



Adaptive learning

Lessons from Southern Lao PDR

ACKNOWLEDGEMENTS

These guidelines have arisen from a perceived need to synthesise, in an accessible manner, the experiences gained from trying to implement an adaptive learning approach to fisheries management in Southern Lao PDR. Starting in 1999, the Adaptive Learning project has developed, tested and evaluated the approach and some of the lessons learnt are described in this short booklet.

The experience, the result of close collaboration between MRAG Ltd, (London, UK) and the RDC (Savannakhet, Lao PDR) could not have been gained without the help and participation of a vast number of people. In particular, we thank the Department of Livestock and Fisheries, (DLF), in Savannakhet for making their staff available whenever possible, and the district staff of 8 districts in Savannakhet and 4 districts in Khammouane who worked with energy and enthusiasm throughout. Very little would have been achieved without the interest and effort of the 38 villages who are managing community fisheries and who shared their knowledge and experiences with us. We are extremely grateful to them.

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Cover photo. Sunrise over rice fields in Champon, Savannakhet, Lao PDR taken by Simon Bush

It is also anticipated that copies of these guidelines will be downloadable from the MRAG website (<http://www.mragltd.com>) and the Fisheries Management Science Programme website (<http://fmisp.org.uk>)

WHY THIS GUIDE?

For the last three years we have been applying an 'adaptive learning' approach to the management of small waterbodies in Southern Lao PDR. Results have suggested that the approach is a very promising one for the co-management of natural resources in conditions where management 'best practice' is uncertain or unknown. These guidelines are a result of our wish to share our experiences with a wider audience.

What is adaptive learning?

This will be discussed in more detail on later pages but briefly, experience with the management of many renewable natural resources has shown that often benefits from management are either less than expected or

are not sustained, because management advice is either not available or, being provided in a top-down manner, is too generic to account for local complexities and the uncertainties they create.

Adaptive learning is a management approach that explicitly recognizes that uncertainties exist and, instead of glossing over them, seeks to reduce them at the same time as managing the resource. In such cases learning, and reducing uncertainties about the resource system being managed, become a crucial component of management itself.

Our experience: Adaptive learning in Southern Lao PDR

Stocked communal waterbodies bring

vital income to villages in Southern Lao PDR, enabling them to pursue their own village development priorities as well as providing an important insurance device for the rural poor in



Stocking in Xieng Hom village as part of a management experiment

times of need. However, many villages lack experience and technical knowledge and, being isolated from each other, their learning is slow (for more information about these systems see the community fisheries guidelines in the same series).

In collaboration with local government staff, the project addressed these needs by actively engaging 38 villages managing community fisheries in locally relevant experimental research. Working together, this process enabled them to share their skills and knowledge with each other and with project and gov-



Villagers and government district staff record catches at a fishing day

ernment extension staff at the same time as generating new information that



Villagers discuss the results of the management experiment together.

would be useful in the future. The management experiment resulted in recommendations for stocking based on waterbody productivity and, in addition, generated valuable information about benefits and constraints of different management systems. The immediate result has been increased fish yields and community income for villages, and an increase in the technical and socio-economic understanding of all involved. With emphasis on developing a process that increased

capacity, shared responsibilities and encouraged meaningful participation, the information

network created has laid foundations for continued learning in the future.

Who is this guide for?

This guide is aimed at anyone involved in renewable natural resources management in a development context. It will be of particular use to organisations that are already involved, or who intend to be involved, in assisting communities to learn about and improve the management of their natural resources.

A FOCUS ON LEARNING

Why learning?

Unwelcome but true, management of natural resources often has to proceed with incomplete information. Natural resource systems are extremely complex and the interactions that exist within and between resources and resource users are often only partly understood, if at all. In addition, resource systems can show immense local variability making generalisation difficult. The failure of generalised solutions, often presented as 'blue-prints', in complex and uncertain environments has led to increased focus on management approaches, like adaptive learning, that can potentially provide more location specific & dynamic solutions.

First appearing in the mid 1970's, adaptive

learning approaches have been developing separately in the renewable resources management, economic policy, and development management fields. While emphases have been different, these approaches have shared the same fundamental idea - management action is necessary despite imperfect knowledge and management should therefore be part of a structured learning process where management and learning are occurring at the same time.

This contrasts with more traditional management approaches, particularly in the natural resource fields, where learning is usually detached from the decision making process, with an emphasis on learning before managing,

What is learning?

Much has been written about the nature of learning, and of particular relevance here, organisational learning (for references see p30). Whilst many views abound, a conceptualisation that we found useful in implementing an adaptive learning approach (and one used again in this booklet) was to see it as a 3 stage process: Information generation, information sharing & information utilisation (see diagram).

The diagram is depicted as a circle because the implementation of a learning approach can lead to more information generation in and of itself.

PRINCIPLE 1

Generating information

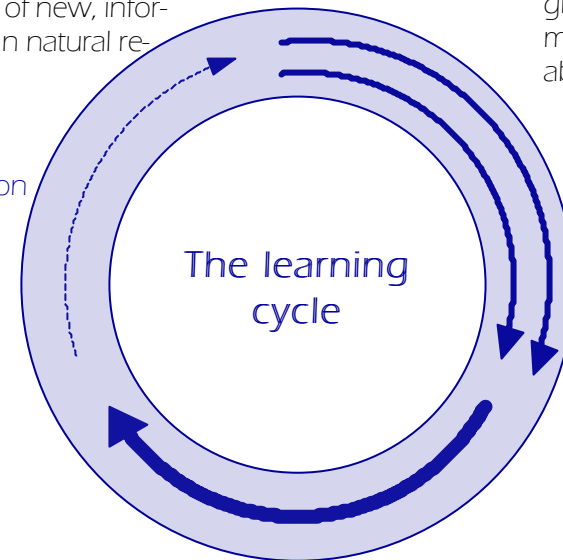
Information generation, as its name suggests, is the development of existing, or creation of new, information. In natural re-

analysis of variation that has been deliberately introduced into the management systems for the purpose of learning (active). In both cases the varia-

Sharing & utilising information

Learning as a group can not occur until information has been shared and integrated in a way that makes it broadly available and generalis-

Utilising information



Sharing information

source management, this information can be generated in two ways: By the observation and analysis of variation already existing in the management systems (passive) or by the observation and

tion could be through time or space but should be large enough to provide necessary contrast (for experimental design issues see p.22)

Generating information: Passive and active

able to new situations. (Information utilisation) Who information should be shared with and utilised by, & the implications of this, is discussed on the following pages.

LEARNING BY ALL

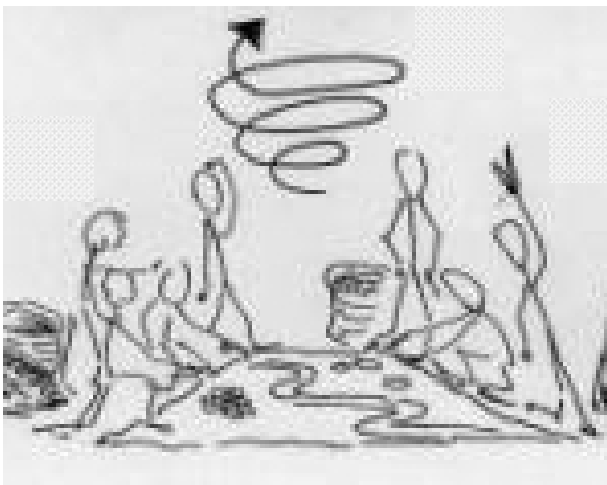
Co-management

It is increasingly recognised that co-management approaches to natural resource management, where responsibility and/or authority for management is shared between governments and the local 'communities' who use resources, can and has lead to improved resource management outcomes. Adaptive learning approaches to management should follow the same principles.

Bringing learning/research into management requires that another group of stakeholders, the researchers frequently not involved in hands-on management, also become part of the partnership.

A learning partnership

A learning partnership between government, local users and researchers has the potential to build on the particular strengths, skills and knowledge of each, thereby improving the quality and scope of learning as well as



the number of people benefiting from it.

Close collaboration between govern-

ment, managers, researchers and resource users will bring the greatest benefits, but it is also a great challenge given the frequently different perspectives, and ways of thinking and doing, of each. Addressing this challenge is a fundamental component of participatory adaptive

learning.

The table on the opposite page shows the skills and strengths of the differ-

PRINCIPLE 2

ent stakeholders that were identified in the Lao case.

methodologies that would facilitate effective information sharing.

Techniques for conducting participatory research are well documented. (see

Strengths in small waterbody management, Southern Lao PDR	Local communities	Government	External researchers
Capacity to make management regulations	☑☑☑	☑☑	
Capacity to monitor & enforce regulations	☑☑		
Knowledge of local resources and needs	☑☑☑	☑☑	☑
Technical knowledge	☑	☑☑	☑☑☑
Traditional research skills		☑	☑☑☑
Access to experiences of others	☑	☑☑	☑☑☑
Financial resources	☑	☑	☑☑
Capacity to bring different stakeholders together to share experience		☑☑	

Characterising these strengths and weaknesses early on in the process enabled us to start identifying the possible roles & methodologies for each group in information generation, and the

As can be seen, strengths varied, but with careful planning they could complement each other and increase the learning potential of all in a process of participatory research.

references on Participatory Action Research (PAR) & Participatory Learning & Action (PLA) for an introduction). Some ideas are discussed later in this booklet.

GETTING STARTED

What do I need?

The primary requirement to implement an adaptive learning approach, as it is described in these guidelines, is that local resource users are already managing/co-managing their natural resources or are interested in doing so. Without the interest, commitment and co-operation of local resource users, implementation is likely to fail.

Additionally, adequate resources must be available in terms of finances, people, time and equipment to actively engage with stakeholders, develop a learning partnership with them and get involved in resource management.

Apart from these basic conditions, an adaptive learning approach requires a commitment to both learning and to meaningful participa-



Developing skills in a workshop setting: RDC 2001

tion. Both of these aspects will make certain demands upon an organisation that may require some development and capacity building.

The learning organisation

A fundamental requirement is that the organisation is, above all, open to learning. This can manifest itself in several ways; by being open to critical evaluation, able to admit failures, and see these as opportunities to learn; by being committed to developing human resources within the organisation thereby enhancing staffs' capacity to learn; by developing suitable feedback systems within the organisation that allow for new knowledge to be shared; and by having the organisational flexibility to



Engaging communities: discussing resource management with members of the village administration

adapt and change as a result of learning.

Adaptive learning involves both generating and sharing information and the former will make its own technical and analytical demands. Whilst it is not absolutely necessary for an organisation to possess all the skills required before starting, within the organisation there needs to be a strong commitment to building capacity and to training.

and effort, creating challenges that require flexible, sensitive and involved responses.

Besides technical and analytical skills, effective participation will therefore require excellent communication, negotiation and facilitation skills and, potentially, an understanding of conflict resolution and consensus building.

The need for these skills and this philosophy cannot be over-emphasised. Without them, participation can become a hollow word.

A commitment to participation

Adaptive learning requires bringing together a number of different stakeholders, creating a learning partnership that is based on meaningful participation, shared responsibilities and gaining consensus. Developing this partnership into a common purpose takes time



Building organisational capacity and individual skills by practicing participatory methodologies

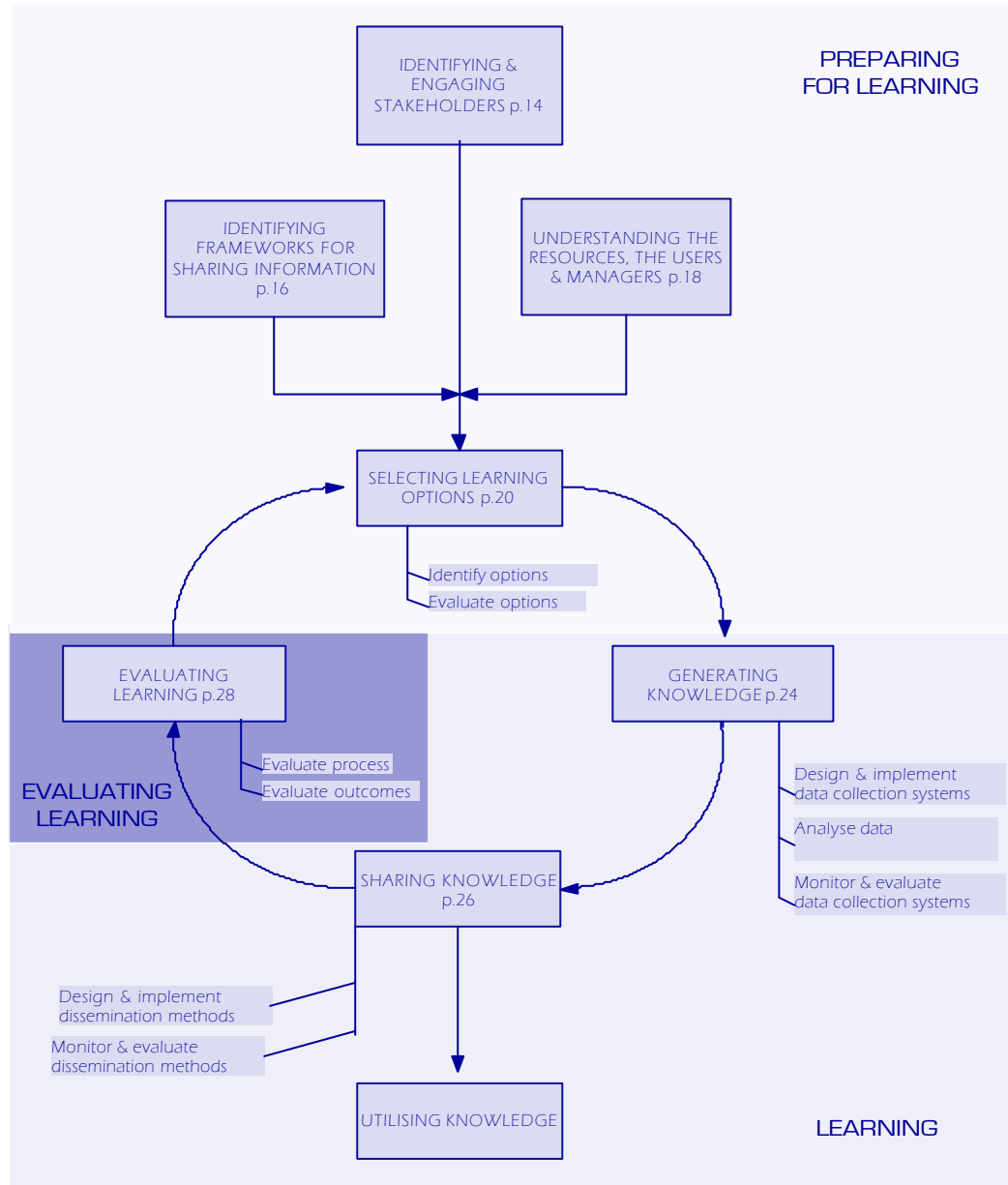
THE STAGES OF ADAPTIVE LEARNING

The diagram on this page represents both an overview of the stages of an adaptive learning approach, and a framework for the contents of the rest of this booklet.

On subsequent pages each stage will be addressed in detail (page numbers are indicated on the diagram).

Preparing for learning

The first stage concerns preparation for learning (top part of the diagram) and consist of four different activities. Identifying and engaging stakeholders, and developing an understanding of the resource management systems in question, will enable you to identify where current priorities and gaps in understanding lie. Identifying the current pathways and nature of information ex-



A FRAMEWORK

change between stakeholders will enable you to identify current constraints and opportunities for generating and sharing information in the future. Together, these activities will enable you to identify and evaluate the different learning options open to you.

Learning

As discussed previously, learning as a collective is not only about generating new knowledge (in fact this may not even be necessary) but is also about disseminating knowledge and doing so in a way that enables that knowledge to be assimilated, utilised and generalised to new situations. It is only when management has been adapted in the light of new knowledge that learning is complete. This stage therefore includes no

ties for generating knowledge but also for sharing it amongst all relevant stakeholders.

Evaluating learning

Hopefully by this stage, new knowledge has been generated and/or shared and this has led to a reduction in uncertainty, and adaptation and improvement in natural resource management. However evaluation is still critical. Did the process result in the information gain expected? If not, why not? Even if it did, were the benefits gained from the new information worth the costs incurred to acquire it? Such critical reflection of outcomes and process will increase understanding, enable methodological adaptation and improve the performance of any future iterations of the cycle.

WHO SHOULD BE INVOLVED & HOW?

Identifying stakeholders

Before anything else it is necessary to establish who are the appropriate partners in an adaptive learning approach? Who has interests and/or influence in the management of the natural resources in question? Whilst we believe that research is an integral function of management, traditional approaches often researched then managed. In such cases it may be that those who do research are not linked to those who manage and both groups must be identified.

A common way to start this process is to carry out a **Stakeholder Analysis**. Major steps are presented in the orange box.

See ODA (1995) for further information

Possible steps in a stakeholder analysis for adaptive learning

- 1) Draw up a table of all potential stakeholders
- 2) Assess each stakeholders potential interest in, importance to, and/or potential influence on, the adaptive learning process
- 3) Identify risks and assumptions that will affect the design of the approach and its potential for success

The purpose of the analysis is to begin to:

- Understand the current interests of those involved in research and/or management.
- Identify any conflicts of interest.
- Understand the existing relationships between stakeholders that can be built on.
- Identify appropriate degrees of participation at the various stages of the process.

Engaging stakeholders

All those identified as potentially being involved in the process should be aware of it right from the very start. In particular, resource users are often the last to be consulted and/or are often not aware of new initiatives until after the planning stage. This must be avoided. As already explained, they are fundamental to the implementation of adaptive learning. Not only should research address their priorities, they should be full participants in it. Interest & opinion must therefore be sought.

EXAMPLE FROM SOUTHERN LAO PDR

Main stakeholders	Current role in small waterbody management /research	Importance to successful implementation of approach	Limitations/risks	Implications for design of the approach	Desired direct involvement in different stages of the approach
RDC	Co-ordinate aquatic resource research and development activities of 6 Southern Provinces	↑	Co-ordinating role only. Have little influence over activities of government	None	Planning & Evaluation
2 Provincial Livestock & Fisheries Departments	Carry out limited research activities & district staff training. Provide limited funds for stocking. Employ district staff	↑↑	Technical research capacity low. Limited equipment. Same staff & constant staff input not guaranteed.	Keep technical requirements low & research design simple. Build existing research capacity. Majority of time consuming activities carried out at lower levels. Avoid over-reliance on individuals and involve as many as possible.	All stages
District Livestock & Fisheries extension staff	Provide technical advice to villages if it exists. Vital link between Provincial staff & villages	↑↑↑	Technical research capacity very low and experience with small waterbody management very varied between districts. Salaries & morale low	Keep technical requirements low. Substantial effort must go into motivating staff & building research capacity. Enable staff to learn from each other. Use district staff to help in learning with villages.	All stages
Village management committees	Manage small waterbodies on behalf of village for village community development	↑↑↑	Experience, interest and capacity varies greatly. Lack funds. Very limited ability to endure short term costs for longer term gains	Enable village representatives to learn from each other. Avoid high, average risk or high cost strategies. Ensure ability to compensate in extreme cases.	All stages
Villagers	Roles & responsibilities as set out by management committees. Beneficiaries of management	↑	Risk that not all their priorities are being considered by management committees	Problems in villages must be monitored and opinions should be sought during key stages of implementation	Some aspects of evaluation

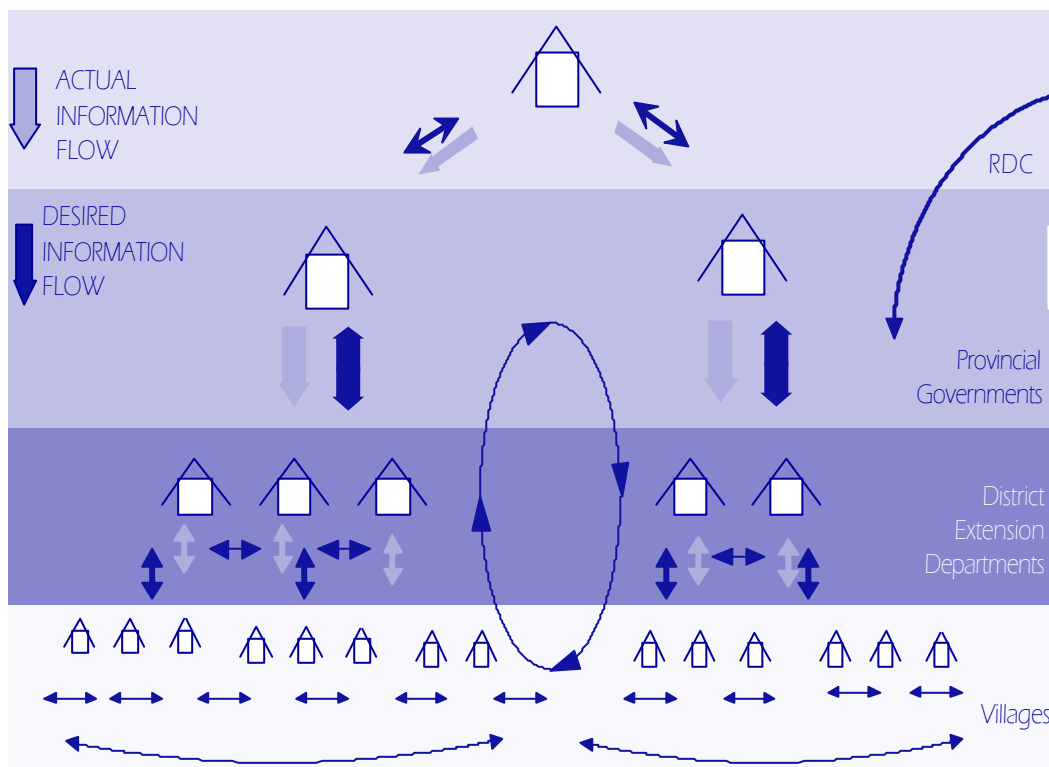
COMMUNICATION FLOWS

Having identified who stakeholders are, the next focus is to investigate how information is going to be shared. This requires looking at current communication networks; their opportunities and constraints.

When discussing adaptive learning approaches to management, frequently the reduction of uncertainty through generation of new information is focused on. However, learning is not just about the acquisition, sharing and utilisation of new knowledge, but is also about improving existing systems of information share to make the most of knowledge already there. A lot of uncertainty comes from not having access to information and more efficient mechanisms for sharing existing and new information

are likely to produce the greatest returns. In addition to looking at communication

stakeholders, and the extent to which they are being used to their full potential. i.e.



networks it is therefore also vital, if not already known, to understand the specific skills, knowledge and experience of

whether the right people are communicating with each other and, if not, how this can be rectified.

DEVELOPING A 'SHARING' NETWORK

As an example, the diagram below shows the actual and desired communication

flow was down the hierarchy, with no sideways communication systems at all. This was a missed opportunity. Villages were managers of their resources and as such had the most experience and understanding of management and its problems. However, managing in isolation, and with little knowledge about what others were doing, made their learning slow. It was clear that the access of villages to information regarding other villages' experiences was a key opportunity in the information network. Likewise, giving district staff the opportunity to discuss ideas and experience with each other and with Provincial staff would

provide more opportunities for learning and information share.

Most of the information flowing downwards was technical advice but with little upward communication, (that between villages and district extension staff being the exception) it was hard for those in the higher parts of the hierarchy to provide what the villages needed. Providing a forum where all could discuss together thereby combining the capacity, skills and experience of each would be highly beneficial.

This new desired 'community fisheries information network' was integrated into the overall adaptive learning approach. Exactly how these communication flows were realised is discussed on p.26.

tion flows in Southern Lao PDR, and the text below explains why the changes were deemed necessary.

The majority of infor-

COLLECTING BASELINE INFORMATION

Understanding resource systems

Following through the adaptive learning cycle on page 12, developing an understanding of the natural resource system is another initial stage in the process. These pages outline the types of information needed for this, together with some methods that might be useful in collecting it.

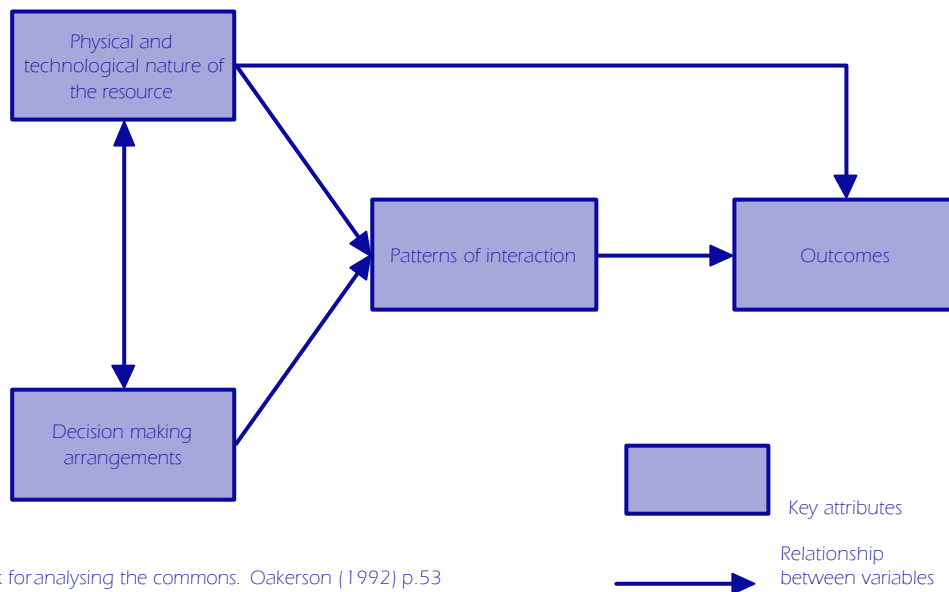
Developing an understanding will be discussed with reference to one specification of an Institutional Analysis and Design framework, as shown in the diagram. For a detailed explanation of this framework, see Oakerson (1992).

The fundamental concept of the framework is that outcomes of resource use are not only determined by

the physical and technological nature of the resource but also by people's inter-

and the decision-making arrangements all combine to cause outcomes, all should

pening who is involved, why is this happening and how does it occur? The first



actions with it. These in turn are affected, but not totally determined, by the nature of rules and regulations set up to govern resource use and how people view these in the light of the nature of the resource. Because the relationship between people, the resource,

be studied to develop an understanding of why outcomes are as they are.

Working through the framework

A useful way to approach the framework is to work back through it, asking as we go, what is hap-

pening who is involved, why is this happening and how does it occur? The first step is to examine the outcomes of management, whether these outcomes are considered satisfactory and by whom, and how outcomes are constrained by the physical, biological or technical nature of the resource. Working back through the framework the next

AN 'INSTITUTIONAL' FRAMEWORK



Using participatory methodologies to develop understanding of resource user objectives.

step is to examine what resource users are doing, including whether they are following regulations or not, and from this develop an understanding of why this is the case by looking at the rules, the resource and how together they influence the actions of users. By working through the framework in this way, key issues regarding management can be identified.

Possible methodologies

To get the fullest picture of the resource system, a wide range of data sources and techniques can be used. Secondary data sources, can provide valuable background information. PRA techniques (see references) are a useful means of enabling local stakeholders to evaluate their activities, needs, priorities and objectives — also a requirement from any baseline study. Finally, the bio-physical nature of the resource system can be explored by the measurement of key parameters (e.g. size and productivity would be relevant in the case of small waterbodies).

IDENTIFYING OPTIONS

Baseline studies should give a good understanding of current conditions, needs and priorities. Over the next few pages we shall look at how this information can be used to develop learning strategies.

The diagram on the opposite page, in combination with pages 22 & 23, can help determine which uncertainties should be addressed and, in turn, the learning strategy to follow in each case.

Starting at the top, the first stage is to identify existing management uncertainties, the reduction of which would be relevant to local stakeholders. Discard all those that are not.

The second stage is to classify remaining uncertainties in terms of which kind of approach, if any, can be

taken to reduce them; essentially whether information already exists, needs to be generated or can never be obtained.

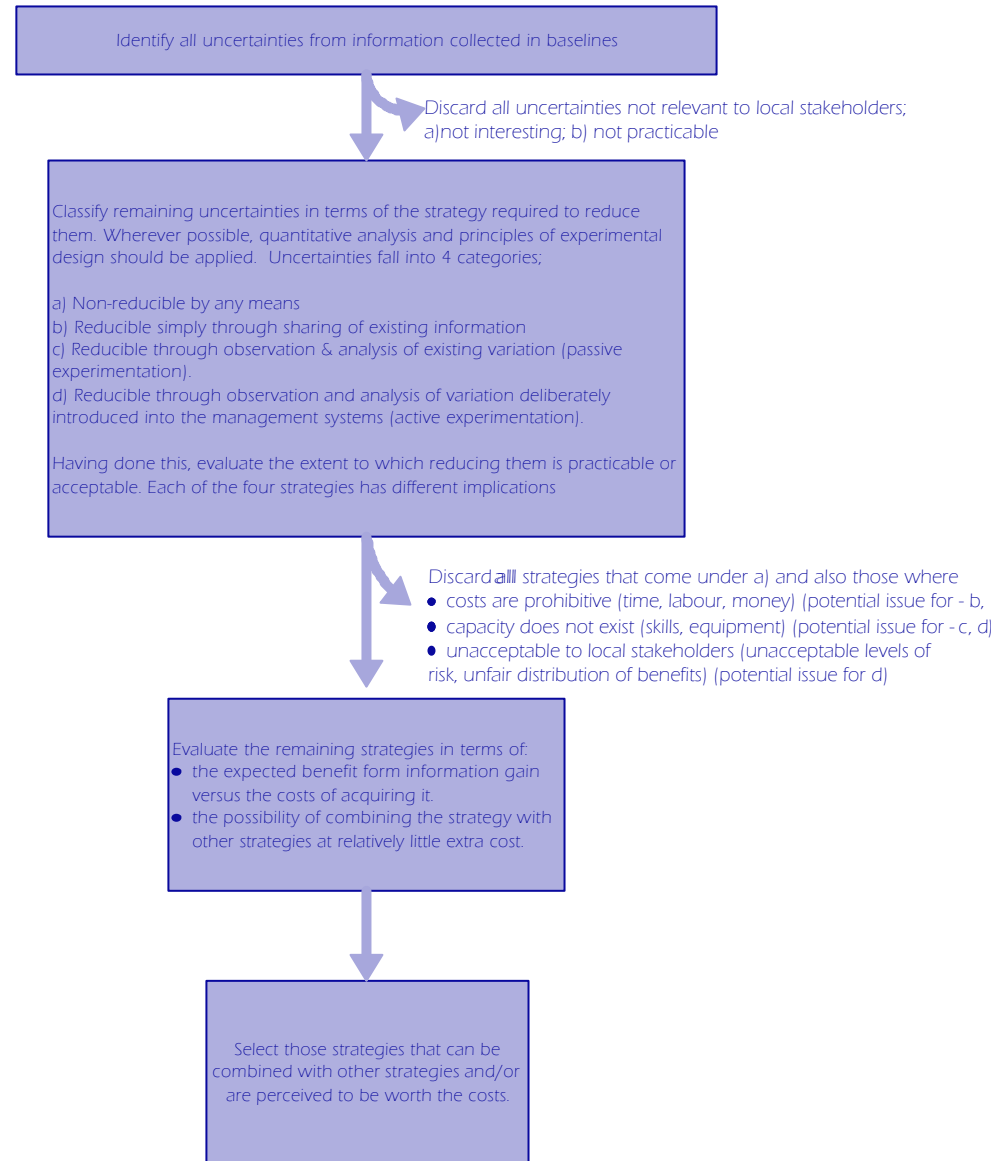
Which is true depends on the number of sites, and variation between them in relation to what you are trying to discover, and this is an issue of experimental design, discussed in the box on page 22.

Whichever of the strategies is required will have different implications for what must be considered when evaluating options. Strategies that require simply the sharing of existing information are the least complex, but even here the costs of getting the right people together (in terms of time, labour, money) may not be considered worthwhile. Such costs are an issue for all learn-

ing options.

If collecting and analysing new information is required, the capacity to do so will become an additional criteria for evaluation. If changes to management are required, acceptability will have to be considered on top. Having evaluated and discarded options (a non-trivial matter) you will be left with a range of options that are within capacity, not prohibitively costly and acceptable to stakeholders. These should be evaluated in terms of their individual expected net benefits, quantitatively as far as that is possible. This, along with the extent to which they can be combined with other strategies to further increase returns to effort, can then form the basis for final selection.

A SELECTION PROCESS



DESIGNING EXPERIMENTS

Designing experiments.

Whether experiments are designed to provide information based on existing variation in management or by creating this variation, the principles of experimental design (including replication, contrast and randomisation) should be used to ensure that experiments provide meaningful results. The time the experimental model must run in order to detect an effect should be considered as this might be an important constraint.

Implementation and available resources can also both impose constraints on experimental designs, and unforeseen events can reduce the planned number of replicates or treatments. This is particularly true for renewable resources management in a development context and for this reason it is crucial that experiments are robust in design. Wherever possible, quantitative tools, such as statistical power, should be used to evaluate proposed strategies, assessing aspects such as sample sizes and contrast between treatments. This will help ensure that the designs are both robust and likely to detect desired effects. Some references for experimental design and associated principles are supplied on page 30.

Costs and benefits of different strategies

The previous page explained the issues that need considering with the different types of adaptive design. It was seen that there were more issues to deal with in active experimentation than the other strategies and that it can potentially incur

the greatest costs. However, active strategies can also potentially produce greater benefits than passive experiments because appropriate experimental design can, in most cases, generate greater contrast more quickly than when relying on natural variation alone. The question is: **Should it be done?**

Creating variation can be risky, and can require incurring short term costs for longer term gains. Whether this is acceptable or not depends on stakeholders discount rates (extent to which they are able to forgo short term benefits) and a related concept, how risk-averse they are.

In the Lao case, communities had little abil-

A PEOPLE CENTERED APPROACH

ity to endure short term costs and, partly as a result of this, were very risk averse. For them, minimising risk and the costs of learning was more important than maximising its benefits.

Even if these are not constraining factors, creating variation, by its very nature, requires different treatments in different places. Some are likely to be, or perceived to be, better than others

and allocating treatments will require great care. In our experience, differences were only acceptable if they were perceived to be fair, and/or were allocated in a fair manner.

Collaboration is crucial

In this respect, active strategies make their own particular demands and providing a forum for discussion and negotiation of

affected stakeholders is a crucial part of the planning process. Apart from anything else successful implementation of an active strategy will require the cooperation and coordination of a potentially large number and wide diversity of stakeholders. In Southern Lao PDR, workshops were used as the fora for discussion and for more information about these see Garaway et al. (2002).



District staff evaluate & analyse different options using post it notes

GENERATING INFORMATION

Having determined learning strategies with stakeholders (last two pages), the next step is to develop an action plan for implementation and one that is based on shared responsibilities.

In Southern Lao PDR, the approach taken was to negotiate a 'contract' with participating villages. Under the terms of this contract, villages agreed to manage the waterbody specifically for community benefit, to record catches and fishing effort and to come back after a year to share their experiences with all other stakeholders.

In return, the project agreed to stock the waterbodies in accordance with the experimental plan, to provide training and advice where necessary, to collect management data and to

share results with stakeholders at the end of the experimental cycle. An important aspect of the contract was responsibilities for data collection and reasons for this emphasis are given below.

Shared data collection systems

Generating new information will obviously require data collection. Who should collect what then becomes an issue and there are great advantages in sharing responsibilities between stakeholders in a way that utilises the advantages of all. For example, it is unlikely that government staff will ever have the resources to collect information about resource use on a daily basis, however, resource users might—particularly if it

just requires utilising, or building on, existing recording systems. Knowing what information is already collected, and how, is a good start to designing a data collection system.



Recording fish catches at a fishing day in Hinboun, Khammouane, Lao PDR

Another principle to improve the quality of data collected is to involve those who will be collecting information in the planning and design phases of data collection systems. This will have several benefits,

SHARING RESPONSIBILITIES

Involvement in planning will help collectors understand why information is being collected and this will encourage them (if they agree with the overall objective of collection) to collect the information accurately. Poor data collection often occurs even when people are highly motivated, and this is often a result of not understanding that a particular way of collecting information is as important as it is.

Involvement in design will help to ensure that data collection systems are both practicable and understandable. Equally importantly, it will increase a sense of ownership of the learning process. Both of these aspects will improve the quality of the data collected, and the interest in it.

Following from this

last point, the quality of data collected is also likely to be increased if those collecting it are involved with the information after it has been collected. This can be done in the following ways:

- Design information collection in a way that some or all of the information is of relevance to the collector for their own benefit,
- Involve the collectors directly in the analysis of the information,
- Present the analysed data back to the collectors as soon as possible.

Again, creating this sense of 'ownership' of the data builds capacity and gives people a stake in the process.

A page from a village record book recording catches and fishing hours

Is it working?

The adaptive learning cycle on page 12 emphasises the need to constantly evaluate. This is also true of data collection methods which should be monitored to check that they are working, and if they are not, should be adapted and improved. This will ensure that when evaluation of the whole process is carried out (see p28) data collection systems are not identified as the major constraint. Those in the best position to evaluate collection systems are the designers and collectors themselves.

SHARING INFORMATION

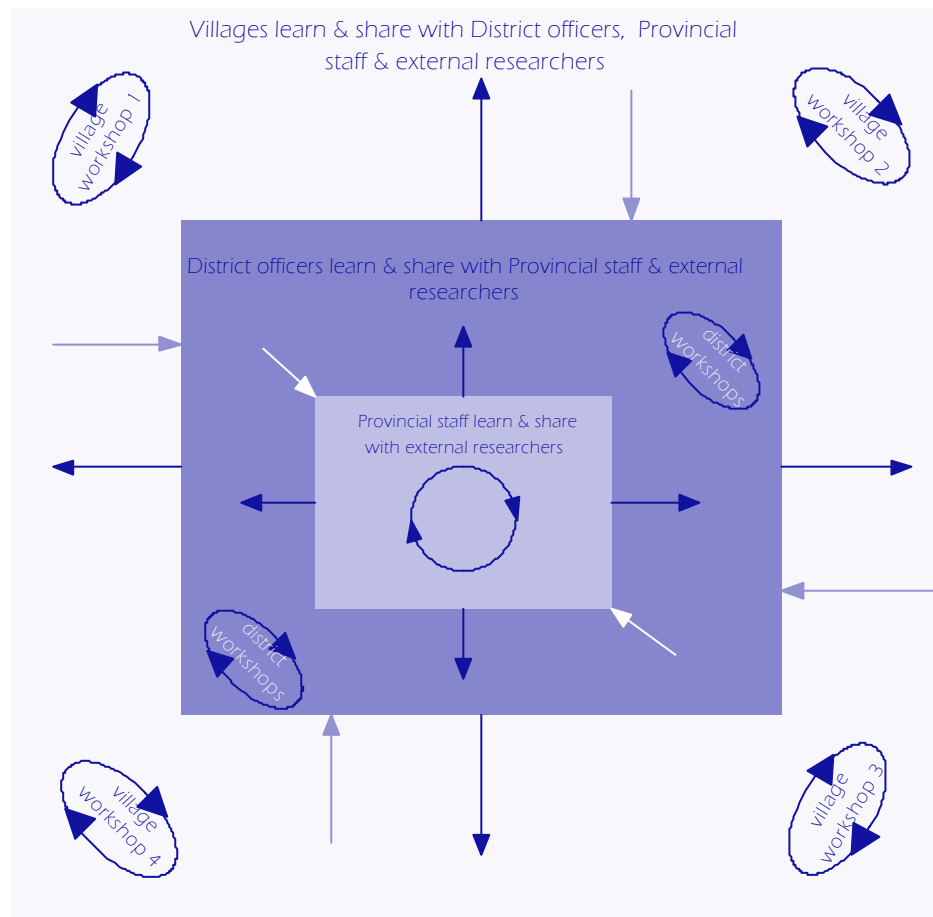
As previous pages indicate, there are plenty of opportunities for sharing throughout the stages of the adaptive learning cycle, but one place it is absolutely crucial is after new information has been generated, the focus of this page. On page 16 we discussed who should learn, this page focuses on how. Ideas are expressed with relation to what we did in Lao PDR.

The facilitators

Information must be shared in an understandable way and, as suggested on p.8, this is a challenge given the different skills and perspectives amongst stakeholders. Such efforts will require excellent facilitation (see references) and the first principle is to learn from what is already

done. In Lao PDR, for example, district staff were used to explaining things to villagers and, therefore, they took a lead when the learning of villagers was involved. The system for explaining experimental results developed in Lao PDR is shown in the diagram. First external analysts acted as facilitators in the learning of Provincial staff, then Provincial staff did so for District, then District for Village. Whilst the flow of information was always multi directional and at each stage more stakeholders were

involved, this process ensured that ideas were being explained



by those best equipped to understanding the requirements of learners.

The fora

These will depend on

what information is being shared and how many people require it. Literature can reach

the largest number of people, but with no possibility for group feedback or evaluation, is the least preferred method. Study tours would be useful in circumstances where results could be directly observed. However, workshops are the most common fora, as was the case in Lao PDR. Here, workshops were held in the Provincial capital and then in different district centres within three hours reach of participating villages.

Three ways of learning

People can learn by hearing, learn by seeing or learn by doing, and it is generally recognised that these three are

on an increasing scale of effectiveness. When developing methods for sharing information it is useful to bear these principles in mind.

The methods

Training methods are frequently based on 'learning by doing' with practicals and role plays being common methods for training in data collection. When disseminating experimental results this principle can also be applied. For example, instead of presenting results, synthesized data sets that reveal key results can be prepared beforehand and stakeholders can analyse the data themselves and present findings to each other. This was carried out with district staff, (with limited technical research capacity) in Lao PDR, and proved very successful. Specific details of how this was done can be found in Garaway & Arthur. (2002b).

EVALUATION

Of all stages, evaluation holds the key to learning, as it is only when situations have been open to scrutiny that one can understand the extent to which activities have been successful and, if they have not, where improvements must be made.

Evaluation has been mentioned, and should occur, at several stages of the adaptive learning cycle; evaluating methods for generating and sharing information being two. However, there is more to the evaluation of process than just this. Another important aspect is the evaluation of the outcomes of that process—the information gain itself.

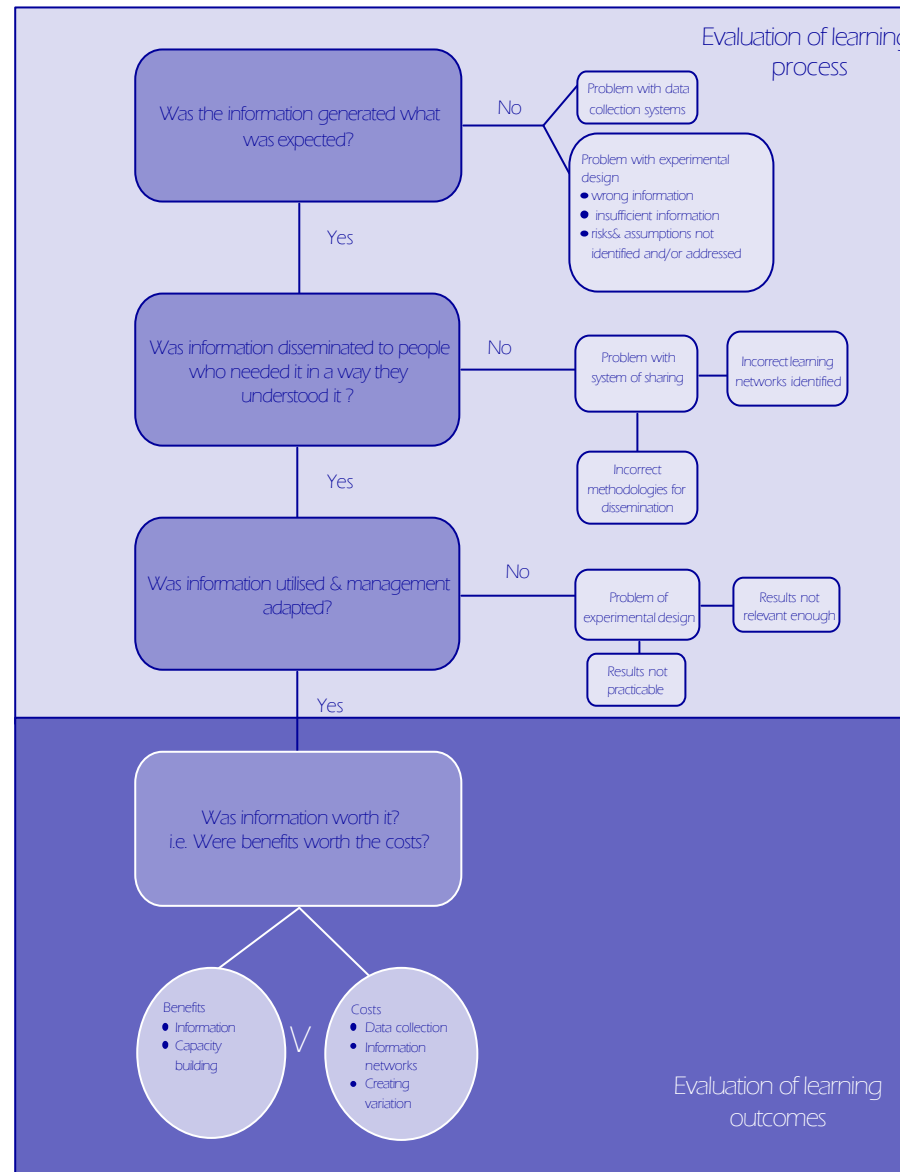
The adaptive learning approach aims to reduce uncertainties in natural resource management by taking an explicitly experimental approach. This ap-

proach may (or may not) incur short term costs, but the idea is that the longer term benefits of the information gained, in terms of improved management, will be worth these costs. This then is the ultimate criteria against which an adaptive learning approach should be evaluated.

The framework illustrated on this page was developed during the Lao project to guide evaluation both during the experimental cycle and at the end of it (the last stage of the cycle). It combines evaluation of process with evaluation of outcomes and is organised as a diagnostic tree to enable you to pin point where any potential problems lie.

Starting at the top, one looks at whether the information reduced the uncertain-

THE KEY TO IMPROVEMENT



ties as expected. If not problems may lie with data collection systems or the experimental design itself.

Given that learning requires sharing and utilisation of knowledge, as well as the generation of it, the next two questions relate to whether information was shared effectively and then utilised. Relevant adaptation to management would be a good indicator of this but participant evaluations of sharing methods will also help to evaluate likelihood of uptake.

If the experimental management was successful, resulted in the reduction of uncertainties and

adaptation of management, there is still one more question to ask. Was it worth it? Adaptive learning approaches, whilst having the potential to be more cost-effective than unsystematic trial-and-error management, should never be automatically assumed to be so. Quantification of benefits, and future benefits, should be estimated wherever possible and compared to the costs of implementation. Non financial costs and benefits such as 'capacity building' or being 'open to risk' should also be considered, if only qualitatively. (For more on monitoring and evaluation see McAllister, K. (1999).

Finally, evaluation is not a matter just for the external analysts but for all involved in an adaptive learning approach.

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ABOUT THE ORGANISATIONS

RDC The Regional Development Co-ordination for Livestock and Fisheries Development in Southern Laos (RDC) is a regional tier of the government of the Lao PDR, co-ordinating livestock and fisheries development in the six southern Provinces of the country. The RDC has many partners in its development activities, and acts as a link between external agencies and target populations. Its primary focus has been in aquatic resources management, these resources being a major proportion of the protein intake in the local diet. The RDC has taken a low input, low technology approach that has relatively quick results; when success is observed, it can be a key for opening up other development activities. The RDC approach is to work firstly with Provincial Government Officers, who then work with District Officers (government staff at ground level who are often farmers/villagers themselves). These District Officers are then well placed to encourage participation and monitor results within local communities.

MRAG LTD MRAG are a UK-based consulting firm dedicated to promoting sustainable utilization of natural resources through sound integrated management policies and practices. MRAG has a long and highly productive history of designing and implementing integrated resource management systems in marine, estuarine, riverine and floodplain environments. It has a core staff of more than 30 full time specialists with a wide variety of expertise and practical and technical experience, providing a multi-disciplinary approach to every project. For over a decade, MRAG has worked in more than 60 countries for government agencies, international agencies, non-governmental organizations and private sector companies. MRAG's capability to service an extensive array of resource management needs is further extended through our network of associations and collaborations with internationally acclaimed experts from academic institutions and other private organizations worldwide.

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Also in the same series - 'Community Fisheries - lessons from Southern Lao PDR' - detailing what the project learnt about 'community fisheries' management.

