue for addressing disputes at the local level, leaving recourse to courts for situations where more complex issues of law cannot be resolved by the groundwater grievance redressal officers. This is a major step forward compared to the present situation where the only possible recourse in case of dispute is to the formal court system.

## **CONCLUSION**

Groundwater plays today a central role in India. It is the primary source of water for basic water, for subsistence and commercial irrigation and an increasingly important source of water for industrial uses. The existing legal framework is intrinsically incapable of addressing the needs of this increasingly complex sector. This is due to the fact that it is based on a now dated understanding of groundwater, reflects preoccupations with groundwater predating the massive expansion of groundwater use for drinking water and reflects an atomised view of groundwater use based on individual land ownership that prevents any aquifer-based protection measures.

The central role of groundwater for all water uses has been linked in part to the increasing ease to exploit (and deplete) groundwater resources linked to the introduction of mechanised pumping on a large scale a few decades ago. The possibility to keep digging further down for some years (or to give incentives to farmers to do so) has been increasingly exploited as a way to avert short-term crises linked to water availability. This is no solution since it simply throws back the need to a search for solutions at future generations. The existing legal regime is incapable of addressing such issues since it fails to have any understanding of the need to protect aquifers beyond the interests of individual landowners. Further, the disconnect between allocation principles for surface water and groundwater implies that the legal framework does not provide a basis for taking an integrated view of the management of surface water and groundwater, even at the local level.

The need to move towards a new paradigm for groundwater law has been officially acknowledged in the twelfth Five Year Plan, which specifically states that '[n]ew model legislation is needed for protection, conservation, management and regulation of groundwater'.<sup>147</sup> The primary element that needs to be introduced is an understanding that groundwater in the second decade of the twenty-first century can under no circumstances be regulated as a private resource. It is of such fundamental importance for so many uses and so many users that the law must recognise its public nature in direct and clear terms. This implies in the first place severing the link between land ownership and control over

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<sup>145</sup> *ibid* s 53.

<sup>146</sup> *ibid* s 57.

<sup>147</sup> Planning Commission (n 2) para 1.115.

groundwater. This is necessary in terms of the social dimension of groundwater and happens to be also necessary in terms of introducing a more comprehensive protection regime. In legal terms, this article has argued that groundwater should thus be conceived as a public trust.

The reform of groundwater law along the framework proposed in this article has the potential to be realised thanks to the initiative of the Planning Commission that drafted a model legislation that largely builds on the framework proposed here. At the same time, there remain many obstacles on the way to a more socially equitable and environmentally sustainable legal framework. Indeed, it is not enough to simply to declare that groundwater is a public trust to ensure positive outcomes. In the Indian context, as in the context of several other post-colonial societies, the state has tended to see the management of natural resources as one of its prerogatives. The new framework must thus ensure that strong safeguards are in place to rein in the state's centralising tendencies. This is why this article and the Groundwater Model Bill, 2011 propose that the declaration of public trust should be linked to the principle of subsidiarity that puts the most local arm of the government in control of groundwater at their level.

The Indian situation is in some way idiosyncratic and the specific proposals made in this article need to be seen in the context of the country, its federal governance structure and its specific patterns of groundwater use. At the same time, there are an infinite variety of situations within a country spanning most climatic zones. There is thus a lot to be learnt from the Indian experience in other countries. This is particularly the case for all countries where irrigation constitutes the primary use of water, which includes a majority of countries in the South. Similarly, the need for comprehensive groundwater regulation that takes into account the primary needs of every individual for basic water as well as other water needs and the need to ensure sustainable protection of aquifers is not something, which is specific to India. Various lessons can thus be learnt, whether in terms of the basic conceptual framework identified in this article or the legislative instrument that is the Groundwater Model Bill 2011.