



**Pigs, Prawns and Power Houses:
Politics in Water Resources Management**

K. M. Jensen, R. B. Lange and J. C. Refsgaard

DIIS Working Paper 2012:03

K. M. JENSEN

is Senior Analyst at the Danish Institute for International Studies

e-mail: kum@diis.dk

R. B. LANGE

is Research Assistant at the Danish Institute for International Studies

e-mail: rla@diis.dk

J. C. REFGAARD

is Research Professor at Geological Survey of Denmark and Greenland (GEUS)

e-mail: jcr@geus.dk

DIISWORKING PAPER 2012:03

© The authors and DIIS, Copenhagen 2012

Danish Institute for International Studies, DIIS

Strandgade 56, DK-1401 Copenhagen, Denmark

Ph: +45 32 69 87 87

Fax: +45 32 69 87 00

E-mail: diis@diis.dk

Web: www.diis.dk

Cover Design: Carsten Schiøler

Layout: Ellen-Marie Bentsen

Printed in Denmark by Vesterkopi AS

ISBN: 978-87-7605-486-1

Price: DKK 25.00 (VAT included)

DIIS publications can be downloaded

free of charge from www.diis.dk

CONTENTS

Abstract	4
1. Introduction	5
2. Analytical framework: normative ideals, politics and social learning	7
2.1 Social learning as an analytical middle ground	8
2.2 Social learning and normative ideals	9
2.3 Learning loops, power and politics	10
2.4 Analytical framework	12
3. Methodological approach	12
4. Prawn politics: integrated management of Chilika Lagoon, India	13
4.1 Governance frameworks: Integration, conservation and aquaculture	13
4.2 Governance processes: prawn politics	15
4.3 Discussion: shallow social learning in Chilika	16
5. Power house politics: dams and integrated management of the Lower Mekong River	17
5.1 Governance framework: the MRC as a mechanism for transboundary water management and development	18
5.2 Governance processes: expanding stakeholder participation	19
5.3 Discussion: unfolding social learning where national sovereignty reigns	22
6. Pig politics: integrated management of water resources in Denmark	23
6.1 Governance framework: national and EU legislation	24
6.2 Governance processes: low hanging fruits and stagnation	25
6.3 Discussion: Social learning up to the threshold of pain	26
7. Discussion: politics, power, social learning and normative ideals	26
7.1 A comparative perspective on social learning	26
7.2 Social learning and the political economy of water	27
7.3 Possibilities and limitation of normative ideals in water governance	28
8. Conclusion	30
References	32

ABSTRACT

Normative ideals like Integrated Water Resource Management depicting the ‘good environmental governance’ have proliferated the last twenty years. However, evidence of effective implementation is scarce. The paper analyzes cases from India, the Mekong and Denmark where actors have sought to translate IWRM ideals into practice. The purpose is to demonstrate the importance of politics and power for water governance processes and their outcomes. The concept of social learning is applied in order to understand the dynamic interplay between actors, institutions and power in the political processes involved. It is argued that the political economy of water tends to vest the stronger stakeholders with an interest in upholding the status quo. Consequently, social learning typically centers on the ‘low lying fruits’ that does not challenge the prevailing distribution of resources. Strategic approaches looking outside the ‘water box’ are necessary to foster deeper changes in water resources management in both developing and developed countries.

I. INTRODUCTION

When the global water expert community joins the heads of state for Rio+20 summit in 2012, they can celebrate twenty years of promoting the concept of sustainable development. Under this umbrella, a range of normative management ideals and methods have been developed and advocated. These include the holistic concepts of Integrated Water Resources Management (IWRM) and Coastal Zone Management, as well as their 'tool room' management instruments and methods, such as Environmental Impact Assessments and Environmental Flows. These ideals designate elaborate approaches to 'good environmental governance' aimed at replacing 'bad' and unsustainable practices. Experts across different institutional contexts have sought to evaluate the merits of the various approaches and extract important lessons learnt from their empirical applications. Consequently, we now have a broad range of more or less scientifically validated ideals and models ready for decision-makers and practitioners to implement. Among these, IWRM has achieved iconic status in the water community and has gained ground in national water policies and development interventions in both developed and developing countries (see Box 1).¹

1 A UN water report presented to the 16th session of the UN Commission for Sustainable Development (CSD16) in 2008 took stock of the development of IWRM plans in 104 countries. For the Rio+20 Conference in 2012, UN-Water will submit an assessment report on the application of integrated approaches to the development, management and use of water resources. A working group under UNEP has been mandated to prepare the report. The working group's preliminary findings were presented at the Stockholm World Water Week in September 2011. See also Lenton and Muller 2009 for a selection of examples from developed and developing countries.

Yet, progress with IWRM is faced with the harsh reality of everyday water governance. Despite considerable efforts by governments, donors and other water-sector stakeholders, the effects of the IWRM approach have been mixed. Unambiguous stories of success are scarce, and the cleavage between IWRM plans and policy papers and water resources management practices on the ground remain a challenge. Whereas this implementation deficit has led some critics to question the universal relevance of normative ideals such as IWRM, others point to the shortcomings of the predominant technical and managerial approaches employed by governments and international donors.² As one of the keynote speakers at the Brisbane River Symposium in September 2005 noted on the global progress of IWRM:

'Globally we have considerable knowledge and many lessons learned on the technical, engineering and managerial aspects of IWRM and river basin management. What remains to be achieved is a better understanding of the political constituents of water governance.' (Dr. Torkil Jønch Clausen, Senior Adviser, Global Water Partnership)

In this paper, we seek to address this knowledge gap by analyzing three cases from developed and developing countries: India, Denmark and the Mekong region. The cases provide illustrative examples of the political processes involved when some actors try to introduce normative ideals like IWRM into water governance practices. We analyze the process of translating normative ideals into action as a

2 Cf. Biswas 2004, 2008, Butterworth et al. 2010, Lenton and Müller 2009, Molle 2008, Savannah 2006, Shah and von Koppen 2006, Ojendal et al. 2011.

Box 1. Integrated Water Resources Management (IWRM)

IWRM has evolved as the water sector's child of Agenda-21 of the 1992 UN Conference on Environment and Development in Rio de Janeiro as well as the Dublin Conference on Water and Environment also in 1992. Subsequently, the IWRM concept and approach has been developed and promoted by the Global Water Partnership (GWP) at the global, regional and country level through its IWRM Tool Box, documentation of good IWRM practices and other promotional activities. Many bilateral donors, UN agencies and to some extent also development banks have also been supportive of the IWRM approach. The GWP defines IWRM as:

'(...) a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.' (Global Water Partnership Technical Advisory Committee 2000:22)

The GWP developed an IWRM Tool Box (2001) to make the approach comprehensive in practical terms, guide policy makers and practitioners in implementing the IWRM principles and assemble best practices examples (www.gwptoolbox.org). The key components in the GWP guidelines include: i) establishing an enabling environment of appropriate policies, laws, incentives and financial mechanisms; ii) defining institutional roles for their implementation; and iii) deploying a set of 'management instruments.'

process of social learning in which public and private stakeholders engage in deliberations and negotiations on the appropriate way to manage and allocate water resources according to certain governance practices. Our point of departure is that water governance is an inherently political process. Actors not only pursue normative and holistic ideals, their partial interests in the distribution of water resources are also based on the existing relationships of power. Consequently, social learning processes are always embedded in the prevailing *political economy of water*, which has significant influence on how water governance unfolds in the contexts of each of the three case studies.

In the water sector, the concept of Adaptive Water Management (AWM) has recently been introduced as an answer to the challenges of im-

plementing IWRM (see Box 2).³ AWM emphasizes the contextual nature of water management and situates social learning through a 'best-practice' approach, continuous 'reality checks' and 'polycentric water governance', these being the mechanisms of change. Polycentric governance refers to the vertical and horizontal integration of stakeholders, institutions and sectors within hydrological units. As such, the AWM approach dives more directly into the political aspects of water resource governance.

However, in this paper we argue that the IWRM and AWM concepts both represent normative ideals for how water resources may be best managed and governed. Their strengths are the provision of a holistic analytical and stra-

³ Pahl-Wostl and Sendzimir 2005, Pahl-Wostl et al. 2005.

Box 2. Adaptive Water Management (AWM)

The concept of AWM has evolved as a supplement to IWRM derived from research on natural resources and ecosystems management in the 1970s and 1980s. It has been developed in the New Approaches to Adaptive Water Management under Uncertainty (NeWater Project, www.newater.info), and the Twin2go Project (www.twin2go.eu) financed by the EU 7th Framework Programme. The approach is based on the hypothesis that IWRM cannot be realized unless current water management regimes undergo a transition towards more adaptive water management. This is defined as:

(...) a systematic process for continually improving management policies and practices by learning from the outcomes of implemented management strategies” (Pahl-Wostl and Sendzimir 2005)

AWM emphasizes the establishment of mechanisms for continuous learning (the assessment or learning cycle), experimentation, scenario-generation and hypothesis testing of water management in the political and administrative systems. The approach also emphasizes participation of a multiplicity of stakeholders in negotiations over water and its management to broaden the scope of social learning and implementation of best practices. The approach also draws on the idea of polycentric governance, which refers to the vertical and horizontal integration of stakeholders, institutions and sectors within hydrological units. Empirical examples of AWM have mainly been developed as part of the EU funded NeWater and Twin2Go research projects.

tegic approach to water resources management.⁴ Their weakness is their exclusion of the larger context of politics and political economy.

2. ANALYTICAL FRAMEWORK: NORMATIVE IDEALS, POLITICS AND SOCIAL LEARNING

Saravanan and his colleagues discern two discourses on the character and importance of power and politics in water governance in the current debate on the implementation problems of IWRM.⁵

Proponents of IWRM tend to portray politics in line with Jürgen Habermas’ thinking.⁶ Politics is a communicative process in which actors seek to build common understandings and coordinate action through reasoned argument, consensus and collaboration, rather than self-interested strategic action. Resting on the normative concept of communicative rationality, this approach emphasizes the establishment of enabling environments and democratic institutions, which allows for the participation of all relevant stakeholders and enables decision-makers to make informed and rational choices between alternatives.⁷ In this context, power is

⁴ Jensen and Ravnborg 2011.

⁵ Saravanan et al. 2009: 76ff.; see also Saravanan et al. 2008.

⁶ Habermas 1984.

⁷ Cf. Lenton and Muller 2009: 214.

a property that can be negotiated through mutual and cooperative agreement.

Conversely, critics of IWRM have made the case for the opposite conception of politics, as a conflict-loaded process in which stakeholders compete over limited resources based on a particular set of interests.⁸ Decision-making is dominated by asymmetrical power relationships, which are deeply enmeshed in the wider socio-political and economic context of water governance. In short, '(...) *the struggle for water is often equal to the struggle for power*', meaning that water resource management is inherently political.⁹ In such a set up democratic institutions are no 'quick fix', as patterns of participation tend to reflect power asymmetries rather than change them. Drawing on Michel Foucault¹⁰ and Pierre Bourdieu¹¹, power is understood as a relational concept that is continuously produced and reproduced through interactions and negotiations between actors.

Whereas the critics of IWRM tend to exclude the possibility of consensual decision-making a priori and leave little room for stakeholders to reach cooperative agreements, its proponents tend to treat the content of normative ideals as the obvious common good.¹² As François Molle has pointed out, proponents assume such normative ideals as representing the water governance Nirvana that we should all be striving to achieve, and thus as the natural center of gravity for all stakeholders involved in political processes.¹³ This assumption seems to have fuelled the supply-driven agenda

and social engineering approach that has governed the way IWRM has been implemented in many developing countries.¹⁴

2.1 Social learning as an analytical middle ground

In this paper, the intention is to establish a 'middle ground' between these two discourses on politics and power through the concept of *social learning*.¹⁵ Politics is about both collaboration and conflict, and power can inhibit or promote change, depending on the larger context, the institutional set up, the constellation and behaviour of actors and other features of the processes of the actual water governance situation at hand. We argue that a realistic and strategic approach that leaves a space for the analysis of both types of political dynamics to influence water governance, and not exclude any possible outcomes in advance, is required for the analysis of the translation of normative ideals into practice.¹⁶

Theoretically, the concept of social learning departs from the notion that policy-making can be framed as a kind of collective puzzle war

8 Saravannan et al. 2009: 81, Molle 2008: 132f, Mollinga et al. 2007: 705, Mollinga 2008: 8, Butterworth et al. 2010: 74.

9 Saravannan et al. 2009: 81.

10 Foucault 1990

11 Bourdieu 1977 and 1991

12 Öjendal et al. 2011.

13 Molle 2008: 132ff.

14 Mollinga et al. 2007: 714.

15 We draw on the approach to politics, power and institutions in water governance outlined by Saravannan et al. 2009, Molle 2008, Mollinga et al. 2007 and Mollinga 2008, as well as the analytical framework of social learning developed by Pahl-Wostl et al. 2007a, b, Pahl-Wostl 2009, Lebel et al. 2010, and the debate on social learning in natural resource management (cf. Armitage et al. 2007, Armitage et al. 2008, Leeuwis and Pyburn 2002) and organizational theory (Agryris and Schön 1978, Flood and Romm 1996). We use the concept as an analytical tool to understand processes of change, not as part of the Adaptive Water Management agenda.

16 Saravannan et al. 2009 phrase the approach in terms of the question, 'How does integration actually take place?', in opposition to the normative 'How to integrate' most often pursued in the discourse on IWRM. See also Mollinga et al. 2007 for an outline of the strategic approach.

that involves experimentation, negotiation and deliberation over problems and their solutions between various stakeholders.¹⁷ Through continuous interaction, actors may produce new knowledge, shared understandings and eventually trust that can facilitate collective action and change in governance frameworks, actor relationships and the distribution of water resources.¹⁸

However, social learning does not occur in a vacuum. Formal and informal institutions define the rules and roles that structure actors' interactions and establish a normative foundation for their behaviour.¹⁹ As such, they give rise to a certain set of social practices that influence the outcome of water governance processes. Institutions do not act themselves, nor do they account for all aspects of the political processes involved in water management. State and non-state actors act strategically inside and towards the existing institutional frameworks to influence policymaking and implementation according to their perceptions of their interest.

In these dynamic governance processes, actors deploy power to transform existing social practices (e.g. through institutional change) or secure the status quo.²⁰ Importantly, we define power as both a relationship and a property. Power comes from everywhere.²¹ Power denotes a relationship between the actors involved that is continuously negotiated through interactions. Power is also a property embedded in

and legitimised by the prevailing institutions. Institutions accumulate bias and contribute to the creation of socio-political positions, giving some actors more power than others, for example, through better access to information, resources, authority or boundary setting. It is this dynamic interplay between actors using various sources of power strategically in negotiations on the management, distribution and allocation of water resources that may eventually generate social learning. The result of such social learning may then result in institutional change or alterations in water management practices. Hence, politics is an integral part of social learning, which is neither value-free nor politically neutral, and power is built into such processes of change.²²

2.2 Social learning and normative ideals

How, then, does social learning occur with reference to normative ideals?

To achieve relevance on the ground, normative ideals need to be adopted, interpreted and adapted to the actual water governance situation by stakeholders in the local context. However, the agents of change, whether experts, international organizations, local NGOs or state agencies, will be confronted with a muddy setup of stakeholders and advocacy coalitions, some of which will have a vested interest in the status quo, others an interest in change. Power relationships are most often asymmetrical, and problem perceptions may also differ considerably. Consequently, the actual process of translating normative ideals into practice often in-

17 Pahl-Wostl et al. 2005: 4, Pahl-Wostl 2009: 355.

18 Lebel et al. 2010: 334.

19 Saravanan et al. 2009: 82. In our understanding of actors and institutions we draw on Giddens 1984, but see also Hall and Taylor 1996 for a general discussion of the new institutionalism.

20 Saravanan et al. 2009: 82f.

21 Foucault 1990: 93.

22 Armitage et al. 2008: 96. This conceptualization of social learning departs from the categorization of social learning approaches by Saravanan and his colleagues, who emphasize the Habermasian elements of such approaches; see Saravanan et al. 2009: 78.

volves trade-offs between different policy goals (e.g. the three E's of IWRM: economy, environment, equity) that need to be negotiated between stakeholders.²³ The outcome denotes a *negotiated order*, which typically represents a suboptimal outcome, from the perspective of both the proponents of normative ideals and the perspective of most stakeholders, who has to relinquish something in painful political processes.²⁴

However, that does not render social learning with reference to normative ideals impossible. When some stakeholders adopt these ideals and advocate their implementation in negotiations and deliberations with other stakeholders on the appropriate mode of water governance, new knowledge can inform water governance processes and generate new outcomes in the form of changes in governance frameworks and practices. Actors may collectively learn to do things differently.

Advocates of the social learning framework often point to a reasonable degree of democratic governance, transparency and participation by relevant stakeholders as a necessary condition for the social learning process to unfold.²⁵ Social learning needs a *political space* in which to occur.²⁶ This should not be contrasted or confused with the mechanisms of representative democracy.²⁷ Rather, participation refers to the issue-specific inclusion of stakeholders in deliberations and decision-making on policy content and implementation. While participatory processes may be expensive and less controllable for policy-makers and experts,

they expand the scope of learning to a broader range of stakeholders.²⁸ This may qualify the outcome of the political processes in terms of stakeholder ownership and acceptance, as Lebel et al. pointed out:

‘(...) deliberative processes bring together alternative perspectives and forms of knowledge reducing the likelihood that collective responses are based solely on relative influence and power of the actors involved.’²⁹

Again, participatory governance is not a universal fix that removes power from politics.³⁰ Participatory processes provide a forum for negotiations, conflict resolution and identification of synergies, but can also be stalled by strong conflicts of interest and partisan agendas. Stakeholder behaviour may produce a situation in which the deliberative process ends up by merely reinforcing positions of opposition. Additionally, powerful stakeholders may also manipulate participatory processes. This may result in de-politicization and/or elite capture of participatory institutions in water resource management.³¹

23 Molle 2008: 132ff.; see also Biswas 2004: 253.

24 Barret 2004: 253, Molle 2008: 133, Swatuk 2008: 25; see also Warner 2007: 9, Mollinga et al. 2007: 705.

25 Mostert et al. 2007, Armitage et al. 2008.

26 Armitage et al. 2008: 10.

27 Pahl-Wostl 2009: 357.

28 Pahl-Wostl et al. 2007a: 1.

29 Lebel et al. 2010: 336.

30 Chhotray and Stoker 2009.

31 As Biswas 2004 and Molle 2008 have pointed out, the adoption of normative ideals like IWRM can be strategic and/or symbolic and not denote any real intention to change the prevailing system of water governance or approach. Rather IWRM may be adopted to acquire recognition, legitimacy and funds from the international epistemic community of donors and authoritative water experts.

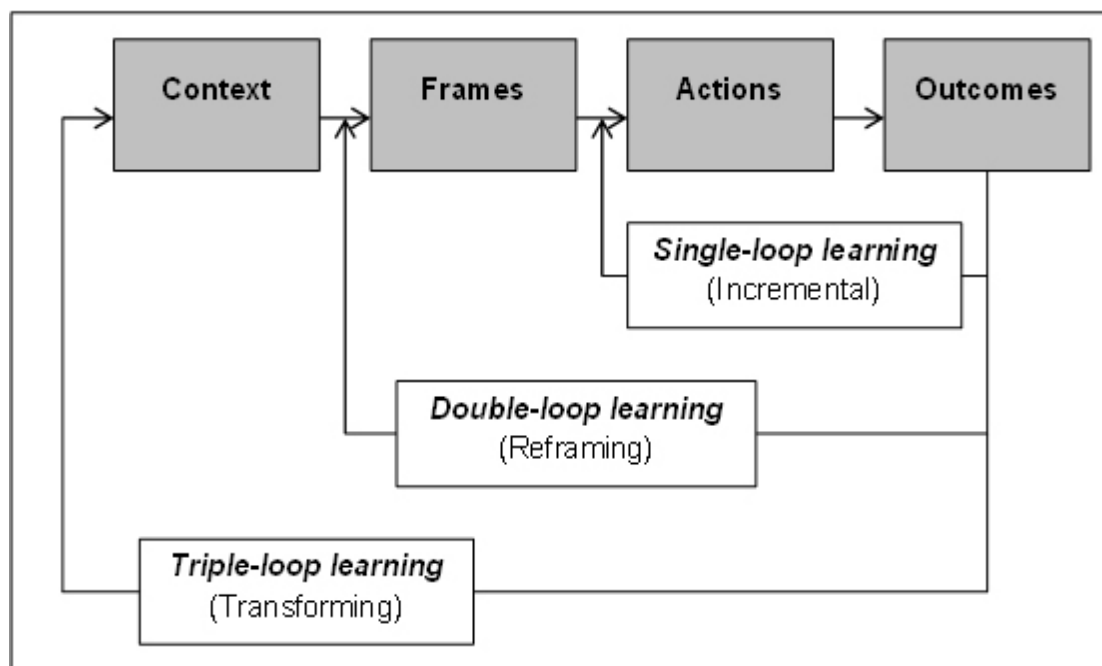


Figure 1 - Social learning loops (from Pahl-Wostl 2009:359)

2.3 Learning loops, power and politics

In order to leave analytical space for social learning to occur without neglecting power and politics, we conceptualize the process in terms of the 'learning loops' identified in organizational theory (illustrated in Figure 1).³² Single loop learning refers to the incremental refinement of action strategies without revising underlying assumptions. Improved goal achievement is the aim of eventual changes in governance practices. In double loop learning, assumptions (e.g. cause and effect relationships) within the prevailing normative framework are questioned. Actors start to reflect on goals, problems and priorities and on how the goals can be achieved. Eventually, the actor networks involved in resource governance are changed. Triple loop learning entails reconsideration and

eventually transformation of underlying structures, values and world-views. Such paradigmatic changes entail the inclusion of new actor groups in governance processes, the alteration of power structures and relationships and the introduction of new regulatory frameworks.

Politics and power play an important role in the learning cycles. First, they involve elements of policy-making, implementation and evaluation, regardless of depth (i.e. single, double or triple loops). Social learning is thus intimately related to large-scale and micro-scale political processes, where actors deploy power in the pursuit of their interests. Secondly, the deeper the loop, the higher transaction costs in terms of institutional and behavioural change. Theoretically, this places certain expectations on the behaviour of actors involved in collective decision-making processes. They tend to choose the 'low hanging fruits' associated with single loop learning, and only enter the deeper double and triple learning loops if they face constraints at the shallower levels. Hence, change is more

³² Pahl-Wostl 2009: 258ff., Armitage et al. 2008: 87ff.; see also Flood and Romm 1996, Argyris and Schön 1978.

likely to occur when social or environmental problems become seriously aggravated and cannot be solved within the prevailing governance framework.³³ However, the potential stakeholder conflict grows proportionally and aggravates the political struggles over decision-making. Thirdly, power relationships can be utilized strategically by actors either to resist learning or to enhance it, for example, in support of the implementation of a normative ideal.³⁴ Here the prevailing political economy of water plays an important role in defining the pattern of power asymmetries that typically vests the stronger actors with an interest in resisting change and maintaining the status quo.

2.4 Analytical framework

In the following we apply the concept of social learning as an analytical tool to understand the process of translating normative ideals into practice. The central question we seek to address is *to what degree has social learning occurred in the cases with reference to normative ideals?* The key analytical categories are the governance framework (formal institutions, e.g. policies, laws, modes of governance, and informal institutions, e.g. caste, patron-client relations) and the governance processes (strategic actions by state and non-state actors). Similarly, the role of normative ideals vis-à-vis partisan power politics in deliberations and decision-making on problems of environmental governance forms an important analytical focus in the discussion of whether or not social learning has occurred. Through this line of analysis, we aim to discern the preconditions that can be identified as critical for the translations of normative ideals, such as IWRM, into action.

33 Lenton and Muller 2009: 11.

34 See e.g. Swatuk 2008: 26, Saravannan et al. 2009: 81,83, Mollinga et al. 2007.

3. METHODOLOGICAL APPROACH

The concepts of *social learning* and the *political economy of water* are applied as the analytical framework for the comparative analysis of three cases of water governance processes. The objective in taking this approach is to demonstrate that, in spite of the three empirically very different cases, there are structural similarities in the way social learning and governance processes unfold (or not).

The three cases in our water governance research have been selected from both developed and developing countries. They vary in terms of the primary governance level, i.e. sub-national (India), national (Denmark) and transnational (the Mekong). Similarly, transparency and stakeholder participation in the governance processes vary, with Denmark being the most open and inclusive. Equally important, asymmetries of power between stakeholders differ. Discrepancies are huge in India, more equal in Denmark and formally equal in the Mekong case (between sovereign states). However, in all cases the stakeholder set up is complex, as both sub-national and international actors influence negotiations.

The cases function as illustrative examples of social learning across different governance contexts. The social learning approach provides an opportunity to analyze the discrepancies between normative ideals for water management ('what should be') and the governance limitations imposed by political realities ('what is') in a comparative perspective.³⁵ Additionally, the analysis has considerable time-depth, as IWRM has influenced water management and governance processes in all three cases for more

35 For more on the discrepancy between 'what should be' and 'what is' in water resources management, see Jensen and Ravnborg 2011.

than fifteen years. This allows us to analyze the evolution of the governance frameworks, discuss the social learning involved and identify situations when 'politics take over'. Ultimately, the analysis leads us to identify situations when strong economic and political interests – the political economy of water – override scientific knowledge and social learning.

4. PRAWN POLITICS: INTEGRATED MANAGEMENT OF CHILIKA LAGOON, INDIA

The brackish waters of Chilika Lagoon on India's east coast have been contested for more than thirty years.³⁶ From the middle of the 1980s, the catches of local fishermen and the lagoon's hitherto rich biodiversity started to decline. The ecological crisis gained international attention in 1993 when Chilika was placed on the Montreux Record of endangered wetlands under the Ramsar Convention. The Odisha State government responded by creating the Chilika Development Authority (CDA), which set out to restore the environment and build an integrated approach to lagoon management.³⁷ The CDA's activities have subsequently been highlighted by international NGOs as a best-

practice example of a holistic and integrated approach to water resource management.³⁸

However, the lagoon has simultaneously been the scene of a bitter conflict over rights and access to fishery resources.³⁹ Traditional low-caste fishermen have increasingly become marginalized, as local non-fisher communities from higher castes in alliance with local and political elites have encroached on large areas of the lagoon for prawn aquaculture and instigated controversial changes in fishery policy. Hence, the integrative nature of government activities can be contested. Multiple demands on the lagoon's productive capacity are now levered by its stakeholders in a highly polarized setting, which impedes social learning processes.

4.1 Governance frameworks: Integration, conservation and aquaculture

In the analysis of the governance frameworks, we concentrate on the two most important policy regimes related to water governance in the lagoon: conservation and fisheries (both capture and culture).

Prior to the establishment of the CDA in 1991, the Odisha state government was only marginally engaged in the management of

36 Dujovny 2009: 196; see Dujovny 2010 for an extensive historical account of the conflicts.

37 Ghosh and Pattnaik 2005, 2006, Chilika Development Authority 2011a, Chilika Development Authority and Wetlands International 2010.

38 Ramsar Advisory Mission no. 50 refers to the case as an 'excellent example' of holistic management. Similarly, Pattnaik and Trisal 2003 is part of the collection of best-practice examples in the Global Water Partnerships 'Toolbox' www.gwptoolbox.com, Wetlands International also promotes the case and works closely with the CDA; see Chilika Development Authority and Wetlands International 2010.

39 Samal 2002, Samal and Meher 2003, Ghosh and Pattnaik 2005, 2006, Pattanaik 2006, 2008, Dujovny 2009, 2010, Mishra and Griffin 2011, Nayak and Berkes, 2010, 2011.

natural resources in Chilika Lagoon.⁴⁰ Designed as an 'apex organization', the CDA was meant to serve as a coordinating body between the stakeholders in the basin.⁴¹ The CDA was given the mandate 1) to conserve the lagoon's ecosystem, 2) to conduct socio-economic development activities, and 3) to prepare an integrated management plan. These loosely defined policy goals delegated significant powers to the agency to translate policy into action. However, the organization was not vested with any regulatory power (e.g. granting fishery leases), and only few human and financial resources were transferred from the Odisha state government.⁴² Consequently, the CDA has had to rely on its ability to foster stakeholder cooperation and raise funds from other sources to gain an impact on lagoon management.⁴³ Political and bureaucratic control of the organization also remained strong, as the governing body of the CDA is composed of high-level politicians and bureaucrats from various departments and districts.⁴⁴ Representation of other non-state stakeholders is weak.

The Odisha state government's integrative ambitions are being jeopardized by the simultaneous development in fishery policy. Here the critical juncture also occurred in 1991 when

the Revenue Department changed the leasing policy.⁴⁵ First, it introduced aquaculture as a legal fishery technology. Previously only various traditional methods of capture fishing were allowed. However, prawn aquaculture had been promoted by the government since the beginning of the 1980s, when increasing global demand made prawn farms a lucrative export business, with the prospect of a 'blue revolution' comprised of poverty alleviation and foreign earnings in Chilika Lagoon.⁴⁶ Trade liberalization in the 1990s only made the industry even more attractive. Secondly, it allowed higher-caste non-fisher communities and outsiders to lease fishing territories, although this actually just reflected the de facto situation. These communities had taken up aquaculture in large parts of the lagoon without any legal rights in previous years. Before this, fishing rights were granted only to traditional low-caste fisher communities. Thirdly, it nearly tripled the annual increase in the cost of a lease. Fourthly, the management of leases was centralized in the form of a new state-level apex organization, which deprived the local fisher organizations of their key role in the existing community-based fishery resource management framework.

While the changes in fisheries policy have clear benefactors (i.e. non-fisher communities), the conservation and development goals

40 Ghosh and Pattnaik 2005: 118, Ghosh et al. 2006: 247, Pattnaik 2009: 7. Activities were primarily related to the fishery policy (Revenue Department, and Fishery and Agriculture Departments), tourism (Tourism Department) and a small bird sanctuary (controlled by the State Forest Division).

41 Ghosh and Pattnaik 2005: 116, Ghosh et al. 2006: 243, CDA 2011a.

42 Controller and Auditor General 2008: 94ff.

43 See Ghosh and Pattnaik 2005: 122ff., Controller and Auditor General 2008: 94ff., CDA and Wetlands International 2010 and World Bank 2005 for information on sources of financing.

44 Ghosh and Pattnaik 2005: 118, 2006: 243, Pattnaik 2009: 7, CDA 2011c.

45 Samal 2002, Ray and Ray 2008, Dujovny 2009, Nayak and Berkes 2010, 2011, Pattnaik 2006, 2008.

46 Samal 2002: 1714, Pradhan and Flaherty 2008: 65f., Pattnaik 2006: 3ff., Dujovny 2009: 196, 2010: 232ff., Nayak and Berkes 2010: 557, 2011: 7. See also Mishra and Griffin 2010, Nayak and Berkes 2011. The label 'blue revolution' marks the desire to intensify the production of sea-food through modern technologies with the aim of securing food supplies and promoting exports. The technology was introduced in Chilika by the government of Odisha as a part of a World Bank-financed poverty alleviation programme; see Dujovny 2010: 232ff.

of the CDA apparently posit a win-win situation for all stakeholders. However, the political commitment to the normative ideal of integration embodied in the CDA is weakened by the lack of coordination with the fishery policy. This makes the governance framework somewhat paradoxical, especially when we consider the way the governance processes unfold.

4.2 Governance processes: prawn politics

The governance processes are dominated by the antagonistic and asymmetrical relationship between traditional fisher communities and newcomers. In the face of the changes in the governance framework discussed above, fishermen have tried to lever their interest through legal action and public protest.⁴⁷ Success has been limited: despite a Supreme Court ban on shrimp aquaculture in 1996 and subsequent promises by the state government to enforce this decision (through the CDA and local administrations), it has never been implemented.⁴⁸ Repeated public rallies and violent confrontations between fishermen, non-fishermen and the police have produced similar government reactions: vows of action but little enforcement on the ground.⁴⁹ Attempts to solve the conflict through a new fishery policy (the Orissa Fishing in Chilika (Regulation) Bill)

have been met with equally fierce resistance, as it reifies the division of rights and introduces a rubber-stamp paragraph to legalize shrimp aquaculture.⁵⁰

The political stalemate is commonly referred to the existence of an alliance of politicians, bureaucrats and business interests involved in aquaculture, the so-called 'shrimp mafia'.⁵¹ Through patron-client relationships and informal networks, the interests of these stakeholders dominate the de facto outcome of the governance processes. Consequently, the (illegal) encroachments on fishing grounds, high leasing costs and corruption networks continue systematically to marginalize the traditional fishermen politically and economically.⁵² Equally important, the unabated practice of aquaculture is producing negative environmental impacts (pollution, increased silting and loss of biodiversity), which are jeopardizing the health of the lagoon's ecosystem and the integrative policy goals.⁵³

The CDA's role in this political landscape has been ambiguous. As the champion of the integrative ambitions, the organization has engaged other stakeholders in its activities. However, priority has been given to government agencies, research institutions and in-

47 See Samal 2002, Pattanaik 2003, Ghosh et al. 2006, Dujovny 2009, Ray and Ray 2008, Nayak and Berkes 2010, 2011.

48 Supreme Court of India 1996; see also Odisha High Court 1993.

49 The Supreme Court ruling was later confirmed by a special committee of the Odisha Legislative Assembly in 1997, and an administrative ban on aquaculture was issued by the Revenue Department in 2001; see Nayak and Berkes 2011: 8. In 2011, history repeated itself when the Odisha High Court confirmed the Supreme Court's 1996 verdict and banned aquaculture from the lagoon: *Times of India* 05.02.2011.

50 Ghosh and Pattanaik 2005: 128, Ray and Ray 2008: 404ff, Dujovny 2009: 201, Dujovny 2010: 259ff. The bill has not been approved as yet, despite multiple relaunches; see Dutta 2011.

51 Samal 2002: 1716, Pattanaik 2006: 9, 2008: 2, Dujovny 2010: 234ff. Even the CEO of the CDA acknowledges the existence of this alliance; see Ghosh and Pattanaik 2005: 122. The importance of the network is also discussed in Dujovny 2009, Mishra and Griffin 2010, Nayak and Berkes 2010, 2011.

52 Dujovny 2009, Nayak and Berkes 2010, 2011, Samal 2002, Mishra and Griffin 2010.

53 Samal 2002: 1716, Pattanaik 2008: 6ff., Mishra and Griffin 2011: 454f., see also Das et al. 2003, Supreme Court of India 1996.

ternational organizations, as well as to the execution of less controversial technical-managerial development interventions. The CDA dug a new sea mouth to the Bay of Bengal in 2000 to establish '*a more beneficial hydrological regime*'.⁵⁴ The experts ascribed the ecological problems to increased sedimentation, choking of the existing sea mouth and consequently a drop in salinity. The CDA also claims that the intervention was '*the long standing demand of local communities*', which were consulted in the decision-making process.⁵⁵ This is contradicted by independent studies, which claim that the degree of participation of local stakeholders was limited and that the research conducted prior to the intervention was biased.⁵⁶ The CDA-sponsored reports uniformly identify the shifting position of the existing sea mouth as the key problem for the lagoon's ecology. Consequently, the new sea mouth was perceived to be the optimal solution. This analysis runs contrary to both historical evidence of the stability of the sea mouth and local debates on the importance of upstream flood control measures (dams) for the lagoon's ecosystem.⁵⁷ The official narrative of success, i.e. ecological rejuvenation and livelihood improvement (e.g. a ten-fold increase in fish catches) has also been questioned.⁵⁸ Critics claim that, a decade after the intervention, the ecosystem and fishery re-

sources continue to decline, primarily due to the continuous proliferation of aquaculture (around 60% of the lagoon's waters remain illegally encroached upon for this purpose).⁵⁹ Additionally, the new mouth has changed the distribution of resources in the lagoon and created a more saline environment, which primarily is better for prawn aquaculture.⁶⁰

However, upstream deforestation, untreated sewage and pollution, dams and irrigation projects etc. also pose severe challenges for sustainable management of the lagoon.⁶¹ Despite attempts to deal with these issues, such as through a World Bank sponsored Environmental Flow Assessment and participatory IWRM schemes in catchments, the CDA's ability to facilitate cooperation between different government departments and stakeholders has been weak.⁶² Hence, the actual governance processes continue to follow sector divisions, effective participation in decision-making processes lingers in the shadows, and the conduct of the CDA has been dominated by interventions that do not conflict with the interests of the strong 'shrimp-mafia'.

4.3 Discussion: shallow social learning in Chilika

The discrepancy between the formal and informal governance processes in Chilika poses some challenges for the assessment of the degree of social learning. On the one hand, the establish-

54 Ghosh and Pattnaik 2005: 122.

55 Ghosh et al. 2006: 248.

56 See Nayak and Berkes 2010: 559 and Dujovny 2009: 195 on the participatory nature of the decision-making process, and Dujovny 2009: 196ff. on the bias in the research prior to the intervention.

57 Dujovny 2009.

58 See Chilika Development Authority 2011b, Ghosh et al. 2006: 248ff., Mohapatra et al. 2007, Pattnaik and Trisal 2003: 4ff. In 2001, Chilika was removed from the Montreux record at the request of the Indian Ministry of Forests and Environment; see Ramsar Advisory Mission No. 50, India 2001.

59 Nayak and Berkes 2010: 558, see also Dujovny 2009: 199ff.

60 Controller and Auditor General 2008: 97f., Dujovny 2009: 195f., 199ff., Nayak and Berkes 2010: 559ff.

61 Dujovny 2009: 199ff, Ghosh and Pattnaik 2005: 127ff.

62 World Bank 2005, Controller and Auditor General of India 2008: 98ff, Hirji and Davies 2009, Ghosh and Pattnaik 2005: 123, Chilika Development Authority and Wetlands International 2010: 4.

ment of the Chilika Development Authority has led to a change in the governance framework for Chilika Lagoon. Despite its biases, the conservation strategy applies a scientifically informed approach to the whole hydrological unit and represents an improvement to the management perspective, which now formally includes a broader array of goals. At face value, this would qualify as double loop learning. On the other hand, it is difficult to talk about such deeper degrees of social learning when the actual practices are taken into account, and even the incremental improvements of first loop learning are hampered by the prevailing socio-political dynamics. The integrative ambitions embodied in the Chilika Development Authority have to a large extent been subsumed by the interests of the stronger stakeholders involved in aquaculture, who have had an important influence on its conduct. Official political and institutional adherence to the goals of conservation, holistic management and sustainable development are contradicted by other parts of the governance framework and the prevailing governance practices, where little effective coordination occurs. As such, this case points to the general problem of corruption in policy-making and implementation, and to the specific problem of patron-client relationships embedded in the social structure of Odisha. Both problems are severely hampering the possibility of social learning, as official deliberations and decision-making succumb to power politics conducted behind the scenes. Similarly, the discrepancy between public policy goals, legal decisions and the de facto situation on the ground erodes trust between the actors involved, confining eventual learning to be represented only by the ink on policy plans, rather than becoming a lived experience. The present 'modus operandi' is far from the normative ideal of integration. Evidence from independent studies suggests that it is more likely that the governance of Chilika Lagoon ap-

proaches that of a scientifically managed '*prawn pond*'.

5. POWER HOUSE POLITICS: DAMS AND INTEGRATED MANAGEMENT OF THE LOWER MEKONG RIVER

Cambodia, Laos, Thailand and Vietnam have cooperated over the Lower Mekong River since the 1960s, when a series of dams on the Mekong mainstream appeared on the drawing board. The intention was to develop hydropower as the power house for economic development. It was also seen as a measure undermining the communist insurgencies in the region. The subsequent Indochina wars and instability into the early 1990s put the dreams of turning the Lower Mekong into a power house for economic growth on hold. In 1995 the four Lower Mekong countries signed an agreement to establish the Mekong River Commission (MRC). The agreement, brokered by the UNDP with the assistance of water experts and experts in international environmental law, represented state-of-the-art thinking on transboundary water resources management including international water law and many IWRM principles. The agreement also represented a considerable degree of river basin management learning at the time and is often referred to as a 'development agreement' translating normative ideals for sustainable development into specific plans and programs.⁶³

In the 1990s the Mekong River was largely considered an open water regime with unlimited quantities of free flowing water. There were few contentious transboundary issues between the four countries. However, at the national levels, including upstream China, hydropower

⁶³ Particularly from the Murray-Darling, Rhine and Danube river basins.

projects were implemented, with many social and environmental consequences.⁶⁴ As water management in the Mekong was until recently largely a national affair, there was limited social learning at the transboundary level. Knowledge production and capacity development within the MRC was implemented according to the mandate of the 1995 Agreement.⁶⁵ In parallel to these largely self-confined national and transboundary levels, there was growing civil society and NGO engagement in the environmental and social aspects of water management in the Mekong.

Thus, until around 2007 social learning was limited to single loop learning, largely based on scientific learning, within the confines of the major Mekong stakeholders, i.e. the MRC, national governments, civil society, academia and NGOs.⁶⁶ However, recent developments in the Mekong case are now inviting more stakeholders to meet and engage at the transboundary level. Economic development is the driver. Accelerated economic growth in China and the Lower Mekong countries over the last ten years has increased the need for energy. Consequently, hydropower is being considered as the power house fueling further growth. The pressure on the Mekong is increasing and its image as 'the Shangri-La of rivers' is under

threat. Stakeholders are becoming engaged as the space for transboundary power and politics unfold. Social learning is being taken to another level.

5.1 Governance framework: the MRC as a mechanism for transboundary water management and development

Cooperation on water resources management and development in the Mekong dates back to the 1940s. It has overcome setbacks caused by the Indochina wars, the Khmer Rouge in Cambodia, the structural challenges of the Cold War and historical animosities between the riparian countries.⁶⁷ Cooperation between the four Lower Mekong countries was first formalized in 1957 under the Mekong Committee. During the 1960s cooperation was reinforced politically as a united front against communism.⁶⁸ The 1957 agreement was changed under the Interim Mekong Committee in 1975, which excluded Cambodia under the Khmer Rouge and subsequent conflict until the recognition of a democratic government in Cambodia in 1993. The current MRC agreement was signed in 1995 after three years of negotiations.

Because of its emphasis on sustainable development and environmental balance, the 1995 agreement has been acclaimed as a '*model among multilateral efforts in international river basin development*'.⁶⁹ According to its emphasis on approaches to integrated water management, the agreement covers not only water allocation but also '*irrigation, hydropower, navigation, flood control, fisheries, timber floating,*

64 The controversies over the Pak Moon dam in Thailand and the Nam Theun2 dam are well known. Dams have also been built in Vietnam's Central Highlands on the '3S' tributaries (Srepok, Sesan and Sekong) shared by Cambodia and Vietnam. Although there has been increasing NGO and civil society involvement in the environmental and social impacts of the Vietnamese dams, they have not attracted regional and international attention comparable to the Pak Moon and Nam Theun2 dams.

65 Primarily in its technical support Secretariat.

66 The study on 'National Interests and Transboundary Water Governance in the Mekong' (Hirsch and Jensen 2006) was an attempt to pull together social learning by Mekong stakeholders including national governments, the MRC, civil society, NGOs and donors.

67 Öjendal 2000.

68 China and North Vietnam.

69 Radosevich 1996: 263. the full title of the 1995 MRC agreement is: 'Agreement on the cooperation for the sustainable development of the Mekong River basin', Mekong River Commission 1995.

recreation and tourism, in order to optimize the multiple use and mutual benefits for all riparians.⁷⁰ However, according to international environmental law experts the agreement falls in the ‘soft law’ category, as ‘*its legal mechanisms for implementation and enforcement at regional and national levels [are] generally weak*’.⁷¹ Hydrological flows and water allocation are not mentioned in quantitative terms but left to be resolved as policy harmonization among riparians in the implementation of the agreement. The agreement is couched in a consensus spirit of ‘Asian cultural values’, ‘the ASEAN way’ and ‘the Mekong Spirit’. There is no right of veto in cases of difference or dispute. Instead a number of restrictions on development interventions apply according to various circumstances ultimately aimed at mutual understanding and consensus among the member states.⁷²

In the absence of a formal legal framework, and as the ultimate power remains with the individual member states, the MRC’s governance framework, including the decision-making support by its technical Secretariat, has become crucial in addressing transboundary tensions and maintaining cooperation. The MRC’s three tiers of governance are geared to doing precisely that. The MRC’s technical Secretariat develops the necessary knowledge capacity in member countries to implement the 1995 agreement. The Secretariat provides technical services and decision-making support to the MRC’s Joint Committee (JC) of senior civil servants, representing the four member countries. The JC meets twice a year and is mandated to take decisions (by unani-

mous vote) on matters as specified in the agreement. The MRC’s Council of Ministers meets once a year to confirm JC decisions or decide (also by unanimous vote) matters of higher political importance. In the event of differences and disputes that cannot be solved within the MRC governance framework, governments have to resort to diplomatic channels or invite mediation by another party.⁷³

5.2 Governance processes: expanding stakeholder participation

Major development interventions along the Mekong are largely synonymous with hydropower and only to a lesser extent irrigation development. Until recently governance processes linked to such infrastructure-based developments were largely a national affair, as they occurred on tributaries within national territories. Governance regimes around hydropower projects have been narrow and under state control.⁷⁴

With its Basin Development Plan (BDP), the MRC has taken steps to widen the Mekong governance regime to include other stakeholders. The BDP is considered the MRC’s ‘flagship program’, and it attempts to be the umbrella approach to water management and development in the Lower Mekong according to the 1995 agreement’s Article 2. The BDP is a management and planning process exploring and analyzing likely development scenarios in the Mekong basin. The scenarios and their assessments include existing, ongoing and planned development interventions (largely hydropower and irrigation infrastructure development, in-

70 Mekong River Commission 1995: Art. 1.

71 Hirsch and Jensen, 2006: 43.

72 The detailed text on the ‘Procedures for Notification, Consultation and Agreement’ was agreed by the MRC member countries in 2003.

73 Mekong River Commission (1995): Article 35.

74 In China, Laos and Vietnam. Thailand’s Pak Moon dam from the 1980s is the only Mekong tributary dam in Thailand.

cluding upstream China). Assessments are based on the MRC's extended knowledge production from many programs and projects. Assessments on development impacts also follow a number of agreed MRC guidelines, such as EIA, SEA, Environmental Flows etc. The BDP started in 2002 and is now running into its third phase.

The BDP process as it has unfolded since 2007 represents a general shift towards greater participation and greater MRC openness towards other Mekong stakeholders. In a number of arranged meetings with regional civil society and NGO stakeholders the MRC has presented the BDP work undertaken, including the assessment of development scenarios and an overall IWRM-based development strategy for the Mekong basin. Although the development scenarios may have limitations in terms of being largely hydrologically defined, they did open up a space for dialogue, though also generated controversy over the assumptions, scope and impact of management and development interventions.⁷⁵ The MRC's dialogue with a wider public was also supported by more transparency and access to the MRC's knowledge production. Assessment reports and policy documents are now easily accessible on the MRC's official website and open for comments.⁷⁶ The MRC's technical secretariat has supported this participatory mode of engagement, resulting in much friendlier stakeholder attitudes towards the MRC.⁷⁷ Although the expanded involvement of stakeholders has generated social learning on approaches to transboundary management and development of the basin, it did not enter the more contro-

versial national regimes for water development plans and projects.

However, the recent controversy over the Laotian government's plan for the Xayabury main-stream dam and hydropower project has stirred up controversy at the regional and international levels, as well as within the MRC's own governance framework.⁷⁸ The Xayabury controversy illustrates the extent to which scientific and social learning has developed and is able to influence (or not) the governance processes within the MRC and national political decision-making. The Xayabury dam proposal and the unilateral interests of Laos are testing the MRC's governance regime.⁷⁹ The proposal has presented the MRC with its first real governance challenge, namely the engagement in controversial main-stream development. It has also given the MRC the opportunity to demonstrate the value of its knowledge-based assessments, as well as assess how these assessments can support political decision-making by each MRC country.

The Xayabury dam is seen as the key to the potential for mainstream dams or otherwise in the Lower Mekong. It has generated widespread discussion over the future of the Lower Mekong. Activists, NGOs, villagers and the Thai and Vietnamese media are opposing Thai commercial interests and the Laotian government.

Hydro-politics thus play a role in determining the positions of the MRC member country

75 Lebel et al. 2010.

76 <http://www.mrcmekong.org/>

77 This is partly due to a more engaged and conducive leadership in the MRC's technical secretariat, and partly due to Vietnam's widened perspectives on NGOs, civil society and the environmental consequences of upstream hydropower development.

78 Export of hydropower is the major foreign exchange earner for Laos. It is expected to increase considerably, turning Laos into the 'battery of Southeast Asia'. Laos has plans for up to nine mainstream dams, Cambodia for two, and China for several more in the upper reaches of the Mekong in China. Dozens of tributary dams are being considered all over the lower basin, most of them within Laos. Several of these are in an advanced stage of planning and financing. See Öjendal and Jensen 2011.

79 Laos argues that exports of energy will generate government income to be invested in poverty alleviation measures benefiting the whole country.

governments towards the Xayabury dam. Upstream Laos, the proponent of the project, has the best geographical conditions for hydropower development. With few other alternatives, Laos considers hydropower a national asset for economic growth and poverty alleviation. Thailand is also upstream, but in a complex and ambiguous situation. On the one hand it has commercial interests in the project and needs the electricity it will generate. On the other hand, as a vibrant democracy Thailand needs to consider politically that there is widespread public opposition to the project. Vietnam has expressed strong concerns over the project's basin wide environmental impacts in general and its impacts on the Mekong Delta in particular. Cambodia is also downstream and wary of the project's environmental impacts, not least on fisheries and the Tonle Sap flow system. But the Cambodian government's position is complicated by its own interest in mainstream dams on the one hand and public opinion against not only the Xayabury dam but mainstream dams in general on the other.

According to the MRC Agreement, large infrastructure developments with a transboundary impact, particularly mainstream dams, have to follow a process of notification, consultation and agreement before being implemented.⁸⁰ As a first step in this process, Laos submitted the Xayabury project for assessment by the MRC in early 2011. The assessment concluded that there were a number of uncertainties and negative impacts from the project. Public hearings on the project were also held, with opposition

expressed by the Thai public.⁸¹ Perhaps most significant was the criticism of the project by downstream Vietnam's official media, environmental authorities and Vietnamese scientists and environmentalists. Critics in the region and internationally warn that the project could open the door to the ten other dams being considered for the Lower Mekong, thus turning the river into a cascade of engineered lakes.

At a JC meeting of the MRC in April 2011, Vietnam, Thailand and Cambodia raised doubts over the project, which was referred to a MRC Council in December 2011. The apparent importance of the Xayabury controversy led to diplomatic engagement on the matter between the prime ministers of Laos, Thailand and Vietnam during the ASEAN Summit in Jakarta in May 2011. After closed meetings, the Lao-tian prime minister announced that Laos would temporarily suspend the project. It was agreed to engage 'prestigious international scientists to seek firm scientific ground for future decisions'.⁸² In defiance of the MRC and its three neighboring countries, Laos informed the Thai project developer in early June 2011 that all necessary impact assessments had been made and the regional decision-making process had been completed.⁸³ Disagreement over the results of the existing scientific impact assessments of the dam remains. The differing views on these assessments appear ultimately to be embedded in the political economy of water in Laos, whose national economic imperative of hydropower

80 See earlier section on the 1995 MRC agreement. The detailed text of the agreements 'Procedures for Notification, Consultation and Agreement' was agreed by the MRC Council in 2003. Not only mainstream but also tributary dams with 'significant transboundary impact' require notification, discussion and agreement between MRC member countries. However, the criteria for what constitutes a 'significant impact' are still being discussed.

81 Communities and local NGOs near the project site on the Thai side of the river.

82 Radio Voice of Vietnam 8 May, 2011.

83 Reported by the International NGO International Rivers based on a leaked letter from the Laotian government to the Thai investor, the Xayabury Power Company Ltd. A field visit by International Rivers to the site of the proposed Xayabury dam in early July 2011 year revealed that construction on the dam's access road and work-camp was well under way.

development is challenging scientific impact assessments and social learning. However, geopolitics is also playing a role here. Closer commercial and political ties with China⁸⁴ may also be a factor behind the Laotian government's determination to go ahead with the Xayabury project in defiance of the opposition from other MRC member countries, particularly Vietnam.

5.3 Discussion: unfolding social learning where national sovereignty reigns

Until recently social learning in the Mekong was limited to single loop learning in largely self-contained circuits. For many years the MRC and its member country governments were operating in a rather closed governance regime. Donor-supported knowledge production in the MRC represented single loop learning and was mainly oriented towards science and management.⁸⁵ In parallel, and largely outside the MRC framework, a civil society and NGO network has created its own space for alternative dialogue and single loop social

learning.⁸⁶ Thai and international media have voiced criticism and concerns over the Mekong and MRC developments, thereby participating in this alternative circuit of single loop learning. From time to time the relationship between the two circuits has been tense.

But as the MRC has opened up a space for participation and transparency around its knowledge production, social learning is being enhanced within a wider governance framework. This has created room for double loop learning based on dialogue and discussions over the BDP process of formulating development scenarios, including the conditions for and impact of hydropower development. Also, the sharing of the development space by inviting stakeholders for consultation and dialogue and the MRC's more open and transparent management of its considerable pool of knowledge represents social learning. The MRC's transparency around the notification, consultation and agreement process linked to the Xayabury dam has been an icebreaker for double loop learning. Mekong stakeholders outside the MRC have been able to voice their views and concerns over the dam, including having direct access to and dialogue with the MRC. Also, the openness around the MRC-sponsored independent strategic environmental impact assessments (SEA) of Mekong mainstream dams in general appears to have widened the space for double loop learning and given the MRC considerable credit.⁸⁷ The NGO, civil society and scientific community have largely been supportive of the quality of the MRC's impact

⁸⁴ China has gained considerable economic influence in Laos over the last ten years. Chinese investors have leased large areas of forest in northern Laos for logging and commercial forestry. Considerable infrastructural developments are also taking place in these areas, also through Chinese investments. Observers on China's regional political influence see a parallel between the recent closer ties between China and Laos and those that have existed between China and Burma for quite some time.

⁸⁵ Donor assistance has focusing on building capacity in the MRC's secretariat and in member country governments. Capacity-building was based on generating a wide range data and information, scientific studies, guidelines for development impact assessments and the assessment of various development scenarios, including large scale infrastructural development for hydropower and irrigated agriculture. A key objective has been to develop capacity in the MRC Secretariat to support difficult political decisions by member country governments.

⁸⁶ Dominated by national and regional NGOs located in Thailand and lately also in Cambodia.

⁸⁷ The NGO, civil society and scientific community have largely been supportive of the quality of the MRC's impact assessment of the Xayabury dam and have also acknowledged the transparency and access to information made available by the MRC.

assessment of the Xayabury dam. Although the chapter on mainstream Mekong dams remains open, the events surrounding the Xayabury dam have had significant positive social learning effects, widening and deepening the governance regime of the MRC to include all stakeholders in shared social learning. In addition, it has given a boost to the legitimacy of the MRC as a relevant knowledge and governance institution.

It remains a question whether the MRC and cooperation in the Lower Mekong is ready for triple loop learning. If, for example, the MRC decides to postpone the Xayabury dam or have a ten-year moratorium on mainstream dams in general, as has been suggested, it would represent a paradigm shift that amounts to triple loop learning.⁸⁸ Although such a decision would be possible within framework of the current 1995 agreement, it would infringe upon national sovereignty and thereby represent a transformation of the political context and governance practices.

6. PIG POLITICS: INTEGRATED MANAGEMENT OF WATER RESOURCES IN DENMARK

Conflicts of interest between agriculture and the environment have been topics of a continuous political struggle in Denmark during the last three decades. The most fundamental problem has been related to the leaching of nitrogen from agricultural land, which has contributed significantly to the dramatically increased eutrophication and poor ecological status of lakes, estuaries and coastal waters.

Agriculture has been the dominant sector in Denmark, and export of agricultural products formed the backbone of the national economy until the 1960s. During the first two thirds of the twentieth century, the paradigm among the population and the politicians was that 'What is good for the agricultural sector is good for Denmark'. During this period the majority of wetlands and other marginal land areas were converted into agricultural land with heavy subsidies from the Danish government, so that agricultural land today constitutes 61% of the entire land area, which is among the highest in the world.⁸⁹

During the 1960s the use of agrochemicals such as fertilizers and pesticides increased dramatically, and a process of industrialization, specialization and centralization was started. Thus the 200,000 farms before 1960 had been reduced to 40,000 farms in 2009. The largest growth in agricultural production occurred for pork meat, with an increase in the pig population from 4.6 million in 1955 to 12.4 million in 2009.⁹⁰ As a result of the increased use of fertilizers crop yields increased significantly, but so did the leaching of surplus nitrates and to a lesser extent phosphorous to the aquatic environment. Today a major part of the fertilization comes from pig manure, from which the nitrogen uptake in plants is much more difficult to control than from mineral fertilizers, and which therefore contributes significantly to nitrate leaching.

The main water stakeholders are the agricultural and environmental sectors. The interests of the two sectors are to a large extent promoted by their respective sector ministries. The ministries have managed these interests in the classic manner of having own research institutes and

88 Trandem 2011.

89 Statistics Denmark, 2009.

90 Statistics Denmark, 2009 and Statistical Yearbook 1960.

research programs and having close contacts with their respective stakeholder groups. The key stakeholder in the agricultural sector is the farmers' association, the Danish Agriculture and Food Council, which has its own research organization, the 'Knowledge Center for Agriculture', and runs the agricultural extension service. The environmental stakeholders are organized into several green NGOs, the Danish Society of Nature Conservation being the most powerful in this context.

6.1 Governance framework: national and EU legislation

The governance framework has evolved in three stages: (i) before 1987; (ii) 1987-2003; and (iii) after 2003.

During the 1970s and 1980s, it became clear to the scientific community that the leaching of nitrates and phosphorus from agricultural land was the dominant source responsible for the increasing eutrophication of coastal waters that periodically resulted in oxygen depletion and dead fish in coastal waters. After a number of severe episodes and heavy campaigning by the Danish Society of Nature Conservation, in 1987 the Danish Parliament adopted an act (VMP1) with the overall objective of improving the aquatic environment. An important instrument in the VMP1 was regulations on Danish agriculture aiming at reducing nitrate leaching by Fifty percent. Two other elements of the VMP1 were a major research program aimed at improving knowledge about nitrates and phosphorus in agricultural and environmental systems and the establishment of an environmental monitoring system to assess the impacts of the regulations.

VMP1 was executed during the period 1987-1998. The objective of reducing nitrate leaching by fifty percent was not achieved, so the Danish Parliament revised the plan in a new act (VMP2) with a strengthening of the

regulations, an additional research program, etc.⁹¹ By the completion of VMP2 in 2003 the target of a fifty percent reduction has been officially achieved and the aquatic environment improved, albeit not nearly to the extent originally envisaged.⁹²

With the adoption of the EU Water Framework Directive (WFD) in 2000 the legislative framework changed significantly.⁹³ Most importantly, the objective was shifted, as the WFD requirements for 'good ecological status' were much stricter than the soft objective in VMP1 of improved water quality. As a result the target of nitrate reduction was changed to the reduction of a further fifty percent, i.e. down to about twenty-five percent of the amount before 1985. The measures to achieve the new WFD objectives are described in the politically much disputed river basin action plans from the Ministry of Environment, which were delayed for two years.⁹⁴

The normative ideals behind the VMP1 and VMP2 legislation were dual. On the one hand the ideal was to ensure environmental sustainability in line with the principles outlined in the Dublin Statement on Water and Sustainable Development of 1992.⁹⁵ On the other hand the ideal was to ensure good framework conditions for an economically sound agricultural sector. The EU WFD introduced new principles with close similarities to key IWRM principles, such as the requirements to manage surface water and groundwater in an integrated manner, to involve stakeholders in the planning and management process, and to make economic

91 Grant, Paulsen, Jørgensen and Kyllingsbæk 2002.

92 Ministry of Environment and Ministry of Food, Agriculture and Fisheries 2004.

93 European Commission 2000.

94 <http://www.naturstyrelsen.dk/Vandet/Vandplaner/>

95 ICWE 1992.

assessments, including all cost aspects. The WFD can be seen as a European adaptation of IWRM, but with some important differences: (i) WFD gives a priori preference to environmental objectives, while IWRM in itself is neutral, only emphasizing the triple bottom lines (economy, environment, equity); and (ii) WFD has a built-in implementation mechanism, including the transfer of national powers to the EU.

6.2 Governance processes: low hanging fruits and stagnation

The adoption of VMP1 in 1987 represented a paradigm shift. Until then the agricultural sector had not been subject to environmental regulations, and the general thinking among most farmers and many of their advisors in the agricultural extension service was that the water quality problem was not being caused by the agriculture. The cooperation between environmental and agricultural researchers had until then been very limited, and when these water quality issues emerged there was a considerable degree of mistrust ('we cannot be sure that foreign groundwater equations also apply under Danish conditions'). This lack of trust was naturally even greater among private stakeholders in the two camps.

Therefore the government intentionally designed the VMP1 so that the interactions between scientists, professionals and stakeholders from the two camps were increased. Thus it was prescribed that both the research and the monitoring programs should be run jointly by research institutes from the two ministries of agriculture and environment. This gradually resulted in the building up of trust, so that the inevitable political battles could take place with a minimum level of disturbing misunderstandings. Another outcome of this process was that scientific evidence became important arguments in the political struggle. Conditions

for the knowledge-based management process were favorable during this period because it was possible to identify solutions where the conditions for one part (environment) could be improved substantially without severe costs for the other part (agriculture).

By the time the environmental objectives had been strengthened with the WFD all the low-hanging fruits had been harvested, and the agricultural stakeholders argued that it was not possible to achieve the WFD goals without devastating costs for the agricultural sector. Environmental stakeholders like the Danish Society of Nature Conservation likewise argue that the only way to preserve an economically sound agriculture in Denmark is for it to give up some of the marginal agricultural land. If this idea of converting land from agriculture back to nature is implemented, it would be a major paradigm shift requiring new legislation.

Agricultural stakeholders have been heavily engaged and have strongly influenced this evolution. The environmental NGOs were very active in the 1980s and at the beginning of the 1990s, but as the Ministry of Environment gradually adopted their agenda during the 1990s they have played a less significant role since.

The transition from the national VMP1 process with significant progress to the EU WFD process with, so far, rather limited progress coincided with a change of government in Denmark in 2001. During the 1990s environment was high on the political agenda, the Minister of Environment was a powerful member of the cabinet, and Denmark often played a role as environmental frontrunner internationally. The new government had lower environmental ambitions and agenda and the once powerful Ministry of Environment lost influence.

6.3 Discussion: Social learning up to the threshold of pain

The paradigm shift with the adoption of the VMP1 in 1987 was a reframing of the regulatory framework (double-loop learning), including new legislation, though without undermining the conditions for the agricultural sector.

The developments between 1987 and 2003 can be seen as a single-loop learning process that started with two fundamental different knowledge frames among environmental and agricultural stakeholders. The results were very successful because there was room to improve environmental conditions without sacrificing agriculture. Thus the 'low-hanging fruits' were gathered in a process of intensive stakeholder involvements and dialogues, and the water management process was truly knowledge-based during this period.

Today there are no low-hanging fruits left, and achieving further improved ecological conditions, as required by the WFD, will in the short term be very painful for the agricultural sector. This will require a transformation implying a completely different paradigm for the role and importance of agriculture in society, corresponding to triple loop learning. Such a transformation is obviously not possible without a major political struggle. An indicator of this ongoing struggle is the fact that Denmark, once perceived to be among the environmental front-runners, has had to delay the adoption of the WFD river basin action plans, due in December 2009, by two years, with the result that in June 2010 the European Commission (EC) issued a notice to the Danish government that it may take legal steps because Denmark is breaching the relevant directive. It remains to be seen how much muscle the EC will apply to enforce the WFD in Denmark and in other countries.

All the regulatory frameworks (VMP1, VMP2 and the EU WFD) included elements

of normative ideals. While these ideals were higher than what could realistically be achieved in the short term because of the political struggles between stakeholders, they contributed to setting the agenda throughout the period. Progress towards achieving some of the ideals was influenced partly by the low socio-economic and political costs, i.e. the availability of 'low-hanging fruits', and the degree of resistance from stakeholder groups, and partly by the changing policies of the respective governments.

7. DISCUSSION: POLITICS, POWER, SOCIAL LEARNING AND NORMATIVE IDEALS

These three cases allow us to study the way social learning processes unfold in practice. Through our analysis, we approach '*...the way integration actually takes place...*' rather than idealized normative pictures of how actors should integrate.⁹⁶ Below we discuss the cases in a comparative perspective while investigating the links between social learning with reference to normative ideals, the political economy of water and principles of democratic governance.

7.1 A comparative perspective on social learning

In the three cases social learning has occurred with reference to different normative ideals ('what is learned'). IWRM includes both a sustainability dimension (e.g. the balancing of environmental, economic and social goals in water management) and a process dimension (e.g. the coordination and participation of

⁹⁶ Saravanan et al. 2009: 77.

stakeholders in a governance process), which are intimately linked.

The learning loops in the Danish case primarily refer to tackling the environmental problems created by the limited regulation of an industrialized agricultural sector. Conversely, the Chilika and Mekong cases emphasize the problems of transparency and inclusion in decision-making processes, as well as the ability of the key integrative agencies (i.e. the CDA and MRC) to secure effective implementation of the normative ideals involved. In Denmark, these processes have been framed by an enabling environment characterized by a transparent and highly institutionalized governance system, which to a lesser degree is present in the other two cases.⁹⁷ Despite the democratic character of the Indian state, the outcome of governance processes in Chilika is structured by informal patterns of power and influence producing contradictory policies, which erodes trust between the non-state stakeholders involved and jeopardizes the legitimacy of government interventions. This complicates and expands the scope of social learning processes, as both the sustainability and process dimensions are involved; there is no enabling environment in place.

At first sight, the intergovernmental character of the MRC sets a different scene, with the sovereign Mekong countries as the key stakeholders. Nevertheless, the integrative institutions in Chilika and the Mekong cases are structurally similar in the sense that both the CDA and MRC have been designed as facilitating institutions meant to perform a support function for political decision-making, act as mediators between stakeholders and build a

scientific knowledge base. Neither of the organizations has been mandated with any formal regulatory capacity. Consequently, they both depend on their ability to build shared understandings and create a sense of common interests if they are to achieve the cooperation of state and non-state stakeholders. The capacity to implement political decisions is formally stronger in the Danish case, as integrative policy plans have been accompanied by adaptation of the regulatory frameworks and close links to well-established government institutions (i.e. the Ministry of Environment and Ministry of Agriculture). With the adoption of the EU's WFD in 2000, the role of the various actors changed in Denmark. Water management goals are now defined multilaterally, and member states, including Denmark, are given the task of implementing the directive according to a specific timetable. Implementation by member states will be carried out under the supervision and ultimately the legal pressure of the European Commission. This strengthens the water governance framework even more compared to the Chilika and the Mekong cases.

7.2 Social learning and the political economy of water

Despite their differences, the three cases point to the importance of the *political economy of water* for social learning processes.⁹⁸ In Denmark, Chilika and the Mekong, the interests of strong economic stakeholders or specific national interests intervenes and challenges the implementation of the IWRM-based frameworks that have been created. Social learning

⁹⁷ E.g. an institutionalized system of public hearings of interest organizations, media surveillance, a stable bureaucracy etc.

⁹⁸ The concept of a political economy of water is used by Swatuk (2008), who analyzes the intertwined nature of the political economy of underdevelopment and water resource distribution and allocation in southern Africa (SADC countries).

has been an incremental affair, where the ‘low-hanging fruits’ of single-loop learning have been picked first. Deeper and more controversial transformations of double- and triple-loop learning have been avoided, as they typically challenge the distribution of power, interests and benefits among stakeholders within the prevailing water governance system. In the three cases, actors with vested interests in the status quo have tended to resist transformative changes. These findings largely reflect points made by several other authors, namely that change is ‘generally not the result of the triumph of rational science over ignorance’.⁹⁹ Rather, change occurs when powerful actors see a benefit in change, or when costs are minimal. As Jeroen Warner has also argued, realizing mutual interdependence does not in itself pose a sufficient condition for actors to engage in social learning: they also need to be *willing* to search for solutions and take joint responsibility.¹⁰⁰

Consequently, the translation of normative ideals like IWRM into practice is mediated by the context-specific political economy of water. The translation process typically involves hard negotiations, trade-offs and asymmetric power struggles between stakeholders over the use and allocation of water resources. A willingness to learn, cooperation, trust and shared understandings between stakeholders are not easily achieved, especially when problems continue after less costly and uncontroversial solutions have been implemented. When the persuasion of normative ideals requires changes beyond clear-cut win-win situations, as in the conflicts over prawn aquaculture in India, mainstream dam construction in the Mekong or the environmental effects of industrial agriculture in

Denmark, the links between social learning, politics and power become even more important for the outcome of water governance processes. In such situations, social learning in the realm of water governance may require a shift in the wider socio-political context – and in the power relationships, norms and perspectives of key stakeholders – to approach the second or third tier learning loops.¹⁰¹

7.3 Possibilities and limitation of normative ideals in water governance

Whereas deeper degrees of social learning with reference to normative ideals may be controversial and difficult to achieve, the three cases illustrate some of the possibilities that emerge when these concepts inform the political processes of water resource management. The three cases also underline the importance of democratic governance for social learning to occur.

Firstly, the introduction of normative ideals in Denmark and the Mekong region have contributed to setting the agenda for policy-making and created a political space for contestation of the prevailing practices. In spite of the controversies and shortcomings of their implementation, the normative ideals have provided a frame of reference for the agents of change, which is utilized to exert pressure on the existing management systems and challenge the stronger or emerging stakeholders. This is exemplified in the Danish case, where normative ideals have provided a vehicle for the environmental sector to seek a transformation of the agricultural sector and in that sense contributed to the politicization of water management practices. In the Mekong region this is illustrated by the Laotian government’s determination to go ahead with the mainstream

⁹⁹ Swatuk 2008: 25; see also Warner 2007: 9, Molle 2008: 133, Mollinga et al. 2007: 705 for similar arguments.

¹⁰⁰ Warner 2007: 5.

¹⁰¹ Pahl-Wostlet al. 2007a: 10.

Xayabury dam, which has accelerated social learning (on water management and environmental principles) and widened the space for more transparent and inclusive governance. The Indian case is muddier, as the official claim to integration stands in grave contrast to the actual practices. In this context, the normative ideals play a somewhat dubious role in providing legitimacy to the official government policy, but in effect they contribute to the de-politicization of water governance in the lagoon. Thus, normative ideals may provide a direction for social learning processes, or else become symbols for the stronger stakeholders to base their interests in.

Secondly, the cases point to the role of scientific knowledge in processes of social learning.¹⁰² Provision of scientifically validated and context-specific information is a key part of the integration strategy designed. Despite the political and contestable character of scientific knowledge, such knowledge has ultimately evolved into 'soft' constraints on political decision-making, especially in Denmark and the Mekong region.¹⁰³ Here the actors have developed some sense of shared understanding, exerting pressure on actors who are tempted to resort to unilateral decision-making. For example, it may become politically costly for Laos to build the Xayabury dam if commonly agreed scientific knowledge identifies serious social or environmental problems. Consequently, the significant amount of scientific knowledge-generation in the key water-management institutions in these two cases also contributes to the exposure of stakeholders giving priority

to political or economic self-interest over the shared knowledge base and shared social or environmental concerns.

Thirdly, water governance processes in the Mekong and Danish cases have been relatively transparent and have involved government, business, media and civil society actors. This makes decision-making susceptible to public scrutiny and debate, thus influencing room for maneuver and the legitimacy of outright power politics. In India, formal decision-making and knowledge-generation subsumes to the informal and power-ridden political logics of corruption and patron–client relations. Whereas the principle of democratic governance is no magic bullet that guarantees social learning, evidence from these cases suggests that general features of the governance system – those outside the 'water box' – such as transparency, the rule of law, participation, free media etc. work as facilitating conditions for social learning with reference to normative ideals.¹⁰⁴

This corresponds to the common notion among proponents of normative ideals like IWRM and AWM that stakeholder participation and democratic institutions are the key tools in moving water governance processes towards their respective 'nirvanas' of integration or enhanced adaptiveness.¹⁰⁵ Despite the attention given to exactly the necessary transformations in prevailing practices, the AWM ends up in the same position as IWRM: as a *normative model* of how water management systems should be created to maximize the possibil-

102 Pahl-Wostl et al. 2007b: 5ff, Pahl-Wostl and Sendzimir 2005: 1ff.

103 E.g. the conflicting sector-specific research institutions in Denmark, biases in scientific consultancy reports in Chilika and Laos' strategic usage of EIA in the controversy over the mainstream dam in the Mekong case.

104 See Armitage et al. 2008: 94, Pahl-Wostl et al. 2007a: 10 for notions on the importance of democratic governance in social learning processes.

105 Lenton and Muller 2009: 214. Here the authors claim that the dominant political theme in IWRM is about democracy and the participation of stakeholders in decision-making processes regarding water management. See also Pahl-Wostl et al. 2007: 9ff.

ity of social learning and stakeholder involvement. Hence, AWM portrays an idealized picture of how water governance processes should be orchestrated.¹⁰⁶ Whereas AWM provides an important supplement to IWRM, it does not escape the fact that normative models need actors to be implemented locally. AWM processes, like the integration processes of IWRM, are likely to produce suboptimal, political and highly power-infused outcomes. Moreover, the institutionalization of new water management arrangements is likely to fall short of the adaptive ideals and their social learning imperatives. Consequently agents of change, whether governments, NGOs, water experts and international donors need to qualify the prevailing social engineering approach to IWRM and AWM with a strategic action approach based on careful contextual analysis of the current situation. This would entail identification of the options for change, the benefits and costs involved for various stakeholders, vested interests and potential allies and opponents in political struggles for change.¹⁰⁷ Such an approach deals directly with the inherently political and power-ridden character of water management, as well as seeking to create political spaces of contestation that may increase the chances that social learning processes with reference to normative ideals can be pushed towards more inclusive and deeper loops and therefore more profound changes.

¹⁰⁶ Interestingly, the concept has evolved through a series of action-research experiments that resemble laboratory-like situations such as the recent EU-funded Twin2Go-project, www.twin2go.eu. Evidence of implementation of the concept on a wider scale is not yet available.

¹⁰⁷ Such an approach is also advocated by Mollinga et al. 2007 and Saravanan et al. 2009.

8. CONCLUSION

The social learning processes involved in the translation of normative ideals into actual governance practices inevitably comprise the political economy of water – the reality of ‘what is’. Consequently, social learning does not occur independently of power politics and does not occur with any self-enforcing necessity. Normative ideals require some actors to adopt and advocate them in the local context. In this process, open, inclusive and transparent decision-making and implementation, as well as political support by authoritative actors, are crucial. Positively, political power can push social learning processes towards the normative ideals if it is used to build shared understandings, trust and regulatory capacity. Negatively, political power can impede social learning if actors use it to resist the changes envisaged and pursue partisan interests. Whatever the outcome, it is determined by the way the political processes unfold in the actual context in which the normative ideals are applied.

Despite the effect of the normative ideals on the water governance practices identified in the three cases, the simultaneous impediments related to the political economy of water suggest that *more* IWRM or AWM in itself does not suffice to take the social learning processes above the low-hanging fruits. Rather, the eventual accumulation of shared knowledge among stakeholders, significant political shifts and the alteration of power structures constitute the windows of opportunity that may make deeper degrees of social learning with reference to normative ideals possible. The recently elected centre-left government in Denmark, with its promises of doing more for the environment and a greener economy, may represent such a political shift. It remains to be seen whether implementation of the EU WFD will be lifted out of the current stagnation and the social learning process pushed towards a paradigmatic

ic transformation of the Danish agricultural sector. However, political struggles are inevitable and important determinants of such social learning processes.

Consequently, sober-minded and realistic expectations regarding the ability of normative ideals to solve the present water governance challenges should inform future attempts to design integrative or adaptive water governance systems. Whereas they may provide a frame of reference for agents of change, the eventual transformation toward their 'Nirvana' visions will be the result of long-term political processes, where strategic action, negotiations and trade-offs between the stakeholders involved in the micro- and macro-decisions of water governance on the ground provide the vehicle of change. Otherwise, they will remain misty mirages on the horizon of public policy-making.

Finally, we see the discourse on the relationship between normative water management ideals and politics or political economy as having universal application. It is relevant for most development priority areas, including climate change mitigation and adaptation, as well as for overall development policies.

REFERENCES

- Argyris, C., and Schön, D. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading: Addison-Wesley.
- Armitage, D., Berkes, F., Doubleday, N. (eds.) (2007). *Adaptive Co-Management: Collaboration, Learning, Multi-level Governance*. Vancouver: University of British Columbia Press.
- Armitage, D., Marschke, M., Plummer, R. (2008). Adaptive co-management and the paradox of learning. *Global Environmental Change* 18, 86-98.
- Barret, S. M. (2004). Implementation Studies: Time for a Revival? Personal Reflections on 20 Years of Implementation Studies. *Public Administration*, 82 (2), 249-262.
- Biswas, A. (2004). Integrated water resources management: a reassessment. *Water International*, 29 (2), 248-256.
- Biswas, A. (2008). Integrated Water Resources Management: Is It Working? *International Journal of Water Resources Development*, 24 (1), 5-22.
- Bourdieu, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press
- Bourdieu, P. 1991. *Language and Symbolic Power*. Cambridge: Policy Press
- Butterworth, J., Warner, J., Moriarty, P., Smits, S., and Batchelor, C. (2010). Finding Practical Approaches to Integrated Water Resources Management. *Water Alternatives*, 3 (1), 68-81.
- Chilika Development Authority and Wetlands International (2010): *Chilika Newsletter March 2010*, vol. V, 1-28
- Chilika Development Authority (2011a): *Aims and Objectives*. Accessed 26.10.2011 at www.chilika.com
- Chilika Development Authority (2011b). *Eco-restoration*. Accessed 26.10.2011 at www.chilika.com
- Chilika Development Authority (2011c): *Governing body*. Accessed 26.10.2011 at www.chilika.com
- Controller and Auditor General of India (2008). Functioning of Chilika Development Authority, Bhubaneswar. *Audit Report (Civil), Orissa for the Year 2007-2008, Chapter III: Performance Audit*, 94-104.
- Das, G. S. et. al. (1993). *The Report of the Fact-Finding Committee on Chilka Fisheries*. Submitted to Orissa High Court 16 August 1993.
- Dujovny, E. (2009). The Deepest Cut: Political Ecology in the Dredging of a New Sea Mouth in Chilika Lake, Orissa, India. *Conservation and Society*, 7 (3), 192-204.
- Dujovny, E. (2010). *Casteing the Net: The Making of a Lagoon and the Emergence of Case as Social Network*. Unpublished Ph.D. diss., Graduate School, University of Georgia.
- Dutta, K. (2011). Chilika fishermen set to battle prawn mafia themselves. *InfoExchangeIndia*. Accessed 26.10.2011 at <http://infochangeindia.org/environment/features/chilika-s-fishermen-set-to-battle-prawn-mafia-themselves.html>
- European Commission (2000). *Water Framework Directive. Directive 2000/60/EC*.
- Flood, R. L., Romm, N.R.A. (1996). *Diversity Management: Triple Loop Learning*. West Sussex: John Wiley and Sons.
- Foucault, M. (1990). *The History of Sexuality. Volume 1: an Introduction*. New York: Vintage.
- Ghosh, A. K. and Pattnaik, A. K. (2005) Chilika Lagoon: Experience and Lessons Learned Brief. In: ILEC (ed.): *Managing Lakes and Their Basins for Sustainable Use: A Report for Lake Basin*

- Managers and Stakeholders*. Kusatsu: International Lake Environment Committee Foundation, 115-132. Accessed 26.10.2011 at www.ilec.or.jp/eg/lbmi/.../08_Chilika_Lagoon_27February2006.pdf
- Ghosh, A., Pattnaik, A., and Ballatore, T. (2006). Chilika Lagoon: Restoring ecological balance and livelihoods through re-salinization. *Lakes and Reservoirs: Research and Management*, 11(4). 239-255.
- Giddens, A. (1984). *The Constitution of Society*. Cambridge: Polity Press.
- Global Water Partnership Technical Advisory Committee (2000). *Integrated Water Resources Management*. TAC Background Papers No. 4.
- Government of India Planning Commission (2008). *Report on Visit to Chilika Lake, Orissa, a Wetland included under the National Wetland Conservation and Management Programme of the Ministry of Environment and Forests*. Accessed 26.10.2011 at http://planningcommission.nic.in/reports/genrep/index.php?repts=b_repgen.htm
- Grant R., Paulsen I., Jørgensen V., Kyllingsbæk A. (2002). Vandmiljøplan II: baggrund og udvikling. *Jordbrug og Miljø 2*. Danmarks Miljøundersøgelser og Danmarks Jordbrugsforskning.
- Habermas, J. (1984). *The Theory of Communicative Action: Reason and the Rationalization of Society –Volume 1*. Boston: Beacon Press.
- Hall, P. A. and Taylor, R. C. R. (1996). Political Science and the Three New Institutionalisms. *Political Studies*, XLIV, 936-957.
- Hirsch, P. (2010). The Changing Political Dynamics of Dam Building on the Mekong. *Water Alternatives* 3(2), 312-323.
- Hirsch, P. and Jensen, K. M. (2006). *National Interests and Transboundary Water Governance in the Mekong*. Australian Mekong Resource Centre, University of Sydney, Australia.
- Hirji, R. and Davis, R. (2009). *Environmental Flows in Water Resources Policies, Plans and Projects: Case Studies*. World Bank Environment Department Papers, Natural Resource Management Series, no. 117, 121-128
- ICWE (1992) *The Dublin Statement and report of the conference*. International Conference on Water and the Environment: Development issues for the 21st century. 26-31 January 1992, Dublin, Ireland
- Jensen, K. M., and Ravnborg, H. (forthcoming). The Water Governance Challenge: The Discrepancy between What Is and What Should Be. Paper submitted for the IWRM 2011 conference, Dresden, Germany.
- Lebel, L., Grothmann, T., and Siebenhüner, B. (2010). The role of social learning in adaptiveness: insights from water management. *International Environmental Agreements: Politics, Law and Economics*, 10(4), 333-353.
- Leeuwis, C., Pyburn, R. (eds.)(2002). *Wheelbarrows Full of Frogs*. Assen: Koninklijke Van Gorcum.
- Lenton, L. R., and Muller, M. (2009). *Integrated water resources management in practice: better water management for development*. Global Water Partnership. London: Earthscan.
- Mekong River Commission (1995). *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin 5th April 1995*.
- Ministry of Environment and Ministry of Food, Agriculture and Fisheries (2004). *Agreement on the Action Plan for the Aquatic Environment III 2005-2015 between the Danish Government, the Danish People's Party and the Christian Democrats*, www.vmp3.dk

- Mishra, S., and Griffin, A. (2011). Encroachment: a threat to resource sustainability in Chilika Lake, India. *Applied Geography*, 30 (3), 448-459.
- Mohapatra, A., Mohanty, R., Mohanty, S., Bhatta, K., and Das, N. (2007). Fisheries enhancement and biodiversity assessment of fish, prawn and mud crab in Chilika lagoon through hydrological intervention. *Wetlands Ecology and Management*, 15 (3), 229-251.
- Molle, F. (2008). Nirvana concepts, narratives and policy models: insights from the water sector. *Water Alternatives*, 1 (1), 131-156.
- Mollinga, P. P., Meinzen-Dick, R. S. and Merrey, D. J. (2007). Politics, Plurality and Problemsheds: A Strategic Approach for Reform of Agricultural Water Resources Management. *Development Policy Review* 25 (6), 699-719.
- Mollinga, P. P. (2008). Water, Politics and Development: Framing a Political Sociology of Water Resources Management. *Water Alternatives* 1 (1), pp. 7-23.
- Mostert, E., Pahl-Wostl, C., Rees, Y., Searle, B., Tabara, D., and Tippet, J. (2007). Social Learning in European River-Basin management: Barriers and Fostering Mechanisms from 10 River Basins. *Ecology and society* 12 (1), Article 19.
- Nayak, P., and Berkes, F. (2010). Whose marginalisation? Politics around environmental injustices in India's Chilika lagoon. *Local Environment*, 15 (6), 553-567.
- Nayak, P., and Berkes, F. (2011). Commonisation and decommonisation: understanding the processes of change in Chilika Lagoon. *Conservation and Society*, in press, 9 (2), 132-145.
- Orissa High Court (1993). *Judgement on Kholamuhana Primary Fishermen Co-Operative Society And Ors., Etc. vs State Of Orissa And Ors. on 23/11/1993*. Accessed 26.10.2011 at <http://www.indiankanoon.org/doc/1874851/>
- Pahl-Wostl, C., Downing, T., Kabat, P., Magnuszewski, P., Meigh, J., Schlueter, M., Sendzimir, J., and Werners, S. (2005). *Transition to Adaptive Water Management: The NeWater Project*. NeWater Working Paper no. 1. Institute of Environmental Systems Research, University of Osnabrück.
- Pahl-Wostl, C. and Sendzimir, J. (2005). *The relationship between IWRM and Adaptive Water Management*. NeWater Working Paper no. 3. Institute of Environmental Systems Research, University of Osnabrück.
- Pahl-Wostl, C., Craps, M., Dewulf, A., Mostert, E., Tabara, D., and Taillieu, T. (2007a). Social learning and water resources management. *Ecology and Society*, 12 (2), 5.
- Pahl-Wostl, C., Sendzimir, J., Jeffrey, P., Aerts, J., Berkamp, G., and Cross, K. (2007b). Managing change toward adaptive water management through social learning. *Ecology and Society*, 12 (2), 30.
- Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change*, 19 (3), 354-365.
- Pattanaik, S. (2006). Commercialization of Shrimp Trade, Environment and Rural Poverty: A Socio-Ecological Exploration in Coastal Orissa. Paper presented at the Workshop on Trade, Environment and Rural Poverty, Institute of Economic Growth, University of Delhi. Working Paper Series No. E/274/2006, 1-25.
- Pattanaik, S. (2008). Conservation of Environment and Protection of Marginalized Fishing Communities of Lake Chilika in Orissa, India. *Journal of Human Ecology*, 22 (4), 1-12.

- Pattnaik, A. K. (2009). *Lake Chilika-a Ramsar site from India and its ILBM Challenges*. Paper presented at the 13th World Lake Conference at Wuhan, China. Accessed 26.10.2011 at www.wldb.ilec.or.jp/data/ilec/WLC13_Papers/S17/s17-12.pdf
- Pattnaik, A. K. and Trisal, L. C. (2003) *Integrated Management of Chilika Lagoon, India*. Case #268 in Global Water Partnerships Toolbox. Accessed 26.10.2011 at http://www.gwptoolbox.org/index.php?option=com_caseandid=160
- Pradhan, D., and Flaherty, M. (2008). National Initiatives, Local Effects: Trade Liberalization, Shrimp Aquaculture, and Coastal Communities in Orissa, India. *Society and Natural Resources*, 21 (1), 63-76.
- Radio Voice of Vietnam, 8 May, 2011.
- Radosevich, George, E. (1996), 'The Mekong: A New Framework for Development and Management'. In: Biswas, A. K. and Hashimoto, T. (eds.): *Asian International Waters: From Ganges-Brahmaputra to the Mekong*. Bombay: Oxford University Press.
- Ramsar Advisory Mission No. 50: India (2001). *Removal of Chilika Lake Ramsar Site, India, from the Montreux Record 9-13. December 2001*. Accessed 26.10.2011 at http://www.ramsar.org/cda/en/ramsar-documents-rams-ram50/main/ramsar/1-31-112%5E22934_4000_0__
- Ray, A. P. and Ray, S. (2007). Chilika Lease Policy: Threat to Environment and Fishermen. In P. K. Mohanty (ed.): *Lakes and coastal wetlands: conservation, restoration, and management*. New Delhi: Capital Publishing Company, pp. 399-406.
- Samal, K. (2002). Shrimp culture in Chilika lake: case of occupational displacement of fishermen. *Economic and Political Weekly*, 37(18), 1714-1718.
- Samal, K. and Meher, S. (2003). Fishing communities on Chilika Lake: comparative socio-economic study. *Economic and Political Weekly*, 38(31), 3319-3325.
- Saravanan, V. (2006). Integrated Water Resources Management: A Response. *Economic and Political Weekly*, vol. 41 (38), 4086-4087.
- Shah, T. and von Koppen, B. (2006). Is India Ripe for Integrated Water Resources Management? Fitting Water Policy to National Development Context. *Economic and Political Weekly*, vol. 41 (31), 3413-3421.
- Saravanan, V., McDonald, G., and Mollinga, P. (2008). Critical review of integrated water resources management: moving beyond polarised discourse. ZEF Working Paper Series, 29, 1-23.
- Saravanan, V., McDonald, G., and Mollinga, P. (2009). Critical review of integrated water resources management: moving beyond polarised discourse. *Natural Resources Forum*, 33 (1), 76-86.
- Statistics Denmark (2009). *Agricultural Statistics 2009*. Copenhagen: Statistics Denmark.
- Statistics Department (1960). *Statistical Yearbook 1960*. Copenhagen: Statistics Denmark.
- Supreme Court of India (1996). Judgement on S. Jagannathvs Union of India and Ors on 11 December, 1996. Accessed 26.10.2011 at <http://www.indiankanoon.org/doc/507684/>
- Times of India (2011.02.05). Illegal Chilika Gheries ace Demolition. Accessed 26.10.2011 at http://articles.timesofindia.indiatimes.com/2011-02-05/bhubaneswar/28354081_1_illegal-prawn-enclosures-gheris-traditional-fishermen
- Trandem, A. (2011). Milestones of concern: a timeline of concerns expressed over the proposed Xayaburi Dam September 2008 to July 2011. *International Rivers*. Accessed 26.10.2011 at http://www.internationalrivers.org/files/Milestones_of_Concern_Xayaburi.pdf

- UN General Assembly (1997). *Convention on the Law of the Non-navigational Uses of International Watercourses Adopted by the General Assembly of the United Nations on 21 May 1997*.
- UN-Water (2008). *Status Report on IWRM and Water Efficiency Plans Prepared for the 16th session of the Commission on Sustainable Development*. Accessed 26.10.2011 at <http://www.unwater.org/documents.html>
- Warner (2007). *The Beauty of the Beast: Multi-Stakeholder Participation for Integrated Catchment Management*. In: Warner (ed.). *Multi-Stakeholder Platforms for Integrated Water Management*. Hampshire: Ashgate.
- World Bank (2005). *Implementation Completion Report (IDA 28010): Orissa Water Resources Consolidation Project*. Washington, D.C.: World Bank.
- Öjendal, J. (2000). *Sharing the Good: Modes of Managing Water Resources in the Lower Mekong River Basin*, Ph.D. Diss., Department of Peace and Development Studies, Gothenburg University.
- Öjendal, J., Hansson, S., and Hellberg, S. (2011). *Politics and Development in a Transboundary Watershed. The Case of the Lower Mekong Basin*. In: Öjendal, J., Hansson, S., and Hellberg, S. (eds.). *Politics and Development in a Transboundary Watershed: The Case of the Lower Mekong Basin*. London: Springer.
- Öjendal, J. and Jensen, K. M. (2011). *Politics and Development of the Mekong River Basin: Transboundary Dilemmas and Participatory Ambitions*. In: Öjendal, J., Hansson, S., and Hellberg, S. (eds.). *Politics and Development in a Transboundary Watershed: The Case of the Lower Mekong Basin*. London: Springer.

