M a i t r e y e e

Maitreyee is a starting point for academics and practitioners who are seeking a brief introduction to research and work in the area of human development and the capability approach. Each issue addresses a different topic.

Water and Capabilities

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INTRODUCTION FROM THE GUEST EDITOR

Communities and living organisms are adapted to and dependent on natural hydrological cycles. Scarcity of water curtails economic production, food security and health, and in extreme cases leads to death - the equivalent of a jumbo jet of children crashes to the ground every day due to avoidable waterbourne disease. Water is a key constraint to development. Those who are poor in water (not having improved drinking water-source within 200 metres of their dwelling for instance) are, despite their constitutional rights, also poor in opportunities to claim access to that water. Clearly, those with an undersupply of water are also plagued by scarcity of social resources. They are deprived of opportunities to make decisions about the protection, use, development, conservation, management and control of the resource. The restriction of opportunities that would be available if there were adequate supplies (quantity and quality) of water curtails agency and human flourishing and - in some cases it produces or shame. There is a perturbing gap between progressive water policy and its practical application on the ground. This is particularly evident with the roll out of projects and programmes within the context of the famous – or infamous – paradigm that has dominated the sector since the Rio Summit in 1992, integrated water resources management (IWRM). IWRM rests on the premise that there is supposed to be broad-based stakeholder engagement by water users in decision-making processes and that this would then lead to social equity, financial viability and environmental sustainability. People value voice, choice and freedom in deciding what constitutes a good life and when they have choices they are likely to have more freedom to be or to do what they would like to be or do. IWRM, in the ideal, provides for spaces for the expansion of freedom but there is ample literature to show that this is not happening (Goldin 2005, 2010, 2013, Manzungu 2004, van Koppen et al 2013)

What problem-solving processes around the issue of water tend to neglect is the fact that they are, essentially, dealing with humans. The Capability Approach (CA) is guided by the fact that it is dealing with humans and with what constitutes a just society. The application of a new approach in dealing with water might provide answers to the deprivations of water and sanitation because it opens up new doors for researchers to look at the water problems that befuddle scientists. In certain parts of southern Africa, more than 50% of boreholes are dysfunctional. The 'water crisis' the world community faces today is largely a governance crisis. Securing water for all, especially for vulnerable populations, is often not only a question of hydrology (water quantity, quality, supply, demand) and financing, but equally a matter of good governance. Managing water scarcity and water-related risks (floods, natural disasters, etc) requires resilience institutions, collaborative efforts and sound capacity at all levels (WWF 2012:5 in Goldin, Sneddon and Harris 2013). Opportunities for people to reason in public spaces (at multiple scales such as water user associations, village committees, catchment management agencies) are critical for ensuring good management and care of boreholes, for instance, after they have been installed. The CA offers a more holistic approach to problems, demonstrating how in order to address development concerns, more needs to be considered than simply physical health or materiality. In the case of water, the complex problem of access, conservation, use, management etc of water depends on the adoption of a more holistic approach.

In my work in the water sector, I have found it helpful to expand the framework of the CA by drawing on the work of feminist philosophers such as Marion Iris-Young (1990, 2005) on recognition and misrecognition, Wolff and de Shalit (2007) on Disadvantage, Nancy Fraser (2009) on justice, Bozalek et al (2013), Michaelonos Zemblyas (2011) work on emotions and Tronto's (1993) contribution to the ethics of care. The ethics of care recognizes the importance of emotions in moral deliberation. From a care perspective, responsiveness and attentiveness are important as guides for how best to meet particular needs, rather than generalized principles which are applicable to all (for instance those of

IWRM), whilst the ethic of care places value on concrete circumstances and on the incorporation of emotions, such as compassion into moral deliberations (Staeheli & Brown, 2003). Like Iris-Young and Tronto, my interest is in the recognition of difference which intersects social hierarchy and looks more carefully at the issue of power that is often so prevalent, in water user associations, catchment management councils and other institutional settings set up to manage water. In a just society there is a fair distribution of material goods - and taps and pipes would be pertinent here. Non-material goods – such as the basket of emotions that are so apparent where water is too dirty or too far away – cannot be distributed. The idea of distributing emotions as one would material goods, assumes that are things that can be moved from one place to another. We know however that emotions are a function of social relations and processes and as my work on shame has shown, water users who are made to feel 'stupid' because they do not understand the technical jargon that is thrown at them about water flows, pumps, weirs etc – might well feel shame. This is the same shame that is felt when a person is unable to wash their shirt or their body because they do not have enough water to do so. Some households have been known to withdraw from church activities because they do not have a decent toilet and could not face the eventuality that when it is their turn to invite the priest to their dwelling, the bush would be the only place to defecate. The CA is apt for an analysis of deprivation of materiality and non-materiality related to water. It is able to tap into concerns of domination and oppression and ideas of social justice that the feminist philosophers bring to the fore. This is helpful when analyzing institutional spaces and trying to access why women, for instance, are so often silent, or silenced in these spaces. I have also found it helpful to consider 'high' hope or 'low' hope as a gauge for tapping into issues of power, recognition, advantage, opportunity and freedom are connected to water. An expanded CA approach gives pointers to problems of vandalism, non payment for services, dysfunctionality of boreholes and so forth as it considers mental states that contribute to valuable and complex functionings that are relevant for assessing poverty and human development related to water. Well-being, dependent on access to water, will never be fully addressed by simply considering the physical component of water. The essays which follow demonstrate how, in different ways, the Capability Approach – may have an effect on the water sector and to consider what the positive implications of this application are.

To start, Anand's essay gives his readers an account of how the inequality which exists with regards to access to water is a result of poor management. He explains how in reality we have enough water on our planet for everyone, yet over 768 million people do not have access to 'improved' sources of water. He goes on to suggest that this is because water is not ubiquitous and its division in society is not equal either—there are some with plenty living next to others with none. There seems to be a drive to consider all aspects associated with water inequality such as the effects of hunger, disease and well-being in order to effectively combat the inequality which exists. Anand focuses on a Capability Approach to water access by attempting to operationalise an entitlements analysis of water supplies. He explains how an entitlements analysis has allowed for a shift in the outlook toward water as it takes on a more 'human right to water' approach. However, he realises this is only the first step and that there still needs to be deeper institutional change to clarify duty-bearer responsibilities and accountability mechanisms, which will take time. He mentions that there are also further hindrances to the realisation of this right such as the fact that much of the available freshwater resources are used mainly for agriculture. This leads to policy level and distribution conflicts in prioritising economic rights (agriculture and industrial production) with the human right to water. Anand suggests we can resolve such disputes by taking up a Capability Approach to it, looking at it through the view point of capabilities and freedoms. By taking such an approach, he suggests the meeting of a human right to water can be prioritised and protected over all else. This might not be the situation at present, yet Anand seems to indicate things will develop this way as judiciaries who are made to make such decisions are forced to consider the international views which are consistent with such an approach. Ultimately, Anand resolves that access to water is

not only about water or even about a human right to water, but rather about all the inequality in life outcomes and substantive freedoms which are effected by and form part of it. Anand seems to suggest that the sooner institutions realise the broader ramifications of the inequality in access to water, the more effective they will be at combating it.

Wutich's article then moves on to considerations about how a lack of basic resources undermines well-being not just physically, but also in terms of an individual's emotional and mental health. She shows how poverty is found to be linked to an increase in symptoms of anxiety and depression as well as mental illnesses and further that new research has now uncovered a link between water insecurity and mental ill-health and distress. This is especially evident with regards to drought. This is of growing alarm, Wutich suggests, as with global warming on the increase, so too are unavoidable problems such as droughts and the subsequent complications, such as mental illnesses, which they bring along. Wutich further mentions how failing water institutions are another area where this link is noticeable. Lastly, she mentions how this link is also seen with regard to inadequate sanitation. This is a concern not only because of the large numbers who completely lack sanitation facilities (around 1.1 billion people globally) but also because of the numerous diseases and subsequent emotional distress that this accounts for. This emotional distress is especially heightened for those who are not able to keep clean bodies in the public eye or for women whose role it is to maintain cleanliness in the house and family. Consequently, as Wutich demonstrates, water insecurity can produce a complex cluster of problems for those affected, ranging from diseases to emotional distress and mental ill-health, sometimes simultaneously expressing signs of all. This in turn pushes those affected into the downward spiral of hospitalisation, lost work opportunities, debt, and poverty. Wutich thus gives a much more holistic approach to well-being, showing how addressing water insecurities needs to be seen through the lens of addressing individuals' physical health considerations as well as their mental and psychological development, capabilities and opportunities.

Owen's paper then accounts for the research she conducted on a specific project around youth capabilities and food security that she studied in Mpumalanga, South Africa. She describes how a project was set up in the region to enhance food and water security. It was innovative because the theoretical frame for considering the success of the project used for the first time in that context (both in South Africa and in the context of food and water insecurity), the Capability Approach. This provided a lens through which individual well-being, social arrangements, policy designs and proposals about social change linked to the implementation of rain water harvesting could be evaluated. Owen explains how the Capability Approach is useful in the water sector because it provides a multi-dimensional perspective on poverty, vital capabilities and functionings that are necessary to enable an effective management of ecosystems and improved wellbeing. Results of the research suggest that access to networks, access to knowledge and information and sociability are lacking among youth and that this restricts their opportunities to engage in issues around food and water security. Owen proposes the Capability Approach, as a framework that is particularly helpful when considering youth, freedom and opportunities and the linkages with food and water security. Harris's work concludes by focusing on the different ways water is accessed and on community participation in its governance. Although not explicitly working with the Capability Approach, Harris' work concentrates on well-being tied to bodily health, with particular attention given to drinking water and who is able to access it. She highlights the need to foreground equity considerations and to consider differentiated access to water. Her work then progresses to broader socio-political notions of well-being, giving focus to political and economic contexts or decision making processes and how these affect well-being as well as how these are experienced differently by different segments of the population. She considers the conflicts which arise from demands that are put on water by different subsets of the population. Harris also demonstrates how the same water issues can be used to moderate the negative and violent dynamics which exist in

regions as well as for upholding notions of state legitimacy and individual citizenship and responsibility. She shows how water considerations impact on people's ability to make choices - and therefore their consequent freedoms - and how they should thus be given the ability to participate in decisions that affect their lives. She concludes by arguing for a feminist political ecological analysis, showing how participation is important but that this also means extra responsibility that is not always practical and possible. This analysis also shows the linkages between participation, self-respect and aspiration. Harris's work thus offers some key insights for a linked water and capabilities perspective. Although Harris does not frame her discussion as Capability Approach discourse, her focus on freedom and opportunity match well with the central premises on which the Capability Approach depends.

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ELEMENTS OF FEMINIST POLITICAL ECOLOGY AND CAPABILITIES

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Introduction

Through a focus on water politics and access to water, especially important social and political categories that condition differential access and participation in governance (such as gender, landlessness and ethnicity), contribute to several of the themes that fit well with a Capability Approach to water and well-being. Much of my case study work has focused on the situation in south-eastern Turkey, the relatively impoverished and politically contentious Kurdish region of the country. My more recent work also highlights themes of water access, governance, and meaning for people's everyday lives in the contexts of Accra, Ghana and Cape Town, South Africa. Specifically, drawing on the framework set out by Goldin (2013) entitled *From Vagueness to Precision*, as well as on Sen's framework on 'intrinsically valuable functionings and capabilities', there are several primary themes that this work has addressed, largely working beyond simply a sense of well-being as tied to bodily health and function. This work thinks more broadly around social and political ways in which people engage in community and in senses of relative inequality and difference. It also thinks about broader environmental justice and inequality considerations around water-related developmental and environmental change. Although bodily health and well-being is not the focus of our discussion, it is a starting point. The examples below then broaden out to consider relative inequality, engagement in the social and political community (including ideas of inclusion and exclusion), as well as broader political processes that impinge on the well-being of different populations.

Theoretically, my work relies heavily on political ecology, feminist studies, environmental justice, and governance approaches. As such, there is an emphasis on the broader political economic contexts or decision-making processes across scales (from state down to grass roots levels), and how these contexts impinge on different dimensions of well-being. By highlighting gender and other aspects of socio-political inequality, there is attention to ways that processes may often be experienced differently by various subsets of a population. As such, notions of capabilities and well-being are not based on aggregate or average statistics (consistent with Sen's general approach and critiques of development that move away from the general to the individual), but often there is attention paid to the most marginalised or vulnerable members of society (again, consistent with Sen, but also development theorists such as Naila Kabeer and others). In drawing on narrative, ethnographic and political ecological approaches, there is emphasis given to the social context in which we understand well-being, with attention particularly to qualitative and relative senses of well-being. In this way, my focus is not only on differentiated water quality or access to resources, but rather how people narrate and give meaning to ideas of difference (whether or not that is supported by objective biophysical assessments). It is more relevant that women themselves suggest that Kurds might be disadvantaged in water allocation schemas or governance processes, rather than attempting to objectively assess whether this is 'true.' The reason for doing so is the understanding that even the sense of relative deprivation or inequality itself can have important effects for well-being, or politics—and as such these discourses and narratives need to be

understood and taken seriously. In particular, for the political situation in the Kurdish regions of Turkey, notions of underdevelopment and relative deprivation have been pivotal to past violence and mobilisations of the PKK, the Kurdish Workers Party. Findings (discussed below) that suggest that some Kurdish speaking populations consider the recent irrigation and waterworks development to favour non-Kurdish populations in the region is potentially very significant. Other work has suggested a growing sense of inclusion and legitimacy of the Turkish state among certain populations in the region— also with potentially significant effects for a broad understandings of well-being, citizenship, and inclusion in the social and political community. Beginning first with more bodily health issues (materiality) and then moving to broader socio-political notions of well-being, some key insights for a linked water and capabilities perspective are highlighted below.

Health and Bodily Well-Being—Water has clear and unambiguous effects for public health. Adding different dimensions to the vast bodies of work that highlight these connections from medical and public health perspectives, the political ecological and justice orientation on these themes provides several insights on these connections. In particular, it is of interest that the GAP development (South Eastern Anatolia Project), a massive state-led intervention to dam and divert the upper Tigris and Euphrates rivers, proceeded in full knowledge that malaria, schistosomiasis, and other water related diseases would be emergent. Planning of multiple dams, water diversion and irrigation schemas throughout southeast Turkey included the full expectations of the increase of these diseases. Here, the issue of complex trade-offs in any development encounter are apparent, as are the difficulties of preparing people for ill-health in the name of economic development. An issue, less obvious in state planning documents, but certainly a consideration that was highlighted through field work in the region, is the complex ways that irrigation transfers from the Tigris-Euphrates to other areas of the southeast region. This means that drinking water might also be threatened. In a 2008 piece (*World Development*), I discuss the interlinked hydro-geologies of river water transported for irrigation and drinking water (drawn from underground aquifers) and how this means that these aquifers are effectively recharged with irrigation waters. This irrigation water, in turn, is now loaded with pesticides and other inputs due to particular cropping choices (e.g. primarily cotton), subsidies, and other agro-ecological and political economic conditions that drive heavy application of these pesticides in the region. Apart from implications for drinking water, the topography of the pilot irrigation area (the Harran plain) has led to the formation of stagnant 'lakes' across the southern reaches of the plain near the Syrian border. These stagnant water bodies also have considerable health effects and are also seeping into the adobe homes in those villages. In all of these senses, while the approach taken in this work is more political, economic and socio-political, rather than health focused, there are nonetheless important issues that have been highlighted that have clear implications for bodily health.

More recently I have focused more on drinking water, where I consider differentiation among populations in terms of who is able to access water, as differentiated by gender, ethnicity, relative impoverishment and so forth. This work focuses on urban areas of Accra, Ghana (where only roughly half the urban area is served directly by the piped municipal network), Cape Town, South Africa (where there is near universal coverage, yet nonetheless, important differences in terms of experiences of access, for instance, between those with in-home access and those sharing communal taps), and in First Nations of British Columbia Canada (where many communities suffer from poor quality water as well as permanent boil water advisories). All of this work again highlights the need to foreground equity considerations and also to highlight differentiated access when considering water issues.[1] Also linked to

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[1] More details can be found on www.edges.ubc.ca or www.watergovernance.ca

bodily health, water has clear, albeit indirect, effects through a number of other mechanisms, including demonstrated links to hunger. The political ecological focus of the study of the GAP project in southeastern Turkey has shown that while income has increased, other dimensions of vulnerability have also increased (World Development, 2008), and further, that women, the poor, or landless populations might be most likely to be adversely affected. With respect to diet and nutrition there are ambiguous outcomes associated with irrigation in the Harran plain. In particular, the shift from subsistence where many grow wheat, lentils and other pulses and herd sheep and goats, to a cash economy, where approximately 90% of fields are dedicated to cotton, means that diets have shifted significantly (often with families no longer having direct access to grains and proteins, including cheese, yogurt, meat and other things they would get from animal husbandry which was common prior to irrigation, but which has diminished significantly since then). Yet, on the positive side, irrigation is also allowing families to grow small garden plots with peppers, eggplant, tomatoes and other summer vegetables. There are complex outcomes for health and well-being when viewed through the lens of diet and nutrition. That said, the conversion to a market oriented cash crop such as cotton has also meant heightened vulnerability of many families to price shifts or shocks (which was witnessed precisely during field work conducted in 2001 during the massive collapse of the Turkish economy).

The very issue of dam building and associated relocation has clear implications for general capability concepts such as the capability to choose. Here, we see dynamics where dam building is occurring in the primarily Kurdish region of the country (where the headwaters of the Tigris and Euphrates rivers both flow), but where much of the electricity generated will be used in the touristy southern areas of the country. This has led to complex political dynamics and discourses highlighting 'theft of Kurdish waters' or complex issues related to self-determination or claims of 'internal colonialism' (drawing on the long and complex political history and violence of the region (see Harris, 2002, *Water and Conflict Geographies*). As such, we see clear examples where water related development and water access has clear and direct linkages for notions of autonomy and self-determination as well. Particularly as water infrastructure is often large and costly, there are often complex negotiations of state-society relations or imposition of statist agendas on regions and populations (see Harris, 2012, *State as Effect* and *States at the Limit*, 2009). Interestingly, while much of the literature on the GAP project has emphasised these more negative dimensions of state practices in the region, it is also clear that there is a tremendous capacity of water access, infrastructure and delivery to moderate negative and even violent dynamics that have long existed in the southeastern Anatolia region. In particular, the long contested Turkish state has increasingly been narrated as legitimate in the region, precisely due to these development efforts, access to irrigation and associated services. The recent work in Accra and Cape Town conducted by Harris and other students as part of the EDGES collaborative similarly focuses on the centrality of service delivery (such as drinking water and sanitation) for notions of state legitimacy, or for notions of individual citizenship and responsibility. As a basic resource essential for life, water is often key to these negotiations of appropriate government action or linked notions of autonomy, self-determination or adequate political representation.

As another theme related to capabilities which this work on water access, politics and governance speaks to, I have also considered issues of autonomy, self-determination and participation in social life in relation to water governance. This is a key theme for recent work on water and First Nations in the Canadian context. For the work in Accra and Cape Town, again possibilities for impoverished and vulnerable communities to participate in decision making over water important for their lives and livelihoods is a key theme (see Morinville and Harris, 2013 for work on Local Water Boards in the

context of Accra). Building on key themes in the literature related to exclusions from key decision making entities and practices that are common to work on gender and the environment, feminist political ecology, environmental justice, and allied fields, I have similarly documented the exclusion of women, impoverished and landless farmers from Water User Groups in the context of southeast Turkey (Harris, 2005). I have also found it useful to analyse broader water governance practices and how they are changing with neoliberalisation and market orientation from a gender perspective, highlighting ways that participation is at once important for marginalised populations, but also may mean particular difficulties for these populations as more responsibility is often downloaded without adequate resources or capacities (Harris, 2009).

Linked to these practices of exclusion, work has also shown important issues related to self-respect and aspiration. For example, again analysing developmental and water-related changes in the GAP region of Turkey, it was often mentioned in interviews that women do not work or contribute to the household but 'just sit'. The analysis of these discourses, in the face of clear and considerable labour and contributions of women to agriculture and the household, is one where feminist analysis is particularly useful. In particular, these frequent invocations and discourses assert male status and prestige. In brief, because men gain status when they are able to care for wives and families, and when women do not have to work in the agricultural fields, often these ideas are repeated in ways that devalue women's labour and contributions. We see that irrigation access has resulted in new labour practices for men and women. Interesting for the broader question of self-respect and aspiration, most men are now able to labour in work they consider to be prestigious—as an irrigator—while very few women are able to realise their notion of 'prestige' by being able to stay at home with the children and avoid working in the fields (most are now, by contrast, working extensively on the labour intensive tasks associated with cotton production—particularly the harvest) (Harris, 2006). In these ways, feminist political ecological analysis is useful to highlight differentiated effects of agricultural changes and water access for men and women, as well as the ways that this connects to broader notions of capabilities.

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ACCESS TO WATER AND THE CAPABILITY APPROACH

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Readers of *Maitreyee* might be a bit amused that nearly 2600 years after Thales of Miletus, there are researchers who are still talking mainly about water. I am not going to add to their amusement by presenting nuanced arguments (sometimes mixed with clichés) as to why water is an important social and political issue. Inequality in access to water is like any other aspect of inequality that emerges from improperly managed human and environment interaction. Thus, in my view, the lack of access to water is not very different from the lack of access to education, or access to information and networks, or access to health services– these are all merely different manifestations of injustice and inequality in a given society.

Inequality in access to water is an enigma. On the face of it, the surface area of our planet has more water than land. According to *US Geological Survey* data, there is about 1.4 billion cubic kilometres of water, though only 0.8 per cent of this is in the form of fresh water. This works out as 1.5 million cubic metres for every person, equivalent to the amount of water each of us consumes in 27 years! Yet, the UN (2013) report on the *Millennium Development Goals* notes that over 768 million people do not have access to 'improved' sources of water. This is without taking into account the quality of water or the distance over which water has to be carried. Part of the problem is that freshwater is not ubiquitous– there is a lot more of it in some places and a lot less of it in others. Yet, the fact that within the same city you could find poor people having to queue for several hours to fetch a small amount of drinking water while not too far away there are lush green lawns in larger houses, corporate and government complexes and rolling lawns on golf courses, raises serious concerns about deeply institutionalised inequality. We should really worry about the nature of a society and such degrees of inequality.

Inequality and injustice in relation to water can be examined with different units of analysis. Studies at the global and regional scales emphasise the unequal (hydro-geographical) distribution of freshwater. Some of this global and regional inequality in the way water resources are distributed is exaggerated by the asymmetric nature of some of the water resources such as rivers. There is scope for trans-boundary rivers to become flash points. However, the much exaggerated thesis of 'water wars' has been seriously questioned by researchers such as Wolf et al. (2003) and Yoffe et al. (2004). Based on systematic analysis of various river basins over the twentieth century, these authors argue that there have been more instances of co-operation than conflict. However, their analysis also highlighted that co-operative treaties are more likely during years of plentiful rainfall and flow and conflict-type relationships are more likely in years when rainfall is significantly below long term average. This suggests that though we need to be critical of 'water wars' theses, there is scope for tensions and conflicts to emerge especially due to variability in water flows, perhaps further influenced by climate change. However, there is scope for anticipating and resolving this from a freedom perspective (more later).

In the *UN Millennium Ecosystem Assessment* (or MA) framework, ecosystem services are seen as the various benefits people receive from the ecosystems– these include food and water (provisioning services); regulation of floods, drought etc. (regulating services); formation of soil and its nutrients (supporting services) and normative or nonmaterial benefits (cultural services). Chapter 7 of the *Condition and Trends* assessment report (Vorosmarty et al, 2005) focused on freshwater as a provisioning service (from the ecosystem). This chapter noted that globally only 15 per cent of the population lives in water abundant areas; 65 per cent of the population share low to moderate supplies and that another 20 per cent of the population has no appreciable water supply. The chapter also ranks global water quality issues with pollution/contamination by pathogenic agents, organic matter, heavy metals and pesticides taking the top four places. Among the MA synthesis reports, one report (Finlayson et al, 2005) focuses on human well-being and wetlands and water. The discussion there emphasises that it will be advantageous to focus on multiple goals including poverty and hunger reduction, climate

change mitigation, and meeting Ramsar and CBD commitments (page 11).

The concept of water stress or water scarcity has been used to highlight the need to manage freshwater carefully. There are a number of problems with using a metric such as 'cubic metres of fresh water per capita' and comparing this with an arbitrary line such as '600 cubic metres per person' to define water scarcity (discussed in Anand, 2007a: chapter 2). There exists little meaningful relationship between the amount of freshwater available per person from a statistical point of view and whether every person in society has the ability to command and receive a certain amount of water. The Democratic Republic of Congo has 14,000 cubic metres of water per person, yet only 45 per cent of its citizens have access to improved sources of water; whereas Singapore has less than 115 cubic metres of water per person, but 100 percent of the population have water access (2010 data from FAO and WHO-UNICEF).

While the global or international level analysis is of interest, a greater and more immediate issue is of inequality in access at the level of the individual. Concepts such as water poverty or water insecurity are sometimes used to capture this dimension though there are some problems with such concepts. I have suggested elsewhere alternative ways in which we could identify water insecurity from already available data collected by WHO-UNICEF Joint Monitoring Programme (see Anand 2012).

There is clear evidence that improving water and sanitation saves lives. An earliest example of such evidence concerns cholera. Ever since 1854 when John Snow connected an outbreak of cholera in London's Soho to water drawn from a hand pump on Broad Street, improving water and sanitation has become a central premise of public health measures. A paper published in *The Lancet* in 1872 (September21; pages 415-6) presents evidence that the introduction of a filtered water supply in Calcutta resulted in a significant fall in the number of deaths due to cholera from 5,076 in 1865 to 800 deaths in 1871. Notwithstanding the 'great sanitary victory' of the nineteenth century water related diseases continue to claim lives even today. The most recent *Global Burden of Study* reveals that some 337,000 deaths in 2010 were due to 'unimproved water and sanitation' (Lim et al, 2012).

Yet, improving water supply and sanitation is a rather blunt way to achieve health outcomes. Globally, approximately 700,000 children die due to diarrhoea (Fischer-Walker et al, 2013). Improving water and sanitation will not eliminate deaths caused by diarrhoea but can help in reducing these significantly. For example, a study of city-wide sanitation in Salvador in North East Brazil shows that such improvement could lead to a 22 per cent reduction in the incidence of diarrhoea among children (Barreto et al, 2007). From a review of 110 randomised trails, Bhutta et al (2013) noted that risk of diarrhoea decreases by 17 per cent with water supply, 36 per cent with improved sanitation and 48 per cent with hand washing with soap.

The connection between water and the Capability Approach is still developing and I have been lucky to be associated with some of the early attempts on this theme. I hope *Maitreyee* readers would be kind to allow me a brief personal reflection. I had a lucky breakthrough in conceptual terms to connect access to water and entitlements after attending Professor Amartya Sen's lecture when he was awarded the Edinburgh Medal in March 1997. Though a few others had previously used the expression 'water entitlements' (for example Webb and Iskandarani, 1998), they have focused mainly on a legal concept of entitlement and there was no reference to Sen's entitlements analysis in that study. Some initial thoughts on applying Sen's entitlements analysis to water supply from my doctoral work were expressed in Anand and Perman (1999) and these were more fully developed in a UNU/WIDER discussion paper (Anand, 2001). Our main contribution is to demonstrate a way to operationalise an entitlements analysis in applying it to access to water supply in a city using primary research data.

The entitlements analysis helps in changing the nature of the question from 'there being not enough water' to one of 'some people not getting enough water'. Though the former way of thinking still dominates water delivery institutions such as water utilities and local government bodies, the overall emphasis in policy discussions began to change significantly with a gradual shift towards a human right to water. The idea of access to water as a human right is not directly mentioned in the *Universal Declaration of Human Rights* – though it could be read into some of the issues related to concepts of

dignity and 'decent standards of living' in both the *UDHR* and the *International Covenant on Economic, Social and Cultural Rights* (*ICESCR*)s of 1966. *The Child Rights Convention* of 1989 in article 24 calls upon state parties to recognise the right of a child to the enjoyment of the highest attainable standards of health, and specifically urges state parties to provide clean drinking water and to extend information and awareness about hygiene and sanitation to all 'segments of society'.

In 2002, the *UN Committee of Economic, Social and Cultural Rights*, general comment number 15, articulated the basis for a human right to water. In this Comment (paragraph 10) the Committee noted: "…The right to water contains both freedoms and entitlements. The freedoms include the right to maintain access to existing water supplies necessary for the right to water, and the right to be free from interference, such as the right to be free from arbitrary disconnections or contamination of water supplies. By contrast, the entitlements include the right to a system of water supply and management that provides equality of opportunity for people to enjoy the right to water." In paragraph 37 in the same note, the Committee felt that even under existing provisions of *ICESCR*, state parties have core obligations related to a human right to water. In July 2010, the *UN General Assembly Resolution A64* unequivocally declared that a right to safe and clean drinking water and sanitation to be "…a human right that is essential for the full enjoyment of life and all human rights".

These are momentous and significant milestones in our journey towards reducing inequality in access to water. However, proclamation of a human right to water is not a magic wand. My previous analysis comparing a group of countries including South Africa who have promulgated a right to water, and a control group of their neighbouring countries who have not, showed that promulgation of a right to water did not make any significant difference in progress with regard to the number of people gaining access to water (Anand, 2007b). There could be several reasons for this. Promulgation of a right is merely a first (and easy) step– the deeper institutional change that is necessary to clarify duty-bearer responsibilities and accountability mechanisms will take time and require further deliberation and sustained action.

One of the challenges to realising the right to water is that in most countries much of the available freshwater resources are used mainly for agriculture (as highlighted in the UN *Millennium Ecosystem Assessment Report*, the *HDR2006* and Anand, 2007a). There are also wide variations between countries in water intensity for economic activities (for example, cubic metres of water required for producing 1 dollar of GNI in agriculture or industry) resulting in a rather complex water footprint of nations. One aspect of such a footprint is the virtual water transfer due to international trade in commodities (Allan, 2011). There are other aspects as well in terms of transfer of 'dirty laundry' industries (i.e., those that produce a lot of waste water) to countries with rather limited regulatory capacity. Within a nation too there are complexities due to freshwater being located only in some regions. This results in policy level conflicts in prioritising economic rights (agriculture and industrial production) with the human right to water and distributional conflicts in terms of water disputes. I have examined elsewhere in depth the issues of river water disputes and how we could attempt to resolve such disputes from the view point of capabilities and freedoms (Anand, 2007a and c). I have argued there that at present institutions governing the sharing of river water take a predominantly legal approach to water allocation problems and so far human right considerations have not entered into such discussions. The Capability Approach and universal life claims can help us to prioritise the meeting of the human right to water and the sustaining of ecosystem functions and protecting these aspects of water consumption before everything else. This has not yet happened but I believe from now on the judiciary in such legal disputes will have to take note of the UN General Assembly resolution on the human right to water.

Though the idea of human rights is important, there is more to inequality in access to water than a promulgation of a human right to water. In an evaluation of inequality, as Sen (1992:135) reminds us, there is a need to keep in focus the 'effective freedoms'. We can apply this to say 'effective freedom from thirst' and its role in other effective freedoms such as 'freedom from (avoidable) diseases' such as diarrhoea and cholera and so on, which must guide us in achieving the required change in the nature of institutions based on human agency and deliberative public reasoning. Inequality in access to water is thus not so much about water – it is essentially about the inequality in life outcomes and substantive

freedoms and why institutions so often fail in realising these outcomes.

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WATER INSECURITY, EMOTIONAL DISTRESS, AND MENTAL ILLNESS: IMPLICATIONS FOR HUMAN DEVELOPMENT & CAPABILITIES

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Introduction

A lack of basic resources impedes people's ability to reach their full potential in many ways. One important, but less considered, way in which insecurity undermines wellbeing is through emotional and mental health. People with mental illnesses have a 40-60% increased chance of premature death, and mental illness accounts for 13% of the total disease burden globally (Bloom et al. 2011). Mental illness, then, fundamentally impairs people's capabilities by impairing their health (i.e., physical and mental) and wellbeing (i.e., emotional satisfaction). A growing body of research now indicates that people living in poverty are at much higher risk of developing common mental disorders (Patel and Kleinman 2003). To explain the mechanisms that link poverty and mental illness, many have looked to the role of inadequate food and water. Initial research on food insecurity showed that people who lacked sufficient food were more likely to experience symptoms of anxiety and depression (Weaver and Hadley 2009). More recently, new research has uncovered a link between water insecurity and mental ill-health. Such research has shown that people dealing with a range of water-related stresses—including drought, failing water institutions, and inadequate sanitation—are more likely to experience emotional distress and mental illness.

Drought

Perhaps the strongest evidence of a link between water insecurity and mental illness comes from studies of drought. During the severe Sahelian droughts of the 1970s, for instance, many scholars noticed an increase in nervousness, hopelessness, and fear among residents of drought-struck communities. Turnbull's (1972) ethnography of the Ik of Uganda follows the story of a nomadic people as they are displaced from their land and then plagued by drought. As the community was decimated by thirst and hunger, people's emotional responses progressed from desperation to hopelessness to apathy. Cawte (1978) conducted psychiatric research among the Kaiadilt of Bentick Island, Australia. There he found people who experienced drought were more likely to experience depression and anxiety. From these early beginnings, scholars have developed more rigorous ways of assessing the symptoms of mental illness. The extreme Australian drought of the 2000s produced the first set of studies that definitively establishes a link between drought and mental illness. Residents of farming communities affected by the drought experienced heightened feelings of worry and helplessness (Sartore et al. 2008). As the prolonged drought worsened, these feelings began to develop into more serious mental health concerns, such as emotional distress and behavioral problems (Dean and Stain 2010). Ultimately, drought-related stresses resulted in greater rates of suicide among rural Australians (Fragar et al. 2008, Hanigan et al 2012). This is a growing area of concern for global health practitioners, who fear that climate change will increase the frequency and severity of droughts (and their mental health impacts) around the world (Berry et al. 2010).

Failing water institutions

Globally, 783 million people lack access to any improved water source (United Nations 2012). Even within one city, water coverage can be extremely uneven, as some residents receive low-cost municipal water delivery, while others must queue for hours a day to buy water at exorbitant prices. And even when "improved sources" are available, there is no guarantee that people will be able to obtain *enough* water (at least 50 liters daily) to meet their basic needs (Gleick 1996). Recent research indicates that people who are dependent upon inequitable or exclusionary water institutions are at risk of experiencing severe emotional distress. For instance, Ennis-McMillan's (2001) research in central Mexico explores how the inequitable distribution of water rights and responsibilities provoked emotional suffering. Ennis-McMillan found that residents who were dependent on a community water system, which was periodically shut off due to underfunding, were more likely to experience negative emotions like frustration, anguish, and anger. Another powerful example is Goldin's (2010) research on the exclusion of non-whites from water governance in South Africa. Goldin found that this exclusion provoked a profound sense of shame, which impeded people's ability to assert their rights to improved water access. In my own research in a Bolivian squatter settlement, I found that dependence on water institutions that had ambiguous and inequitable rules put people at greater risk of emotional distress (Wutich and Ragsdale 2008). In particular, squatters were far more likely to experience worry, fear, bother, and anger when they relied on sources (i.e., private vendors and neighbours) known to unpredictably deny them access to water. Stevenson and colleagues' (2012) research with women in Ethiopia was the first of these studies to establish a definitive link between water insecurity and mental health. They found that women who experienced great water insecurity reported having more symptoms of psychosocial distress on the *Falk Self-Reporting Questionnaire*, a psychiatric screening tool.

Inadequate sanitation

Around the world, 1.1 billion people completely lack sanitation facilities (United Nations 2012). People who cannot safely dispose of wastewater are at greater risk of contracting diseases including cholera, typhoid, and dysentery. Beyond the risk of infectious disease, inadequate sanitation may put people at greater risk of experiencing social stigma, emotional distress, and mental ill-health. Women appear to be at greater risk, given that typical gendered divisions of labour make women responsible for the care of homes, health, and children (UNDP 2006). For instance, Reddy and Snehalatha's (2011) research explores the social costs of having an "unhygienic" home in the slums of Andhra Pradesh, India. Women suffered scolding from their husbands and humiliation before neighbours when they lacked sufficient water to clean their homes. Stigma is even more severe when people lack sufficient water to attain social norms for clean bodies. Rashid and Michaud's (2000) research in Bangladesh documented the experiences of young women who lacked sufficient water to clean themselves during menstruation. These women reported feeling impure and ashamed, and ultimately experienced distress and anxiety. These cases are far from isolated. Curtis and colleagues (2009) found that, cross-culturally, inadequate hygiene was a source of shame, humiliation, and stigma. Further, this research found that people who did not adhere to local hygienic norms suffered status loss and social isolation. Such has historically been the case for people in communities struck by cholera, a waterborne disease typically associated with inadequate sanitation. Nations and Monte's (1996) research in Brazilian *favelas* (slums), for instance, found that people whose communities were seen as sources of cholera reported feeling ashamed, tainted, and disgraced. Thus water insecurity can produce a complex cluster of problems— including disease, stigma and emotional distress—for those affected.

Conclusion

Water is intimately linked to health and wellbeing, in ways that are both apparent and hidden to casual onlookers. Most immediately, inadequate or poor-quality water causes infectious disease, which compromises people's health, impedes their ability to work, and may force their families to incur medical debt. Beyond this, water insecurity and waterborne disease are widely stigmatised, creating shame and social exclusion for affected populations. Because of the serious social, economic, and biophysical risks associated with water insecurity, people fear and dread it. Whether the source of water insecurity is natural (i.e., drought) or social (i.e., inequitable or exclusionary institutions), it puts people at increased risk of suffering emotional distress and mental illness—threatening to push them further into the downward spiral of hospitalisation, lost work opportunities, debt, and poverty. For these reasons, water security is crucial for human freedom, development, and wellbeing.

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ASSESSING THE RELATIONSHIP BETWEEN YOUTH CAPABILITIES AND FOOD SECURITY: A CASE STUDY OF A RAINWATER HARVESTING PROJECT IN SOUTH AFRICA

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Introduction

I carried out a study that focuses on rural youth in Luphisi and Dwaleni villages in the Ehlanzeni District Municipality (EDM) in the Mpumalanga Province, South Africa, where I looked at the relationship between youth capabilities and food security. An Integrated Rain Water Harvesting Project (IRWHP) was implemented in the EDM of Mpumalanga Province in 2009. The overall purpose of the project was to enhance food and water security by allowing for an extended cropping season through the collection and storage of water (Goldin, 2009). The study uses the Capability Approach (CA) as its theoretical framework and, as has been suggested by Robeyns (2003), I considered the CA as a broad normative framework for evaluating individual well-being and social arrangements, policy designs and proposals about social change in society (Robeyns, 2003). It was helpful to use the framework in my study to evaluate food and water security, concerns that are part of a wider variety of aspects of people's well-being, inequality and poverty (*ibid*).

The Capability Approach and its relevance to the water sector

Anand (2007 cited in Goldin et al., 2008) notes that the CA has only recently been applied to the water sector. However, it is a useful development framework within which to reflect on the extent of achievements in the water sector (Goldin et al., 2008). The multi-dimensional poverty approach embraces notions of development that pay particular attention to the expansion of human capabilities (Goldin et al., 2008). According to Goldin et al. (2008) the expansion of human capabilities is built on principles of social justice and equity, including the just allocation of resources. The authors note that the multi-dimensional approach encourages an expanded set of poverty indicators that are of great importance to the water sector because it brings to the fore vital capabilities and functionings that are necessary to enable human systems to effectively manage the ecosystems on which they depend. The authors state that it is critical to select measurement indicators that tap into constructs such as self-esteem, empowerment and agency as measurements of well-being.

Research methodology

The study used a mixed methods methodology. Focus group discussions were conducted using a semi-structured interview guide which included a list of questions around water and social issues relevant to the IRWHP and designed to fit within the CA framework. The survey instrument was organised under the following subthemes: demography, utilities, food security, income, social capital and empowerment, skills training and social change. The quantitative data was analysed using the statistical analytical package STATA. The total sample size for youth in both villages was 199 (79 for Dwaleni and 120 for Luphisi). Youth form 49.14% of the total sample size for all age categories in both villages. I used an age category for youth of 18-35 years.

Results and discussion

The results show that youth have high levels of certain attributes/capabilities such as trust, social cohesion and inclusion, co-operation, self-esteem and meaning. The findings also show that in other dimensions there are fewer opportunities and that, in particular, access to networks, access to knowledge and information and sociability are lacking among youth. This is confirmed from the statement below when youth were asked if they were aware of any water committee in the community:

> "We don't know, but we have meetings where we talk about water problems…we know about the borehole, but we don't know who put it there."

Low levels of adherence to networks, lack of access to knowledge and information and poor sociability restrict opportunities for youth to engage with issues around food and water security. The Chi-square test was used to investigate the relationship between youth capabilities and food security and at $p<0.05$ results showed that there was no relationship between youth capabilities and food security in Dwaleni. There were however three capabilities which showed a significant statistical relationship between youth capabilities and food security in Luphisi namely: collective action and co-operation, social cohesion and self-esteem. This is reflected in the statement below:

> "We can start income generating projects instead of sitting at home and gossiping all day."

Youth coming together could have a positive impact on their livelihoods. As youth work together on issues of common interest, trust is built and this solidarity sets the stage for co-operation around living conditions and livelihood strategies– including food and water security.

Conclusion

According to the *South African National Youth Policy 2008-2013* (Republic of South Africa, 2008), some of the youth rights include participation in the planning and implementation of youth development by becoming the custodians of their own development and attaining an educational level commensurate with their aspiration and self-determination. Although it is beyond the scope of this study to consider ways in which general education levels could be improved, the study does recommend making information available in such a way that youth are able to attain new knowledge which they can then apply to food and water projects. The CA is a constructive framework within which to consider youth and particular aspects concerning their freedom and opportunities.

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