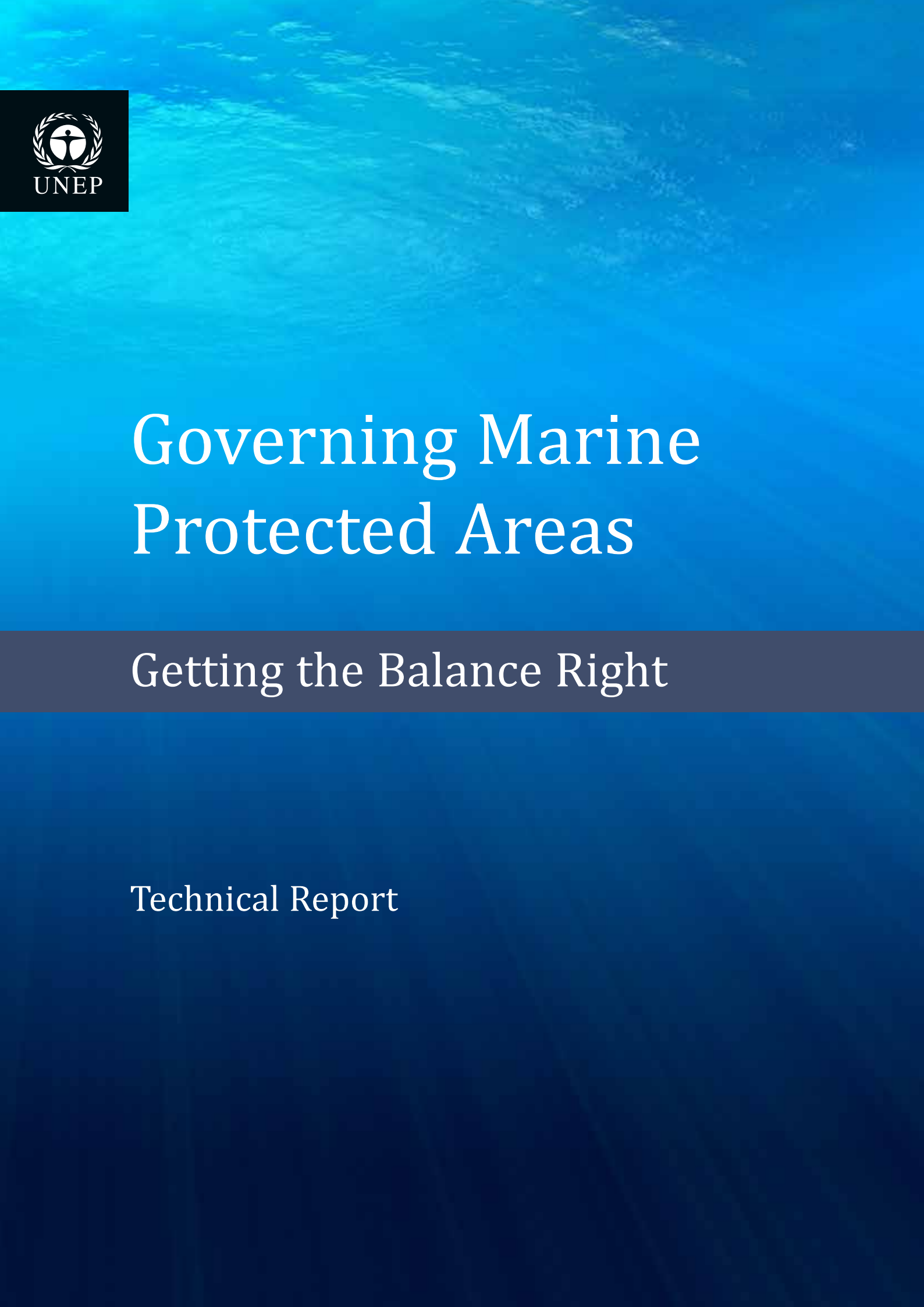

Governing Marine Protected Areas

Getting the Balance Right

Technical Report

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Authors:	Peter Jones and Wanfei Qiu, University College London (UCL), UK Elizabeth De Santo, Dalhousie University, Canada
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Project coordination:	Peter Jones, UCL and Ole Vestergaard, UNEP
Contact information:	University College London, Dept. of Geography, Gower Street, London, WC1E 6BT, UK. email: P.J.Jones@ucl.ac.uk. web: www.geog.ucl.ac.uk/~pjones
Web:	MPA Governance: www.mpag.info UNEP: www.unep.org/ecosystemmanagement

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Getting the Balance Right

Technical Report

Peter J. S. Jones, Wanfei Qiu, Elizabeth De Santo

UNEP

MPA governance workshop participants, Cres-Lošinj, Croatia, October 2009

MPA governance network

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Background

Whilst there is currently much guidance available on how to manage marine protected areas (MPAs), there is less guidance available that considers MPAs from a governance perspective. This perspective poses a key question – how do we *combine* top-down, bottom-up and market approaches for reaching and implementing decisions in order to achieve effective and equitable MPAs? It is widely accepted that all three approaches are important, but how might they be combined in different MPA contexts?

The need to address this question has led to a new partnership amongst a group of governance experts and MPA planners and managers to initiate development of guidance on governing MPAs in seas under national jurisdiction. Initial steps have included an international workshop supported by UNEP bringing together 20 MPA case studies from different regions around the world and different settings, and subjecting them to detailed analysis employing a governance analysis framework developed by Dr. Peter Jones, plus subsequent analysis of the findings and preparation of this report. The MPA case study analyses were focused on 'deconstructing' the complexities of MPA governance by employing 40 incentives from five categories. This technical report describes the findings of this research and is intended to provide a foundation for further case studies and discussion, employing the governance analysis framework, to provide a preliminary resource for MPA managers to consider how different incentives might be combined to support the governance of their MPA. It also resonates strongly with current debates in fisheries management about the role of incentives.

Thereby, the work directly underpins UNEP's core strategic effort to develop innovative approaches and capacity for implementation of cross-sectoral ecosystem-based management and governance of marine and coastal ecosystems and resources. Our plan is that further work will lead to the development of summary guidance for MPA managers and policy makers based on further and more in-depth case studies. UNEP is a partner in this work as it represents both a major contribution to debates about how MPAs and their natural resources might be governed, and provides an innovative approach for managers to think about how the governance of their MPA might be improved. The report conclusion that governance systems are similar to ecosystems, in that it is the diversity of incentives and their linkages that builds resilience, provides a novel perspective and is envisioned to stimulate debate and interest. The combined focus on theories, policies and practice is key to UNEP's approach and we hope this report will make a significant contribution in all these aspects.

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List of abbreviations

CBD	Convention on Biological Diversity
GEF	Global Environment Facility
GIS	Geographic Information System
GDP	Gross Domestic Product
ICDP	Integrated Conservation and Development Project
ITQ	Individual Transferable Quota
IUCN	International Union for Conservation of Nature
LEDC	Less Economically Developed Country
MA	Millennium Ecosystem Assessment
MEDC	More Economically Developed Country
MPA	Marine Protected Area
MPAG	The UNEP-funded marine protected area governance project, through which the work leading to the publication of this report has been undertaken
NGO	Non-governmental Organization
REDD	Reducing Emissions from Deforestation and Degradation
TURFS	Territorial User Rights in Fisheries
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Glossary of key terms

Actors: people from wider society, non-governmental organisations, user groups, regulatory agencies, corporate interests, *etc* who interact with each other in governance processes.

Collaborative management (Co-management): a partnership by which two or more relevant actors collectively negotiate, agree upon, guarantee, share and implement institutions that provide for the governance of a particular area or natural resource.

Decentralisation: the transfer of power and authority from the central government to lower-level governments, quasi-independent government organisations or the private sector. According to Rondinelli (2000) and Oxhorn (2004), there are different types and levels of decentralisation that allocate varying degrees and forms of autonomy to subnational governments, quasi-independent government organisations or the private sector:

- Deconcentration - the transfer of power for implementing decisions, but not for making decisions;
- Delegation - transfer of some decision-making authority with a degree of control from the central government over key aspects of policy; and
- Devolution - the transfer of maximum feasible but not necessarily total decision-making powers.

Effectiveness: the degree to which the ecological management objectives of a MPA are being fulfilled, particularly with regard to biodiversity and sustainable resource use.

Governance: the involvement of a wide range of institutions and actors in the production of policy outcomes… involving coordination through networks and partnerships,

or

Steering human behaviour through combinations of people, state and market incentives in order to achieve strategic objectives.

Incentive: a particular institution that is instrumentally designed to encourage actors to choose to behave in a manner that provides for certain strategic policy outcomes, particularly biodiversity conservation objectives, to be fulfilled.

Institution: very broad term covering a wide range of agreements, interactions, *etc*, which remain relatively stable over a certain period of time, including:

- mutually agreed modes of cooperative behaviour (norms);
- interactions through markets: local – distant;
- government policies and programmes; and
- legal instruments and related obligations.

Protected area: a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (IUCN 2008b).

Resilience: a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables (Holling 1973).

Stewardship: a sense of ownership and responsibility amongst natural resource users to manage and protect natural resources for their long-term sustainability and cultural heritage values.

Executive Summary

Debates about how to govern marine protected areas (MPAs) are taking place in the much wider context of debates about how we should go about managing people and the social, economic, political and bureaucratic systems of which they are a part. These debates are not confined to recent times; for example, Plato's philosophies (The Republic, 360BC) consider the role of the state in 'steering' human affairs, the word 'governance' being derived from his use of the Greek verb 'to steer'. Since Plato, many other influential thinkers have put forward various observations, ideals and theories concerning the relative importance of the roles of different approaches to governance:

- state steer: government and law;
- market steer: capitalism and economies; and
- people steer: communities and civil society.

There is a growing recognition in governance debates that there is a need to move beyond ideological arguments as to which approach is 'best' or 'right' and, instead, develop governance models, frameworks and approaches that combine the steering role of states, markets and people. Such integrated, pragmatic perspectives enable us to move on from ideological debates about whether we should rely on the strong hand of state power, the 'invisible hand' of market forces or the democratic hands of the people, and to consider how the three approaches can be effectively combined. These three perspectives on environmental governance are represented in the more specific context of protected area governance, where they are discussed in terms such as the following:

(1) Top-down: the need for state control through laws and other regulations to ensure that biodiversity and natural resources are actually 'protected' against degradation and destruction;

(2) Bottom-up: the need to adopt community-based approaches to protected area governance that decentralise decision-making processes and empower local people by involving them in deliberations and decisions; and

(3) Market incentives: the need for economic initiatives to support alternative, compatible livelihoods, *etc*; the need to attach an economic value to biodiversity in terms of natural capital and ecosystem services, as a means of providing for balanced decisions; the need to attach property rights to environmental resources in order to promote economic rationalism.

Collaborative management or co-management is a common concept or narrative that is employed in natural resource and protected area governance, to explore the challenges of combining these three approaches, whereby local communities and the state work on a partnership basis to sustainably manage natural resource use and/or conserve biodiversity, potentially involving all three of the approaches listed above. Co-management arguably simply serves as a new framing device as to the relative emphasis that should be placed on the three general approaches outlined above.

MPAs are an important focus for debates concerning how these different approaches can be combined in co-management. It is widely accepted that co-management of MPAs is the way forward, but there are many different interpretations of this concept and it is applied in many different ways amongst MPAs in different contexts. One way of considering the challenges of co-managing MPAs is to consider the question:

> *What does "design and management of MPAs must be both top-down and bottom-up" (Kelleher 1999) actually mean in practice?*

Rather than exploring this question and the related debates through the literature, this research project aims to explore it through a range of case studies, employing a specifically developed case study

research approach – the marine protected area governance (MPAG) framework – to support getting the balance right between the three governance approaches and, ultimately, between the conservation of marine biodiversity and the sustainable use of marine resources. In examining the relative roles of state, market and people-steered approaches, the different case studies examined in this project will explore the proposition that whilst certain approaches are effective at addressing some challenges in some contexts, other sorts of approaches are generally required to address other challenges in other contexts.

The effectiveness of an approach or, more likely, a **combination of approaches** in a given case will depend significantly on the challenge and the attributes of the local context in which the challenge has emerged. In addition, the national and international contextual attributes, particularly those related to strategic statutory biodiversity conservation obligations, need to be considered. An important element of this approach is that case studies are analysed on the basis of the governance approaches that are actually effective in addressing conflicts and achieving conservation objectives, rather than on the basis that a particular category of governance approaches, based on state, people or market steer, should be effective. Protected area governance case studies are thus assessed on an open and realistic basis, rather than on the basis of theoretical and ideological ideals by which a particular governance approach might be considered to be 'right' or 'best'. **The 'bottom line' for these case study analyses is whether the governance of a given MPA is effective in achieving specific conservation objectives and how governance might be improved in order to be more effective**.

The advantages of this case study approach are that it is based on empirical analyses that explicitly consider all aspects of the context of a given case study and that the case studies are deliberately sought in a representative variety of contexts. Furthermore, the analyses are designed to address which combinations of governance approaches are effective in a given context on the basis of what is observed in reality rather than on the basis of theoretical and ideological ideals. This will provide for case study analyses that are not biased by preconceived assumptions concerning the 'best' governance approach, but instead assess the actual effectiveness of different combinations of governance approaches. In turn this will provide for the development of governance approaches that appear to be effective in particular contexts, and thereby the development of 'good practice' that can be transferred to other MPAs in similar contexts. The key to such good practice in governing MPAs will be to combine the steering role of the state, markets and people through an appropriate balance of approaches, given the conflicts and context of a particular case.

This study will consider these sources of steer in terms of **incentives**, which are defined for the purposes of this project as:-

Institutions that are instrumentally designed to encourage people to choose to behave in a manner that provides for certain strategic policy outcomes, particularly biodiversity conservation objectives, to be fulfilled

These are divided into five categories that can be related to the three modes of governance discussed in the table on the next page:

Economic incentives	Using economic and property rights approaches to promote the fulfilment of MPA objectives.	Market steer
Interpretative incentives	Promoting awareness of the conservation features of the MPA, the related objectives for conserving them, the policies for achieving these objectives and support for related measures.	Supporting all three approaches
Knowledge incentives	Respecting and promoting the use of different sources of knowledge (local/traditional and expert/scientific) to better inform MPA decisions.	Supporting all three approaches
Legal incentives	Establishment and enforcement of relevant laws, regulations, *etc* as a source of 'state steer' to promote compliance with decisions and thereby the achievement of MPA obligations.	State steer
Participative incentives	Providing for users, communities and other interest groups to participate in and influence MPA decision-making that may potentially affect them in order to promote their 'ownership' of the MPA and thereby their potential to cooperate in the implementation of decisions.	People steer

Examining the 20 case studies on which this study focuses reveals a variety of different governance approaches employed to address MPA-related conflicts and to support the achievement of MPA objectives. Five broad approaches to MPA governance can be recognised in the 20 case studies. This categorisation is based on the defining characteristics and attributes of MPA governance, namely the allocation of authority and responsibilities between different parties and/or actors involved in governing MPAs, the type of rules that are followed in MPA decision-making and conflict resolution, and key incentives used to steer related processes.

Approach I

MPAs managed primarily by the government under a clear legal framework (government-led)

MPA governance under this category is characterised by having a well established legal framework, with clearly defined MPA objectives, restrictions on different uses, jurisdictions and responsibilities of different government institutions, and rights and obligations of the public. Legal incentives are the key drivers in most MPA-related processes, ensuring that the statutory conservation objectives are fulfilled in MPA decision-making. However, the legal framework also provides a basis for community participation, which is guided by specific legal provisions as a means of promoting transparency, equity and compliance in achieving statutory MPA objectives. It is important to note that the MPAs categorised as government-led also employ the other four categories of incentives and that having a strong government lead certainly does not preclude opportunities for community participation, though legal incentives were most frequently cited as being both used and needed (Figure 2). MPAs adopting this governance approach are the Great Barrier Reef Marine Park (Australia), Darwin Mounds candidate Special Area of Conservation (UK), North-East Kent European Marine Site (UK), Wash and North Norfolk Coast European Marine Site (UK), California Marine Life Protection Act (US) and US National Marine Sanctuary System (US).

Approach II

MPAs managed by the government with significant decentralisation and/or influences from private organisations (decentralised governance)

MPA governance under this category is characterised by a sharing of authority and responsibilities between central/federal governments and lower levels of government, or between government institutions and non-governmental/private organisations. MPAs are managed in accordance with

formal regulations and/or through partnerships and negotiations between different parties. A variety of governance incentives are employed in MPAs that adopt this approach, depending on the context and main focus of the MPA, but economic incentives were most frequently cited as being currently used whilst legal incentives were most frequently cited as being needed to improve governance (Figure 3). MPAs adopting this governance approach are the Sanya Coral Reef National Marine Nature Reserve (China), Seaflower Marine Protected Area (Columbia), Galápagos Marine Reserve (Ecuador), Karimunjawa Marine National Park (Indonesia), Wakatobi National Park (Indonesia), Tubbataha Reefs Natural Park (the Philippines), and Ha Long Bay World Natural Heritage Area (Vietnam).

Approach III

MPAs managed primarily by local communities under collective management arrangements (community-led)

MPA governance under this category is characterised by local communities taking a lead in the conservation and sustainable use of marine resources, which is essential for the long-term social and economic well-being of communities. Community institutions (*e.g.* local fishing cooperatives) are often granted a significant level of autonomy to collectively decide the rules governing MPA management. External organisations, such as government departments and conservation NGOs, may have an important role in enabling and reinforcing such community initiatives, and ensuring that such community efforts are consistent with existing legal and policy frameworks, including the fulfilment of fisheries and biodiversity conservation objectives/obligations. Again, all categories of incentives are employed but economic incentives were most frequently cited as being used to promote community ownership of MPAs whilst legal incentives were most frequently cited as being needed (Figure 4). MPAs adopting this governance approach are Isla Natividad (Mexico) and Os Miñarzos Marine Reserve of Fishing Interest (Spain).

Approach IV

MPAs managed primarily by the private sector and/or NGOs granted with property/management rights (private-led)

MPA governance under this category is characterised by non-governmental and/or private organisations taking the main responsibility for MPA management and enforcement. Such organisations are often granted with permanent property rights or temporal management rights to a particular area of sea, where they fulfil conservation and resource management responsibilities. Such organisations work independently, but often collaborate with public institutions to enhance the effectiveness of their conservation efforts. Incentives employed to steer MPA management vary between MPAs that belong to this category depending on the context as well as the core values of the leading organisation. Economic incentives were most frequently cited as being used to promote effective governance whilst legal incentives were most frequently cited as being needed (Figure 5). MPAs adopting this governance approach are Chumbe Island Coral Park (Tanzania) and Great South Bay Marine Conservation Area (United States).

Approach V

No clearly recognisable effective governance framework in place

The development of MPA governance in this category is hindered by a lack of political will, leadership and capacity from all levels to develop effective governance structures and arrangements that would support the achievement of any MPA objective, often in the face of strong driving forces counter to conservation. Few incentives are successfully applied to address conflicts and steer MPA processes in this category and participative, interpretative and knowledge incentives were most frequently cited as

being used, whilst legal and economic incentives were most frequently cited as being needed to improve governance (Figure 6). MPAs adopting this governance approach are Baleia Franca Environmental Protected Area (Brazil), Pirajubaé Marine Extractive Reserve (Brazil), and Cres-Lošinj Special Marine Reserve (Croatia).

Overall, all five categories of incentives have been widely applied to steer MPA governance in the case study MPAs, based on the sum of the frequency with which individual incentives within each category are cited as being **used** (Figure 7), though there are differences in this respect between the case study governance approach groups. In general, across all 20 case studies, economic and legal incentives were more frequently cited as being used, but the differences are relatively minor. There are, however, greater differences in the frequency with which incentives within each category are cited as being **needed**. It is particularly notable that legal incentives were cited as being needed to improve governance more often (38) than the other four categories of incentives combined (total 27) (Figures 7 & 9). This illustrates the importance of legal incentives for improving and reinforcing governance frameworks, based on this sample of 20 case studies analysed through the MPAG framework.

The results show that although in the past decades, both the academic and policy communities have called for and adopted new approaches, such as collaborative management and the introduction of market mechanisms to effectively govern protected areas, improving MPA governance may still hinge on overcoming some of the 'old problems', which are as pressing now as in the past when a more top-down governance framework was in place. **Old problems waiting to be addressed in many MPAs include establishing a clear and strong legal basis to enable well-integrated conservation efforts to be taken across different sectors and jurisdictions. Perhaps more importantly, improving MPA governance cannot be achieved without generating sufficient state capacity, political will and resources for the enforcement of conservation laws and regulations**. This is partly because successful implementation of 'new' governance approaches may also require a strong legal basis, such as legal provisions to ensure local people's rights to participate in governance processes and to protect community property rights to natural resources against corporate development. In the face of strong driving forces, legal incentives are often essential in preventing over-exploitation by incoming and local users, which may lead to catastrophic declines in marine resources vital to the livelihoods of coastal communities.

A number of case studies also identify knowledge incentives as priorities to improve MPA governance, particularly an agreed basis for the use of precautionary approach, as well as economic incentives, particularly measures to reduce the 'leakage' of the economic benefits of the MPA away from local people. The reinforcement of community/user property rights is also identified by a number of case studies as a priority to improve MPA governance (Figure 9). Overall, the results show that MPA governance can become more effective, equitable and resilient to external driving forces if **different incentives are combined** to address conflicts and challenges.

In the preparation of the case study summaries (Volume 2), attention was drawn in the framework to a number of cross-cutting issues, as the workshop discussions and subsequent analyses indicated that such issues underlie the use and effectiveness of different incentives. These include *leadership*, *the role of NGOs*, *equity*, *stewardship*, *driving forces*, and *the key role of the state* (for more detail, see section 3.4). Notwithstanding the differences in context and the governance approach adopted amongst the case studies, some key factors can be identified as being particularly important for developing good MPA governance in most cases, including:

- provision of sustainable economic development opportunities within or adjacent to MPAs;
- fair sharing of economic benefits and costs from MPAs;
- public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of MPAs;
- use of all available information and knowledge to guide/inform MPA decision-making;
- political will and capacity for passing and enforcing laws and regulations that provide for effective

MPA management;
- provision of opportunities for different user and public groups to participate in MPA decision-making processes;
- leadership from individuals and organisations within governments, NGOs, the private sector, academic institutions, and/or local communities; and
- strong sense of stewardship of the MPA among communities and users.

It is clear from these case studies that MPA governance should be considered in terms of how incentives can be combined, rather than whether any particular category of incentives is 'best', and that many incentives can be employed to support both top-down and bottom-up approaches. Accepting that all five categories of incentives have an important role to play in any given MPA context, the emphasis becomes one of combining the use of as great a **diversity** of incentives as feasible in order to develop a governance framework that is more **resilient** to the perturbing effects of driving forces (global fish markets, corporate tourism, incoming users, *etÃ*). As such, **discussions concerning the resilience of governance frameworks resonate with discussions concerning the resilience of ecosystems**.

In a similar manner, this study suggests that it is the **combination and inter-connection of different incentives from different categories that makes governance frameworks more resilient**, with legal incentives constituting strong links that reinforce the governance framework against potential perturbing driving forces, and incentives from the other four categories constituting weaker links, without which the framework is inherently unstable. Simple governance frameworks, consisting mainly of incentives from any one category, including strong legal or participative incentives, may not be resilient to the potentially negative impacts of driving forces on marine biodiversity and resources.

Resilience in MPA governance frameworks is woven by complex webs connecting incentives from all five categories. Recognition of this addresses the question '*What does "design and management of MPAs must be both top-down and bottom-up" (Kelleher 1999) actually mean in practice?*' and will also allow us to move on from debates about which category of incentives is 'best' towards more practical debates about how incentives can be combined and inter-linked in order to develop resilient governance frameworks. It is planned that the 'menu' of 40 governance incentives developed through this study (Appendix 2) coupled with the MPA case study examples of how they have been combined in different contexts will constructively contribute to such debates and, more importantly, practices that provide for equitable and effective approaches to MPA governance.

It is envisaged that there will be three ways in which the marine protected area governance (MPAG) initiative can be taken forward:

- this technical report can be used as a framework for assessing governance issues in any given MPA, particularly the menu of 40 incentives, which serves as a list of potentially applicable governance approaches. This list of incentives can be coupled with guidance from the case studies describing how incentives have been used and combined in different contexts and which incentives were particularly needed;
- the findings of this phase of the MPAG initiative can be applied in a more in-depth manner to a smaller number of case studies, in collaboration with the project team, in order to test and refine them; and
- this MPAG analysis framework can be applied on a meta-analysis basis to a larger sample of MPA case studies, with the online assistance of the project team, and the findings added to those reported here in an expanding database of case studies. This will provide the further development and refinement of the framework and the findings, and further analyses of MPA governance issues based on a larger sample of case studies.

It is planned that all three approaches will be pursued and a dedicated website for this project has been established to facilitate this and disseminate the findings – www.mpag.info.

Full list of incentives

Full list of incentives (40), including those not cited as being applied or needed in this preliminary project. Those marked with an asterisk (*) are not cited as having been used and/or needed in this study amongst this initial trial sample of case studies. For the rest of the incentives, examples of their use in the case studies can be found in this report – see pages 20-25 for a list of the incentives against the case studies that used them.

Economic incentives

- Promoting sustainable fisheries by providing a refuge for marine organisms in no-take zones in order to safeguard and enhance harvests in adjacent fishing grounds through spill-over/export, insurance against uncertainty, increased resilience, *etc.*
- Promoting the 'green marketing' of tourism, fisheries, *etc.* products from the MPA to increase profits through price premiums.
- Ensuring that a fair proportion of the economic benefits arising from the extractive (fishing, *etc.*) and non-extractive (tourism, research, *etÃ¸*) uses of the MPA flows to the local people, including active measures to reduce the 'leakage' of such benefits.
- Direct payments for the flow of ecosystem services provided by the MPA, i.e. marine REDD.*
- Seeking and promoting alternative livelihood and economic development opportunities that are compatible with the achievement of the biodiversity conservation objectives and can generate sustainable income for local people.
- Providing fair economic compensation for those users who carry costs as a result of restrictions on their activities that cannot reasonably be offset through alternative compatible opportunities, *e.g.* fisheries buy-outs, decommissioning schemes.
- Re-investing some of the MPA income that flows to the state to develop local facilities (schools, medical care, *etc*.) and infrastructure (roads and other transport links, electricity, water, *etc*.).
- Assigning property rights for certain marine areas and fisheries to appropriate groups of people to promote ownership, stewardship, rational self-interest in sustainable use, *etc.*
- Ensuring that a sufficient degree of state funding is available to support the governance of the MPA, particularly in relation to enforcement and the economic incentives listed above, whilst ensuring that such funding does not allow the state to 'capture' MPA governance by undermining the balance of power discussed below in relation to participation incentives.
- Seeking corporate and NGO funding through endowments to support the governance of the MPA, particularly in relation to enforcement and the economic incentives listed above, whilst ensuring that such funders cannot 'capture' MPA governance through an inappropriate degree and type of influence.

Interpretative incentives

- Using the media, champions and various interpretative approaches to overcome 'out of sight, out of mind' and alienation hurdles by raising the awareness of users, local people, relevant authority officers, politicians, *etc.* about the aesthetic values, ecological importance and vulnerability of marine biodiversity in terms of the species, habitats, ecosystems and 'landscapes' of the MPA.
- Promoting recognition of the potential resource benefits of the conserved areas in terms of spillover/export benefits for wider fisheries, insurance/resilience, *etc*, whilst being realistic about such potential benefits and not 'over-selling' them.
- Promoting recognition of and respect for the MPA's regulations/restrictions, including the boundaries.

Knowledge incentives

- Explicitly recognising the challenges raised by scientific uncertainty and the importance of developing approaches to help reduce and address such challenges, *e.g.* establishing ground rules for the interpretation and application of the precautionary principle, decision-making under uncertainty, and adaptation in the light of emerging knowledge.
- Developing mechanisms for independent advice and/or arbitration in the face of conflicting information and/or uncertainty.
- Promoting mutual respect amongst local people and scientists for the validity of each other's knowledge and promoting collective learning through partnership research, research/advisory groups, participative GIS, participative workshops, *etc*. (*e.g.* conducting studies in collaboration with users on the patterns of biodiversity and resource use within MPAs, including trends).
- Maximising scientific knowledge to guide/inform MPA decision-making and monitoring/evaluation.

Legal incentives

- International-regional-national-local legal obligations that require effective MPA conservation, including the potential for top-down interventions.
- Adopting a sensitive but decisive approach to legal interventions to address basic conflicts that would otherwise undermine the fulfilment of marine biodiversity conservation objectives.*****
- Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to ensure the equitable and effective enforcement of all restrictions on all local and incoming users, including addressing the **driving forces** of incompatible trends in exploitation activities **–** pressures from immigration, corporate mass tourism, fisheries market forces, *etc*.
- Clarity and consistency in defining the legal objectives of MPAs, general and zonal use restrictions, and the roles and responsibilities of different authorities and organizations.
- Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc.*
- Promoting clarity and openness concerning the jurisdictional limitations of the MPA legislation, *i.e.* recognising what driving forces, activities and impacts cannot be directly addressed by the MPA legislative framework and exploring means of addressing such factors.*****
- Employing legal adjudication and other formal and widely respected decision-making platforms to address and regulate conflicts.*****
- Scope for legal flexibility – adaptive management and local discretionary action – maintaining, reinforcing, building on and working through local customary institutions, provided that this does not undermine the fulfilment of conservation objectives.
- Effective judicial system for penalising transgressors in a way that provides an appropriate level of deterrence.
- Legal or other official basis for coordination between state and local authorities, and between conservation and other government agencies/law enforcement units, to address cross-jurisdictional and cross-sectoral conflicts in order to support the achievement of MPA objectives.
- Establishing legal provisions to ensure the transparency in MPA management processes, *e.g.* statutory requirements for public access to information, appeals, public hearings, *etc*.

Participative incentives

- Developing participative governance structures and processes that support collaborative planning and decision-making, *e.g.* user committees, participative geographic information system (GIS), postal consultations on proposals that provide for detailed feedback, participative planning workshops, *etc.*, including training to support such approaches.
- Delegating some roles, responsibilities and powers to local people through a clear management structure, whilst maintaining an appropriate balance of power between local people and the state in relation to the legal biodiversity conservation obligations. Managing expectations in this respect can be particularly important by being realistic about the degree of autonomy and influence that local people can expect.*****
- Clear rules on the means and degree of participation from different groups and the unbiased representation of all user groups in participation processes.
- Building trust/social capital) between different actors through transparency, face-to-face discussions, equity promotion, *etc*., recognising that this can lead to an 'upward spiral' (Ostrom 1999) of cooperation and confidence that cooperation will be reciprocated amongst MPA users, whilst erosion of trust through lack of transparency, equity, enforcement, *etc*. can lead to a 'downward spiral'.
- Strategically developing and strengthening linkages amongst relevant state authorities and key user representatives, including mutual trust, in order to promote the fulfilment of biodiversity conservation obligations and build resilient governance structures ('bracing' social capital; Rydin 2006).*****
- Transparent participation and decision-making processes, including about how user participation has affected decisions and why it may or may not have done, and being very clear and honest, once decisions are made, about the potential benefits and costs, as well as the restrictions imposed on certain users.
- Providing for participative enforcement, *e.g.* peer enforcement, community rangers/wardens, and promoting the potential for cooperation and peer enforcement through the development of a sense of ownership of the MPA and respect for related decisions.
- Promoting consistency with and respect for local traditions, customs, norms and practices, in so far as they are compatible with and contribute towards the fulfilment of marine biodiversity conservation objectives/obligations, recognising that compromises on both sides may need to be negotiated in such 'hybrid' institutions (Cinner & Aswani 2007).*****
- Providing for a degree of local protectionism from incoming users, recognising that exploitation by incoming users often poses a major threat to local biodiversity and resources.*****
- Promoting recognition & realisation of the potential for a the participative governance of a given MPA to influence the higher-wider statutory framework, processes and obligations, *i.e.* that local users can have an influence on higher level institutions as well as being influenced by them - co-evolution.*****
- Bringing in 'neutral' facilitators to support governance processes and negotiations or training state employees to do so.
- Employing 'neutral' and widely respected panels to arbitrate on issues and recommend decisions.*****

Structure of the report

Readers who wish to go straight to the key findings of this report are recommended to go first to Table 3 on pages 17-18, which summarises the 20 case studies, then the results and discussion section on pages 20-48, which sets out the key findings, and then the conclusions-next steps sections on pages 49-50. The 40 incentives identified through this project are listed and described in full at the end of the executive summary and on pages 103-105, and briefly listed on pages 20-25, including the number and names of case studies that were found to have employed each incentive.

This report is divided into two volumes. Volume one contains the authors' synthesis and analysis of MPA governance, based on the 20 case studies of MPA governance in different contexts. Detailed information for each of the 20 case studies can be found in the second volume of the report, which compiles the 20 original summaries produced by the case study authors. Both volumes will be hosted at a dedicated website – www.mpag.info – to facilitate the dissemination of the findings and follow-up discussions.

The main text of Volume One is divided into several parts. In the 'introduction' section, the theoretical background to MPA governance approaches is outlined. In the 'methods' section, a framework for analysing different governance approaches is outlined and the methods and processes employed to collect and analyse case study information is described. This framework contains a list of incentives, divided into five broad categories (see Appendix 2), which can be seen as the basic elements of MPA governance in any given context. The development of this framework enables MPA governance to be analysed in a systematic way and allows comparisons across different case studies.

In the 'results and discussion' section, the results from the analysis of the 20 case studies are discussed. Sub-section 3.1 is an overview of how frequently the incentives have been applied in all case studies, and a list of MPAs in which a particular incentive has been applied. In sub-section 3.2, the 20 case studies are grouped into five categories of governance approaches, based on the key characteristics and attributes of MPA governance. For each category of MPA governance, the contexts in which it has been observed are outlined and the key incentives that have been applied and are needed to improve MPA governance are analysed. This is then followed by a summary and comparison between different case studies (sub-section 3.3). Finally, the discussion in sub-section 3.4 focuses on the cross-cutting issues that emerged from the analysis, which underlie the use and effectiveness of different incentives in all categories of MPA governance.

In the 'conclusion' and 'next steps' sections, key conclusions from this project and plans for follow-up work are summarised.

The discussion in this volume draws on the analysis of 20 case studies (Volume Two), with key findings in each case study synthesised in the 'essence' reports (Appendix 1 in this volume). For readers who have a special interest in the application of a particular incentive or a particular category of MPA governance, the 20 case study summaries can be navigated on the basis of the incentives which have been applied (see section 3.1) or the governance category that they belong to (see Table 3).

1. INTRODUCTION

1.1 Governance

1.1.1 The origins and main elements of governance in relation to protected areas

Governance can be defined as 'the involvement of a wide range of institutions and actors in the production of policy outcomes…..involving coordination through networks and partnerships' (Johnston *et al.* 2000). There are different analytical lenses that can be used to examine such networks, both in vertical planes (*i.e.* from local to national to international levels) and horizontal planes (*i.e.* between different sectors and organisations at the same level). A protected area is '*a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*' (IUCN 2008b).

Debates about how to govern marine protected areas, along with their terrestrial counterparts, are taking place in the much wider context of debates about how we should go about managing people and the social, economic, political and bureaucratic systems of which they are a part. These debates are not confined to recent times, for example Plato's philosophies (*The Republic*, 360BC) consider the role of the state in 'steering' human affairs, the word 'governance' being derived from his use of the Greek verb 'to steer'. Since Plato, many other influential thinkers, such as Marx, Hobbes, Machiavelli, Locke, Bodin, Smith, Weber, Dahl and Habermas have put forward various observations, ideals and theories concerning the relative importance of the roles of:

- state steer: government and law;
- market steer: capitalism and economies; and
- people steer: communities and civil society.

A full consideration of these debates is beyond the scope of this report, but in the context of discussions on how we might manage human affairs and activities in a manner that considers their impacts on our environment, which are often framed within the concept of sustainable development, these debates can be considered in terms of three perspectives or discourses (*e.g.* Dryzek 2005):

- administrative rationality – 'leaving it to the experts';
- economic rationality – 'leaving it to the markets'; and
- deliberative pragmatism – 'leaving it to the people'.

Whilst Ostrom (2007) highlights the importance of going beyond panaceas to provide for the development of systematic analyses of the attributes of different governance case studies, recognising their linkages with wider socio-economic, political and ecological structures, many governance analyses remain primarily focused on the role of people and civil society, and resistant to state controls. This is consistent with Kjær's (2004) observation that whilst governance analyses should consider the role of the state as government, since the 1980's governance has increasingly been considered by many analysts as being distinct from government in its focus on people and civil society.

Against this background, the following definition of governance is considered to be more appropriate: '**Steering human behaviour through combinations of people, state and market incentives in order to achieve strategic objectives**'. This definition is consistent with the growing recognition in governance debates that there is a need to move beyond ideological arguments as to which approach is 'right' and, instead, develop governance models, frameworks and approaches that combine the 'steering' role of states, markets and people. Such integrated, pragmatic perspectives enable us to move on from ideological debates about whether we should rely on the strong hand of state power, the 'invisible hand' of market forces or the hands of the people, and to consider how the three approaches can be effectively combined.

These three perspectives on environmental governance are represented in the more specific context of protected area governance, where they are discussed in terms such as the following:

(1) Top-down: the need for state control through laws and other regulations to ensure that biodiversity and natural resources are actually 'protected' against degradation and destruction;

(2) Bottom-up: the need to adopt community-based approaches to protected area governance that decentralise decision-making processes and empower local people by involving them in deliberations and decisions. Advocates of such approaches often highlight local sources of knowledge and customs on which traditional sustainable resource use practices are generally based, that are usually considered to be compatible with biodiversity conservation; and

(3) Market incentives: the need for economic initiatives to support alternative, compatible livelihoods, *etc*; the need to attach an economic value to biodiversity in terms of natural capital and ecosystem services as a means of providing for balanced decisions, that might otherwise favour exploitation; the need to attach property rights to environmental resources is also often emphasised as a means of improving governance by using market incentives to promote economic rationalism[1].

Collaborative management or co-management is a common concept or narrative that is employed in natural resource governance, including protected areas, to explore the challenges of combining these three approaches, whereby local communities and the state work on a partnership basis to sustainably manage natural resource use and/or conserve biodiversity, potentially involving all three of the approaches discussed above. Indeed, co-management was adopted as the 'new paradigm' for protected area governance at the last IUCN World Park's Congress (Phillips 2003). Co-management does, however, arguably simply serve as a new framing device for the same debates as to the relative emphasis that should be placed on the three general approaches outlined above, in the same manner as for the concepts of sustainable development and the ecosystem approach. As such co-management can be interpreted and implemented in many ways, the following being three key perspectives on it.

1.1.2 Protected area co-management as more a bottom-up approach

Co-management is essentially a reaction to the failures of previous top-down 'fortress conservation' approaches to protected area governance, particularly in less economically developed countries (LEDCs). These were failures not only in that restrictions on local, often indigenous, people on living, grazing livestock, gathering wood, hunting and 'poaching' within protected areas proved to be difficult to enforce due to their resistance to and defiance of such imposed measures, but also in that they were unjust, Jones and Burgess (2005) discussing these in terms of the 'risks of imposition'. Growing awareness of the resistance and injustices associated with fortress conservation in the 1980's and 1990's led to efforts to provide for the greater involvement of local people in decisions.

Such attempts to provide for the participation of local people associated with protected areas led to the emergence of the co-management approach that it is widely considered to be the model on which protected area governance should be based. It is, however, a model with a particular emphasis on community-based approaches to protected area governance as a mean of addressing the imbalances and injustices associated with fortress conservation. Whilst co-management is, in principle, focused on promoting the sharing of power between the state and local people and the development of a partnership approach, as a reaction against a history of the wielding of power by the state, the emphasis

[1] The originator of the metaphor that the 'invisible hand' of market forces amongst self interested individuals can efficiently guide decisions to achieve societally optimum outcomes, Adam Smith, recognised that government intervention is required in some circumstances (Stein 1994). Indeed, the recent global collapse of many economic systems is attributed by many to a lack of government regulation (The Economist 2008), which allowed short-termism and self-interest to prevail in many markets. This might be considered as a warning concerning the potential collapse of ecological systems should such market interests be allowed to prevail in biodiversity and natural resource conservation governance through a lack of regulatory steer from the state.

is often on devolving as much power as possible to local people and organisations, *i.e.* a bottom-up approach to governance.

1.1.3 Protected area co-management as too top-down an approach

It has been argued that protected areas governed through co-management represent the continued imposition of western wildlife preservation values (Brockington 2002) and that co-management thus serves as a veneer for the continued disempowerment and impoverishment of local people. As such, participation is argued to represent a tyranny that disguises a continued imbalance in power, the state deciding who, how and why local people should participate (Cook and Kothari 2002). Given that most protected areas are identified by national decree and the state decides if and how to involve local resource users, proponents of co-management also have concerns that protected areas risk being too 'top-down' to provide for the meaningful participation of local people (Borrini-Feyerabend 1999).

Many governance analysts consider that protected areas represent an imposition of western science and values that serves to marginalise the power and interests of local people. Accordingly, a key principle of good governance is that the state's role should shift from that of 'controller' to 'facilitator' (Ostrom 1990). Similarly, one of the 33 critical conditions for sustainable governance institutions reviewed by Agrawal (2001) is that central governments should not undermine local authority, and this is also considered to be one of three basic necessary conditions by Stern *et al.* (2002). Given that many protected areas are the result of top-down priorities and initiatives, Goodwin (1999) questions whether such imposed designations are appropriate if we focus "on participation as a process, in which the objectives and actions are not settled in advance but emerge from the act of participation itself."

The logical extension of these analyses has recently been expressed in arguments that protected areas, even those governed through 'co-management', can contribute to the problem of overexploitation rather than representing the solution, in that they disempower local people and undermine both traditional means of sustainably exploiting nature and the potential for local people to cooperate with conservation restrictions (Hayes 2006, Hayes and Ostrom 2005, Ellis and Porter-Bolland 2008). These arguments are supported by analyses that indicate that forest areas that are not designated as protected are actually better conserved than 'protected areas', as a result of community-based initiatives and traditional sustainable natural resource use practices. The reliance on protected areas, which essentially represent top-down initiatives despite the power-sharing claims of co-management, is thereby called into question, as are claims that protected area co-management represents a more bottom-up approach.

1.1.4 Protected area co-management as too bottom-up an approach

Whilst the above two perspectives are focused on the problems and risks of imposing protected areas, there is a growing awareness of the 'risks of parochialism' associated with taking a more bottom-up approach to protected area governance through co-management (Jones and Burgess 2005). McClanahan (2004) argues that the co-management paradigm could lead to a hollow victory - protected area approaches that successfully promote resource user participation but that result in a "picked-over and emaciated carcass of biodiversity". Terborgh (1999) similarly argues that the dominant emphasis on sustainable development, coupled with increased numbers of 'settlers', is leading to the degradation and destruction of allegedly protected areas. The focus of such concerns is that resource exploitation and economic development objectives often dominate local decision-making processes, over-riding objectives to protect biodiversity. Walters (2004) and Saunders *et al.* (2008), for instance, highlight how mangrove conservation projects which are recognised as a success story for community-based conservation are actually undermining biodiversity conservation objectives by the gradual replacement of natural mangroves with mangrove plantations, through a focus on local resource exploitation interests.

In keeping with the view that biodiversity represents a 'common concern of humankind' (Preamble, CBD) and Terbogh's (1999) view that local-national political and economic vested interests, if not corruption, are often behind its degradation and destruction, he argues for much stronger top-down controls through an international body to ensure biodiversity conservation in LEDCs, an approach that could be criticised as representing neo-colonialism or even ecofascism (Adams 2004, p224). There are top-down obligations to conserve biodiversity, including through effective protected areas, which are aimed at addressing growing international concerns about the impacts of human activities on habitats and species, often considered in terms of biodiversity losses. The effects of these losses include undermining the resilience of the ecosystems in question and their ability to deliver ecosystem services that support human well-being (MEA 2005).

At the 7th Conference of the Parties (2004) to the Convention on Biological Diversity (CBD), for instance, it was agreed that 10% of the area of all the world's habitat types should be effectively conserved, including through protected area designations, recognising that some terrestrial habitats and most marine habitats are under-represented, and that many protected areas are not effective in achieving their biodiversity conservation objectives. Though the international community has no effective legal means of actually enforcing treatise such as the CBD, they do form an international framework for cooperation that creates political pressures to comply at a national level, and are better enforced than is often realised (Lyster 1985). Whilst such top-down obligations may not represent the strong international controls to ensure the protection of biodiversity that Terborgh (1999) argues for, thereby arguably avoiding the criticism that they represent neo-colonialist impositions, they do represent significant strategic obligations under international conventions, or a form of international legal order, albeit one that raises adjudicative and enforceability challenges (Sands 2003, 11-15).

The key challenge that protected areas face is to address the basic conflict between biodiversity conservation objectives and resource use objectives, recognising that whilst the latter may be sustainable and include traditional approaches that help contribute to the former, this may not necessarily be the case, particularly given the increasing reach and influence of markets, growing human population, increasing aspirations to raise our standard of living, and improved exploitation technologies. Advocates of more top-down approaches consider that such binding obligations are necessary to encourage governments to address such basic conflicts whilst also providing them with the capacity to do so, particularly in relation to protected areas. This arguably requires the state to exercise a degree of control in certain circumstances, particularly where parochial priorities and related corporate and political vested interests risk undermining strategic biodiversity conservation objectives. As such, they also consider that protected area co-management can provide a framework for parochial and vested interests to undermine biodiversity conservation and that the state must therefore retain the legal authority and capacity to exercise top-down control to ensure that designated areas are actually protected. It is considered that such top-down protection is necessary to fulfil biodiversity conservation obligations, enabling protected areas to contribute to strategic, wider-scale, longer-term objectives.

1.1.5 The pervasive nature of market incentives

It is interesting to note that market incentives emerge as key elements in most perspectives on co-management. Advocates of more bottom-up approaches often stress the importance of providing for local people to yield the benefits generated by tourism and other compatible economic development opportunities within protected areas. Such approaches are often discussed in terms of integrated conservation and development projects (ICDPs), in which most of the economic benefits from such developments are yielded by local people, who bear many of the lost opportunity costs due to protected area restrictions (Adams *et al.* 2004), rather than such benefits being yielded by incoming developers. 'Ecotourism' is an important economic development opportunity in this respect. Connecting local people to external markets is also seen as a means of increasing the probability that community-based conservation will be successful by increasing local economic benefits from sustainable and compatible

natural resource exploitation activities (Berkes and Seixas 2008), as is the assignation of property rights – tenure – to local people (Hayes and Ostrom 2005), by increasing their ownership of local resources and thereby promoting their role as responsible stewards.

Advocates of more top-down approaches recognise the international equity issues that protected areas can raise through foreclosing economic development opportunities related to logging, fishing, agriculture, *etc*. that often conflict with biodiversity conservation objectives. Such equity issues are recognised by, various instruments including the CBD, Article 11 of which includes obligations to adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of biodiversity. These measures can include the transfer of funds from more economically developed countries (MEDCSs) to LEDCs, recognising that the latter are often relatively rich in terms of biodiversity but relatively poor in economic terms, to support biodiversity conservation through measures such as protected areas and to assist in capacity building to conserve such areas. The Global Environment Facility (GEF), for instance, is the mechanism for such funding transfers under the CBD, providing $2.2 billion in grants and leveraging $5.2 billion of co-financing to support 750 projects in 155 countries between 1991 and 2006 [2]. There are proposals under the United Nations Framework Convention on Climate Change (UNFCCC) for the introduction of a funding transfer mechanism to reduce emissions from deforestation and forest degradation (REDD) in developing countries (Miles and Kapos 2008). This would essentially involve payments to the governments of LEDCs in return for them ensuring that tropical forests are not harvested or degraded, particularly in protected areas, as a means of mitigating against climate change. To this end, article 6-10 of the Copenhagen Accord, agreed in December 2009 under the UNFCCC, set out a commitment for MEDCs to provide $30 billion a year to fund mitigation measures in LEDCs, including REDD schemes, rising to $100 billion a year by 2020, through the Copenhagen Green Climate Fund. Whilst certain marine and coastal habitats are recognised as important sinks for carbon dioxide (Laffoley and Grimsditch 2009) and preliminary guidance has been produced on getting payments for marine ecosystem services (FT/TKG 2010), it remains to be seen whether REDD economic incentives will be extended to include payments for the marine ecosystem services that flow from MPAs.

A key principle underlying such international financial incentives is that whilst biodiversity within countries is subject to national sovereign rights, the ecosystem services that biodiversity provides are of international importance. Whilst this places a particular responsibility on LEDCs due to their richness in biodiversity, the need to conserve this biodiversity places a financial burden on these countries due to the economic development opportunities that are foregone, coupled with the need to develop national biodiversity conservation capacity. Financial incentives, such as those through the GEF and proposed under the REDD mechanism, are intended to promote biodiversity conservation by alleviating this burden. Advocates of bottom-up incentives, however, could critically question whether such top-down incentives are transferred to local people who are affected by protected area restrictions, and this raises important social justice questions. The debates as to the merits of top-down and bottom-up approaches to co-management are thus paralleled in debates as to the merits of different incentive approaches, recognising that equity and justice issues are multidimensional, *i.e.* international, intrasocietal, intergenerational, *etc.* Whilst market incentives can therefore be considered to be pervasive in such debates, it is important to recognise that the aims and means of such incentives are interpreted very differently depending on the perspective adopted*, i.e.* top-down or bottom-up.

[2] www.gefweb.org/interior_right.aspx?id=224

1.1.6 Summary

Protected areas are an important focus for debates concerning how different approaches can be combined to promote effective governance, co-management being a framework for such debates rather than an answer or conclusion.

1.2 Challenges of marine versus terrestrial governance

1.2.1 Differences between marine and terrestrial environments

Marine protected areas (MPAs) differ from terrestrial protected areas in several ways and these differences have a significant influence on their governance. There are a number of ecological and management differences between marine and terrestrial environments which are particularly important in this respect and have been reviewed by many, *e.g.* Jones (2001), the following being particularly relevant to governance issues:

Scale-connectivity

Protected areas are site-specific designations and it has been argued that their effectiveness is limited in relation to the marine environment compared to the terrestrial environment, as MPAs cannot protect drifting and migratory populations whose natural range takes them beyond MPA borders. There are, however, growing challenges to such arguments about the spatial limitations of MPAs, particularly in relation to the importance of certain critical marine habitats and growing recognition through genetic studies of the limited dispersal potential of many species (Kinlan and Gaines 2003) and the importance of sub-populations that are genetically adapted to local conditions (Hauser and Carvalho 2008). Similarly, it has been assumed that MPAs cannot protect marine life within their boundaries from 'up-stream' pollution impacts and the impacts of wide-scale environmental changes *e.g.* climate change. These assumptions are increasingly being challenged on the grounds that marine areas that have been destabilised by local impacts are more vulnerable to wider-scale impacts such as those related to climate change (Walther *et al.* 2002) and that MPAs can increase resilience, coupled with the increasing focus on scaling-up MPAs by designing ecologically coherent networks that accommodate the scale-connectivity of marine ecosystems (McCook *et al.* 2010). Whilst such challenges and developments support the role of MPAs, it must be recognised that the scale-connectivity of marine ecosystems will present challenges to MPA governance as people may question the potential effectiveness of such designations given arguments and assumptions about the spatial limitations of such designations.

Uncertainty

Marine ecosystems are more complex than terrestrial ecosystems, due to their wider diversity of niches and greater number of trophic levels. Different communities with non-linear population dynamics interact over larger spatial scales, due to the scale-connectivity discussed above, and are closely coupled to physical oceanographic variations. These factors combine and lead to relatively variable and unpredictable marine ecosystem dynamics, compared to terrestrial ecosystems. Furthermore, our understanding of the structure and function of marine ecosystems is poor compared to that of terrestrial systems, due to logistical problems of observing and studying such environments, the related high costs and the fact that humans are a predominantly terrestrial species. The combination of complexity, variability and poor understanding poses major challenges for MPA governance, due to difficulties in providing an evidence-base for proposed user restrictions. Such restrictions generally need to be scientifically justified through the determination of the significance of observed changes and identification of cause-effect linkages between the impacts of certain human activities and observed

changes. Ideally, governance decisions should be underpinned by confidence in knowledge concerning the significance of such effects and the human activities that are their causes. This is, however, rarely the case and both the significance of observed effects and their linkages to certain human activities remain uncertain, even if a great deal of funding is invested in research, *e.g.* Dalton (2005), Pratchett (2005), and such links are generally contested, particularly by those users whose activities might be restricted in order to address these effects.

Hidden and alien

To the majority of people marine ecosystems are 'out of sight, out of mind' in that the impacts of human activities on marine habitats and species are hidden beneath the waves. For instance, a person observing a demersal fishing vessel from a cliff top would be unaware of the impacts of trawling on the seabed and the species it supports. By contrast, a person observing the effects of a tractor-towed plough on a grassland habitat or of tree felling can directly witness the impacts of human exploitation on terrestrial habitats and species and is more likely to be concerned. Whilst charismatic marine megafauna such as whales and dolphins do attract public attention, our direct observations of such species and appreciation of human impacts on them is relatively limited. These observational difficulties also mean that we do not become familiar with marine 'landscapes' and therefore cannot appreciate the changes that occur to them as a result of wide-scale and long-term human impacts in the same way the we become familiar with and come to care for terrestrial landscapes. This lack of historical understanding and appreciation of past marine landscapes and their associated communities of fish and other populations contributes to the 'shifting baseline syndrome' (Pauly 1995), whereby we come to accept the current depleted state of fish stocks and wider biodiversity as we have few historical and cultural records of the thriving and bountiful nature of our seas in the past (Roberts 2008).

Even if people are made aware of human impacts on marine ecosystems, their reaction could be one of indifference given the widespread view that the seas are an unfamiliar, alien world dominated by cold blooded animals that routinely abandon their young and amongst whom cannibalism is common. Marine populations tend not to follow familiar seasonal patterns and the sea itself is also often seen as an adversary – 'the cruel sea'. Certainly, humans do not have the 'hard wired' appreciation for marine landscapes that some evolutionary biologists think we have developed for certain terrestrial landscapes (Appleton 1975, Ulrich 1993) due to a lack of familiarity and associations with marine landscapes and a lack of empathy with most marine life. For such reasons it could be argued that we do not appreciate our seas as consisting of living landscapes, areas of which might be preserved for our aesthetic and symbolic appreciation. Whilst some people particularly value marine life due to its unfamiliar and unusual nature, the majority of people are relatively unfamiliar with marine life and landscapes. Therefore gaining understanding of the need for use restrictions to protect marine life and support for such restrictions presents a significant challenge in MPA governance.

Naturalness

Marine ecosystems are generally natural in management terms, in that they are rarely the result of positive intervention. By contrast, some terrestrial habitats considered to be of high conservation value, *e.g.*, moors, lowland heaths and meadows, are semi-natural in that positive intervention through the maintenance of certain human activities is required to preserve them in their modified state. Marine ecosystems are, to varying degrees, subject to negative interventions through anthropogenic impacts that result from a range of activities, such as fishing. This leads to significantly modified ecosystems and the majority of the world's coastal seas have been affected. However, it is rarely argued that such activities should continue in certain marine areas because the impacted habitats are considered, as a result, to have developed a conservation interest. The general approach to the management of MPAs is therefore one of non-intervention in comparison to the active management approach to conservation which is often practised on land. MPA management essentially involves the minimisation of negative

interventions, through the restriction of certain activities in certain areas, in order to maintain relatively natural ecosystems, rather than the promotion of positive interventions through the selective continuation of certain activities, in order to maintain semi-natural habitats. This can be perceived as an exclusionary, 'humans-out' approach to governance that can present challenges when trying to promote cooperation through governance initiatives.

Property rights

Land tends to be owned by specific parties such as individual or groups of people, commercial companies (private property rights) or the state (state property rights). Some terrestrial areas are subject to common property rights, whereby people have rights of access to undertake certain extractive and non-extractive uses under customary and/or legal common property rights, but most land is subject to private or state property rights. Land is often also leased or rented to certain people for certain uses and can be sold from one party to another. Whilst the owners or occupiers of land may not have complete legal autonomy over how the land is managed, they generally do have the rights to determine who can use the land and in what ways such land can be used. Land owners may be subject to state controlled restrictions for biodiversity conservation purposes within terrestrial protected areas, but land areas are generally subject to relatively well defined rights of access and use. This makes it relatively straight forward for such restrictions to be implemented, as the state can define the owners, leases and people with rights to use a given land area, whose activities it needs to regulate, with relative ease.

Marine areas and resources under national jurisdiction, on the other hand, have relatively poorly defined rights of access and use, and are rarely subject to private property rights, such areas and resources generally being recognised as state property. State ownership of marine areas and resources within the Exclusive Economic Zones (EEZ) has recently been legally specified under the United Nations Convention on the Law of the Sea (UNCLOS, 1982), but the reality is that marine areas and resources are subject to complex combinations of state, open access (often *de facto* where state capacity to regulate is lacking) and common property (often having evolved in seas subject to *de facto* open access) regimes, private property regimes being a rarity in our seas, hence the customary principle of the 'freedom of the seas' that UNCLOS both reinforces and challenges. Some users consider the marine realm to be one of the 'last of the commons' and are culturally resistant to restrictions on freedom of access, compared to terrestrial areas, where private property rights and resistricted rights of access and use are *relatively* (Jones 2001) accepted.

Marine areas arguably also tend to be able to support a wider diversity of uses than terrestrial areas, due to their three dimensional nature coupled with assumptions about the resilience and productivity of our seas. This is further complicated by the sectoral basis on which different marine activities tend to be regulated amongst different authorities, leading to 'turf battles', regulatory gaps and confusion. These tendencies and the related complexity of property rights regimes leads to 'multiple uses amongst multiple users' regimes that pose major challenges for MPA governance, recognising that MPA designations themselves alter the marine property rights regime of the sea area in question (Mascia and Claus 2009). Whilst most marine interest is in the potential of the state assigning property rights to fisheries as a means of improving governance to achieve wider sustainable exploitation objectives, there have been cases where property rights have been used as a means of governing MPAs to achieve marine biodiversity conservation objectives (Beck *et al.* 2005) and where marine property rights can be defined, there may be significant potential in what represents a novel approach in the marine environment but a routinely employed approach in the terrestrial environment, as is discussed in the next section.

1.2.2 Similarities

The different perspectives and narratives discussed above in relation to the governance of terrestrial protected areas also apply to MPAs but are strongly influenced by the above challenges, which have to be recognised and addressed in MPA governance and will be considered further in relation to the case study analyses. Jones (2001) reviews arguments for top-down approaches based on state control and scientific expert knowledge, and bottom-up approaches based on devolved control and local knowledge, concluding that a key challenge is to adopt a 'middle-ground' which recognises that both approaches have a role and that they should be combined. The IUCN MPA Guidance (Kelleher 1999) similarly concludes that the design and management of MPAs must be both top-down and bottom-up. More recent guidance (IUCN 2008a) also stresses that there is a need for both legal authority and user participation in order to successfully establish and manage MPAs. As is the case with terrestrial ecosystems, co-management is employed as a concept to explore how the state and users can work in partnership to sustainably manage wider fisheries and to conserve MPAs, but the key question of how top-down and bottom-up approaches can actually be combined remains.

As with terrestrial protected areas, market incentives emerge in many perspectives on MPA co-management. There is a particular and growing interest in the use of economic incentives to improve marine resource governance, particularly through the assignation of property rights to fish stocks to improve fisheries management (Costello *et al.* 2008, Fujita and Bonzon 2005, Gutiérrez et al. in 2011, Hilborn *et al.* 2005, WB/FAO 2008). Some argue that such reformed fisheries management approaches would be a better way forward than designating MPAs, as they would address the root causes of over-exploitation rather than being a band-aid (Hilborn *et al.* 2004). Such arguments are similar to arguments that terrestrial protected areas can contribute to the problem of overexploitation rather than representing a solution and that community-based sustainable natural resource governance, promoted through the granting of property rights to local communities, is more effective (Hayes 2006, Hayes and Ostrom 2005, Ellis and Porter-Bolland 2008). Proponents of community-based governance through the assignation of property rights to fisheries resources similarly recommend strengthening customary marine 'tenure' systems (Asafu-Adjaye 2000), 'enclosure' through the assignation of individual transferable quotas (ITQs) to a particular community of fishers for a particular area (McCay *et al.* 2008), and the use of 'territorial user rights in fisheries' (TURFS) (Gelcich *et al.* 2008). Whilst such approaches are primarily aimed at achieving sustainable natural resource use, fishers who were granted community-run ITQs over shellfisheries have voluntarily designated MPAs to promote biodiversity and resilience (McCay *et al.* 2008) and areas managed by fishers through such rights can show add-on biodiversity conservation benefits (Gelcich 2008).

Whilst such biodiversity conservation benefits can be delivered through the assignation of property rights, there is no guarantee that they will be nor can it be taken for granted that they will be. This is particularly the case given the divergences between sustainable resource use and biodiversity conservation objectives (Jones 2007, Jones and Burgess 2005). Beddington *et al.* (2007) stress that "the simple creation of rights-based incentives does not automatically deal with ecosystem problems" and that MPAs therefore have an essential role in addressing the impacts of fishing in relation to ecosystem conservation priorities. Symes (2000) similarly argues that rights-based approaches to fisheries management would be unlikely to address wider societal concerns about the impacts of fishing on the productivity, diversity, integrity and service provision functions of marine ecosystems and that ecosystem based approaches such as no-take MPAs to address such concerns "are not the kinds of actions that can reasonably be left to the fishing industry to formulate and implement". He concludes that the state must act as the regulating authority and that responsibility and powers of sanction to conserve marine ecosystems can only reside with the state.

1.2.3 Summary

It is clear that debates concerning the relative merits in governance of the strong hand of the state, the 'invisible hand' of markets and the democratic hands of people are occurring with a focus on MPAs, as are related debates as to whether wider sustainable resource use approaches through the assignation of property rights to local people to promote community-based management might be more effective than narrower site-based approaches such as MPAs. It is widely accepted that the co-management of MPAs is the way forward, but there many different interpretations of this concept and it is applied in many different ways amongst MPAs in different contexts. One way of considering the challenges of co-managing MPAs is to consider the question:

> *What does "design and management of MPAs must be both top-down and bottom-up" (Kelleher 1999) actually mean in practice?*

Rather than exploring this question and the related debates through the literature, the aim of this research project is to explore it through a range of case studies, employing the case study research approach discussed below, to support getting the balance right between these three governance approaches and, ultimately, between the conservation of marine biodiversity and exploitation of marine resources.

1.3 The importance of combining these approaches – a case study approach to assess what 'getting the balance right' means

Considering the diversity of perspectives on co-management, it is argued that this concept merely serves as a framework for continued debates as to how protected areas should be governed, rather than an end to such debates. In examining the relative roles of the state, markets and people, the use of different case studies examined in this research project will explore the proposition that whilst certain governance approaches are effective to address some challenges in some contexts, other approaches are generally also required to address other challenges in other contexts.

The effectiveness of an approach or, more likely, a **combination of approaches** in a given case will depend significantly on the challenge and the attributes of the local context in which the challenge has emerged. In addition, the national and international contextual attributes, particularly those related to strategic statutory biodiversity conservation obligations, need to be considered.. An important element of this approach is that case studies are analysed on the basis of the governance approaches that are actually effective in addressing conflicts rather than on the basis that a particular category of approaches (top-down, bottom-up, or market incentives) should be effective. Protected area governance case studies are thus assessed on an open and realistic basis, rather than on the basis of theoretical and ideological ideals by which a particular governance approach might be considered to be 'right' or 'best'.

The advantages of this approach are that:

- it is based on empirical case study analyses that explicitly consider all aspects of the context of a given case study;
- the case studies are deliberately sought in a representative variety of contexts; and
- the analyses are designed to address which combinations of governance approaches are effective in a given context on the basis of what is observed in reality, rather than on the basis of theoretical and ideological ideals.

This will provide for case study analyses that are not biased by preconceived assumptions concerning the 'best' governance approach but instead **assess the actual effectiveness of different combinations**

of governance approaches. In turn this will provide for the development of governance approaches that appear to be effective in particular contexts and thereby the development of 'good practice' that can be transferred to other protected areas in similar contexts. The key to such good practice in governing protected areas will be to combine the steering role of the state, markets and people through an appropriate balance of approaches, given the conflicts and context of a particular case. This study will consider these sources of steer in terms of incentives, as discussed in the methods section (2.2).

1.4 Relevance to the Millennium Ecosystem Assessment

The Millennium Ecosystem Assessment (MEA 2005) aimed to assess the consequences of ecosystem change for human well-being and to establish a scientific basis for action required to improve the conservation and sustainable use of ecosystems. This initiative was a response to government requests for information received through the Convention on Biological Diversity, the United Nations Convention to Combat Desertification, the Ramsar Convention on Wetlands, and the Convention on Migratory Species. In its exploration of linkages between ecosystem health and human well-being, the MEA raises some themes that are relevant to this research project. These include:

Institutions and Governance: changes in institutional and environmental governance frameworks are sometimes required to create the enabling conditions for effective management of ecosystems, while in other cases existing institutions could meet these needs but face significant barriers.

Economics and Incentives: economic and financial interventions provide powerful instruments to regulate the use of ecosystem goods and services.

Social and Behavioural Responses: including population policy, public education, civil society actions, and empowerment of communities, women and youth, can be instrumental in responding to the problem of ecosystem degradation.

Technological Responses: given the growing demands for ecosystem services and other increased pressures on ecosystems, the development and diffusion of technologies designed to increase the efficiency of resource use or reduce the impacts of drivers such as climate change and nutrient loading are essential.

Knowledge Responses: effective management of ecosystems is constrained both by the lack of knowledge and information about different aspects of ecosystems and by the failure to use adequately the information that does exist in support of management decisions.

As explained in greater depth in section 2 below, the analytical framework developed in this project focuses on the interplay between economic, interpretative, knowledge, legal, and participative incentives in MPA governance. The following table outlines overlaps between the analytical approach taken in this study and the MEA themes.

Table 1. Links between MEA themes and the MPA incentive categories

MA Themes	MPA Governance (MPAG) Incentive Categories				
	Economic	Interpretative	Knowledge	Legal	Participative
Institutions and Governance	X			X	
Economics and Incentives	X				
Social and Behavioural Responses		X	X		X
Technological Responses					
Knowledge Responses			X		

Whilst this study does not address the area of technological responses as set out by the MEA, it overlaps with the other four themes, and focuses primarily on the social (rather than ecological) side of MPA governance.

2. METHODS

2.1 Initial consultation and IMCC1 workshop May 2009, Washington DC

This project began with a proposal to undertake an analysis focused on collating 'good practice' in addressing the challenge of successfully governing MPAs in various contexts. Building on the experience of *How is your MPA doing?* and the forthcoming *How is your MPA managed?* it was recognised that MPA practitioners around the world are engaged in 'getting the balance right' between achieving marine resource use objectives and biodiversity conservation objectives on a day-to-day and year-to-year basis, and a variety of 'good practice' approaches will have been developed that are appropriate to the context of a given MPA. This study was proposed as a means of systematically comparing and analysing a representative range of MPA case studies from around the world, with the aims of:

- identifying examples of such good practice;
- assessing their transferability to other MPA contexts; and
- producing a guide to different approaches to governing MPAs.

The initial proposal was disseminated throughout the IUCN World Commission on Protected Areas network, aimed at gaining feedback on the potential usefulness of such a manual and suggestions for improvement, potential sources of funding, potential contributors to the production of this manual, and potential case studies on which the manual might draw. Interested parties attended a workshop held in May 2009 at the second International Marine Protected Areas Conference, in conjunction with the International Marine Conservation Congress, in Washington DC.

2.2 Development of the analysis framework

Prior to the first workshop in May 2009, a framework was developed as a proposal for analysing the case studies. This was presented at the workshop, along with the theoretical background to the project (as above), and subsequent feedback was sought on how this framework could be refined for application to case studies, as well as also requesting proposals for further case studies. The framework was revised both in the light of discussions at the workshop and of feedback subsequently received, and the post-

consultation version of the framework is available at www.mpag.info.
It was used by the project participants as the basis for an analysis of each of the 20 case studies that were finally selected for this study, listed in Table 3 and illustrated in Figure 1. The reports from these analyses formed the basis of the workshop discussed below.

The core element of this MPA governance analysis framework is **incentives**, which are defined for the purposes of this project as being:

Institutions that are instrumentally designed to encourage actors to choose to behave in a manner that provides for certain strategic policy outcomes, particularly biodiversity conservation objectives, to be fulfilled.

These were divided into five categories that can be related to the three modes of governance discussed in the table below (state control, market forces and public participation).

Table 2. Incentive categories

Economic incentives	Using economic and property rights approaches to promote the fulfilment of MPA objectives.	Market steer
Interpretative incentives	Promoting awareness of the conservation features of the MPA, the related objectives for conserving them, the policies for achieving these objectives and support for related measures.	Supporting all three approaches
Knowledge incentives	Respecting and promoting the use of different sources of knowledge (local/traditional and expert/scientific) to better inform MPA decisions.	Supporting all three approaches
Legal incentives	Establishment and enforcement of relevant laws, regulations, *etc* as a source of 'state steer' to promote compliance with decisions and thereby the achievement of MPA obligations.	State steer
Participative incentives	Providing for users, communities and other interest groups to participate in and influence MPA decision-making that may potentially affect them in order to promote their 'ownership' of the MPA and thereby their potential to cooperate in the implementation of decisions.	People steer

Participants were requested to discuss how different incentives had been used and combined to support the effective governance of their case study MPA. The discussions on the incentives were contextualised by information under various headings:

- National-local social, economic, political context;
- Why was the MPA designated?
- Legal basis: hierarchy from international-MPA specific;
- Legal-operational management objectives; and
- Effectiveness in addressing main pressures.

Case study reports were produced through the application of this framework for each of the twenty case studies by the participants listed in Table 3.

2.3 Case study workshop in Lošinj, Croatia

During the week of 12-16 October 2009, a workshop was held on the island of Lošinj, Croatia, hosted by the Blue World Institute. The workshop brought together twenty-five leading experts from five continents and seventeen countries around the world who are engaged in MPA governance at a practitioner and/or research level. Case studies were presented in clusters that corresponded with descending order of the estimated capacity for governance. Discussions at the meeting helped inform the development of the authors' analytical framework and further refined the project's focus. Seventeen of the twenty case studies included in this manual were presented and discussed at the workshop.

The workshop included the following case study presenters/representatives and participants:

MPA Case Study	**Presenter/representative**
Great Barrier Reef Marine Park, Australia	Jon Day, GBRMPA
National Marine Sanctuary System, USA	Elizabeth Moore, NOAA NMS
California Marine Life Protection Act, USA	Mark Carr, UC Santa Cruz
Darwin Mounds MPA, UK	Elizabeth De Santo, Dalhousie University
(1) The Wash and (2) North Norfolk Coast EMS, UK	Peter Jones, University College London
Cres-Lošinj Special Reserve, Croatia	Peter Mackleworth, Blue World Institute
Os Miñarzos Marine Reserve, Spain	Lucia Perez, independent
Pirajubaé Marine Extractive Reserve, Brazil	Leopoldo Cavaleri Gerhardinger, ECOMAR
Baleia Franca Environmental Protection Area, Brazil	Heitor Machado, ICMBIO
Isla Natividad MPA, Mexico	Wendy Weisman, Rutgers University
Sanya Coral Reef NMNR, China	Wanfei Qiu, University College London
Ha Long Bay World Heritage Area, Vietnam	Bui Thi Thu Hein, IUCN Vietnam
Seaflower MPA, Colombia	Elizabeth Taylor, Corallina MPA
Chumbe Island Coral Park, Zanzibar/Tanzania	Sibylle Riedmiller, Chumbe Island Coral Park Ltd.
Galápagos Marine Reserve, Ecuador	Veronica Toral, Galápagos MPA
Tubbataha Reefs Natural Park, Philippines	Marivel Dygico, WWF Philippines
Karimunjawa Marine National Park, Indonesia	Stuart Campbell, Wildlife Conservation Society

Additional participants

Tundi Agardy, Sound Seas
Daniel Cebrian, RAC/SPA
Drasko Holcer, Blue World Institute
Minsuk Jun, University College London
Alphonse Kambu, UNEP
Alice Miller, University College London
Emily Saarman, UC Santa Cruz
Ole Vestergaard, UNEP

This workshop was focused on case study presentations based on the analysis framework described above (2.2). Each case study was allocated 90 minutes to present their analysis and for discussions on the key governance issues related to the MPA in question.

2.4 Framework for summary analysis of the case studies

At the end of the workshop, it was agreed that a 4,000 word summary of each case study would be produced employing a common list of headings (available at www.mpag.info.) including some cross-cutting themes that had emerged through the case study discussions:

- context;
- objectives;
- drivers/conflicts;
- governance framework/approach;
- effectiveness;
- incentives: used and needed;
- key issues; and
- cross-cutting issues:
  - Leadership
  - Role of NGOs
  - Equity
  - Stewardship

The effectiveness evaluations were essentially judgements that were either undertaken by the case study participants or by the authors of this report. They were particularly important as **the effectiveness of governance approaches in achieving biodiversity objectives and fulfilling related legal obligations is considered as the 'bottom line' in this project**, whilst recognising that equity is integrally important in this respect, *i.e.* MPA governance should be both effective and equitable, as the two are inextricably intertwined.

In their case study summaries, participants were asked to discuss whether the management objectives of their MPA were being fulfilled, particularly with regard to biodiversity and sustainable resource use. The following effectiveness 'scale' was provided to participants, aimed at assessing how their MPA addresses impacts from surrounding uses and local and incoming users, recognising that this enhances ecosystem resilience to climate change:

0 No use impacts addressed: designation may even have increased impacts by undermining previous institutions.
1 Some impacts beginning to be slightly addressed.
2 Some impacts partly addressed but some impacts not yet addressed.
3 Some impacts completely addressed, some are partly addressed.
4 Most impacts addressed but some not completely.
5 All impacts from all activities completely addressed.

Participants were asked to give an assessment/judgement of where their MPA case study currently lies on this scale; what effect MPA designation and related governance incentives have had on effectiveness by addressing use impacts; and the direction that MPA effectiveness is going (*i.e.* recovering, declining or stable).

The 20 case study summaries are set out in volume 2 of this report, available at www.mpag.info.

2.5 Final analysis and outputs October 2009 – July 2010, London

Following the Croatia workshop, the authors of this report met in London in November 2009 to discuss the workshop outcomes, the key issues for each case study and the cross-cutting themes. UNEP funding provided support for a researcher at University College London (Wanfei Qiu) for three months to focus on the analysis and for Elizabeth De Santo to visit London from Canada for the meeting of the project team. The resulting 'essence reports' represent further distillations of each of the 20 case studies and can be found in Appendix 1. The essence reports were further distilled in the 'index tables', which list the incentives employed in each case study, the incentives needed to improve governance and the cross cutting themes (Table 4). Again, some of these analyses were directly from the case study participants and some were undertaken by the project team. The frequency with which incentives are listed as being used and needed was analysed using Excel and these findings are employed in the results/discussion section. The case studies are listed in Table 3 which includes the effectiveness scores (see 2.4 and Appendix 1 for details) and a figure indicating the national governance capacity for each case study country, derived by averaging the scores for the six governance indicators [3] estimated by the World Bank (Kaufmann *et al.* 2009) for each country.

2.6 Auto-critique of and reflection on the methodology

It is important to recognise that this research project is based largely on the views of the case study participants, though most case study authors grounded their comments and recommendations with reference to their own experiences and previously published peer-reviewed work that considered wider perspectives. This project is not, however, based on a social survey of the perspectives of different actors on different governance approaches. This was both practically necessary, as a means of undertaking as large a number of case studies as feasible within a limited budget, and intentional, as a means of developing a governance analysis framework that can be adopted and applied in relation to any given MPA by managers, *etc.* Furthermore, it is also intended that this framework can now be applied to a larger sample of MPA case studies and the results analysed by the MPA Governance (MPAG) project team in order to provide for a wider 'meta-analysis' of MPA governance approaches.

It is also important to recognise that the 'qualitative data' on which this analysis is based essentially represents the views of the case study participants, all of whom had very detailed knowledge of their MPA as they were experts on them and/or somehow involved in governing them. The views on whether incentives have been applied and needed in a given case study context is thereby influenced by the perceptions, knowledge, *etc*. of the case study participants, coupled, in some cases with the views of the MPAG project team. It is further recognised that the nature and structure of the MPAG analytical framework both reflects the views of the project team and influenced the views of the case study participants. Whilst it is important to recognise the influence of the researchers and the MPAG analytical framework on the case study findings, it is argued that this influence does not significantly undermine the validity and value of the findings. Indeed, several case study participants stated that their involvement in the MPAG workshop and project had radically influenced the way they viewed governance issues in relation to the case study that they represented. The influence of the methodology and the rationale underlying it is thus argued to be, on balance, positive.

[3] (1) Voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) rule of law; and (6) control of corruption.

Table 3. Outline of case studies categorised on the basis of the MPA governance approach employed

MPA governance approach	Case Study MPA name	Country	Per Capita GDP[1] US$	Nat. gov. capacity[2]	Effectiveness[3]	Case Study Coordinator(s)
(I) Managed primarily by the government under clear legal framework	Great Barrier Reef Marine Park	Australia	38,900	1.65	3	Jon Day (GBRMPA)
	Darwin Mounds Marine Special Area for Conservation	UK	37,000	1.48	3	Elizabeth De Santo (Dalhousie University)
	North East Ketnt European Marine Site	UK	37,000	1.48	3	Tom Roberts (University of Manchester)
	Wash & North Norfolk Coast European Marine Site	UK	37,000	1.48	3	Peter Jones (UCL)
	National Marine Sanctuaries	USA	48,000	1.36	3	Elizabeth Moore (Office of National Marine Sanctuaries, NOAA)
	California MPAs under the MLPA	USA	48,000	1.36	Too early to assess	Mark Carr & Emily Saarman (PISCO, Univ. Calif. Santa Cruz)
(II) Managed by the government with significant decentralisation and/or influences from private organisations	Sanya Coral Reef National Marine Nature Reserve	China	6,100	-0.47	2	Wanfei Qiu (UCL)
	Seaflower MPA	San Andres Archipelago, Colombia	9,300	-0.38	1	Elizabeth Taylor (CORALINA), Mark Baine (Consultant), Marion Howard (Brandeis University) & Annette Kilmer (IADB)
	Galápagos Marine Reserve	Ecuador	7,600	-0.86	1	Veronica Toral (Consultant, Galápagos Islands) & Alex Hearn (UC Davis)
	Karimunjawa Marine National Park	Indonesia (Coral Triangle)	3,900	-0.50	2	Stuart Campbell (Wildlife Conservation Society)
	Wakatobi National Park	Indonesia (Coral Triangle)	3,900	-0.50	2	Julian Clifton (University of Western Australia)
	Tubbataha Reefs Natural Park	Philippines (Coral Triangle)	3,400	-0.48	3	Marivel Dygico (WWF), Angelique Songco (Tubbataha Management Office), Alan White (TNC) & Stuart Green
	Ha Long Bay World Heritage Site	Vietnam	2,800	-0.56	2	Bui Thi Thu Hein, IUCN Vietnam

MPA governance approach	Case Study MPA name	Country	Nat. Per Capita GDP	Nat. gov. capacity[2]	Effectiveness[3]	Case Study Coordinator(s)
(III) Managed primarily by local communities under collective management arrangements	Os Minarzos Marine Reserve	Galicia, Spain	35,500	0.95	3	Lucia Perez (formerly UCL, now independent)
	Isla Natividad MPA	Baja California	14,400	-0.14	3	Wendy Weisman & Bonnie McCay, Rutgers University
(IV) MPAs managed primarily by the private sector and/or NGOs granted with property/ management rights	Great South Bay Marine Conservation Area	USA	48,000	1.36	2	Carl LoBue & Jay Udelhoven (TNC)
	Chumbe Island Coral Park	Tanzania	1,400	-0.29	4	Sibylle Riedmiller, Chumbe Island Coral Park
(V) No clearly recognisable effective governance framework in place	Baleia Franca Environmental Protection Area	Brazil	10,300	0.04	1	Heitor Macedo (Chico Mendes Institute of Biodiversity Conservation) & Melissa Vivacqua (Federal University of Santa Catarina)
	Pirajubaé Marine Extractive Reserve	Brazil	10,300	0.04	0	Leopoldo Gerhardinger (ECOMAR), Renata Inui, José Matarezi, Cátia Hansen (Environmental Education Laboratory, Universidade do Vale do Itajaí), Melissa Vivacqua (Federal University of Santa Catarina)
	Cres-Lošinj Special Zoological Reserve	Croatia	18,600	0.38	1	Peter Mackelworth &Draško Holcer (Blue World)

[1] National per capita gross domestic product (GDP) figures sourced from https://www.cia.gov/library/publications/the-world-factbook/index.html

[2] Based on Kaufmann *et al.*(2009); see 2.5.

[3] See 2.4 and Appendix 1 for details of effectiveness score.

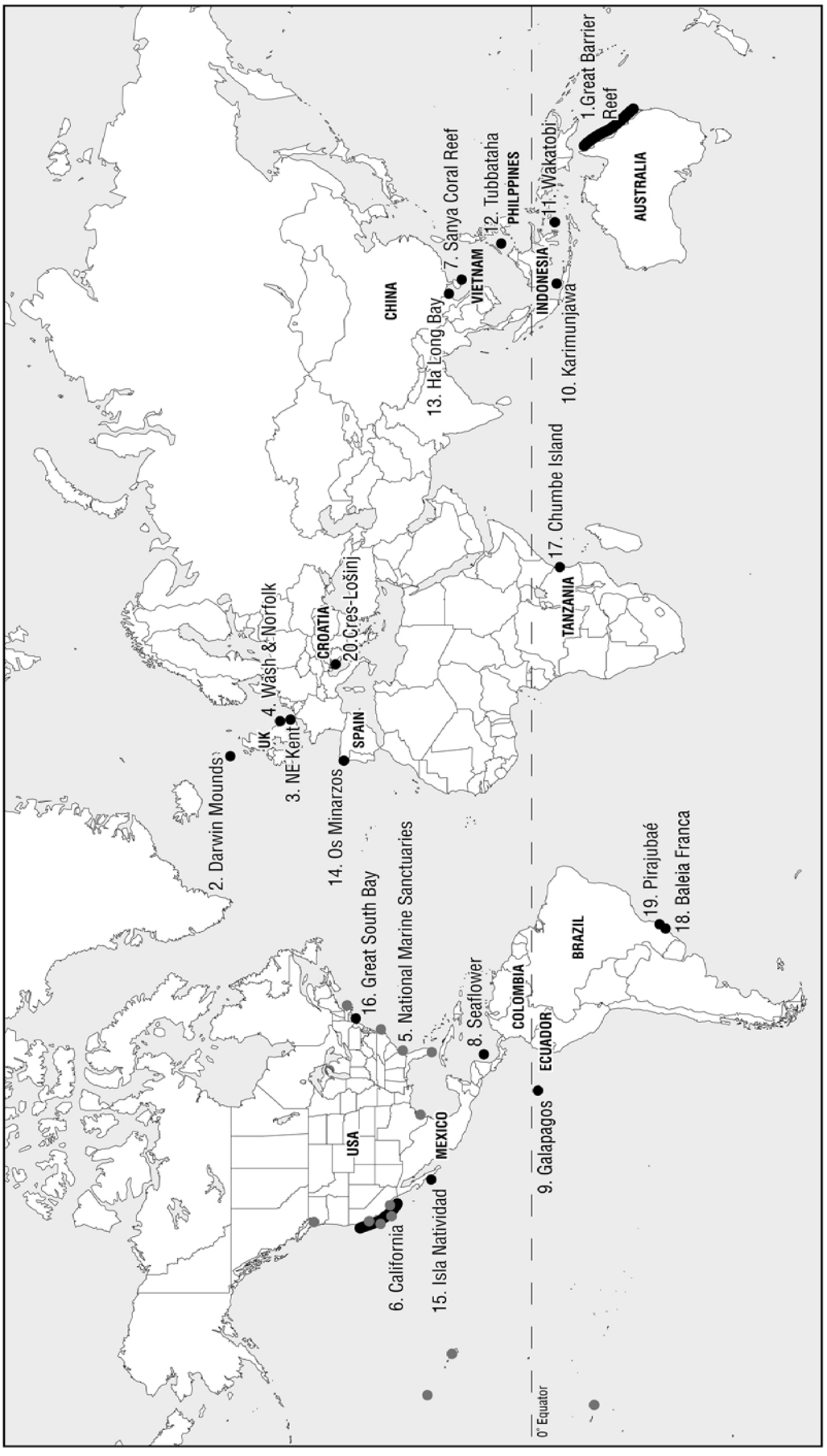


Figure 1. Location of the case study MPAs (numbered in the same order as in Table 3).
1: Great Barrier Reef Marine Park. 2: Darwin Mounds Marine Special Area for Conservation. 3: North East Kent European Marine Site. 4: Wash & North Norfolk Coast European Marine Site. 5: National Marine Sanctuaries (a network of MPAs with locations shown in grey colour). 6: California MPAs under the MLPA (a network of MPAs in California). 7: Sanya Coral Reef National Marine Nature Reserve. 8: Seaflower MPA. 9:Galápagos Marine Reserve. 10: Karimunjawa Marine National Park. 11: Wakatobi National Park. 12: Tubbataha Reefs Natural Park. 13: Ha Long Bay World Heritage Site. 14: Os Minarzos Marine Reserve. 15: Isla Natividad MPA. 16: Great South Bay Marine Conservation Area. 17: Chumbe Island Coral Park. 18: Baleia Franca Environmental Protection Area. 19: Pirajubaé Marine Extractive Reserve. 20: Cres-Lošinj Special Zoological Reserve.

3. RESULTS AND DISCUSSION

3.1 Incentives

The ensuing discussions are largely based on analyses of the incentives that are cited (see Table 4) as being currently used and needed to support MPA governance. These are listed below, along with a list of the case studies that cite each incentive as being used, the numbers in this list referring to the x axis labels in Figures 8 and 9.

1. Economic incentives

Using economic and property rights approaches to promote the fulfilment of MPA objectives, *e.g.*:

1.1 Promoting economically and ecologically sustainable resource use, through spill-over effects and enhancing direct and indirect use values from resources (applied in 13 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Seaflower Marine Protected Area, Karimunjawa Marine National Park, Wakatobi National Park, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Isla Natividad MPA

1.2 Green marketing of products and services from the MPA (applied in 7 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Seaflower Marine Protected Area, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest, Chumbe Island Coral Park, Isla Natividad MPA

1.3 Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people (applied in 4 MPAs)

California Marine Life Protection Act, Galápagos Marine Reserve, Tubbataha Reefs Natural Park, Isla Natividad MPA

1.4 Providing economic compensation for restricted users for profits foregone (applied in 3 MPAs)

Great Barrier Reef Marine Park, Wakatobi National Park, Tubbataha Reefs Natural Park

1.5 Payments for the flow of ecosystem services provided by the MPA

(not cited as being applied)

1.6 Allocation or reinforcement of community/user property rights (applied in 7 MPAs)

Great Barrier Reef Marine Park, Sanya Coral Reef National Marine Nature Reserve, Seaflower Marine Protected Area, Karimunjawa Marine National Park, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Isla Natividad MPA

1.7 Promoting alternative livelihoods (applied in 6 MPAs)

Sanya Coral Reef National Marine Nature Reserve, Seaflower Marine Protected Area, Galápagos Marine Reserve, Karimunjawa Marine National Park, Tubbataha Reefs Natural Park, Chumbe Island Coral Park

1.8 Improvements in local infrastructure and living standards (applied in 7 MPAs)

Sanya Coral Reef National Marine Nature Reserve, Karimunjawa Marine National Park, Wakatobi National Park, Tubbataha Reefs Natural Park, Ha Long Bay World Natural Heritage Area, Chumbe Island Coral Park, Isla Natividad MPA

1.9 Protection from incoming users (applied in 7 MPAs)

Sanya Coral Reef National Marine Nature Reserve, Os Minarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Isla Natividad MPA

1.10 Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture' - undue influence on MPA governance that undermines the effectiveness of the MPA (applied in 15 MPAs)

Great Barrier Reef Marine Park, Darwin Mounds Special Area of Conservation, Wash and North Norfolk Coast European Marine Site, California Marine Life Protection Act, Sanya oral Reef National Marine Nature Reserve, Galápagos Marine Reserve, Karimunjawa Marine National Park, Wakatobi National Park, Tubbataha Reefs Natural Park, Ha Long Bay World Natural Heritage Area, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Cres-Lošinj Special Marine Reserve, Isla Natividad MPA

2. Interpretative incentives

Promoting awareness of the conservation features of the MPA, the related objectives for conserving them, the policies for achieving these objectives and support for related measures *e.g.*:

2.1 Public communication, education and awareness raising on the importance/ vulnerability of marine ecosystems and the benefits of the MPA *e.g.* through newsletters, web sites, education programmes, media campaigns, *etc*. (applied in 20 MPAs)

Great Barrier Reef Marine Park, Darwin Mounds Special Area of Conservation, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Sanya Coral Reef National Marine Nature Reserve, Seaflower Marine Protected Area, Galápagos Marine Reserve, Karimunjawa Marine National Park, Tubbataha Reefs Natural Park, Ha Long Bay World Natural Heritage Area, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Baleia Franca Environmental Protected Area, Pirajubaé Marine Extractive Reserve, Cres-Lošinj Special Marine Reserve, Isla Natividad MPA, Wakatobi National Park

2.2 Role of celebrity 'champions'(applied in 3 MPAs)

Great Barrier Reef Marine Park, National Marine Sanctuary System, Tubbataha Reefs Natural Park

2.3 Promoting recognition of the potential benefits from well-managed MPAs, *e.g.* spillover to surrounding fisheries, enhanced resilience, ecosystem services (applied in 10 MPAs)

Great Barrier Reef Marine Park, Wash and North Norfolk Coast European Marine Site, National Marine

Sanctuary System, California Marine Life Protection Act, Sanya Coral Reef National Marine Nature Reserve, Seaflower Marine Protected Area, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Isla Natividad MPA

2.4 Promoting recognition of MPA regulations and restrictions, including boundaries (applied in 4 MPAs)

National Marine Sanctuary System, Seaflower Marine Protected Area, Karimunjawa Marine National Park, Tubbataha Reefs Natural Park

3. Knowledge incentives

Respecting and promoting the use of different sources of knowledge (local/traditional and expert/scientific) to better inform MPA decisions, *e.g.*:

3.1 Integration of local/traditional/indigenous knowledge in MPA decision-making (applied in 9 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, Seaflower Marine Protected Area, Galápagos Marine Reserve, Os Miñarzos Marine Reserve of Fishing Interest, Isla Natividad MPA, Baleia Franca Environmental Protected Area

3.2 Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation (applied in 15 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Seaflower Marine Protected Area, Galápagos Marine Reserve, Karimunjawa Marine National Park, Wakatobi National Park, Tubbataha Reefs Natural Park, Ha Long Bay World Natural Heritage Area, Os Miñarzos Marine Reserve of Fishing Interest, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Baleia Franca Environmental Protected Area

3.3 Promoting mutual respect and collective learning between different knowledge owners *e.g.* scientists and local resource users (applied in 10 MPAs)

Great Barrier Reef Marine Park, California Marine Life Protection Act, Seaflower Marine Protected Area, Galápagos Marine Reserve, Karimunjawa Marine National Park, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest, Baleia Franca Environmental Protected Area, Pirajubaé Marine Extractive Reserve, Isla Natividad MPA

3.4 Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty (applied in 3 MPAs)

Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act

3.5 Agreed basis for the role of precautionary approaches in the face of uncertainty (applied in 2 MPAs)

Wash and North Norfolk Coast European Marine Site, Os Miñarzos Marine Reserve of Fishing Interest

4. Legal incentives

Use of relevant laws, regulations, *etc* as a source of 'state steer' to promote compliance with decisions and thereby the achievement of MPA obligations, *e.g.*:

4.1 International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions (applied in 10 MPAs)

Great Barrier Reef Marine Park, Darwin Mounds Special Area of Conservation, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, California Marine Life Protection Act, Sanya Coral Reef National Marine Nature Reserve, Seaflower Marine Protected Area, Galápagos Marine Reserve, Tubbataha Reefs Natural Park, Ha Long Bay World Natural Heritage Area, Great South Bay Marine Conservation Area

4.2 Clarity and consistency in defining the legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, and roles/responsibilities of different authorities and organisations (applied in 9 MPAs)

Great Barrier Reef Marine Park, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Seaflower Marine Protected Area, Galápagos Marine Reserve, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest, Chumbe Island Coral Park

4.3 Effective judicial system for penalising transgressors (applied in 3 MPAs)

Darwin Mounds Special Area of Conservation, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest

4.4 Legal provisions to ensure public rights and transparency in MPA management processes (applied in 7 MPAs)

North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Seaflower Marine Protected Area, Galápagos Marine Reserve, Baleia Franca Environmental Protected Area

4.5 Legal or other official basis for cross-sectoral/cross-jurisdictional restrictions to support the achievement of MPA objectives (applied in 6 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, Darwin Mounds Special Area of Conservation, California Marine Life Protection Act, Seaflower Marine Protected Area

4.6 Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc*. (applied in 4 MPAs)

National Marine Sanctuary System, Sanya Coral Reef National Marine Nature Reserve, Os Miñarzos

Marine Reserve of Fishing Interest, Isla Natividad MPA

4.7 Scope for flexibility - adaptive management and local discretionary action, maintaining, building on and working through local customary institutions, provided that this does not undermine the fulfilment of conservation objectives (applied in 3 MPAs)

Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, Isla Natividad MPA

4.8 Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users, including addressing driving forces – pressures from immigration, corporate mass tourism, fisheries market forces, *etc*. (applied in 7 MPAs)

Great Barrier Reef Marine Park, Darwin Mounds Special Area of Conservation, Wash and North Norfolk Coast European Marine Site, Galápagos Marine Reserve, Tubbataha Reefs Natural Park, Os Miñarzos Marine Reserve of Fishing Interest, Chumbe Island Coral Park

5. Participative incentives

Providing for users, communities and other interest groups to participate in and influence MPA decision-making that may potentially affect them in order to promote their 'ownership' of the MPA and thereby their potential to cooperate in the implementation of decisions, *e.g.*:

5.1 Participative governance structures and processes such as user committees, public consultations, participative GIS planning, *etc*, including training to support such processes (applied in 15 MPAs)

Great Barrier Reef Marine Park, North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Seaflower Marine Protected Area, Galápagos Marine Reserve, Karimunjawa Marine National Park, Wakatobi National Park, Tubbataha Reefs Natural Park, Great South Bay Marine Conservation Area, Chumbe Island Coral Park, Baleia Franca Environmental Protected Area, Os Miñarzos Marine Reserve of Fishing Interest, Isla Natividad MPA

5.2 Participative enforcement, *e.g.* peer enforcement, community rangers and wardens *etc* (applied in 3 MPAs)

North East Kent European Marine Site, Seaflower Marine Protected Area, Karimunjawa Marine National Park

5.3 Building trust/social capital between different actors (applied in 7 MPAs)

North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, Seaflower Marine Protected Area, Great South Bay Marine Conservation Area, Os Miñarzos Marine Reserve of Fishing Interest, Isla Natividad MPA, Baleia Franca Environmental Protected Area

5.4 Transparent participation and decision-making processes (applied in 7 MPAs)

North East Kent European Marine Site, Wash and North Norfolk Coast European Marine Site, National Marine Sanctuary System, California Marine Life Protection Act, Tubbataha Reefs Natural Park, Baleia

Franca Environmental Protected Area, Isla Natividad MPA

5.5 Clear rules on the means and degree of participation from different groups, and the unbiased representation of all user groups in participation processes (applied in 3 MPAs)

Great Barrier Reef Marine Park, Wash and North Norfolk Coast European Marine Site, California Marine Life Protection Act

5.6 Bringing in 'neutral' facilitators to facilitate participative processes (applied in 3 MPAs)

North East Kent European Marine Site, California Marine Life Protection Act, Baleia Franca Environmental Protected Area

A list of incentives that could **potentially** be applied to support MPA governance was developed in the early stages of this project, based on the literature and the experience and knowledge of the authors. This list was revised and added to in the light of the findings of the case studies. Whilst some of these incentives were not cited as being used or needed in this preliminary case study analysis, it is considered that this 'full list' is still valid as (a) further case studies are likely to reveal contexts in which these incentives have been used; and (b) it represents a 'menu' of incentives that might be considered for application in any given MPA. This full list of incentives is set out in Appendix 2.

3.2 Different governance approaches employed in achieving MPA objectives

Examining the 20 case studies reveals a variety of different governance approaches employed to address MPA-related conflicts and to support the achievement of MPA objectives. Five broad approaches to MPA governance can be recognised in the 20 case studies. This categorisation is based on the defining characteristics and attributes of MPA governance, namely the allocation of authority and responsibilities between different parties and/or actors involved in governing MPAs, the types of rules that are followed in MPA decision-making and conflict resolution, and key incentives used to steer related processes. For the purposes of this discussion, the frequency with which incentives are reported as being *used* to support current governance and *needed* to improve governance has been summed under each of the five categories of incentives in order to illustrate their relative importance amongst the five approaches from the case studies (Figures 2-6). Though the number of case studies within each category is small, these figures do indicate the relative importance of different categories of incentives in the five governance approaches identified amongst the case studies.

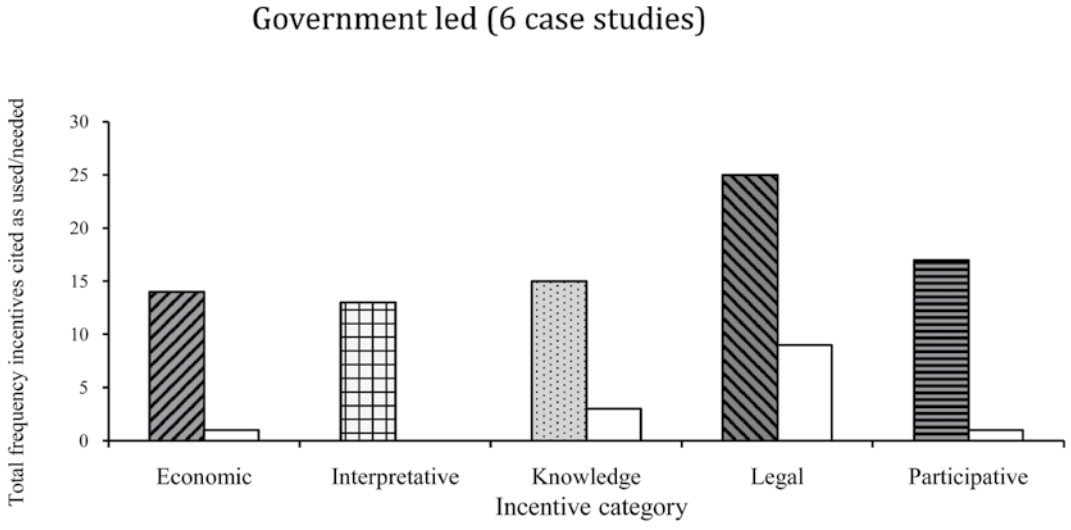


Figure 2: Incentives used/needed – government-led case studies

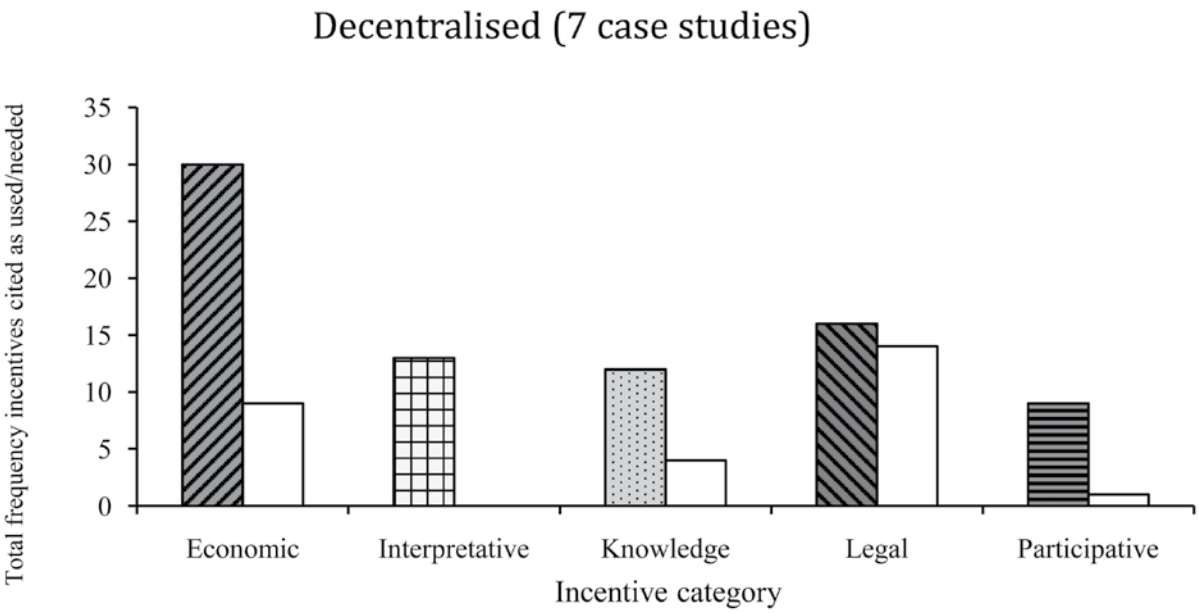


Figure 3: Incentives used/needed – decentralised case studies

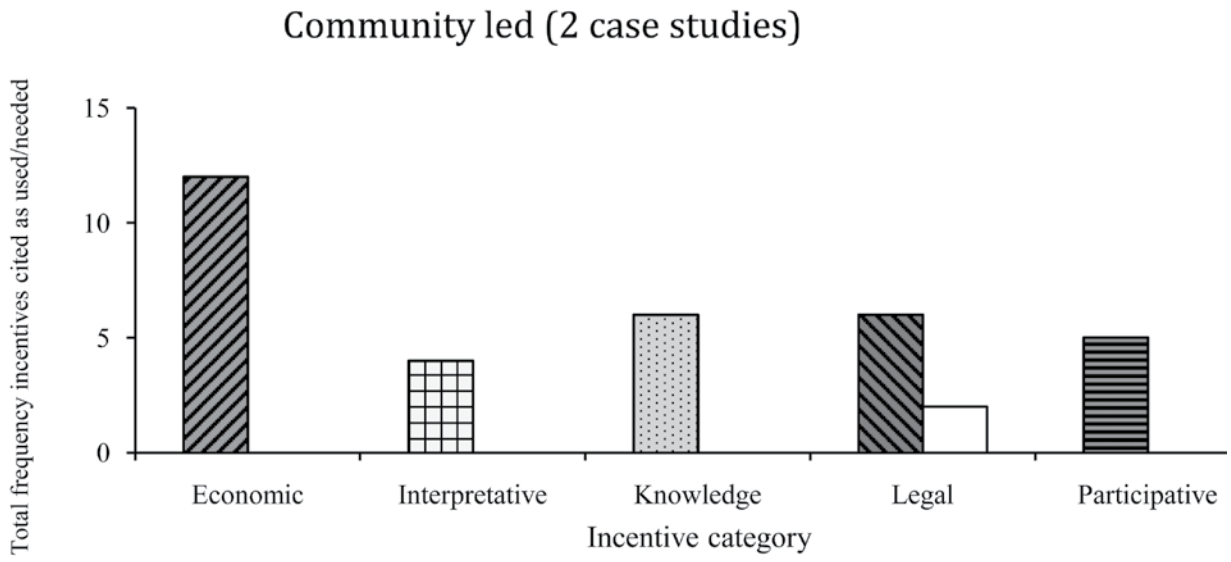


Figure 4: Incentives used/needed – community-led case studies

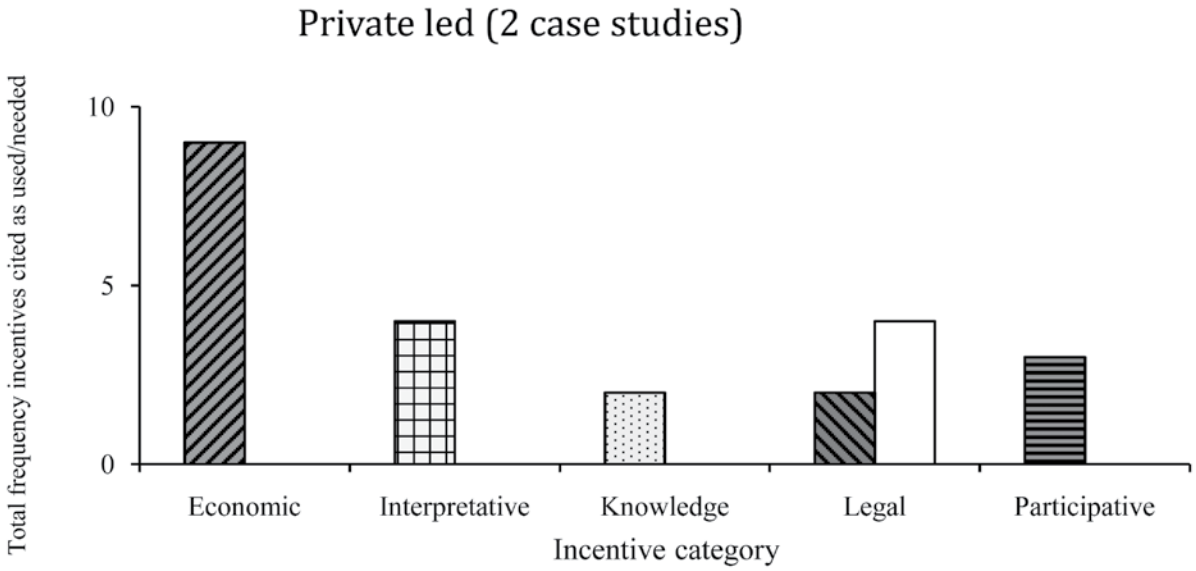


Figure 5: Incentives used/needed – private-led case studies

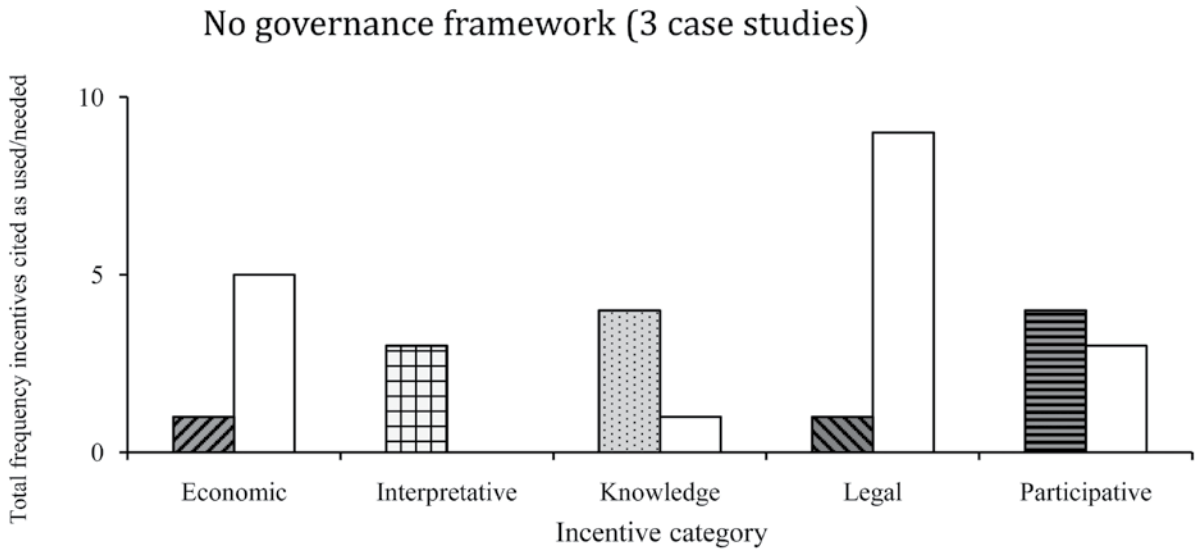


Figure 6: Incentives used/needed – no effective governance framework case studies

Key for Figures 2-6: Hashed bars represent incentives used, whilst open bars represent incentives needed, as identified by the project participants.

3.2.1 Approach I

MPAs managed primarily by the government under clear legal framework (government-led)

MPA governance under this category is characterised by having a well established legal framework, with clearly defined MPA objectives, restrictions on different uses, jurisdictions and responsibilities of different government agencies, and rights and obligations of the public. **Legal incentives are the key drivers in most MPA-related processes, ensuring that the statutory conservation objectives are fulfilled in MPA decision-making.** However, the legal framework also provides a basis for the participation of local people who directly and indirectly use the MPA, which is guided by specific legal provisions as a means of promoting transparency, equity and compliance in achieving statutory MPA objectives (see Table 4). It is important to note that the MPAs categorised as government-led also employ the other four categories of incentives (Figure 2) and that having a strong government leadership certainly does not preclude opportunities for user participation, though legal incentives were most frequently cited as being both used and needed.

The three countries in which these MPA governance approaches are adopted have relatively high per capita GDPs (average US$41,300) and governance capacities (average +4.5), **whilst the MPAs have a relatively high effectiveness (average 3)**. This approach would thus seem to be most appropriate to more economically developed countries (MEDCs) with strong state-federal governance frameworks.

MPAs adopting this governance approach are the Great Barrier Reef Marine Park (Australia), Darwin Mounds candidate Special Area of Conservation (UK), North-East Kent European Marine Site (UK), Wash and North Norfolk Coast European Marine Site (UK), California Marine Life Protection Act (US) and US National Marine Sanctuary System (US).

Examples of good practice

- Providing economic compensation for fishers, their employees and other businesses/workers, who were significantly negatively impacted by the rezoning (Great Barrier Reef Marine Park).
- Public education and awareness raising through an innovative Marine Campaign, whereby the emphasis was on 'selling' underwater landscapes (Wash and North Norfolk Coast European Marine Site).
- Establishing independent Scientific Steering Committees with expertise in both natural and social sciences to guide the development of bio-physical and socio-economic-cultural principles and to provide the best available information as a fundamental underpinning for the new zoning plan (Great Barrier Reef Marine Park).
- Establishing provisions to take a broad ecosystem-approach in the Great Barrier Reef legislation, allowing regulatory controls on activities well outside the jurisdictional area, *e.g.* the GBRMPA was able to bring in regulations controlling aquaculture up to 5 km landward of the GBRMP when concerns were raised about the potential adverse impact of discharges associated with aquaculture activities.
- Having clear international-regional-national-local regulatory obligations that *require* effective MPA management and law enforcement (Great Barrier Reef Marine Park, Darwin Mounds candidate Special Area of Conservation, NE Kent and the Wash and North Norfolk Coast European Marine Sites, and the California Marine Life Protection Act).
- Appropriating sufficient financial, institutional and technical resources for surveillance and law enforcement (Great Barrier Reef Marine Park, Darwin Mounds candidate Special Area of Conservation and the Wash and North Norfolk Coast European Marine Site).
- Launching an effective public consultation program during the rezoning process in the Great Barrier Reef Marine Park, which involved hundreds of user and public meetings and over 31,000

public submissions.

- Developing participative governance structures and processes through Regional Stakeholder Groups and a GIS-based online decision support tool called MarineMap in developing draft proposals of MPA network designs (California Marine Life Protection Act).

Key challenges to MPA governance

One of the **key weaknesses of this governance approach results from the complex jurisdictional and bureaucratic systems in these MEDCs**. The responsibilities for managing different uses of marine resources, particularly fisheries management and marine conservation, are still under different government authorities and jurisdictions. **Cross-sectoral and cross jurisdictional coordination and integration are still major challenges to MPA governance**, as in the cases of the Great Barrier Reef Marine Park, the US National Marine Sanctuary System, and the California Marine Life Protection Act (see Table 4). The implementation of marine spatial planning may be a way forward to contextualise and streamline the integrated management of MPAs and other sectoral activities. In addition, increasing public participation and the integration of local knowledge into MPA decision-making processes are also identified as key areas to improve in the future in some MPAs (the Darwin Mounds candidate Special Area of Conservation and the Wash and North Norfolk Coast European Marine Site, respectively), which will empower local users to enable a better balance of power in top-down MPA initiatives.

Conclusion: main characteristics of MPA governance (approach I)

- The relatively high levels of effectiveness achieved in MPAs in this category are achieved through the combination of legal and other incentives, rather than solely from the enforcement of MPA regulations.

- This governance approach is most common and arguably most successful in MEDCs, with a relatively small portion of local people depending on direct uses of natural resources for livelihoods.

- The existence of a relatively well developed legislative and judicial system, as well as the state capacity to effectively enforce laws and regulations, are essential for the successful use of this governance approach.

- A variety of other incentives are employed to increase MPA effectiveness by promoting awareness, compliance, transparency and equity in such top-down MPA initiatives.

- Strong leadership from the regional, national and sub-national governments underpins the successful use of different incentives.

- Better cross-sectoral and cross-jurisdictional coordination and integration will often improve governance in MPAs led by the government.

3.2.2 Approach II

MPAs managed by the government with significant decentralisation and/or influences from private organisations (decentralised governance)

MPA governance under this category is characterised by a sharing of authority and responsibilities between central/federal governments and lower levels of government, or between government agencies and NGOs/private entities. MPAs are managed in accordance with formal regulations and/or through partnerships and negotiations between different parties. A variety of governance incentives are employed in MPAs that adopt this approach (Figure 3), depending on the context and main focuses

of MPA-related efforts, but **economic incentives were most frequently cited as being currently used whilst legal incentives were most frequently cited as being needed to improve governance.** The six countries in which these MPA governance approaches are adopted all have relatively low per capita GDPs (average US$5,400) and governance capacities (average -0.54), whilst the **MPAs have a medium effectiveness (average 1.9)**. This approach would thus seem to be characteristic of less economically developed countries (LEDCs) where there is **a degree of commitment** to conserve marine biodiversity and fisheries but **a weak state capacity**, hence the tendency towards decentralisation.

MPAs adopting this governance approach are Sanya Coral Reef National Marine Nature Reserve (China), Seaflower Marine Protected Area (Columbia), Galápagos Marine Reserve (Ecuador), Karimunjawa Marine National Park (Indonesia), Wakatobi National Park (Indonesia), Tubbataha Reefs Natural Park (Philippines), and Ha Long Bay World Natural Heritage Area (Vietnam).

Examples of good practice

- The successfully implementation of an innovative legislation under the Galápagos Special Law that restricts immigration, designed to alleviate the driving force of immigration and thereby growing population pressure on marine resources (Galápagos Marine Reserve).
- Well designed research and monitoring programs providing feedbacks on the park zoning plan and decision-making, which form the knowledge basis for adaptive management (Karimunjawa Marine National Park).
- The provision of employment opportunities to around 1,400 villagers through the development of tourism, which has led to a huge reduction in the incidence of coral mining and fishing pressure in nearby coral reefs (Sanya Coral Reef National Marine Nature Reserve).
- The sharing of tourism revenues (10% of tourism fees) as a compensatory mechanism offered to the fishing community when the no-take policy was fully enforced, which allows local communities to claim co-ownership of the MPA (Tubbataha Reefs Natural Park).
- Re-investing tourism revenue to support both MPA management and community development (Sanya Coral Reef National Marine Nature Reserve, Tubbataha Reefs Natural Park, and the Ha Long Bay World Natural Heritage Area).
- Generating community stewardship through recognising the rights of local users for tourism, mariculture and fishing (traditional fishing allowed in 83% of the area of the park) within the MPA, and promoting community participation in park planning, monitoring and enforcement (Karimunjawa Marine National Park).

Key challenges to MPA governance

One of the main weaknesses identified in MPA governance in this category is the lack of political will and national-local state capacity for effective enforcement of MPA regulations (Table 4). Most MPAs that belong to this category are facing multiple and strong driving forces including growing coastal populations, increasing domestic and international demand for sea food, development of mass tourism, and rapid coastal development and urbanisation, most of which cannot be fully controlled and mitigated through actions at local levels and require interventions at national or even international levels. Insufficient use of legal incentives by the state has led to uncontrolled mass tourism development (*e.g.* Sanya Coral Reef National Marine Nature Reserve and the Ha Long Bay World Natural Heritage Area), increasing displacement of traditional fishers by incoming fishing vessels (*e.g.* Seaflower Marine Protected Area), and over-exploitation of fishery resources (*e.g.* Galápagos Marine Reserve and Seaflower Marine Protected Area). International and national NGOs and donors often focus their activities on building capacity at a local level; **however, the need to build more state capacity in developing countries to effectively address driving forces must also be recognised**.

A second key weakness of MPA governance in this category is that **incentives are needed to further improve fairness and equity in the sharing of benefits from MPA management** (Table 4). Such incentives include the allocation or reinforcement of user/property rights to communities and traditional users (*e.g.* Sanya Coral Reef National Marine Nature Reserve), more funding to develop alternative livelihoods and sustainable business enterprises owned by local communities (*e.g.* Karimunjawa Marine National Park), protection from incoming users (*e.g.* Seaflower Marine Protected Area), respect for and integration of local knowledge in MPA decision-making (*e.g.* Wakatobi National Park), and developing participative governance structures and processes that bring in marginalised user groups (*e.g.* Sanya Coral Reef National Marine Nature Reserve and Wakatobi National Park).

Finally, insufficient use of scientific knowledge (*e.g.* Sanya Coral Reef National Marine Nature Reserve) and the precautionary principle (*e.g.* Galápagos Marine Reserve), and a lack of integration of local knowledge (*e.g.* Wakatobi National Park) are also areas identified as being needed to improve governance in some MPAs. The lack of scientific guidance and understanding of local culture and traditions may undermine the effectiveness of other incentives used to steer MPA management.

Conclusion: main characteristics of MPA governance (approach II)

- This approach is employed in contexts in which the state often lacks the political will, resources, capacity, and/or legitimacy to effectively manage and enforce MPAs.
- This approach is common in LEDCs with large coastal populations dependent on marine resources and undergoing decentralisation in the management of natural resources.
- Economic incentives are clearly the most important steering force in MPA management.
- Economic and other incentives have been used to alleviate the driving forces of resource decline and to promote equity and fairness whilst conserving marine resources.
- A strong presence of donor aid and/or international NGOs is common in most of the MPAs.
- Assistance from private sources or NGOs is essential in the successful implementation of MPA governance incentives.
- In the face of strong and multiple driving forces, the need for strengthening the political will and national-local state capacity for effective enforcement of MPA regulations must be recognised.
- Incentives will be needed to further improve fairness and equity in the sharing of benefits from MPA management.
- Providing incentives for supporting and promoting the participation of marginalised groups can make MPA governance more effective and equitable.
- Improved use of scientific knowledge, including through an agreed role of the precautionary principle, as well as the integration of local knowledge, were considered to be particularly needed to improve governance in decentralised MPAs.

3.2.3 Approach III

MPAs managed primarily by local communities under collective management arrangements (community-led)

MPA governance under this category is characterised by local communities taking a lead in the

conservation and sustainable management of marine resources, which is essential for the long-term social and economic well-being of communities. Community organisations (*e.g.* local fishing cooperatives) are often granted a significant level of autonomy to collectively decide the rules governing MPA management. External organisations, such as government departments and conservation NGOs, may have an important role in enabling and reinforcing such community initiatives, and ensuring that such community efforts are consistent with existing legal and policy frameworks, including fisheries and biodiversity conservation objectives/obligations, that govern the management of marine resources at a national or other wider scale. Again, all categories of incentives are employed but **economic incentives were most frequently cited as being used to promote community stewardship of MPAs whilst legal incentives were most frequently cited as being needed** (Figure 4).

The two countries in which these MPA governance approaches are adopted are more heterogeneous, with per capita GDPs (US$) of 14,400 and 35,500 and governance capacities between -0.14 and +0.95, whilst **the MPAs have a high effectiveness (3 in both MPAs)**. This approach would thus seem to be more opportunistic than characteristic, but effective in certain contexts, particularly where sustainable resource use is the dominant objective, rather than biodiversity conservation.

MPAs adopting this governance approach are Isla Natividad (Mexico) and Os Miñarzos Marine Reserve of Fishing Interest (Spain).

Examples of good practice

- Expected economic benefits from MPA management through improvements in fishery and tourism sectors serving as a main premise for creating both the Os Miñarzos Marine Reserve of Fishing Interest and the Isla Natividad MPA.
- Allocation and/or reinforcement of community/user property rights through the introduction of territorial user rights for fishers (TURFs) associated with the MPA in the Os Miñarzos Marine Reserve of Fishing Interest and a twenty-year exclusive fishing concession to the local fishing cooperative in Isla Natividad.
- Reinforcing a growing interest among some younger members in the value of conserving ecological uniqueness and beauty for its own sake in the Isla Natividad MPA.
- Promoting mutual respect and collective learning between scientists and local users in both the Os Miñarzos Marine Reserve of Fishing Interest and the Isla Natividad MPA.
- The integration of local knowledge in MPA design and monitoring processes in both the Os Miñarzos Marine Reserve of Fishing Interest and the Isla Natividad MPA.
- Performance standards and conditions related to the MPA's conservation objectives and attached to user rights in both the Os Miñarzos Marine Reserve of Fishing Interest and the Isla Natividad MPA.
- Developing MPA proposal through a collaborative partnership between fishers, scientists, an NGO and members of the autonomous government a participatory process in the Os Miñarzos Marine Reserve of Fishing Interest.

Key challenges to MPA governance

One of the major challenges to MPA governance in this category is that although existing governance arrangements have been successful in addressing over-exploitation of valuable marine resources in the current context, they are **vulnerable to changes in the wider socio-economic and political environment**, such as changes in external markets, which may devalue products and services from a MPA, or lead to an increase in corporate tourism interests for example, and the political will to renew community rights to marine resources, as in the case of Isla Natividad MPA. Such wider-scale changes may significantly influence communities' incentives and capacity to effectively control access to natural resources. This is why **legal incentives to reinforce the current regime are cited as most needed**

in these case studies (Figure 4).

Another concern is that the power awarded to some community organisations and groups to deny access to natural resources to outsiders and non-elite members of a community may generate equity concerns. For example, in Isla Natividad, the Mexican constitution indicates that anyone may use resources for subsistence, but from the perspective of the fishing cooperatives this is the kind of loophole through which poaching occurs. In this case, an MPA may be an effective way for the cooperatives to ensure that even 'subsistence' use of resources like abalone is further limited, disadvantaging local people who are not members of cooperative and thus reinforcing and potentially widening local inequities (Lane and Corbett 2005). Whilst governance structures in community-based MPAs such as Isla Natividad may appear to be non-hierarchical, they can actually represent hierarchical structures based on local entitlements. Isla Natividad's communities were discussed in terms of'a hierarchy of wannabees', reflecting the desire amongst non-members of the co-operative to become affiliated with the co-operative in order to gain access rights to the lucrative abalone fishery.

Conclusion: main characteristics of MPA governance (approach III)

- This approach has been applied in contexts in which declines in valuable fish stocks have become a shared concern amongst local users.
- A relatively low level of exploitation pressure from incoming (non-local) users contributes to the relatively high effectiveness of the MPAs.
- Economic incentives appear to be the most important steering force for protecting marine resources.
- The integrated use of economic, participatory and other incentives (knowledge, legal and knowledge) helps legitimise and strengthen community institutions.
- Strong community leadership and stewardship of marine resources underpins the use of different incentives and the high effectiveness of the MPAs.
- Governments' and NGOs' roles are also important in enabling and reinforcing local actions, and in enabling the delivery of wider conservation and resource management benefits.
- A concern for community-led MPA governance is that power and authority granted to certain community organisations and groups may generate intra-community inequity.
- A key concern for community-led MPAs is that they are vulnerable to changes in the wider socio-economic and political environment, legal incentives and continuous support from the state therefore being important in maintaining and reinforcing the current community-led governance framework.

3.2.4 Approach IV

MPAs managed primarily by the private sector and/or NGOs granted with property/management rights (private-led)

MPA governance under this category is characterised by a non-governmental and/or private organisations taking the main responsibility for MPA management and enforcement. Such organisations are often granted with permanent property rights or temporary management rights to a particular area of sea, where they carry out conservation and resource management work. Such organisations work independently of their own volition, but often collaborate with public institutions to enhance

the effectiveness of their conservation efforts. Incentives employed to steer MPA management vary between MPAs that belong to this category (Table 4), depending on the context as well as the core values of the leading organisation, but **economic incentives were most frequently cited as being used to promote effective governance whilst legal incentives were most frequently cited as being needed** (Figure 5).

The two countries in which these MPA governance approaches are adopted are even more heterogeneous, with per capita GDPs (US$) of 1,400 and 35,500 and governance capacities between -0.29 and +1.36, whilst **the MPAs have a reasonable effectiveness** (both 2).

MPAs adopting this governance approach are Chumbe Island Coral Park (Tanzania) and Great South Bay Marine Conservation Area (United States).

Examples of good practice

- Improved sustainability of shellfish fisheries in surrounding areas through restocking and spill-over effects from spawning sanctuaries in the Great South Bay Marine Conservation Area
- Reinvesting profits generated from ecotourism to support MPA management and community development in a sustainable manner in the Chumbe Island Coral Park
- Providing environmental education to fishers, government officials, teachers, students, tourism operators, the general public and all visitors (up to mid 2009, over 4,000 schoolchildren and 750 teachers have participated in this program) in the Chumbe Island Coral Park
- Employing rangers from local communities to carry out MPA enforcement in the Chumbe Island Coral Park
- Developing participative governance structures and processes that bring together local, state and federal representatives to develop a long-term vision for the MPA and surrounding areas in the Great South Bay Marine Conservation Area

Key challenges to MPA governance

As in community-led MPAs, **privately managed MPAs are also vulnerable to changes in the political and economic environment**, which may, for example, affect the land lease and management agreements entrusted to the private company or NGO, as in the case of the Chumbe Island Coral Park. In addition, the effectiveness of **privately managed MPAs can be significantly undermined by a lack of legal conditions or mandates attached to the property rights that require or provide for effective biodiversity and resource conservation, and/or the political will to provide support in enforcing existing conservation rules, as in both cases. This is why legal incentives are most frequently cited as needed in these two case studies** (Figure 5).

Conclusion: main characteristics of MPA governance (approach IV)

- Privately managed MPAs often come into existence as a result of the interest, dedication and investments from an individual, private organization or an NGO.
- Economic incentives have been used in combination with other incentives to promote awareness and support for effective MPA management.
- The effectiveness of privately managed MPAs can be undermined by a lack of legal mandates and political will for reinforcing property rights and existing conservation efforts.

3.2.5 Approach V

No clearly recognisable effective governance framework in place

The development of MPA governance in this category is hindered by a lack of political will, leadership and capacity from all levels to develop effective governance structure and arrangements that would support the achievement of any MPA objectives, often in the face of strong driving forces counter to conservation. **Few incentives are successfully applied to address conflicts and steer MPA processes in this category** (Table 4) and participative, interpretative and knowledge incentives were most frequently cited as being used, whilst legal and economic incentives were most frequently cited as being needed to improve governance (Figure 6).

The two countries in which these MPA governance approaches are adopted have medium per capita GDPs (US$) of 10,300 and18,600 and governance capacities between +0.04 and 0.38, whilst **the MPAs have a low effectiveness (0-1)**.

MPAs adopting this governance approach are Baleia Franca Environmental Protected Area (Brazil), Pirajubaé Marine Extractive Reserve (Brazil), and Cres-Lošinj Special Marine Reserve (Croatia).

Key challenges to MPA governance

The lack of effective governance framework in MPAs that fall under this category **results from weak political will, leadership and support for conservation at all levels, from the national to local government, often in the face of strong counter forces, particularly government-sponsored economic development programmes and related infrastructure and corporate tourism development projects**. Compared to MPAs in other governance approach categories, the limited use of economic and legal incentives in MPAs in this category is most notable (see Figure 6), as they are the pillars of MPA governance in other categories examined, providing the 'carrot' and/or 'stick' that are needed to steer MPA governance. This is why legal and economic incentives are most frequently cited as being needed in these two case studies (Figure 6). It should be noted that strong driving forces counter to conservation are not unique to MPAs in this category; several other MPAs, particularly those under approach II, are also facing very similar conflicts and difficulties in achieving their management objectives. Such conflicts can be mitigated and reduced through the use of different incentives, as shown in previous case studies; however considerable leadership and commitments, be it from the state, NGOs, the private sector or communities, must underpin the use of such incentives and they must be underpinned by a legal framework.

Conclusion: main characteristics of MPA governance (approach V)

- MPAs in this category face strong driving forces, particularly government-sponsored economic development.

- Limited use of all incentives, particularly legal and economic incentives, leads to low effectiveness in MPA governance.

- These ineffective MPAs are characterised by a lack of political will and leadership for effective MPA management from all levels.

3.3 Summary and comparison across all case studies – incentives applied and needed for improving MPA governance

3.3.1 Categories of incentives

Overall, all five categories of incentives have been widely applied to steer MPA governance in the case study MPAs, based on the sum of the frequency with which individual incentives within each category are cited as being **used** (Figure 7), though there are, as discussed above, differences in this respect between the case study governance approach groups. In general, across all 20 case studies, economic and legal incentives were most frequently cited as being used.

There are, however, larger differences in the frequency with which incentives within each category are cited as being **needed**. It is particularly notable that **legal incentives were cited as being needed to improve governance more often (38) than the other four categories of incentives combined** (total 27). **This illustrates the importance of legal incentives for improving and reinforcing governance frameworks, based on this sample of 20 case studies analysed using the MPAG framework**.

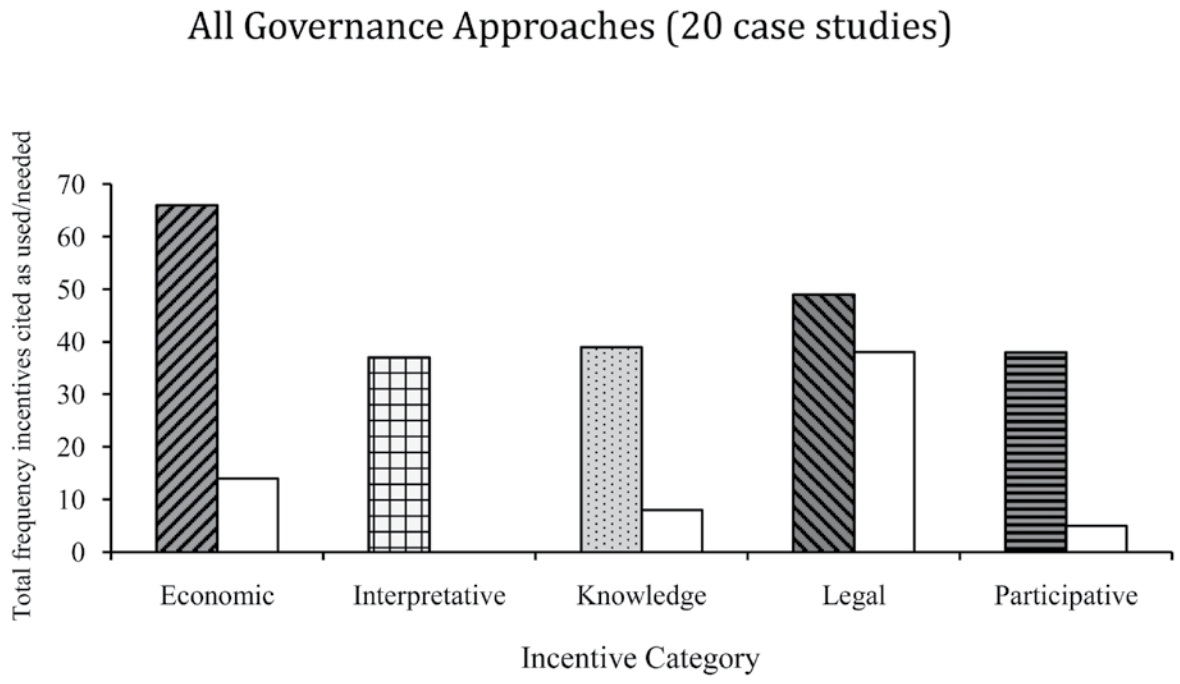


Figure 7: Incentives used/needed – all case studies

Hashed bars represent incentives used, whilst open bars represent incentives needed, as identified by the project participants.

3.3.2 Individual incentives

The five incentives most frequently cited as being **used** are drawn from four of the five categories, other than legal incentives (Figure 8):

- Public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA (interpretative);
- Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation (knowledge);
- Participative governance structures and processes such as user committees, public consultations, participative GIS planning, *etc*., including training to support such processes (participative);
- Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives (economic); and
- Promoting economically and ecologically sustainable resource use, through spill-over effects and enhancing direct and indirectly use values from resources (economic).

Only one incentive was not cited as being used or needed amongst this preliminary sample of case studies – payments for the flow of ecosystem services provided by the MPA – but it was decided to leave this incentive in the list to illustrate that whilst there is a growing emphasis in the literature on the critical need to maintain/restore the flow of marine ecosystem services (MEA 2005), it would appear that the logical extension of this, in the form of such payments to support effective and equitable MPA governance, has not yet been realised.

The five incentives most frequently cited as being **needed** to improve MPA governance are dominated by legal incentives (Figure 9):

- Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users (legal);
- Legal or other official basis for cross-sectoral/cross-jurisdictional restrictions to support the achievement of MPA objectives (legal);
- Clarity and consistency in defining the legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, and roles/responsibilities of different authorities and organisations (legal);
- International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions (legal); and
- Agreed basis for the role of precautionary approaches in the face of uncertainty (knowledge).

The results show that although both the academic and policy communities have been calling for and adopting new approaches in recent years, such as collaborative management and the introduction of market mechanisms to effectively govern protected areas (see Section 1), improving MPA governance may still hinge on overcoming some of the 'old problems', which are as pressing now as in the past when a more top-down governance framework was in place. **Such 'old problems' waiting to be addressed in many MPAs include establishing a clear and strong legal basis to enable decisive and well-integrated conservation efforts to be taken across different sectors and jurisdictions. Perhaps more importantly, improving MPA governance cannot be achieved without generating sufficient state capacity, political will and resources for the enforcement of conservation laws and regulations**. This is partly because successful implementation of 'new' governance approaches also requires a strong legal basis, such as legal provisions to ensure public rights to participate in governance processes and to protect community property rights to natural resources against corporate development. In the face of strong driving forces, legal incentives are often essential in preventing over-exploitation by incoming and local users, which may lead to catastrophic declines in marine resources vital to the livelihoods of coastal communities.

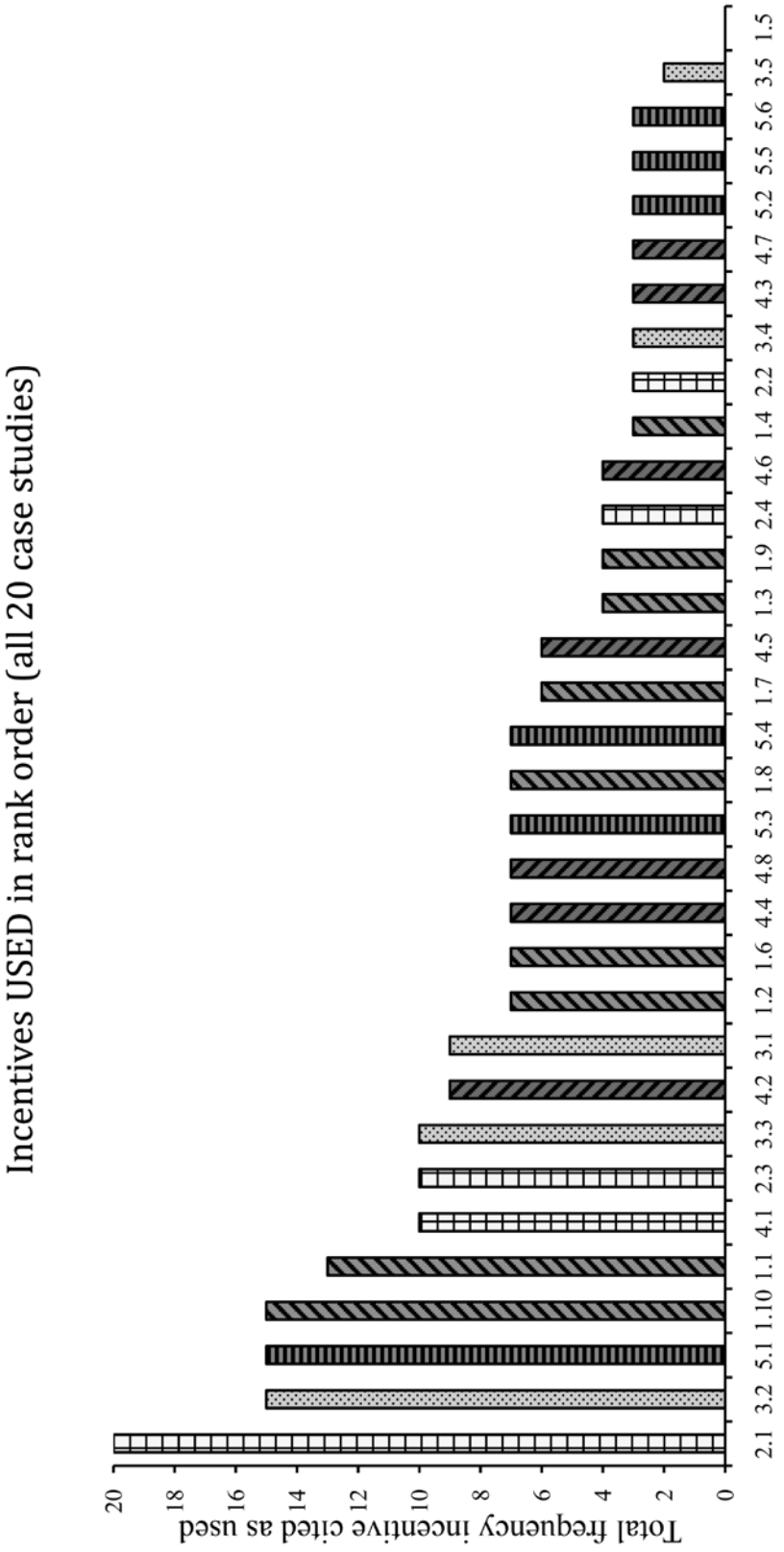
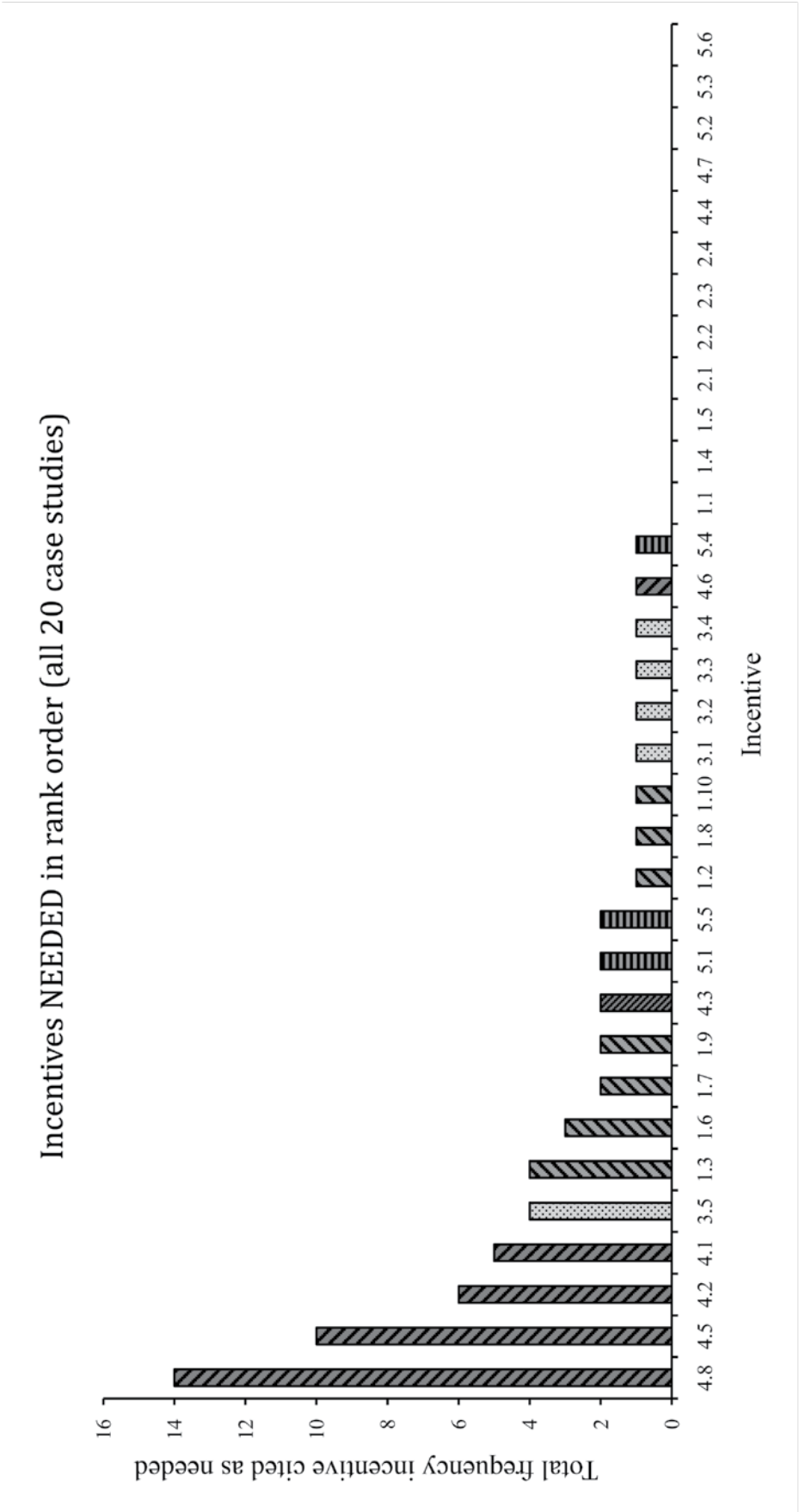


Figure 8. Incentives USED in rank order (all 20 case studies)

Key for figure (see section 3.1 for reference to the incentive numbers)

- Economic incentives
- Interpretative incentives
- Knowledge incentives
- Legal incentives
- Participative incentives


Incentives NEEDED in rank order (all 20 case studies)
Total frequency incentive cited as needed
0
2
4
6
8
10
12
14
16
4.8 4.5 4.2 4.1 3.5 1.3 1.6 1.7 1.9 4.3 5.1 5.5 1.2 1.8 1.10 3.1 3.2 3.3 3.4 4.6 5.4 1.1 1.4 1.5 2.1 2.2 2.3 2.4 4.4 4.7 5.2 5.3 5.6
Incentive

In addition, knowledge incentives, particularly an agreed basis for the use of precautionary approach, and economic incentives, particularly measures to reduce the 'leakage' of the economic benefits of the MPA away from local people and the reinforcement of community/user property rights, are also identified by a number of case studies as priorities to improve MPA governance (Figure 9). Overall, the results show that **MPA governance can become more effective, equitable and resilient to external driving forces if different incentives are combined to address conflicts and challenges**.

3.3.3 Key points

- Whilst incentives from all five categories were cited as being used and needed, legal incentives were most frequently cited overall, particularly as being needed to improve governance.
- Legal incentives were cited as being used and needed alongside incentives from the other four categories, highlighting the need to combine the reinforcing role of legal incentives with the cementing role of economic, knowledge, participative and interpretative incentives.
- This indicates that the need for a strong legal basis for controlling impacts on MPAs is still widely recognised amongst MPA practitioners and experts.
- Whilst 'new' approaches to governance, such as collaborative management and the allocation of property rights, are important, these approaches need to be combined with and reinforced by a strong legal regime if an MPA is to be resilient to the perturbing effects of existing and emergent driving forces.

3.4 Cross-cutting issues

In the preparation of the case study summaries (Volume 2), attention was drawn in the framework to a number of cross-cutting issues (2.4), as the workshop discussions and subsequent analyses indicated that such issues underlie the use and effectiveness of different incentives.

3.4.1 Leadership

This may come from individuals and organisations from state, NGO, private, academic or local community sectors. In all contexts, **having dedicated and respected individuals and organisations that can provide vision and leadership for an MPA is an important source of steer in developing and sustaining good MPA governance**. Whilst leadership from individuals representing NGOs, private, academic or local community sectors can be important, it is argued that leadership from key representatives of the state is particularly important, in order **to provide for the development and effective implementation of legal incentives**. Such incentives, alongside complementary incentives from the other four categories, are, as is discussed above, **vital to reinforce MPA governance frameworks and provide for their resilience to the various driving forces that can undermine, stress and collapse such frameworks**.

3.4.2 Role of NGOs

Local, national and international NGOs have played important roles in governing MPAs, often providing funding, knowledge, facilitation and guidance that are needed for MPA management. They work

alongside state, private, academic or local community sectors, to support MPA governance frameworks in order to provide for the better achievement of MPA objectives. They are also often responsible for galvanizing both public opinion and political will towards establishing MPAs, for example with the continued push towards networks of MPAs, large no-take MPAs and international MPA targets. Both private and academic bodies *e.g.* dive tourism operators and marine research institutes, can also fulfil roles normally associated with NGOs, such as advocating MPAs and supporting their designation and management. Whilst there are concerns about the increasing 'corporatisation' of NGOs, working in partnership with the private sector, *e.g.* corporate tourism operators, to undermine the use rights of local users (Brockington *et al.* 2008), alongside concerns about NGOs assuming a quasi-state role and representing a form of neo-colonialism (Adams and Mulligan 2003), several case studies indicate that **NGOs can serve an important role in developing and implementing various incentives for the effective governance of MPAs, particularly in LEDCs lacking in state finance, governance capacity and/or the political will to apply such capacity to MPA governance**.

3.4.3 Equity

Equitable sharing of the costs and benefits associated with protected areas is becoming an increasingly important issue (Adams *et al.* 2004, Blaustein 2007), amidst concerns that **poor, disadvantaged and marginalised people can represent a major threat to biodiversity, as they struggle to survive and improve their standard of living**. There are also concerns that co-management and community-based governance approaches can lead to the reinforcement of inequities and the increased marginalisation of disadvantaged groups, as locally powerful groups and elite individuals can dominate local decision-making processes (Lane and Corbett 2005).

These case studies indicate that the fair sharing of costs and benefits associated with MPAs and providing for the participation of all affected groups in decision-making, including politically marginalised groups, is important in providing for effective governance. The need to feed one's family and improve your living standards is a powerful motive for marine resource exploitation. MPAs that marginalise certain groups in terms of access to MPA decision-making and resources face major governance challenges. **It is extremely difficult to implement legal incentives that are strong enough to deter large numbers of poor and disadvantaged people**. Even where this is feasible, unfairly imposing restrictions on such people is contrary to the principles of social justice (Brechin *et al.* 2003). Whilst it must be ensured that MPA governance frameworks provide for effectiveness in achieving biodiversity conservation objectives and fulfilling related obligations, **equity in the fair allocation of access to decision-making and resources must also be guaranteed**. In the long-term, **an inequitably implemented but apparently effective MPA is unlikely to be socially sustainable, as the exploitation pressures from marginalised and poor people will eventually lead to the over-exploitation of marine resources, unless unjust, 'fortress' conservation approaches to ensuring compliance are implemented** (Hutton *et al.* 2005).

Effectiveness and equity in MPA governance are inextricably intertwined and a careful balance must be struck between alleviating poverty by providing for access to MPA resources and ensuring that such resources are not over-exploited as result of exploitation influences on decision-making processes or ineffective incentives for compliance. In order to achieve this balance, the case studies indicate that legal and participative incentives should be combined with economic, knowledge and interpretative incentives, though there is no precise combination or formula for achieving this balance. In reality, finding a balance between these forces often involves trade-offs coupled with compensatory measures, recognising that **economic compensation through alternative livelihoods, welfare payments, *etc* is much more feasible than ecological compensation through marine habitat recreation/ restoration elsewhere**.

3.4.4 Stewardship

Community stewardship or 'ownership' of an MPA both strengthens and is shaped by MPA governance arrangements. The case studies indicate that stewardship can be generated through the combined use of economic, interpretative, knowledge, legal and participative incentives. **Without a strong sense of stewardship, incentives aimed at generating support from communities and users, such as economic, interpretative and participative incentives, are less likely to be successful**. One important means of promoting community stewardship that is indicated by the case studies is to **provide for protection from incoming users, through the allocation of legally enforced community property rights**. Such rights have previously been discussed in the literature (Jones and Burgess 2005) as a good example of how synergies can be created between the objectives of conservationists and local users (Murphree 1994), in that the conservationists regard local protectionism as a means of achieving conservation ends, whilst local users regard local protectionism as an end to be achieved through the means of conservation. This is particularly important given that exploitation from non-locals is widely recognised as representing one of the main threats to biodiversity, and potential alliances between the state and local users to fend off such threats is argued to be one of the principal benefits of co-management (Borrini-Feyerabend 1999). Similarly, Rydin and Pennington (2000) recognise that there may need to be rules which prevent the participation of non-locals who have a higher potential to free-ride.

In relation to MPAs, Jones (2009) highlights that there is a growing interest in the potential of assigning property rights to fish stocks as an incentive to improve fisheries management (Costello *et al.* 2008, Fujita and Bonzon 2005, Gutiérrez *et al*. 2011, Hilborn *et al.* 2005, WB/FAO 2008), discussed in terms such as territorial user rights in fisheries (TURFs) (Gelcich *et al.* 2008) and 'enclosure' through the assignation of individual transferable quotas (ITQs) to a particular community of fishers for a particular area (McCay *et al.* 2008). Fishers in the north-eastern United States, who were granted community-run ITQs over shellfisheries, voluntarily designated MPAs to promote biodiversity and resilience (McCay *et al.* 2008) and areas managed by users through such rights can show add-on conservation benefits (Gelcich *et al.* 2008) that complement MPAs.

In relation to the MPAG case studies, it is **clear that the promotion of stewardship through the assignation of property rights, in combination with other incentives, played a key role in the success** of the case studies that adopted approach III (Isla Natividad and Os Miñarzos) and approach IV (Chumbe Island and Great South Bay). In these and other cases, promoting a sense of ownership and stewardship of MPAs amongst local users provided an important element of the governance framework.

In addition to these four cross-cutting issues that were employed in the case study summary framework, some further cross-cutting issues can now be considered:

3.4.5 Driving forces

It is widely acknowledged that protected areas are becoming more influenced by global forces (Büscher and Whande 2007, Dearden *et al.* 2005), including MPAs. Such 'driving forces' have also been discussed in terms of 'the root causes of biodiversity loss' (Wood *et al.* 2000) and could be considered as 'disincentives' in the context of this analysis. With specific regards to MPAs such driving forces include:

- increasing reach and numbers of tourists and increasing pressures for large-scale corporate tourism;
- increasing reach of large-scale fish markets for a growing and increasingly affluent human population coupled with the increasing reach and effort capacity of fishing vessels through 'technological creep';
- increasing mobility of people and thereby the increasing potential for migration to coastal areas, where economic development and subsistence opportunities tend to be relatively good; and

- increasing and legitimate desire of the local population, which may itself be increasing through 'Malthusian' population growth as well as immigration, to not only feed themselves and their families on a subsistence basis, but also to improve their material standard of living and their prospects, as people increasingly aspire, including through media exposure, to a more secure, comfortable, consumerist and technological western lifestyle.

Such driving forces are a major and increasing challenge for MPA governance, as they represent forces that can combine to perturb, disrupt and, ultimately, collapse the governance framework, severely undermining, if not destroying, the potential for the biodiversity and resource conservation objectives of a given MPA to be achieved.

3.4.6 Key role of the state

The increasing diversity, reach and magnitude of such driving forces means that it is **very risky in MPA governance to rely solely on participative incentives in combination with economic, interpretative and knowledge incentives**. Such reliance will leave the MPA vulnerable to the perturbing, disrupting and destructive influence of driving forces. Whilst a given coastal/marine area may currently be subject to a minor diversity and magnitude of such forces, increasing human population coupled with globalisation and technological trends, realistically means that **it is a matter of *when*, not *if*, such driving forces will eventually become strong enough to perturb, disrupt or destroy the MPA governance framework**. Such potential has already come to fruition in several of the case studies, *e.g.* Galápagos, Sanya and Seaflower, whilst others were considered to be particularly vulnerable to such potential, *e.g.* Isla Natividad and Chumbe. Discussions concerning which combinations of incentives are appropriate for a given MPA cannot be separated from discussions about existing and potential driving forces.

Whilst participative incentives in combination with economic, interpretative and knowledge incentives can be effective where such driving forces are minor, in the long-term it must be accepted that a degree of state protectionism through legal incentives is required to withstand the effect of growing and emerging driving forces[4]. Whilst advocates of participative governance approaches recognise the need for the state to support and reinforce locally developed governance institutions, a key perception remains that the state's role should be one of facilitator rather than controller[5]. This analysis questions the validity of this view, given that **state protection rarely if ever comes without some conditions, expectations and objectives attached to it, MPA designations often representing just such 'imposed' objectives**. The state often also has wider-scale and longer-term obligations to fulfil, such as the obligation under the CBD to designate representative networks of MPAs by 2020, but also, arguably, the obligation to conserve/restore marine ecosystems on behalf of wider society and future generations. It is, in reality, **clear that a degree of state control, particularly through MPA-related biodiversity conservation/restoration objectives, is concomitant with a degree of state protectionism**. **It is, therefore, argued that the protection of local customary institutions against driving forces is generally required and it is reasonable and realistic to expect that this protection will be accompanied by a degree of state control in order to achieve wider-scale, longer-term societal objectives**.

Accordingly, Weeks *et al.* (2009) conclude that whilst community-based approaches to MPA management in the Philippines may have been a considerable success, such approaches will not be sufficient to meet strategic conservation targets for a representative network of MPAs, therefore a degree of state control through local government support and national agency management is also required, citing one of the MPAG case studies (Tubbataha) as a success in this respect. This is similar to the conclusion previously reached by Jones and Burgess (2005) that the state and local users should share power in MPA governance, but that **a degree of state control is required if strategic biodiversity conservation objectives are to be met**. This is not, however, an argument

for a return to fortress conservation, along with the inherent inequities associated with this approach. **The findings of this preliminary project indicate that legal incentives, involving a degree of state control, and participative incentives, involving a degree of community control, are not mutually exclusive and that they can be combined as elements of effective and equitable governance frameworks**. One example of a means of maintaining local ownership of and support for MPAs subject to a degree of state control is providing for a protection from incoming users [6], and this was found to be a significant influence in several case studies, *e.g.* Os Miñarzos, Isla Natividad. Overall, it is notable that the **incentives most frequently cited as being needed in this study are legal incentives, in order to provide for a greater degree of state control in MPA governance**. However, many countries that are rich in biodiversity, particularly LEDCs, have relatively weak governance capacities (Pearce 2005, Barrett *et al.* 2001), and the MPAG case studies are consistent with this trend, in that most of the case studies featuring tropical coral reefs are in countries that have relatively low governance capacities (Table 3). An additional factor in this tendency is that **some countries that have sufficient governance capacity lack the political will to apply it to biodiversity conservation**, the three case studies categorised as governance approach V being particularly notable in this respect. By contrast, several of the countries hosting the case studies that are categorised as having adopted approach II and III have relatively low per capita GDPs and governance capacities, but apparently have the political will to focus some funds and capacity on MPAs and to decentralise some elements of the governance framework to private, non-governmental and community organisations. It is still vital that that the state is willing to provide a supportive legal/policy framework for such decentralised MPAs, through supporting property right allocations and attaching conditions related to conservation objectives, implementing legal controls on exploitation activities, *etc*. **Political will is clearly critical in providing for available state funds and capacity to be focused on promoting the achievement of MPA objectives through state controls and support**.

This leaves the challenging question of **what can be done where states lack the political will to provide for the effective governance of MPAs?** Even if non-governmental or private organisations provide funding support, most MPAs will require some support from the state in terms of creating an appropriate legal and policy context for MPAs and restricting certain users. Obligations to a federal or regional state can be important in this respect in requiring national states to provide sufficient legal controls and funding in order to achieve MPA objectives, as is the case with the three UK case studies, the governance of which has been driven by obligations to the European Commission, and such obligations remain the key incentive that could lead to the more effective governance of Cres-Lošinj Special Reserve, should Croatia be successful in joining the European Union. However, many countries do not have such federal or regional obligations to drive them, being independent sovereign states. Whilst international legal requirements under the CBD, *etc* can be influential, these are not the sort of supra-national enforcement measures that Terborgh (1999) argues are required to overcome national development priorities that frequently over-ride conservation obligations (1.1.4). **Given that the sovereignty of such states is beyond question, it is clear that measures such as providing funding to develop governance capacity within such states coupled with logistical and scientific support and whatever political encouragement/pressure can be applied are realistically the key ways forward for providing for the fulfilment of marine biodiversity conservation objectives in states that may otherwise have weak governance frameworks**.

[4] Smith et al. (2010), for example, note that common property resource institutions for fisheries governance need to be buffered from external forces, especially during periods of rapid change related to driving forces (3.4.5); Cinner and Aswani (2007) note that customary governance institutions become weakened by driving forces, even though property rights may become strengthened, therefore 'hybrid management', combining state control and customary institutions, is required; Pitcher and Lam (2010) similarly note that a 'composite strategy' of binding laws and customary management is required to avoid fishery conservation goals being compromised by driving forces.

[5] Ostrom (1990) argues that the state's role should shift from that of 'controller' to 'facilitator', allowing considerable local autonomy whilst providing a supportive framework. One of the 33 critical conditions for sustainable common pool resource (CPR) governance reviewed by Agrawal (2001) is that central governments should not undermine local authority, and this is also considered to be one of three basic necessary conditions for successful CPR governance by Stern et al. (2002).

It is argued that **without state support, institutions developed through economic, interpretative, knowledge and participative incentives will inevitably be eroded by driving forces**, for example in the Galápagos, where the driving forces of immigration and incoming fishers are being addressed by the state, but there is a lack of political will to enforce restrictions on local fishers, over-exploitation being driven by international fish markets and the desire for personal economic development. **The role of the state is critical and whilst economic, interpretative, knowledge and participative incentives can complement the role of the state through legal incentives, they are not a substitute for a degree of state control, through a combination of there being both sufficient governance capacity and the political will to apply this capacity to promote the equitable and effective governance of MPAs**.

Overall, it is argued that **the role of the state, which sometimes involves a degree of control, is critically important in order to ensure that MPAs can withstand the perturbing effects of driving forces and that they are governed on an equitable basis**. Whilst community stewardship, leadership and the support of NGOs are important factors, MPA governance frameworks always need to be reinforced against perturbing and potentially destructive driving forces through the role of state, otherwise they are not 'protected'.

3.5 Combining incentives to get the right balance

There are still considerable debates about the merits and weakness of different governance approaches in addressing multiple and often conflicting claims on the marine environment, the most important being the need to conserve biodiversity, natural resources and ecosystems, and meeting the socio-economic needs of coastal communities (see Section 1). This study shows that the design of MPA governance frameworks and the governance approach varies according to the context, though often it is a **combination of different incentives** and instruments that are in place or needed to enable MPAs to be governed in an effective and equitable way. Similar conclusions have been reached with regards to terrestrial protected area: "To succeed, wildlife conservation policy will have to be a mix of protectionism, community involvement, public relations, conservation education and revenue sharing" (Hackel 1999).

Whilst recognising the significance of differences in context and the governance approach adopted amongst the MPAG case studies, some key factors can be identified as being essential to developing good MPA governance in most cases, these include:

- provision of sustainable economic development opportunities within or adjacent to MPAs;
- fair sharing of economic benefits and costs from MPAs;
- public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of MPAs;
- use of all available information and knowledge to guide/inform MPA decision-making;
- political will and capacity for passing and enforcing laws and regulations that provide for effective MPA management;
- provision of opportunities for different user and public groups to participate in MPA decision-making processes;
- leadership from individuals and organisations within governments, NGOs,the private sector, academic institutions, and/or local communities; and
- strong sense of stewardship of the MPA among communities and users.

[6] Blaustein (2007) concludes in quoting Ashish Kothari in this respect: "My biggest hope is that we will get to a situation, across the world, where indigenous and local communities will demand the creation of protected areas, to protect themselves against outside destructive forces, and to derive social and economic benefits from them without compromising on their conservation values". (report authors' emphasis).

This project shows that **in the face of strong driving forces, the combined use of a diversity of inter-connected incentives makes MPA governance more resilient to the perturbing effects of such driving forces**. The relatively large number of case studies that call for improved use of legal incentives indicates that legal incentives may constitute strong links that reinforce the governance framework against potential perturbing driving forces. **Without strong links between legal incentives and incentives from the other four categories, the MPA governance framework is inherently unstable**. Over-reliance on a particular category of incentives without recognising the linkages and inter-connectivity between different incentives may render MPA governance less stable. Simple governance frameworks, consisting mainly of incentives from any one category, including strong legal or participative incentives, will be less likely to be resilient to the potentially negative impacts of driving forces on marine biodiversity and resources.As such, **discussions concerning the resilience of governance frameworks resonate with discussions concerning the resilience of ecosystems** (Figure 10 a & b). Whilst it used to be considered that complexity usually destabilises food webs, Polis (1998) in discussing McCann *et al.* (1998), observes that "stability is woven by complex webs", in that it is the combination of weak and strong links amongst a wide diversity of species that makes ecosystems

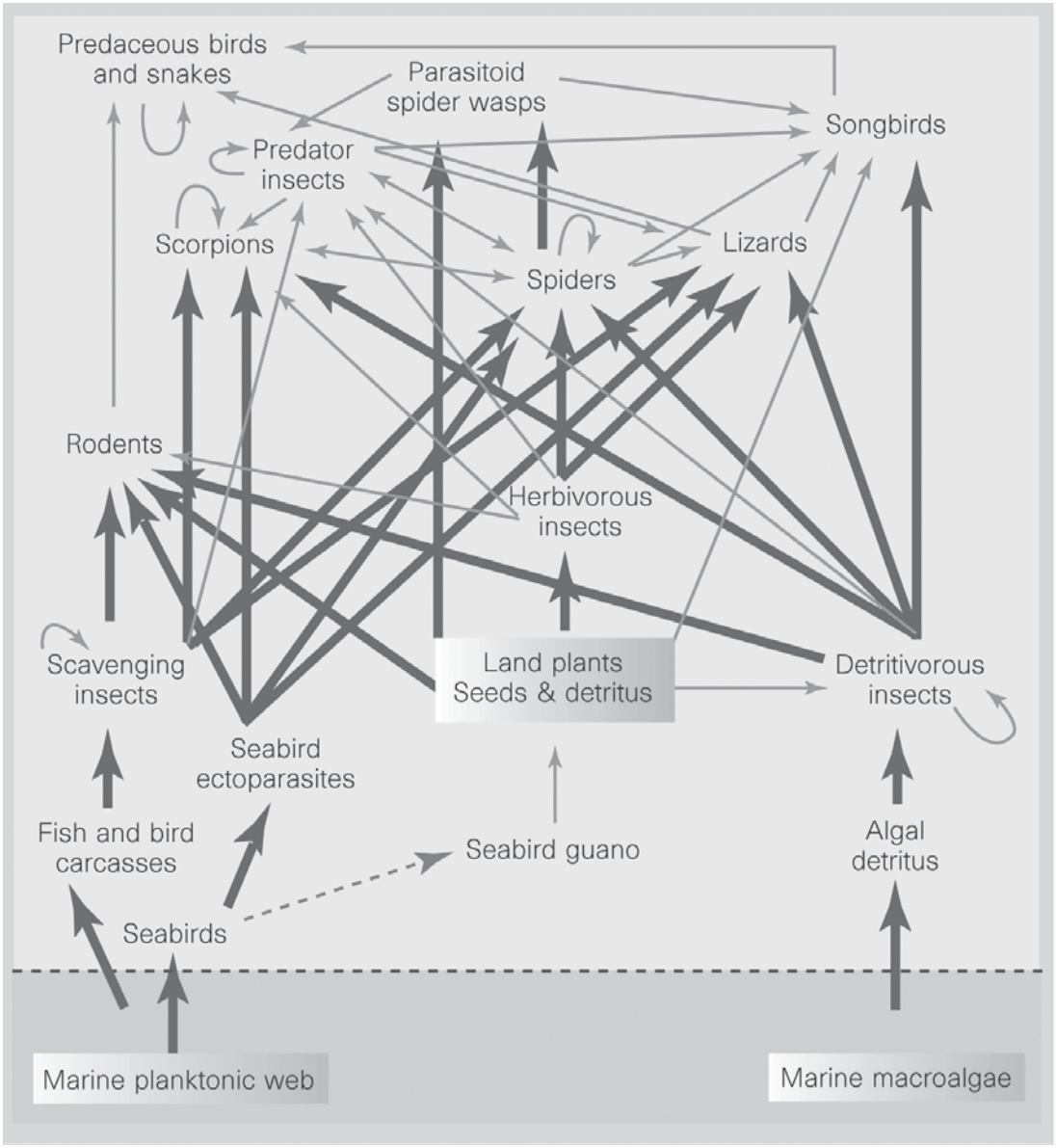


Figure 10 a. Complex food webs in a natural ecosystem.
Source: Polis (1998) With permission Nature Publishing Group©

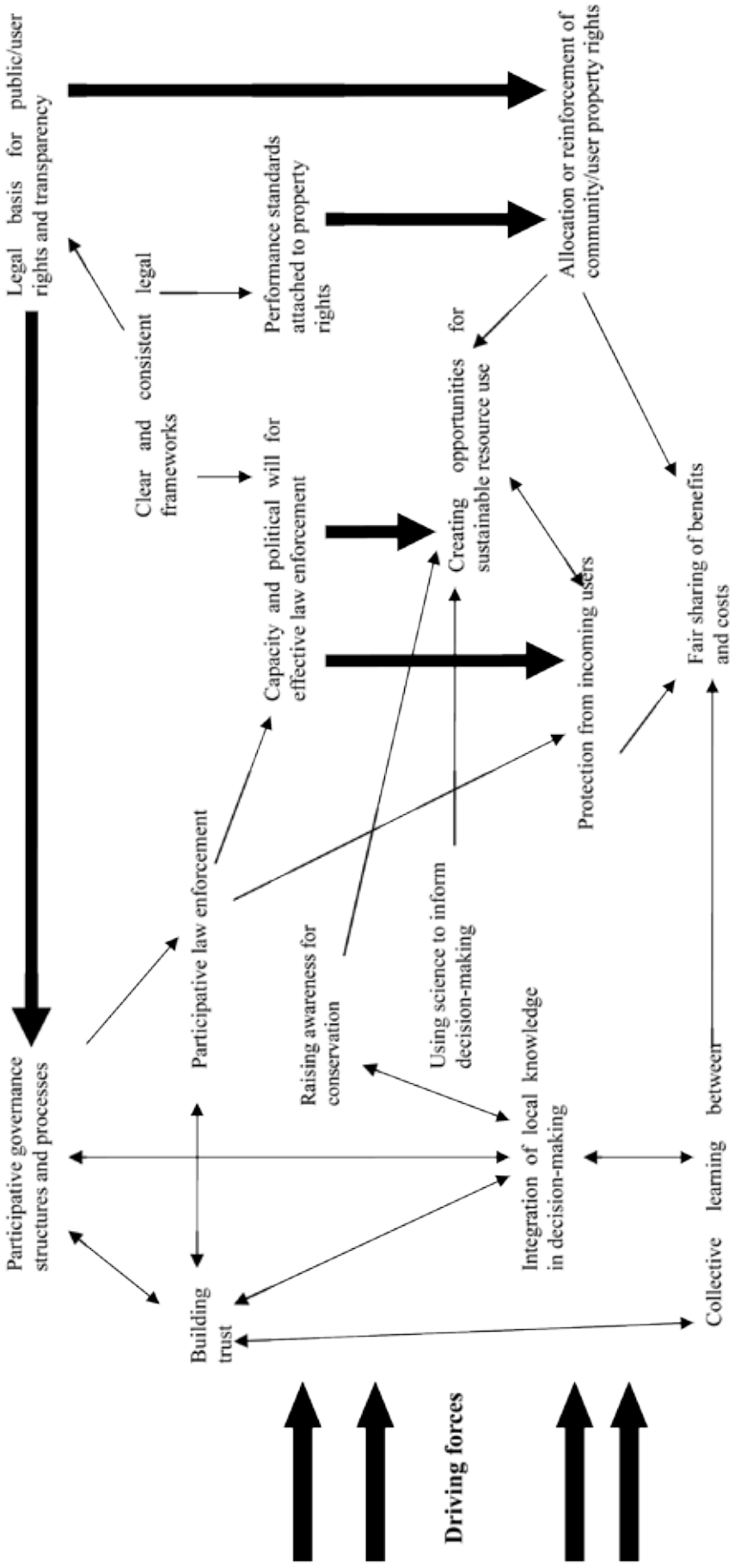


Figure 10 b. Linkages and inter-connections between different incentives in a governance system.

more stable.

These findings also indicate that the same type of governance incentives can be used to empower different people (the most important being the state and local users) in MPA management, depending on how and by whom they are being used. For instance, economic incentives can be used to provide additional resources for the state to manage MPAs as well as benefits and livelihoods for local communities. Legal incentives can be used by the state to control the use of marine resources or to attach conservation conditions to property rights, but they can also be used by communities to claim their rights and entitlements. Participative incentives can be used by the state or other elites to control MPA decision-making processes, but they can also be used by marginalised groups to exert an influence. The **incentives analysed in this study can thus be seen as steering and empowering mechanisms to enable a balance of power in governing MPAs** (Figure 11). From this perspective**, the divide between top-down, bottom-up and market approaches to MPA governance becomes blurred, and incentives from all of theseapproaches can be well integrated and allowed to co-evolve in governance frameworks to provide for more resilient, equitable and effective approaches to MPA governance**. This can also be considered in terms of the co-evolution of institutions, whereby the structure of the governance framework, involving combinations of incentives, both changes in response to the influence of users and influences the behaviour of users, in keeping with Giddens' (1984) theory of structuration [7].

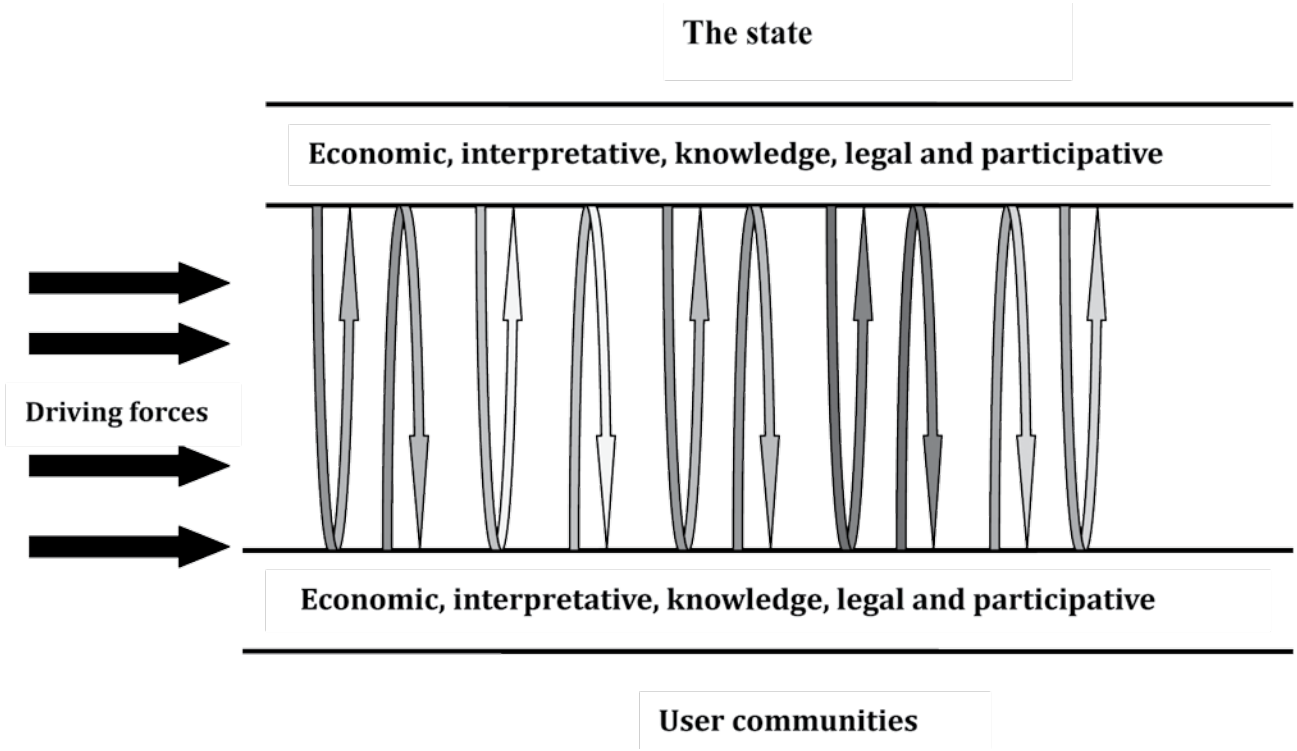


Figure 11. Illustration of how incentives co-evolve to support both top-down and bottom-up approaches

[7] See the participative incentive 'Promoting recognition & realisation of the potential for the participative governance of a given MPA to influence the higher-wider statutory framework, processes and obligations, i.e. that local users can have an influence on higher level institutions as well as being influenced by them - co-evolution.

4. OVERALL CONCLUSIONS

Several key findings can be summarised from the discussions above:

- Overall, economic incentives were the most frequently cited category as being used to contribute to MPA governance, along with legal, knowledge, interpretative and participative incentives.

- It is important to combine the reinforcing role of legal incentives with the cementing role of economic, knowledge, participative and interpretative incentives if the governance framework for a given MPA is to be resilient to the perturbing effects of existing and emergent driving forces.

- Having dedicated and respected individuals and organisations that can provide vision and leadership for an MPA is an important source of steer in developing and sustaining good MPA governance, but strong leadership from representatives of the state is particularly important, in order to provide for the development and effective implementation of legal incentives.

- NGOs can serve an important role in developing and implementing various incentives for the effective governance of MPAs, but they are not a substitute for the leadership role of the state, particularly with regards to the need for legal incentives to reinforce MPA governance frameworks.

- Effectiveness and equity in MPA governance are inextricably intertwined and a balance must be struck between providing for a reasonable standard of living for local communities, through controlled access to the resources in an MPA, alternative livelihoods, etc, and ensuring that MPA resources are not over-exploited.

- Without community stewardship or 'ownership' of an MPA, incentives aimed at generating support from local resource users are less likely to be successful. One important means of promoting community stewardship is to provide for protection from incoming users, including through the allocation of legally enforced community property rights, in combination with other incentives.

- Driving forces are a major and increasing challenge for MPA governance, as they can combine to perturb, disrupt and, ultimately, collapse the governance framework, severely undermining, if not destroying, the potential for the biodiversity and resource conservation objectives of a given MPA to be achieved.

- Whilst economic, interpretative, knowledge and participative incentives can complement the role of the state, they are not a substitute for a degree of state control, as legal incentives are critically important in order to ensure that MPAs can withstand the perturbing effects of driving forces.

- In the face of strong driving forces, the combined use of a diversity of inter-connected incentives makes MPA governance frameworks more resilient, but without strong legal incentives to reinforce the MPA governance framework, it is inherently unstable. Resilience in MPA governance frameworks is therefore woven by complex webs connecting incentives from all five categories, legal incentives providing essential strong and reinforcing links.

- Recognising the need to combine incentives from different categories, the divide between top-down, bottom-up and market approaches to MPA governance becomes blurred. Incentives from all of these approaches can be well integrated and allowed to co-evolve in governance frameworks to provide for more resilient, equitable and effective approaches to MPA governance

This project indicates that by 'deconstructing' MPA governance into different categories of incentives, the structures, strengths and weaknesses of MPA governance can be analyzed in a more systematic way. If explored from the perspective of incentives, **the divides between different governance**

approaches, be it top-down, bottom-up or market-driven, are not as significant as they are often assumed to be. Regardless of the differences in contexts, governance approaches and sources of leadership, the case studies have shown that in order to achieve a high level of effectiveness in meeting MPA objectives, **different categories of incentives will need to be employed in a balanced and mutually supportive way. It is therefore important that the shift to more decentralised and community-based MPA governance approaches does not undermine the potential for the use of legal incentives and the political will for effective law enforcement, as these are identified as being essential in ensuring the success of decentralised and community-based MPAs**.

It is clear that MPA governance should be considered in terms of how incentives can be combined, rather than whether any particular category of incentives is 'best', and that many incentives can be employed to support both top-down and bottom-up approaches. Accepting that all five categories of incentives potentially have a role to play in any given MPA context, **the emphasis becomes one of combining the use of as great a diversity of incentives as feasible in order to develop a governance framework that is more resilient to the perturbing effects of driving forces** . In a similar manner, **this study concludes** that it is the **combination and inter-connection of different incentives from different categories that makes governance frameworks more resilient**. Improving MPA governance therefore means strengthening the linkages between different incentives and promoting the diversity of incentives and governance approaches.

The recognition that resilience in MPA governance frameworks is woven by complex webs connecting incentives from all five categories addresses the question 'what does combining top-down and bottom-up approaches mean?'. This recognition also allows us to move on from debates about which category of incentives is 'best' towards more practical debates about how incentives can be combined and inter-linked in order to develop resilient governance frameworks. It is hoped that the 'menu' of 40 governance incentives developed through this study (Appendix 2) coupled with the MPA case study examples of how they have been combined in different contexts will constructively contribute to such debates and, more importantly, practices that provide for equitable and effective approaches to MPA governance.

5. NEXT STEPS

It is envisaged that there will be three ways in which the MPAG initiative can be taken forward:

- this technical report can be used as a framework for assessing governance issues in any given MPA, particularly the menu of 40 incentives, which serves as a list of potentially applicable governance approaches, coupled with the case studies describing how they have been combined in different contexts and which incentives were particularly needed;

- the findings of this phase of the MPAG initiative can be applied in a more in-depth manner to a smaller number of case studies and planning scenarios in collaboration with the project team, planners and decision-makers, in order to test and refine them; and

- this MPAG analysis framework can be applied on a meta-analysis basis to a larger sample of MPA case studies, with the online assistance of the project team, and the findings added to these to produce an expanding database of case studies, in order to further develop and refine the framework and the findings, and to produce an analysis of MPA governance issues based on a larger sample.

It is planned that all three approaches will be pursued and a dedicated website for this project has been established to facilitate this and disseminate the findings – www.mpag.info.

Table 4. Index table for each case study

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Great Barrier Reef Marine Park (Australia) **Managed primarily by the government under clear legal framework (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of tourism within the MPA • Providing economic compensation for restricted users • Allocation or reinforcement of property rights • Funding from private or NGO sources to promote the effectiveness of the MPA		Effective leadership (at both the political and agency levels) essential for the success of MPA governance initiatives Promoting a sense of stewardship amongst users through the development of strategic partnerships with industry
	Interpretative	• Public communication, education and awareness raising • Role of celebrity 'champions' • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximizing scientific knowledge to guide/inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity/consistency in defining legal objectives, jurisdictional boundaries, roles/responsibilities of different authorities/organisations • Legal or other official basis for cross-sectoral/ jurisdictional MPA restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all users , including addressing driving forces	Strengthening legal or other official basis for cross-sectoral/jurisdictional restrictions *e.g.* fisheries management and coastal development, to support the achievement of MPA objectives	
	Participative	• Participative governance structures and processes • Clear rules on the means/degree of participation from different groups		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Darwin Mounds candidate Special Area of Conservation, (UK) **Managed primarily by the government under clear legal framework (3)**	Economic	• Funding from private or NGO sources to promote MPA effectiveness		<u>Strong leadership</u> from within the UK regulatory community in leading the initial designation process <u>Role of NGOs</u>: played a significant role in pressuring the UK government to conserve 'offshore' marine areas using legal obligations to the European Commission
	Interpretative	• Public communication, education and awareness raising		
	Knowledge		• Agreed basis for the role of precautionary approaches in the face of uncertainty	
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Effective judicial system for penalizing transgressors • Legal or other official basis for cross-sectoral/ jurisdictional MPA restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	• Strengthening legal or other official basis for cross-sectoral/jurisdictional MPA restrictions, particularly in integrating biodiversity conservation and fisheries management policies within the European Commission and streamlining the policy process for restrictions under the latter to achieve the objectives of the former	
	Participative		• Participative governance structures and processes such as user committees, public consultations, participative GIS planning, *etc*, including training to support such processes	

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
North East Kent European Marine Site (UK) **Managed primarily by the government under clear legal framework (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA		
	Interpretative	• Public communication, education and awareness raising		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Legal provisions to ensure public rights and transparency in MPA management processes • Legal or other official basis for cross-sectoral/ jurisdictional MPA restrictions	• Clarity and consistency in defining roles and responsibilities of different authorities and organizations • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions on all local and incoming users	
	Participative	• Participative governance structures and processes • Participative enforcement • Building trust/social capital between different actors • Transparent participation and decision-making processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Wash & North Norfolk Coast European Marine Site (UK) **Managed primarily by the government under clear legal framework (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Funding from private or NGO sources to promote the effectiveness of the MPA	• Green marketing of products and services from the MPA	<u>Leadership</u> at all levels, including from the European Commission, the UK government, the local fishery authority and EMS project officers has been critical to the success of this MPA <u>Stewardship</u>: generated through the use of economic and participative incentives help overcome the fear that local users' proprietorship of the area was being undermined by the EMS designation <u>Role of NGOs</u>: RSPB has been a key ally of nature conservation agency in this case
	Interpretative	• Public communication, education and awareness raising • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation • Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty • Agreed basis for the role of precautionary approaches in the face of uncertainty	• More and better integration of local knowledge in MPA decision-making	
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Legal provisions to ensure public rights and transparency in MPA management processes • Legal or other official basis for cross-sectoral/jurisdictional MPA restrictions • Scope for flexibility - adaptive management and local discretionary action, maintaining, building on and working through local customary institutions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces		
	Participative	• Participative governance structures and processes • Building trust/social capital between different actors • Transparent participation and decision-making processes • Clear rules on the means and degree of participation from different groups		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
National Marine Sanctuary System (United States) **Managed primarily by the government under clear legal framework (3)**	Economic	• Promoting economically and ecologically sustainable resource use		<u>Leadership</u>: increasingly strong, stable leadership from NOAA is enabling the further development of governance structures and processes.
	Interpretative	• Public communication, education and awareness raising • Role of celebrity 'champions' • Promoting recognition of potential benefits from well managed MPAs • Public communication, education and awareness raising on MPA regulations and restrictions		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation • Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty	• Agreed basis for the role of precautionary approaches in the face of uncertainty	
	Legal	• Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries and roles/ responsibilities of different authorities/organizations • Legal provisions to ensure public rights and transparency in MPA management processes • Performance standards-conditions-criteria-requirements related to MPA objectives and attached to user/property rights, participatory governance structures *etc* • Scope for flexibility - adaptive management and local discretionary action	• International-regional-national-local regulatory obligations that require effective MPA conservation • Legal or other official basis for cross-sectoral/jurisdictional MPA| restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions on all local and incoming users	
	Participative	• Participative governance structures and processes • Transparent participation and decision-making processes		

Name of MPA Governance approach	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
California Marine Life Protection Act (United States) **Managed primarily by the government under clear legal framework** **(too early to evaluate the effectiveness of MPA governance)**	Economic	• Promoting economically/ecologically sustainable resource use • Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Funding from private or NGO sources to promote the effectiveness of the MPA		Strong leadership from the California state government has been a key driver in the process
	Interpretative	• Public communication, education and awareness raising • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Maximising scientific knowledge to guide/ inform MPA decision-making and monitoring-evaluation • Promoting mutual respect and collective learning between different knowledge owners • Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries and roles/responsibilities of different authorities/organizations • Legal provisions to ensure public rights and transparency in MPA management processes • Legal or other official basis for cross-sectoral/ jurisdictional MPA| restrictions	• Further strengthening legal or other official basis for cross-sectoral/ jurisdictional MPA| restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions on all local and incoming users	
	Participative	• Participative governance structures and processes • Transparent participation and decision-making processes • Clear rules on the mean/degree of participation from different groups • Bringing in 'neutral' facilitators		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Sanya Coral Reef National Marine Nature Reserve (China) **Managed by the government with significant decentralisation and/or influences from private organisations (2)**	Economic	• Allocation of user rights (for tourism developers) • Promoting alternative livelihoods • Improvements in local infrastructure and living standards • Protection from incoming users • Funding from private sources to promote the effectiveness of the MPA	• Allocation or reinforcement of property rights (for communities and traditional users) • Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people	Leadership: the lack of leadership from the central government has had a huge influence on the governance of the SCRNMNR. It results in a lack of financial and institutional resources available for law enforcement, and opportunities for local governments and developers to 'capture' MPA governance; Equity: the development of tourism in the SCRNMNR has been a mixed blessing for local communities, who are still struggling with the inequity imposed on them. Social inequity undermines the effectiveness of interpretative incentives and further increases power imbalances; Stewardship: the loss of local communities' access to resources due to tourism development significantly undermines community stewardship of the MPA.
	Interpretative	• Public communication, education and awareness-raising on the importance/ vulnerability of marine ecosystems and the benefits of the MPA • Promoting recognition of the potential benefits from MPAs		
	Knowledge		• Maximising scientific knowledge to guide/ inform MPA decision-making and monitoring-evaluation	
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Performance standards/conditions/ criteria/requirements related to the MPA's conservation objectives and attached to user/ property rights, participatory governance structures, *etc*	• Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions on all users	
	Participative		• Developing participative governance structures and processes	

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Seaflower Marine Protected Area (Columbia) **Managed by the government with significant decentralisation and/or influences from private organisations (1)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA • Allocation or reinforcement of property rights • Promoting alternative livelihoods	• Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Promoting alternative livelihoods • Protection from incoming users	Leadership This is the only MPA in Colombia that is devolved entirely to the local government (CORALINA) and a stronger lead is required from the central state to address pressures from immigration, incoming fishers, *etc*, as well as to provide a sufficient and secure source of funding for CORALINA
	Interpretative	• Public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA • Promoting recognition of the potential benefits from MPAs • Promoting recognition of MPA regulations and restrictions, including boundaries		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries and roles/ responsibilities of different authorities/organizations • Legal provisions to ensure public rights and transparency in MPA management processes • Legal or other official basis for cross-sectoral/ jurisdictional restrictions to support MPA objectives	• Legal or other official basis for cross-sectoral/jurisdictional MPA| restrictions (*e.g.* in regulating commercial fishing) • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	
	Participative	• Participative governance structures and processes • Participative enforcement • Building trust/social capital between different actors		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Galápagos Marine Reserve (Ecuador) **Managed by the government with significant decentralisation and/or influences from private organisations (1)**	Economic	• Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Promoting alternative livelihoods • Funding from private or NGO sources to promote the effectiveness of the MPA	• Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Allocation or reinforcement of community/ user property rights	<u>Leadership</u>: the lack of strong leadership from the GMR and other state authorities, due to political instability and a lack of political will to address the driving forces, greatly undermines the use of legal incentives and MPA effectiveness <u>Role of NGOs</u>: several, including the Charles Darwin Foundation, provided funding and technical assistance in the implementation of various incentives
	Interpretative	• Public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners	• Agreed basis for the role of precautionary approaches in the face of uncertainty	
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Legal provisions to ensure public rights and transparency in MPA management processes • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	• Effective judicial system for penalising transgressors • Performance standards/conditions/ criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc* • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	
	Participative	• Participative governance structures and processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Karimunjawa Marine National Park (Indonesia) **Managed by the government with significant decentralisation and/or influences from private organisations (2)**	Economic	• Promoting economically and ecologically sustainable resource use • Allocation or reinforcement of community/ user property rights • Promoting alternative livelihoods • Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA		Stewardship has been generated through recognizing the rights of local users for tourism, mariculture and fishing (traditional fishing allowed in 83% of the area of the park) within the KNP, and promoting community participation in park planning, monitoring and enforcement
	Interpretative	• Public communication, education and awareness raising • Promoting recognition of MPA regulations and restrictions, including boundaries		
	Knowledge	• Maximising scientific knowledge to guide/ inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners		
	Legal		• Legal or other official basis for cross-sectoral/jurisdictional MPA| restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	
	Participative	• Participative governance structures and processes • Participative enforcement		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Wakatobi National Park (Indonesia) **Managed by the government with significant decentralisation and/or influences from private organisations (2)**	Economic	• Promoting economically & ecologically sustainable resource use • Providing economic compensation for restricted users • Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA	• Allocation or reinforcement of community/user property rights	Leadership: strong, democratic leadership at the community or user group level represents the most significant chance of improving MPA effectiveness; Role of NGOs: NGOs, including tourism, have been instrumental in funding, delivering and monitoring key activities within the WNP. However this gives rise to some ad hoc conservation measures designed for tourism rather than marine resource management. Equity: the social and economic marginalisation of the Bajau community has been exacerbated in the Wakatobi through measures designed to improve MPA effectiveness. As long as programmes are based upon a predominantly protectionist notion of conservation rooted in Western scientific thought, inequity will persist and will inevitably undermine effectiveness Stewardship: creation of Wakatobi regency government area, whose boundaries are congruent with the WNP, offers ways to build a sense of community identity. This could be developed through the use of village-level regulations with a focus on fishing rights
	Interpretative	• Public communication, education and awareness raising		
	Knowledge	• Maximising scientific knowledge to guide/inform MPA decision-making	• Integration of local knowledge in decision-making • Promoting mutual respect and collective learning between different knowledge owners	
	Legal		• Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations; • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users, including addressing driving forces • Legal or other official basis for cross-sectoral/jurisdictional MPA| restrictions	
	Participative	• Participative governance structures & processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Tubbataha Reefs Natural Park (Philippines) **Managed by the government with significant decentralisation and/or influences from private organisations (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA • Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Providing economic compensation for restricted users • Promoting alternative livelihoods • Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA		Equity and stewardship: the TPAMB recognized the foregone opportunities of the Cagayancillo fishermen when the no-take policy of the Park was fully enforced and negotiated for the sharing of tourism revenues as a compensatory mechanism. This share may be perceived by many as not enough but it helped the Cagayancillo residents to claim co-ownership of the vision to conserve Tubbataha and take pride in it. Role of NGOs: played a significant role in honing the present leadership of the Park, including the provision of funding, but the park has become reliant on this and sustainable sources of funding from tourism operators &/or the state are also needed
	Interpretative	• Public communication, education and awareness raising • Role of celebrity 'champions' • Promoting recognition of MPA regulations and restrictions, including boundaries		
	Knowledge	• Maximising scientific knowledge to guide/inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Effective judicial system for penalising transgressors • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces		
	Participative	• Participative governance structures and processes • Transparent participation and decision-making processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Ha Long Bay World Natural Heritage Area (Vietnam) **Managed by the government with significant decentralisation and/or influences from private organisations (2)**	Economic	• Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA	• Promoting alternative livelihoods	Role of NGOs: international NGOs provide technical advice, training and capacity-building to the HLBMD and other decision-makers; Leadership: stronger leadership from the state will be needed to improve MPA governance-- as the HLBMD lacks strategic direction, capacity and institutional support to meet the multiple challenges raised in the management of the site.
	Interpretative	• Public communication, education and awareness raising		
	Knowledge	• Maximising scientific knowledge to guide/inform MPA decision-making		
	Legal	• International-regional-national-local regulatory obligations that require effective MPA conservation	• Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Legal or other official basis for cross-sectoral/jurisdictional MPA restrictions • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Os Miñarzos Marine Reserve of Fishing Interest (Spain) **Managed primarily by local communities under collective management arrangements (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA • Allocation or reinforcement of community/user property rights • Protection from incoming users • Funding from private or NGO sources to promote the effectiveness of the MPA		Leadership from key individuals, such as an anthropologist from the University of Coruna and secretary of Lira's fishing corporation, played a key role in the designation of the MPA; Stewardship: a key factor in the effectiveness of the MPA is the sense of ownership generated by user participation, protectionism from incoming users, and use of local knowledge and provision of property rights.
	Interpretative	• Public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Integration of local knowledge in MPA decision-making • Maximising scientific knowledge to guide/inform MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners • Agreed basis for the role of precautionary approaches in the face of uncertainty		
	Legal	• Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Effective judicial system for penalising transgressors • Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc* • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces		
	Participative	• Participative governance structures and processes such as user committees and public consultations • Building trust/social capital between different actors		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Isla Natividad MPA (Mexico) **Managed primarily by local communities under collective management arrangements (3)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA • Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Allocation or reinforcement of property rights • Improvements in local infrastructure and living standards • Protection from incoming users • Funding from private or NGO sources to promote the effectiveness of the MPA		Role of NGOs: the Mexican environmental NGO COBI played a key role in the establishment of the MPA and continues to partner with the cooperative in monitoring efforts Equity: the power of fishing cooperative to exclude outsiders and those who are not members of the cooperative generates equity concerns Stewardship: most incentives that enabled effective MPA governance in this case are provided by exclusive resource access rights that are contingent on stewardship of the resources
	Interpretative	• Public communication, education and awareness raising • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Integration of local knowledge in MPA decision-making • Promoting mutual respect and collective learning between different knowledge owners		
	Legal	• Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc* • Scope for flexibility - adaptive management and local discretionary action, Maintaining, building on and working through local customary institutions	• Effective judicial system for penalising transgressors • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all users, including addressing driving forces	
	Participative	• Participative governance structures and processes • Building trust/social capital between different actors • Transparent participation and decision-making processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Great South Bay Marine Conservation Area (United States) **Managed primarily by the private sector and NGOs granted with property/ management rights (2)**	Economic	• Promoting economically and ecologically sustainable resource use • Allocation or reinforcement of community/user property rights • Protection from incoming users • Funding from private or NGO sources to promote the effectiveness of the MPA		Role of NGO: TNC's leadership critical in generating financial and public support and driving the whole process Leadership: stronger steer and support is needed from the State, including provision of and support for legal incentives
	Interpretative	• Public communication, education and awareness-raising on the importance/ vulnerability of marine ecosystems and the benefits of the MPA • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Maximising scientific knowledge to guide/inform MPA decision-making		
	Legal		• International-regional-national-local regulatory obligations that require effective MPA conservation; • Strengthening legal or other official basis for cross-sectoral/cross-jurisdictional restrictions (*e.g.* in fisheries management and coastal development) to support the achievement of MPA objectives; • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	
	Participative	• Participative governance structures & processes • Building trust/social capital between different actors		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Chumbe Island Coral Park (Tanzania) **Managed primarily by the private sector and NGOs granted with property/ management rights (4)**	Economic	• Promoting economically and ecologically sustainable resource use • Green marketing of products and services from the MPA • Promoting alternative livelihoods • Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA		Leadership: CHICOP's commitment to invest in conservation in an initiative considered too risky (both economically and politically) by NGOs and other investors underlines the success of the park, its leadership also critical in generating political support from high-level officials. A greater long-term commitment to CHICOP is needed from the State as there are concerns that the lease may not be renewed in the face of pressures from fishing and tourism interests
	Interpretative	• Public communication, education and awareness-raising on the importance/ vulnerability of marine ecosystems and the benefits of the MPA • Promoting recognition of the potential benefits from MPAs		
	Knowledge	• Maximising scientific knowledge to guide/inform MPA decision-making		
	Legal	• Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	• Strengthening legal or other official basis for cross-sectoral/ jurisdictional restrictions	
	Participative	• Participative governance structures and processes		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Baleia Franca Environmental Protected Area (Brazil) **No clearly recognisable effective governance framework in place (1)**	Economic		• Promoting economically and ecologically sustainable resource use, through spill-over/export benefits and enhancing direct and indirect use values • Improvements in local infrastructure and living standards • Funding from private or NGO sources to promote the effectiveness of the MPA)	<u>Leadership</u> no state agency appears to have the power, commitment and resources to steer this MPA and ensure its effectiveness
	Interpretative	• Public communication, education & awareness raising		
	Knowledge	• Integration of local knowledge in decision-making • Maximising scientific knowledge to guide/inform MPA decision-making. • Promoting mutual respect and collective learning between different knowledge owners		
	Legal	• Legal provisions to ensure public rights and transparency in MPA management processes	• International-regional-national-local regulatory obligations that require effective MPA conservation; • Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations; • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all users , including addressing driving forces;	
	Participative	• Participative governance structures and processes • Building trust/social capital between different actors • Transparent participation & decision-making processes • Bringing in 'neutral' facilitators		

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Pirajubaé Marine Extractive Reserve (Brazil) **No clearly recognisable effective governance framework in place (0)**	Economic		• Measures to reduce the 'leakage' of the economic benefits of the MPA away from local people • Protection from incoming users	Leadership: the appointment of two new project officers by the environmental agency has brought positive changes to MPA governance. Both officers are in favour of community-based initiatives and are committed to building new alliances with key local players Equity: the primary objective of the RESEX is to direct the flows and benefits of the MPA towards a given traditional community. However the heterogeneity of fishermen profiles and the lack of clear definition of the 'traditional community' raise recurrent discussions regarding the roles of different groups within the community and who are the main beneficiary of the RESEX, which may potentially lead to intra-community conflicts and inequity.
	Interpretative	• Public communication, education and awareness raising		
	Knowledge	• Promoting mutual respect and collective learning between different knowledge owners		
	Legal		• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces	
	Participative		• Clear rules on the means and degree of participation from different groups	

Name of MPA, Governance approach (effectiveness scale)	Incentive type	Incentives applied to address conflicts and provide governance steer	Incentives needed to improve MPA governance	Cross-cutting issues
Cres-Lošinj Special Marine Reserve (Croatia) **No clearly recognisable effective governance framework in place (1)**	Economic	• Funding from private or NGO sources to promote the effectiveness of the MPA		Role of NGOs essential in providing scientific information and raising political and local support for the initial designation Leadership: the loss of political support for the CLSMR due to changes of leadership at both state and local administrations has been a main obstacle to the management of the site. The main hope for the CLSMR is that the Croatian government will be required to implement biodiversity conservation obligations for cetaceans as part of the EU accession process.
	Interpretative	• Public communication, education, and awareness-raising		
	Knowledge		• Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty	
	Legal		• International-regional-national-local regulatory obligations that require effective MPA conservation • Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations • Ensuring that sufficient state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users, including addressing driving forces	
	Participative		• Transparent participation and decision-making processes • Clear rules on the means and degree of participation from different groups	

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APPENDIX 1 'Essence' reports of the 20 case studies

Note that these summaries were produced by the MPAG project team, not the case study coordinators/authors, and are intended to capture the 'essence' of the governance issues for each case study. (Detailed case study material and analysis are available at www.mpag.info).

Great Barrier Reef Marine Park (GBRMP), Australia

Size of MPA: 344,400 km^2
Year of establishment: 1975
Whether the MPA is a coastal/island/offshore site: coastal and offshore
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: 3

Key message: the GBRMP is a good example of how different governance incentives can be effectively employed in combination to address conflicts in MPA management and to support the achievement of conservation and other statutory obligations. In governing the GBRMP, the steer comes from a strong political commitment to 'keep it great, a strong legal framework, a strong economic rationale for biodiversity conservation and sustainable management of resource use, a high level of public awareness and support for marine conservation, guidance from scientific and local knowledge, and extensive user and public consultation in decision-making. Areas to improve in the future include strengthening cross-sectoral and cross-jurisdictional integration in planning and enforcement, particularly in managing fisheries and coastal development.

The GBRMP covers a vast area of coastal and offshore waters under both federal and state jurisdictions. The main legal objective of the GBRMP is to provide for the long term protection and conservation of the environment, biodiversity and heritage values of the Great Barrier Reef Region. It also provides for ecologically sustainable use of the reef so far as it is consistent with the main objective. The factors that currently and are projected to influence the GBRMP's values are:climate change, catchment runoff and coastal development plus the influence of direct use (*e.g.* tourism, fishing and shipping) of the Great Barrier Reef Region. The drivers of such impacts include both global factors, such as fuel prices and global economic conditions, as well as local factors, such as population growth, mining and industrial activities. The GBRMP is managed by the GBRMP Authority in partnership with other federal and state government agencies. User participation in zoning and other processes has been guided by clear policies in accordance with the principle of balancing conservation and sustainable resource use. Enforcement of the GBRMP has been relatively effective for certain activities such as defence activities, commercial marine tourism, and shipping, but less effective for other activities such as water quality control and coastal development.

Key governance incentives applied in the GBRMP:

- **Promoting economically and ecologically sustainable resource exploitation, through spill-over effects and enhancing direct and indirectly use values from resources:** demonstrated increase in fish populations in the no-take zones helps enhance catch in adjacent fishing grounds and promote the tourism industry;
- **Providing economic compensation for restricted users for profits foregone:** a structural adjustment package was initiated for fishers, their employees and other businesses/workers that were significantly negatively impacted by the rezoning of the GBRMP. This package is still being finalised but the level of economic adjustment is much more than was forecast (>AUS$200 million);
- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA** through the use of media, online resources and other effective communication channels to generate support from the wider public (*i.e.* the 'silent majority'), which in turn helped to win support from politicians;
- **Role of celebrity 'champions':** celebrities were used very effectively during the rezoning to raise public awareness, e.g. 'our great barrier reef, let's keep it great' campaign;
- **Promoting recognition of the potential resource benefits from well-managed MPAs,** such as the increase in fish populations and reduction in outbreaks of crown-of-thorns starfish after the area of no-take zones was increased;
- **Maximizing scientific knowledge to guide/inform MPA decision-making:** an independent Scientific Steering Committee was convened to define biophysical operational principles to guide the development of a new representative network of no-take areas in the GBRMP. Another committee guided the development of socio-economic- cultural and management principles. Data from Vessel Monitoring Systems (VMS) were also

used to inform the rezoning;
- **Agreed basis for the role of precautionary approaches in the face of uncertainty:** the legislative basis for the use of the precautionary principle, and the decision to 'adaptively manage' in the absence of perfect knowledge, are both in place to guide management in the face of uncertainty;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making**: knowledge of traditional users and local fishermen used to inform the rezoning;
- **International-regional-national-local regulatory obligations that require effective MPA conservation:** there is a strong legal basis for the management of the GBRMP, which includes international conventions (*e.g.* the World Heritage Convention), federal and state legislations. The GBRMP legislation takes precedence over fisheries legislation;
- **Legal or other official basis for cross-sectoral/cross-jurisdictional restrictions to support the achievement of MPA objectives:** the State of Queensland's decision to 'mirror' the new zoning for the GBRMP alleviated the jurisdictional complexities in management. The GBRMP legislation also has provisions to take an ecosystem-approach, allowing regulatory controls on activities well outside the jurisdictional area *e.g.* the GBRMPA was able to bring in regulations controlling aquaculture up to 5 km landward of the GBRMP when concerns were raised about the potential adverse impact of discharges associated with aquaculture activities;
- **Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces – pressures from immigration, corporate mass tourism, fisheries market forces, *etc***, this is achieved through theallocation of considerable funding (AUD $46.3 million for 2007-2008) and the use of advanced technology (*e.g.* Vessel Monitoring System);
- **Participative governance structures and processes:** rezoning of the GBRMP went through extensive stakeholder consultation processes, with over 31,000 public submissions received. Significant changes were made between the initial, draft and final zoning plans, which were largely based on additional information received in public submissions or other ways;
- **Clear rules on the means and degree of participation from different groups:** stakeholder participation processes take place under clear and transparent policies and guidelines established by the GBRMP Authority;
- **Effective leadership** (at both the political and agency levels) was one of the key factors in the successful rezoning of the GBRMP;
- **Promoting a sense of stewardship** through the development of strategic partnerships with industry (*e.g.* tourism and the commercial fishing industries).

Key remaining issues for the GBRMP:
- The lack of integrated planning, compliance monitoring and enforcement in managing coastal development is a key threat to the conservation of the GBRMP's values;
- Fishing is managed at the state level rather than being explicitly focused on the GBRMP and the protection of all its values. The impacts of fishing on non-target species and wider ecosystem are poorly understood;
- There are concerns about the decline in certain marine mammal species, such as dugongs, resulting from various activities such as boat strikes and disturbances, by-catch and traditional hunting.

Darwin Mounds candidate Special Area of Conservation, United Kingdom

Size of MPA: 1380 km^2
Year of establishment: 2003
Whether the MPA is a coastal/island/offshore site: offshore
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: 3

Key message: the designation of the Darwin Mounds has been mainly driven by the UK government's legal obligations to the EC, in addition, conservation NGOs also played an important role in pressuring the government to take actions to protect offshore habitats and in promoting public awareness for cold-water coral reef conservation in the Mounds. Key areas to improve in the future include strengthening the legal and political basis for integrating/streamlining fisheries management and nature conservation within the EC, and enhancing transparency and user participation in decision-making processes related to offshore conservation.

The Darwin Mounds is the first offshore MPA in the UK. The formal conservation objective for the MPA is to

protect a deep, cold-water coral reef from bottom-trawling. It was initially designated as a six-month emergency closure for bottom trawling under the revised European Commission (EC) Common Fisheries Policy in 2003, which then became permanent in 2004. Key industrial activities with a potential to affect this particular MPA are (1) pelagic fishing, although the actual amount of fishing is relatively small on the Mounds and (2) oil and gas exploration, which may take place in the coming years in the Shetland islands, east of the Darwin Mounds. The site is being managed under the Scottish Authority with its own legal and administration systems enjoying significant autonomy from the UK national government. The Marine Scotland Compliance is responsible for the enforcement of the site, and the enforcement has been quite effective.

Key governance incentives applied in the Darwin Mounds:

- **Regional-national regulatory obligations that require effective MPA conservation:** the strongest drive for protecting the site comes from the UK government's legal obligation to protect cold-water corals under the EC Habitats Directive. In addition, the 'greening' of the revised EC Common Fisheries Policy in 2002 provided an emergency closure mechanism, which enabled the initial closure of the Mounds to bottom trawling;
- **Provision of financial and institutional resources from the state for MPA governance:** the enforcement agency, the Marine Scotland Compliance is well funded and supported by satellite-based Vessel Monitoring System (VMS) in monitoring and enforcing the area;
- **Public communication, education and awareness raising** through conservation campaigns organised by the Greenpeace, WWF and the news media helped to increase public support. In addition, the news media was an important player, as the discovery of the Darwin Mounds was heralded at the time as "Scotland's Barrier Reef" in the press. Photographic evidence of the effects of bottom-trawling on coral reefs in general also had a strong impact on European Commissioners;
- **Strong leadership** from within the UK regulatory community in leading the negotiations with other European countries to close the Mounds, and to overcome the political complexity raised by the EC Common Fisheries Policy;
- **Role of NGOs**: NGOs such as the Greenpeace and WWF played a significant role in pressuring the UK government to conserve marine areas, especially when a legal argument was made.

Key remaining issues for the Darwin Mounds:

- An inherent tension exists between legal approaches to nature conservation and fisheries management in Europe, as the former remains the remit of Member States while the latter is under the exclusive legislative jurisdiction of the European Community. This creates difficulties for conserving habitats or species that are under threat from fishing activities. Without the emergency closure mechanism within the revised Common Fisheries Policy, it would have taken years to get the Darwin Mounds designated as a Special Area of Conservation under the Habitats Directive;
- Disparity between and Directorates General for Fisheries and Environment within the EC, with fisheries management often given higher political power than environmental conservation;
- Offshore environments often face greater uncertainty than inshore environments; therefore the need for a precautionary approach is greater in establishing and managing offshore MPAs;
- Transparency in the policy process is reduced for offshore MPAs and this is an issue that needs to be addressed in the way that stakeholder consultation is built into the legislative process.

North East Kent European Marine Site (North East Kent EMS), United Kingdom

Size of MPA: 2269 hectares
Year of establishment: 1995
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: 3

Key message: the North-East Kent EMS is an example of different incentives being employed in combination in governing the MPA. As in the case of the Wash & NN EMS and Darwin Mounds, a clear legal framework guides the management and governance processes. Economic, interpretative and participative incentives are essential for overcoming local resistance to the MPA designation and generating community awareness and support for the MPA. Knowledge incentives contribute to meeting management challenges in the face of uncertainty raised by climate change and other large-scale impacts. Key areas to improve in the future are to further strengthening the

political will for the enforcement of all restrictions, and to increase clarity regarding the roles and responsibilities of different authorities in law enforcement.

The North-East Kent EMS is located in Thanet, an area that has been experiencing economic hardships due to the decline in the local tourism industry. The objective of the site is to conserve habitats and species listed in the European Commission (EC) Habitats Directive and Birds Directive. Main impacts to be addressed include fishing, shellfish collection, human disturbance to nesting birds and the building of sea defences. A management group comprising of national and local authorities was formed to develop and implement a management scheme in consultation with users. The management group is also support by a scientific advisory group consisting of local scientists. The efforts have been effective in reducing human disturbance to nesting birds and stopping the building of new sea defences that may cause damage to the chalk reef.

Key governance incentives applied in the site:

- **Promoting economically and ecologically sustainable resource exploitation, through spill-over effects and enhancing direct and indirectly use values from resources:** integrating the development of the management scheme with the application for EC objective 2 funding to revitalize local economy has served as the key drive to overcome local authority's resistance to the designation;
- **Green marketing of products and services from the MPA**: the MPA designation has contributed to promoting the area as an up-market eco-tourism and cultural destination. In addition, the improving profile of the area has caught the attention of a number of film and advertising companies who are increasingly using the beaches for filming, bring a welcome boost to the local economy;
- **Participative governance structures and processes:** community participation through participative planning, user dialogue and consultation in developing, implementing and evaluating the management plan has resulted in a high level of public support for the designation and a high level of trust and social capital between relevant authorities and local community;
- **Participative enforcement:** a coastal warden's scheme was established to train and engage local people in ecological surveys and the reporting of illegal behaviour;
- **Public communication, education and awareness raising:** through the Thanet Coast project numerous education programmes have been set up including rock pool activities for children, coastal art projects, community information walks and a coastal warden's scheme;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making:** a key element of the user approach adopted was to gather the knowledge of locals through participative workshops to inform decision-making;
- **Maximising scientific knowledge to guide/inform MPA decision-making:** a wider range of information about the site has been gathered from relevant authorities, the local wildlife trust, scientific advisors and coastal wardens to inform the management of the site. However, uncertainty still remains a big concern, particularly related to the impact of pollution, sea level rise and other influences which remain outside the control of the MPA. These concerns formed the basis of the decision to adopt an 'ecosystem approach' to the management of the site;
- **Legal obligations that require effective MPA conservation:** the decision-making and management of the site, as well as relevant user participation process, are ultimately governed by the EC Habitats Directive, which requires that any plans or projects which might have a significant effect on the designated sites should be assessed and these activities should only go ahead 'for imperative reasons of overriding public interest.'

Key remaining issues for the North-East Kent European Marine Site:

- Difficult decisions will have to be made about the managed realignment of the coast, given the anticipated impacts from climate change and sea level rise. Ultimately human concerns such as the protection of property will have to be weighed up against environmental concerns such as the protection of the chalk reef;
- With the adoption of the ecosystem approach, the impacts of water pollution and non-native species will need to be addressed, which cannot be directly controlled through localised management;
- There has been insufficient political will to exercise the legal power to regulate certain activities such as shellfish collection, and law enforcement has also been weakened by disagreements between different authorities about who should be responsible for regulating particular activities.

Wash & North Norfolk Coast European Marine Site (W&NNC EMS), United Kingdom

Size of MPA: 1078 km^2
Year of establishment: 1996
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: 3

Key message: the W&NNC EMS is managed through a statutory partnership, and employs local participation as a means to achieve national and regional conservation obligations. The relatively high effectiveness of this approach in address conflicts emerging from the designation of the EMS contributes to a few key factors, including relatively minor user pressure, having a clear legal framework and resources available to support the governance processes and enforcement of the EMS, improved ecological and economic sustainability of shellfishing through restricting fishing efforts, and the provision of scope for local participation, which has helped to re-establish local users' stewardship of the area. A key area to improve in the future is the integration of local knowledge into decision-making processes, which can balance against the top-down nature of this MPA initiative.

The W&NNC EMS is located in a rural area where traditional activities, including those based on common rights, such as wildfowling and shellfish farming/gathering, are a particularly important aspect of the local culture and economy. The W&NNC EMS was designated to fulfil the legal obligation that the habitats and species listed under the European Commission (EC) Birds and Habitats Directives are maintained or restored to a favourable condition. The conservation features are listed as being vulnerable to a range of impacts, but the main impacts on which EMS management has been focused are those related to shellfishing, particularly of cockles and mussels. The W&NNC EMS is managed through a statutory partnership between relevant authorities and local users, who are both represent in the management group responsible for decision-making. However the 'partnership' must ensure the fulfilment of statutory biodiversity conservation obligations under the EC Directives, which were imposed and not jointly agreed by the members of the partnership. This governance approach has been effective in addressing key conflicts between shellfish exploitation and biodiversity conservation.

Key governance incentives applied in the W&NNC EMS:

- **Promoting economically and ecologically sustainable resourceuse , through spill-over effects and enhancing direct and indirectly use values from resources:** the EMS designation is employed to promote local tourism, and restricting catches of certain stocks has served to maintain market prices by ensuring that excessive competitive harvesting does not lead to over-supply;
- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA:** *e.g.* Natural England's Marine Campaign, whereby the emphasis was on 'selling' our underwater landscapes through posters for the region that includes the EMS, and the production of various graphics and artwork in various media to promote public awareness of the biodiversity values of the EMS;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making:** knowledge was gathered through the advisory groups to inform the development of the management scheme, *e.g.* fishermen's knowledge of the distribution of biogenic reefs was employed as a key basis for the design of fishing restriction zones;
- **Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation:** an *ad hoc* scientific advisory panel has been formed to support decision-making. The sea fisheries authority also instigated a long-term monitoring programme, which provided a firm knowledge base for the shellfishery recovery plan;
- **Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty:** an independent expert and research laboratory trusted by both fishermen and conservation and fisheries authorities were hired to conduct independent assessments ; These independent assessments provided information for many debates and initiatives to move forward, and reinforced the view that the site could achieve both fisheries exploitation and biodiversity conservation objectives;
- **International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions:** the EMS has a very specific legal framework through the Habitats Directive and the UK Regulations that implement it;
- **Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations:** the

obligations and responsibilities of different authorities and local advisory groups, restrictions imposed and jurisdictional boundaries are clarified in great detail in the various official documents for this designation, *e.g.* the regulation 33 advice, management plan & action plan;

- **Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions on all local and incoming users:** relevant authorities have been provided by the state with sufficient capacity and resources to address the impacts of shellfishing activities. There is also an initiative to install Vessel Monitoring Systems (VMS) on all fishing vessels operating in and around the EMS. The new enforcement technologies will provide for equal enforcement on all fishermen;
- **Building trust/social capital between different actors:** personal links that have been established between the project officer and key representatives of local users and relevant authorities appear to have been a factor behind the partnership being resilient enough to withstand the tensions as a result of the public inquiry;
- **Participative governance structures and processes:** key user groups participate in EMS decision-making processes through their representatives in advisory groups, which provide inputs to and are consulted on ideas/proposals developed by the management group. In addition, postal consultations are employed to gain detailed feedback and suggestions from wider user community;
- **Clear rules on the means and degree of participation from different groups:** even though the advisory group chairs sit on the management group, the top-down nature of this 'statutory partnership' means that responsibilities and powers related to the EMS can never be entirely devolved to the advisory groups. This is made clear through the agreement that specifies the roles of the advisory groups;
- **Stewardship:** the 'top-down' nature of the EMS designation initially undermined many direct users' sense of ownership of the area. There is, however, a growing acceptance among many users that compatible economic development opportunities are provided for through the EMS governance approaches. The emphasis on participation as a means to deliver obligations has assisted in minimising the potentially undermining effects on stewardship of this imposed designation.

A key issue for the W&NNC is:
Conflicts between 'local knowledge' and 'scientific knowledge' appears to be one of the biggest causes of tension between local users and managers, as the former claim that uncertainty could be reduced if local knowledge and expertise were more widely drawn on. The statutory nature of this partnership, *i.e.* driven by the need to fulfil imposed obligations, has arguably led to a greater emphasis being placed on 'scientific' knowledge than on local knowledge. More respect for and integration of local knowledge related to the conservation of the EMS will be needed to further strengthen the partnership.

There is also considerable potential for the green marketing of fisheries from the EMS and of 'green tourism', capitalizing more on the conservation benefits achieved through this designation.

National Marine Sanctuary System (NMSS), USA

Size of MPA: varies with each site
Year of establishment: varies with each site
Whether the MPA is a coastal/island/offshore site: varies with each site
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: 3

Key message: the main incentives employed in governing the NMSS are participative, interpretative and knowledge incentives. Transparency and community participation in decision-making are essential for generating community ownership and stewardship towards sanctuaries. Stable and strong leadership from the ONMS also enabled the employment of different incentives. Key incentives to improve the governance of the NMSS are to enhance the legal basis for effective biodiversity conservation, including the use of a precautionary approach, the provision of sufficient resources and cross-jurisdictional and cross-sectoral cooperation for effective law enforcement and the development of better economic incentives.

The NMSS consists of 14 MPAs under various contexts ranging from small towns to some of the largest urban areas and working ports in the US. The primary mandate for national marine sanctuaries, as designated under the National Marine Sanctuaries Act, is resource protection. Activities that may affect the sites include a range of

commercial, recreational and extractive uses, and the occurrence and impacts of such activities vary from one site to another. Some sites are also facing global-scale issues such as climate change and natural disasters. The chief responsibility for managing the NMSS lies with the NOAA's Office of National Marine Sanctuaries (ONMS). For the sites that include state or territorial waters, the ONMS works in partnership with appropriate state or territory authorities. There are no system-wide regulations for the NMSS. Regulations are therefore individually tailored to each sanctuary. Enforcement of the sites has been effective in addressing some impacts, but other impacts such as fishing and alternative energy are less well addressed.

Key governance incentives applied in the NMSS:

- **Participative governance structures and processes:** the management plan for each site, which outlines the policy goals and objectives for a particular site, has been developed in a participatory process that includes management partners and sanctuary advisory councils (community-based advisory groups chartered for each site);
- **Transparent participation and decision-making processes:** providing accurate and up-to-date information to communities and user groups, including through advisory councils, is crucial in the success of designation and management plan review processes;
- **Public communication, education and awareness raising** through various channels, ranging from traditional, curricula-based education to innovative web-based, real-time "telepresence" efforts and social media;
- **Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation:** maximizing and integrating data and information coming from multiple sources has been a priority for the ONMS;
- **Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty:** sanctuary advisory councils have been serving as independent information and advisory sources;
- **Leadership:** increasingly strong, stable leadership from NOOA is enabling the further development of governance structures and processes;
- **Stewardship:** transparency and community involvement in decision-making, diligence in building relationships, presentation of clear and unbiased information, and simple persistence have helped to overcome antagonistic attitude in the community towards sanctuary designation and to foster a sense of stewardship among local communities.

Key remaining challenges for the NMSS:

- The main purpose of the NMSS is resource protection; a secondary mandate, the facilitation of uses that are compatible with resource protection, which combined with the lack of a strong legal basis for the use of a precautionary approach, may in the future potentially weaken the legal mandate for effective biodiversity conservation in the NMSS;
- Lack of effective law enforcement resulting from various factors including the lack of funding and available resources, competing management priorities, and the nature of state/federal enforcement relationships;
- Decisions on fishing activities in sanctuaries are often delayed and compromised by the strong lobby of the fishing industry;
- Lack of funding and authorities for developing and implementing better economic incentives.

Disclaimer: The findings and opinions expressed in this case study are those of the authors (This essence report and summary case study report) and do not necessarily reflect the position of the Office of National Marine Sanctuaries, NOAA, or the U.S. Government.

California Marine Life Protection Act (MLPA), U.S.A.

Size of MPA (km^2): Mean MPA area = 18 km^2, Network area (sum of MPAs) = 529 km^2
Year of establishment: the MLPA was passed in 1999
Whether the MPA is a coastal/island/offshore site: the MLPA only has jurisdiction within California state waters which extend 3 nautical miles (5.5 km) offshore. Most but not all MPAs extend to this jurisdictional boundary.
Governance approach: managed primarily by the government under clear legal framework
Effectiveness scale: too early to assess

Key message: the fundamental incentive for stakeholders, government agencies and other interested parties to participate in and contribute to the MLPA Initiative is the legal mandate of the act. Knowledge and participative incentives have been employed in a transparent and deliberative manner, guided by science-based guidelines to ensure that legal conservation objectives are met. The right balance between top-down and bottom-up governance approaches is key to the success of the Initiative. Areas to improve in the future are to secure sustainable funding to ensure the effective implementation, monitoring and enforcement of the MPA network, and to enhance cross-sectoral and cross-jurisdictional cooperation to support the achievement of MLPA objectives.

California's MPA network is being designated under the MLPA, a state law passed in 1999. The MLPA identifies six overarching goals for the MPA network, and envisages a well designed and effectively managed MPA network for the protection and enhancement of ecological, socio-economic and cultural values of California's marine ecosystems. Threats to California's coastal ecosystems include fishing, water pollution, invasive species, climate change and coastal development. Only fishing is effectively regulated under the MLPA. The California Department of Fish and Game (CDFG) is named as the agency responsible for implementation and enforcement. The MPA network design processes were driven by stakeholder participation guided by strong legal mandate and science-based design guidelines, therefore using a combination of top-down and bottom-up approaches. It is still too early to assess how effective the MPA network will be at achieving its conservation objectives.

Key governance incentives employed in the California MLPA:

- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** there has been a very successful state effort to secure funding from private foundations to contribute to implementation costs, but without inappropriate control of governance;
- **Maximising scientific knowledge to guide/inform MPA decision-making and monitoring-evaluation** The MLPA Science Advisory Team is charged with bringing the "best readily available scientific information" to inform the MPA design process. The SAT develops science-based guidelines for the design of MPA networks that are used by the Regional Stakeholder Groups in the development of their proposed networks and evaluates how well the proposed networks meet the design criteria generated by the SAT;
- **Promoting mutual respect and collective learning between different knowledge owners:** extensive interaction between the MLPA science team and stakeholder groups throughout the MPA design process promotes mutual respect for a wide variety of knowledge types. Scientists and stakeholders embark together on "joint fact finding" projects where they enhance one another's knowledge of local ecosystems while improving the information available for use in MPA planning;
- **Developing mechanisms for independent advice &/or arbitration in the face of conflicting information &/or uncertainty:** the Blue Ribbon Task Force, a panel of widely respected political figures, was constituted to arbitrate on issues and recommend decisions, especially in cases of uncertainty and stakeholder or stakeholder-scientist conflict;
- **International-regional-national-local regulatory obligations that require effective MPA conservation:** the legal mandate of the MLPA requires the development of an enhanced, science-based network of MPAs, therefore stakeholders and others are motivated to participate and cooperate, rather than question whether a network of MPAs is an appropriate policy;
- **Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations:** the text of the MLPA provides a clear legal framework with specific conservation objectives. In the MPA design process, great care is taken to ensure that MPA boundaries are simple, easily understood, and enforceable. Efforts are likewise made to ensure that MPA regulations are simple and compatible with existing fishing regulations;
- **Legal or other official basis for cross-sectoral/cross-jurisdictional restrictions to support the achievement of MPA objectives:** although the MLPA has little legal power to regulate non-fishing activities, the California Marine Managed Areas Improvement Act (MMAIA) provides for cross-sectoral coordination. Significant efforts have been made to co-locate MPAs with other protected areas, such as Areas of Special Biological Significance (water quality protection areas designated under the MMAIA) and National Marine Sanctuaries, in order to enhance cross-sectoral and cross-jurisdictional cooperation and efficiency of enforcement;
- **Participative governance structures and processes**: stakeholder participation is facilitated by Regional Stakeholder Groups that are responsible for the development of draft proposals of network designs. Stakeholder participation is also enhanced by a GIS-based online decision support tool called Marine Map. This tool allows stakeholders to view habitat and effort distributions, draw and share proposed MPAs, and assess the habitats that they will protect with each shape;

- **Clear rules on the means and degree of participation from different groups:** in designing the MPA network, stakeholder participation processes were guided by science-based guidelines, and MPA network designs must meet the conservation objectives specified by the MLPA;
- **Bringing in 'neutral' facilitators to facilitate participative processes:** the MLPA stakeholder group is facilitated by trained and neutral facilitators who are not participants in the process in any other way.
- **Transparent participation and decision-making processes:** all MPA designs are openly negotiated and discussed in public meetings with opportunities for public participation. The final decision about MPA designation is made by the Fish and Game Commission and this decision is open to input from both stakeholders and the public;
- **Leadership:** strong leadership from the California state government is essential for ensuring the success of the MLPA Initiative.

Key remaining issues for the MLPA:
- Funding is not secure for design, implementation, enforcement, monitoring, or evaluation of the MPA network. Although private foundations and the state have thus far been able to fund all the necessary components, the perceived insecurity of funding undermines trust on the part of stakeholders who are sacrificing portions of their livelihood for the cause of marine conservation;
- Although the simplicity of the regulatory framework (*e.g.* CDFG regulates only fishing) makes the MPA design process much more manageable than a larger inter-agency effort might be, it also has limitations that can be frustrating to both stakeholders and decision-makers. Greater and more clearly defined coordination between the regulators of cross-sectoral activities (*e.g.* water quality, mineral extraction, terrestrial activities)would improve governance.

Sanya Coral Reef National Marine Nature Reserve (SCRNMNR), China

Size of MPA: 56 km^2
Year of establishment: 1990
Whether the MPA is a coastal/island/offshore site: island
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 2

Key message: the use of economic incentives through the development of tourism is one of the most important mechanisms through which the conflict between biodiversity conservation and local economic development is being addressed in the SCRNMNR. However, the achievement of conservation objectives and community empowerment have been hindered by a lack of law enforcement and well-designed monitoring programmes, and the loss of communal access to natural resources resulting from corporate tourism development. Improving governance of the SCRNMNR requires more political leadership and steer from the central government to reduce the risk of institutional capture by local authorities and tourism developers, addressing equity issues and promoting community stewardship and participation in MPA management.

The SCRNMNR is located in the Sanya Municipality of the Hainan Province, China. The primary management objective of the SCRNMNR is to preserve coral reef and other marine habitats, and to enhance tourism and local socio-economic development under the condition that the primary objective is met. Main threats to the MPA include uncontrolled mass tourism, small-scale and recreational fishing, coastal development and water pollution, driven mainly by the growing domestic demand for tourism services, and the rapid economic development and urbanisation in Sanya. In managing the SCRNMNR, the State Oceanic Administration (SOA) retains the final decision-making power, however much of the responsibilities, including financing MPA operations and law enforcement, have been decentralised to lower levels of government. Decentralisation has generated tensions between higher-level governments (central and provincial) and the Sanya municipal government, as the latter tends to be more focused on achieving short-term economic needs rather than conservation benefits. Enforcement of the SCRNMNR has been relatively effective for some activities (*e.g.* blast and cyanide fishing, coral mining and seaweed farming), but less effective for tourism and fishing activities conducted by existing users.

Key governance incentives applied in the SCRNMNR:
- **Allocation or reinforcement of user rights:** the issuing of exclusive user rights for tourism within the SCRNMNR gives developers the incentives to better manage resource use within the tourism area;

- **Promoting alternative livelihoods:** from 2002 to 2004, around 1,400 local villagers in the Xiamo Island in the SCRNMNR were employed in the tourism industry, and local employment rate reached over 90%, which in turn led to a huge reduction in the incidence of coral mining and fishing pressure in nearby coral reefs;
- **Improvements in local infrastructure and living standards:** employments in the tourism sector generate stable income for local communities; in addition, tourism companies also invested in local infrastructure such as schools and roads, and brought electricity and piped water;
- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** funding from tourism developers has been used to establish three surveillance stations, and 5-7 wardens in each station are hired by tourism developers to oversee activities in surrounding waters. In addition, tourism developers also funded some public education programmes;
- **Public communication, education and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA**: various education and outreach programmes, such as ocean day events, community visits and talks in local secondary schools have been organised;
- **International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions:** the regulatory framework established a spatial zoning scheme for the SCRNMNR, which forms the basis of MPA management and enforcement, as well as the allocation and regulation of marine area user rights for tourism and other types of resource use;
- **Conditions/criteria/requirements attached to user rights:** the legal framework established the conditions and statutory procedures for the issuing of exclusive marine area user rights (for tourism and other compatible uses), which are restricted to defined areas within the experimental zone of the SCRNMNR, and are subject to evaluations and renewal by the SOA in every three years.

Key issues for the SCRNMNR:

- Weak leadership from the central government provided opportunities for local governments and developers to 'capture' MPA governance and to promote development activities that undermine conservation efforts. More and better ways of steer from the state are needed, *e.g.* by targeted financial incentives. In addition, as most local officials in China are still appointed by higher-level governments, making the effectiveness of protected areas a key criteria for the assessment of local officials' performance can be a good way to increase support from local governments for nature conservation;
- The use of legal incentives in governing the SCRNMNR is characterised by a relatively strict and rigid legal framework established by the central government, but very limited political will and resources allocated for its enforcement. Law enforcement can benefit from a better designed legal framework with clear conservation mandates and scope for local discretional actions to induce compliance, as well as the provision of sufficient funding, technology and political support from the central government;
- Lack of a well-designed and participatory monitoring framework to inform management decisions;
- Poorly controlled corporate tourism development, often promoted by the local and sometimes higher level governments, results in both environmental and social costs. The distribution of tourism benefits in the SCRNMNR could be fairer and more equitable. Extensive coastal land and productive fishing grounds have become increasingly inaccessible to local communities due to the development of tourism, which is a main obstacle to fostering genuine participation from local communities in MPA management;
- Lack of community participation further increases power imbalances and provide more opportunities for powerful local elites to capture MPA governance and the benefits from the MPA. Fostering a sense of stewardship of marine resources amongst local communities, by protecting their rights to vital natural resources and encouraging small-scale tourism ventures owned by local communities will be essential to improve MPA governance.

Seaflower Marine Protected Area (Seaflower MPA), Colombia

Size of MPA: 65,000 km^2
Year of establishment: 2005
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed by the government with significant input and/or influences from MPA users (both organized and independent)
Effectiveness scale: 1

Key message: in managing the Seaflower MPA, most efforts have focused on participative and knowledge incentives, *i.e.* increasing the awareness, capacity and participation of local users in the decision-making, management and enforcement of the MPA. However poorly controlled commercial fisheries and population immigration and weak enforcement of MPA zoning regulations hinder the achievement of MPA objectives and have resulted in natural resource decline and displacement of traditional users. Increasing the political will, financial and institutional resources available for effective law enforcement, in combination with well designed economic incentives to alleviate population and economic pressure on natural resources will be essential for improving the governance of the Seaflower MPA.

The Seaflower MPA is located in the marine area of the Seaflower Biosphere Reserve in the San Andres Archipelago. The mission of the Seaflower MPA is to conserve biodiversity and ensure sustainable use of coastal and marine resources in the archipelago, while enhancing equitable benefits for the local community. This mission is achieved through five legally defined and linked objectives oriented towards sustainable development. The main activities supported by the Seaflower MPA are subsistence, artisanal, and industrial fishing, and marine tourism and recreation. These activities, while an integral part of the MPA, also impose pressure on Seaflower's resources. In addition, terrestrial activities, such as coastal development, urbanization, and deforestation, are negatively affecting Seaflower's ecosystems and biodiversity through land-based pollution and sedimentation. The drivers of such threats include local factors such as rising population pressure associated with the influx of migrants from the Colombian mainland, poverty and growing food insecurity, national factors such as poorly regulated commercial fisheries and global factors such as introduced species and climate change. The Seaflower MPA is under the jurisdiction of CORALINA, the regional environmental management authority, which receives advice from the Stakeholder Advisory Committee (SAC), the Inter-Institutional Committee (IIC) and the International Advisory Board (IAB). The declaration of the Seaflower MPA does not affect the responsibilities of any other institutions; for example, offices that share in fisheries management have maintained their customary roles in regard to fishing in and out of MPA waters. Since the establishment of the MPA, the condition of most resources and habitats has remained the same or even declined, however some habitats and resources (*e.g.* mangrove cover and queen conch populations) have shown signs of recovery.

Key governance incentives applied in the MPA:

- **Allocation of community user rights:** the MPA includes artisanal fishing zones for exclusive use by traditional fishers, which are often zoned adjacent to no-take zones to ensure that the benefit of any spill-over first goes to traditional fishers;
- **Public communication, education, and awareness-raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA:** this has been delivered throughdiverse meetings and outreach events targeting all sectors of the island community, media campaigns, introduction of formal school curricula on coastal and marine ecosystems and a variety of publications for children and adults;
- **Maximising scientific knowledge to guide/inform MPA decision-making:** extensive ecological monitoring on the status of ecosystem and key species has been carried out, as well as monitoring on socioeconomic parameters;
- **Capacity building and promoting collective learning between different knowledge owners:** stakeholder training courses in marine conservation and sustainable use in fisheries, tourism, and farming have been offered, and other collective learning programmes include artisanal fishers training children in traditional practices and PADI training for artisanal fishers and youth;
- **Progress in securing financial and institutional resources for law enforcement:** MPA management is on track to become financially self-sustainable by 2014. Meetings are underway with the Navy, Coast Guard, and US marine enforcement agencies of NOAA to strengthen joint operations, including providing Colombian authorities with technology and vessels;
- **Potential for integrated and cross-sectoral management of the MPA:** a strength of Seaflower's management is that CORALINA's jurisdiction includes land and sea. As a sustainable development agency, CORALINA's responsibilities are not limited to environmental planning and management, but also include poverty alleviation, capacity building and establishing partnerships with communities and other institutions. This places CORALINA in an excellent position to deal with conflicts and take a holistic approach to MPA management and governance;
- **Participative governance structures and processes:** local communities have participated in the planning, zoning, management, enforcement and monitoring of the MPA. Notable examples were the coming together of all stakeholders in mapping workshops to identify and agree on the external boundaries and multiple-use zones, community-based monitoring programmes, volunteer inspectors, and the introduction and successful completion of a technical degree program at a local university that trained young *raizales* from poorer

families to take on jobs in coastal and marine management. Community participation is also facilitated and strengthened by the establishment of the Stakeholder Advisory Committee.

Key remaining issues for the Seaflower MPA:

- Leadership: This is the only MPA in Colombia that is devolved entirely to the local government (CORALINA) and a stronger lead is required from the central state to address pressures from immigration, incoming fishers, *etc.;*
- Lack of funding for the management agency (CORALINA) is one of the major obstacles for MPA enforcement and management. Less than a third of its annual budget and virtually none of its program budget are government-funded, so raising money to support activities is an on-going struggle. This results in initiatives that are donor-driven and lack continuity in programming, staffing, and building institutional capacity;
- Lack of resources and capacity for law enforcement, particularly in regulating commercial fishing and implementing zoning regulations. Government enforcement against incoming national and international high-intensity commercial fishing has been weak and volatile. Commercial fishing leads to overfishing and related loss of marine biodiversity, increasing difficulty of access to collective fishing grounds by native fishers, and conflicts between local fishers and national fishery management institutions. In addition, some local fishers also fail to respect MPA zoning and general regulations, which adds to the problem of overfishing;

In order to achieve the objectives of the MPA, economic incentives need to play more important roles, such as provisions of alternative livelihoods, promoting community-based tourism operations and protecting the rights of traditional fishers in so far that they comply with MPA regulations.

Galápagos Marine Reserve (GMR), Ecuador

Size of MPA: 138,000 km^2
Year of establishment: 1998 (initially designated as a Marine Resource Reserve Area in 1986)
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 1

Key message: in governing the GMR, a great deal of effort has been focused on participative and interpretative incentives, aiming to increase community support for MPA management. Legal incentives have been applied to address some driving forces of environmental deterioration, such as overfishing and immigration, but their effectiveness has been limited. To improve the governance of the GMR, a combination of different incentives will be needed, including the allocation of user/property rights for tourism development and fishing and establishing environmental standards and other conditions attached to such rights, reinvesting some tourism profits in community development and MPA management, establishing rules and procedures for implementing the precautionary principle, improving representation of all key stakeholders in participatory decision-making, and most importantly, stronger leadership and political will from the GMR and other state authorities in exercising the legal powers that they are granted with.

The GMR was designated to integrate a vital part of the Galápagos ecosystem into the terrestrial Galápagos National Park. In 2007, both the Galápagos National Park and Marine Reserve were placed on the World Heritage Sites in Danger list. The GMR Management Plan established that the main management objective of the GMR is 'to protect and conserve the coastal-marine ecosystems of the archipelago and their biological diversity for the benefit of mankind, the local inhabitants, science and education' and the Plan also details a series of 12 specific objectives (including social and ecological) below the main objective. Main threats to the GMR are fishing, tourism activities and oil spills, driven mainly by immigration and population growth on the Galápagos islands, demand from Asian fish markets, and incoming tourism operators. At a local level, management decisions are taken through a Participative Management Board (PMB), which are made up of local representatives of the Tourism, Naturalist Guide and Fishing Sectors, the Galápagos National Park Service (GNPS) and the Charles Darwin Foundation (CDF). The PMB aims to agree management proposals on consensus basis. The Inter-Institutional Management Authority (IMA) is the maximum decision making body of the GMR. It is presided by the Minister of Environment, and composed of three additional ministries: Tourism, Fishing and Defence. The local fishing sector, the local tourism sector, and environmental NGOs also each have a representative. Generally, it will ratify a consensus from the PMB, but where the PMB is unable to reach a consensus. the IMA will make a decision by

majority vote. Enforcement has largely been ineffective and other than some migratory pelagic species, exploited populations and wider biodiversity are in a state of decline if they have not already 'bottomed-out', rather than recovering.

Key governance incentives applied in the GMR:

- **Promoting alternative livelihoods**: initiative from the fishing sector has resulted in permits to carry out tourism-based fishing – so certain fishing vessels were licensed to carry tourists who would pay to observe how Galápagos fishers do their trade;
- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA:** from 2002-4, a project with the Inter-American Development Bank focused on creating tools to educate stakeholders and authorities about the GMR and its key issues. A TV programme "Land of volcanoes" and education centres for local children also helped to raise awareness among local communities;
- **Promoting mutual respect and collective learning between different knowledge owners:** participatory population density surveys have been implemented to understand the population dynamics of the sea cucumber (*Isostichopus fuscus*). Fishers, park managers and scientists work together to develop the survey methodology and draft the final report submitted to the PMB;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making**: interview were conducted with local fishermen to collect information such as historical levels of whitefish, catches, and perceived overfishing tendencies. The information provided was used to develop the new Fisheries Management Plan for Galápagos;
- **International-regional-national-local regulatory obligations that require effective MPA conservation including the potential for top-down interventions:** the sea cucumber *I. fuscus* was included in CITES Appendix III by Ecuador as a way to encourage Parties in the distribution range of this species to promote its sustainable use;
- **Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces – pressures from immigration, corporate mass tourism, fisheries market forces, *etc***: the Ecuadorian government has successfully implemented innovative legislation under the Galápagos Special Law that restricts immigration. In December 2007, Presidential Decree N° 224 authorised the installation of Vessel Monitoring Systems (VMS) devices which aims to monitor the activities of all vessels within the GMR;
- **Participative governance structures and processes:** stakeholders participated in GMR decision-making processes through their representatives in the PMB and IMA. In addition, a participatory evaluation of the governance of the marine reserve was carried out in 2001;
- **Role of NGOs:** international and national NGOs have provided substantial funding and other assistance in the use of governance incentives in the GMR, *e.g.* community education efforts and helping fishers and their families to run small enterprises, and provide funds to employ lawyers to follow up legal administrative process against users infringing the GMR.

Key issues for the GMR:

- Foreign owned cruise vessels, hotels, *etc*, are leading to a growing leakage of tourism income from the Galápagos economy. There are policies to try and minimise this, such as the introduction of permits to local fishermen to develop tourism activities, however this has had a limited success due to a large number of fishermen selling their tourism permits to big corporations;
- Fisheries of valuable species, such as sea cucumber, are typically open-access and boom-and-bust fisheries driven by demand from Asian markets;
- Although the precautionary principle is a key principle for the GMR under the Galápagos Special Law, it has not been applied in reality. The scientific advice for restricting fishing efforts in the GMR has been routinely rejected or ignored by users, and a lack of funding for research has been fuelling the capitalisation of uncertainty in fisheries management;
- There has been a lack of law enforcement against fishing and tourism developments in the GMR, due to political instability and a lack of political will to restrict the growth of tourism and fishing for environmental purposes;
- Participatory decision-making allow certain users to successfully resist or ignore the proposed restrictions (*e.g.* catch limit for sea cucumbers) on fishing efforts;
- The use of different governance incentives (*e.g.* small enterprises owned by communities) has been heavily dependent on financial and other assistance from NGOs rather than being self sustainable.

Karimunjawa Marine National Park (KNP), Indonesia

Size of MPA:1,106 km^2
Year of establishment: 1986
Whether the MPA is a coastal/island/offshore site: island site
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 2

Key message: economic incentives are the main mechanism through which the conflict between biodiversity conservation and local development needs are being addressed in the KNP. In addition, interpretative, knowledge and participatory incentives are also being used to increase local awareness, capacity and stewardship. Areas to improve in the future are to enhance the political will, resources and capacity for law enforcement, to increase cross-sectoral and cross-jurisdictional integration and coordination in policy development and law enforcement, particularly between national park authority and local fishery agencies, and to increase the scope for the alternative livelihoods programme.

The KNP is located in the Karimunjawa sub-district, which has a total population size of 8,842. The management objectives of the MPA are to protect biodiversity, ecosystems and resources for sustainable use and livelihoods, to preserve species, and to provide effective management for community prosperity and national obligations. Main impacts to be addressed in the KNP include fishing (70% of the local community involved in fishing related activities), tourism, and water pollution resulting from coastal development and mariculture. The drivers of these impacts are domestic and international demands for fish (with the latter mainly targeting live reef fish species), growing domestic and regional tourism markets, coastal development and the expansion of mariculture. The Karimunjawa National Park Authority (KNPA) has the primary management role although district government agencies concerned with fisheries, tourism and development have responsibilities and jurisdictions within the KNP. The KNPA also receives technical and other assistance from NGOs (local NGOs and the Wildlife Conservation Society). Enforcement of the KNP has been effective in stopping the decline in reef fish biomass (with improvements in fish stocks in no-take zones) and improving coral cover.

Key governance incentives applied in the KNP:

- **Promoting economically and ecologically sustainable resource use** through the establishment of no-take and gear restriction zones, which aims to enhance harvest in surrounding waters through spill-over effects, as well as controlled tourism activities;
- **Promoting alternative livelihoods** through a micro-credit programme since 2008, which provides assistance to fishermen to develop grouper mariculture operations, in order to replace the ecologically destructive practice of cyanide fishing. Six fisher's households have participated in the program, with increased participation expected in 2010;
- **Improvements in local infrastructure and living standards:** a community group created by the local district government has been formed to manage local tourism activities and the revenue from tourism has funded the building of schools, mosques and other facilities including water sanitation infrastructure;
- **Allocation or reinforcement of community/user property rights:** the new zoning plan provides incentives to better manage resource use through areas of exclusive use for mariculture of seaweed, clams and fish;
- **Funding from private or NGO sources to promote the effectiveness of the MPA:** the Wildlife Conservation Society has allocated $700,000 over 5 years for assisting the KNPA develop and implement management and zoning plans, including $200,000 over the next 2 years for the micro-credit programme; The KNPA has an annual budget of approximately $400,000 to manage the park;
- **Public communication, education and awareness raising** through various environmental education and outreach programmes organized by park authority, NGOs and community groups;
- **Participative governance structures and processes:** *e.g.*stakeholder participation in park rezoning, the establishment of the KNP collaborative management forum to identify appropriate management interventions, and strategic village planning to guide economic development and conservation;
- **Maximising scientific knowledge to guide/inform MPA decision-making:** well designed research and monitoring programs provide feedbacks on the park zoning plan and decision-making, which form the knowledge basis for adaptive management;
- **Promoting mutual respect and collective learning between different knowledge owners:** local community groups have been involved in monitoring programs to raise awareness on the importance of fishing regulations and to provide information on compliance with the zonation plan;

- **Fostering a sense of stewardship among local communities** through recognizing user rights for tourism, mariculture and fishing (traditional fishing allowed in 83% of the area of the park) within the KNP, and promoting community participation in park planning, monitoring and enforcement.

Key issues for the KNP:
- A lack of capacity, political will, surveillance technologies, and financial resources for law enforcement;
- District level fisheries and tourism policies often contravene national park regulations, and a lack of cross-jurisdictional and cross-sectoral law enforcement, particular between the park authority and fishery management agencies;
- Limited scope of sustainable financing for alternative livelihood programs.

Wakatobi National Park (WNP), Indonesia

Size of MPA: 13,900 km^2 (464 km^2 land area)
Year of establishment: 1996
Whether the MPA is a coastal/island/offshore site: island site
Governance approach:managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 2

Key message: economic incentives constitute the most important group of incentives in terms of promoting the effectiveness of the WNP, given their success in addressing perceived problems of overfishing and illegal resource usage. In addition, participative incentives have also been employed and offer some potential to address locally-based threats in the WNP. Improving MPA governance in the WNP will require the development of a clear and consistent legal framework, and stronger political will and government resources and capacity for effective law enforcement. Under the current process of decentralisation within Indonesia, legal incentives could also be directed towards adaptive management and local discretionary action, building upon existing village leadership institutions. In addition, the implementation of some economic and participative incentives have led to the marginalisation of some user groups, therefore addressing inequity and fostering community stewardship in developing future governance structure and processes are also essential to improve MPA governance.

The WNP is located in the province of south-east Sulawesi, which is classified as a 'very poor' province in Indonesia. The management objective of the WNP is to establish a sustainable environment with benefits to local resident communities and for regional development. Main threats to the MPA include illegal fishing (bomb and cyanide fishing and trade in protected or endangered species), coral mining, artisanal fishing, and tourism activities. Key drivers of such impacts are population growth, advancements in fishing technologies, the international demand for live reef fish, ornamental fish and protected and endangered species, economic development and the resultant increase in the demand for tourism services. Since 2003, the roles assumed by international NGOs and tourism operators have addressed the impacts of fishing, principally destructive fishing, and the harvest of protected species.

Key governance incentives applied in the WNP include:
- **Promoting economically and ecologically sustainable resource use**through the deployment of fishing aggregating devices in pelagic waters, aiming to reduce fishing pressure in coral reef areas and addressing the perceived issues of resource sustainability and poverty;
- **Providing economic compensation for restricted users for profits foregone and improvements in local infrastructure and living standards:** a 'reef leasing' scheme was introduced by a tourism operator in 1999 in return for a cessation of all fishing activities on 20 km of reef in17 villages on the island of Tomia. Compensation equivalent to US$500 per month is paid to each village for public building repair and improving transport infrastructure;
- **Funding from private or NGO sources to promote the effectiveness of the MPA:** funding from international NGOs (*e.g.* TNC and WWF), foreign donors (*e.g.* AusAID) and tourism operators have been used to support enforcement activities and the use of economic and other incentives;
- **Maximising scientific knowledge to guide/inform MPA decision-making:** research conducted by TNC/WWF helped to inform the new park zoning plan;
- **Participative governance structures and processes:** participatory mapping exercises and stakeholder

consultation were conducted in the drafting of the new park zoning plan. There is a history of attempts to ensure participatory planning in the WNP, most of which have been instigated by NGOs and private tourism operators. However, these are vulnerable to elite dominance or discourse capture by particular groups within the fishing community. The Kaledupa-based Darwin Initiative project plans to establish new village-based institutions (termed Village Fishers Forums) involving all fishermen and a representative of the BPD;
- **Role of NGOs:** NGOs, including tourism operators, have been instrumental in funding, delivering and monitoring key activities within the WNP.

Key issues for the WNP:
- Lack of government resources and capacity available for park enforcement;
- The sectoral approach to legislation and law enforcement, confusions regarding jurisdiction in an era of decentralisation, and a lack of clear and consistent legal framework;
- Political reforms empowering district government, which resulted in the growing pressure to secure financial benefits from economic activities such as tourism within the WNP;
- Risks of institutional capture: the financial resources of larger NGOs and foreign-owned tour operators imbues them with the power to influence or ignore park authorities and local government, giving rise to some *ad hoc* conservation measures designed for tourism rather than marine resource management;
- The dominant utilitarian views of local resource users towards the marine environment conflict with the conservation agenda primarily driven by external NGOs and rooted in western scientific thought, which renders it difficult to implement interpretation incentives and to effectively integrate local knowledge in decision-making processes;
- The implementation of some economic and participative incentives reinforced existing social-economic inequity within local communities and led to the further marginalisation of certain groups, such as subsistence-oriented line fishermen and the minority Bajau community.

Tubbataha Reefs Natural Park (TRNP), Philippines

Size of MPA: 968 km^2
Year of establishment: 1988
Whether the MPA is a coastal/island/offshore site: island site (submerged shoal)
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 3

Key message: the TRNPis a good example of different governance incentives employed in combination to enable effective and equitable MPA management in a developing country. In particular, economic and participative incentives are used to ensure fairness and equity for affected communities, and effective use of scientific knowledge and law enforcement ensure the achievement of conservation objectives. A key area to improve in the future is to enhance the sustainability of funding for the employment of different incentives and continued evolution of MPA governance.

The TRNP is nestled in the middle of the Sulu Sea, approximately 130-150 km offshore to nearby cities. It is designated as a World Heritage Site and Ramsar site. The primary objective of the MPA is to conserve the biological, socio-cultural, educational and scientific values of the TRNP, and the MPA is managed as an IUCN category II protected area. Main threats to the MPA include water pollution from outside the TRNP, starfish infestation, beach erosion and climate change. The Tubbataha Protected Area Management Board (TPAMB) is responsible for the management of the TRNP, which is a multi-sectoral body with representatives from the provincial and municipal governments, national enforcement agencies, Cagayancillo people's organization, NGOs, local universities and the tourism sector. Day-to-day park management is carried out by the Tubbataha Management Office (TMO), the executive arm of the TPAMB. Due to its remote location, uninhabited status and the implementation of various incentives, enforcement of the TRNP has been quite effective with improvements in key biophysical, socio-economic and governance indicators.

Key governance incentives applied in the TRNP include:
- **Green marketing of products and services from the MPA:** dive tourism in Tubbataha generates $80,000 to $110,000 a year from conservation fees, further promotions of tourism activities are being initiated by WWF-Philippines, with the World Heritage designation being a key marketing tool;

- **Providing economic compensation for restricted users for profits foregone**: the residents of Cagayancillo historically used the park for part of the fishing season but have given up this access. In return the TPAMB approved the provision of 10% (increased from 7% in 2007) of conservation fees for the development of alternative livelihoods in Cagayancillo. This may be perceived by many as not enough but it helped the Cagayancillo residents to claim co-ownership of the vision to conserve Tubbataha and take pride in it.
- **Promoting alternative livelihoods** through micro-finance projects run by a local people's organization in Cagayancillo, which provide capital for local residents to develop small businesses such as adventure-ecotourism;
- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** additional funds from local and international NGOs and foundations have so far sustained park management operations to about 60% of the annual budget averaging US$250,000. The national government has also allocated funding, manpower and logistic support for MPA management and enforcement;
- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA:** the park has been very successful using the "New7Wonders of Nature" (http://www.new7wonders.com) as a campaign vehicle for promoting the MPA. Information, communication and education campaign in local schools, communities and organizations improve awareness for the Park and marine conservation;
- **Role of celebrity 'champions':** regular dives with high profile persons is also very helpful. The President of the Philippines together with some of her cabinet members and media groups dive annually in the Park;
- **Promoting recognition of the potential benefits from well-managed MPAs:** conservation benefits from the Park are made known to the public through the conduct of fora with local stakeholders on results of scientific studies *i.e.* larval dispersal and oceanography, monitoring of the status of the reefs and other marine life, and contextualizing these in the light of pressing issues on health, poverty, and climate change;
- **Maximising scientific knowledge to guide/inform MPA decision-making**: methodologies applied in research, planning, monitoring and evaluation have been designed to maximize the advantages of scientific and participatory principles. Standardized resource monitoring protocols are worked out between and among the different research groups working within the Park;
- **Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations**: the enforcement team with composite membership from the Philippine Navy, Philippine Coast Guard, TMO and the Cagayancillo sea guards operate following a clear enforcement protocol respected by the mother agencies. This enforcement protocol is periodically reviewed and improved together with the rangers, the prosecutors and legal advisers;
- **Effective judicial system for penalising transgressors**: criminal cases are filed in the courts. The TMO and the TPAMB members are not allowed to negotiate for and in behalf of the accused and to intervene in the judicial process. Media exposure and strong NGO support at the local and international scenes are instrumental to this. The use of alternative dispute resolution (ADR) for administrative cases is resorted to under the Palawan Council for Sustainable Development Adjudication Board. Strong support from prosecutors and legal counsel and adequate enforcement equipment are provided to ensure that illegal users are brought to court;
- **Participative governance structures and processes:** the TRNP Management Plan specifically indicates that participatory mechanisms shall be used in the formulation of specific plans and in the evaluation of results. The Management Plan itself went through a series of consultations with representatives of the Local Government, communities of Cagayancillo, and other stakeholders. The TPAMB with its multi-sectoral membership and consensual decision-making process allows for participative governance;
- **Role of NGOs:** the NGOs facilitated the development of management systems to support the long-term vision of TRNP. This came in the form of funding, technical assistance, and networking;

A key issue for the TRNP is:
Lack of financial sustainability: maintaining effective park management requires stable and sustainable levels of funding, which is a key challenge for the TRNP. Current finance of the park relies heavily on funds from NGOs and private foundations, and the sustainability of such private funds is not guaranteed.

Ha Long Bay World Natural Heritage Area (Ha Long Bay WHA), Vietnam

Size of MPA: 1553 km^2
Year of establishment: 1994
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 2

Key message: economic and legal incentives are the most important incentive groups employed in governing the Ha Long Bay WHA. However they have been largely ineffective in addressing the key conflict between economic development and biodiversity conservation, due to the scale and intensity of economic activities within and surrounding the MPA, the lack of a clear and consistent legal framework that provides for integrated and cross-sectoral enforcement of the area, a lack of leadership, strategic direction, and institutional capacity for MPA management, and few alternative livelihoods available for fishermen and other resource users in the areas. Improvements in these areas will be essential for improving the governance of the Ha Long Bay WHA.

Ha Long Bay was inscribed on the World Heritage Area List under natural criteria (vii) exceptional natural beauty and aesthetic importance and (vii) significant geological and geomorphology values. The management objective of the Ha Long Bay WHA is to ensure the integrity of Ha Long Bay's values (including aesthetic, geomorphologic, biodiversity and cultural values). The Ha Long Bay WHA faces multiple threats from overfishing, tourism, transportation, mariculture, water pollution, urban development and coastal habitat destruction, driven by increasing tourism demand, industrialisation and urbanisation in the surrounding area. The Ha Long Bay Management Department (HLBMD) is responsible for the management and enforcement of the site. Enforcement has been effective for some activities (*e.g.* destructive fishing methods, coral collection and trading), but other activities such as fishing, pollution and land-based activities remain beyond the control of the HLBMD.

Key governance incentives applied in the Ha Long Bay World Heritage Area:

- **Improvements in local infrastructure and living standards**: tourism generated US $5 million income in 2008, of which 55% has been reinvested in improving infrastructure in the Ha Long City and in promoting tourism activities, and the rest 45% is managed by the HLBMD including 5-10% spent on supporting schools and other community infrastructure in the floating fishing village;
- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** the World Bank has provided financial and technological assistance in addressing the problem of water pollution in the Ha Long Bay;
- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA** through the Eco-boat programme, which is a public-private partnership in environmental education;
- **International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions:** the inscription on the world heritage list has helped to generate support for conservation of the area at international and national levels. The HLBMD has developed and implemented a legislative document for adjusting and regulating activities in the core area and buffer zone of the WHA. Law enforcement has effectively stopped the exploitation and trading of corals;
- **Role of NGOs:** international NGOs provide technical advice, training and capacity-building to the HLBMD and other decision-makers.

Key remaining issues for the Ha Long Bay World Heritage Area:

- Complicated and confusing legal and policy framework composing of various sectoral laws, regulations and plans, but there is a lack of efforts in surveillance and law enforcement;
- Lack of laws and regulations for controlling land-based pollution, an Integrated Coastal Zone Management Plan exists but has not been implemented;
- Lack of alternative livelihoods for fishermen in the floating village;
- Lack of information sharing between multiple inspectors;
- Conservation efforts currently focus on the aesthetic and geomorphological values of the Bay, more steer is needed from international and national agencies in addressing potential threats (*e.g.* fishing and pollutions) to biodiversity and ecosystem health;
- Lack of inter-agency cooperation particularly in managing land-based activities and pollution control;
- The HLBMD lacks strategic direction, capacity and institutional support to meet the multiple challenges raised in the management of the site. Currently most of its 290 members of staff are involved in cave and grotto management, and only a small number of staff are involved in managing on-water activities.

Os Miñarzos Marine Reserve of Fishing Interest (MRFI), Spain

Size of MPA: 2072 hectares
Year of establishment: 2007
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: managed primarily by local communities under collective management arrangements
Effectiveness scale: 3

Key message: the Os Miñarzos MRFI is an example of local users motivated and empowered through the use of economic, knowledge, and participative incentives to undertake an active role in MPA decision-making and management. The use of legal incentives has been instrumental in securing the user rights of local users, enabling the development of collective management arrangements, and providing effective law enforcement against potential free-riders. The management of the MRFI has been focused on enhancing the stocks of fishery resources; therefore initiatives to improve governance in the future can include the integration of broader ecosystem and biodiversity conservation objectives in MPA decision-making and management.

The MPA is located in Lira, a small fishing village located in Galicia (NW Spain), a region with an autonomous government (Xunta de Galicia). The fishing community of Lira is comprised of 33 small scale vessels, all managed by the local fishing corporation, who have legal powers to managed fisheries within defined territorial limits. The MPA is managed for multiple purposes, including sustainable fisheries management, biodiversity conservation and developing participatory models of fisheries management. The main threat to the MPA is overfishing, particularly illegal fishing by incoming fishers, driven by the modernisation of fishing fleets in the past 20 years and economic returns from illegal catches. The MPA was managed under the authority of Xunta de Galicia, and a management body was created to be responsible for the management of the site. The management body is comprised of equal numbers of representatives from the government and the fishing sector. Enforcement has been effective in controlling overall fishing efforts and eliminating sub aquatic fishing.

Key incentives applied in the MPA include:

- **Promoting economically and ecologically sustainable resource use, through spill-over effects and enhancing direct and indirectly use values from resources:** expected benefits of the MPA are the increase of revenue from enhanced fishing resources and the boost of tourism;
- **Allocation or reinforcement of community/user property rights:** non-tradable territorial user rights for fishers (TURFs) were introduced to limit access to fishery resources. To implement this new measure it was created a census in which fishers need to register to have the right to use the area. Such census is object of periodical renewal and it is required to fish in the area a minimum of days per year in order to keep the membership. The census is produced by the fishing authority based on the requirements established in the Decree of creation of the MPA;
- **Protection from incoming users:** the permanent surveillance of the MPA has practically eliminated the action of illegal fishers;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making and promoting mutual respect and collective learning between different knowledge owners**: scientists and fishers worked together in the design of the reserve and its implementation, as well as in the monitoring of the fishing activity by jointly collecting daily fisheries data. The partnership capacity between fishers and scientists facilitated the integration of scientific information with traditional knowledge of fishers in the design of the MPA;
- **Clarity and consistency in defining legal objectives of MPAs, jurisdictional boundaries, roles and responsibilities of different authorities and organizations:** the designation and management of the MPA have a clear legal basis, which provides for the territorial rights of the local fishing corporation and restrictions on fishing. In addition, in the designation process, words carrying connotations of conservation were avoided to prevent instant denial, instead the term 'fishing interest' was used to make clear that the focus of MPA management is to protect the interests of local fishers by enhancing resource sustainability;
- **Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users , including addressing driving forces – pressures from immigration, corporate mass tourism, fisheries market forces, *etc*.:** the surveillance of the area is done by Tragsa, a company in contract with the Autonomous Government of Galicia and coordinated by the management body of the MPA;
- **Participative governance structures and processes:** the proposal of this MPA was developed in partnership between fishers, scientists, an NGO and members of the autonomous government through different meetings

and workshops in a participatory process;
- **Building trust/social capital between different actors:** mutual trust between scientists and fishers achieved through years of previous teamwork was essential to the success of the process;
- **Leadership:** leadership from key individuals, such as an anthropologist from the University of Coruna and secretary of Lira's fishing corporation played a key role in the designation of the MPA;
- **Stewardship:** a key factor in the effectiveness of the MPA is the sense of ownership generated by stakeholder participation, protectionism from incoming users, use of local knowledge and provision of property rights.

A key issue for the MPA is:
- The MPA is now being managed primarily for fishery management purposes; however biodiversity conservation objectives are less well addressed.

Isla Natividad MPA, Mexico

Size of MPA: unknown
Year of establishment: 2005
Whether the MPA is a coastal/island/offshore site: island
Governance approach: managed by the government with significant decentralisation and/or influences from private organisations
Effectiveness scale: 3

Key message: economic incentives based on exclusive fishing rights for valuable fishery resources have been the key drive in the establishment and management of the MPA. In addition, funding received from private foundation to support enforcement activities, integration of scientific and local knowledge in MPA design and monitoring, a legal basis that provides for the concession rights of fishing cooperatives and sets conditions for the renewal of such rights, and partnership between the environmental NGOs and the local cooperative are all factors that contribute to the effectiveness of the MPA. Although governance approaches that build upon stewardship, patrimony, and the power and capacity of the local cooperative have been quite successful in this relative closed socio-economic system, changes will be needed if the MPA governance were to be more inclusive, equitable and adaptable, particularly considering growing interests from the state in developing tourism in the area.

The MPA is located in Isla Natividad, a remote and sparsely populated island in the Mexican state of Baja California Sur. The island is located within the Vizcaino Biosphere Reserve. The MPA is essentially a six-year agreement to fully protect three of 42 fishing grounds off the coast of the island, equivalent to approximately 4% of the entire fishing territory. The main objective of the MPA is to rebuild lucrative abalone populations in fishing grounds surrounding the island. The main activity being addressed through the establishment of the MPA is over-harvesting of valuable benthic resources. The MPA is mainly managed and enforced by the local fishing cooperative, who has been granted a 20-year renewable concession (till 2012) including exclusive fishing rights for abalone and other valuable benthic resources such as lobster, turban snail, and sea urchin. Assistance from NGOs and government institutions reinforced local fishery resource management initiatives. Enforcement seems to be very effective in stopping poaching.

Key governance incentives applied in the MPA include:
- **Promoting economically and ecologically sustainable resource use, through spill-over effects and enhancing direct and indirectly use values from resources:** reaping future economic benefits as a direct result of increased fishery performance was a main premise for creating the MPA. Not fishing in an area for a time is often understood by coop members and leaders as a kind of savings account in which, as long as enforcement is effective, provides a measure of security and simply increases in value the longer you wait to harvest it;
- **Allocation or reinforcement of community/user property rights:** the MPA was created by the local fishing cooperative within the waters of the cooperative's fishing concession encircling Isla Natividad. The exclusive fishing rights for valuable benthic resources provide the fundamental incentive for the cooperative to take actions to enhance the long-term sustainability of resources;
- **Improvements in local infrastructure and standards:** some of the profits from the abalone fishery in the MPAs were invested by the cooperative in projects such as improvements in electricity supplies;
- **Protection from incoming users:** the MPA is seen as a way to limit the increasing legal presence of out-

siders in the concession waters, *e.g.*'intrusion' by recreational diving or surfing expedition operators and tourists not hosted by the local fishing cooperative are seen as undesirable by cooperative members, who ultimately wish to capture additional income through conducting such activities themselves;

- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture' - undue influence on MPA governance that undermines the effectiveness of the MPA:** the Walton Foundation provided USD $100,000 per year for enforcement and surveillance to deter poaching inside and outside the reserve areas;
- **Integration of local/traditional/indigenous knowledge in MPA decision-making:** the experience-based environmental knowledge of participants from the cooperative has been used in designing and monitoring the MPA;
- **Promoting mutual respect and collective learning between different knowledge owners:** local users have worked extensively with NGOs and scientists in the process, *e.g.* workshops were used to pool local and scientific knowledge in choosing the control and experimental sites, and discussing reserve strategies. A lead biologist who is a member of the cooperative acted as liaison as needed between scientists and other interested parties;
- **Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc*:** Cooperative law in Mexico governs how coops should operate, and sets guidelines for basic elements such as democratic decision making and parameters for distribution of the coop's income. Fishing quotas are set by the government and concession renewal is contingent on stewardship of resources through cooperation in co-management and monitoring with government, enforcement to discourage poaching, and proactive efforts to rebuild abalone stocks;
- **Scope for flexibility - adaptive management and local discretionary action; maintaining, building on and working through local customary institutions, provided that this does not undermine the fulfilment of conservation objectives:** the local fishing cooperative, with funding and other assistance from external organisations, has been responsible for the enforcement of the MPA. The involvement of government in the MPA has been seen as a way to reinforce and legitimize local efforts;
- **Participative governance structures and processes and transparent participation and decision-making processes:** the general legitimacy of the cooperative and practices aimed at transparency and democratic decision making underpin the successful implementation of the MPA;
- **Building trust/social capital between different actors**: trust formed over time between the coop and COBI, the NGO mentioned previously, that subsequently facilitated implementation of the MPA and other partnerships for funding;
- **Role of NGOs:** the Mexican environmental NGO COBI played a key role in the establishment of the MPA and continues to partner with the cooperative in monitoring efforts.

Key issues for the MPA:

- Slow judicial system for penalising transgressors: only government agents can legally use arms and/or prosecute transgressors of the law. Delays, inefficiency and corruption in prosecuting poachers have resulted in tensions between the cooperative and government agents;
- Inequity: the power of fishing cooperative to exclude outsiders and those who are not members of the cooperative generate equity concerns. For example, the Mexican constitution indicates that anyone may use resources for subsistence, but from the perspective of the cooperatives this is the kind of loophole through which poaching occurs. Indeed, an MPA may be an effective way for the cooperatives to ensure that even "subsistence" use of resources like abalone is further limited;
- Existing governance arrangements, despite being successful in the current context, are vulnerable to changes in the wider socio-economic and political environment, such as changes in global markets and in the political will to renew concessions allocated to local cooperatives when they expire in 2012.

Great South Bay Marine Conservation Area, U.S.A.

Size of MPA (km²): 54 km²
Year of establishment: 2002-2004
Whether the MPA is a coastal/island/offshore site: island site
Governance approach: managed primarily by the private sector and/or NGOs granted with property/management rights
Effectiveness scale: 2

Key message: the Great South Bay Marine Conservation Area is an example of private conservation initiatives driven by a NGO the Nature Conservancy, which has been granted permanent property rights to the area. A range of economic, interpretative and participative incentives have been used to raise public awareness and support for conservation initiatives. The Nature Conservancy also played an active role in getting the area designated as a no-take shellfish management area through the enactment of a local ordinance. However, management of the areas has been hindered by the lack of legal mandates for the conservation of the area and government law enforcement, and a lack of integrated planning and environmental management in the Great South Bay, which may undermine the conservation efforts. Generating more political support and strengthening the legal basis for effective management and enforcement of the area will be essential for improving governance of the Great South Bay Marine Conservation Area.

The Great South Bay Marine Conservation Area is managed by a NGO (The Nature Conservancy, TNC), which has acquired the property rights for the submerged land within the conservation area to carry out conservation and ecosystem restoration work. The site has multiple objectives but management and restoration effects focus on conserving particular species (molluskin shellfish) and habitats (seagrass beds). The entire 54 km² site is best characterized as a Category IV Protected Area. Main threats to the conservation area include transient navigation/boating, harmful algal blooms and water quality degradation, sand mining, recreational finfishing and waterfowl hunting. As the owner of this private property, the Conservancy works on its own volition but in collaboration with public and private partners in managing the area. An advisory board, the Bluepoints Bottomlands Council, consisting of all of the relevant natural resources managers, stakeholders and scientists, has been established to develop long-term ecosystem restoration and management plans in the bay. Enforcement has generally been effective in prohibiting commercial and recreational shellfishing, the use of restricted fishing methods (dredges, *etc*), and the building of public or private structures (such as docks and bulkheads) within the Conservancy's property.

Key governance incentives applied in the MPA include:

- **Promoting economically and ecologically sustainable resource use, through spill-over effects and enhancing direct and indirectly use values from resources:** restocking in and spillover effects from spawner sanctuaries help improve the sustainability of shellfish fisheries in surrounding areas. In addition, estuarine habitats provide important ecosystem services such as water filtration;
- **Allocation or reinforcement of community/user property rights:** the Conservancy holds permanent property rights to the entire marine conservation area, which enabled the organisation to manage the area for conservation and ecosystem restoration purposes;
- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** millions of dollars in private/public partnerships have been invested in ecosystem restoration and conservation in the estuary. In its first year the project was all supported by private funding (from foundation and individuals) since that time there has been much public interest and the funding stream has been about 60% public funds (from federal, state, county, even township governments);
- **Promoting recognition of the potential benefits from well-managed MPAs:** education programmes promoting the recognition of ecosystem services provided by shellfishes are key governance incentives applied in the MPA;
- **Maximising scientific knowledge to guide/inform MPA decision-making:** applied research and monitoring guide conservation efforts in enhancing shellfish stocks and conserving seagrass habitats;
- **International-regional-national-local regulatory obligations that require effective MPA conservation, including the potential for top-down interventions:** the recent establishment of the area by the local town through an ordinance that makes the site a no-take shellfish management area allows local law enforcement to take action without the Conservancy's direct complaint as the underlying landowner whose private property rights are being infringed upon;

- **Participative governance structures and processes** through the establishment and participation on the Bluepoints Bottomlands Council, which is an organized group of public and private individuals who represent local, state and federal interests and are working together to create a long-term vision for Great South Bay;
- **Leadership from the Nature Conservancy** essential in generating financial and public support, and driving the whole process.

Key remaining issues for the Great South Bay Marine Conservation Area:

- Although from a legal perspective, TNC's private ownership of the area gives them the rights to regulate activities other than navigation and riparian rights of adjacent upland property owners, TNC currently chooses only to limited few uses (such as shell fishing, the use of certain fishing gears that may affect benthic habitats, and the building of public or private structures). TNC is concerned that if it attempts to regulate other activities (such as sport fishing), it would erode public support for existing conservation efforts and jeopardize relationships with government agencies;
- TNC does not carry out surveillance and enforcement on its own, rather it relies on local government agencies, who do not consider the enforcement of the site as a high priority;
- The lack of statutory, legally binding biodiversity conservation obligations renders it difficult for TNC to generate further government and public support for the conservation of the area;
- The lack of coordination and cooperation between multiple government agencies and different levels of governments in regulating activities in the Great South Bay.

Chumbe Island Coral Park, Tanzania

Size of MPA: 55 ha (33 ha Reef Sanctuary, 22 ha Forest Reserve)
Year of establishment: 1994
Whether the MPA is a coastal/island/offshore site: island site
Governance approach: managed primarily by the private sector and/or NGOs granted with property/management rights
Effectiveness scale: 4

Key message: in governing the Chumbe Island Coral Park, strong leadership from the private company the Chumbe Island Coral Park Limited enabled the use of different incentives and underlines the success of the MPA. Through the use of economic, interpretive and participative incentives, the company has successfully generated political and community support, as well as financial and institutional resources for the management of the park, which have sustained conservation efforts to date. Enforcement of regulations and rules has also been effective due to the small size of the park, a clear legal basis, and sufficient human and financial resources for surveillance and enforcement activities. However, the management rights of the company and hence the future of this conservation initiative will depend on government policies and the level of political support for the continued existence and development of the park. Strengthened political will and capacity for the enforcement of existing national environmental regulations will also offer legal protection to this conservation initiative.

The Chumbe Island MPA was established and managed by a private company, the Chumbe Island Coral Park Limited (CHICOP), which was founded in 1992 with the intention of developing a financially sustainable model of MPA management through revenues generated from ecotourism. The private park has been recognised by government laws and decrees, including the 1988 Fisheries Act, which established the Chumbe Reef Sanctuary as a closed fishing area. The management objective for the Park is 'to manage, for conservation purposes, the Chumbe Island Reef Sanctuary and the Chumbe Island Closed Forest Habitat. This includes educational and commercial activities related to the non-consumptive use of the above mentioned natural resources and the doing of all such other things as are incidental or conducive to the attainment of the above object'. Main threats to biodiversity conservation in the park include fishing, water pollution, introduced species, crown-of-thorn (COT) starfish and *Diadema* sea urchin outbreaks. The Park is managed by the CHICOP, who receives advice from an advisory board comprising of stakeholder representatives from the Government of Zanzibar departments, research institutions and adjacent villages. Due to its remote island status, relatively small size, and the application of different incentives, enforcement in the park has in general been quite effective in addressing the conservation objectives.

Key governance incentives applied in the Park:

- **Promoting economically and ecologically sustainable resource use, through spill-over effects and**

enhancing direct and indirectly use values from resources: enhanced biomass and density of commercial fish stocks within the no-take area and spill-over effects to surrounding fishing areas help improve sustainability of fishing;

- **Promoting alternative livelihoods and improvements in local infrastructure and living standards** through the provision of employment opportunities (CHICOP employs 200% more staff than the international average for ecolodges, 90% of the 43 staff members are Tanzanian nationals, 63% from local communities), education and capacity building for local employees, and creating market demand for local products and services;
- **Funding from private or NGO sources to promote the effectiveness of the MPA through the use of various incentives, provided that this funding does not lead to 'institutional capture':** profits generated from ecotourism are reinvested in supporting MPA management and Environmental Education programs (EE) in a sustainable manner**;**
- **Public education and awareness-raising:** CHICOP offers Environmental Education for fishers, government officials, teachers, students, tourism operators, the general public and all visitors. Up to mid 2009, over 4000 schoolchildren and 750 teachers have participated in this program;
- **Clarity and consistency in defining legal objectives of MPAs, general and zonal restrictions, jurisdictional boundaries, roles and responsibilities of different authorities and organizations:** the gazettement of the Chumbe MPA and Forest Reserve in 1994 by GoZ and Management Agreements give CHICOP exclusive management rights over Chumbe Island. The Management Plans 1995-2005 and 2006-2016 define objectives, activities, research regulations, and Do's and Don'ts both for visitors and staff;
- **Ensuring that sufficient surveillance technologies and financial resources are available to enforce all restrictions equitably on all local and incoming users, including addressing driving forces – pressures from immigration, corporate mass tourism, fisheries market forces, *etc*:** enforcement has been carried out by rangers employed from local communities to patrol the park, who have been assisted by armed police officers when arrests were necessary on a few occasions;
- **Participative governance structures and processes** through regular meetings with the advisory board and local communities;
- **Leadership from the CHICOP:** CHICOP's commitment to invest in conservation in an island considered too risky (both economically and politically) for NGOs and other investors underlines the success of the park, its leadership also critical in generating political support from high-level officials.

Key issues for the Chumbe Island Coral Park:

- Government policy favours big tourism corporate investors;
- Limited duration of land lease and management agreements entrusted to the CHICOP (20 years for the Chumbe Reef Sanctuary and 33 years for the Forest Reserve, both starting from 1994), there is no legal assurance that the lease and management contracts will be renewed after expiration;
- Insufficient political will to enforce environmental laws, such as the Environmental Management and Protection Act 1996, which would offer better legal protection for private conservation efforts, but also has some weaknesses in this respect.

Baleia Franca Environmental Protected Area (BFEPA), Brazil

Size of MPA: 1560 km^2
Year of establishment: 2000
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: no clearly recognisable effective governance framework in place
Effectiveness scale: 1

Key message: the BEFPA is governed mainly through participative incentives, with decisions taken through a management council. Participatory incentives alone, however, are evidently not sufficient to address the growing development pressure and conflicts between conservation and development. Key priorities for the BEFPA are to build the political will and state capacity for the effective enforcement of conservation regulations, and to develop the use of economic incentives to promote small-scale, community-based development initiatives. International and regional conservation treaties and cooperation in conserving migratory whale species can also play a role in enhancing national awareness and capacity for effective MPA management.

The BEFPA is located in the Santa Catarina State with nine coastal cities located in its vicinity. It was designated to protect the southern right whale *Eubalaena australis* and to promote the rational use of natural resources in the region for various activities. The site is facing multiple threats including inappropriate land use, mass tourism, destructive fishing practices, mining and shrimp mariculture, mainly driven by the growth in tourism and other economic sectors stimulated by different instances of municipal, state and federal government.. Management decisions in the BEFPA are taken through a multi-sectoral Management Council (MC) comprised of four technical chambers for land-use, fishery, tourism, and mining, which are mediated through the federal government agency ICMBio.

Key governance incentives applied in the BEFPA:

- **Participative governance structures and processes:** adopting participatory approaches in decision-making has helped foster trust and collaborations between BEFPA officers and resource users. In 2005/2006, members of the BFEPA MC received compulsory training on legal management instruments and integrated and participatory planning. The objective was to enable critical thinking about the implementation of participatory public environmental management processes;
- **Transparent participation processes and bringing 'neutral' facilitators to facilitate participative processes:** hiring of a fishery specialist and a communication consultant helped increase communications between MC counsellors and the local people they represent through the media, online blog *etc*;

Key remaining issues for the BEFPA:

- The financial and human resources allocated for MPA planning, management and enforcement are extremely limited (only 7 members of staff and an annual project budget of US $ 5,000-15,000) for a large marine and land area along 130km of coastline and including 10 cities;
- Lack of a well-structured & comprehensive management plan and legal basis for MPA management;
- Confusion over the authority and responsibility of different government agencies at federal, state and municipal levels in managing different activities and a lack of clear leadership from the state. The management agency ICMBio faces severe difficulties with its legal power to punish anyone who breaks environmental regulations;
- Lack of economic incentives to develop small-scale, community-based fisheries, mariculture and tourism activities, as alternatives to corporate fishing and tourism operations;
- The rising power of the corporate tourism sector and their growing resistance to sustainable tourism management;
- A potential role for international and regional cooperation in conserving migratory whale species (*e.g.* through the International Whaling Commission or CITES).

Pirajubaé Marine Extractive Reserve (Pirajubaé Marine RESEX), Brazil

Size of MPA: 1,444 ha
Year of establishment: 1992
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: no clearly recognisable effective governance framework in place
Effectiveness scale: 0

Key message: the Pirajubaé Marine RESEX is an example of government-driven economic development undermining both biodiversity conservation and the interests of traditional resource users, as well as the development of sound MPA governance arrangements. Main governance incentives applied in the MPA are interpretative and knowledge incentives, aiming at building local awareness and capacity for conservation and sustainable resource management, as well as forging the trust between local users and government institutions. Similar to the BEFPA, building the political will and state capacity for effective MPA management is a key priority for the Pirajubaé Marine RESEX. In addition, recognising the heterogeneity and complexity of local communities and engaging different community user groups in a fair and equitable manner will also be essential if the MPA is to be governed collectively by local stakeholders.

The Pirajubaé Marine RESEX was designated by the Brazilian federal environmental agency IBAMA in response to community interest from a small group of mussel fishermen in conserving local mussel resources and associated habitats. At the same time as the MPA was being designated, the DEINFRA (Santa Catarina State

Infrastructure Department) was issued an environmental license from IBAMA to claim the littoral zone in the area to shelter a coastal highway that connects the central part of the city to the international airport, which resulted in a significant loss of coastal habitats and traditional fishing grounds, as well as mistrust on public institutions (DEINFRA and IBAMA). The primary objective of RESEXs in Brazil is to protect local culture, including its productive practices closely related to natural resources. The impacts to be addressed in the management of the MPA include mussel extraction, small-scale fishing, crab fisheries, water pollution and housing expansion, mainly driven by urbanisation and the opening of external fish markets. According to official definitions, the designation and management of a RESEX should be shared by local stakeholders, with the balance of power favouring traditional populations. Governments' roles are limited to facilitating participatory processes and to guarantee that local economic activities do not affect the integrity of the natural environment. Due to high development pressure and a lack of enforcement, the effectiveness of the MPA has been very limited so far.

Key governance incentives applied in the Pirajubaé Marine RESEX:

- **Public communication, education and awareness raising on the importance/vulnerability of marine ecosystems and the benefits of the MPA:** an Environmental Education Program (EEP) has been delivered through two universities to disseminate information about the MPA and local environment;
- **Promoting mutual respect and collective learning between different knowledge owners:** in the past two years, the EEP's work has enabled a series of encounters amongst fishermen and between fishermen and scientists to stimulate the practice of knowledge sharing;
- **Leadership:** the appointment of two new MPA officers by the federal government agency, who are more open and committed to working with local players, has resulted in positive changes in MPA governance.

Key issues and challenges for the Pirajubaé Marine RESEX:

- The way the state has been trying to steer the local governance system is both contradictory (*e.g.* issuing the environmental licence for the highway to be built at the same time as the RESEX was being designated) and weak (*e.g.* no enforcement and control of incoming users);
- The lack of clear management structure and plan at local levels to guide the implementation of national environmental policies and regulations;
- The primary objective of the RESEX is to direct the flows and benefits of the MPA towards a given traditional community. However the heterogeneity of fishermen profiles and consequent lack of clear definition on who is the 'traditional community' raise recurrent discussions regarding the roles of different groups within the community and who are the main beneficiary of the RESEX, which may potentially lead to intra-community conflicts and inequity.

Cres-Lošinj Special Marine Reserve (CLSMR), Croatia

Size of MPA: 526.76 km^2
Year of establishment: initially designated in 2006, protection expired in July 2009
Whether the MPA is a coastal/island/offshore site: coastal
Governance approach: no clearly recognisable effective governance framework in place
Effectiveness scale: 1

Key message: the initial designation process of the CLSMR was mainly led an NGO, which in combination with Croatia's legal obligations to regional environmental conventions and agreements had succeed in generating sufficient political and local support for the site to be declared as a three-year 'preventative protection'. The expiration of the 'preventative protection' status resulted from a combination of factors, including the loss of political support for conservation in the area due to changing political leaderships at both national and local levels, a lack of funding and other government resources for MPA management, the lack of a clear legal framework and official definitions for the 'preventative protection' status, scientific uncertainty and contradictions raised on the importance of the area to dolphin populations and biased stakeholder participation processes, which were dominated by fishermen and other opposition parties. The delay in Croatia's accession to the EU also means that EC environmental regulations cannot be used effectively to strengthen MPA management. Key priorities for the CLSMR are to enhance national political will and capacity for effective MPA management, employing independent scientific advisors to legitimise the knowledge used to inform decision-making, and to engage stakeholders in a more open and transparent manner.

The CLSMR is located in the Cres-Lošinj Archipelago. It was granted a three-year 'preventative protection' by the Ministry of Culture in July 2006. Preventive protection is a proactive step established under the Nature Protection Act (2005), to protect an area that is considered as being under immediate threat. In 2006 this area was under immediate threat from the construction of a 380 berth marina in the small village of Nerezine located in the middle of the area. The CLSMR was designated to protect the population of bottlenose dolphin (*Tursiops truncatus)* as well as other protected species (turtle and birds) and their habitats. The main threats to the conservation of the area include physical and noise disturbances to dolphins from boat traffic, water pollution and fishing. The main drivers of these activities are growth in the local tourism industry, fishing subsidies and opening of the EU fish market. The 'preventive protection' has been effective in deterring the construction of the Nerezine marina to date, but the three-year protection status has expired in July 2009.

Key governance incentives applied in the CLSMR:

- **International and regional regulatory obligations that require effective MPA conservation:** The area is listed under various regional conventions such as the ACCOBAMS agreement and the Bern Convention and has been promoted as one of the future 'Natura2000' sites under the European Commission (EC) Habitats Directive. Croatia's obligation to regional conventions and agreements has been the main drive in generating national interests in developing the CLSMR. As Croatia is an EU accession country, the overarching national policy to harmonise with the EC Habitats Directive is also an important driver in the initial designation of the CLSMR. Whilst these obligations exist on paper, they have not yet been implemented, and the main hope for the CLSMR is that the Croatian government will be required to implement them as part of the accession process;
- **Public communication, education and awareness raising** through the establishment of the Lošinj Marine Education Centre, which provided a local focus for sustainable development and extra-curricular environmental education on the island. In addition, the Centre also serves as a tourism attraction and helps to promote local tourism;
- **Role of NGOs:** NGOs played a significant role in the initial designation of the CLSMR. In particular they have been active in providing scientific information, establishing and running the Lošinj Marine Education Centre, and lobbying at the international level.

Key issues and challenges for the CLSMR:

- Lack of political will for nature conservation at all government levels leading to no budget, management and enforcement in the CLSMR, as well as the expiration of its 'preventative protection' status;
- Loss of political support for the CLSMR due to changes of leadership at both state and local administrations;
- Lack of a clear legal framework and official definition on protection measures entailed in the designation of 'preventative protection' left the window open for local stakeholders to have fears for the potential restrictions the CLSMR might impose on them;
- The delay in Croatia's accession to the European Union, which would have been a significant drive for the Croatian government to strengthen nature conservation and MPA designation;
- Oppositions from the local mass tourism and fishing industry, and the proposal to build the Nerezine marina further increased the conflict between conservation and development;
- Loss of support from the media as conflicts arose, and the local Catholic Church also played a role in exacerbating the conflict between the CLSMR and local fishermen;
- Scientific uncertainty and contradictory information on the importance of the area to dolphins provided by different institutions undermine conservation efforts. There is a need to bring in independent scientific advisors to legitimise the knowledge used to inform decision-making;
- The stakeholder participation process has been highly selective and mainly dominated by most vocal groups such as the fishery and boat operator's guilds, who are opposed to the establishment of the CLSMR. A more open and transparent process will be needed to engage a broader spectrum of stakeholders.

APPENDIX 2 Full list of incentives

Full list of incentives (40), including those not cited as being applied or needed in this preliminary project. Those marked with an asterisk (*) are not cited as having been used and/or needed in this study amongst this initial trial sample of case studies. For the rest of the incentives, examples of their use in the case studies can be found in this report – see pages 19-23 for a list of the incentives against the case studies that used them.

Economic incentives

- Promoting sustainable fisheries by providing a refuge for marine organisms in no-take zones in order to safeguard and enhance harvests in adjacent fishing grounds through spill-over/export, insurance against uncertainty, increased resilience, *etc.*
- Promoting the 'green marketing' of tourism, fisheries, *etc.* products from the MPA to increase profits through price premiums.
- Ensuring that a fair proportion of the economic benefits arising from the extractive (fishing, *etc.*) and non-extractive (tourism, research, *etc.*) uses of the MPA flows to the local people, including active measures to reduce the 'leakage' of such benefits.
- Direct payments for the flow of ecosystem services provided by the MPA, i.e. marine REDD.*
- Seeking and promoting alternative livelihood and economic development opportunities that are compatible with the achievement of the biodiversity conservation objectives and can generate sustainable income for local people.
- Providing fair economic compensation for those users who carry costs as a result of restrictions on their activities that cannot reasonably be offset through alternative compatible opportunities, *e.g.* fisheries buy-outs, decommissioning schemes.
- Re-investing some of the MPA income that flows to the state to develop local facilities (schools, medical care, *etc.*) and infrastructure (roads and other transport links, electricity, water, *etc.*).
- Assigning property rights for certain marine areas and fisheries to appropriate groups of people to promote ownership, stewardship, rational self-interest in sustainable use, *etc.*
- Ensuring that a sufficient degree of state funding is available to support the governance of the MPA, particularly in relation to enforcement and the economic incentives listed above, whilst ensuring that such funding does not allow the state to 'capture' MPA governance by undermining the balance of power discussed below in relation to participation incentives.
- Seeking corporate and NGO funding through endowments to support the governance of the MPA, particularly in relation to enforcement and the economic incentives listed above, whilst ensuring that such funders cannot 'capture' MPA governance through an inappropriate degree and type of influence.

Interpretative incentives

- Using the media, champions and various interpretative approaches to overcome 'out of sight, out of mind' and alienation hurdles by raising the awareness of users, local people, relevant authority officers, politicians, *etc*. about the aesthetic values, ecological importance and vulnerability of marine biodiversity in terms of the species, habitats, ecosystems and 'landscapes' of the MPA.
- Promoting recognition of the potential resource benefits of the conserved areas in terms of spillover/export benefits for wider fisheries, insurance/resilience, *etc*., whilst being realistic about such potential benefits and not 'over-selling' them.
- Promoting recognition of and respect for the MPA's regulations and restrictions, including the boundaries

Knowledge incentives

- Explicitly recognising the challenges raised by scientific uncertainty and the importance of developing approaches to help reduce and address such challenges, *e.g.* establishing ground rules for the interpretation and application of the precautionary principle, decision-making under uncertainty, and adaptation in the light of emerging knowledge.
- Developing mechanisms for independent advice and/or arbitration in the face of conflicting information and/or uncertainty.
- Promoting mutual respect amongst local people and scientists for the validity of each other's knowledge and promoting collective learning through partnership research, research/advisory groups, participative GIS, participative workshops, *etc*. (*e.g.*conducting studies in collaboration with users on the patterns of biodiversity and resource use within MPAs, including trends).
- Maximising scientific knowledge to guide/inform MPA decision-making and monitoring/evaluation.

Legal incentives

- International-regional-national-local legal obligations that require effective MPA conservation, including the potential for top-down interventions.
- Adopting a sensitive but decisive approach to legal interventions to address basic conflicts that would otherwise undermine the fulfilment of marine biodiversity conservation objectives.*****
- Ensuring that sufficient national-local state capacity, political will, surveillance technologies and financial resources are available to ensure the equitable and effective enforcement of all restrictions on all local and incoming users, including addressing the **driving forces** of incompatible trends in exploitation activities **–** pressures from immigration, corporate mass tourism, fisheries market forces, *etc.*
- Clarity and consistency in defining the legal objectives of MPAs, general and zonal use restrictions, and the roles and responsibilities of different authorities and organizations.
- Performance standards/conditions/criteria/requirements related to the MPA's conservation objectives and attached to user/property rights, participatory governance structures, *etc.*
- Promoting clarity and openness concerning the jurisdictional limitations of the MPA legislation, *i.e.* recognising what driving forces, activities and impacts cannot be directly addressed by the MPA legislative framework and exploring means of addressing such factors.*****
- Employing legal adjudication and other formal and widely respected decision-making platforms to address and regulate conflicts.*****
- Scope for legal flexibility – adaptive management and local discretionary action – maintaining, reinforcing, building on and working through local customary institutions, provided that this does not undermine the fulfilment of conservation objectives.
- Effective judicial system for penalising transgressors in a way that provides an appropriate level of deterrence.
- Legal or other official basis for coordination between state and local authorities, and between conservation and other government agencies/law enforcement units, to address cross-jurisdictional and cross-sectoral conflicts in order to support the achievement of MPA objectives.
- Establishing legal provisions to ensure the transparency in MPA management processes, *e.g.* statutory requirements for public access to information, appeals, public hearings, *etc.*

Participative incentives

- Developing participative governance structures and processes that support collaborative planning and decision-making, *e.g.* user committees, participative GIS, postal consultations on proposals that provide for detailed feedback, participative planning workshops, *etc.*, including training to support such approaches.
- Delegating some roles, responsibilities and powers to local people through a clear management structure, whilst maintaining an appropriate balance of power between local people and the state in relation to the legal biodiversity conservation obligations. Managing expectations in this respect can be particularly important by being realistic about the degree of autonomy and influence that local people can expect.*****
- Clear rules on the means and degree of participation from different groups and the unbiased representation of all user groups in participation processes.
- Building trust/social capital) between different actors through transparency, face-to-face discussions, equity promotion, *etc.*, recognising that this can lead to an 'upward spiral' (Ostrom 1999) of cooperation and confidence that cooperation will be reciprocated amongst MPA users, whilst erosion of trust through lack of transparency, equity, enforcement, *etc.* can lead to a 'downward spiral.
- Strategically developing and strengthening linkages amongst relevant state authorities and key user representatives, including mutual trust, in order to promote the fulfilment of biodiversity conservation obligations and build resilient governance structures ('bracing' social capital; Rydin 2006).*****
- Transparent participation and decision-making processes, including about how user participation has affected decisions and why it may or may not have done, and being very clear and honest, once decisions are made, about the potential benefits and costs, as well as the restrictions imposed on certain users.
- Providing for participative enforcement, *e.g.* peer enforcement, community rangers/wardens, and promoting the potential for cooperation and peer enforcement through the development of a sense of ownership of the MPA and respect for related decisions.
- Promoting consistency with and respect for local traditions, customs, norms and practices, in so far as they are compatible with and contribute towards the fulfilment of marine biodiversity conservation objectives/obligations, recognising that compromises on both sides may need to be negotiated in such 'hybrid' institutions (Cinner & Aswani 2007).*****
- Providing for a degree of local protectionism from incoming users, recognising that use by incoming users often poses a major threat to local biodiversity and resources.*****
- Promoting recognition & realisation of the potential for a the participative governance of a given MPA to influence the higher-wider statutory framework, processes and obligations, *i.e.* that local users can have an influence on higher level institutions as well as being influenced by them - co-evolution.*****
- Bringing in 'neutral' facilitators to support governance processes and negotiations or training state employees to do so.
- Employing 'neutral' and widely respected panels to arbitrate on issues and recommend decisions.*****

www.unep.org
United Nations Environment Programme
P.O. Box 30552, Nairobi 00100, Kenya
Tel: +254-(0)20-762 1234
Fax: +254-(0)20-762 3927
Email: uneppub@unep.org
web: www.unep.org

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Governing Marine Protected Areas – Getting the Balance Right

Whilst there is currently much guidance available on how to manage marine protected areas (MPAs), there is less guidance available that considers MPAs from a governance perspective. This perspective poses a key question – how do we combine top-down, bottom-up and market approaches for reaching and implementing decisions in order to achieve effective and equitable MPAs? It is widely accepted that all three approaches are important, but how might they be combined in different MPA contexts?

The need to address this question has led to a new partnership among a group of governance experts and MPA planners and managers to initiate development of guidance on governing MPAs in seas under national jurisdiction. 20 MPA case study from around the world have been brought together and subjected to detailed analysis employing a new governance analysis framework, 'deconstructing' the complexities of MPA governance employing 40 incentives from five categories.

This Technical Report describes the findings of this work. It is intended to provide a foundation for further discussion and learning, employing the governance analysis framework in different planning scenarios, to provide a preliminary resource for MPA managers to consider how different incentives might be combined to support the governance of their MPA.