

Project Acronym: HighARCS

Project Title:

Highland Aquatic Resources Conservation and Sustainable Development

Deliverable 5.3 (IAP)

Title: An introduction to the HighARCS Integrated Action Plans, with an institutions, policies and conflicts perspective

By

*Assoc. Prof. Søren Lund, Department of Environmental, Spatial and Social Change,
Roskilde University*

Date: August 1, 2012

Lead beneficiary for the Deliverable: Roskilde University

**RESEARCH
PARTNERS:**



University of Essex



ieswm



Funded by the
European Commission



UNIVERSITY OF
STIRLING

Contents

Contents	2
1. Introduction	3
2. DPSIR category definitions (from D3.2)	4
3. Site Integrated Action Plans (IAPs) – policies & institutions.....	5
3.1 Beijiang River, China.....	5
3.2 Phu Yen, Son La, Viet Nam	10
3.3 Quang Tri, Central Vietnam	11
3.4 Buxa, West Bengal – Aquatic resources.....	15
3.5 Nainital, Uttarakhand.....	17
3.6 Closing remarks.....	18
References	19

1. Introduction

This report (Deliverable 5.3) is an introduction focused on institutions, policies and conflicts aspects, for the Integrated Action Plans (IAPs) produced by the HighARCS project for the 5 sites (see Annexes 1 to 5) for the full IAP documents). In conjunction with this policies focused report there are two additional reports that provide a similar assessment of the IAPs but with a conservation (D3.2) and a livelihoods (D4.2) perspective. There will also be an additional synthesis report (D4.3) that provides an interdisciplinary assessment of the IAPs, by comparing and contrasting the outcomes of the individual disciplinary assessments.

In this report each of the project sites IAP will be discussed separately, and will use a Driving Force, Pressures, State, Impacts and Response (DPSIR) framework as defined by Maxim *et al.* (2009) to present the relevant issues and proposed actions. A discussion of the choice of this methodology, its strengths and its weaknesses is presented in the Introduction to the Integrated Action Plans with a conservation perspective Report (D3.2). As mentioned there, “by using this model we hope to be able to use the DPSIR tables as more than just a communication tool and also as an analytical tool (in this document but primarily in the synthesis report) to help identify gaps and possible conflicts created through the IAPs (the ‘Responses’)”.

This report uses the DPSIR categories and definitions stated and discussed in Section 2 of the D3.2 report. To facilitate the reading of the present report, the definitions have been copied into section 2 of this report with a few adaptations. Section 3 summarises, with an institutions, policies and conflicts perspective, the IAPs from each site separately using the DPSIR framework to provide a clear communication of the actions being proposed and a simple analysis to highlight strengths and potential gaps within each IAP.

The ‘responses’ (actions) proposed within the IAP are diverse in their time frames, targets and implementers. In terms of time frames, the responses are divided into three categories: **Current actions** – currently being undertaken, mostly by government bodies and other stakeholders; **Short-term actions** – aim to be undertaken and completed in the short term (around 2 years) within the HighARCS project time frame and will be led or significantly contributed to by the HighARCS project; **Long-term actions** – beyond the scope of the HighARCS project and are unlikely to be undertaken or completed within 2 years, but will be communicated and recommended by the HighARCS project to the relevant decision making and implementing bodies.

2. DPSIR category definitions (from D3.2)

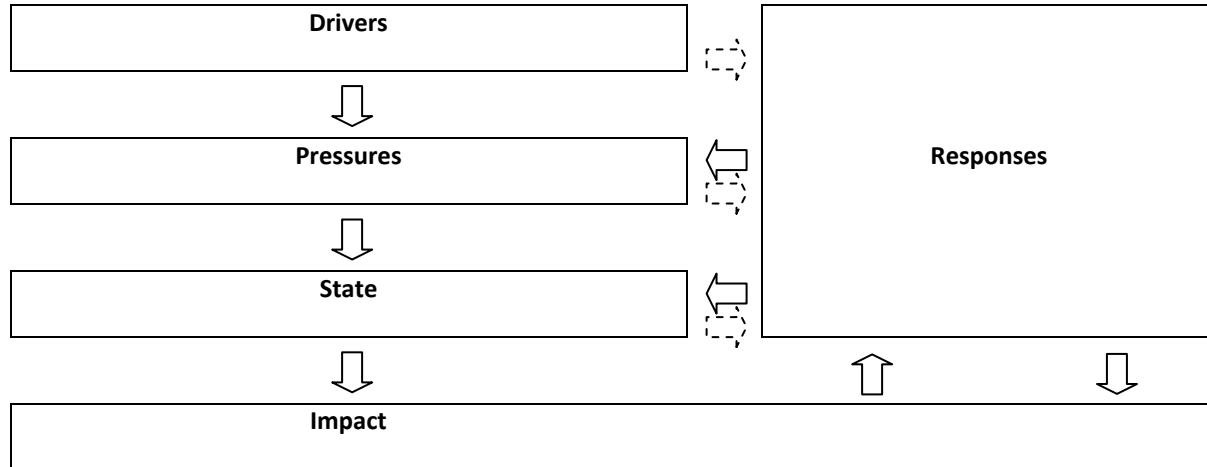


Figure 1. Driving forces, Pressures, State, Impacts, Response(DPSIR) framework.

Drivers. For the Integrated Action Plan Introduction reports, ‘Drivers’ or ‘Driving Forces’ are ‘changes in the social, economic and institutional systems (and/or their relationships) which are triggering, directly and indirectly Pressures’ (Maxim *et al.* 2009). As with most DPSIR literature (Maxim *et al.* 2009), only anthropogenic factors (manifested in political, social and economic factors) are included as Driving Forces. In this report, the Driving Force focus will be on the “institutional systems (and/or their relationships)”.

Pressures. Pressures are defined as ‘consequences of human activities (i.e. release of chemicals, use of resources) which have the potential to cause or contribute to adverse effects (Impacts)’ (Maxim *et al.* 2009). It could be argued that various management activities or incentives schemes (or lack of same) having potential adverse effects on aquatic resources or local livelihoods could be included in this category. However, for the purposes of this report, such institutional activities or structures are considered as belonging to the category of institutions and policy drivers.

State. Quoting the D3.2 report, State is defined as ‘the quantity of biological features (within species, between species, and between ecosystems) or physical and chemical features of ecosystems, and/or of environmental functions [i.e. ecosystem services] vulnerable to pressures’ (Maxim *et al.* 2009). The term supposes a comparative judgment with a given threshold considered sustainable. As mentioned in report D3.2, State has also been used to refer to natural and socio-economic systems for example levels of employment or income of an industry (Rogers & Greenaway 2005), and the MEA (2005) adopted the concept of ecosystem services to assess the magnitude and status of benefits derived by people from ecosystems.

For this report, with the intention of focusing on policies and institutions, it is suggested to extend the definition of “State” to include an empirical dimension including existing policy programs, legal texts and rule-systems aiming the protection of the environment and the improvement of local livelihoods, as well as the organizational setup for their implementation. At this level, the implied comparative judgment with a “sustainable threshold” could be expressed as the “adequacy of current legal provisions and institutional arrangements to reach goals and effectively implement legally defined regulatory standards of specific (international, national or local) policies of sustainable development”.

Impacts. Impacts are defined as ‘changes in the environmental functions, affecting (negatively) the social economic and environmental dimensions, and which are caused by changes in the State’ (Maxim *et al.* 2009). This definition applies well to the conservation action planning. The livelihood IAP introductory report focuses upon the socio-economic impacts. For this report, which is addressing policies and institutions aspects, emphasis is on the (negative) impacts of natural resource management practices and behaviors observed amongst the various social actors.

Responses. Responses are ‘policy actions, initiated by institutions, or groups (politicians, managers, consensus groups etc.) which is directly or indirectly triggered by (the societal perceptions of) Impacts and which attempts to prevent, eliminate, compensate, reduce or adapt to them and their consequences’ (Maxim *et al.* 2009). This category therefore is common to all three introductions, including of course policies and institutions.

3. Site Integrated Action Plans (IAPs) – policies & institutions

The DPSIR framework for each site has been populated with information provided by the IAP reports (see Annex) and the individual research reports on biodiversity and ecosystem services, livelihoods, and policy. This report is focusing on the policy aspects of the IAPs, therefore any actions proposed in the IAPs not directly related to policy have not been included (these issues will be covered in the other IAP introduction reports).

An overview of the general steps in the procedure engaged by each of the country teams to prepare the proposed action plans is provided in the D3.2 report and consequently they are not repeated here.

3.1 Beijiang River, China

The Beijiang IAP findings and proposed actions related to policies, institutions and conflicts are summarised and presented in the DPSIR framework (Figure 2).

According to the analysis made in the Institutions and Policies Report made for the Chinese site (D5.1, Sept. 2011), the **social and economic drivers** come from the growing population in the region. They form a pressure for improving their livelihoods, which in turn has put a tremendous pressure on the local natural resources. At present, the **state** from a socio-economic view is that most of the population in Shaoguan City is experiencing important improvements of their livelihoods through their participation in the economic growth of the area. However, the gap between the rich and the poor is increasing, and the livelihoods and the social status of the poorest part of the population such as fishers is declining. This may have negative overall **impact** on the stability of the society which is seen as a concern by the Chinese Authorities. The **response** of the government is already quite active. Measures such as poverty

alleviation plan, zero tax for farm products, allowance for the disable persons, free 9 year education, cooperative medical care system etc. are already in place. However, HighARCS research findings suggest that much still has to be done in the future, such as the establishment of a fisher's organization in order to give more voice to the fishers to have their needs considered by Chinese society.

The **physical** and **technical drivers** come from quickly changing land use patterns (China D5.1 report, 2011). As explained in the introduction to the conservation aspects, the rapid growth in population, industry and economy is creating an increasing demand for natural resources. These drivers in turn are creating many '**pressures**' in the form of habitat destruction of many aquatic resources by dam building, by water pollution, by sand mining, etc. The **state** of the aquatic resources is decreasing. Not only the amount fish stock is decreasing, but also the number of species is decreasing. The **impact** is very negative for the livelihood of fishermen and biodiversity. According to the China D5.1 report, the local government has taken steps (**responses**) to reverse the situation by actions such as more restrictions on the management of sand mining activities, setting up of fish preserve areas, setting up of no fishing season from 2011, releasing artificial raised fish fry, setting up more sewage treatment plants, strengthening reforestation process etc. However, the efficiency for the implementation of those actions is still needed to be improved.

Taking now the specific view on **institutional and policy drivers**, the previous report on institutions (China D5.1) showed how the **drivers** come from the multi-factors and multi-disciplinary nature of the sustainable development and preservation of aquatic resources in the region. This gives a **pressure** on setting up an efficient communication and coordination system among different sections of the society. It also gives a great **pressure** on the legislation and policy makers who usually have their discipline limitation for understanding the whole story. The **state** is that although legislation and policy framework has been set up, more workable details are often lacking. Although leader of local government can coordinate the effort of different departments of the government, the daily activities are still quite separated with each other and the channel opened for communication and coordination is not enough. These situations have negative **impact** on the system. The report also concluded that it seems that the local government is not aware this situation and has not taken enough measures of **response** to improve the communication and coordination systems. Due to the limitation of the legislation power, the local people's congress has also taken very few actions to respond to the situation.

Current responses

As it has already been mentioned in the introduction to the conservation aspects of the Integrated Action Plans, all of the current actions are implemented by regional government departments and have little involvement/input from the HighARCS project.

The report points to one of the key current policy and institutional actions relevant for conservation at the site being the response R1.4 *Improved regulations regarding water pollution* which is implemented by The Shaoguan Bureau of Environment Protection (with co-operation with Dabao Shan Mining Cooperation and other factories). However, as it was pointed out, heavy pollution from iron ore mining and other mining activities still exists in the Bejiang River at the site and the Shaoguan Bureau of Environment Protection are developing new plans to prevent and treat heavy metal pollution from Shaoguan.

Another key current action mentioned above is response R1.3 *Setting up Aquatic Conservation Zone office*, which aims to develop a specific office (team) to administer and monitor the 9 aquatic resource protection zones that currently exist in the Beijiang River within Shaoguan. Currently the zones have no specific officer, and are assigned under the Guangdong Provincial Fishing Monitory Team who do not have time or resources to administer these zones, which has led to illegal activities such as sand mining occurring within them.

A third on-going response is the R1.6 *Increased numbers of fish fry release*, with up to 100 thousand fish fry released each year.

The livelihoods issues addressed by current actions considered in this project are concerned with the livelihoods of the fishers. The local fishers have traditionally lived off the catch of wild fish in the river. But the yearly fish catch has decreased steadily since the 1950's from 8,000 T (1950s) down to 2,000 T annually (2009). As mentioned in the livelihoods introduction, the authorities have tried to regulate access to fishing through a license system giving rights for boat fuel subsidies.

New actions

The actions that involve significant input from the HighARCS project and are key for conservation at the site are the 'New - short term' actions and 'New - long term' actions are described in the conservations section.

In terms of the DPSI targets of the actions proposed, the only category not (directly) targeted is the Drivers. As it is argued in the conservations section, this is expected as the scale of the Drivers at the site are national and international, and therefore only macro scale responses, such as national policies and international events, can address the increasing demand for natural resources. Such actions are beyond the scope of the HighARCS project.

However, from a policies action planning perspective, HighARCS can work on linking up to these levels by actively pursuing a number of response strategies.

Response strategies

Five main response elements have been identified. *First*, HighARCS should work on supporting the local authorities in setting up a more comprehensive (integrated) planning system, which mainstreams a procedure of stepwise communication and coordination amongst the different relevant disciplines and institutions presently working in a more secluded way. *Secondly*, HighARCS should continue efforts of supplying a more adequate knowledge base for local stakeholders and authorities to base their planning and coordination efforts on. *Thirdly*, this knowledge base should be used to support local stakeholders and authorities in developing specific response strategies adjusted to local context and specific conditions. *Fourthly*, it is important to support the establishment of a grass roots fishers' organization and to engage in lobbying for extending the same rights to the fishers as urban dwellers with regards to public welfare programs and subsidies. *Finally*, activities of education and media campaigns are needed in order to promote the establishment of public consensus on wise use solutions to aquatic resource management.

Summary

The overall analysis of the Beijiing River Site seen from the institutions and policy perspective can be summarized as follows (Fig 2):

Fig. 2 DPSIR Policy and Institutions analysis, Beijiing River, China



▪ Fishers' voice is too weak to be heard and considered by the authorities and other stakeholders



State (S) of policies and institutions

- Legal rules related to environment protection, wild animal protection, protection of water resources, protection of forestry, and farmland resources protection are existing at national and provincial and city levels.
- Specific rules for the implementation of the law however are not fully in place
- Fishers are not formally organized
- Government officers' performance is rated by their contribution to economic growth rather than to environmental protection or the livelihoods of marginalized small communities
- No specific institution has the responsibility of coordinating cooperation between line ministries and different levels (national-province-local) with regards to the conservation of ecosystems of the river.



These strategies could be focused on specific types of measures, such as:

- Intensifying enforcement of rules and regulations (closed seasons for fishing; limits to sand digging)
- Establish fishery resources compensation system (improve social security and alternative vocational training for fishermen to permit conversion to other jobs)
- Introducing mitigating measures (artificial "fish nests", fish stocking)
- Develop Legislation (texts) on biodiversity restoration
- Establish a coordinating mechanism between government agencies



Impacts (I)

- Insufficiently controlled and managed situation of Drivers of environmental degradation such as hydro-power dams, polluting industries, sand mining and over-fishing.
- No compensation given to fishers for loss of fishery resources
- Over-fishing continues
- Enforcement of rules on water protection is weakened by poor coordination
- The goals of environmental/biodiversity conservation and livelihood policies for fishers are not met
- Institutional capacities and arrangements are unable to enforce rules adequately

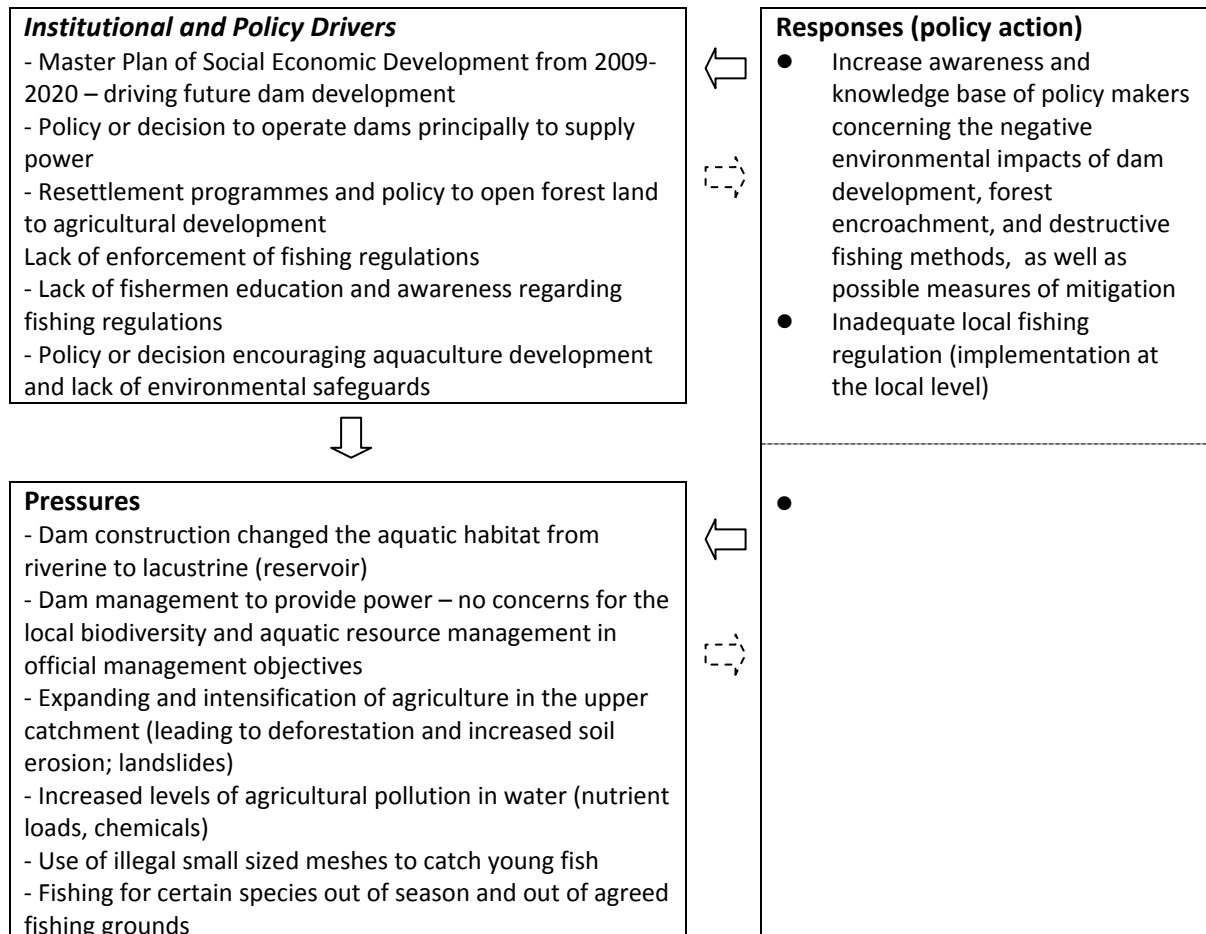
3.2 Phu Yen, Son La, Viet Nam







The main issue of sustainable management of aquatic resources in Son La is the impact of the hydropower station and the dam. There is a lack of awareness of the national environmental policy goals amongst much of the local and provincial staff in the area, both with regards to the ecosystem consequences of the changed habitat caused by the dam, as well as the environmental challenges and threats implied by the development of aquaculture in the dam. Moreover, the rules and regulations for fisheries in the lake are not adequate to assure a controlled catch and fair conditions of access to the resource, and the fishers' voice is weak due to lack of a fishers union where fishers' interests can be articulated and management problems solved.

The proposed policy action plans for this site consequently have sought to address these challenges, by suggesting awareness raising and training of local government officers, support in setting up a fishers' management group and working out of local fisheries management rules, and in producing local resource management guidelines. Moreover, fish restocking programmes and research on fish seed production for rare species are proposed.

As explained elsewhere, however, this site has not been maintained for implementation.

Fig. 2: DPSIR Policy and Institutions analysis: Phu Yen, Son La, Viet Nam



<ul style="list-style-type: none"> - Use of destructive fishing practices (explosive and electricity) - Aquaculture and fisheries development in the reservoir - Introduction of non-native invasive species 		
		
<p>State <i>Institutional and policy aspects</i></p> <ul style="list-style-type: none"> ● A national legal framework on environmental protection, biodiversity protection, forestry protection and fisheries exist ● Specific guidelines for local level implementation are not fully elaborated ● Local government institutions do not have the resources & staff to implement policies and reinforce rules fully ● Local fishers are not organized 	 	<ul style="list-style-type: none"> ● Implement the Fisheries Law by elaborating specific lists of prohibited and limited fish species; ● Create local fishing management group to make rules and determine fish size at harvest ● Research on seed production for rare fish species ● Introduce fish restocking programmes
		 
<p>Impacts <i>Institutional and policy aspects</i></p> <ul style="list-style-type: none"> - Enforcement of regulatory measures of fishing is not always observed - No restrictions on prawn/shrimp fishing leading to overfishing - No monitoring of fish species and biodiversity 		

3.3 Quang Tri, Central Vietnam

Policy, institutions & conflict issues

In Quang Tri, there are issues of lack of local awareness of the laws on biodiversity, weak institutional capacity and weak implementation of laws, similarly to the situation in Son La. There also seems an issue of unclear division of roles between various local authorities (D5.1, Vietnam).

As in Son La, the main conflict with regards to aquatic resources lies between hydropower dams and river biodiversity. The area being particularly poor, with parts of the local communities belonging to politically marginalized hill tribes, HighARCS has decided to limit the Vietnam action plan implementation to this site.

In Dakrong district, with the objective to support socio-economic development and quick poverty reduction in Dakrong district for the period 2009-2020, the industry of mineral exploitation has been given priority to develop. The Dakrong District focuses to invest in the exploitation of sand and grit production line in Dakrong River (in Ba Long and Mo O commune). Investment for infrastructure and service for gold mining in A Vao, A Bung and Ta Long commune is also going on, using local labour and with a management objective to limit environmental impact and increasing the revenues of the district. Currently, in Dakrong district, there are several places for gold mining.

According to the Dakrong master plan, some animal feed factories, food processing, handicraft, textile and wood processing will be built in district in the period 2009-2020 (Quang Tri Planning and Investment Department, 2011). If the district doesn't have a specific plan for environment management, the waste from these factories will create negative impact on environment as well as water quality and thus biodiversity.

The master plan of Dakrong district encourages local people to make an integrated system (pond-garden- livestock) in household scale. There is no fishery policy in the master plan but, fish is an important food source for local people and in recently aquatic resources are highly exploited and the indiscriminate fishing methods, such as use of poison and electric equipment are still present. The limitation in awareness of conservation and difficulties in livelihood has contributed greatly to the degradation on fish populations.

Local authorities believe that propaganda promoting the fishing law and awareness-raising in aquatic conservation is important for biodiversity conservation. However, fishing within the boundaries of the law does not provide the people enough fish to ensure survival so they are still pushed into illegal fishing. If fishing is strictly banned people lose their job and livelihood so there is no easy solution for this issue.

In many places around the region, it is often observed that there is a conflict between the environment and the development of agriculture and forestry. In Dakrong, it is planned to make concentrated production areas in agri-forest. It's encouraged to plant cereal trees, industry trees (rubber, pepper...) and providing land for planting the forest (D5.1, Vietnam). It seems that there are no conflicting interests in policies on agricultural development and biodiversity conservation in Dakrong district. However, some stakeholders complain about flushed out waste from the coffee plantations having a negative impact downstream on the quality of the water for the fish. Likewise, it is to be expected that the increased modernization of agriculture in the area will increase pollution from pesticides.

Policy Action Plans

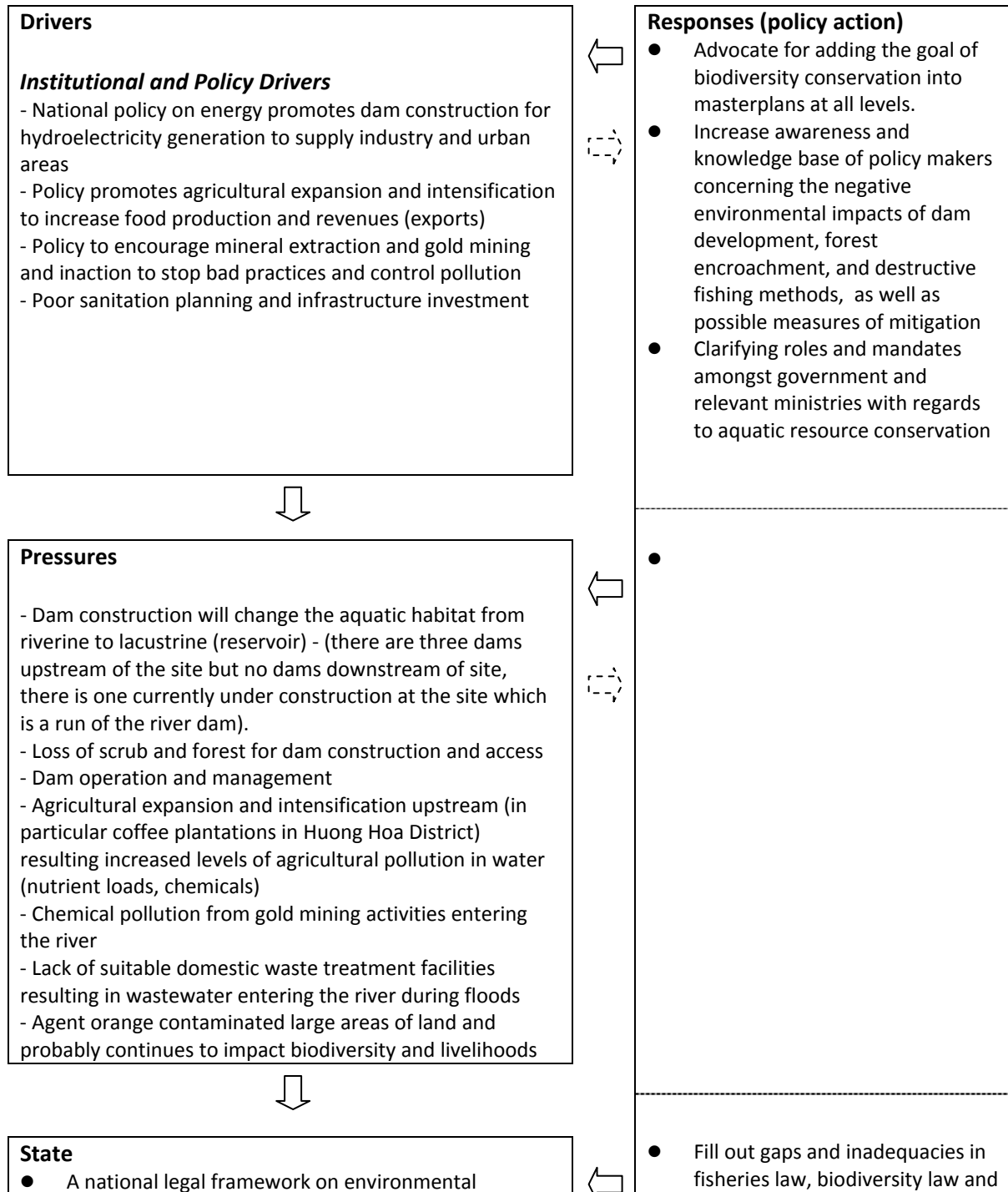
The Quang Tri site action plan has a number of policy and institutions related action plan proposals.




One proposal is addressing the issue of the waste from the coffee plantations and the claimed oil-spill from the hydropower stations by **introducing stricter regulations for coffee factories and hydro companies** in order to reduce this pollution. This action plan includes the development of water quality monitoring systems to be run locally and an awareness plan for local farmers and authorities on the impacts of pesticide use in agriculture. Facilitating, documenting and analyzing the process of institutionalizing water quality monitoring and how the results from this will influence the enforcement of environmental regulation on polluters will be one of the important activities of WP8 at the Quang Tri Site.

A second proposal is about **improving local people's knowledge about laws for environment protection** in general. This proposal includes training of local farmers on effective and sustainable forestry methods, as well as age and gender specific campaigns on fishing and forestry regulation and better practices through communication media like the local radio, posters or trainings, or events like a contest

for school children. The proposal is to be matched with a more specific activity *of improving local peoples' knowledge about fishing regulations and law of fish protection*, using the same tools (training, media communication), and making an *atlas of fish species*. A framework of how to best monitor, document and analyse the outcome of the implementation of these projects is currently under preparation in collaboration with work packages 6, 7 and 9. A multi-stakeholder perspectives approach will be applied.

Fig. 3 : DPSIR Policy and Institutions analysis: Quang Tri, Viet Nam



<p>protection, biodiversity protection, forestry protection and fisheries exist</p> <ul style="list-style-type: none"> ● Specific guidelines for local level implementation are not fully elaborated ● Local government institutions do not have the resources & staff to implement policies and reinforce rules fully <p>-</p>	<p>providing detailed guidelines for communes</p> <ul style="list-style-type: none"> ● Decentralization of aquatic resource management responsibilities with community participation ● Increase staffing responsible for aquatic resource conservation ● Allocate budget to the local communes and districts to enhancing local peoples' knowledge about fish stock and aquatic environment issues and for training local employees in aquatic resources conservation.
	 
<p>Impacts <i>Institutional and policy aspects</i></p> <ul style="list-style-type: none"> - Biodiversity monitoring capacity and commitment from appropriate institutions not adequately assured - Existing conservation and livelihoods policy frameworks not fully deployed - Public participation and awareness is low 	

3.4 Buxa, West Bengal – Aquatic resources

Issues of policy, institutions and conflicts concerning aquatic resource management and livelihoods

The most important institutional factor is the fact that Buxa is located within a Tiger Reserve. As the area falls under the Reserve Forest Act, governance of the area is influenced by the Department of Forestry on subjects related to forest and natural resources management. This makes things complex. On the one hand where there is the possibility of resources optimization, on the other there is always an avoidable conflict between the Department of Forestry and other local agencies including Department of Panchayat. No local planning initiatives can take place unless it is ratified by the Department of Forestry.

The institutional and policy framework, as it exists in Buxa, often comes in to conflict with the local actions people might take for the conservation of biodiversity and livelihoods. For example people cannot take such actions without going through a complex system of obtaining permission from the Department of Forestry and other related line departments. This is the context for testing the feasibility of local actions related to aquatic resources management taking the community as the anchor.

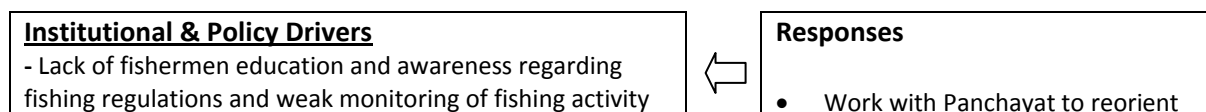
Research findings (Buxa, D5.1, D5.2) suggest that although there is the possibility of convergence and synergy among different actors, including communities, this is not achieved because of a number of constraints including lack of awareness about various policy perspectives, conflicting legal regimes and policies and lack of trust among the agencies and individuals. Consequently it was proposed that Integrated Action Planning would hold this as a critical consideration while evolving testable and feasible Integrated Action Plans during the current phase of the project.










Proposed Policy Actions

The proposed actions to be undertaken to address the challenges mentioned in the previous section mainly consist of gender and age as well as stakeholder specific capacity building for biodiversity conservation (self-help groups; local authorities). This will be matched with similar activities in view of building awareness and provide information about biodiversity conservation and about the legal acts and rules of protection and management, and activities facilitating the setting up of community-run farmers' clubs and innovation forums, where local farming communities engage innovative activities related to their livelihoods and the management of local aquatic resources. The project will similarly also work with the Panchayat to "reorient and sharpen their governance efficiency" (IAP, Buxa). Another livelihoods oriented policy initiative is to set up a livestock and insurance programme.

The activities of WP8 will largely consist in documenting and understanding how these proposals are being discussed, negotiated and adapted in on-going participatory planning and subsequent implementation process.

Fig. 4 : DPSIR Policy and Institutions analysis: Buxa, West Bengal, India



<ul style="list-style-type: none"> - Poor regulation and controls on mining and forestry upstream and in adjacent areas - Poor monitoring and regulation of agricultural activity permitting inappropriate practices on farms, notably those close to rivers 		<p>and sharpen governance efficiency</p>
		
<p>Pressures</p> <ul style="list-style-type: none"> - Sand and boulder mining from river beds (causing localised impacts on stream morphology and water quality) - Increased levels of agricultural pollution in water (nutrient loads, chemicals) - Use of destructive fishing practices (poison) impacting water quality - Mining for bauxite and dolomite in Bhutan results in silt and spoil being carried down rivers into Buxa site and deposited in river channel - Forest cover loss outside Buxa Tiger Reserve and in Bhutan leading to soil erosion upstream and increased sediment loads in rivers and raising of river beds - Continued land-use and agricultural practices that result in soil erosion and land-slides during the monsoon 	 	<ul style="list-style-type: none"> • Build capacity of local self help groups for biodiversity conservation activities • Awareness building and information dissemination about biodiversity and prevention of misunderstandings of provisions and acts • Catalyze setting up community owned farmers clubs/Innovation Forums
		
<p>State <i>Institutional and policy aspects</i></p> <ul style="list-style-type: none"> • The Environment Protection Act and the Biodiversity Act of 2002 are the main legal frameworks for biodiversity conservation in India. However, the Buxa area is classified as a Tiger Reserve under the authority of the Forestry Services. Biodiversity conservation of aquatic resources is not the main policy concern for Tiger Reserves. Forestry agent awareness of other biodiversity concerns than tigers is weak. Constraints on livelihood options of the population. 	 	
		 
<p>Impacts <i>Institutional and policy aspects</i></p> <ul style="list-style-type: none"> • Forestry services do not actively address decline in aquatic resources • There is a conflict of interest between livelihoods aspirations of the local communities and the tiger reserve management strategies of the Forestry Department. This also implies mutual lack of trust. There is a need of mediation. 		

3.5 Nainital, Uttarakhand

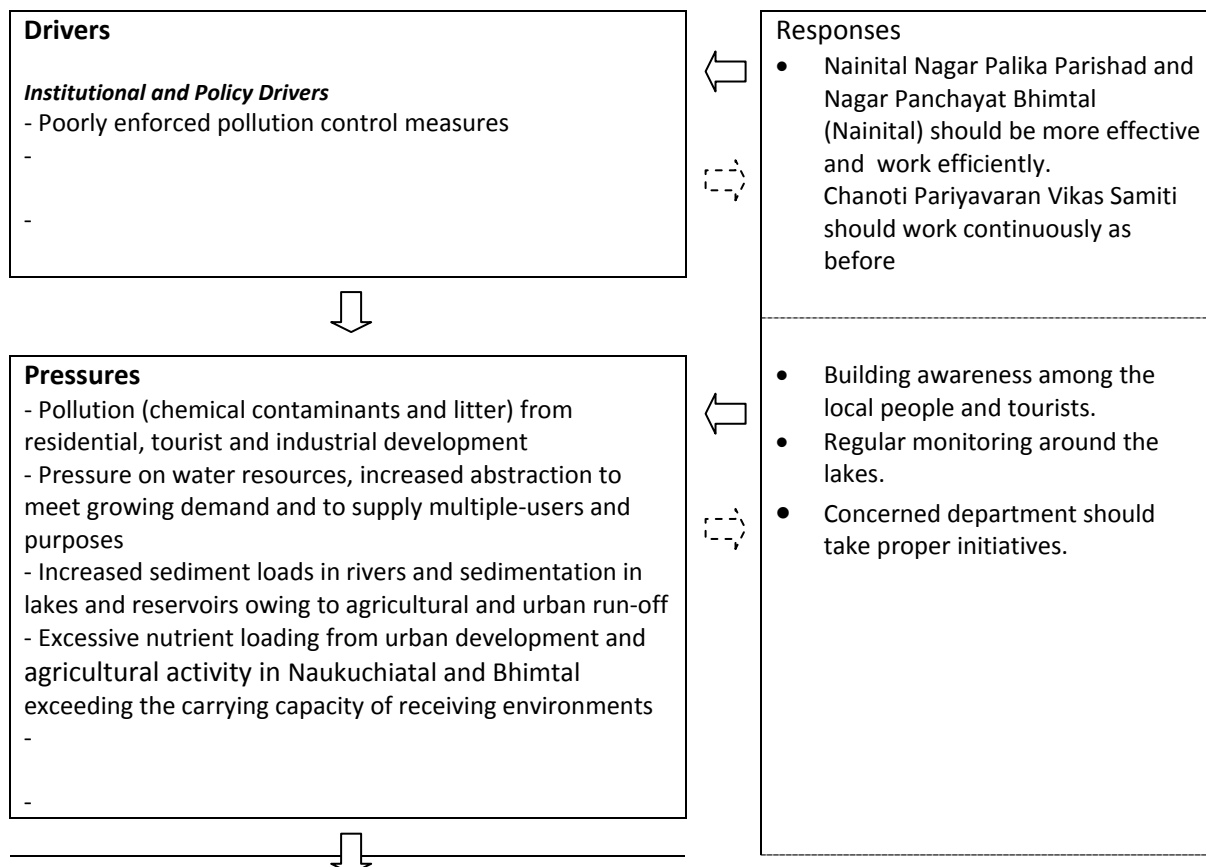
Policy and institutions issues

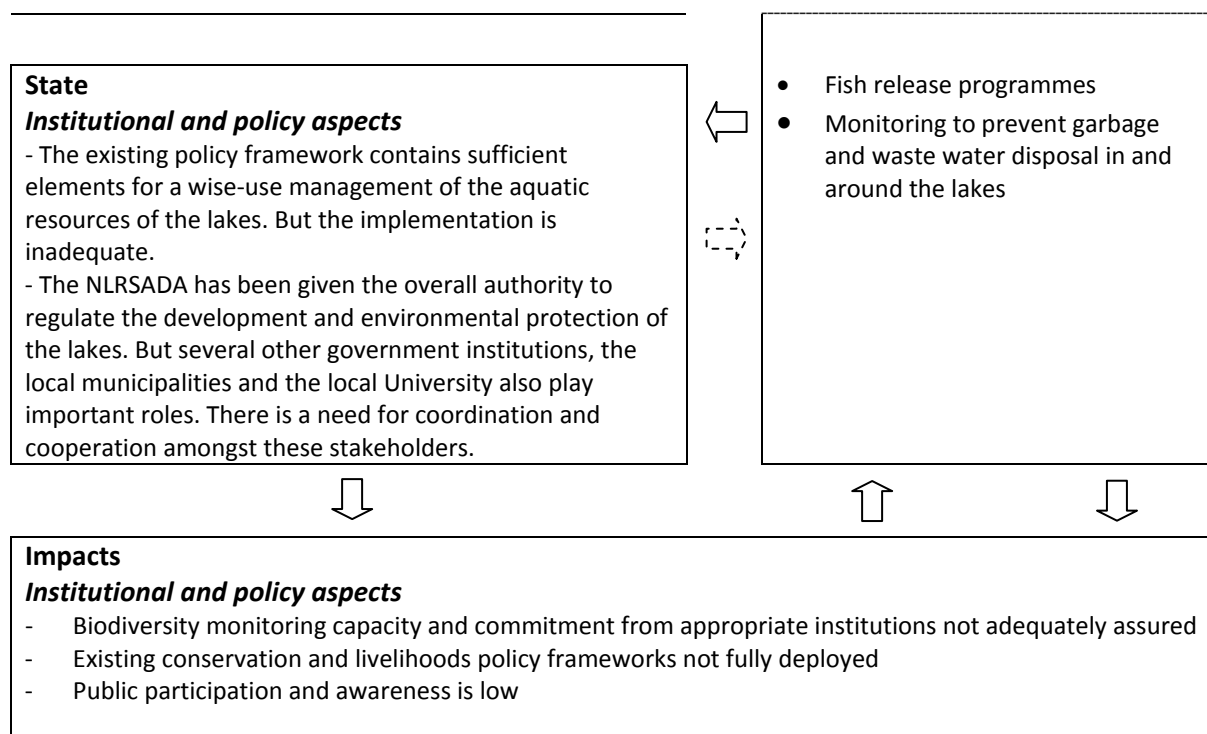
As it has been reported in D5.1, Uttarakhand site, a very complex set of legal provisions and governance institutions is characterizing the policy and institutions situation at the Nainital site in Uttarakhand with regards to conserving biodiversity and the ecosystems of the lakes, and to promoting the livelihoods of the local communities. Fishing, boating, hotels, restaurants, shops around and in the lakes constitute sources of pressure having necessitated the adoption of regulatory measures. Increased pressure from roads and housing construction and sewage issues likewise has made public regulatory and remedial measures to be taken. The organizational set up of the public authorities is also quite complex with multiple state agencies, NGOs, CBOs and local administrative organs in need for negotiation of conflicts or competing interests, concerted action, and coordination of efforts.

Proposed policy actions

The proposed policy-related actions are mainly focusing on establishing or improving existing monitoring and rule enforcement systems with regards to garbage disposal, crop protection from wild animals, awareness raising and improved coordination and access to relevant knowledge. Policy actions in the domain of ecosystem conservation such as increase of fish release programmes or desilting of one of the lakes (lake Bhimtal) have also been proposed.

Fig. 5 : DPSIR Policy and Institutions analysis: Nainital, Uttarakhand, India





3.6 Closing remarks

This introduction has given an overview of the Integrated Action Plans developed for implementation at the five HighARCS project sites from the institutions, policies and conflicts perspective. It has been shown that, across sites, policy programs, legal texts and rule-systems aiming the protection of the environment and the improvement of local livelihoods exist and complex organizational set-ups are in place through which they are being implemented. Within this institutional framework, competing interests and concerns for access to and use or protection of the local aquatic resources are being played out. The report has shown that significant institutional challenges exist if the state of the aquatic resources is to be protected or improved, such as the need to develop integrated planning systems with stepwise communication and coordination amongst the relevant domains of expertise and concerned institutions; the provision of adequate knowledge base for local stakeholders and institutions; and supporting them in developing specific response strategies. In some cases, legal provisions (rule-systems) are lacking or insufficient and work has to be engaged to address this. Conflicts amongst user groups and local institutions have been observed to exist at all sites, and various measures are being suggested to address these conflicts through combined efforts of organization of community groups and user groups, mediation and facilitation of negotiations amongst stakeholder; and more general activities of training and awareness raising. More detailed analyses of the situation can be read in the respective country reports, and the strategy of implementation and monitoring in a separate report.

References

- Baoguo, J., Quandian, W., Min, G. and Shiming, L. 2011. Institutions, Policies and Conflicts Related to Sustainable Use and Protection of Aquatic Resources in Beijiing River Watershed, China. HighARCS Project, Work Package 5 report. South China Agricultural University.
- Kundu, N., Pal, M., Chatterjee, P., Ghosh, S. and Nag, G. 2011b. Institutional, policy and conflicts report Uttarakhand site, India. HighARCS Project Work Package 5 report. Centre For Environmental Management And Participatory Development, and Institute Of Environmental Studies And Wetland Management, Kolkata, India.
- Maxim, L., Spangenberg, J.H. and O'Connor, M. 2009. An analysis of risks for biodiversity under the DPSIR framework. *Ecological Economics*. 69:12-23.
- Mishra, R. and Ray, D. 2011. Institutions, policy and conflict Final report from Buxa West Bengal. HighARCS project Work Package 5 report. Centre for the Development of Human Initiatives, Jalpaiguri, India.
- Nguyen, T.D.P., Nguyen T.H.T., Do, V.T., Nguyen, T.T. and Nguyen, H.D. 2011a. Freshwater ecosystem services and biodiversity values of Phu Yen District, Son La, Viet Nam. HighARCS Project Work Package 3 report. Research Institute for Aquaculture No.1, Viet Nam.
- Nguyen T.H.T., Nguyen, T.T. Do, V.T. and Nguyen, T.D.P. 2011b. Report on institutions, policy and conflict in highland Aquatic conservation in the Northern and Central of Vietnam. HighARCS Project Work Package 5 report. Research Institute for Aquaculture No.1, Viet Nam.
- Nguyen, T.D.P., Nguyen T.H.T., Do, V.T., Nguyen, T.T. and Nguyen, H.D. 2011c. Freshwater ecosystem services and biodiversity values of the Dakrong River, Quang Tri, Viet Nam. HighARCS Project Work Package 3 report. Research Institute for Aquaculture No.1, Viet Nam.
- Pal, M. and Kundu, N. 2011. Freshwater ecosystem services and biodiversity values at Nainital, Uttarakhand. HighARCS Project Work Package 3 report. Centre For Environmental Management And Participatory Development, and Institute Of Environmental Studies And Wetland Management, Kolkata, India.
- Phuong, N.T.D., Thinh, D.V., Nguyen, T.H.T., Nguyen, T.T. and Nguyen, H.D. 2010. Report on livelihoods dependent on highland aquatic resources in the Northern of Vietnam. HighARCS Project Work Package 4 report. Research Institute for Aquaculture No.1, Viet Nam.
- Ray, D. and Mishra, R. 2011. Freshwater ecosystem services and biodiversity values at Buxa, West Bengal. HighARCS project Work Package 3 report. Centre for the Development of Human Initiatives, Jalpaiguri, India.
- Shiming, L., Kunzheng, C., Huihong, Z., Ke, C., Lian, G., Jinghua, F., Xueying, Z., Xiaoli, T., Jia'en, Z., Yanqong, Y., Huashou, L. and Hongzhi, H. 2011. Freshwater ecosystem services and biodiversity values of the Beijiing River, China. HighARCS Project, Work Package 3 report. South China Agricultural University.
- Springate-Baginski, O., Allen, D. and Darwall, W. 2009. An integrated wetland assessment toolkit. International Union for Conservation of Nature and Natural Resources, Gland, Switzerland and Cambridge, UK.
- Svarstad, H., Peterson, L.K., Rothman, D., Siepel, H. and Watzold, F. 2008. Discursive biases of the environmental research framework DPSIR. *Land Use Policy*. 25(1):116-125
- Millennium Ecosystem Assessment. 2003. *Ecosystems and Human Well-Being: A Framework For Assessment*. Island Press, Washington.