Chapter 2
Nature, Economy and Society: Of Values, Valuation and Policy-Making in an Unequal World

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In this chapter, some aspects of the linkages between nature, economy and society (the theme of the conference) are examined at different levels. The first is a conceptual one, which begins from and goes beyond stressing the urgent need for dealing with the complexity of nature and society interactions from diverse discipliary perspectives: I intend to postulate that whichever discipline we treat as the starting point of the analysis the ethical undertones and assumptions drive the analysis in directions which acquire meaning in terms of the quality and legitimacy of decision-making. In other words, methodologies acquire meaning only when interfaced with or interpreted in the context of value systems. Continuing in the same strain, I intend to examine briefly the emerging literature on valuation of ecosystems and ecosystem services, both as a methodology and as a tool for providing policy direction.

The last issue I propose to touch on deals with the major environmental challenges that face us humans today and for alleviating which specific policy directions at international and national levels are needed. The choices which face India and South Asia, as development and environment both need to be addressed aptly, span a large number of these challenges. The question is: What directions does the current level or state of knowledge give to help us to emerge with meaningful policy directions?

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2.1 Of Methodology and Values: Towards Deliberative Processes as Links

Methodologies in all disciplines are driven by underlying values and assumptions. Take for instance economics and ecology. Both share at least one common methodological approach, that of modelling. And, underlying all models are assumptions; in economics with respect to human behaviour and in ecology with respect to community evolution and/or stability. Economics proceeds to create macro perspectives, and ecology moves towards case-by-case recommendations. In both disciplines, the models used can be classified in several ways. A division of models into descriptive, normative and decision theoretic is useful for our purposes.

Descriptive models attempt to define (and perhaps explain) the behaviour of some aspects of the environment or the economy. "Normative models" go further. They prescribe how things should be. The prime examples of normative mathematical models in ecology are formal decision models used in conservation management. In economics, the standard optimizing model that counsels an agent to maximize utility/expected utility is the representative example of a normative mathematical model.

Both descriptive and normative models by themselves can only provide images of reality and its driving forces. Most of the time, they select certain aspects of nature or economy and formalize the relationships. Normative or optimizing models can succeed in providing guidelines for environmental decision-making, but only by using ethical principles to provide an objective function. These principles could be: maximizing welfare, protecting the vulnerable, reducing inequality or adopting a right-based approach to livelihoods not to mention several others. The guidance provided for policy depends on which of these principles are taken on board by the decision-makers and stakeholders who they give recognition to. And since constituent stakeholders may have different preferences on the issue at hand, multiple solutions, non-commensurability and consensus become significant in reaching solutions. It is then correct to conclude that methodologies encompassing decision-theoretic tools and deliberative approaches are of the essence in most practical policy-making situations.

In other words, as soon as we concede that multiple criteria for arriving at decision rules exist and are to be taken into account, the emphasis in methodology has to shift to models of consensus building[1]. Such models which examine real-life processes of decision-making need to augment those rooted in a Platonic ideal in which technical elites take decisions through the so-called dispassionate use of scientific knowledge. For example, in any conservation related decision-making, regarding biodiversity as an end in itself raises a variety of ethical questions about the ultimate source of the value it has. Alternatively, a purely technical approach may limit itself

[1] For a discussion of these and related issues, see Colyvan et al. (2009).

to balancing the value of biodiversity as an embodiment of one stream of goods and services against that of other streams.

The point that rational action may better be captured through models of procedural rather than substantive rationality has of course been made earlier by, among others, Simon (1972). Developing this line of argument further, deliberative monetary valuation suggests that revealed or stated preference methods be followed up with group deliberation to arrive at values which a society holds, cherishes and intends to promote. Such approaches are also based on the presumption that a deliberative process does not only elicit preferences but forms them too. While case studies using deliberative processes have been carried out at different ecosystem levels, the methods of deliberative analysis have been received with apprehension. Some claim that they are time consuming and vague. However, even if we are never able to fully model the change in preferences and the subsequent effect on decision-making which a deliberative process brings about, we will enable decisions which take into account most stakeholders' interest. In other words, to provide institutions for preference changing behaviour to emerge is an important contribution of the process. And as Norgaard (2008) has maintained, "the lines between *scientific* ways of knowing and *democratic* ways of learning and choosing continue to blur as scientists acknowledge the role of judgement in science".

Deliberative processes also, at times, illustrate the rich nature of decision-making outcomes when institutional arrangements at different levels interact and learn from each other. Witness the positive outcomes when formal legal arrangements relating to natural resources learn from and amalgamate critical lessons from community management regimes. On the contrary, when schemes such as those for payments for ecosystem services (PES) are introduced without understanding that their success involves a reconfiguration of the roles of the community and the state, they are bound to be unsuccessful. In other words, deliberstion between the state's hierarchical structures, markets and community management is of critical significance in setting up systems of rights and payments for ecosystem services.[2]

2.2 Of Valuation Within and Outside the Market: Will Valuation of Resources or of Ecosystem Services Help?

Economists have maintained, and rightly so, that a large number of environmental problems often arise because of the absence of market value for some kinds of resources and services. An outcome of this line of argument has been a whole literature on valuation, including a focus on methodologies of nonmarket valuation. This literature has strengthened our understanding of how natural resources contribute to livelihoods of the poor and to the wellbeing of all sections of society. It has also provided refinements in methodology by giving rise to contingent valuation, hedonic

[2] See Vatn (2010) for details.

pricing and several other techniques. In the particular case of extensions of valuation methods to linked ecological and economic systems, in particular regulating services of ecosystems, details of ecological interactions have also sometimes been taken into account. Most of these valuation exercises fall back on an interpretation or extension of the notion of prices in the market, directly or indirectly as the anchor of the methodology.

In interpreting and applying these exercises however, it is of critical importance to remember that markets as institutions are defined within a set of assumptions relating to the knowledge, information and economic power that participants in them command. Information and power asymmetry corrode the efficient functioning of markets. More importantly, where these are asymmetrically distributed, valuation cannot take us far in terms of guidance for policy. Further, overriding considerations of societal norms and values play an important role in decisions on conservation. I wish to draw attention here to Geoffrey Heal's statement *"Valuation is neither necessary nor sufficient for conservation. We conserve much that we do not value and do not conserve much that we value" (in monetary/economic terms).*

Biological and ecological findings have often supported the conservation of areas also without any resort to valuation. Arthur Cooper argued that there were numerous examples of the way that ecology has directed environmental ethics and policy. The best illustration, he said, has been the role that findings about estuarine ecosystems have played in stimulating government programs for coastal zone management. Ecological findings were directly responsible for environmental decisions to limit the use of dichlorodiphenyltrichloroethane (DDT), to promote multispecies forests, and to publicize the problem of acid rain (Cooper 1982). In other words, ecological "facts" provide, at least, part of the basis for inferring what ethical, political and practical "values" ought to characterize environmental decision-making.

Ecological drivers by themselves are perhaps likely to be more compelling in developed countries where the drive for growth leading to perceived poverty eradication is not as paramount as in regions such as South Asia. Further, there exist other kinds of conflicts in developing countries too. The unequal distribution of income and power together with low levels of living has resulted in a focus on conflicts over resources and their appropriation by privileged sections. This is in particular emphasized by a large part of the literature on political and social ecology and for resources such as land and water. It is claimed that aggregative valuation often ignore distributional impacts and does not give due significance to the underlying relationship between ecosystems and multiple stakeholders.[3] Consequently, in many cases, monetization aimed at resolving a conflict in the use of ecosystem services may, in fact, lead to the perpetuation of the conflict.[4]

[3] For attempts to extend the literature on valuation to take into account stakeholder perspectives see Lele (2009 and 2013).

[4] See, for example Martinez-Alier (2002).

Take another example, that of land; with increasing urbanization, the tensions of the interface between value of land for different uses and by different stakeholders are rapidly increasing. In the face of a huge demand from urban use, driven by purchasing power, retaining land for agricultural or ecological use is not going to be easy. The underlying asymmetries referred to above, result in very high capacity to pay resulting in high demand driven prices.[5] *While valuation of land for different ecosystem services may provide additional inputs, an understanding that there exist "inviolate areas", whether for ecological or distributional justice reasons will have to be a critical component of policy.* Once again, we are led to conclude that although ecologists and economists in the past have frequently employed a notion of "scientific or economic rationality", current environmental problem solving requires them also to use "ethical rationality".

2.3 Of Emergent Issues Facing the Region and the World: And the Way Ahead

During the last century, an array of natural resource scarcity related issues have often led to emergent situations in parts of the world. At the same time, it is true that not all resources are equally threatened or scarce, whether from the perspective of nation states or of the world at large. There are large areas where knowledge and ingenuity are likely to alleviate resource shortages. In particular, we know that in some cases the more nuanced the technology for exploration, the more the reserves that become known. Also, substitutes are used when resources become scarce and there often occurs substantial reduction in resources used per unit of output. Such developments have led to more production per unit of a resource and alleviated scarcity. On the other hand, certain other kinds of resources and the ecosystems within which they are found may be nearing critical thresholds of change and sometimes moving towards extinction due to overuse.

Keeping in view all such possibilities, scientists have identified nine areas which are in need of a limit on human resource use, what they term as areas in which human use is straining boundaries at the planetary level (Rockstorm et al. 2009). Climate change and biodiversity loss are high on the list. Global consumption of

[5] Driven by India's high rates of urbanization, demand for land for urban construction and infrastructure continues to push the price of land to very high levels. Undoubtedly, these are higher than values yielded by "traditional" valuation of ecosystem services. Tensions from differing land values associated with different uses and different stakeholders are rapidly increasing. For instance, supply side ecosystem services-based approach to valuation yielded estimates of forest and deemed forest land between ₹ 7 to 9 lakhs per hectare for dense natural forests (See Chopra et al. (2006) Supreme Court Expert Committee 2007, Chopra and Dasgupta 2008). This was much higher than the compensatory afforestation payment of ₹ 50,000 per hectare paid for conversion. But demand-driven urban land use could garner a price of up to ₹ 90 lakhs per hectare or more. A similar situation exists for land diverted to mining. The drivers in this case may be high export prices.

fresh water, air pollution and changes in land use also figure. Closer home, at the national and regional levels too we witness many conflicts related to these areas to deal with.

Simultaneously, pressures from increased demands for natural resources continue. Countries such as India and China are undergoing major economic and social transformations. As a consequence, many boundaries between sectors (e.g. between the rural and the urban) are getting blurred. Changes in use of natural resources are driven by market determined drivers operating across sectors and ecosystemic scales. This change takes place so fast that we do not have the time to sit back to examine or rectify the dynamics of the processes which are simultaneously changing ecosystems, depriving us of important services and thereby increasing the costs to the economic and social systems of providing them. We destroy floodplains, (the natural sponges for excess water) through indiscriminate urban construction and then set up elaborate systems for flood relief. We create pollution and then clean-up expenditure needs to be incurred. Such quick fix solutions are often harmful. In the longer run, we also need to understand how to increase and sustain the capability of people, economies and nature to deal with fast changes in economic systems.

Are governments showing any long run leadership in this direction? A few policy pronouncements of the Indian government such as the Forest Rights Act (2006) and the recognition of places of ecological value as "no-go" areas or more recently "inviolate areas" incorporate some of the movement towards such leadership roles. Newspaper headlines sometimes (refreshingly) contain allusions to principles of environmental economics, for example in the case of the oil spill off the west coast, *"polluter pays principle to be used"*. Or to lack of enforcement of Acts as in the case of the Vedanta mining project, the Saxena committee report pointed out *"violations of the Forest Rights Act, the Forest Conservation Act and the Environment Protection Act (in the case of the associated aluminium refinery)"*. Further, *"the government ordered the closure of the Loharinag Palla hydro electric project" and the Minister for Power and for the Environment and Forests jointly decided this*. Also, lately, an incentive for conservation approach seems to have found favour as when we hear that *"green states to get a bonus"*.

More often than not, however, the emergence of trade-offs between environmental and development concerns has witnessed short-run expediency gaining the upper hand in policy-making. The moves to enable mining in certain forest areas and to proceed with hydel power development in pristine ecologically sensitive areas are examples of such policy directions.

In other words, while a certain amount of dynamism in the acceptance of these developments by policy-makers has been observed, an understanding of the underlying long-run linkages between human wellbeing and wise use of nature and its reflection in the design of policy seems a far cry at the present moment of time.

There is in fact, a focus on "the two cultures" when referring, in particular to the environment development debate.[6]

This preponderance of "two cultures" is true at all levels of governance; local, national and global. At the same time, learning in social science from policy implementation is itself the moving force behind the progress of some aspects of social science. All this happens in a somewhat piecemeal fashion with very little of an analytical framework to define it. The discourse is not a part of regular policy-making.

What is the way ahead in such situations? The term "green growth" has been used extensively of late, in particular in the context of the Rio + 20 conference. The United Nations Environment Programme (UNEP) defines a green economy as *"one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive"* (UNEP 2011). The "green economy" approach is nothing but a reiteration of the viewpoint that since developing countries are at the point where massive investments are being undertaken, they can choose to invest in ecofriendly technologies. Such a choice will reduce the human footprint on areas in which human use is straining at planetary boundaries. In other words, these countries have the opportunity of "tunnelling through" the Environmental Kuznets curve, which postulates that the initial stages of development have seen a deterioration in environmental quality, with the relationship being reversed later.

However, investments in pathways to a green economy may not be easy to come by. They will require the framing of a *compelling and committed global interest*, in investing at least 1–2 % of global gross domestic product (GDP) in greening the economy[7] in order to shift development and unleash public and private capital flows onto *a low-carbon resource-efficient path.* They may also require specifics in policies such as: reducing or eliminating environmentally harmful or perverse subsidies (e.g. at the global level, around US$ 235 billion per year way back in 1992); creating markets for ecosystem goods and services; providing market-based incentives, opportunities and enabling institutions through appropriate regulatory framework. There is every possibility that potential investors under the banner of corporate social responsibility may find the best options to undertake green investments only in such countries,

a. Which are very high in carbon and suffering from "brown economic growth".
b. Which have all the essential infrastructures such as transport, communication and markets for investment.
c. Where the returns or turnover on investments are higher. One is not sure if developing countries like India, Nepal or Brazil will become their first candidates.[8]

[6] See Jairam Ramesh (2010), for a succinct exposition of the state of the debate and the policy-makers' consequent dilemma.

[7] The Stern review (2006) places the figure at 1 %.

[8] See Kadekodi (2012) for details.

In other words, while technologies that use renewable resources efficiently and achieve distributive justice exist at least in some sectors, the challenges presented by their widespread dissemination seem formidable. They may require large one time investments with low returns in the short run. Alternatively, if indeed constraints to unabashed maximization of short run growth rates are presented by natural capital, they may need to be tackled using the "reduce, reuse and recycle" route. In other words, developed and developing countries may be confronted with the question of whether some sections of the population are indeed consuming too much.

This significant underlying question leads us to the second component of the way ahead. We need to monitor macroeconomic parameters in all countries to inform us on the nature of production and consumption in economies. Are the present levels of consumption and production "sustainable"? This question can be answered only if a few macroeconomic parameters relating to the environment and natural resources are monitored in conjunction with standard macroeconomic indicators covered in the System of National Accounts (SNA). The SNA focuses policy attention on parameters such as Gross Domestic Product (GDP), Gross Fixed Capital Formation (GFCF) and others. Yearly and indeed quarterly assessments of the state of the economy are based on these parameters. A similar statistical accounting of critical components of natural capital needs to be undertaken to ensure that year to year economic growth is not eating into the natural capital of the country. In recent times, developments in environmental economic accounting have taken place both at the international and national levels (See, for example, Government of India CSO (2013)) which attempt at providing a common basic framework for such an exercise. Most of this work is an attempt at using the theoretical developments in "sustainable income" to develop the outlines of a System of Environmental Economic Accounting (SEEA). The United Nations presented SEEA (2003) as a possible starting point. This has been revised subsequently and now provides the following two tier framework:

a. SEEA central framework which starts from the perspective of the economy and its economic units.
b. A SEEA experimental ecosystem accounting which links ecosystems to economic and other activity. This approach understands and states upfront that placing ecosystems in an accounting context requires the disciplines of ecology, ecological economics and statistics to come together and think of measurement and policy issues in new ways. It does not give precise instructions on how to compile ecosystem accounts but it represents a strong and clear movement towards a convergence across the disciplines on many core aspects.

"Genuine savings" is one of the most documented macro parameters, both internationally and in India. Estimates for different countries from the World Bank of genuine savings indicate that for India, the number is 24.64 % in 2008 and 24.56 %

in 2009 as against net savings of 29.68 and 26.60 % (of the GDP).[9] These estimates indicate that green GDP is lower than conventional GDP by 8.22 % in 2008 and by 5.1 % in 2009.[10] Though these estimates are partial, they provide the way forward with respect to the Central SEEA framework mentioned above.

Two approaches to assist in policy-making which accounts for nature–economy relations have been outlined above: Taking "the green economy" route to resource conservation and monitoring macro parameters for "sustainable development". But this is not enough. These policy changes need to be nested in a larger blueprint for a longer term development future, both for the planet and for the country. In such a blueprint, the following components could provide a good starting point:

1. The first is a framework of equal rights and entitlements for all humans to share the global commons resources, in particular atmospheric space. Either legally binding (for developed nations) or voluntary commitments (for e.g. the BRIC nations) to limit the use of that space by limiting greenhouse gas (GHG) emissions is then the next step. This will lead us on to consumption and production patterns that are feasible. We may be able to respond to the question of whether we are consuming too much. Or who is?
2. The second component of the blueprint is the transition to a green source of energy. In other words, the new technology has to be based on renewable sources and away from fossil fuels. A global as well as national agenda for moving in that direction can then be drawn up.
3. To understand the significance of the first two components of the blueprint, a new economic indicator of wellbeing which complements macro measures such as GDP is urgently needed. We need to measure relative prosperity of nations in a more inclusive and carbon liable manner. Then, alone can the implication of a relentless pursuit of individual material prosperity be made transparent. Though steps are being taken to estimate "green" GDP, real savings and related measures, in some countries it has to be globally mandated.

To enable nations to move towards the vision inherent in the blueprint mentioned above, new and reformed institutions are needed for facilitating a change in human behaviour, to increase local appreciation of shared global concerns and to correct collective action failures that cause global-scale problems. However, this change in behaviour assumes acceptance of a common international norm. Such norms are more likely to emerge with decreases in inequalities in distribution of income and power and more interactions across the globe which facilitate emergence of international institutions. (Walker et al. in Science 2009). This brings us back, full circle, to the issue of distributional justice and shared norms. In conclusion, it is true that shared values with regard to the linkages between economy, society and nature need to inform policy-making at both macro and project levels. It is these that we need to move towards, as we simultaneously strengthen the information and data bases that enable us to do so.

[9] Corresponding gross national savings are 38.17 and 35.20 % for 2008 and 2009, respectively. See World Bank, World Development Indicators (2010 and 2011).

[10] See Murty and Panda (2012).

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