



Maitreyee

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Dear HDCA member,

Over the last decades, the human development and capability approach achieved considerable expertise and voice in many areas of development research, policy and practice. Poverty and gender, justice and human rights, ethics and empowerment – to name a few – are fields to which HDCA has been contributing for long.

However, the environment and environmental sustainability have been relatively neglected. At least so it may seem. This is would be both a surprise and a considerable lacuna. The entitlement to lead a life in human dignity and with valuable choices cannot be a privilege of only those living today. Moreover, environmental challenges affect the lives of millions of people, often very immediately and brutally.

This edition of *Maitreyee* therefore aims to show that the human development capability approach has in fact some important insights and messages to offer. We have invited four HDCA researchers to contribute and begin with a brief overview of some important contributions of the capability approach to environmental protection and sustainability issues.

Our next *Maitreyee* will be in September 2011. If you wish to contribute and/or propose a topic and be guest editor, please do contact us.

Fabian Scholtes (guest editor) and Séverine Deneulin
E-mails: mail@fabianscholtes.de, s.deneulin@bath.ac.uk

Marrying environment and development: What the capability approach has to offer

Fabian Scholtes
KfW Development Bank, Frankfurt

The environment seems back on the agenda. Climate change, deforestation and land conversion, Fukushima, etc., headlines touching upon how we are managing or rather misusing the global commons abound. Next year, there will be the 20 years follow-up to Rio Earth Summit, where development and environment were so prominently united. The question of how to put this marriage into practice has lost none of its urgency and little of its complexity and challenge. Climate change is expected to increase the burden of poverty, and successful reconciliations of poverty reduction and environmental sustainability are widely overcompensated by ever-increasing throughputs of material and energy.

Triggered by the near-collapse of blind faith in markets and growth in the 2008 economic crisis, economics is being critically examined. Reflection has set in. The economic system is good as long as it grows, yet by growing, it undermines its very conditions of functioning through destruction of the environment. Such aporia calls for fundamental scrutiny. The quest for ‘prosperity without growth’ (Jackson 2009) and a green economy (UNDP 2011) is on the agenda. A serious self-critique of economic thinking – including as to how we should measure and evaluate economic performance (Stiglitz-Sen-Fitoussi Commission, 2009) – gains momentum.

Here the human development and capability approach has a say. Questioning mainstream economic thinking about development is part of its genesis; re-prioritising valuable ends like human freedoms over materialistic means lies at the core of its rationale. However, when it comes to the green side of the coin and to how we think about, measure, and achieve, environmental sustainability, the capability approach is less pronounced than it could be.

Or is it? Relatively speaking, it is. Other development issues have received far more attention in the human development literature. Systematic work on how the human development and capability approach and the environment connect is scarce. At the same time, founders and proponents of the approach have contributed substantially to a range of issues, and the discussion has recently intensified. The contributions in this *Maitreyee* are based on very recent research. Let us put them into the context of what the capability approach has contributed to the discussion so far.

Breana Holland addresses the fundamental question of how to assess the state of, and changes in, the environment. Her point of departure is Anantha Duraippah’s analysis of linkages between ecosystem services on the one hand, and human well-being and poverty reduction on the other. Lately, this pioneering work from 2004 seems to have been – quite undeservedly – neglected, even though it addresses the very questions that the capability approach poses and draws on ideas of multidimensionality, interdependencies and complementarities of human freedoms. Holland offers an important step beyond this by also drawing our attention to trade-offs that exist between developmental and environmental ends and means.

In environmental economics, instead of complementarities, the idea of substitutability has long prevailed. Sustainability concepts still build on the assumption that natural capital could be substituted – to a large extent – with man-made capital. One of the earliest contributions of human development, going back to a background paper for the 1994 Human Development Report, has addressed this question. Sen and Anand criticised approaches to sustainable development limited to providing for either basic needs or overall living standards of future

generations (Anand and Sen 2000). The critique of the needs-based Brundtland definition is: needs is not enough. The critique of overall measures is that we must not conceal and thus ignore important specific claims of future generation (as well as of people today) by submerging them into one levelling overall measure. Here, Anand and Sen suggest for the first time freedoms or capabilities as the relevant notion of advantage and answer to the question ‘sustainability of what?’ – a core proposition that can be found in many subsequent attempts to connect the human development literature with the environment (among others, Duraiappah 2004, Mathai 2004, Scholtes 2004, Page 2007).

The need to acknowledge specific claims features heavily in the contribution of Clare Heyward. She looks at how climate injustice may include that adaptation to climate change is not only insufficient regarding some capabilities but also incomplete, since other important capabilities are simply not covered. While approaches which look at overall, and often only economic, measures of well-being tend to ignore this, the human development emphasis on core basic capabilities, such as for instance suggested by Martha Nussbaum, leads to a much richer picture of what ought to be sustained.

Heyward’s contribution also points to the question of whose concerns need to be taken into account. The capability approach has always advocated considering the (cultural as well as individual) diversity of what people value being and doing and, in particular, enabling the unheard to make themselves heard. Sustainability, after all, is an endeavour to do justice to people of whom we do not even know which freedoms they will value. This poses a challenge to the capability approach where much emphasis is put on the opportunities of people to live lives *they* have reasons to value (Scholtes 2010).

We get a flavour of this problem when looking at how even today’s environmental values differ. This is what Krushil Watene offers in her contribution. She shows that people may relate to nature, and value its existence and conservation based on concepts and values fundamentally different from those in dominant environmental economics’ discourse. The mere existence of a certain value system is not reason enough for acting in accordance to it, in particular if this affects other people with other value systems; this goes for environmental economics as much as for the Maori. However, there is an urgent need to include more environmental discourses and to challenge dominant ones.

Recently, this inclusive attitude has even gone beyond *human* development. Nussbaum (2006) includes sentient animals in the community of those who have justified claims to ethical consideration and treatment. Schlosberg (2007) suggests extending the scope of human development even beyond this, towards the inclusion of species and ecosystems. This may be even more controversial, but should be appreciated for driving forward the discussion of how the environment should be included among what matters, that is, among valuable capabilities. Holland (2008a) has suggested ‘sustainable ecological capacity’ as a meta-capability that needs to underlie the provision of other capabilities.¹ Others have explored to what extent environmental issues are already sufficiently covered by existing lists, in particular that of Nussbaum (2000).

The question of including reasons for conserving the environment touches upon another early concern of the human development literature. Sen (1995) discussed the merits and limits of market-based procedures of valuing the environment and called for a fuller ‘social choice formulation’ of environmental problems. He also pointed to the limits of incentive-based systems of pursuing environmental conservation, suggesting that people judge alternatives

¹ ‘Having this meta-capability involves being able to live one’s life in the context of ecological conditions that can provide environmental resources and services that enable the current generation’s range of capabilities; to have these conditions now and in the future’ (Holland 2008a: 6).

‘from a social perspective which includes her own well-being, but also, quite possibly, many other considerations’ (p. 23). This question of which reasons for which people would actually preserve the environment has been taken up lately by Lessmann (2011). According to Sen, public deliberation, valued for its inclusion of voices and viewpoints, also allows for cultivating social values and a ‘sharing psychology (...) that may well be extremely valuable as a human resource (...) to preserve and look after the environment’ (Sen 2003: 7ff.). Even proponents of the capability approach were tempted to ask if this were too optimistic.

In his contribution, Manu Verghese Mathai probes the limits of this ‘sharing psychology’ in the context of a dominant economic development discourse and its power over social behaviour. However good the capability approach is at re-prioritising development ends, how can it avoid that free agents simply may not opt for a sustainable path of sufficiency along with efficiency, for instance in deciding upon energy end-uses? How do we increase the probability that agency serves as a vehicle for development *and* sustainability? Mathai’s proposal provokes the capability approach to clarify further how the social and institutional embeddedness of agents may not only be appreciated (or critically scrutinised) but even be drawn upon to foster sustainability.

There are two further anchors for fostering sustainability. One is in line with the idea of sufficiency, which – more or less explicitly – can be found in many human development contributions: Holland (2008b) suggests capability ceilings, i.e. thresholds above which an expansion of capabilities is not justified if this implies environmental costs – in particular if it is at the expense of other people’s capabilities. This corresponds to the policy approach of, for example, emission caps. Another anchor is stewardship and responsibility. Sen (2004) has stressed that our responsibility results from us being powerful over other species, but also over our successors who have no choice but live with what we leave behind. Responsibility comes in when the burdens of adapting the global economy to sustainability requirements need to be distributed. Responsibility implies ‘imperfect obligations’ of those ‘who are in a position to help’ (Sen 1999: 230). Those who are responsible for much of the global environmental challenge, and who are often more powerful regarding the adaptation of consumption, technologies etc., are in a position in which they not only can, but ought to help.

There are many more works on capabilities and sustainability, for instance on sustainability measurement and indicators (Constantini/Monni 2005), capabilities and collective action (e.g. Anand 2007); based on humanistic psychology, Rauschmeyer (et al. 2011) develops a concept for decision-making about which capabilities matter, for instance capabilities with different environmental effects. To the interested reader the HDCA thematic group on Sustainable Human Development provides a more comprehensive bibliography. Hopefully, this overview nevertheless provides a first picture. The following contributions illustrate that the discussion is ongoing and productive and has promising fields for further research. Enjoy – and contribute.

References

- Anand P.B. (2007) Capability, sustainability, and collective action: an examination of a river dispute, *Journal of Human Development*, 8 (1), 109-132.
- Anand, S. & Sen A.K. (2000) Human Development and Economic Sustainability, *World Development*, 28 (12), 2029-2049.
- Constantini, V. & Monni, S. (2005) Sustainable Human Development for European Countries, *Journal of Human Development* 6 (3), 329-351.
- Duraiappah, A.K. (2004) Exploring the Links. Human Well-Being, Poverty, and Ecosystem Services (Manitoba, IISD).
- Holland, B. (2008a) Justice and the Environment in Nussbaum’s ‘Capabilities Approach’. Why Sustainable Ecological Capacity is a Meta-Capability, *Political Research Quarterly*, 61 (2), 319-332.
- Holland, B. (2008b), Ecology and the Limits of Justice. Establishing Capability Ceilings in Nussbaum’s Capability Approach. *Journal of Human Development* 9 (3), 401-425.

- Jackson, T (2009) *Prosperity without Growth. Economics for a finite planet*. London: Earthscan.
- Lessmann, O. (2011) 'Das Individuum und die Sorge für zukünftige Generationen. Capability-Ansatz und nachhaltiges Verhalten'. *Ökologisches Wirtschaften* 1, 23-24.
- Mathai, M. (2004) Exploring Freedom in a Global Ecology. Sen's Capability Approach as a solution for Environmental Deterioration. Conference paper, 4th HDCA conference, Pavia, Italy.
- Nussbaum, M. C. (2000), *Women and Human Development*, New York: Cambridge University Press.
- Nussbaum, M. C. (2006), *Frontiers of Justice: Disability, Nationality, Species Membership*. Cambridge, Mass.: Belknap.
- Page, E. A. (2007) Intergenerational Equality of What: Welfare, Resources or Capabilities? *Environmental Politics*, 16 (3), 453-469.
- Rauschmayer, F. & Oman, N. et al. (2011) *Sustainable Development: Capabilities, Needs, and Well-Being*. London: Routledge.
- Schlosberg, D. (2007) *Defining Environmental Justice*, Oxford: Oxford University Press.
- Scholtes, F. (2010) Whose Sustainability? Environmental Domination and Sen's Capability Approach. *Oxford Development Studies* 38 (3), 289-307
- Scholtes, F. (2004) Development as Freedom and the Protection of Nature As a Constitutive Aim of the Economy. Conference paper, 4th HDCA conference, Pavia/Italy.
- Scholtes, F. (2005) Responsibility and Imperfect Obligations: The Preservation of Nature as a Duty of Public Action. Conference paper, 5th HDCA conference, Paris.
- Sen, A.K. (1995) Environmental Valuation and Social Choice: Contingent Valuation and the Market Analogy, *Japanese Economic Review*, 64 (1), 23-37.
- Sen, A. K. (1999a) *Development as Freedom*, Oxford: Oxford University Press.
- Sen, A. K. (2003) What Difference can Ethics make? International Meeting on 'Ethics and Development' of IDB, www.iadb.org/etica/documentos/dc_sen_queimp-i.pdf, 25.03.2005.
- Sen, A. K. (2004) Why We Should Preserve the Spotted Owl, *The London Review of Books*, www.lrb.co.uk/v26/n03/sen_01.html, 1.2.2005.
- Stiglitz-Sen-Fitoussi commission (2009) Report by the Commission on the Measurement of Economic Performance and Social Progress, http://stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf, 1.3.2011.
- UNDP (2011) Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, <http://www.unep.org/greeneconomy/>, 18.3.2011.

Environmental Assessment and Human Capabilities

Breana Holland
Lehigh University, Pennsylvania

The capability approach, as an evaluative paradigm, has done much to expand and deepen contemporary thinking and reasoning about the goals and impacts of international development. However, the relevance of human capabilities to assessing changes in the natural environment is relatively unexplored in the growing body of literature theorizing and applying the capability approach.

In 2004, Anantha Duraiappah (2004) introduced pioneering work addressing the connection between human capabilities, environmental resources, and ecosystems. Specifically, in order to better understand the relationship between human poverty and ecosystem services, Duraiappah identifies ten primary constituents and determinants of well-being that are closely related to ecosystems. These include commonly discussed capabilities, such 'being able to be adequately nourished' and 'be able to be from avoidable diseases', as well less commonly recognized capabilities, such as 'being able to continue using natural elements found in ecosystems for traditional cultural and spiritual practices'. Duraiappah (2004:11) explains how ecosystems can shape each of these factors, thereby illuminating why they exert a powerful influence over whether people are able to escape poverty. For example, if people in poorer rural communities are dependent on wild plants for their fat intake, then damage to

ecosystems that sustain those plants can prevent people from being able to be adequately nourished.

In these and many additional ways, 'ecosystem services' provide a wide range of benefits to humans: they provide 'the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life' (Duraiappah 2004:13). This entails maintaining biodiversity and the production of ecosystem goods, such as seafood, forage, timber, biomass fuels, natural fiber, and many pharmaceuticals, industrial products and their precursors. It also entails maintaining the basic supporting functions for life on earth (such as cleansing, recycling, and renewal), as well as the intangible, aesthetic, and cultural values people derive from relationships to particular natural resources and places. While the functional importance of many ecosystem services is common knowledge among natural scientists, Duraiappah's work is novel in charting out the connections between these services and the multiple dimensions of well-being that determine whether people are able to escape poverty.

In linking different ecosystem services to different constituents of well-being Duraiappah's work is well-aligned with the capability approach, which also adopts a multi-dimensional view of the states and activities that matter in human life. Additionally, because the capability approach has put some emphasis on synergies between different freedoms (Sen 1999), Duraiappah's work clears a path for developing a capability approach to environmental assessments, which could reveal how those synergies depend on use of ecosystem services, and therefore help to account for the environment's crucial role in expanding and strengthening human freedoms. However, because use of ecosystem services can also produce conflicts between different freedoms, especially over longer time periods, a capability approach to environmental assessment can also reveal how environmental processes produce tradeoffs among human freedoms. In particular, activities associated with economic and social development not only depend on ecosystem services, these activities also can affect ecosystem services in ways that ultimately undermine human freedoms (see Holland 2008).

In this context, a crucial step for future work on the capability-environment nexus is assessing how changes in human capabilities relate to trade-offs between and among different ecosystem services. For example, when soil in an ecosystem is farmed intensively for long periods of time along with heavy applications of fossil-fuel based fertilizers, the ecosystem can lose its ability to generate and renew soil. Put differently, damage to an ecosystem due to overuse of soil in one time period diminishes the services that flow from the ecosystem in a later time period. The authors of the *Millennium Ecosystem Assessment* explain such trade-offs in the following way: 'Efforts to increase the short-term provision of services typically reduce the capacity of ecosystems to provide the full array of services in the future' (Millennium Ecosystem Assessment, 2005:14). Unfortunately, the threshold behavior that ecosystems exhibit often masks a decline in their ability to produce services until a collapse in functioning occurs (see Scheffer et al. 2001). Understanding how these ecosystem service trade-offs bear on human capabilities is therefore crucial to sustaining capabilities over time.

Minimizing such trade-offs will require identifying development activities that improve capabilities while also maintaining the resilience of ecosystems. For instance, by setting aside multiple protected areas within a broader ecosystem, it is possible to ensure that some minimal set of ecosystem services is sustained. In practice, this might require tailoring development activities that improve capabilities (e.g. agricultural development or resource extraction), so that parts of the relevant ecosystem (e.g. wetland areas) continue to provide crucial ecosystem services (e.g. water purification and biodiversity) and maintain their natural mechanisms of resilience to outside perturbations (Millennium Ecosystem Assessment,

2005:443). Incorporating an assessment of slowly changing environmental factors, such as soil formation and groundwater levels is also crucial to preventing ecosystem service trade-offs that threaten human capabilities. Although these slowly changing environmental factors are central to the provision of ecosystem services such as food and freshwater, in many instances a society will choose to increase use of food, freshwater and other 'provisioning services' from ecosystems, even if it leads to a slow decline in the environmental factors necessary to regulate and support these and other benefits. Environmental assessments that rank the preferences among different ecosystem services that are implicit in development activities supporting different capability improvements will help to reveal current environmental priorities and what the ramifications are in different time-periods.

Relating capability changes to environmental changes has the potential to profoundly reshape contemporary views about the kind of development necessary for sustaining capability improvements. In particular, a capability approach to environmental assessment can dramatically improve on common economic approaches to environmental valuation. Economic approaches determine the environment's contribution to individual well-being by assessing people's 'willingness to pay' for use of (or access to) specific components of ecological systems. In this form of assessment, it is people's subjective preferences – as revealed in the price they are willing to pay for particular environmental goods or services – that determine the environment's value. Unfortunately, such economic assessments fail to capture the breadth and depth of the environment's role in determining the possibility and quality of human living.

With respect to more general economic methods of well-being assessment, capability theorists commonly criticize preference-based valuation because people's preferences are susceptible to adaptation. In particular, preference adaptation can be problematic when one's preferences align with one's existing circumstances such that however limited they may be, these circumstances become more appealing and therefore more bearable. The problem is that this form of optimistic adaptation can occur even when one is objectively bad-off (see Nussbaum 2000). Basing environmental value on the subjective preferences people reveal in market choices is subject to a similar kind of adaptation. For instance, one's preferences may adapt such that one is willing to pay very little for a level of environmental quality that is beyond one's reach, or for a kind of environmental experience that one has never had (e.g. breathing clean air) and therefore recognized as valuable. The capability approach would avoid this problem by looking at what people are objectively able to do and achieve with a given level of environmental quality, rather than at how well they subjectively feel about a given level of environmental quality.

Objective assessment of the environment's role in supporting humans is crucial when viewed in light of several problems that challenge preference-based assessments of environmental value. When it comes to valuing components of the environment that are not individually owned (e.g. clean air) or that contribute to complex ecological processes (e.g. the carbon cycle) involving other ecosystem services, limitations in a person's understanding of and knowledge about the natural environment also threatens to significantly distort the accuracy of a person's subjective preferences. Economists view this as a problem of imperfect information, and therefore seek to 'impute' prices for environmental goods and services about which people lack information. For instance, if someone has little understanding of how dirty air threatens her respiratory health, then she may be willing to pay very little for property located in areas with clean air. However, that person may already be paying significant hospital bills for respiratory illness triggered by poor air quality. Imputing (or assigning) clean air a value that is equivalent to those hospital bills does not accurately convey the value of clean air to non-health and non-monetizable dimensions of a person's life, not to mention

the value of clean air to entirely different ecological services, such as the maintaining the chemical composition of the atmosphere. In short, methodological problems continue to challenge efforts to convey the significance of the environment's ecological contributions in economic terms.

These are some of the reasons why defining environmental value in terms of terms of the environment's role in creating and sustaining the capabilities that make up individual well-being or freedom can provide a more objective basis for environmental assessment. In a capabilities paradigm, the question of valuational assessment is not what people are willing to pay for environmental goods and ecosystem services, but rather, what these goods and services do to make people capable of pursuing activities and achievements they value or have reason to value. In addition to this, the multiple dimensions of human well-being that capabilities can define also make it possible to account for the environment's contribution to less material values, such as spiritual realization, which defies monetary representation.

While these advantages are important in the field of environmental valuation, it is important to note that the capability approach is committed to the liberal ideal of self-determination, autonomy, and individual consent, which involve defining one's own ends and purposes. The centrality of this commitment is why the capability approach focuses on the conditions that make genuine choice possible. Thus, a problem for the capability approach is that respecting people's choices may conflict with policy decisions emerging from assessments that demonstrate the objective implications of environmental degradation on people's freedoms. Specifically, respect for one person's choice to use ecosystem services in ways that enhance her capabilities may produce a negative impact on the ecosystems services supporting a different person's freedom to pursue the ends or purposes she values. Although environmental assessment need not entail adopting or endorsing a particular justice- or deliberation-based approach to resolving such conflicts, assessments that reveal such conflicts can help to ensure they are not ignored in public decisions. Indeed tradeoffs among individual freedoms that occur through environmental processes may not always be easy to see, but the implications of such tradeoffs for individual freedoms are no less important.

References

- Anand, Sudhir and Amartya Sen, 2000. "Human Development and Economic Sustainability." *Journal of World Development* 28/12:2029-2049.
- Duraiappah, Anantha K. 2004. *Exploring the Links: Human Well-being, Poverty and Ecosystems*. United Nations Environment Programme. Winnipeg, Canada: International Institute for Sustainable Development. www.unpei.org/PDF/economics_exploring_the_links.pdf
- Holland, Breena. 2008. "Ecology and the Limits of Justice: Establishing 'Capability Ceilings' in Nussbaum's Capabilities Approach." *Journal of Human Development and Capabilities* 9/3:399-423.
- Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Scenarios, Volume 2*. Washington D. C.: Island Press.
- Nussbaum, Martha. 2000. *Women and Human Development: The Capabilities Approach*. New York: Cambridge University Press.
- Page, Edward. 2007. Intergenerational Justice of What: Welfare, Resources or Capabilities? *Environmental Politics* 16/3:453-469.
- Scheffer, Marten, Steve Carpenter, et al. 2001. "Catastrophic Shifts in Ecosystems." *Nature* 413/October 11: 591-596.
- Scholtes, Fabian. 2010. "Whose Sustainability? Environmental Domination and Sen's Capability Approach." *Oxford Development Studies* 38/3:289-307.

Climate Justice and the Capabilities Approach

Clare Heyward
Magdalen College, Oxford, UK

This short article argues that the capabilities approach has certain merits over rival accounts when it comes to analysing injustices brought about by climate change. The capabilities approach endorses a multidimensional account of core human interests, such as that proposed by Nussbaum in her list of central human capabilities (Nussbaum, 2002, pp 79-89). Such list, I shall argue, allows acknowledgement of how several important ways in which the environment (and environmental change) affects human life. This is shown by considering complaints from indigenous peoples and citizens and leaders of Small Island States.

Climate change is set to have a significant impact on human well-being. Accordingly, there has been sustained international pressure for the world's leaders to agree a programme to avoid 'dangerous anthropogenic interference in the global climate', and ever increasing disappointment at the lack of progress made, especially when it comes to *mitigation* - the curbing greenhouse gas (GHG) emissions. One possible reason for the lack of progress in mitigation is the possibility of dispute for whether it, or an alternative response, *adaptation* is the best strategy. Whereas mitigation deals with the root cause of climate change, adaptation is intended to reduce the harmful impacts that climate change is likely to have upon people's lives.

The greater the adaptive capacity of any agent, the less urgent the need for mitigation – as individuals who can adapt will not be harmed, in the sense of losing their central capabilities to function. Tol and Yohe (2006) criticise the EU's goal of a 2°C limit in the rise in global temperatures as itself being too costly, and miscalculating the advantages of mitigation. It is more cost effective, they argued to scale back on mitigation efforts and to focus on adaptation. Similarly, Lomborg (2007) has argued that money spent on immediate mitigation initiatives would be better spent on reducing poverty and illness, as well as investing in research into cleaner technologies to make mitigation more cost-effective in the long term. If, he argues, we are concerned about the impact of climate change upon the spread of malaria, it would be better to provide malaria nets and medication directly, rather than to 'entirely stop' global warming (Lomborg 2007, p.224).

The problem with these arguments is that they overestimate the capacity for adaptation. Adaptation supposes that the goods affected by climate change are fully substitutable. That is, all functionings can be maintained by the replacement of some environmental goods by others. Using claims advanced by the Inuit Circumpolar Conference (ICC) and some Small Island States (SIS), I argue that this is not the case because some environmental goods that are being lost due to climate change are not *fully* substitutable. An important advantage of the capabilities approach is that its framework allows this problem to be expressed. Consider the following cases:

The Inuit Petition

The Inuit Circumpolar Conference is an organisation representing the Inuit peoples in different states around the Arctic Circle. The petition, on behalf of the Inuit peoples in Northern America, requested redress from the USA for the losses the Inuit are suffering due to anthropogenic climate change. One of the core claims of the ICC petition was that:

[t]he transition of their physical environment due to the individual and cumulative effects of climate change have undercut the Inuit's ability to enjoy the benefits of their traditional way of life and property, and have imperilled Inuit health, safety, subsistence harvest, travel. These changes are projected to accelerate, seriously threatening the Inuit's continued survival as a distinct and unique society. (ICC, 2007, p. 67)

We can discern two parts to the ICC's complaint. The first is that some capabilities are imperilled for members of the Inuit, due to the more dangerous travel conditions, and the decrease in food supplies. The second claim is that the Inuit are losing *their particular forms of property, food and travel*.

If the complaint was simply about the loss of the capability to achieve functionings relating to property, food, travel, etc then it could be resolved by adaptation, i.e. finding other means of realising those functionings. Indeed, the ICC petition gives several examples of substitutions which have already been made. For example, as the amount of food obtained by hunting and gathering decreases, more food is being purchased at stores, and in some areas boat travel is replacing over-ice travel. Sometimes where hunting and fishing is successful, species new to the area are caught. Tents are used now that there is less snow for igloos.

However, the complaint is not simply that these core functionings are being diminished. Although it is argued that consumption of store-bought food is behind an increase in diabetes, tents are colder than igloos and boat travel in the open sea is risky, the complaint is not simply that the changes are inadequate to protect these capabilities to function. What matters is that the Inuit's own *particular and unique ways* of meeting nutritional and other needs and the practices that have built up around them are increasingly unviable.

Nussbaum's list of central human capabilities contains elements which allow this dimension of the Inuit complaint to be accommodated. Whereas adaptive measures might ensure that the capabilities of life, bodily health, and bodily integrity (which include the freedom to move) continue to be realised, but in different ways, there are, I suggest, two further capabilities which will remain compromised.

Like many other indigenous peoples, the Inuit claim a special relationship with their local environment which is a core component of their cultural identity. The petition's claim was that the ongoing environmental changes undermine the ability of Inuit members to enjoy their traditional way of life and threaten the survival of the Inuit as a culturally distinct society. Consider therefore, the seventh and eighth capability in Nussbaum's list. Here, they are intimately linked. The seventh capability concerns the good of affiliation: 'being able to live with and toward others' (Nussbaum 2002, p. 314). The Inuit's sense of cultural identity, which is a very significant source of affiliation, affecting all kinds of relationships with other human beings, is being jeopardised. It is jeopardised because of the loss of the Inuit relationship with other species – the eighth capability. Over many centuries, the Inuit have developed a relationship with particular species, both animal and plant, that occupy the Arctic environment. Traditional practices of hunting, gathering, preparing and sharing foods have developed around these species. Sustaining this relationship with these other species is constitutive of identifying with Inuit culture. We can say that part of the Inuit complaint is that the eighth capability is compromised, and that this in turn entails a compromise to the capability of affiliation. Therefore, saying to the Inuit that their material needs can be met through adaptation is to address only half of their grievance.

Claims of the Small Island States

Like the Inuit, Small Island States (SIS) are particularly vulnerable to climate change. Many face loss of local resources through coastal erosion, threats to their settlements and infrastructure, and severe reduction in water resources (Intergovernmental Panel on Climate Change, 2007, p. 15). Their key concern, however, is that without significant and immediate mitigation efforts, adaptation will be rendered impossible, as far as living on the lowest-lying atolls and islands is concerned. Some SIS, such as Kiribati and Tuvalu are low-lying, and therefore at risk of total submersion. Thus it has been suggested that the i-Kiribati and the Tuvaluans, among others, will become *environmental refugees*.

It might be thought that the i-Kiribati and Tuvaluans will be just as well off if they are allowed to emigrate to the more prosperous states of New Zealand and Australia. However, even if this happens, something significant is nevertheless lost. They would be forced to abandon their way of life, and seek a new life in a different country. The argument put forward by the SIS is that *their* particular islands should be protected,¹ just as the Inuit were concerned about the loss of particular species. There is a further dimension to the complaint of the SIS however: they lose their status as a distinct, self-governing community. If the only means of adaptation is for the citizens of SIS to emigrate and live a different country, it is clear that the tenth capability, control over one's political environment is severely compromised. It is hard to think of any greater loss of control over one's political environment than being forced to join a different state. Again, this significant loss is not accounted for by those who argue that adaptation, rather than mitigation, should be prioritised when responding to climate change.

The capabilities approach allows for appreciating that the environment matters not just as a source of natural resources and means of meeting material needs. Relationships with certain environmental goods (capability 8) are constitutive of cultural identity (capability 7) and control over a particular environment, namely a territory, is necessary for self-determination and control over one's political environment (capability 10). As has been illustrated, the capabilities approach can therefore help identifying important ways in which climate change constitutes a problem of justice. Two very important implications follow. Firstly, the approach, with its broad perspective on what is worth sustaining, lends itself to environmental or sustainability assessments better than narrow approaches that neglect valuable dimensions of life. Secondly, taking into account these dimensions, adaptation to climate change is not enough to avoid a loss of capabilities. Much greater priority should therefore be given to mitigation, regardless of any economic case for prioritising adaptation.

References

- Inuit Circumpolar Conference (ICC). "Petition to the Inter American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States." 7 December 2005.
- Intergovernmental Panel on Climate Change (IPCC). 2007. "Summary for Policymakers." In *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Cambridge: Cambridge University Press: 7-22
- Kirby, Alex. "Pacific Islanders Flee Rising Seas." *The BBC*, 9 October 2001, available at at <http://news.bbc.co.uk/1/hi/sci/tech/1581457.stm>.
- Lomborg, Bjørn. 2007. *Cool It! The Skeptical Environmentalist's Guide to Global Warming*. London: Marshall Cavendish; Cyan Communications.
- Nussbaum, Martha C. 2000. *Women and Human Development: The Capabilities Approach*. Cambridge: Cambridge University Press.
- Tol, Richard S.J., and Gary Yohe. 2006. "Of Dangerous Climate Change and Dangerous Emission Reduction." In *Avoiding Dangerous Climate Change*, edited by Hans Joachim Schellnuber, Wolfgang Cramer, Nebojsa Nakicenovic, Tom Wigley and Gary Yohe, Cambridge: Cambridge University Press: 291-310.

¹ Paani Laupepa, assistant secretary of Tuvalu's Ministry of Natural Resources, Energy and Environment said 'By refusing to ratify the [Kyoto] protocol the US has effectively denied future generations of Tuvaluans their fundamental freedom to live where our ancestors have lived for thousands of years.' (Quoted in Kirby, 2001).

Valuing the Environment in a Diverse World

Krushil Watene
University of St Andrews

What challenge does the diversity of values – when we are dealing with the environment – pose? More specifically, can the capability approach – given its claim to accommodate widespread cultural differences – take on board the different ways in which we value the environment? I consider this question by looking at how some indigenous peoples place value in – and understand their relationship to – the environment. My conclusion is that the capability approach seems to fall short, and that some reassessment of how the approach speaks to these values is required.

A widely held view is that the environment ought to be valued in terms of the contribution it makes to the well-being of current and future people. If we accept this position, we are left with at least two questions: 1) what do we mean by well-being, and 2) how do we balance the well-being of current and future people? One way of fleshing this commitment out – proposed by Amartya Sen – is to say that we ought to preserve and, where possible, expand ‘the *substantive freedoms* and *capabilities* of people today *without compromising* the capabilities of future generations to have similar or more freedom’ (Sen, 2009: 251-2, emphasis mine). In other words, what matters is freedom-centred development that can be sustained over time. The environment, on such a view, is valuable if (and when) it contributes to (and helps us to balance) the *substantive freedoms* of current and future people.

Treating freedom as a place-holder (as Sen does) leaves scope for the inclusion of diverse values. What these freedoms are or ought to be will depend on a range of factors including a range of cultural values. Determining what these freedoms are or ought to be requires that we critically engage with the values that exist. Such a move, allows us to leave room for a number of ways in which the environment might be valuable to the individuals or peoples to which these freedoms attach. Saying very little about the content of these freedoms is what leaves us with room to fill this content out. The disadvantage of such a view is that it leaves us with very little guidance on how deep these differences might be. We need to examine these differences as they feature on the ground to get any real sense of what they might be. This is particularly urgent when we are dealing with the environment in a world that is diverse, shared, and facing serious challenges. We will need to know how deep these differences are, in order to determine whether agreement on the value of the environment is possible.

A central theme in Maori creation stories and Maori identity is *whakapapa* (‘to place in layers’). Whakapapa as a genealogical tool provides a way of tracing and connecting descent lines and relationships, revealing and connecting all of the generational layers (Benton, et al., 2004: 1). While this sounds simple enough, it is important to mention that whakapapa is not reserved for the descent lines and generations of human beings alone. Instead, it extends to include and connect the relationships and descent lines of all things (including the world of the living and nonliving, and even inanimate objects). Maori creation stories are, then, rooted in revealing the relationships between all beings – extending back to the origins of the universe. Myth and legend are an important part of this knowledge. They are ‘neither fables embodying primitive faith in the supernatural, nor marvellous fireside stories of ancient times’ (Marsden, 2003: 55-6, see also Mead, 2003). According to Marsden, myth and legend provides Maori with a way to condense their views of the world and the relationships between all beings. This leads Maori to explain the relationship between human beings and the

environment (including all nonhuman animals) in terms of whakapapa (Benton et al, 2004: 1). They will explain that we all share common ancestors, and that the natural world (the environment and natural resources) are both ancestors and kin. Maori identify and place themselves, then, not merely in relation to people but also in relation to the natural environment (land, mountains, rivers, and other species).

This approach is reflected in the Maori health model, *Te Whare Tapa Wha*. This model includes the following four overlapping and interdependent dimensions: 1) *Whanau* (the health of an extended family and community), 2) *Tinana* (physical health), 3) *Hinengaro* (mental health), and 4) *Wairua* (spiritual health which includes, among other things, the living and nonliving worlds). Such an approach to the environment and health is holistic and enduring. It not only encourages one to think (as communities and individuals) about development and well-being as it is bound up with other beings, but it also requires that we think about health and the environment as a process that is long-term. The future (including future people, the environment, and all living beings) is not a separate case in question on such a view, but part of the fabric of these values. Many indigenous peoples see themselves as ‘caretakers of the world’ with an obligation not just to contemporaries, but to plan for and to have vision for the future. Indigenous peoples contend, for instance, that we ought to ‘make every decision on behalf of the seventh generation to come, to have compassion and love for those generations yet unborn’ (Lyons, 1994: 33).¹ We are encouraged (if not required) to hope for and to play a part in bringing about a future that we are likely never to see ourselves.

Can Sen’s articulation of development take this approach to the environment on board? There are at least two points to make about how the Maori worldview impacts on how we might value the environment. The first is that it raises the general question of how we ought to relate to the environment. On Sen’s account, we say that the environment matters for the substantive freedoms of current and future people. We must leave behind a ‘generalized capacity to create well-being’, rather than ‘any particular thing or any particular resource’ (Anand and Sen, 2000: 2035). We know that this lack of content is partly what allows us to include diverse values. However, such a view also accepts that natural resources can be substituted – a view which is likely to exclude (and impose) ways of valuing and relating to the environment (Scholtes, 2010). For instance, Maori (and other indigenous peoples²) view themselves as being of the land and environment – *belonging* to it, rather than having *ownership* over it.³ On such a view, it is difficult to accept that land and other resources can be substituted. This is a significant point when we take into account that many island nations are expected to be uninhabitable not too far into the future. How we relate to the environment, and how we understand well-being and our obligations over time, are likely to bear on how we respond to this challenge.

This brings us to the second point. This approach to the environment raises questions about whether there are more than human freedom-centred reasons to value the environment. What do we take well-being to include and what should the scope of well-being be? A human freedom-centred account of well-being leaves the environment and beings that lack agency in

¹ This view is reiterated by many of the indigenous statements in Ewen (1994).

² This way of relating to the natural world and land in particular is shared amongst many (of not all) indigenous peoples. Such a view is representative of The World Peoples Conference on Climate Change and the Rights of Mother Earth held in Bolivia in April 2010. The conference was motivated by Bolivian president Evo Morales’ dissatisfaction with the COP15 conference deal in Copenhagen (see the peoples’ agreement at <http://pwccc.wordpress.com/support/>). See also Maaka and Anderson (2006), Smith (2005), Wilkinson (2006). For reasons of space, I use Maori as one example.

³ It is difficult to locate a word for ownership over land and natural resources within the Maori language. What’s more, the Maori word for land *whenua* is also the Maori word for the placenta – a reminder of the way in which Maori relate to land (and the environment). See Marsden (2003) pp.54-71 and Mead (2003).

what seems an extremely vulnerable position. On such a view, the value of the environment depends entirely on what individuals and peoples value. Is this really enough? Maori and other indigenous people value the environment for its own sake. On such a view, there is (in principle) reason to preserve the environment even in the absence of, and for reasons quite apart from, human freedom alone. This looks to be a significant difference, and once which is likely to raise questions about what our starting point(s) for development really ought to be.

To be fair, we should not be too quick to play down what resources the capability approach has at its disposal. Martha Nussbaum's list of capabilities recognises our freedom to enjoy 'other species' (including the environment) as among those freedoms that we ought to value (Nussbaum, 2006: 77; Nussbaum, 2002:80n85). In so doing, the list contends that the environment contributes to well-being. What's more, Nussbaum's list applies to, and so includes, a range of species directly. The list, and starting point of dignity, speaks to any creature that 'has either the capacity for pleasure and pain, or the capacity for movement from place to place, or the capacity for emotion and affiliation, or the capacity for reasoning and so forth (we might add play, tool use, and others)' (Nussbaum, 2006:362). Such a move strengthens the value of the environment and non-human animals. It gives us more than human-centred reasons to place value in the environment and other beings, and it extends the scope of the approach to include more than human beings alone. In so doing, it gives us more scope for understanding who the environment benefits, and how these benefits contribute to the lives of more than human beings. Such a way of formulating the capability approach gets us closer to the way Maori (and other peoples) view and value the environment. Even so, the environment itself and beings beyond the scope of dignity are still left out. Even on Nussbaum's modified (and somewhat improved) approach, we are still left with instrumental reasons to value the environment and those beings beyond the scope of dignity.

There are deep differences between how the environment is valued and what gives rise to our obligations to the natural world. These differences are likely to give rise to disagreements about what well-being consists in and how we ought to think about the environment as part of our development programmes. It's not entirely clear how we ought to move forward. This is especially unclear when we are concerned with both current people and future people. In order to speak to all of the values that exist, or at least to try to do so, we need to assess our assumptions about what the scope of development should be and what we ought to include within our development programmes. Also, we need to invest more into learning about how other peoples relate to the environment and about how deeply this may differ from views we often take for granted, like conceiving of nature as capital. Without an idea of how the environment is valued, it is difficult to determine whether agreement on a way forward is even possible.

Both Sen and Nussbaum seem unable to speak to all of the cultural differences that exist. Among other things, this highlights a need to engage with the diverse values and world views that exist. Without this engagement, we simply impose a particular view of the environment on current and future people (Scholtes, 2010).

References

- Anand, S. and Sen, A. K. 2000. Human Development and Economic Sustainability. *World Development* 28:12 , pp. 2029-2049.
- Anaya, S. James. 2000. *Indigenous Peoples in International Law*. Oxford: Oxford University Press.

- Benton, Richard. Melissa L Finucane, Manuka Henare, Mark Henare, Brad Hoami, Mere Roberts, and Terre Salterfield. 2004. 'Whakapapa as a Maori mental construct: Some Implications for the Debate over Genetically Modified Organisms'. In *The Contemporary Pacific*, vol. 16, no. 1, pp. 1-28
- Cobo, José Martínez. 1983. *Study of the Problem of Discrimination Against Indigenous Populations*. UN Permanent Forum for Indigenous Issues.
- Daes, Erica-Irene A. 2008. *Indigenous Peoples: Keepers of our Past, Custodians of our Future*. International Working Group for Indigenous Affairs.
- Lyons, Oren (Chief, Faithkeeper of the Onondaga Nation of the Haudenosaunee). 1994. In Alexander Ewen, *Voices of Indigenous Peoples: Native People Address the United Nations*. New Mexico: Clear Light Publishers, pp.31-6.
- Maaka, Roger, and Chris Andersen (eds.). 2006a. *The Indigenous Experience: Global Perspectives*. Toronto: Canadian Scholars' Press Inc.
- Marsden, Rev. Māori., and Te Aroha Henare. 2003. 'Kaitiakitanga: A Definitive Introduction to the Holistic Worldview of the Maori'. In Te Amokura Charles Royal (ed.), *The Woven Universe*. Published by the estate of Reverend Maori Marsden.
- Mead, Hirini M. 2003. *Tikanga Maori: Living by Maori Values*. Wellington: Huia.
- Nussbaum, Martha. 2006. *Frontiers of Justice: Disability, Nationality, Species Membership*. Cambridge, Massachusetts: The Belknap Press.
- Nussbaum, Martha. 2000. *Women and Human Development: The Capabilities Approach*. Cambridge, Cambridge University Press.
- Rochford, Tim. 2004. Whare Tapa Wha: A Maori Model of a Unified Theory of Health, *Journal of Primary Prevention*. Vol. 25, No. (1): pp.41-57.
- Scholtes, Fabian. 2010. Whose Sustainability? Environmental Domination and Sen's Capability Approach, *Oxford Development Studies*. Vol. 38, No. (3): pp.289-307.
- Sen, Amartya. 2009. *The Idea of Justice*. London: Penguin Books Ltd.
- Smith, Linda T. 2005. *Decolonizing Methodologies: Research and Indigenous Peoples*. London: Zed Books Ltd.
- Smith, Linda T. 2006. Colonizing Knowledges, in R. Maaka and C. Andersen (eds.), *The Indigenous Experience: Global Perspectives*. Toronto: Canadian Scholars' Press Inc.
- Te Puni Kokiri (Ministry of Maori Development). June 2009. *Hauora Maori: Maori Health* (Fact Sheet 011-2009). Wellington: Te Puni Kokiri.
- Wilkinson, Charles F. 2006. *Blood Struggle: The Rise of Modern Indian Nations*. New York: Norton.

A Synergy for Sustainability: End-Use Energy Planning, Development as Freedom, Inclusive Institutions and Democratic Technics

**Manu V. Mathai,
Rochester Institute of Technology¹**

By and large, institutional responses to today's environmental crisis rely on *more* economic growth and *better* environmental management through *better* technological fixes and regulatory instruments. Illustrative are the 'nuclear renaissance', now as a purported green technology, proposals to bury carbon or spent nuclear fuel, or to 'tap the Sahara's sun'. Crucially these efforts proceed through society's commitment to economic expansion and faith in its scientific and technological means, even as reflection and engagement with the question of ends remains sidelined. Such convenience (or complacency) is not viable given that adequate responses to the environmental crisis call for efficiency as well as *sufficiency* in our throughput of useful matter and energy.

Efforts to address this oversight can draw on rich seams of creative work. For a number of decades the energy literature has recognized, and some voices in it have called for, 'end-use'

¹ This is an overview of my chapter forthcoming in Jeroen van den Hoven and Ilse Oosterlaken (eds.). *Human Capabilities, Technology and Design*. Dordrecht: Springer.

energy planning. The basic idea is that people value the services derived from energy and not the units of energy per se that they consume. A crucial benefit of this simple yet profound distinction is that the apparently rational policy of constantly increasing energy generation can be usefully scrutinized and help weaken a key driver of the environmental crisis, *viz.* the growing energy throughput deemed to be imperative. An illustration of such a benefit was the DEFENDUS (Development Focused, END-Use oriented, Service directed) electricity plan developed for the state of Karnataka, India. Planning out from 1986 toward the planning horizon of 2000, this approach required 38% of the demand projected by the government's conventional approach for the same period. It was found that 59% of the savings came from having clearly stated end-uses from which to build out future demand scenarios, and the remaining 41% of the savings were derived from five energy efficiency improvements and energy substitution measures (see Reddy, 1995, 1990).

While end-use planning is more richly informed than extrapolation from past demand trends, it could just as likely endorse energy insatiability as it might energy frugality. There need not, after all, be any limit to the services or end-uses we might demand. In 1958, John Kenneth Galbraith famously characterized the 'affluent society' as one 'preoccupied with productivity and production' and the constant, unceasing demand for 'more elegant cars, more exotic food, more erotic clothing, more elaborate entertainment'. 'More...' can all without quarrel be end-uses and offer defensible energy and economic policy prescriptions. Thus, when the conversation moves beyond basic end-uses like irrigation, basic lighting, electrification of small-scale manufacturing units and efficiency measures such as fuel substitution, energy efficient motors, valves, etc. there is need for richer conceptual categories, arguments and criteria to better scrutinize the growth imperative.

The capability approach can offer such criteria given the considerable nuance and rigor it brings to the overall discussion of ends. Simply asserting 'more' is an insufficient basis for public policy from the vantage of furthering valuable freedoms. Economic development and energy policy makers can ask whether the preoccupation with *more* productivity and production serves the expansion of *valuable* freedoms? The need for the evaluation and selection of capabilities that follows makes explicit individual valuations of various freedoms that could have, without concern, remain unexamined when deliberation stopped at end-use. This richer normative information made explicit by the capability approach offers useful deliberative rope to loosen the Gordian knot that valorizes contemporary public policy's insatiable growth fixation. A problem that arises is that insatiability could also be a valuable freedom. And this, if we want to apply the capability approach in such a manner, requires us to address the relationship between the individual and social in the capability framework.

How does the selection and weighting of capabilities and functionings informed by individual normative concerns and pursued through individual agency interact with society? The capability approach recognizes a close relationship between social structure and the individual. As noted in *Development as Freedom*, 'the freedom of agency that we individually have is inescapably qualified and constrained by the social, political and economic opportunities that are available to us. There is a deep complementarity between individual agency and social arrangements' (Sen, 1999 p. xi - xii). Recognizing the interaction between the individual and society in such a manner, the capability approach assigns an instrumental status to social structure and appears to consider the individual as the primary locus of normative standing and agency.

The concern here is that while it is possible that individual valuations and agency conducive to sustainability might emerge, it is equally possible that the opposite of these will emerge as well. And as a policy choice the latter are likely to prevail given their alignment with extant

and formative derivation from ‘social, political and economic opportunities that are available to us’ which valorize growth and expansion as an end in itself. Thus the problem is that social change toward sustainability might not emerge without also recognizing and enabling in social structure manifestations of preexisting and formative normative standing and agency that valorizes sustainability.

Thus the question we turn to is what institutions and arrangements of energy infrastructure are likely to foster *sustainable* ‘social preconditions of human agency’ (Deneulin, 2008)? As with end-use energy planning and the capability approach, creative ideas can be drawn on to light a path to institutions and energy infrastructure amenable to this goal. Crucial elements in this endeavor are ideas of ‘commonwealth’ and ‘community trust’ (Byrne et al., 2009) to help shift *power* (pun intended) from large, socially isolated energy utilities guided by exchange value to individuals and communities prioritizing use-value. These elements can help enhance the agency of individuals and communities to shape energy-society relations – a space from which they have progressively been excluded during the rapid industrialization and concomitant evolution of the energy sector during the twentieth century.

A notable illustration of the application of these elements is the Sustainable Energy Utility (SEU), legislated into law in the state of Delaware, USA (SEU, 2007). This entity is predisposed to, indeed its success is contingent on its members using less energy and producing energy using *on-site* renewable energy technologies. Saving energy obviously represents a revenue stream waiting to be channeled in a different direction. Similarly, using the sun or wind to produce energy also represents a revenue stream, which otherwise flows to a coal or oil company. In addition, thirty years of energy policy evolution offers policy tools that valorize even the *attribute* (for example, ‘Renewable Energy Certificates’) of renewable energy in various jurisdictions. The SEU offers a template designed to harness such flows of money and redirect them toward the ‘commonwealth’ and away from concentrated capital.

The SEU as a template for an institutional interface between energy and society helps people invest in efficiency or renewable energy and temporarily shares their savings to recoup its investments. Once recouped, the accumulating commonwealth is available for the next round of investment. Participation is voluntary and the success of this endeavor is contingent on how much energy is saved and how committed the participants are in meeting their reduction/renewable energy obligations. Where do these obligations come from? How are the values supporting them formed, arrived at? The community that an SEU serves also provides a venue for learning and deliberation on the values that mediate energy-society relations and crucially, it offers, through the commonwealth, the means for the community to act on their values. Community trust facilitates such investments of capital and engagement in learning and deliberation on values that can guide decisions on how much energy we need. What is a good life? What are the freedoms we value more or less and why? The SEU illustrates a template for a ‘social precondition for human agency’ that surrounds such discussions. It is designed to use less energy, harness renewable energy at the point of use and is empowered with agency to pursue those ends. In that sense, its founding concepts help extend the synergy between end-use and the capability approach discussed above to resist and change the unsustainable and powerful status quo.

The emphasis above on on-site generation reveals attributes of the technological infrastructure considered necessary for building ‘commonwealth’ and ‘community trust’ and to engage in normatively informed discussions of end-uses or valuable freedoms. A lingering legacy of the existing energy infrastructure is its atomized model of interaction with individuals. Society becomes countless individuals who interact with this system using the limited information carried by the sticker price of gasoline or electricity. There is limited scope at the individual

level to acquire and adopt richer information to modulate one's individual relationship with energy and there is scarcely any need for a shared community to emerge and shape energy-society relations. A collection of individuals (corporate entities) served a bigger market of individual, atomized consumers. Flip the switch and pay your bill – that really is all that was needed, required and allowed.

For the participatory, informationally richer, normatively engaged and deliberative energy-society relationship proposed here, it is important that the technologies employed are capable of being related to, invested in and shaped by individuals and communities. Such requirements exclude arrangements of energy infrastructure at a utility scale, which by definition are stewarded by specialist technologists and concentrated capital and by extension, operate under their objective logics of efficiency and surplus value. A collective outcome of sufficiency *and* equity can scarcely be accommodated in that world. Technics that are 'democratic' ('man-centered, relatively weak, but resourceful and durable') as opposed to 'authoritarian' ('system-centered, immensely powerful, but inherently unstable') are crucial to the proposal being made here for a sustainable synergy (Mumford, 1964). The technological means for such a synergy are readily available; but will the commitment and courage for the fight be mustered?

References

- Byrne, J., Martinez, C., & Ruggero, C. (2009). Relocating Energy in the Social Commons: Ideas for a Sustainable Energy Utility. *Bulletin of Science, Technology and Society*, 29(2), 81-94.
- Deneulin, S., 2008. Beyond Individual Freedom and Agency: Structures of Living Together in Sen's Capability Approach to Development. In: Alkire, S., Comim, F. and Qizilbash, M., eds. *The Capability Approach: Concepts, Measures and Application*. Cambridge: Cambridge University Press, pp. 105-124.
- Mumford, L. (1964). Authoritarian and Democratic Technics. *Technology and Culture*, 5(1), 1-8.
- Reddy, A. K. N. (1990). *Development, Energy and Environment: Case Study of Electricity Planning in Karnataka*. Parisar Annual Lecture, 27 July, Pune, India.
- Reddy, A. K. N., D'Sa, A., Sumithra G. D., & Balachandra, P. (1995a). Integrated energy planning: Part I. The DEFENDUS methodology. *Energy for Sustainable Development*, 2(3), 15-26.
- Sen, A. K. (1999). *Development as Freedom*. New York, NY: Knopf Inc.
- SEU (2007). The Sustainable Energy Utility: A Delaware First. Retrieved July 22 2007, from http://www.seu-de.org/docs/final_report_4-21.pdf