Draft for Discussion

From Paradigms To Practice:

Foundations, Principles and Elements for Dialogue on Water, Food and Environment

Background Document for National and Basin Dialogue Design Workshop

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Albert Einstein once said that you can't solve the problems of today by thinking the way you thought when the problems were created. The Dialogue for Water, Food and Environment is clearly about helping key

stakeholders to 'think differently' so that practical solutions to the emerging water crisis can be found. In this context the background document offers two things. First, it lays out some key ideas and theories that underpin the rational and justification for a dialogical approach to resolving water, food and environment issues. Second it examines principles and key elements for guiding a successful dialogue processes.

5.6 The Water Dilemma

Growing water scarcity threatens global food and environmental security and 2.7 billion people can face water shortages by 2025. Agricultural scientists say that farm water use, especially irrigation, must be increased by 15 to 20% in the coming 25 years to maintain food security and reduce hunger and rural poverty for a growing world population. Meanwhile, environmental scientists say that water use will need to be reduced by at least 10% during the same period to protect rivers, lakes, and wetlands on which millions of people depend for their livelihoods, and to satisfy the growing demands of cities and industry. Societies the world over are confronted with emerging dilemmas and conflicts around water use and management.

These dilemmas and conflicts over water involve complexities and uncertainties that require an integration of technical, economic and interactive perspectives. The interactive perspective while central to the Dialogue is in many ways a new perspective. It seeks to find ways of engaging government, business and civil society stakeholders in processes of learning and negotiation that can transcend the limitations of centrally controlled and technically orientated bureaucratic decision making on one extreme and 'decisions' made by a 'free market' on the other.

The characteristics of these water dilemmas that demand such an alternative approach include:

- Complexity of interconnected biophysical, social, economic and political factors.
- Uncertainty of future consequences.
- Causes and effects and costs and benefits are often separated across time and space with significant implications for the motivation for human action.
- Water dilemmas are value-laden and not neutral in a technical sense, nor can one assume that rational choice or market forces will solve them.
- There are strong vested interests in the allocation and use of water resources both within and between nation states
- Coordinated action across a number of nation state may be required.
- The extent to which water issues become externalities of the economic system.

5.7 What Is A Dialogue and Why Have One

A dialogue in this document is defined as: *"a contrived situation in which a set of more or less interdependent stakeholders in some resource are identified, and invited to meet and interact in a forum for conflict resolution, negotiation, social learning and collective decision making towards concerted action*".

Dialogues are set up in those situations where technical solutions and/or bureaucratic measures have failed to lead to desired policy implementation and/or where the 'free market' has equally failed to lead to desirable outcomes. Growing interdependence among the stakeholders leads to incipient realisation among them that they can't 'slug it out' but must come to some agreement if anyone is to have satisfactory outcomes. Such conditions are becoming increasingly prevalent as an increasing population and expanding standards of living lead people with different interests meeting in the exploitation of the same resources.

An effective dialogue requires attention to:

> **Conflict resolution** – Understanding the different interests and underlying values that lead groups into conflict and what methodologies and political strategies can be used to overcome them.

Social dilemmas – Understanding situations in which short term individual interests are in conflict with longer term collective interests.

Social Learning – Developing ways of engaging different stakeholder groups in processes of learning how to collectively resolve natural resource management problems.

Facilitation – Establishing the methodologies, forums and institutional context that will enable and facilitate dialogue.

5.8 Predicaments to Paradigms to Practice - Perspectives on Natural Resources Management for the 21st Century.

At the turn of the century human kind has found that it is now faced with the negative consequences of its own development. Consequently those concerned with the design of a sustainable future cannot escape the task of moving beyond science and classical economics, into the murky area of understanding human behaviour, and especially into understanding the factors that influence the outcomes of human interaction.

In essence dialogue requires a shift from a reductionist and positivist paradigm (characteristic of classical biophysical science) to a holistic and constructivist paradigm. This in no way devalues the role and necessity of science and technology but rather gives recognition to the 'reality' that social and political life requires forms of inquiry and action different to the classical biophysical sciences. Dialogue is dependent on methodological diversity and systemic thinking and this can only be brought about with at least some understanding of how philosophical assumptions and belief systems shape human action. Further, if we are interested in how different groups can learn together to solve complex problems a deeper understanding of individual and collective cognition becomes essential.

Community participation and multiple stakeholder dialogues have emerged as central themes in contemporary natural resource management in attempts to overcome the social dilemmas associated with common property resource management. However, how these processes engage and mesh with on one hand the scientific community and on the other established forms of governance remains a challenge with many lessons to be learnt.

5.9 Principles for Successful Dialogue

For a successful national or basin level dialogue on water, food and environment the following are an initial list of principles for discussion and modification at the Bonn workshop. Each one is discussed in the main body of the document.

1. Establish appropriate forums and platforms
2. Establish the mandate and legitimacy of the dialogue forum and process
3. Engage Relevant Stakeholders
4. Integrate with existing institutions and processes
5. Clearly Define the Scope of the Dialogue
6. Establish incentives for participation
7. Coordinate between national and basin levels
8. Ensure effective facilitation
9. Utilise a diversity of methodologies
10. Establish and monitor performance questions and indicators

5.10 Indicative Elements of A Dialogue Process

Box 1 provides a list of indicative elements to guide setting up a dialogue process. They are presented as a checklist of ideas to consider and not as a 'blueprint' for how to conduct a Dialogue. While presented in a roughly chronological order it is not meant to imply that each element can be followed in a step by step manner. Rather different elements will need to be conducted concurrently and the whole dialogue process will inevitably be iterative.

Box 1 Indicative Elements of a Dialogue Process

1. Set Up and Managing the Dialogue Process
- Clarify the reasons and motivation for a dialogue
- Build stakeholder support
- Establish an appropriate forum
- Outline the Dialogue Process
- Facilitate and Co-ordinate the Process
- Review and Adapt the Process

2. Conduct an Initial Situation Analysis
- Identify stakeholders and their perspectives and interests
- Identify the key water resource issues and trends
- Conduct an institutional and policy assessment and identify existing processes and initiatives

3. Focus the Dialogue
- Agree on key issues for the dialogue
- Establish the scope and boundaries of the dialogue in relation to other initiatives and available resources
- Develop focusing questions to guide the dialogue

4. Gather information and conduct investigations and research
- Establish sources of available information, information gaps and necessary knowledge gathering processes
- Identify information needs for answering the focusing questions
- Conduct necessary research and investigation
- Collate and synthesise information
- Prepare knowledge for presentation and communication

5. Build Scenarios
- Identify different plausible scenarios for the future of water, food and nature
- Examine the implications of different scenarios for different stakeholders -
- Establish the most desirable scenarios from a sustainable development perspective

6. Negotiate Principles and Desirable Strategies
- Establish the principles implied by the desirable scenarios
- Establish the strategies to put these principles into practice

7. Communicating Outcomes and Facilitating Change
- Establish and implement a communication strategy for the outcomes of the dialogue
- Decide on how the dialogue can contribute to facilitating change

1 Introduction

Albert Einstein once said that you can't solve the problems of today by thinking the way you thought when the problems were created. The Dialogue for Water, Food and Environment is clearly about helping key stakeholders to 'think differently' so that practical solutions to the emerging water crisis can be found. In this context the background document offers two things.

First, it lays out some key ideas and theories that underpin the rational and justification for a dialogical approach to resolving water, food and environment issues. This is no simple task. The very idea of a dialogue engages almost immediately with questions of how societies make decisions for the collective good, the role of science and technology in the modern world, the power of different interest groups and the appropriateness of modern institutions for achieving sustainable development. The Dialogue faces a challenge in that it cannot ignore these deeper issues, on the other hand it must also provide a constructive and practical way forward in the short term. This document offers some depth of analysis on philosophical and theoretical perspectives because of a view that in the end the Dialogue will be a stronger and more worthwhile process if underlying assumptions about how humans make sense of, and taken action in, their worlds are examined and made explicit.

Second, the document provides a more practical perspective. It examines a set of draft principles for a successful dialogue and suggests a set of key elements that could be modified and built on to establish the actual dialogue process for a particular country or basin.

The document is a draft and starting point for the discussions in Bonn. The authors fully recognise that there are diverging perspectives on what such a document should contain and what is an appropriate level of theory. Obviously the dialogue will need to be supported by a diversity of material and feed back from the workshop will enable these needs to be more clearly defined.

The Water Dilemma

5.11 The Emerging Water Crisis

People have taken on the management of the earth, but they have not made a very good job of it. Fresh water is rapidly emerging as the case in point. 'Humans currently appropriate more than half of accessible fresh water run-off, and by 2025, demand is projected to increase to more than 70% of run-off. A substantial amount, 70%, of the water currently withdrawn from all freshwater resources is used for agriculture. By shifting water from freshwater systems to agro-ecosystems, crop production increases, but at significant cost to downstream ecosystems and downstream users. Some of the water consumed does return to rivers but, typically, carrying with it pollution in the form of agricultural nutrients or chemicals, or human or industrial waste. But as much as 60% of water withdrawn from rivers is lost to downstream uses' [i].

Growing water scarcity threatens global food and environmental security and 2.7 billion people can face water shortages by 2025. Agricultural scientists say that farm water use, especially irrigation, must be increased by 15 to 20% in the coming 25 years to maintain food security and reduce hunger and rural poverty for a growing world population. Meanwhile, environmental scientists say that water use will need to be reduced by at least 10% during the same period to protect rivers, lakes, and wetlands on which millions of people depend for their livelihoods, and to satisfy the growing demands of cities and industry. Many of these ecosystems have already been eliminated or damaged over the last decades. The agriculturists and the environmental scientists are speaking about the same water[ii].

It is beyond the purpose of this paper to describe these major dilemmas with respect to the human use of fresh water in greater detail. Such detail will be provided in the other publications available from The Dialogue on Water, Food and the Environment at the Bonn Workshop. Suffice it to say here that this paper addresses one of the most burning issues facing human society today. These issues can be summarised as:

- Scarcity of fresh water in large parts of the world, there simply is not enough for everybody. This scarcity is rapidly becoming more pronounced as a result of climate change and degradation of ecosystems that make the hydrological cycle work for us;

- Even if there is enough for all, lack of access to safe drinking water for very significant numbers of people; increased health risks resulting from hydrological changes (malaria, schistosomiasis);
- Increasing conflicts about the uses of water, between cities and agriculture, between nations, between rich and poor farmers, between upstream and downstream users, and between irrigation and catchment integrity.

5.12 Technical, Economic and Interactive Perspectives

Water scarcity and dilemmas with respect to the deployment of water can be looked at from different angles. And we need all of them if we are to learn our way towards a less gloomy future than we face today. The Dialogue of Water, Food and Environment will indeed take all of them into account and seek to bring together the expertise required. It is important for the argument in this paper that we consider these different perspectives. Moreover, the Dialogue objective also spells out a number of cross cutting issues that need attention in the Dialogue: the alleviation of poverty and hunger and the protection and promotion of human health. While these cross cutting issues add a further element of complexity, they may also provide entry points towards arriving at common grounds and identifying positive trade-offs. The main perspectives with which one can try to understand water resource management are the following.

In the first place, water scarcity can be looked at from a *technical* perspective. For example, we can design more efficient irrigation systems, crop varieties that require less water, and agronomic practices that are more efficient from the point of view of water use. In fact, we can change our standard of agricultural success from tons per hectare to tons per cubic meter of water. But the growing concern is not only with water for food, but especially with the management of the productivity, sustainability and stability of the hydrological cycle, i.e., the evaporation, precipitation, flow, retention, infiltration, purification and so on in river basins, wetlands, aquifers, lakes and other ecosystems. In the end, we depend on the quality and quantity of the ecological services these ecosystems produce. The technical perspective includes the design of adaptive management practices that allow sustained human use of these ecosystems. As the concept of *sustainability* has gradually degenerated into a debate on economic versus environmental trade-offs in specific settings, the concept of *sustainable livelihoods* of communities should prevail in a dialogue that aims to establish a durable relationship between people and the resources they depend on.

In the second place, we can look at water scarcity from the *economic* perspective. This includes the internalisation of the true costs in the price of water, the systems for distributing water, the conflicts between the use of water as a commodity and as a context-bound resource, etc. This perspective leads to an emphasis on valuation, fiscal policy, regulatory frameworks, etc. It is a perspective that gets clouded by the political dimension of food security in particular, with governments wanting to keep the electorate under control through complex systems of subsidies, taxes and penalties.

The third perspective is one that most people are less familiar with. It looks at water scarcity as an arena of human struggle and conflict. There are limits to the extent to which technology can provide win-win solutions. Similarly, the market often fails to provide fair or sustainable improvements and fiscal policy and regulation often are not sufficient. Therefore we need a third perspective than technology and market. *We need to learn to be effective also with respect to issues that can only be usefully addressed on the basis of conflict resolution, negotiated agreement, reflexive learning, consensual arrangements, and collective action*. It is only in the third perspective that it is feasible to move beyond zero sum games, and win-win arrangements to the difficult terrain of reciprocal agreements to take less.

This paper tries to provide a state of the art for this third, '*interaction perspective'*. This perspective provides the seminal background to the very idea of 'Dialogue'. After all, the Dialogue on Water, Food and the Environment not only came into being to assemble the key available expertise in terms of technology and economics. It was created especially also to explore the room for consensus, compromise, agreement and concerted action among the widely diverging scenarios and futures that are being visioned by important global sectoral players. The Dialogue became necessary when it became obvious that each global sectoral actor was planning to use most of the fresh water resources available in the future.

However our focus on the interactive perspective in this paper does not mean that we reject the usefulness of *Integrated Water Resources Management.* IWRM seeks to integrate technical, economic and interactive approaches in a holistic manner, i.e., to optimise technical and economic opportunities for win-win solutions where these are available, but also building effective dialogue processes. We have made the deliberate choice to focus on interactive approaches.

The Dialogue seeks to promote meaningful interaction at different levels. At the *global* level, contradictions emerge in conflicting claims on the world's water resources by sectoral agencies, as we have seen. At the *national* level, ministries and other organisations with different mandates contest the allocation of water flows, the building of dams, the drainage of wetlands, or the reallocation of water sources to efficient irrigated farms and away from small peasant farmers. At the *basin* level, stakeholders, including nature conservationists, urban water companies, upstream farmers, down stream irrigation schemes, fishermen, and others, are engaged in major conflicts about the use of water[iii].

This paper will focus especially at the third, basin or regional, and the national levels. Most experience has been gained at those levels. What is more, the lessons learned at that level are likely to also hold for the global levels. Water issues seem to be more tractable at the basin level, however, especially because conditions for dealing with them can be created at the national and global levels. We still remain with the question how conditions conducive for dialogue especially at the global level can be created.

5.13 Characteristics of Water Dilemmas

Water dilemmas are not easily amenable to technical or economic solutions, otherwise we would not have to bother about them. In fact, they have key characteristics that make them hard to handle.

In the first place, such dilemmas are complex. Even if they would respond to causal manipulation, so many factors are involved that causal models and clear leverage points are difficult to identify. What's more, efforts to simplify the complexity and use decision rules often has disastrous consequences, as Dörner has shown in his 'analysis of failure'[iv]. What is more, different scales in time and space are involved, and the dilemmas do not easily lend themselves to optimisation or other forms of modelling.

Water dilemmas are marked by uncertainty. Climate change, the behaviour of complex ecosystems, the lack of measurability of underground water flows, the unpredictability of major climatic fluxes such as El Nino create a great deal of uncertainty. A typical example is the recent shift in thinking about water quantity management in the delta of the Rhine[v].

> *Box 1. Increasing uncertainty with respect to water quantity management in the Rhine Delta.* Before the German tribes started to cut the forests in its catchment, the water levels in the Rhine used to be so stable that a sizeable population could settle on its levees in the Rhine delta. However, in the late Middle Ages, water levels began to destabilise with a major danger of floods. These necessitated the building of dykes to protect the lands and property of the growing population that had settled in the fertile delta. Until recently, there was a widespread understanding that water quantity management could be left to expert technical agencies, in charge of dykes, sluices, and other measures and structures which *controlled* the river. Now the situation has changed completely. Climate change with its unpredictable and freak weather events, the further canalisation of the Rhine and its tributaries, the increasing acceleration of run-off as a result of hard infrastructure, etc., has led to the realisation that peak water flows are no longer predictable and controllable. Instead, the new reality is that *space for water* must be created. In the Netherlands, water boards are now searching for areas that can be inundated in times of peak flood. In the densely populated delta, any allocation of land to possible inundation is, of course, fiercely contested.

Uncertainty with respect to issues with high stakes demands different approaches than the ones we are used to[vi]. Such uncertainty is not amenable to puzzle solving science or to consultancy approaches, but requires

'post-normal' science': situation improvements arise out of interaction among scientists, problem owners and self-appointed activists. 'Facts' are extended to include people's reasons.

Water dilemmas are value-laden. They are not neutral in a technical sense, nor can one assume that rational choice or market forces will solve them. In fact, water dilemmas are usually marked by the presence of multiple stakeholders representing different interests. These interests are based on different worldviews, life goals, incentives, and livelihoods. The improvement of water dilemmas requires negotiation and agreement among these different stakeholders in order for them to reconcile their differences, reach compromise, and engage in constructive concerted action.

It is clear that such stakeholder differences often feed major political conflicts. Nation states can claim the right to exploit water resources irrespective of the consequences for countries downstream, as Turkey has done with respect to Syria by building major irrigation schemes in the South East of the country. But political conflicts can also arise between upstream farmers and downstream irrigators[vii], between rich landowners who divert water for irrigation from streams on which thousands of small holders depend, between urban and agricultural interests, etc.

As we have seen, water dilemmas often have many different technical and social dimensions. They cannot simply be approached from one angle or point of view. Different people and different interest groups differently 'construct' the dilemma, leading to totally different suggestions about the way forward.

Water dilemmas also typically feature separations in space and/or time. Human activities in the top of the catchment can have disastrous but unnoticed consequences downstream, for example, when pesticides wash down rivers and destroy oyster beds in estuaries. Similarly such activities can have consequences which only emerge years later. An example is the heavy use of fertilisers on plateau's which can lead to enriched seepage that destroys rare vegetations in brook meadows years later. Such consequences are often irreversible or very difficult and costly to rectify[viii].

From an economic point of view, water dilemmas are also hard to deal with. Costs are largely externalised and hard to ascribe to specific actions and/or actors. Public and private responsibilities are hard to assign. The territorial units in which water dilemmas manifest themselves, i.e., lakes, wetlands, estuaries, river catchments, etc., often belong to different administrative units, such as communities and municipalities, provinces, water boards, etc., each with their own rules and regulations, and territorial instincts. Hence institutional aspects, such as jurisdictions, rules and regulations, standards, criteria, and policy instruments, play crucial roles in determining the outcomes of stakeholder interaction. But the same can be said of issues of power, such as the reluctance of provinces and municipalities to relinquish authority to regional agencies, which often prevent decision making at the basin level from having statutory clout.

Very often, agreements at the basin level are hampered by conditions that have been created at the policy level. For example, in the Dutch National Landscape 'De Drentsche Aa', a forum for deliberation among the major stakeholders in that river system, reaching agreement is severely curtailed by conditions set at the policy level. Farmers are provided with subsidies of about US$ 500 per hectare, which motivate them to farm as intensively as possible. Meanwhile the Government pays the Forest Management Service on the basis of its 'output' of hectares of rare vegetation. This boils down to the fact that farmers are paid to fertilise and drain the land, which the Forestry Service is paid to keep it nutrient free and wet. The ensuing 'Dialogue' is clearly affected by its policy context. One cannot approach interactive solutions without taking into consideration the context created by policies and institutions[ix].

1.4 Interactive Options and Institutional Reform

As we observed before, water dilemmas often turn out to be intractable by regular approaches, i.e., by creating technical infrastructure, issuing regulations, policing imposed solutions, providing subsidies, etc. These can be part of the solution, but very often they are part of the problem. As soon as differences of opinion and differences of objectives and interests are involved, it is no longer sufficient to provide the best technical means for an assumed objective, nor can one, as does neo-classical economics, assume that

people want to optimise their utility. One cannot assume people's goals, they the very bone of contention[x]. The substantive way forward is though negotiation and convergence of interests, through joint learning about the stakes and mechanisms at work, through deliberate reflection about mutual inter-dependence with others and through recognising the need to agree on common solutions.

Such an approach requires dialogue. People need to talk and discuss. Their interaction needs to be facilitated to avoid known pitfalls, and structured in terms of discussion forums, representatives, mandates, and some resources. Emergent outcomes need to fall on fertile ground, in terms of resourcing, and follow-up action. Emergent networks and patterns of interaction need to be given a chance to become institutionalised and provided with resources to act in a meaningful way.

Capacity has to be built, particularly in terms of skill development, of the partners in such a dialogue to allow them to participate and contribute in a way that departs from the conventional confrontational strategies to a consensual and trade-off seeking strategy.

Slowly, such 'interactive' approaches begin to be recognised as an important way of getting things done. But the knowledge about them is emergent and by no means consolidated. This paper wants to explore the interactive approaches that are emerging everywhere out of dire need.

What is a Dialogue and Why Have One?

5.14 Definition

The word 'dialogue' has different meanings. In the dictionary, it refers to 'a conversation', often between two, rather than multiple, partners. That is not our meaning here. Nor do we refer to 'The Dialogue on Water, Food and Environment' although it commissioned us to write this paper. 'The Dialogue' (with a capital D) is a consortium of 10 international organisations that have agreed to work together to deal with the water dilemmas we have described above[xi].

In this paper we shall use a third definition of dialogue, in the sense of dialogue that supports the interactive approach to getting things done. *A dialogue is a contrived situation in which a set of more or less interdependent stakeholders in some resource are identified, and invited to meet and interact in a forum for conflict resolution, negotiation, social learning and collective decision making towards concerted action.* A dialogue often is facilitated. A dialogue always must be perceived within a context that is determined by institutions and policies that shape the outcomes that can emerge from the dialogue.

Dialogues are set up in those situations where technical solutions and/or bureaucratic measures have failed to lead to desired policy implementation and/or where the 'free market' has equally failed to lead to desirable outcomes. Growing interdependence among the stakeholders leads to incipient realisation among them that they can't 'slug it out' but must come to some agreement if anyone is to have satisfactory outcomes. Such conditions are becoming increasingly prevalent as an increasing population and expanding standards of living lead people with different interests meeting in the exploitation of the same resources.

As we have seen, water dilemmas make themselves felt everywhere. They emerge in degraded catchments that are unable to retain water for human use, in pollution that prevents use by others, in diversion of water that leaves riverbeds dry and lifeless. People increasingly realise that their failing crops, their dwindling fisheries, and their lack of clean drinking water, are not a question of natural causes, or even of God's intervention, but the result of other actors upon whom they have become dependent for their outcomes. This can lead to conflict, war, and destruction. It can, sometimes after some war and destruction, also lead to a willingness to 'sit around the table' and negotiate the way out the mutually inflicted misery. That is the key to the concept of dialogue we shall use in the present paper.

5.15 Processes that make dialogues work

The most important processes that make dialogues work are:

- **Conflict management**. Typically 'inter-dependence' is nothing else but a conflict between categories of stakeholders who want to use the same resource for different purposes. Conflict is seen to increase in many developing nations as legal systems become pluriform, disparities between rich and poor increase, politics begins to invade all spheres of life, and especially as resources become degraded, scarcer and more sharply contested. Such conflicts often provide new fuel for old divisions among sects, castes, genders, age sets, and political parties[xii].
- **Social Learning**. Typically different stakeholders have very different ways of looking at the same resource. For example, farmers might only have a farm level perspective and are unable to consider as one coherent whole the catchment in which their farm is located. Generally, stakeholders have such different worldviews and life worlds that they find it hard to understand each other. Shared learning is required to reach some level of convergence on the basis of which dialogue and collective decision becomes possible. Mapping exercises, scale models, learning about learning, etc, can deliberately stimulate such learning[xiii]. In general, learning-based approaches are increasingly popular, as scholars, policy makers and others realise that the way people make sense of the world determines the collective way forward. Hence, there is interest in affecting collective sense making, or perhaps one can better call it 'culture'. This is generally referred to as 'social learning'.
- **Overcoming social dilemmas**. People are always confronted with the choice between selfishness and co-operation. A social dilemma is a situation in which everyone is motivated to make short-term selfish choices, whereas all would be better off if they made long-term co-operative choices. Such social dilemmas can be overcome through reaching agreements about such issues as the number of people that have access to the resources, rules of access, ways of monitoring compliance, and sanctions for non-compliance. Such institutional (i.e., rule based) development can lead to trust in reciprocity and hence the readiness to make sacrifices acceptable (the willingness to take less or give more)[xiv].
- **Facilitation**. Dialogues need to be facilitated. Concrete decisions must be made at the policy level to create conditions that are conducive to outcomes such as social learning, conflict management and overcoming social dilemmas. Such outcomes often also need support in terms of finance, institutionalisation, legalisation, and statutory powers. But facilitation also, and first of all, refers to the management of the interactive processes among the stakeholders. Scientific understanding of facilitation as a professional practice is slowly emerging[xv]. It includes skills in using participatory approaches, and the creation of curricula for discovery learning, but above all, it includes the ability to design inclusive processes of change in large groups in which communicative rationality is used in a strategic manner.

Chapter 6 of this paper provides a more elaborate overview of facilitation processes and approaches. It will pay special attention to the policy end: how does one manage the facilitation of dialogue and what policy and institutional conditions does successful use of the interactive approach require. But we must first make the reader aware of some caveats.

5.16 Caveats – Dialogue as an Evolving and Iterative Process

The paper requires a caveat for three reasons. In the first place, it is impossible to use instrumental thinking on people and 'engineer' social change. Society follows a different logic than the objects of the natural sciences. Societal change is likely to be voluntary, i.e., change based on reasons, learning, participation, reflection, deliberation or agreement. The object we want to influence is a conscious, anticipating, strategic *subject*. This means that this paper cannot give prescriptions. At best, it can provide guiding principles and recommendations for the design and facilitation of dialogue processes. We are dealing with *process* rather than *blueprint* planning. In our experience as social scientists, policy makers often expect silver bullets for effectuating social change. This inherently is impossible.

Secondly, the body of knowledge discussed in this paper is in *statu nascendi*. The 'history' of people's endeavour to deal with themselves as a major force of nature is emergent[xvi]. This applies particularly to the area of 'dialogue' and social learning. All over the world, people are deliberately discussing and learning how to create a sustainable society out of the ashes of market failure and an agriculture that forgot its ecological bounds[xvii]. This paper deals very much with work in progress and cannot provide permanent answers. This means that *The Dialogue on Water, Food and Environment needs to develop learning capacity*. Hopefully this paper contributes to that process.

In the third place, the overview that this paper tries to give must draw on different social science disciplines. These include sociology, anthropology, social psychology, political science, ecological and institutional economics, game theory, and soft system thinking, as well as on other relevant fields, such as complex systems, multi-agent systems, ecology and biology. All these disciplines and scientific perspectives are required to build the kind of 'praxiology', i.e., the theory that informs the practice of dialogue, with which this paper is concerned. As the reader can imagine, such a praxiology is a life's work, but even then one might miss important areas of relevant disciplinarian and other knowledge. This paper cannot claim that it covers all the available knowledge and insights. The Dialogue must continue to inform itself on the areas that are relevant.

From Predicament to Paradigms to Practice – Perspectives on Natural Resources Management for the 21st Century

5.17 The Human Predicament: water dilemmas in a wider context

In 1998, Jane Lubchenco[xviii], the then President of the American Association for the Advancement of Science, raised an important question. Now that the cold war is over, she wondered, does science still have a social contract? Is there any reason why society should continue to finance science? The answer she worked out was 'yes'. We are entering the age of the environment and now face the *eco-challenge* as the main human predicament. The eco-challenge will create great demand for science.

According to Lubchenco, the eco-challenge is caused by the fact that *humans have become a major force of nature*, comparable to the impact of a meteorite or the onset of a glacial period. We have transformed vast areas of the surface of the earth, use a large part of the world's fresh water resources, have caused the fifth largest extinction event in global history, have exhausted, or are on the verge of depleting, the oceans' fishery resources, etc. In other words, the eco-challenge is *an anthropogenic* phenomenon. It is not caused by forces outside us, but by ourselves. The eco-challenge is the system feedback to the combined impact of human activity on the 'fraying web of life'[xix].

This raises the interesting question *how we can deal with ourselves*. As a scientist, Lubchenco sees the contribution of science mainly in telling people 'what is out there', so that humankind can take appropriate action. As a result of this position, Lubchenco takes great interest in science journalism. We have good

reason to believe that telling people about the facts of life is a necessary but not a sufficient strategy for change. It has not stopped people from smoking, for example. In this perspective those concerned with the design of a sustainable future cannot escape the task of moving beyond science and classical economics, into the murky area of understanding human behaviour, and especially into understanding the factors that influence the outcomes of interaction.

People need to make negotiated trade-offs among the policy goals of productivity, equity, sustainability and stability [xx]. Typical trade-offs for present day agricultural institution managers include trade-offs among:

- Food security (agricultural production, irrigation, soil and water conservation);
- Health promotion (access to sufficient safe drinking water, environmental management and sanitation, water purification);
- Environmental stability (controlling pollution, toxification, floods, droughts);
- Ecological sustainability (maintaining bio-diversity, integrity of the web of life).

Achieving such trade-offs requires bringing together multiple, and increasingly inter-dependent, stakeholders to negotiate and agree on concerted action with respect to the sustainable use of fresh water resources. The focus on such 'interactive solutions' or 'dialogues' is emerging simultaneously in many different policy arenas. On an over-crowded planet, there simply is no other way. We must learn to look at desirable states, such as sustainable integrated water resources management, as the emergent property of human dialogue. More especially, we must begin to develop the skills and insights required effectively to facilitate such dialogue so that it yields desirable states.

5.18 Paradigms underpinning dialogues for dealing with water dilemmas

A paradigm comprises epistemology, ontology, axiology and methodology[xxi]. Figure 1 uses an epistemological horizontal and an ontological vertical axis to illustrate different approaches for tackling natural resource management problems. The example is based on the management of the Spruce Budworm crisis in New Brunswick, Canada[xxii].

The quadrants characterise the paradigms favoured by different scientists involved in the battle against the Spruce Budworm. Those in Quadrant 1 approached the problem from a reductionist and positivist perspective. They recommended spraying. Positions in Quadrant 2 had a positivist but also holistic, i.e., a hard systems, perspective. They focused on natural controls and the management of the eco-system as a whole. A few of the scientists had developed a Quadrant 3 perspective (i.e., holistic and constructivist, soft system thinking). They focused on the problem as the outcome of human activity and on critical learning (with some reason: the Spruce Budworm became a pest as a result of the human decision to plant enormous tracks of land with one species). No one seemed to have embraced Quadrant 4, Miller mentions 'praying' as the appropriate response in this quadrant[xxiii].

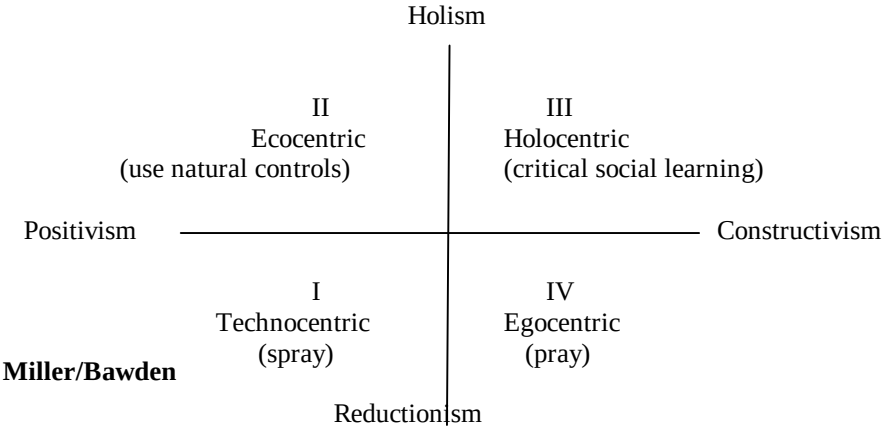

Figure 1: The Miller/Bawden Quadrants[1]

Quadrants 1-3 seem equally relevant for dealing with a natural resource management problem. Studies of effective social change[xxiv] show that all three quadrants were involved, i.e., successful change required fundamental and applied research in Quadrant 1, but also designing hard systems that work (Quadrant 2) and soft systems that people want, know and can do (Quadrant 3). This paper will focus especially on the neglected Quadrant 3 without negating the relevance and importance of the others.

5.19 Dialogue as a Third Way of Getting Things done

Table 1 provides a slightly different take on the area of discourse of the present paper. It illustrates three ways of being effective and some defining attributes of each. Most of us are thoroughly familiar with instrumental and economic thinking, but not with 'interactive thinking'.

As we have said before, water dilemmas dealt require all three ways of being effective. But the paper addresses especially type 3. Although the explicit and deliberate embrace of technology (type 1) and economy (type 2) is a recent historical phenomenon in industrial societies, by now most of their inhabitants can engage in informed discourse about them. Our argument is that this myopic focus on types 1 and 2 has led to second-generation problems that increasingly require type 3. We are facing a new context: our greatest threat to survival is our own behaviour. Type 3 is likely to incorporate the other two, much as economic thinking had earlier incorporated instrumental thinking. Therefore we need to develop shared ability for discourse and reflection with respect to type 3. We believe that the best entry point for the development of such ability is cognition.

Table 1: Three ways of getting things done

	Instrumental	**Economic**	**Interactive**
Predicament	Lack of control over causal factors	Competition, scarcity	Anthropogenic destruction of our habitat, lack of control over ourselves
Dynamics	Causation. Self-organisation	Rational choice, struggle for survival, market forces	Interdependence, learning, reasons, reciprocity, trust
Objective	Control of nature for human purposes	Win, gain advantage, optimise utility	Negotiated agreement, concerted action
Knowledge Base	Science	Economics	Cognitive Theory
Effect based on	Technology	Strategy	Conflict resolution, agreement, learning
Policy focus	Engineering, hard systems design	Fiscal policy, market stimulation	Interactive policy making, social process design, foster dialogue, process facilitation

5.20 Cognition: A general theory for understanding dialogue

If dialogue is to be widely accepted as an affective way to get those things done that are not amenable to technological fixes or market forces, we need a widely shared body of thought that people can draw on to participate in, or make decisions about, dialogues. We believe that cognitive theory fits the bill. We briefly present its main elements below.

People's *reasons* might be intangible and 'soft', but 'they are very real in their consequences'. Cognitive theory focuses on people's reasons, and that is a pursuit very different from the scientific analysis of

causes, and also very different from assuming or ascribing reasons, as does economics when it postulates that people make rational choices to optimise utility. Cognitive theory does not assume or attribute reasons, it looks at how reasons emerge and determine human action. Such a focus is important in an epoch, in which human survival depends, at all levels of aggregation, on people's ability to understand and manage themselves.

People's reasons are not limited to formal logic or knowledge. In fact, the very stuff of reasons comprises emotions and values, beliefs about the world, espoused theories and theories in use, narratives, and decision making to act[xxv]. In other words, cognition is about how people make sense of the world, and how they socially construct reality. Figure 2 pulls together these elements and their relationships. We speak of a cognitive agent in its domain of existence or context.

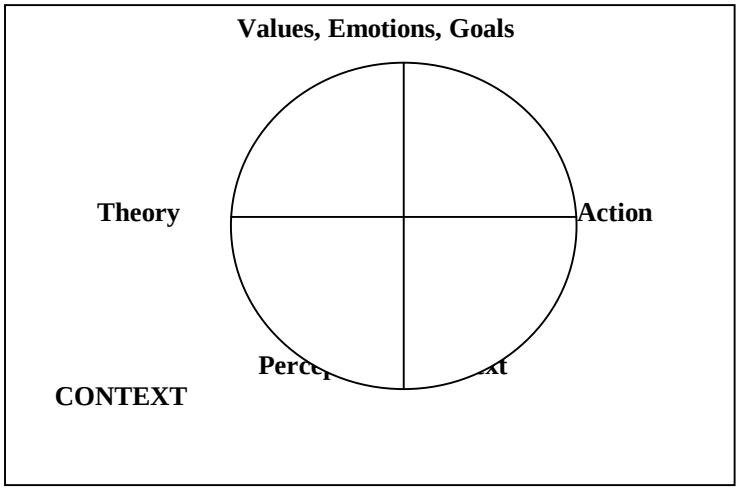

Figure 2: The cognitive agent in its context [xxvi].

People's reasons, and the 'very real' consequences of those reasons as a result of human action, arise out of the effort to, at the same time, create *coherence* among values, theories, perceptions and actions, *and* maintain *correspondence*, or structural coupling, with the context[xxvii]. The dilemmas between coherence and correspondence are the very stuff of social change and innovation. A typical example is Thomas Kuhn's famous theory on scientific revolutions[xxviii].

A dominant paradigm or 'normal science' is a coherent body of knowledge. It fends off evidence that is inconsistent with it and gradually loses correspondence with the context. After some time, 'normal science' cannot resist this evidence any longer, the coherent body of knowledge collapses, and a new paradigm emerges that better corresponds with the context.

The example shows that people are 'doomed' to socially construct coherent 'realties'. There simply is no other way of knowing. But they are likely to get it wrong, and people can only survive to the extent that they are able to correct themselves based on reflection upon their knowledge. Anything that stands in the way of such resilience, be it elite's, institutions, escapist pathologies, inability to learn, impaired or distorted perceptions of contextual change, or the inflexibility of investment, is bound to have grave consequences for survival.

Box 2. Norsemen on Greenland[xxix]

In the Early Middle Ages, the climate was relatively warm. Norsemen had settled on what was then appropriately called Greenland and developed farming communities based on livestock production. Around 1220, they sent a polar bear to the King of Norway as a present. In return, they received a bishop. He wasted no time and began building churches; religious fervour became one of the hallmarks of the Nordic communities. In the fourteenth century, the climate became

cooler. Slowly the conditions turned against the Norse communities and their way of life. Eventually they had to give up and return to Norway. All that now remains of their efforts are the ruins of their churches. Meanwhile, the Inuit who lived on Greenland at the same time effectively adapted their life style to the change in climate and still make their living on the island.

This history has intrigued students of the collapse of prehistoric societies. The conclusion is that it is not so much the change in climate that caused the collapse, but the entrenched way of dealing with the environment. Elite groups (bishops in this case) play an important role in this lack of resilience. Elite's can afford to maintain the old lifestyle until it is too late.

We are especially interested in collective, distributed and multiple cognition. *Collective* cognition emphasises *shared* attributes, i.e., shared myths or theories, shared values, and collective action, e.g., households all engage in recycling paper, or accept that smoking is to be done outside only. Over time, assimilation typically leads to more collective cognition. *Distributed* cognition emphasises different but complementary contributions that allow concerted action, e.g., the navigation of a battleship[xxx]. Different cognitive agents each do 'their own thing', but, together, they allow purposeful action. *Multiple* cognition emphasises the existence, in one situation, of totally different cognitive agents with multiple perspectives. They could maintain mutual isolation. But when they become inter-dependent with respect to the use of resources, such as water, they engage in conflict, work at cross-purposes, or take disjoint action. However, multiple perspectives can grow into a joint rich picture, enrol in dialogue, and negotiate collective action. In this way, *multiple cognition can grow into collective or distributed cognition*. Facilitating this process is the key to effective dialogue.

What is of interest about cognition, therefore, is not so much the working of the individual brain, but learning organisations[xxxi], how institutions think[xxxii], life worlds[xxxiii] and dialogues, to describe phenomena that can only be explained by looking at *collectives* as cognitive agents. What is of interest is how values, theories, perceptions *become* shared or complementary, and lead to collective or concerted action. The main task of leaders, managers, and facilitators is to stimulate such social learning by providing myths, by rewarding desirable behaviours, by stimulating group speak and group think, by ensuring widely shared perceptions of the environment, by facilitating meetings, etc. In such collective settings, the tendencies towards coherence and correspondence drive the process, not only through the use of power, social pressure, imitation, congruence, convergence and so forth, but also through deviance, social dilemmas, innovation, mutation, evolution and revolution.

Box 3. Why do Farmers Chat?
A typical example of collective cognitive process is a study of why French dairy farmers chat[xxxiv]. Scientists earlier had assumed that they do so to transfer technologies received from scientists and technicians. But that proved not to be the case. An important function of chatting was concept formation. Furthermore, chat groups developed criteria for acceptable behaviour. And groups assessed new information or developments in the environment. Only now and then these included science-based information. In other words, the function of chat groups was, foremost, to enhance cognitive coherence among the members of the group, and to ensure shared monitoring of the environment for purposes of maintaining correspondence.

5.21 *Multiple Stakeholder Dialogues*

Multi-stakeholder dialogues emerge, or are created, in situations at different scales in which multiple stakeholders in the same resource come to recognise their interdependence and hence become prepared to meet to negotiate some alleviation to the misery they largely cause each other, and to decide on joint action. The word dialogue refers to a situation in which some institutional infrastructure has been created for multiple cognitive agents to meet, argue, negotiate, fight and hopefully agree on joint action[xxxv]. Dialogues can emerge spontaneously when more-of-the-same becomes intolerable. But dialogues often are imposed, for example when some outside agency observes the degradation of a natural resource and realises that regulatory frameworks, the market or technical solutions do not suffice to solve the problem. Dialogues are relevant especially when natural resource problems, such as run-off, erosion, drought, depletion of ground water resources, begin to manifest themselves, but no human decision making capacity exists at the hard system level at which problems are perceived to be solvable (e.g., water catchments, wetlands, deltas, aquifers, oceans, lakes). In such situations, dialogues are deliberately created to provide the soft system to complement the hard system.

Dialogues are becoming an increasingly common phenomenon. This partly reflects that we had so far organised ourselves mainly to deal with production, profit making, etc., and not for dealing with the eco-challenge. But it also reflects the increasing realisation that expertise based on science, technology, market forces and central policy making, even if based on electoral process, often fail when it comes to depletion of natural resources, or the degradation of ecosystems. Context-informed negotiated agreement among multiple stakeholders is increasingly seen as the only way to move forward in resource dilemmas. Box 4 provides a typical situation in which a dialogue was found to be necessary.

Some key characteristics of dialogues are:

(1) They provide a forum for deliberation among multiple cognitive agents.

(2) These agents are interdependent with respect to the use of some natural resource or ecological service. The one cannot use the resource without affecting the use by the other. These multiple cognitive agents are often called 'stakeholders'[xxxvi]. Stakeholders often have very different perspectives on the same resource. The boundaries of the contested resource are usually drawn differently by different stakeholders and are an important issue in negotiation.

(3) The dialogue typically comprises representatives of different categories of stakeholders. Key questions that arise are whether all relevant stakeholders are represented, and whether the relevant stakeholders are adequately or appropriately represented.

(4) Dialogues often only provide infrastructure for deliberation and do not have their own statutory powers. They must be considered an add-on device in a situation where no one is quite prepared to give up existing power.

(5) Stakeholder representatives often have inflexible mandates when they enter the negotiation process.

(6) Nevertheless, dialogue facilitation can powerfully bring to bear pressure on stakeholders to come to agreement for the common good. This can lead to alienation of representatives from their constituencies.

(7) Dialogue formation can be stimulated by authorities by officially installing them, appointing (independent) chairpersons, providing some resources and policy instruments which will be available to dialogues, enacting legislation to provide dialogues with some statutory power, etc.

Box 4: A Dialogue for Yellowstone Park[xxxvii]
Yellowstone is a symbol of pristine wilderness guided by natural law, free from human interference. But this image is an illusion. The fires that occasionally burn substantial sections of the Park had been stopped for many years but are now deliberately allowed so as to ensure that fuel does not build up to the point where a forest fire would do serious damage. These fires are

contested by the timber companies operating outside the Park. Wolves have been eliminated from the Park since the 1930s. Ranchers, who already resent the out-migrating buffalo that allegedly infect their cattle with Brucellosis, contest their reintroduction. The aquifers feeding the geysers for which the Park is famous are threatened by tin mining activities from which the State of Wyoming derives a great deal of its revenue. The most ubiquitous animal in the Park is *Homo sapiens*, to whose education the wilderness has been dedicated. To deal with the fact that the Park's boundaries do not coincide with the messy, more complex human system that determines what happens to the Park, a Greater Yellowstone Co-ordination Committee has been formed to negotiate accommodations among the conflicting human interests that impinge on the Park. The Park clearly is not an operational natural ecosystem, but a soft system determined by human ends, negotiated under collaborative management. Hence a dialogue, in this case the Co-ordinating Committee, is required to negotiate the design of the system.

Dialogues are based on the assumption that it will be possible to mould multiple cognitive agents into one. Meeting and deliberation among reasonable people, especially if guided by leaders who are skilled administrators, facilitators and managers, will, it is assumed, lead to agreement and desirable joint action. This is very much in line with Habermas' idea of communicative rationality (as opposed to instrumental and strategic rationality) which can occur in perfect communication situations (i.e., situations in which no one has the power to overrule the others)[xxxviii]. Sociologists are quick to point out that such an easy way to deal with power issues is unwarranted. We take the position that the practice of relying on dialogues to resolve resource dilemmas definitely has a normative, if not wishful, element. Dialogues often seem the only way out, therefore they must work. In actual fact, platforms often do not lead to the desired outcomes. The compromises reached turn out to be unsustainable in the long run, powerful interests impose 'solutions', and so on and so forth. This is especially the case when outsiders intervene in local situations[xxxix]. It is for this reason that it is important to develop theory about dialogues and their facilitation that can be widely shared. Understanding the processes involved is one way to ensure an acceptable outcome.

5.22 Social Dilemmas and Common Property Resource Management

Dialogue situations are often characterised by dilemmas between individual selfish interests and collective interests. Hardin[xl] used rational choice theory to argue that herders who use a common pasture have little option but to collectively destroy their shared resource. Herders will increase their herds while the total quantity of grass stays the same for very good reasons. If their cows do not eat the grass, those of others will. The impact of each additional cow on the shared resource is minimal. But in the end, the herders will collectively overgraze the pasture and all will suffer. Hardin called this the 'tragedy of the commons', a metaphor that had great impact on thinking about natural resource management.

It led to the development of social dilemma theory[xli]. A social dilemma is a situation in which it is rational for all individuals to make selfish choices, while all would be better off in the end if they made co-operative choices. The two types of social dilemmas most discussed are commons dilemmas and public goods dilemmas. The former can be solved if all take less from the common good; the latter if all contribute more to the public good. Public goods dilemmas are characterised by free riders who use the public good but do not contribute to its upkeep.

Water resources typically can be the subject of either type of dilemma. When vegetable growers around Beijing relentlessly pump dry the common aquifer, a fact well known to them because the water level is dropping every year, we are clearly dealing with a commons dilemma. But when farmers in the Philippines do not show up to help clean the common irrigation channel, we are dealing with a public goods dilemma.

Hardin's metaphor also led to explicit research of what happened in the millions of villages where resources were shared. In some, as on Turkey's Anatolian plateau, Hardin's prediction seemed all too accurate. Bare rock now marks areas where lush forests grew only fifty years ago and vast grasslands have

been reduced to gravel deserts. But researchers also found areas where farmers had sustainably managed common resources for centuries. This led to very fruitful and interesting research on common property resource management with which the name of Eleanor Ostrom[xlii] is indelibly connected.

It turns out that Hardin was not really talking about commons at all, but about open access resources, i.e., resources from the use of which no one can be excluded. In contrast to such open access resources, many instances exist of common resources that have been managed sustainably for centuries under the following agreements:

- Access to the resource is limited to a defined set of users;
- Those with access communicate (a dialogue exists);
- Clear rules for access and use;
- A way of monitoring adherence to these rules;
- Payments for monitoring and use;
- Sanctions for violating the rules.

These rules form the institution of common property resource management. The existence of such rules generates trust that others will also make the required sacrifice for sustainable management of the resource. Experience that such agreed rules work over time is said to increase social capital, i.e., the likelihood of other successful collective action[xliii].

Box 5: Community Forests in Nepal[xliv]

Until the 1950s, villages managed the forests in Nepal. The villagers used them for grazing their cattle, collecting firewood and timber, as well as various other products such as honey, herbs, etc. But the condition of forests gradually deteriorated as the population increased. The government then decided to nationalise all the forests and make them state property. As soon as this became known, the villagers went on a massive tree cutting binge to ensure enough wood for the time they would not be allowed access any more. Large piles of wood lay rotting in front of the houses of many villages. It soon turned out that it would not have been necessary to cut the wood. The government was unable to monitor the forests. Hence they became *de facto* open access resources. Everyone took as much as possible; the proverbial misnamed 'tragedy of the commons' had set in. In mountainous Nepal this soon had very undesirable consequences in terms of run-off, erosion, landslides, siltation, etc.

The government realised that nationalisation had been an error. The new policy foresees in community forests. Rural communities can get back their forests under certain conditions. They have to organise and set up Forest Users' Groups (FUG). These must comprise all the people who have rights of access to the community forest. The FUG elects a committee for managing the forest. In the FUG agreements have to be made about:

- The amount of wood and other products each family can take. In a typical village, each family, regardless of its size, is entitled to one tree per year.
- The person who will monitor the use of the forest, the payment that person will receive and the amount each family is to contribute for that service.
- The fines that families need to pay when they violate these rules.
-

Studies of these village forests[xlv] show that some of them fail because families are unwilling or unable to make the necessary sacrifices or contribute to the salary of the warden (a public good). However, others succeed. In such communities, people trust the enforcement of the rules. They have made sacrifices, such as reducing the number of cows they graze in the forest because others do so too. It turns out that some powerful people, such as the village head, sometimes violate the rules of access and take more than what they are entitled to. However, the agreements are quite robust and are adhered to, nevertheless. One small problem is that men are not allowed to touch women. Hence the

wardens, who are usually men, are powerless to capture or arrest women who breach the rules. Apparently this leads to a great deal of fun and games and does not seriously jeopardise the common property management.

For us, the lesson from common property resource management is a hopeful one: all over the world, local communities have managed to stick to agreements to manage natural resources in a sustainable manner. Sometimes, these agreements have lasted for centuries. Such agreements are able to override the selfish rational choice that neo-liberal economists assume as the dynamic core of their models. But achieving such agreements requires much attention to institution building (in the sense of systems of rules[xlvi]). Establishing a dialogue is just the beginning. What is important is to build the institutions that will make it work.

Box 6: The importance of maintaining institutions is the prevention of Dengue Fever[xlvii]
The importance of building and maintaining institutions also comes to fore in the experiences with risk management with respect to Dengue Fever. Dengue is a serious mosquito-borne viral disease that occurs in outbreaks and may cause high fatality rates in children due to a condition know as dengue haemorrhagic fever. There is no vaccine or drug treatment for the disease. The contextual determinants of this infection consist of small collections of water in and around the house, which are favoured by the vector species Aedes aegypti and Ae. albopictus. Permanent risk management is therefore in a sense a water management issue.

The impact of dengue is not only a matter of disease burden in the population. The opportunity costs to the health services are enormous: at the height of an urban dengue outbreak, the full capacity of hospital beds may be taken up by dengue patients at costs that have been estimated at US$800 per case.

In many countries national or local governments lack the capacity to maintain effective prediction and early warning services. Insecticide spraying at the time of an outbreak usually only serves cosmetic/political purposes. Traditionally there has, therefore, been a heavy reliance on community based actions to prevent dengue outbreaks from occurring. These consist of clean-up campaigns and house inspections for mosquito breeding. Experience from some Caribbean islands has shown that in the wake of an outbreak, it is easy to mobilise communities to take action. The time between outbreaks is, however, beyond the community attention span. The breakdown starts with a few, usually powerful members in the community who break the self-imposed pattern of risk management. One such member of the community is enough to expose the entire community to the risk of a dengue outbreak. Once the community system has broken down, and the attention span has passed, risks rise to the previous levels. Re-establishing community management for a second time becomes an uphill battle.

Is there any evidence that dialogues actually can work… and is there any alternative?

As we have seen, there is an element of wishful thinking in the widespread embrace of platforms, dialogues, interactive approaches, etc., as a way of getting us out of anthropogenic resource messes. Since dialogue is our only hope, it must work! Alas, it often does not. The compromises reached are opportune but often not sustainable. Enormous effort to learn together and to design concerted action stagnates in lack of means and other support provided at higher levels. Reluctance to recognise dialogues as legal entities or to give them statutory powers robs them of the opportunity to access loans and public funds, and of the clout they need to make things work.

In all, the evidence is that we have a long way to go to learn how to use dialogues as a societal device to get us out of the mess. This applies not only to governments at different policy making levels, but also to stakeholders themselves who have been imbued with economic and strategic thinking and therefore have

little understanding of the processes involved in a dialogue[xlviii]. They find it hard to learn about learning and otherwise to be reflective about the platform processes in which they are or could be involved.

The evidence that platforms can be effective has not been systematised, and at this time could be easily undermined by organisations and players who have reason to reject the interactive approach as 'unscientific' or idealistic. We expect such criticism to come especially from economists and organisations whose strategic perspectives and belief in selfish rational choice leave little room for interactive approaches. As we said, interactive approaches are emergent. They need to be given a chance.

'Significantly, Giddens, Habermas and Beck all make the case, in one way or another, that more democracy, and more radical democracy is an essential precondition of creating environmental sustainability'[xlix].

Box 7: No alternative to dialogue[l]

Current liberal democratic systems tend to appease powerful economic interests at the expense of the overall wellbeing of the majority. Only the active political engagement of the wider citizenry has the potential to redress this situation. 'The kinds of changes in consumption and definition of wellbeing required to bring Western societies within the orbit of sustainability are both extensive in their coverage and intensive in their consequence. Everyone will be affected in such a transition. Negotiated social change of this form is an enormous political task. At the same time, the political and legal systems of capital societies are not neutral but structurally biased in their allocation of power to environmentally problematic interests.

Our current political and economic systems are based on the aggregation of individual preferences and individual votes. A sustainable society demands that we make deliberative decisions and that the design of collective futures steers individual behaviour. We summarise the evidence that dialogues actually can work as follows:

- Shared discovery learning can have a strong empowering effect (e.g., Farmers trained in IPM Farmer Field Schools have learned that they are experts themselves and have set up farmers' organisations which now are active at the national level[li]);
- Contrived and facilitated dialogues among local people who have a common environmental concern can unleash incredible local energy, mobilise local leadership talent, and lead to concrete plans for concerted action. These plans are, however, often not realised because resources, legal and statutory infrastructure and other conditions have not been provided. The public and private sectors are beginning to look at dialogues for solutions and are beginning to learn how to get them going. They are not yet prepared for the consequences. These are the main experiences of a major experiment in the use of dialogue, the Australian Landcare movement[lii].
- Small groups can, and have over the centuries, been able to self-regulate their use of natural resources by creating institutional frameworks that underpin reciprocal agreements to take less from the resource for the sake of sustaining it. Such institutional arrangements are called common property resource management[liii].
- Relatively short efforts to facilitate dialogues, especially if they focus on learning about learning (i.e., create capacity for reflection about dialogue processes), can lead to activities that are sustained years after the facilitation event. In that respect, the facilitation of dialogues can be a very cost-effective way of using expensive expert resources[liv];
- Dialogues often throw up local facilitation capacity that propels dialogues to success. Appointed chairpersons and others, if well chosen, often prove able to coax concerted action out of a very diverse set of stakeholders[lv];
- There are important governance functions that need to be, or are best, carried out at a regional or basin scale, i.e., at the level of the resource system at which one can make a difference. Our society has so

far focused on creating institutions for dealing with technologies and/or the generation of wealth. Institutions for dealing with natural resources and ecological services (national park authorities, river authorities, etc.) have largely relied on centralised power and regulation. This has proved to be an ineffective way to deal with contested resources. However, dialogues set up at the relevant level of the contested resource system often lack impact because people fear to create another level of government, or because existing institutions (e.g., ministry departments, provinces, municipalities, institutional land owners) are loathe to give up their power[lvi].

- Successful dialogue requires careful attention to process. There is an increasing body of evidence about effective process and its facilitation[lvii]. As we have repeatedly stressed, however, the realisation emerging from experiences with successful local dialogues is that:
  (a) Success is circumscribed by conditions and incentives created at the policy level,
  (b) The outcomes of dialogues are often not implemented because conditions (legal frameworks, financial resources, etc.) are not created at the higher policy level.
- Hence the evidence suggests that dialogues cannot only be looked upon as local or regional process, but must be taken as systemic wholes which include the institutional and policy conditions.

On the whole, we must conclude by saying that the whole policy area of getting things done through interactive approaches is in emergence. Lessons are being leaned everywhere and have hardly been consolidated. The theories with which we can understand the processes involved are emerging too or are in the process of being consolidated. They have so far made little headway in the public consciousness, which remains conditioned by the bodies of knowledge of yesteryear, i.e., science and economics.

Principles For Successful Dialogue

We have repeatedly emphasised the need to create suitable conditions for dialogue at the policy level. Below we make an attempt to address this issue[lviii].

5.23 Establish Appropriate Forums or Platforms

One of the key issues in establishing a dialogue is the choice of the actual group that will meet regularly to debate the issues at stake. This is the face-to-face encounter group that must work on behalf of the stakeholders in the area earmarked as 'the system at stake'. It is obvious that this is a crucial choice that greatly influences the success. Of course, one can also establish a number of subcommittees to broaden the scope of participation. But that does diminish the importance of choosing the actual dialogue group. Who can be spokesmen and women for the important stakeholders? Is the group small enough for meaningful dialogue (i.e., usually not more than 10 or 12)? Representation becomes a crucial issue. Do the representatives have constituencies in the important stakeholder groups? Do mechanisms exist for the representatives to report to their constituencies?

One of the key problems in such set-ups is that the representatives, by their participation in the dialogue, are pressured to compromise and move with the dialogue group. However, as they change in culture and begin to belong to the dialogue group, they lose legitimacy and recognition of their constituencies. This is a very common occurrence in dialogue processes[lix]. Explicit capacity among stakeholders to reflect on this normal by-product of a dialogue seems an important guarantee that such problems with representation do not lead to conflicts that impede the process altogether.

5.24 Establish the Mandate and Legitimacy of the Dialogue Forum and Process

A key issue for a dialogue at basin or national level will be the mandate it is given by constituent stakeholders and in particular government. Closely associated with this will be legitimacy with which different stakeholder groups see the forum and process. Ideally a majority of stakeholders will in fact see it

as legitimate forum for open and unbiased dialogue. However if this not the case it will have a dramatic influence on the way different groups react to the dialogue and the support they give.

What is the nature of the agency that sets up the dialogue? What incentives does it have to do so? Does it have the credibility with the different contesting stakeholders? Does it have the capacity to deal with the demands that the dialogue might generate? These questions are important. Very often, the agency setting up the dialogue or paying for the facilitation has an interest in a certain outcome. A typical example is a foreign donor in Senegal that had, for years, paid for the development of a small holder irrigation scheme and now wanted to stop financing this project. Hence it hired facilitators to get the stakeholders organised into an autonomous decentralised organisation. This meant cutting off the sources of credit, the support for the technical unit and so forth[lx]. It is understandable that such a 'loaded' assignment has a strong influence on the outcome. In another example, a Ministry of Agriculture installed a dialogue to develop a 'national landscape' (an officially established format) around a unique river basin that has so far escaped the onslaught of agricultural modernisation. The largest land owners in the area are the Forestry Service which gets paid by the Ministry to manage the rare vegetations along the creeks and small rivers in the basin, and the farmers who get subsidies to intensively farm the plateau's. The instalment was done in close co-operation with the provincial authorities. A paid independent chairman was appointed, who had no interests in the area but was respected by the different parties. The Ministry of Agriculture is one of the members of the dialogue, but does not play a central role. Other stakeholders are the water authority, the largest municipality in the area, an association of small villages, the drinking water company, the tourist sector, and others. In this case, all precautions seem to have been taken not to load the dice. The independent chairman turns out to be able to exert tremendous pressure on the stakeholders to move in a direction of joint action and compromise. However, so far, the dialogue, though officially installed, is unlikely to be given statutory powers of its own. The province, the Forest Service and other major players have no interest in relinquishing their power to the dialogue at the basin level. All action that is commonly decided by the dialogue must be implemented through existing authorities[lxi].

The legitimacy of the dialogue has to do with its mandate, its composition, the nature of the chairperson, the nature of the organisation that commissioned the facilitation, and so forth. A dialogue is necessary when resources are contested. Successful dialogue therefore requires that all stakeholders trust the process and feel committed to accept the outcome. This is partly a question of a strong awareness of interdependence, but also a question of feeling safe, of trusting the process. Accepting the legitimacy of the platform is a first and necessary condition. In the careful preparation that must precede the setting up of a dialogue, it important to ensure that locally trusted people support the idea, that important representatives of key stakeholder groups begin to 'own' the dialogue process, etc.

5.25 Engage Relevant Stakeholders

One of the first problems faced in starting up a dialogue is to define the soft system or the relevant 'theatre'. Of course, the idea is to create an ability to make collective decisions about concerted action with respect to a basin or other resource, such as a lake, wetland, estuary, etc. However, it is often exceedingly difficult to chose an appropriate unit or system level. River basins, such as the Rhone, the Limpopo, or the Amazon tend to be enormous and so complex, crossing several international boundaries, that it is a daunting prospect to create a single dialogue. There is an emerging tendency to believe that such large-scale resources are better dealt with by splitting them up into smaller scale units at the level of landscapes, regions, or sub-catchments[lxii]. Often such units do not coincide with existing geographical, administrative or political boundaries. In a way, the decision is largely arbitrary.

An important consideration is that purely physical geographical or ecological boundaries can not be the only basis for defining 'the system'. An important consideration is that it be a 'contested resource', i.e., an important issue is to identify the contestants or the level of the resource at which the conflict can be solved.

A key point, therefore, is stakeholder identification and analysis. So far, we have developed an enormous body of knowledge on market analysis, market segmentation, consumer research and so forth[lxiii], typical for our civilisation's pre-occupation with the creation of wealth. However, we are slowly beginning to develop

systematic knowledge with respect to stakeholder identification and analysis[lxiv]. This is not an easy job. Important stakeholders, such as women, tourists, poor farmers, who have little voice, tend to be overlooked. Sometimes the arbitrary boundaries exclude important stakeholders (e.g., oyster producers in the sea, i.e., outside the basin itself).

5.26 Establish Incentives

A dialogue requires carefully crafting the incentives. Incentives are important before one starts with a dialogue, in terms of identifying the rewards which stakeholders receive for NOT engaging in a convergence process. But incentives are equally important for stimulating desirable outcomes. For example, one can make available resources for implementing outcomes of the dialogue. The promise of such resources for the local area often is a powerful motivation for contesting stakeholders to come to a compromise. However, in designing such incentives, one must be aware that the nature of the incentive has an important influence on shaping the outcome. I.e., the dialogue will work towards the incentive. The danger is that wrongly designed incentives will stimulate unsustainable compromises and local agreements that evaporate as soon as the incentive has been landed. It should not be forgotten that most local actors in developing and industrialised countries have learned to play the games of donors and other higher authorities in order to get what they consider the benefits that can be obtained. For example, many people have learned that donor projects are usually not very helpful, but that there are small benefits, such as a Landrover, a road, or a building that might be obtained by acting the required roles. Hence building incentives for dialogues requires a great deal of attention to 'local grounding'.

5.27 Integrate With Existing Institutions and Processes

A dialogue never happens in a vacuum. Whatever the situation, one always has to deal with existing social organisation and institutionalisation. Various processes and institutions are likely to already be in place and the Dialogue will need to examine carefully how it fits within this existing context. This could be tricky as the Dialogue could easily be seen as duplicating or subverting existing initiatives and responsibilities.

At a local level tribes, castes, villages, brotherhoods, religious denominations, municipalities, companies, parastatals, and so on already exist, and have a great deal of energy to continue to exist. Often the local situation is subject to a great number of existing regulations, bylaws, institutional arrangements, established rights and privileges, licences, and so on, that local stakeholders can use to resist 'giving in' to the common good. Sometimes these existing rules, regulations and so on turn out to be a real obstacle to reaching any useful outcomes. For example, definitions at the national level of what will be a nature reserve, might imply implications for the value of their land that makes farmers very reluctant to accept having their land defined as being part of a nature reserve, even if they are sympathetic to nature conservation. This means that avenues must be sought to experiment at the dialogue level with other forms of institutions, regulations and so forth. This is a complex issue with which we have so far not had much experience.

5.28 Clearly Define the Scope and Boundaries for Dialogue

Specifically what issues and questions will dialogue processes at basin and national levels address? As already discussed water issues are complex and multifaceted consequently the potential topics for discussion range from specific technical details of water management systems through to the politics of bilateral and multilateral negotiations. Water issues inevitably lead to questions of values, politics and governance, however particular cultural and political contexts may have important implications for how such questions are to be constructively raised and debated.

Defining the domains of dialogue for particular situations would seem to be an important early step in setting up the dialogue process. The domains for dialogue in Box 7 are offered as a starting point for such definition.

Box 8: Domains of Dialogue

Values and Paradigms – What are the values, worldviews and underlying assumptions of different stakeholders and how does this influence the approach to water management and participation in the dialogue process?

Scenarios – What are the likely future scenarios for water, food and environment given the current status and trends, are these desirable and what would constitute an improved future?

Long Term Objectives – What are desirable long term objectives for water use and management?

Issues and Conflicts – What are the current or emerging issues and conflicts around water and why do such conflicts exist?

Technological Opportunities – What scientific, technological and management options and developments could improve the situation and what is required for these to be developed and implemented?

Incentives – What incentive framework is likely to be required to ensure different stakeholders behave in a way appropriate to ensuring the long-term common good and how can such incentives be equitably applied?

Policies, Institutions and Governance – What policies, institutional development and governance mechanisms are required to bring about forms of water utilisation that are better aligned to sustainable development?

5.29 Coordinate Between National and Basin Levels

Basin level dialogues must operate within the legal, policy and institutional context of the nations (or nations). Conversely national level legal, policy and institutional development must be based on the experiences and realities of the basin level. This calls for co-ordination between the two levels and the Dialogue process may well find it difficult to focus exclusively at just one level.

It is a common experience that it is fairly easy to reach agreement at the lower level where people are aware of the issues at stake. At the higher, and especially the national level, the dialogue is necessarily a question of major sectoral and other institutions slugging it out. At stake are their mandates, budgets, and power[lxv]. Hence, one condition for successful dialogues seems to be decentralisation to the basin level. This requires particular attention to the establishment of a regional, area-based, level of government, in between local government (municipalities, community councils), on the one hand, and national or provincial governments and public agencies, on the other[lxvi]. It seems to us that the ensuing issues of subsidiarity, statutory powers, and resourcing, of dialogues cannot be avoided.

With respect to national dialogues, there is some evidence that it is much easier to work from the bottom up, from basin dialogues to the national level, than to start dialogues among the major institutions at the national level. The players at that level live in isolation of the real issues on the ground, so that their 'dialogue' will purely be based on political scheming, coalition building, window dressing, protecting their turf, and so forth, which does not do justice to the promise of the interactive way of getting things done. A typical example is the ministry of agriculture that deals with 'green space' without, at any time, interacting with agencies representing urban interests in using that green space.

However, that is perhaps too easy a conclusion. The national level has a crucial role to play in creating the conditions for basin-level dialogues. Unresolved issues at the national level unavoidably express themselves at the regional level. This means that the Dialogue perhaps has a crucial role in fostering national level dialogues, and in developing sensitivity for situations in which national level dialogues would have a chance of being successful. Perhaps this is one of the key criteria for selecting initial dialogue projects.

5.30 Ensure Effective Facilitation

Chapter 6 deals in some detail with the dialogue process and hence with facilitation as a methodology. Here, we shall look at facilitation more as a tool of policy and examine the issues that arise from that perspective.

We begin by recalling the general experience with dialogues that a good chairperson who has a stake in moving the dialogue forward usually has an unexpected ability to manage a 'wheelbarrow of frogs', as the Dutch saying goes. Such chairpersons are able to bring together widely diverging views, can bring to bear social pressure on those who refuse to compromise, create allegiance to a common goal, network with important parties, etc. But such leadership, which indeed can be expected to be available in most local situations, is not the same as facilitation. Facilitation implies a much broader view of the entire dialogue process. It is, for example, not impossible for a chairperson to be so effective that compromises are reached which are not sustainable in the long term. For example, a compromise may cause such discord between representatives in the forum and their constituencies that major harm is done to the commitment of major parties to the outcomes of the dialogue. In other words, one needs a professional with a good understanding of the social processes involved who can assist the stakeholders in the basin to go through a successful dialogue process. In doing so, the facilitator does not only take into account the process of interaction among the representatives of the stakeholders in the forum, but the entire social process occurring at the basin level.

Good facilitators are scarce. They form a category of professionals that is just beginning to emerge among young people, especially women, now that a demand for them is rising as institutions involved with natural resource management begin to realise the need to pay attention to the interactive way of getting things done. A typical example is a major semi-privatised research institute that is responsible for the management of 'green space'. The people employed by that institute have, so far, been landscape ecologists, hydrologists, agronomists, and so forth. But now its director has realised that money can be made by employing professional facilitators. He sees to his chagrin that private management consultants now capture most of the gains to be made in that market.

This is not to say that management consultants cannot be relied upon for facilitation. But it is important to specify what one is talking about. Many management consultants have an economic focus, are only concerned with the 'bottom line' (i.e., euros), and have little idea about non-formal education through fostering social learning, or solving social dilemmas, and have little experience of multi-stakeholder situations, which are inherently different from dealing with a firm. For example, in multi-stakeholder situations, much more effort is required to create a shared awareness of the problem than is the case if one works with a company[lxvii].

Facilitators can be especially effective if they are able to help stakeholder groups learn about their own learning, i.e., if they can help people reflect on their own experiences as part of the dialogue process[lxviii]. This requires special skills in using large group methods[lxix].

This means that in many countries, efforts must be made to train dialogue facilitators. It is our contention, based on the successful experience with introducing Community IPM (Integrated Pest Management) in Indonesia through Farmer Field Schools[lxx], that much attention must be paid to such training and that temptations to do this through crash courses must be resisted. It is important to pay careful attention to the training of a core of excellent trainers of trainers.

A major temptation, especially when ministries of agriculture are tasked to deal with natural resource management, is to assume that regular extension officers can do facilitation. The international experience is that these officers, who have spent their professional careers telling others what to do, are totally incapable of facilitating a process. This is not to say that some of them would not have a talent for facilitation, but they require careful training to unlearn their previous professional behaviours[lxxi].

An important skill of facilitators is to bring science to bear on the dialogue situation. A scientific understanding of the nature of the hard system nature of the water catchment (i.e., its hydrology, geography, soils, etc., as well as its history of human use and its effect on the landscape) is crucially important for underpinning a shared vision. 'Bringing science to bear on the dialogue situation' does not mean that scientists should be hired to tell people 'how it is'. Instead, scientific insight should be used very circumspectly to design curricula for discovery learning and research activities which local people can do themselves[lxxii].

Box 9: Facilitating a Catchment Perspective[lxxiii].

One of the problems facing the Landcare movement in Western Australia was that the agricultural properties are huge and that growers live within these properties with little awareness of the larger catchments within which these properties are located. The alignment of roads, fences, and paddocks tends to be determined only by considerations at the farm level. However, a freak weather event occurred that caused very serious soil erosion literally transporting tons of soil, covering roads, houses and other structures. This event augmented the earlier 'creeping' awareness of serious degradation caused by salination. It was time to act, and to start a Landcare group in the sub-catchment. The facilitator used the following approach to create a catchment perspective among the property owners.

First, she took the growers through an exercise of identifying the soils in the area. This was based on local knowledge of the growers. The soil scientists in the Department stood at the sideline and severely criticised the exercise as totally unscientific and ignorant of all excellent available soil classifications. But the facilitator persisted. Her idea was to generate a common and shared classification of the prevailing soils in the area. One device she used was to dig soil pits and make soil peels which growers could take home. Then, each grower was presented with an air photo mosaic of his property and a transparent overlay with markers. Each farmer could now draw in the natural resources on his property according to the agreed-upon classification. The results were digitised and read into a catchment map, using GIS software. The results were amazing. Many soils ended exactly at the fence of a property. There was not much agreement among the growers about the nature of soil map that had been collectively constructed. The group worked hard to reconcile the differences. Soils types were further classified in terms of their vulnerability to wind erosion and salination. In the end, after much hard work, the growers agreed on a common resource map of the catchment. They were now able to see their own properties as part of the catchment. This, in turn, allowed planning new farm lay-outs which took into consideration the fencing off of vulnerable soils, the protection or replanting of valley bottom vegetations, and so forth. Unfortunately, after all this effort, it tuned out that no money was available to help farmers realise these farm plans.

A final point we want to raise is to emphasise the fact that facilitation has everything to do with the tendencies towards coherence and correspondence of the cognitive process. A typical example is provided by a study of decision making in small groups[lxxiv]. Figure 3 illustrates the main process.

The figure illustrates the findings. Looking to the past has to do with 'knowing', with an emphasis on observations or perceptions, and their interpretation (theory). Looking towards the future leads to choices, dealing with goals or values and available means. The groups that were successful at coming to collective decisions about concerted action were those that managed to iterate through the different points, creating convergence among goals, means, observations and interpretations. The groups that lingered at one of the

points, for example quibbling about what should be the appropriate goals, or the interpretation of observations, proved unable to come to a decision. The implication for facilitation is clear. Stakeholders must be helped to make common observations, create shared interpretations, agree on common goals, have a shared perspective on the available resources, AND move through these decision points in an iterative manner, converging on a decision.

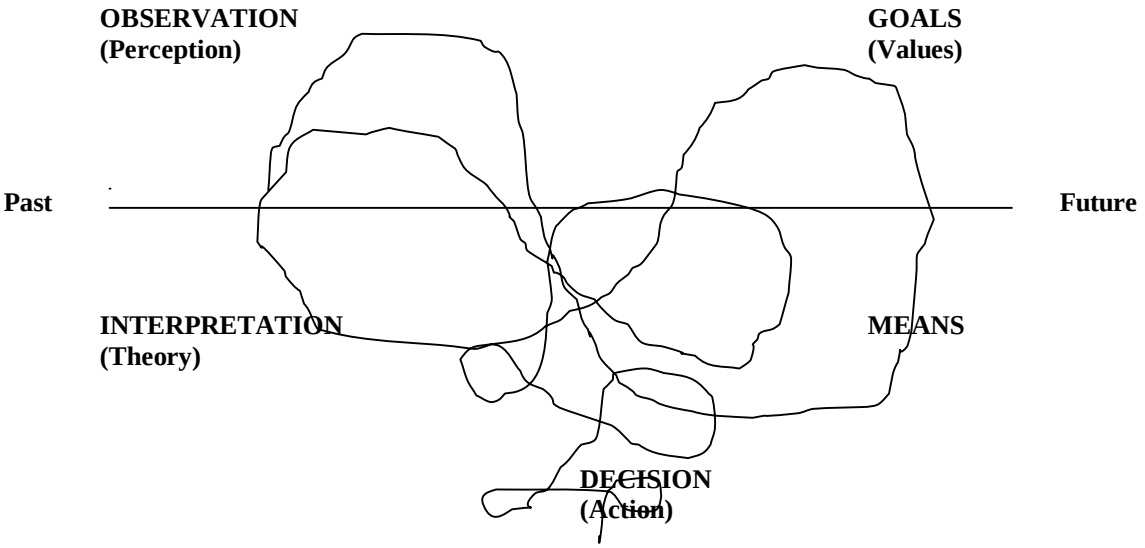

Figure 3: Example of Facilitation of a Cognitive Process

5.31 Utilise a Diversity of Methodologies

A dialogue needs to engage in critical analysis across biophysical, social, economic and political domains. This requires the use of a diverse range of methodologies from the biophysical and social sciences. Modelling of hydraulic processes are likely to play a role alongside processes such as multi-criteria analysis participatory rural appraisal soft system analysis and scenario planning. Essentially there are two groups of methodologies, those that will help inform the dialogue about biophysical social and economic issues and those that can be used to facilitate the dialogue process itself. A valuable part of the knowledge base for the Dialogue could be a comprehensive listing of different methodologies, what they offer and how they could contribute.

5.32 Establish and Monitor Performance Questions and Indicators

There are two aspects of monitoring and evaluating performance important to the Dialogue. One is the set of questions and indicators used to assess improvements in water management and the relations between water, food and environment. The other is the assessment of the dialogue process itself. As the Dialogue is essentially an experimental process monitoring, evaluation and adaption will be particularly critical. Deciding on how to best judge progress in improved water use and management is likely to be a key issue for the Dialogue itself.

In both these aspects participatory and learning orientated approaches to monitoring and evaluation, that utilise and integrate qualitative and quantitative methods are likely to be important.

Box 10 – Examples of possible performance indicators

Performance Indicators for Water Management	Performance Indicators for the Dialogue
• The total hectarage under irrigation; • The types of irrigation deployed and the agricultural production per cubic meter of water used; • The quality of environmental services and the biological diversity in aquatic and water-related ecosystems; • The burden of water-borne, water-based and water-related vector-borne diseases on vulnerable communities.	• Diversity of different stakeholder groups actively involved in the dialogue process. • Extent to which the dialogues process increases the understanding and changes the positions of stakeholders. • Level of agreement between stakeholders on principles and practices for improved water management • Changes in policies, institutional arrangements and water management practices that can be attributed to the Dialogue

Potential Elements of a Dialogue Process

Each national and basin level dialogue process will likely be unique. While recognising this, the following section of the document proposes a set of seven elements that could act as an initial guide for conducting a dialogue process.

5.33 Set Up and Managing the Dialogue Process

Each dialogue process will need to be set up and managed. How well the dialogue process is initially set-up is likely to have a significant effect on its long term impact. Ongoing facilitation, coordination and review will also be very important.

For any dialogue there will be a core group of stakeholders involved in initiating the process and it is important that this group consider how to ensure wider support and participation.

Clarify the reasons and motivation for a dialogue – An initial step is to clarify why potential stakeholders in the dialogue process are interested in it and what factors will motivate them to participate in and support the process.

Build stakeholder support – An understanding of the above reasons and motivations is an important starting point for building a wider base of stakeholder support. There are many ways of doing this but an important principle is to involve groups as early on in the process as possible so they can help shape the it in a way that they feel is appropriate to their needs.

Establish an appropriate forum – A key initial task is to decide on what forum or body will 'host' the dialogue. A new forum could be established or an existing structure could be use or modified. It is important that the status and mandate of any such forum is clearly established. Creating new forums is often seen as unnecessary, on the other hand making use of some existing forums may lead some stakeholders to feel the dialogue process is in some way biased.

Outline the Dialogue Process – Another initial task is to outline the basic ideas for the dialogue process. This will undoubtably change over time, however it will be import to be able to explain to different stakeholders the main activities that will occur as a result of the dialogue.

Facilitate and Co-ordinate the Process – Bringing multiple stakeholder together, ensuring information is communicated and following up on is a very important and time consuming process. The process also requires good facilitation, not just of meetings and workshops but also 'behind the scenes' support and negotiation. The whole success of the dialogue process is likely to hinge on the effectiveness of coordination and facilitation.

Review and Adapt the Process – The dialogue is an experimental process, which makes continuous monitoring, review and improvement of the process important. During the initial set-up of the dialogue process it will be helpful to identify success criteria and how these will be monitored.

5.34 Conduct an Initial Situation Analysis

Situation analysis is being used here to mean an overall assessment of the basin or national context in which the dialogue will be conducted. A good situation analysis looks at a full range of biophysical, technical, social, political, economic and institutional factors and trends. An initial situation analysis tries to look broadly and systemically at the context to provide the necessary information to subsequently focus the dialogue on key issues. Consequently the 'art' of such an initial analysis is to provide an overview without becoming overwhelmed with too much information in too much detail.

Identify stakeholders and their perspectives and interests – A good starting point is to identify the different stakeholders, what there interests are and how they see the current and future situation for water, food and environment.

Identify the key water resource issues and trends – On the basis of the stakeholder analysis and existing scientific and policy documents establish the key water resource issues and trends. Include in this analysis which issues and trends are clear and widely accepted, which there is dispute about and which there is uncertainty over because of insufficient knowledge. Include an analysis of socio-economic, political and policy issues alongside biophysical and resources use and allocation issues.

Conduct an institutional and policy assessment and identify existing processes and initiatives – It is obviously very important that he dialogue understand, build on and work with existing initiatives. This part of the situation analysis aims to ensure all such existing initiatives have been identified and that the relationships between then are understood.

5.35 Focus the Dialogue

Because the issues of water, food and environment is such a huge topic, for a dialogue to be successful and have impact it will most likely have to limit the scope of topics it deals with and focus on those that will have the most strategic value.

Agree on key issues for the dialogue – On the basis of the situation analysis the dialogue forum will need to decide on which issues it will deal with and in what order. As the dialogue itself will be a learning and political process it is important to consider what

might be the most appropriate 'entry points' that would enable a constructive start to the process.

Establish the scope and boundaries of the dialogue in relation to other initiatives and available resources – with the key issues selected how each is to be dealt with in relation to other initiatives and available resource can be decided.

Develop focusing questions to guide the dialogue – It is important that a dialogue process be informed by good information. Building the knowledge base to inform the dialogue will be aided if a set of clear questions are developed for all the key issues that the dialogue will address.

5.36 Gather information and conduct investigations and research

Gathering available information, undertaking additional research (where necessary and resources permit) and synthesising information into knowledge that can usefully inform the dialogue is a fundamental yet potentially resource intensive task. Consequently managing this element of the dialogue is very critical and working out how to do it most efficiently will require careful thought.

Identify information needs for answering the focusing questions – For each question establish what information is critical to have, what would be nice to know but not essential and what is unnecessary. In this process it will be essential to make decisions about how to balance precision and certainty of information with available time and resources.

Establish sources of available information, information gaps and necessary knowledge gathering processes. – Once the information needs are clear it is possible to identify the sources of this information and what additional research and investigation will be necessary.

Gather information and conduct investigations and research – Establish a clear work programme for undertaking this task.

Collate and synthesise information – The dialogue process has the potential to generate a large amount of information so having a good system for collating, synthesising, storing and retrieving information will need to be worked out.

Prepare knowledge for presentation and communication – A diversity of stakeholders will be involved in the dialogue so presenting information in summarised forms, using good visuals will be quite important to having an informed dialogue.

5.37 Building Scenarios

With a clear focus and solid knowledge base the dialogue can then move onto the task of building scenarios. The idea of using scenarios is to examine a range of possible futures by asking what would happen 'if'. Such scenarios need to include social political and economic considerations as well as resources use and biophysical factors. Scenario building is helpful for two reasons. First it recognises uncertainty, that it is often just not possible to know what will happen so it is necessary to plan for a range of alternatives. Second, it can enable people to let go of their existing biases and presuppositions and explore the future in an open way without feeling the exploration is immediately 'planning a future' that may not be seen as in their interest.

It is important to see the scenarios process not as immediately developing a desirable and undesirable situations but rather looking at what could possibly happen. The next step is then to discuss what is more or less desirable according to what criteria.

Identify different plausible scenarios for the future of water, food and nature – This process involves identifying key factors or parameters that could affect the future of water, food and environment and then examining the consequences of changes in these factors and parameters.
Examine the implications of different scenarios for different stakeholders – Discussion around why different stakeholders see different scenarios as more or less desirable can be an important step in a constructive negotiating process. It can be particularly worthwhile to examine the particular values of different groups that are either upheld or threatened by different scenarios, with the objective of finding underlying common values.
Establish the most desirable scenarios from a sustainable development perspective - Ideally a limited number scenarios will emerge that have elements that are seen as desirable by the diversity of stakeholders. The objective is to try and find scenarios that have the potential to maximise, social, economic and environmental wellbeing.

5.38 Negotiate Principles and Desirable Strategies

The scenario building process provides a foundation from which to begin negotiating in more specific terms the principles, objectives and actions for improved water use and management. It developing strategies avoid blue print planning or the impression that the future can be easily controlled and manipulated. Instead focus in particular on the processes and adaptive management and learning strategies needed for coping in a flexible way with change.
Establish the principles implied by the desirable scenarios – From the desirable scenarios try to work towards a set of commonly accepted principles. Principles can range from very generic to quite specific, it will be easier to find common ground over more generic principles so start at this level and work towards the more specific.
Establish Specific Objectives, Targets and Performance Indicators – While controlling the future may not be entirely possible setting specific objectives and targets provides an important basis for society to judge progress towards or away from sustainability.
Establish the strategies to put principles into practice and achieve objectives – Finally strategies can be developed for bringing about change. Such strategies need to look at scientific and technological developments, necessary incentive frameworks, institutional development and capacity building. Ideally the strategies would identify who needs to take what actions

5.39 Communicate Outcomes and Facilitate Change

The ultimate success of the dialogue is likely to depend on how effectively it communicates with those not immediately involved and the extent to which it can facilitate change.

Establish and implement a communication strategy for the outcomes of the dialogue – A communication strategy should be considered early on the in dialogue process and seen as a mechanism over the life of the dialogue. Careful attention is needed over who the various audiences are and how best to communicate with them.

Decide on how the dialogue can contribute to facilitating change – The role of the dialogue in bringing about change will vary depending on how the forum is structured, its mandate and

relationship to other processes and institutions. It will be important to be explicit about this facilitating change role and develop a strategy for how it is best achieved.

Conclusion – Implications For Bonn Workshop

So what does all this mean for the Dialogue (with a capital D)? What are the kinds of decisions that must be taken in Bonn with respect to the way forward? Of course, most of these issues will arise out of the interactive process in Bonn. But we want like to raise a few major points that seem to require particular attention.

- The knowledge and skills with respect to managing and facilitating dialogue processes is in full development. The Dialogue needs to develop capacity to learn about dialogues. It should develop this capacity in collaboration with a number of key institutions in suitable countries that can form the core of an international 'movement' or 'learning network'. Understanding and facilitating dialogues draws on many disciplines and fields of professional experience. Understanding of dialogue processes and lessons with respect to managing them are rapidly emerging[lxxv]. The Dialogue needs to build a Knowledge Base. But we see this, not so much in terms of a data or reference base, but in terms of an active international network that involves enthusiasts from different countries.
- Interactive approaches to getting things done are bound to elicit defensive reactions from technologists, economists and politicians who presently believe they know how to get things done. Promoting interactive approaches is not going to be a neutral activity. It will be a battle to create space and mobilise resources for them. Therefore, it is important to strategically build knowledge and insight and to amass convincing evidence, experience and argumentation for the interactive approach to getting things done. This means that dialogue processes should NOT be jump started on a large scale. Instead, we counsel careful selection of a number of highly promising situations where the Dialogue partners can learn and gain experience. These early efforts should be carefully monitored and used as a learning experience by the entire Dialogue. This means, in turn, that a short-list should be made of promising situations. Their selection should be based on specific criteria, such as the seeming readiness of stakeholders to engage in a dialogue process as a result of a recent ecological crisis, the willingness of the government in question to give the process a chance without loading the dice, etc. Out of the short-list, a selection can then be made.
- Another reason for taking great care in the early stages and building slowly from solid ground is the fact that new approaches tend to become fashionable and are then used instrumentally to support the very old approaches the new ones intended to supplant. This is happening for example with participatory methods, which are now often used in the most blatant way. Dialogues have that feel good sound that makes them vulnerable to the same kind of manipulation. It is, therefore, very important to establish criteria for the integrity of dialogues as an approach. Dilution of key attributes that make dialogues work is one of the greatest dangers. The question then becomes whether the observed lack of impact was caused by applying the wrong method, or by applying the right method wrongly.
- As early as possible, the Dialogue should begin to build a body of 'facilitators of facilitators'. These need not necessarily be employed by the Dialogue but could be available as a networked resource, to be called upon when the need arises. Capacity building, sharing of experience, and exchanging skill in this group needs to be actively promoted. One can look at this group as a network of international associates which is at the disposal of member countries.
- It is important for the Dialogue to develop a strategy group that is capable of assessing the policy and institutional conditions under which dialogues are initiated. As we have seen, policy conditions for dialogues can be very unfavourable and governments tend to use dialogues without attention to follow-up, to resourcing the outcomes, to giving statutory powers to dialogue groups that enable them to acquire resources, etc. The Dialogue needs to develop norms for dialogue conditions on the basis of which the Dialogue and other donors and agencies can decide to financially support dialogues and on the basis of which the Dialogue can advise its member governments.

- A key issue in assessing policy and institutional conditions for initiating dialogues is the national level dialogue (see also chapter 5). As we have said, the conditions at the national level are often not conducive to dialogue. Players at that level often do not use politics to address issues, they use issues to play politics. Hence one can, at the national level, often not appeal to a motivation to deal seriously with creating the conditions for sustainable society. Dealing with sustainability issues is politically unpopular and the future is beyond the next election. Therefore, it is very important for The Dialogue to take great care in selecting countries, or perhaps provinces or districts within countries, where a dialogue process has a fair chance of being seriously pursued. We feel it is only through such circumspection that a momentum for dialogue, and deliberative democracy for that matter, can be established.

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[i] World Resources Institute (2000). World Resources 2000-2001. People and Ecosystems: The Fraying Web of Life. Washington: World Resources Institute, page 50.

[ii] Dialogue of Water, Food and Environment (2001). Press Release in Washington, Stockholm, London and Toronto, August 13

[iii] It seems useful for The Dialogue to take into consideration the work of the World Commission on Dams.

[iv] Dörner, Dietrich (1996). The Logic of Failure. Recognising and avoiding error in complex situations. Reading (Mass.): Addison Westley: a Meloyd Lawrence Book. (Translated by Rita and Robert Kimber from the German: Logik des Misslingens. Rowolt Verlag GMBH 1989). ISBN 0 201 479486

[v] Van Slobbe, E. (expected 2001). Nieuwe Uitgangspunten voor Waterquantiteitsbeheer. (Prelim. Title, manuscript is in Dutch). Wageningen: University, Published Doctoral Dissertation.

[vi] Funtowicz, S.O. and J.R. Ravetz (1990). Global environmental issues and the emergence of Second Order Science. Luxembourg: Commission for the European Community, DG Telecommunications, Information Industries and Innovation. CD-NA 12803 EN C, Report EUR 12803 EN

Funtowicz, S.O. and J.R. Ravetz (1993). Science for the post-normal age. *Futures* Vol. 25, (7): 739-755.

[vii] E.g., Bolding, A. Wielding water in unwilling works: Negotiated management of water scarcity in Nyanayadzi irrigation scheme, winter 1995, chapter 4 in E. Manzungu and P. van der Zaag (1996). The Practice of Small-holder Irrigation. Case Studies from Zimbabwe. Harare: University of Zimbabwe Publications. A published doctoral dissertation by the same author about the conflicts in the Nyanayadzi catchment is expected in 2002.

[viii] Baaijens, G.J., N. Röling and P. Veen (2001). Drentsche Aa, Externe Audit. Driebergen: Staatsbosbeheer (report on an external audit of the Drentsche Aa nature conservation area for the Dutch Forest Management Service.

[ix] Baaijens et al, op. cit.

[x] Checkland, P. (1981). Systems Thinking, Systems Practice. Chicester: John Wiley.

Checkland, P. and J. Scholes (1990). Soft Systems Methodology in Action. Chicester: John Wiley.

[xi] These include: FAO, Global Water Partnership (GWP); International Commission for Irrigation and Drainage (ICID), International Federation of Agricultural Producers (IFAP); International Water Management Institute (IMWI); The World Conservation Union (IUCN); United Nations Environment Programme (UNEP); World Health Organisation (WHO), World Water Council (WWC); and World Wide Fund for Nature (WWF).

[xii] Upreti, B. (2001). Conflict Management in Natural Resources. A Study of Land, Water and Forest Conflicts in Nepal. Wageningen University: published doctoral dissertation.

[xiii] Social learning is rapidly becoming an area of intense research. Examples of studies are: Gunderson, L.H.; C.S. Holling; S.S. Light (Eds) (1995) Barriers and Bridges to the Renewal of Ecosystems and Institutions. New York: Colombia Press; Campbell, A. (1994). Landcare. Communities shaping the land and the future. St Leonards (Australia): Allan and Unwin; Woodhill, J. and N. Röling (1998). The second wing of the Eagle: The human dimension in learning our way to more sustainable futures. In: N. Röling and A. Wagemakers (Eds.). Facilitating Sustainable Agriculture. Participatory Learning and Adaptive Management in Times of Environmental Uncertainty. Cambridge: Cambridge University Press; Woodhill, J. (1999). Sustaining Rural Australia. A Political Economic Critique of Natural Resources Management. Canberra: ANU, Doctoral Dissertation; Gonzalez, R. (2000).Platforms and Terraces. Bridging participation and GIS in joint learning for watershed management with the Ifugaos of the Philippines. Enschede: ITC, and Wageningen: University.

Published Doctoral Dissertation; Groot, A. and M. Maarleveld (2000). Demystifying Facilitation in Participatory Development. London: IIED, Gatekeeper Series no 89.

[xiv] Ostrom, E. (1990, 1991, 1992). Governing the Commons. The Evolution of Institutions for Collective Action. New York: Cambridge University Press

[xv] Röling, N. and A. Wagemakers (Eds.) (1998). Facilitating Sustainable Agriculture. Participatory Learning and Adaptive Management in Times of Environmental Uncertainty. Cambridge: Cambridge University Press; King, C. (2000). Systemic Processes for Facilitating Social Learning: Challenging the Legacy: Learning. Uppsala: Swedish University of Agricultural Sciences, Department of Rural Development Studies. Acta Universitatis Agricultae Suecia, Agraria 233. Published doctoral dissertation; Dore, J., C. Keating, J. Woodhill and k. Ellis (2000). Sustainable Rural Development: SRD KIT. A Resource for Improving the Community, Economy and Environment of your Region. Yarralumla (ACT, Australia): Greening Australia Ltd.; Groot, A. (expected 2001). (Prelim. Title) Demystifying the Role of the Facilitator. Grounding Theory on the Basis of Reflexive Case Studies in Senegal, Kenya and the Netherlands. Wageningen: Published Doctoral Dissertation.

[xvi] This is one reason why we quote so many recent doctoral dissertations and dissertations in preparation.

[xvii] LEArning Research Network (LEARN) (Ed.). Cow up a Tree: Knowing and Learning for Change in Agriculture. Case Studies from Industrial Countries. Paris: INRA.

[xviii] Lubchenco, J. (1998). Entering the Century of the Environment: A New Social Contract for Science. *Science*. 279: 491-496, January 23, 1998.

[xix] World Resources Institute (2000). World Resources 2000-2001. People and Ecosystems. The Fraying Web of Life. Washington (DC): World Resources Institute.

[xx] Conway, G.R. (1994). Sustainability in agricultural development: trade-offs between productivity, stability and equitability. *Journal for Farming Systems Research-Extension* 4(2): 1-14.

[xxi] Guba, E.G. and Y.S. Lincoln (1994). Fourth Generation Evaluation. London: Sage Publications.

[xxii] Miller, A. (1983). The Influence of Personal Biases on Environmental Problem-Solving. *Journal of Environmental Management*, 17: 133-142. Miller, A. (1985). Technological Thinking: Its Impact on Environmental Management. *Environmental Management* 9 (3): 179-190

Bawden, R. (2000). The Importance of Praxis in Changing Forestry Practice. Invited Keynote Address for 'Changing Learning and education in Forestry: A Workshop in Educational Reform', held at Sa Pa, Vietnam, April 16 – 19, 2000.

[xxiii] The intriguing quadrant 4 readily leads to speculation. In his 'Gateway to the Global Garden', N. Röling (2000) suggests that spirituality might appropriately be placed here (see www.uoguelph.ca/cip).

[xxiv] Tekelenburg, A. (2001). Cactus Pear and Cochineal in Cochabamba. The Development of a Cross-Epistemological Management Toolkit for Interactive Design of Farm Innovation. Wageningen: University. Published Doctoral Dissertation.

[xxv] Capra, F. (1996). The Web of Life. A New Synthesis of Mind and Matter. London: Harper Collins Publishers (Flamingo); Maturana, H.R. and F.J. Varela (1987, and revised edition 1992). The Tree of Knowledge, the biological roots of human understanding. Boston (Mass.): Shambala Publications; Rosenberg, A. (1988, 1995). Philosophy of Social Science. Boulder: Westview Press.

[xxvi] Adapted from Bawden, see footnote 23, Maturana and Varela, see footnote 28 and Kolb, D. (1984). Experiential Learning: Experience as a source of learning and development. New Jersey: Prentice Hall.

[xxvii] Gigerenzer, G. and P.M. Todd (1999). Fast and Frugal Heuristics: The Adaptive Toolbox. Chapter 1 in: Gigerenzer, G., P. M. Todd, and the ABC Research Group. Simple Heuristics that Make us Smart. New York and Oxford: Oxford University Press, pp. 3-34.

[xxviii] Kuhn, T.S. (1970). The Structure of Scientific Revolutions. 2nd Ed. Chicago: University of Chicago Press.

[xxix] Pain, S. (1993). 'Rigid' cultures caught out by climate change. *New Scientist*, March 5, 1993.

[xxx] Hutchins, E. (1995, fourth printing 2000). Cognition in the Wild. Cambridge (Mass.): The MIT Press. Hutchins' book provides a fascinating anthropological study of distributed cognition, in the sense that the navigation of the huge ship involves the more or less autonomous activities of different people each doing different things, but together forming a synergistic whole.

[xxxi] Senge, P., A. Kleiner, C. Robers, R. Ross and B. Smith (1994) The Fifth Discipline Fieldbook. Strategies and Tools for Building a Learning Organisation. London: Nicholas Brealey Publishing.

[xxxii] Douglas, M. (1986). How Institutions Think. Syracuse (NY): University of Syracuse Press; Hood, C. (1998). The Art of the State. Culture, Rhetoric, and Public Management. Oxford: Clarendon Press.

[xxxiii] Long, N. and A. Long (Eds) (1992) Battlefields of Knowledge: the interlocking of theory and practice in research and development. London: Routledge.

[xxxiv] Darré, Jean Paul (1985). La Parole et la Technique. L'univers de pensée des éleveurs du Ternois. Paris: l'Harmattan

[xxxv] e.g., Röling, N. (1994). Platforms for decision making about eco-systems. Chapter 31 of L.O. Fresco et al (Eds.), *Future of the Land: Mobilising and Integrating Knowledge for Land Use Options*. Chicester: John Wiley and Sons, Ltd, pp 386-393.

[xxxvi] Grimble, R. and K. Wellard (1996). Stakeholder methodologies in natural resource management: a review of principles, contexts, experiences and opportunities. *Agricultural Systems*, Vol. 65 (2): 173-193

[xxxvii] Keiter, R.B. and M.S. Boyce (1991). The greater Yellowstone Ecosystem: Redefining America's Wilderness Heritage. Boston: Yale University Press.

[xxxviii] Habermas, J. (1984). The Theory of Communicative Action. Vol. 1: Reason and the Rationalisation of Society. Boston: Beacon Press; Habermas, J. (1987). The Theory of Communicative Action. Vol. 2: Lifeworld and System. A Critique of Functionalist Reason. Boston: Beacon Press.

[xxxix] E.g., Upreti, B. (2001). Conflict Management in Natural Resources. A Study of Land, Water and Forest Conflicts in Nepal. Wageningen University: published doctoral dissertation.

[xl] Hardin, G. (1968). The tragedy of the commons. *Science* 162: 1243-1248.

[xli] Ostrom, E. (1990, 1991, 1992). Governing the Commons. The Evolution of Institutions for Collective Action. New York: Cambridge University Press

[xlii] Op. Cit.

[xliii] Uphoff, N. (2000). Understanding Social Capital; Learning From Aanalysis and Experience of Participation. Ithaca (N.Y.): Cornell University: CIIFAD, unpublished paper presented at Wageningen University, September 13, 2000; Uphoff, N. and C.M. Wijayaratna (1999). Demonstrated Benefits from Social Capital: The Productivity of Farmer Organisations in Gal Oya, Sri Lanka. Ithaca (N.Y.): Cornell University: CIIFAD. Unpublished paper.

[xliv] Potters, J. (1998). Understanding the Functioning of Collective Forest Management. A case study on perception and behaviour in a Community Forest User Group in Salyan District, Western Nepal. Wageningen: University, Communication and Innovation Studies, MSc Thesis.

[xlv] Basnyat, B. (1995). Nepal's Agriculture, Sustainability and Intervention. Looking for new directions. Wageningen: Wageningen: University. Published doctoral dissertation. 285 pp.

[xlvi] North, D.C. (1990). Institutions, Institutional Change and

Economic Performance. New York: Cambridge University Press

[xlvii] Provided by Dr Robert Bos, WHO

[xlviii] Röling, N. and M. Maarleveld (1999). Facing Strategic Narratives: an Argument for Interactive Effectiveness. *Agriculture and Human Values* 16: 295-308.

[xlix] Goldblatt. D. (1996). Social Theory and the Environment. Cambridge: Polity Press. Quoted in A.J. Woodhill (1999). Sustaining Rural Australia, A Political Economic Critique of Natural Resource Management. Canberra (Au): ANU, Doctoral Dissertation.

[l] Goldblatt (1996), op. cit., pp 88.

[li] Van de Fliert, E. (1993). Integrated Pest Management. Farmer Field Schools Generate Sustainable Practices: A case Study in Central Java Evaluating IPM Training. Wageningen: Agricultural University: WU Papers 93-3. Published Doctoral Dissertation; Pontius, J., R. Dilts and A. Bartlett (draft October 2000). From Farmer Field Schools to Community IPM. Ten Years of IPM Training in Asia. Jakarta (Indonesia): The FAO Programme on Community IPM in Asia.

[lii] Campbell, A. (1994). Landcare. Communities shaping the land and the future. St Leonards (Australia): Allan and Unwin.

[liii] Ostrom, E. (1990, 1991, 1992). Governing the Commons. The Evolution of Institutions for Collective Action. New York: Cambridge University Press; Steins, N.A. (1999). All Hands on Deck. An Interactive Perspective on Complex Common-Pool Resource Management Base on Case Studies in Coastal Waters of the

Isle of Wight (UK), Connemara (Ireland) and the Dutch Wadden Sea. Wageningen (NL): Wageningen University, Published Doctoral Dissertation.

[liv] Groot, A. (expected 2001). (Prelim. Title) Demystifying the Role of the Facilitator. Grounding Theory on the Basis of Reflexive Case Studies in Senegal, Kenya and the Netherlands. Wageningen: Published Doctoral Dissertation.

[lv] Baaijens, G.J., N. Röling and P. Veen (2001). Drentsche Aa, Externe Audit. Driebergen: Staatsbosbeheer (report on an external audit of the Drentsche Aa nature conservation area for the Dutch Forestry Service).

[lvi] Dore, J. and J. Woodhill (1999). Sustainable Regional Development. An Australia-wide study of regionalism, highlighting efforts to improve the community, economy and environment. Canberra: Greening Australia.

[lvii] Three women have recently published doctoral dissertations on the subject of facilitation: Buck, L. E. (2000). Facilitating Knowledge Systems. The case of an agro-forestry network in the North Western USA. Ithaca: Cornell University, Dept. of Natural Resources. Unpublished PhD Dissertation; Groot, A. (expected 2001). (Prelim. Title) Demystifying the Role of the Facilitator. Grounding Theory on the Basis of Reflexive Case Studies in Senegal, Kenya and the Netherlands. Wageningen: Published Doctoral Dissertation; King, C. (2000). Systemic Processes for Facilitating Social Learning: Challenging the Legacy: Learning. Uppsala: Swedish University of Agricultural Sciences, Department of Rural Development Studies. Acta Universitatis Agricultae Suecia, Agraria 233. Published doctoral dissertation.

[lviii]We gratefully make use of Dore et al, (2000), op. cit.; Woodhill (2000), op cit.; Engel, P.G.H. and M. Salomon (1997). Facilitating Innovation for Development. A RAAKS Resource Box. Amsterdam: KIT; Dangbegnon, C. (1998). Platforms for Resource Management. Case studies of success or failure in Benin and Burkina Faso. Wageningen: WAU, published doctoral dissertation; Steins (1999), op. cit.; Groot and Maarleveld (2000), op. cit.; Groot (2001), op. cit., and Baaijens, et al, (2001), op. cit.; Daniels, S.E. and G.B. Walker (1996). Collaborative Learning: Improving Public Deliberation in Ecosystems-Based Management. *Environmental Impact Assessment Review.* 16: 71-102.

[lix] Aarts, M.N.C. (1998) Een kwestie van Natuur. Wageningen: University, published doctoral dissertation (in Dutch).

[lx] Groot (2001), op. cit.

[lxi] Baaijens, et al (2001), op. cit.

[lxii] Ostrom, E. (1998). Coping with Tragedies of the Commons. Paper for 1998 Annual Meeting of the Association for Politics and Life Sciences, Boston, September 3-6, 1998.

[lxiii] Kotler, P. (1985). Marketing for non-profit organisations. Chicago: Aldine Press.

[lxiv] Grimble, op. cit.

[lxv] Westendorp, J. en N. Röling (1993). Natuurgericht Waterkwantiteitsbeheer: een verkenning naar de bijdrage van kennis en communicatie. Wageningen: Ministerie van Landbouw, Natuur en Visserij, IKC/NBLF, rapport nr 1 (in Dutch)

[lxvi] Dore et al (2000), op. cit.

[lxvii] Engel and Salomon (1997), op .cit.

[lxviii] Groot, 2001, op. cit.

[lxix] See for example Polman, P. and T. Devane (Eds.) (1999). The Change Handbook, Group Methods for Shaping the Future. San Francisco: Berrett-Koehler Publishers, Inc. ; Bunker, B. and B. Alban (1997). Large Group Interventions: Engaging the Whole System for Rapid Change. San Francisco: Jossey-Bas Publishers.

[lxx] Röling, N.; S. Foley; J. Markie; M. Pimbert; R. Salazar and P. Yongfan (2001). FAO Inter-Country Programme for Community IPM in Asia. Phase IV Midterm Review 2000. Rome: FAO.

[lxxi] Matteson, P.C., K.D. Gallagher, and P.E. Kenmore (1994). Extension of Integrated Pest Management for Planthoppers in Asian Irrigated Rice: Empowering the User. In Denno, R.F., and T.J. Perfect (Eds.). Ecology and Management of Planthoppers. London: Chapman and Hall, pp 656-685.

[lxxii] Hamilton, N.A. (1995). Learning to Learn with Farmers. An adult learning extension project. Wageningen: WAU, Published Doctoral Dissertation. Also appeared as a report of the Department of Primary Industries, Brisbane, Queensland, Australia

[lxxiii] Based on a 1990 field visit to Jerramungup in the Avon River Catchment, Western Australia.

[lxxiv] Bos, A.H. (1974). Oordeelsvorming in groepen. Wageningen: Veenman. Published doctoral dissertation Wageningen Agricultural University (in Dutch).

[lxxv] For example, while we were working on the present document, one of us received an unsolicited document by mail from the Dutch 'Innovation Network for Green Space' of the Ministry of Agriculture (2001). The document is called (in Dutch) 'Interactive Policy Making as Challenge for Governance', and discusses the question why interactive policy is necessary for the development of green space. We had never heard of the authors (J. Edelenbos, G. Teisman, and M. Reuding), and did not know that their Erasmus University at Rotterdam was working on these issues.