

# **Strengthening the Governance of Common Land in National Parks to Deliver Ecosystem Services: A Comparative Analysis of the Lake District in England and Danau Sentarum in Indonesian Borneo<sup>1</sup>**

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## **ABSTRACT**

Strengthening governance in National Parks was addressed through research in two national parks; Danau Sentarum in Indonesian Borneo and The Lake District in England. Appreciative Inquiry was used with participants being considered as co-researchers following the participatory paradigm. Analysis of the interview data themes are presented to the reader through a series of word clouds, via ranking activities, action plans and a voting process.

The data is appraised through three analytical frameworks to assess whether the proposals developed during the fieldwork can be predicted to be successful in practice. The frameworks are Ostrom's design principles, Tamanaha's legal pluralism analysis and a ten point criteria for adaptive co-management.

Results indicate that local communities with de jure or de facto rights of utilization created and maintain institutions and governance mechanisms for the management of the ecosystem services they personally benefit from. They have not developed their local institutions to ensure sustained flow of ecosystem services that accrue to downstream or diffuse beneficiaries. The sustained delivery of a broad suite of ecosystem services in National Parks will be dependent on effective multi-partite governance of common property resources by the plural institutions in existence. When the activities of these institutions dovetail combining the strengths of each then there is a real opportunity to sustainably deliver a broader range of ecosystem services.

## **KEY WORDS**

Adaptive co-management, Legal Pluralism, Design Principles, Appreciative Inquiry, ecosystem services

## **INTRODUCTION**

This paper analyses the fieldwork collected in two National Parks to assess how ecosystem services delivered by users of common property resources might be enhanced through strengthening local governance and multi-level partnerships. The case studies are Danau Sentarum National Park in Indonesia and The Lake District in England.

Over the last 20 years those with usufruct rights in common in the two case study National Parks have in common with many other commoners in National Parks been

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under increasing pressure to deliver a broad range of ecosystem services for the public benefit. This begs the questions; “Do commoners want this wider role?” and if they do, “Can they deliver the heterogeneous ecosystem services society is demanding given the plural nature of the legal orders in existence?” The research is founded in the philosophical approach of co-management and recognises that commoners who have de jure and de facto property rights are the key managers of these complex systems<sup>3</sup>.

The research problem has been framed as, ‘How can the governance of common land in national parks be strengthened to improve the delivery of ecosystem services?’ The first step was to look at the current position, the second step to assess the key variables and drivers in current governance systems and the third step to consider options for strengthening governance.

Danau Sentarum and The Lake District were chosen because the author has extensive professional experience in both sites and noted that there are significant similarities between the socio-ecological settings of the resource users and that it would be informative to compare and contrast what impact the different legal orders was on management.

Having introduced the characteristics of both sites this paper describes how the methodology adopted, Appreciative Inquiry, was used to collect data in accordance with the Participative Paradigm underpinning the research. The field work data is then presented visually before being analysed in the context of three well-regarded theoretical frameworks for natural resource management of common property resources. These are Tamanaha’s framework for legal pluralism(Tamanaha 2008), Ostrom’s design principles and variables associated with self-organisation (Ostrom 1990; Cox, Arnold and Tomás 2010) and the ten criteria for successful adaptive co-management(Armitage et al. 2009).

The analysis then enables conclusions to be drawn as to whether and how the flow of ecosystem services can be enhanced and optimised in these national parks of high environmental value which are also critical to the livelihood of commoners.

#### *Case study sites*

Danau Sentarum National Park in the heart of West Kalimantan, Indonesia is a series of seasonal lakes extending to 135,000 ha where fishing is the primary economic activity. The area is valued for its peat swamp forests and biodiversity especially fish, primates, plants and birds. In addition the lakes act as a buffer to the changing water levels in the Kapuas so mitigating against floods and drought. Danau Sentarum has international designation as a Ramsar Site (Giesen and Aglionby 2000). The park is state owned forest but there are over 10,000 local residents with de facto usufruct rights of access to the natural resources. These are managed through traditional law, *adat*, with the park divided between over 40 villages each with its own set of rules. There is little tourism except local day trips from the small surrounding towns. All natural resources are under pressure from unsustainable harvesting levels and land conversion to oil palm in the buffer zone (Wadley et al. 2000).

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<sup>3</sup> (GEM-CON-BIO n.d.)

Designated as a National Park in 1951 The Lake District in England at 229,227 ha is the second most visited site in England after London with over 15 million visitor days each year. In 2011 it was nominated as a World Heritage Site primarily due to the cultural landscape created by pastoral farming over the last millennia, twenty-five percent of the national park area is registered common land and there are several hundred active commoners grazing the open fells organised into over 35 associations each with its legally defined area; a common land unit. The commoners have registered property rights to graze their common with the underlying land being owned privately. Eighteen percent of the park area is designated for biodiversity nationally as SSSIs<sup>4</sup> and of these ninety percent also has international designation as Natura 2000 sites ("LDNP-State-of-the-Park-2012," 2012). For common land the figure is higher with over 50% of the commons being designated. In addition to its high cultural and biodiversity value it is valued as the primary water source for many urban populations and for the carbon stored in the soils. The statutory government conservation body ("Natural England") offers farmers and commoners contracts to manage their land under specific prescriptions with the aim delivering favourable condition of the vegetation with a high proportion of the commons designated as Natura 2000 sites.

### *Commonalities*

The two case studies are both characterised by being areas where local communities depend for their livelihoods on the utilisation of natural resources. In both sites there is strong local governance established over hundreds of years with each community having its separate geographically defined area over which it has rights and authority. There is in both Danau Sentarum and The Lake District a high level of self-organisation of common property resources with locally decided rules governing resource use and institutional structures. There is also evidence of the modification of these rules to take account of national conservation legislation. While the system of rules and institutional structures are clear in both sites there is a resistance to the formal enforcement of locally decided rules and to the imposition of sanctions.

In addition to local governance arrangements Danau Sentarum and The Lake District are both subject to national legislation as National Parks and international conventions as areas of high conservation value. Despite this there is in both countries inconsistency between the official legal orders governing utilisation and conservation.

In both cases the communities have a strong attachment to their locality and their very being is often defined by their success at fishing or farming with multiple generations of the same family working together at each site. Communities in both National Parks are considered as marginal in terms of their access to public services and their economic status.

### *Differences*

In Danau Sentarum commoners harvest wild endemic populations of fish, a mobile resource, while in The Lake District commoners harvest a static resource, grass and other vegetation through the grazing of sheep a long standing but introduced species.

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<sup>4</sup> Site of Special Scientific Interest

The striking difference is therefore that the economic output in Danau Sentarum is a primary product directly harvested from the wild while in the Lake District the primary product, grass, is consumed by sheep through commoners profit a prendre rights and it is the livestock a secondary product which is sold.

The legal and institutional landscape in Indonesia is more complicated as a result of decentralisation with layers of national and local government running parallel to the powers of the Department of Forestry's and its National Park Unit. In particular the communities in Danau Sentarum are illegal residents according to National Park regulations but legal according to local government rules. In The Lake District administratively the National Park is carved out of local district government avoiding this inconsistency though conservation law also runs parallel to local government rules but the National Park body as a local authority has a statutory obligation to protect biodiversity<sup>5</sup>.

Utilisation rights also vary as in Danau Sentarum commoners rights of extraction are dependent on traditional law, *adat*, while in The Lake District all commoners have state acknowledged property rights under the Commons Registration Act 1965. This is the face value position but in The Lake District where the common is designated by a national or international conservation designation these property rights can only be exercised with the consent of the national conservation agency, Natural England<sup>6</sup>. There is therefore an underlying tension in both sites between the conservation agency and the local residents. In The Lake District where national and European funding is more generous this tension and resentment is partially dissipated through the provision of contracts making annual payment to change patterns of sheep grazing and hence deliver environmental gain.

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<sup>5</sup> s7 Natural Environment and Research Act 2007

<sup>6</sup> s28E Wildlife and Countryside Act 1981 (as amended)

## METHOD

### *Approach and methodology*

The overarching world view for the research is the participatory paradigm (Heron and Reason 1997) which demands participants are co-researchers enabling them to take ownership of the data and therefore implement the results. Fieldwork was undertaken using Appreciative Inquiry (AI) techniques. This is a methodology that values success and looks at how improvements to the status quo can be designed when a common vision or 'Dream' has been identified (Reed 2007). AI is implemented through a four-stage cycle of Discover, Dream, Design and Deliver though in this case the research stopped at design as the author was not remitted to deliver the outcomes. The participants have though been assisted to take the findings forward and the data returned to them. Appreciative Inquiry is suited to Common Property Resource research in sites with concurrent policy development as the commoners are treated as participants. They were actively involved in the research process and the AI tools are consistent with the participatory paradigm adopted by the research.

Data was collected at three levels in each site; from individuals, through group meetings in each of the sample villages and through inter-village meetings. In Danau Sentarum data is presented here from three sample villages all contiguous on a river system. In The Lake District data is presented from three sample commons associations two contiguous and the third within a short distance but with a shared water catchment.

Across the two sites data was collected in seven villages with over 80 individual interviews, 16 focus groups, 7 village meetings, an AI inter village workshop in Danau Sentarum and four inter-association consultation meetings in The Lake District.

### *Presentation of the AI Interview data*

Considerable attention in the field work and textual analysis was given to allowing the voices of the commoners in both sites to speak through the way information was collected and the manner it was presented. Additionally the semi-structured framework adopted for identifying themes ensured focus was maintained on the research questions without predefining what would emerge.

Data was collated by identifying all the themes that arose during the AI interviews that were relevant to the research question. Themes were categorised according to four topics of inquiry; livelihood, governance, environment and partnership. A spreadsheet was constructed noting the frequency themes arose but the nature of the data is qualitative not quantitative and to avoid a gloss of statistical analysis the data is presented through word clouds rather than tables or charts. These give focus to the words and the size reflects the relative frequency with which they occur but prevents the reader focusing on the numbers.

The result is that the data from both field sites reveals a clear picture of the predominate themes affecting current governance and provision of ecosystem services. The next step is a review against a series of theoretical frameworks developed to assess the sustainability and success of governance mechanisms for

natural resource management. As well as looking at each case study separately a comparison of the two case studies will be made for each framework so to consider how the variation in the socio-ecological system affects the current flow of ecosystem services and the ability to adapt governance to improve the future flow of ecosystem services. Particular attention is paid to the types of legal and other normative orders and the nature of the resources exploited.

*Theoretical Analysis: Why three frameworks?*

In researching the existing literature it became clear no single theoretical framework would provide an interpretation of the field data that would address the research problem adequately. There are though several that each can contribute with different insights towards these complex socio-ecological systems. The socio-ecological system is the integrated coupled system of people and environments and Ostrom (2009) demonstrates how complex this is through her list of fifty-three second order variables of the eight core sub-systems covering people, socio-political settings, and ecosystems. This is a useful framework to describe a system and recognise its complexity but does not in itself indicate whether a system is likely to be sustainable or not institutionally or whether a flow of a diverse portfolio of ecosystem services is likely.

As a pre-requisite the analysis needed to consider the legal context as law and statutory duty are reasons repeatedly used to constrain or justify action by management organisations at different levels. When considering the delivery of multiple ecosystem services on common property resources understanding the suite of multiple legal orders underpins the discussion. To do this Tamanaha's legal pluralism framework was chosen as it provides a structure to categorise plural legal orders (Tamanaha 2008).

Understanding these multiple orders is a pre-requisite but Tamanaha's categorisation not sufficient for while it provides snap shot of the current position allowing discussion it does not reflect the participative paradigm of this research and the dynamic nature of the institutional settings. Additionally it does not consider success, resilience or delivery as outcomes though Tamanaha does himself address some of these issues.

Noting the commoners living from and dependent on the common property resources are the primary managers their organisation is fundamental to the success of a socio-ecological setting. To address institutional issues at the local governance level an amended version of Ostrom's design principles is used (Ostrom 1990; Cox, Arnold and Tomás 2010). This is supported by the ten second order variables Ostrom identified as frequently positively or negatively associated with self-organisation by natural resource users (Ostrom 2009).

These two theoretical approaches enable discussion of the broad normative orders in each setting and the specific nature of the organisational setting of local level institutions. The third framework chosen, adaptive co-management enables these to be brought together and for the performance of local institutions to be considered in the multi-level institutional setting they exist in. It is these other institutions that design and implement policy, programmes and activities that significantly influence local level governance. Adaptive co-management acknowledges the complexity, feedback, cross-scale interplay and learning that occur in socio-ecological settings. It recognises

the importance of trust, motivation, commitment and power in creating shared goals and delivering outcomes (Armitage et al. 2009).

In short the frameworks of legal pluralism and institutional design principles provide the backdrop for adaptive co-management to consider future options. Armitage et al's ten point criteria developed at a Delphi workshop in 2006 provide a structure to enable the field work results from this research to be critically appraised and to appraise possible answers to the research problem so to draw conclusions that are relevant to the real world situation and hence of value to the participants.

## RESULTS

### *AI Interviews*

The results from the interviews are striking in the common themes that arose in the two case studies in the Livelihood and Governance topics of inquiry. These two topics also produced more themes than the Environment and Partnership topics as seen by the density of the word clouds. From the perspective of the commoners their primary driver is meeting their livelihood needs and governance is directed to that end.

In both Danau Sentarum and The Lake District the primacy of a single enterprise whether fishing or livestock husbandry is plain though it is acknowledged repeatedly in The Lake District that decisions on the number of livestock they keep are significantly affected by government agricultural and environmental policy. In Danau Sentarum there is no government support for fishers so that is not relevant though their dependence on a single enterprise was recognised by some as a risk and diversification of income source identified as an important goal. Additionally in both case studies participants considered themselves and their happiness – peak experience - defined by success in fishing or farming.

Under the governance topic both sets of commoners recognised the importance of self-organisation. In The Lake District this is expressed through their enthusiasm for Commoners Associations usually voluntary unincorporated institutions. These are positively associated with successful entry to agri-environment schemes but also organise day to day management. In Danau Sentarum fishing rules are seen as essential to the management of the resource and the view expressed explicitly by some and implicitly by others is that rules ensure equality of access to resources and hence peace and goodwill within the community. Rules also allow the time limited spatial division of resources in a common property situation and the control of fine mesh gear (*bubu warin*) recognised as damaging to fish stocks. In both sites local management was stressed as important.

Danau Sentarum focused on the importance of the head fisherman and leadership for management while in The Lake District informal approaches to dispute resolution through farmer to farmer discussions or a quiet word were favoured.

From the Environment topic of inquiry the word cloud demonstrates commoners in the Lake District have little engagement with the aims of Natural England and see the schemes as valuable for the income they produce but resent the lack of flexibility imposed with grazing levels set for ten years. In Danau Sentarum the interest in the environment is linked to fish breeding habitats and there is a natural overlap between the long-term interests of the fishers and the National Park Unit. The difference here

is not the end position but the conflicting demands of meeting livelihood needs for a growing population<sup>7</sup> now and the sustainability of the resource where catches are recognised as exceeding renewal i.e. the long term goals are the same but the short term demands differ.

Partnership themes were mixed, the National Park authority in The Lake District is well regarded particularly in relation to public access while in Danau Sentarum few had any connection with National Park staff some not even knowing they lived in a national park. The desire for greater collaboration with government was strong in Danau Sentarum with a recognition that the head fishermen needed support from government to be more effective in enforcing rules as respect for authority has declined. Also due to the high level of movement of commoners between villages they highlighted the need for inter-village collaboration and mutual recognition of each other's rules.

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<sup>7</sup> Population doubled in Danau Sentarum 1994-2009 (Indriatmoko 2010)





### *AI workshop*

In Danau Sentarum a two day Appreciative Inquiry workshop was held in March 2011 with representatives from five villages adjacent to each other produced a large number of dreams. These were prioritised to design four co-management action plans that could strengthen local governance of natural resources;

1. Never allow the extinction of fish species
2. There is always enough fish, wood and rattan
3. Fishing rules are ratified by institutions with authority
4. Cooperation with other parties for enforcement of rules

An example of an action plan is given in fig 3 for Dream 3. The process of preparing this was undertaken with staff from the Danau Sentarum National Park unit and with a local NGO<sup>8</sup>. Implementation was dependent on effective activity from all parties with the National Park conservation agency being expected to take a lead and champion the process through an agreed timetable of activities.

### *Commons Council consultation*

In The Lake District the exploration on how governance could be strengthened was overtaken by a policy initiative from Natural England who commissioned a consultation on the support for establishing an umbrella Commons Council. To be established by the Minister for Defra<sup>9</sup> Commons Councils are run by commoners with statutory powers to make and enforce rules. The author jointly undertook this work<sup>10</sup> and it covered the whole of Cumbria the county administrative unit of which the Lake District is part. Of the three sample villages two were in favour of joining a Commons Council while the third preferred to keep governance local and not be part of an umbrella organisation therefore did not take part in the consultation exercise which was voluntary.

Overall eight out of the fourteen participating commons in the Lake District achieved substantive support for joining a Commons Council. The main reasons in favour were the ability to enforce majority decisions on all commoners, an insurance policy against future disputes, and a clear route for legal action when breaches occur as well as a stronger lobbying voice on the national stage. As the process for becoming a Council is legalistic, time-consuming and expensive some associations concluded they would prefer to be part of the first wave rather than regret not have the statutory powers and be unable to opt-in easily.

Those who were against joining a Council stated the following reasons; ‘the current system works well’, ‘the Federation of Cumbria Commoners is a sufficient lobbying voice’, ‘a Council is too costly’, ‘Natural England want to control us’, ‘What will happen to our local association?’ and ‘How do we get out if we do not like the Council?’

The Secretary of State for Defra will only establish a Common Council where there is substantial support from those with legal rights and in particular the active graziers

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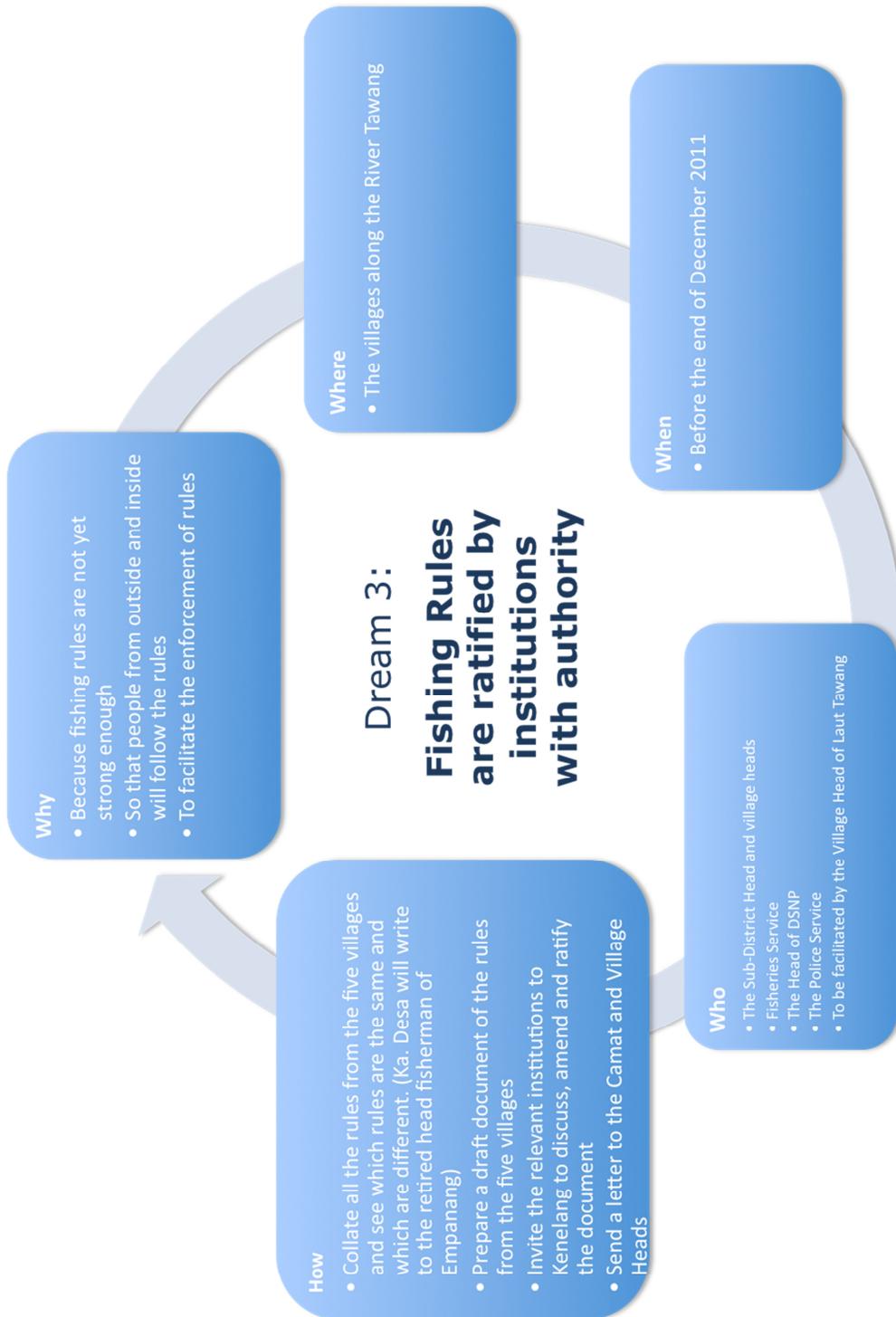
<sup>8</sup> Riak Bumi, [www.riakbumi.co.id](http://www.riakbumi.co.id)

<sup>9</sup> Department for Environment, Food and Rural Affairs

<sup>10</sup> with Viv Lewis and Charlotte Raw, final report at [http://www.cumbriacommoners.org.uk/files/he5u-report-commons\\_council\\_establishment\\_final.pdf](http://www.cumbriacommoners.org.uk/files/he5u-report-commons_council_establishment_final.pdf)

and the owner of the common. The Federation of Cumbria Commoners is taking the application forward with Defra though they have to persuade Defra to allocate staff time and financial resources to the project which currently not a national policy priority.

Fig 3



## DISCUSSION

### *Legal Pluralism Analysis*

The literature on legal pluralism is extensive with Woodman, Griffiths and the von Benda Beckmanns being key founding theorists and advocates (Woodman 1996; Griffiths 1986; von Benda-Beckmann 2002) . Much of their work is descriptive drawing on anthropological approaches focusing on the range of legal and normative orders in existence and how they interact and evolve over time rather than the developing an analytical framework . There is also significant emphasis given to the interaction of colonial imposed state legal orders and traditional customary law, as is the case in Danau Sentarum. In The Lake District while colonisation has not occurred since the 11<sup>th</sup> century state law has also been imposed on local custom and practice. In addition significant effort has expended to justify the approach of legal pluralism as opposed to legal centralism with many debates over what is ‘law’ or a ‘legal order’. Given the participative paradigm adopted those theoretical debates are periphery to this research instead the focus is on the actual and how local users and resource managers perceive an order and more importantly can a legal pluralism analysis help us better answer the research problem; a pragmatist’s approach.

The view taken is that if a system affects how resource users and managers behave and govern themselves then it is classified as a normative order and it is not relevant whether these are classed as laws or not, the practical effect is the same. However inconvenient it may be to local users wanting to have self-determination, or to government agencies wanting to deliver specific environmental outcomes, the reality in both sites is that there is a plurality of co-existing normative orders.

Rather than turn to one of the traditional advocates of legal pluralism the framework adopted here is that devised by Tamanaha, a more recent proponent for legal pluralism. Tamanaha (2008) takes the concept and creates a framework for the allocation of legal/normative orders into six categories though he acknowledges these are ‘rough labels’ and overlap between the categories will exist. Tamanaha says; ‘What matters most is framing situations in ways that facilitate the observation and analysis of what appears to be interesting and important.’ (Tamanaha 2008)

This is undertaken in Table 1 for five of Tamanaha’s categories. Religious Law not being of relevance in this case has been left out.

### *Interplay between legal orders*

Organising the different legal orders by category as in table 1 above is the first step in considering the impact of the plural legal landscape on governance and the delivery of ecosystem services. The field data has provided us with the information to consider the relative effect of these different orders and the overlap between them. At the heart of the governance of commons in both national parks is the customary regulation by local communities. These users are the individuals on site everyday harvesting resources and determining management. The interesting question is which other orders are the key drivers on how local governance is influenced.

<b>Category of Normative Order</b>	<b>Danau Sentarum</b>	<b>The Lake District</b>
Official or positive legal systems	Forest Law, Ministerial Decisions, Conservation Regulations, District Regulations	Commons Registration Act 1965, Commons Act 2006, Wildlife and Countryside Act 1981 (as amended) Commons Councils regs
Customary or Traditional Law	Adat and Local Fisheries Rules and custom and practice	Commons Association rules, custom and practice
Economic Norms	Trading relations internal and external to the village, type of fishing gear	Sale of livestock, auction marts, breed of sheep, agricultural support payments
Functional Agreements	Projects with Riak Bumi and National Park, Honey Co-operatives	Agri-environment Schemes, Internal Agreements
Community & Cultural	Fishing is their driver and life	Deep commitment to livestock and commoning

Table 1: Legal Pluralism Framework

Using Tamanaha's framework as a jumping off point a Venn diagram showing the relative importance of each of the remaining four legal orders on customary law is provided in fig 1 and fig 2 for Danau Sentarum and The Lake District respectively.

The figure for Danau Sentarum shows the primary importance of customary governance by local fishers through the leadership of the head fisherman. The impact of state legal systems both local government regulations and national park law is significant in influencing customary governance as local rules have evolved to be more consistent with state "official" legal systems. One example is the District Regulation prohibiting small mesh gear which is now being incorporated into local rules. In the 1990s a similar process took place as logging and commercial extraction of rattan was banned by the Conservation Authority and communities included this rule in their local regulations. The Economic norms are also increasingly influential as users have in the last twenty years moved from a subsistence to a cash / market place economy with the situation rapidly evolving as new markets can be accessed. The dynamic nature of economic norms leads to changing community and cultural normative orders as these adapt with changing economic circumstances and as populations have grown internally and through immigration. Functional agreements in Danau Sentarum are not significant in their impact on customary governance, there have a number of successful projects focused on livelihood such as honey and but these have not had a direct impact on customary governance though they do have a knock on effect on motivation to protect the forest.

In The Lake District the situation is rather different in that Functional Agreements are over-riding in influencing Customary Governance. These are the agri-environment schemes that the vast majority of commons have signed up to with Natural England in the Lake District.

Fig 4

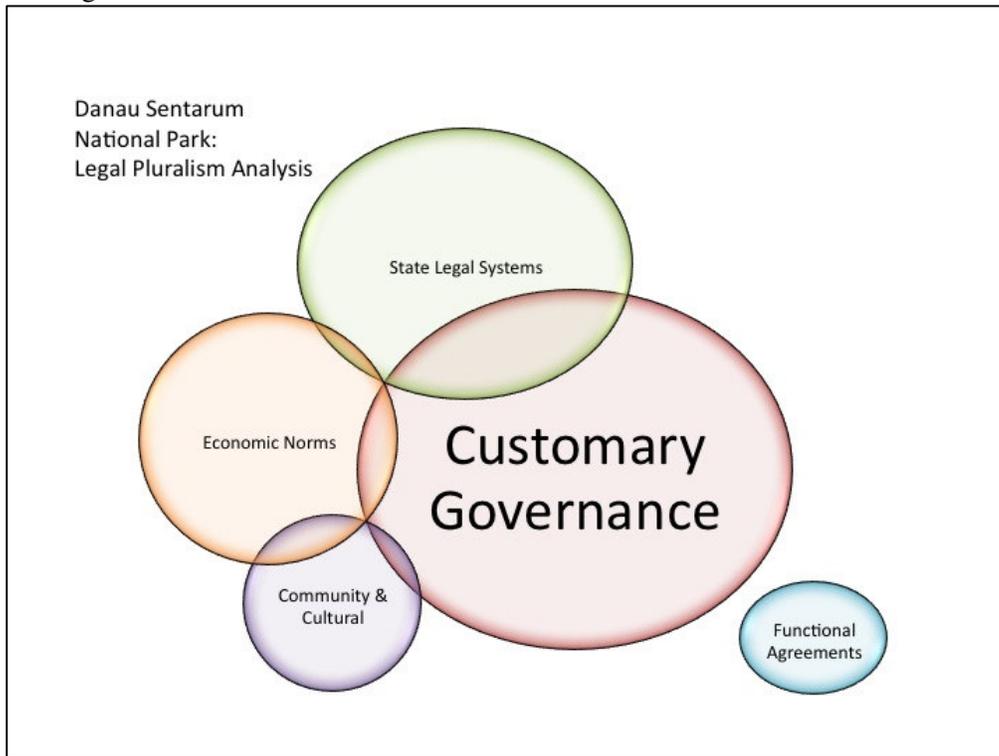
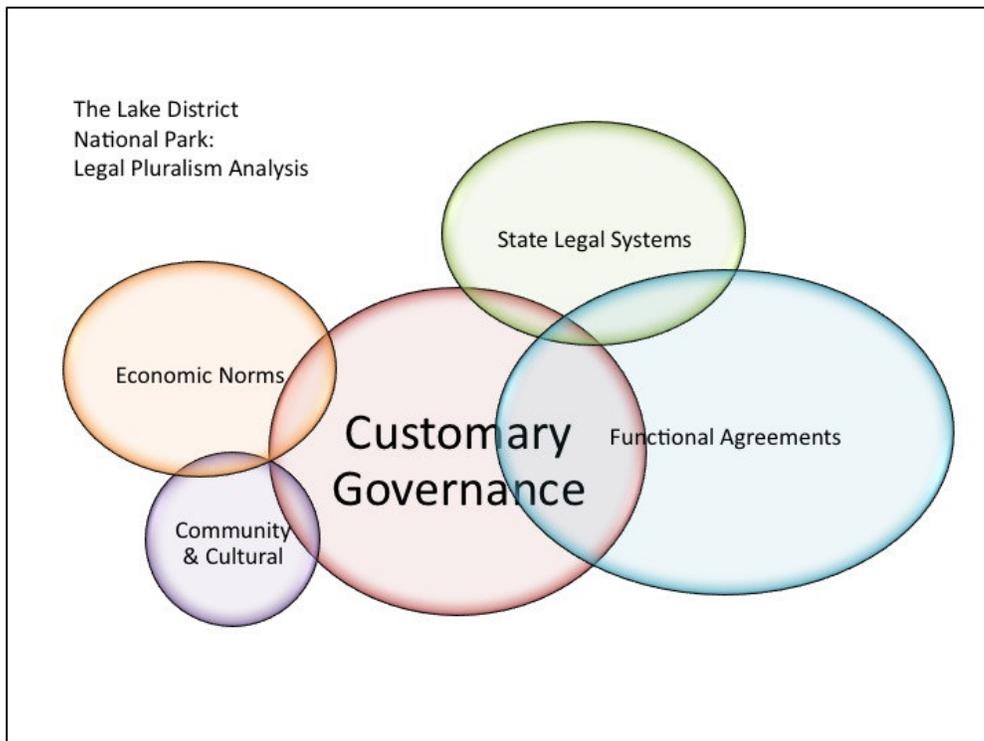


Fig 5



This is signed by the chairman of the Commons Association once all the participating commoners and owners have signed a legal deed between themselves - the internal agreement. This deed sets out each individual's rights, benefits and responsibilities while the agri-environment scheme is in force and provides for the penalties in the event of breaches. The form of these agreements and the motivation of Natural England to offer agreements are in turn influenced by one of the state legal systems; the Wildlife and Countryside Act 1981 which governs activities on SSSIs.

Other State Legal systems that affect Customary Governance are the Commons Registration Act 1965 and the Commons Act 2006. Of less but underpinning influence are the community and cultural norms which over generations have influenced the evolution of customary governance and the Economic Norms including the impact of the Common Agricultural Policy incentives, exchange rates and market prices for livestock.

### *Ostrom's Institutional Analysis*

Ostrom's design principles for the organisation of common property resource users are well regarded and field tested. Cox et al (2010) carried out a meta- analysis of field research and assessed the usefulness of these principles against field data results. Out of that analysis they proposed to amend the principles to split three of the eight principles into 2 sub principles. These amended principles are used as they provide a more refined approach to institutional analysis.

While Ostrom's design principles are useful in considering whether local governance will effectively govern a particular resource they fail to provide any indication whether this effective institution has a positive or negative impact on ecosystem services other than the specific service it is concerned with. For example a commoners association may be run very well and ensure effective management of multiple sheep flocks on the fell but the grazing levels may impact negatively on specific vegetation of ecological interest with international designation.

Ostrom's work on socio-ecological systems addresses this issue by embedding institutional variable within the other variables. There are 53 sub-variables in total from which the ten Ostrom identifies as associated with self-organisation are considered. These overlap with but are different to the design principles and given the need in this research to embed local level governance in the socio-ecological system they are considered in b) below.

#### *a. Ostrom's Principles for CPR Institutions (as amended)*

Table 2 shows the presence or absence in each case study site for each variable. We know that in Danau Sentarum and the Lake District there are local institutions that exist for the management of fishing and livestock. This framework assists the assessment of the efficacy of these institutions and the identification of where changes in governance could deliver change in outcomes.

The situation at the two case studies varies enormously in terms of physical and socio-legal geography but in looking at the list of design principles there is much more in common than might be expected. In Danau Sentarum slightly fewer of the principles are met and this reflects the unclear legal rights of resource users.

Principle 1A – user boundaries differs between the two sites. Unlike the Lake District commoners in Danau Sentarum live inside the common property area they use and their rights to extract resources derive from that residency. The key point here is that under local government law there is no upper limit in Danau Sentarum to the total fishing effort that may be exerted either in the number of commoners or the amount they may fish. This lack of upper limit on resource users makes it difficult to enforce rules as the population in Danau Sentarum has doubled over the fifteen years from 1994-2009 (Indriatmoko 2010). This contrasts with the regulations governing national parks which only allow settlements and resource extraction in very limited areas of a national park.

<b>Principle</b>	<b>Danau Sentarum</b>	<b>The Lake District</b>
1A User Boundaries	PARTIAL	YES
1B Resource Boundaries	YES	YES
2A Rules Congruent with Local Conditions	NO	IN PART
2B Benefits Appropriate to Input	YES	YES
3 Collective Choice in making rules	YES	YES
4A Monitoring of Users	SOME	SOME
4B Monitoring of Resources	NO	NO
5 Graduated Sanctions	YES	NO
6 Low Cost Conflict Resolution	YES	YES
7 Users have Rights to Organize	DEBATEABLE	YES
8 Multiple layers of Nested Enterprises	YES	YES

Table 2: Ostrom's design principle criteria

Contrastingly in The Lake District commoners have defined and registered legal rights usually but not always attached to the enclosed sole occupancy land they farm. No one in The Lake District lives on the common though many are adjacent to it and since 1970 resource utilisation has been constrained by the cap on grazing numbers introduced with the Commons Registration Act 1965. This quantifies the number of livestock that may be grazed though these may be distributed among a variable number of commoners.

Principle 5 is another area where differences arise though in this case Danau Sentarum has stronger compliance with the design principles where the sample villages have a fairly formal system of graduated sanctions from warnings through to set fines. In the Lake District the system is more ad hoc where the Chairman may go and have a quiet word with offenders. If the breach threatens an agri-environment agreement with Natural England and payments are withheld to all commoners only then the issue escalated to formal action. This contrasts with the historical situation in the Lake District where the manorial court records provide evidence of effective self-enforcement of rules (Rodgers et al. 2010).

b. *Ostrom's Ten Sub-Variables associated with self organisation*

Table 3 analyses the data from Danau Sentarum and The Lake District for each of the ten sub-variables. A + symbol in front of the text indicates that the nature of the variable in that site is positively associated with self-organisation while a – symbol suggests that self-organisation will be hindered by the circumstances at the site.

This framework demonstrates that in both case studies there are many positive drivers for self-organising and this is reflected in the actual position in the field. There is one variable for both case studies that shows a negative outcome and that is knowledge of the socio-ecological system (SES). In both cases the users have a shared common knowledge but this has been marked as negative as the users have a good knowledge of the SES as it applies to the resource they harvest but do not have full understanding of the implications of their utilisation on other ecosystem services. Ostrom notes that without this being positive there is likelihood that users will not perceive the risk to the resource and not take action to self-organise.

<b>Variable</b>	<b>Danau Sentarum</b>	<b>The Lake District</b>
Size of Resource System	+ moderate size	+ moderate size
Productivity of System	+ still productive	+ still productive
Predictability of System Dynamics	+ moderately predictable	+ reasonably predictable
Resource Unit Mobility	+ mobile but usually present	+ stationary
Number of Users	- increasing and no limits	+ small numbers
Leadership	- / + variable between units	+ / - variable between units
Shared Norms / Social Capital	+ common cultural background	+ common cultural background
Knowledge of the SES	- limited	- limited
Importance of Resource to Users	+critical	+ important
Collective Choice Rules	+ strong self determination	+ / - some collective choice others imposed by state

Table 3: Ostrom's ten sub-variables for self-organisation by resource users

In Danau Sentarum and the Lake District the situation is rather more nuanced. Users do perceive the need to self-organise but do so to deliver the goods and services they benefit from rather than the whole range of ecosystem services. In part this is because they do not appreciate the impacts they have and in part because they have only a limited incentive to deliver other services except where they sign contracts-functional agreements- to do so. Even where contracts are in existence, as in The Lake District, local users often limit their engagement to following the prescriptions imposed on resource utilisation rather than widening their understanding of the outcomes the government conservation agency is seeking.

The other variable not marked as a straight positive is Leadership and this is because the quality of leadership varied among the sample villages in both case studies. Some were very pro-active while others were less so. On one Lake District common the leader was not keen to interfere unless payments were at risk and in another in Danau Sentarum there was no leader as the selection process had reached a stalemate. As

found in other studies influential leaders made a big difference in the efficacy of governance delivery harmony among users.

*Adaptive co-management*

Adaptive co-management is an approach to the co-management of a socio-ecological system that adapts itself over time – it is reflexive. Where adaptive co-management varies from legal pluralism and principles for self-organisation is that it has a real world three-dimensional character recognising feedbacks, policies, commitment, power and motivation. It provides a framework that enables those implementing and designing management not only to analyse whether a current set of circumstances is likely to succeed but also to adapt to circumstances that arise, it is an evolutionary process. Adaptive co-management places local governance organisations in context with other relevant management organisations rather than Ostrom’s design principles focus on the local and do not provide a framework for analysing the nesting of local governance in the wider institutional framework. Adaptive co-management pays explicit attention to multi-scale vertical and horizontal linkages recognising the importance of supportive policies, laws and culture from national and international level management organisations if local level management organisations are to be successful.

Placing local management organisations in context of other management organisations is important and a visual representation of this assists understanding the horizontal and vertical linkages so clarifying key influencing lines. Fig 6 and 7 provide these for Danau Sentarum and The Lake District.

Armitage et al (2009) presents ten criteria which all need to be met to some degree in order for adaptive co-management to be successful. The degree to which they are requisite depends on the specific context of each setting. The extent to which each criterion is met in the two case studies is presented in table 4. Looking at both case studies it is clear that the necessary criteria for successful adaptive co-management do not exist and this explains why despite all the good will in practice adaptive co-management does not take place and tensions continue to exist as to the range and quantum of ecosystem services being produced.

<u>CRITERIA</u>	<u>DANAU SENTARUM</u>	<u>THE LAKE DISTRICT</u>
Well-defined resource system	YES	YES
Small-scale resource use contexts	YES	YES
Clear and identifiable set of social entities	YES	YES
Clear property rights	NO	YES
Access to adaptable management measures	NO	NO
Commitment to support institution-building	NO	IN PART
Capacity building and resources for all stakeholders	NO	NO
Champions for the process	IN PART	YES
Openness to share plurality of knowledge	YES	NO
Policy supportive of collaborative management	NO	YES

Table 4: Ten Criteria for successful adaptive co-management

While the scoring differs both case studies both fail two criteria; adaptable management measures and capacity building and adequate resources for stakeholders at all levels.

Access to an adaptable portfolio of management measures is not met in Danau Sentarum as while at the local level management organisations have the ability to use a range of tools to manage fishing effort through fisheries rules these cannot be supported by the National Park Unit as according to Forestry Law there should be no fishing in most of the National Park. Co-existing with this law under District Law communities do not have the ability to refuse entry to new users who wish to live in their village and harvest resources. The National Park Unit recognises this tension and de facto accepts fishing but is hampered in formal support for co-operative management by the lack of a legal and policy framework in which to deliver support to local fisheries regulations. In The Lake District the criterion is not met as the national conservation agency, Natural England, has limited flexibility in the structure and adaptability of Environmental Stewardship schemes, the functional agreements it offers local commoners associations which are at the core of modern local governance. This is recognised by Natural England and pilots are being tested in how to give more flexibility so that governance can adapt to a changing socio-ecological context.

‘Adequate capacity building and resources for all levels of stakeholders’ is limited in both sites with the situation worse in Danau Sentarum due to limited staff and financial resources. Additionally when training and resources are provided they tend to be short term never allowing sufficient time for skills and culture to develop or for ideas to be translated into practice. For instance in The Lake District the project to develop a Commons Council was an excellent idea and well supported by Natural England and a significant number of local commoners associations but the initial positive support has not been taken forward as the funding was only for a few months and now attention has been diverted. The incentive for the umbrella organisation, the Federation of Cumbria Commoners, to progress the project has been limited as the Ministry, Defra, have indicated they have no resources to process an application to establish a statutory Commons Council.

Fig 6

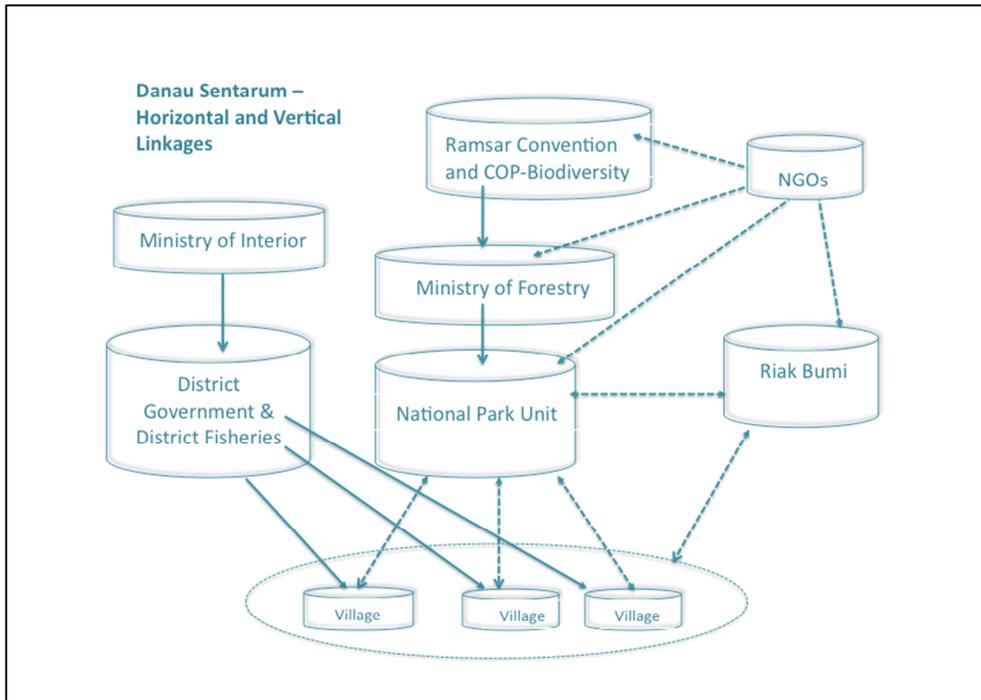
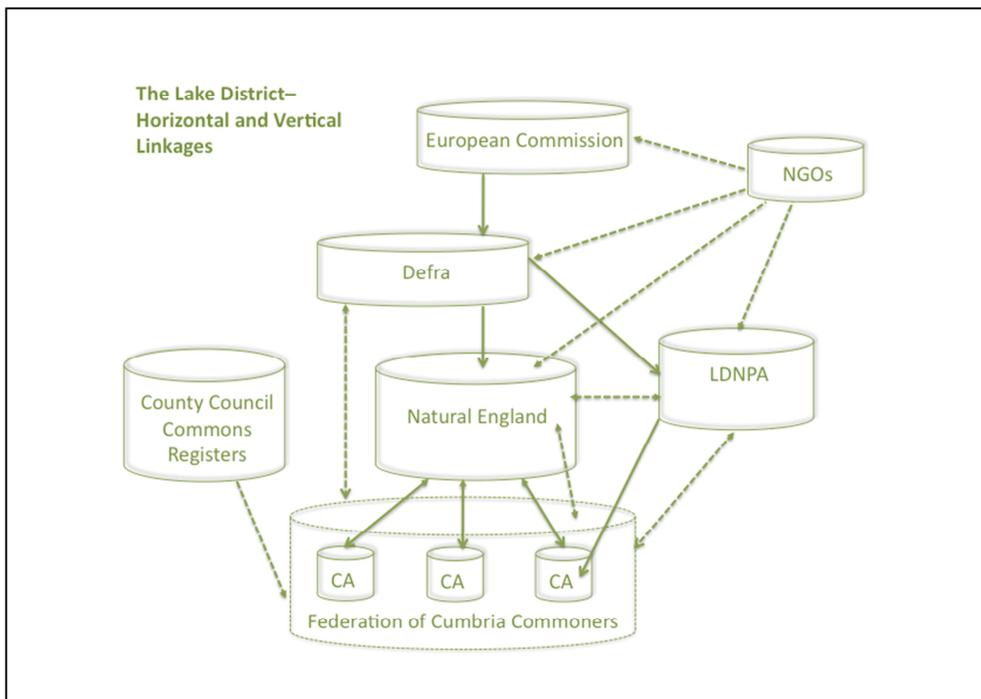


Fig 7



In Danau Sentarum the action plans produced by the Appreciative Inquiry workshop have not been effectively implemented as local organisations have not been supported by the National Park staff who lack either the capacity, the interest or the authority to take the ideas forward. Without support from the National Park unit local communities have limited incentive to progress the ideas themselves as the outcomes will only be achieved through collaborative working.

The nature of local communities property rights varies between the case studies in that common rights are recognised by state legal systems in the Lake District but in Indonesia usufruct rights in national parks while recognised by the Ministry for the Interior, Department for Fisheries and District Government is not accepted by the Ministry for Forestry (Mulyana et al. 2010). Given the land and waters are classified as State Forests this results in an unresolved tension. The local National Park Unit would like to recognise these rights but do not have an effective mechanism through the state legal system to achieve this.

The need for champions for collaborative management is critical given the complex plural normative orders that exist in both case studies. In Danau Sentarum the champions are predominately in NGO institutions both local and international but limited from the National Park authority who adopt more of a command and control management style. In The Lake District there are champions in a number of management organisations at different levels including those with state powers though the support towards and championing from the National Park authority towards farming commoners is mixed.

The success of a champion is in part linked to how open the champion is to plural knowledge systems. In Danau Sentarum where traditional law (*adat*) and customary resource use is well recognised there is an acceptance there are different types of knowledge from oral knowledge handed down from one generation to another to formal scientific knowledge and in Danau Sentarum this is recognised by all levels of management institutions. In The Lake District knowledge is more compartmentalised with specific organisations valuing different outcomes for which they rely on different types of knowledge with the non scientific knowledge of local resource users rarely valued by the ecological community. Similarly the farming community of commoners value their knowledge base on livestock and grazing but have limited interest or understanding of ecological outcomes. In The Lake District different management organisations therefore operate with parallel but not interacting knowledge systems therefore failing this criterion for adaptive co-management.

While management organisations at different levels may be less open to different types of knowledge in The Lake District there is more of a commitment to collaborative working through specific schemes in particular Environmental Stewardship which has detailed guidance on how local commoners associations can be structured to comply with scheme rules, to develop robust governance and to deliver the outcomes government is seeking. The criterion has only been marked fulfilled in part as Natural England are predominately interested in collaborative working to deliver the outputs they have a statutory duty for, nature conservation. A more holistic perspective would be to aim to better the outputs for all interested stakeholders. Danau Sentarum is marked as 'No' as while there is a great interest in

collaborative working by the National Park Unit and by local and international NGOs there is no commitment that translates this into reality.

### *Summary of the Theoretical Frameworks Analyses*

The three theoretical frameworks each provide a different perspective on the situation in the two case studies.

The framework for legal pluralism assists our understanding of the relative importance of the different normative orders at play and illustrates which has significant influence on local governance by resource users. It also enables comparisons between the two sites. In The Lake District functional agreements are of utmost importance in dictating the nature of resource use and the associated governance while in Danau Sentarum there is no comparable type of agreement. This analysis is also useful in incorporating economic norms into the frame allowing inclusion of the important themes highlighted in the livelihood topic.

Ostrom's design principles associated with successful collective action were not completely met in either case study suggesting that local governance has weaknesses that can contribute to its lack of robustness. In particular the inability to exclude users in Danau Sentarum is a weakness as is the lack of an effective sanctions system in The Lake District. In both cases increased monitoring both of users and the resource would enhance the efficacy of local governance. Additionally rules are congruent to local conditions in so far as they meet the requirement for harmonious relations between resource users but are not congruent with all wider environmental conditions. It should be noted that while both sites do not meet all criteria including the 10 sub-variables there is a long history of self-organisation in both communities. Clearly not all variables need to be met for long term self-organisation to occur as communities self-organise when the motivation is self-interest rather than to meet wider public interests.

Cox et al conclude that Ostrom's design principles are useful as far as they go for assessing local governance but acknowledge that there are valid criticisms as the principles do not effectively incorporate the role of external organisations or socio-economic factors (Cox, Arnold and Tomás 2010). Furthermore local communities are increasingly heterogeneous and the original principles are useful but need to be extended to be more diagnostic as taken forward by Ostrom herself in later work (Ostrom 2009).

Adaptive co-management proved to be a useful diagnostic framework as it clearly highlighted weaknesses in the current arrangements. Addressing these is a pre-requisite to effective multi-level management in a legally pluralistic setting as exists in Danau Sentarum and The Lake District. This is particularly true where the aim is to deliver a range of functions from the same geographical unit.

### CONCLUSION

The field data collected in Danau Sentarum and The Lake District has highlighted the importance of livelihood issues to resource users and the strong motivation to self-organise and govern common property resources to meet the financial needs of each

family and the collective requirements of the group to maintain goodwill between users.

In Danau Sentarum the resource harvested is a wild resource and there is clear overlap between the interests of the resource users and environmental stakeholders. In The Lake District where the vegetation that favours sheep productivity is not the same as the vegetation that ecologists favour for biodiverse moorland habitats the goals are not shared. This was indicated by the different nature of the dreams identified in the two case studies. Resource users may share the same motivation as conservationists in Danau Sentarum but they are only willing to alter fishing methods for long term gain if the rules are applied across the national park on all fishers and enforced collaboratively.

The analysis of the data showed that in practice due to the existence of functional agreements providing regular payments commoners in The Lake District do adapt their management to deliver environmental gains even without a shared goal. The lack of a shared goal arises from the gulf between the public policy goal and the objectives of the private appropriators – the commoners – who are motivated by producing a secondary product from managed vegetation rather than having any interest in the primary vegetation growing on the common. The environmental agreements have though been effective in creating a renaissance in local governance institutions though commoners are only motivated to enforce rules where a breach has an impact on their immediate livelihood rather than a diffuse public good.

In Danau Sentarum despite a clear shared goal effective co-management is not implemented in practice due to the legal restriction on limiting the number of resource users and the inability of the National Park Unit to develop formal collaborative ventures within current state legal systems. These are both barriers to managing resource use and creating effective self-enforcing governance. This is recognised by communities who are keen to work with government and NGO organisations to deliver better outcomes. So far government and NGOs have been unable to provide consistent long term support to develop sustainable co-management.

This research has described the current situation with regard management of common property resources in both sites. Improving governance to improve the flow of ecosystem services will require a commitment to collaborative working across multiple levels to take advantage of the opportunities and address the barriers to effective governance. The data has shown local resource users already effectively self-organise but will not change governance structure to enhance ecosystem services that accrue to others – the public- unless there is a commitment to long term co-management from park, regional and national level management organisations. This has yet to emerge.

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