

Ocean and Fisheries Economics

Our work

Using economic instruments and harnessing market forces we are working to address threats faced by marine and coastal fisheries, and the people who depend on them, and to help shape policy options for realising the Sustainable Development Goals.



In brief

IIED's research programme looks at the use of innovative economic solutions to address the problems facing the fisheries sector, and to support healthy marine and coastal ecosystems and resilient fisher communities. We want to enhance understanding not only of the contributions that fisheries make to economic growth and the livelihoods of millions of people who depend on them, but also of the potential impacts of climate change on fisheries and the implications for food security. We identify and promote incentive mechanisms that align ecological and economic outcomes in equitable ways. In this way, we want to inspire, inform and influence people who have the power to make positive changes, including fishermen and women, governments, scientists, private enterprises and consumers.

Why now?

Marine and coastal resources provide millions of impoverished people across the world with livelihoods, and provide a range of critical 'ecosystem services', from biodiversity and culture to carbon storage and flood protection, recreation and amenity opportunities. One billion people in the world rely on fish as their main or only source of animal protein, and more than 300 million are directly or indirectly employed by the fisheries sector. But global fish stocks are under threat from overfishing, pollution, habitat destruction and climate change. Despite their importance to large numbers of people around the world, fisheries have been ignored by mainstream policymakers for too many years because:

- Most of the world's fish is supplied by small-scale fisheries, particularly in developing countries, which are often not accounted for in national statistics.
- Misallocation of incentives and investments, compounded by ill-defined property rights, in which short-term profits come at the expense of long-term viability.

The consequences of continued inaction could now be catastrophic. Unless threats to marine and coastal fisheries are reversed, millions of livelihoods could be lost and numerous communities will have reduced access to a staple food that they rely on for their survival.

In a recent development, national governments have agreed to implement the Sustainable Development Goals (SDGs) – which calls on member states, among other things, to “conserve and sustainably use the oceans, seas and marine resources for sustainable development.” Therefore, it is more timely now than ever to discuss these issues and bring them to the forefront of the debate.

Our ambitions

We aim to promote and support healthy and resilient marine and coastal fisheries for present and future generations. We will carry out collaborative research that aims to address the problems and potentials facing fisheries and propose solutions. Our research questions will include:

1. What is the **economic value** of marine and coastal ecosystems and small-scale fisheries?

2. How to employ **incentives** that align ecological and socio-economic outcomes for sustainable fisheries management?
 3. How to ensure **financial sustainability** for fisheries management through innovative financing mechanisms, including but not limited to fiscal reforms, fund management and impact investment?
 4. What policy instruments enable national governments **advance Goal 14 of the SDGs** in a cost-effective and equitable manner – so that fishers are not left behind and they are able to actively participate in and benefit from employment and income opportunities?
- **Improved understanding among policymakers of the economic value of marine and coastal ecosystems** in general and small-scale fisheries in particular and their contribution to local livelihoods.
 - **Enhanced knowledge and understanding on inclusive policies** for sustainable fisheries management so that fishers are not left behind.
 - **Greater dialogue** between fisheries experts, fishermen and women, policymakers, investors and consumers, fostered in part through our online community FishNet.

National and regional workshops on fisheries issues and economic solutions.

We will help policymakers and private enterprises to understand the importance of fisheries to local economies and livelihoods. We will make a compelling case why investments in marine and coastal ecosystems deliver both ecological and financial returns.

Platforms for dialogue and information sharing.

We will create virtual and physical platforms where interested groups and individuals can share information and debate issues that are affecting the sector.

Outcomes

The programme will look at all the issues on a global scale. Our work will be focused on developing cost-effective policy instruments that will enable national governments meet Goal 14 of the SDGs. Key outcomes will include:

- **Increased use of economic incentives for sustainable fisheries management** that align social and ecological outcomes. These include: payments for ecosystem services, certification schemes and other market-based instruments.



(www.fishnet.ning.com)

FishNet is a growing online community set up by IIED for people who are interested in sustainable fisheries. It aims to bridge traditional disconnect between scientists, policymakers, practitioners, fishers, and consumers and allows them to share knowledge and information on fisheries development and sustainability in a more interactive fashion. We aim to:

- demystify complex theories and scientific findings, to make them accessible to policymakers and consumers and thereby promote informed decision making and fisheries literacy
- create space that allows our members to share hard-earned lessons, and
- inspire change to create fisheries that work for today as well as the future.

Who we are

IIED promotes sustainable development, linking local priorities to global challenges. We support some of the world's most vulnerable people to strengthen their voice in decision making.

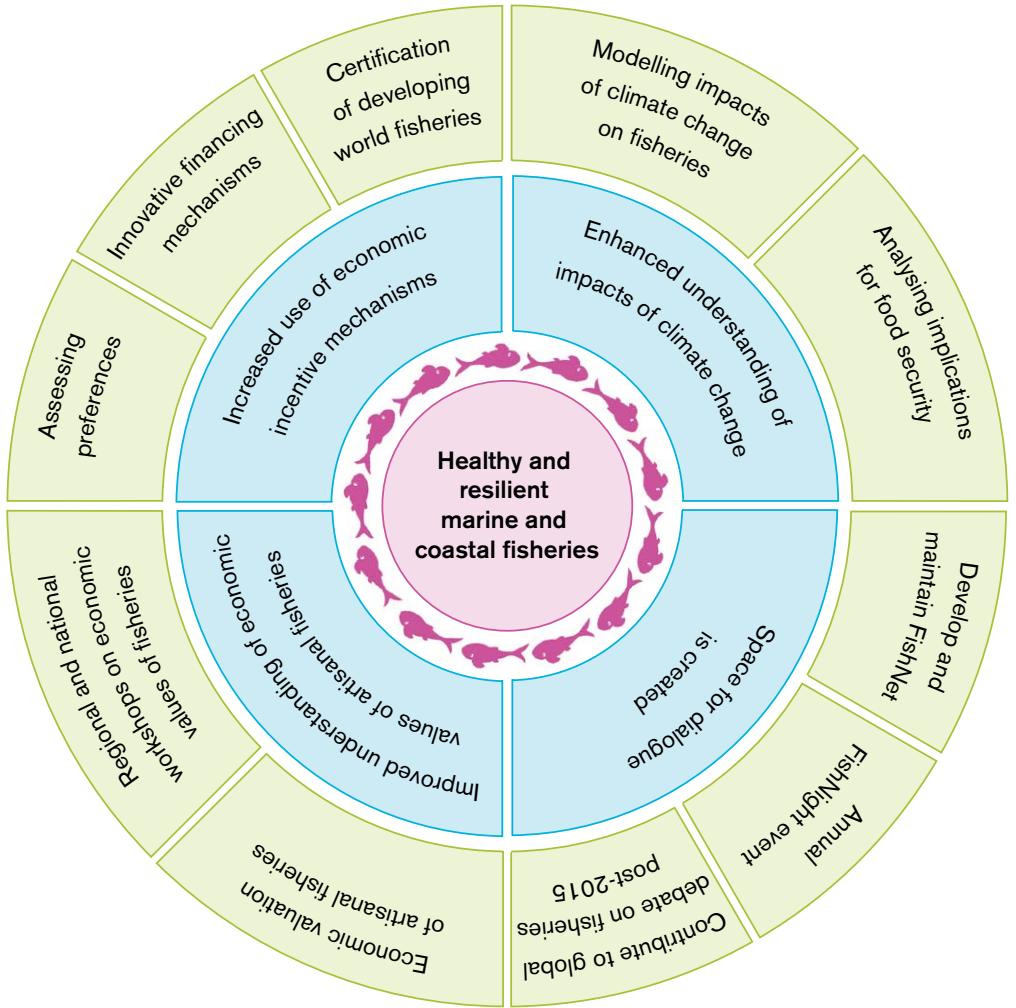
IIED's environmental economics team has extensive experience in designing and reviewing the use of economic incentives and in analysing market forces to deliver both ecological and social objectives. In partnership with our partners, we also have a long history of creating spaces for dialogue, which we are increasingly applying to the fisheries sector. We are well-positioned to lead and coordinate the research in the use of economic instruments for ocean and fisheries management.

Partnerships: We are currently working with key partners in the fisheries sector across the globe including: the Bangladesh Centre for Advanced Studies – BCAS (Bangladesh), Bangladesh Agricultural University (Bangladesh), WWF-UK, WWF Coastal East Africa Initiative, Marine Stewardship Council (UK), Centro de Derecho Ambiental y de los Recursos Naturales – CEDARENA (Costa Rica), MRAG (UK), Imperial College Conservation Science – ICCS (UK), University College London – UCL (UK), Institute for Environmental Studies – IVM (the Netherlands), WorldFish (Malaysia).

We are in the process of identifying 'champions' who would be keen to co-own FishNet and support it to grow.

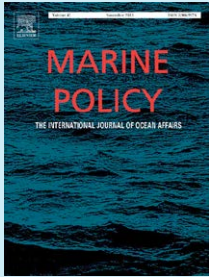


Our programme activities mapped



Fish Knowledge Basket

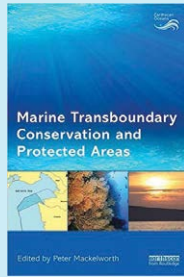
Some of our knowledge products include:



Economic incentives for sustainable hilsa fishing: An analysis of the legal and institutional framework.
Monirul Islam, Essam Yassin Mohammed, Liaquat Ali. 2016.

Since 2003, following a sharp decline in catch figures, the hilsa fish has been the subject of a government conservation programme offering fishers economic incentives or payments for ecosystem services (PES). While PES schemes are widely used to conserve natural resources such as forests and watersheds, Bangladesh's programme is a rare example of PES for sustainable fishery management. This paper analyses the conservation scheme's legal and institutional frameworks, identifying challenges to its design and implementation, and makes recommendations to overcome them.

Download free at:
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Harnessing market forces for financial inclusion in marine and coastal conservation: Lessons from market systems development approach. Uraguchi, Z. B. and Mohammed, E. Y. Forthcoming in 2016.

One of the most critical ingredients or conditions for success for effective incentive-based management schemes is the ability of natural resources users to have access to finance. Often, when payments or compensation packages are provided they are either insufficient or are provided in-kind. This forces most fishers to borrow money to offset losses in earnings, or to cover costs of repairs to boats and gears, which can lead to the use of unsustainable fishing practices. Therefore, in order to enhance the effectiveness of incentive-based marine resources management, addressing this critical and key constraint is crucial. In this chapter, we discuss how this critical design essential can be addressed using market systems development approach.



Impacts of climate change on fisheries: Implications for food security in sub-Saharan Africa. In Hanjra, M.A. Global food security: Emerging issues and economic implications. Mohammed, E. Y. and Uraguchi, Z. B. 2013.

This chapter seeks to examine the contribution of fisheries to poverty reduction and food security, and portray the potential impacts of climate change on the already strained resource in Sub-Saharan African (SSA) countries. While the importance of fisheries to national economies is often understated, the impacts of climate change on the sector and its implications for the socio-economics of the coastal and riparian communities are difficult to ignore. This chapter provides a review of potential physical and biological impacts of climate change on fisheries by giving specific examples from SSA countries.

Download free at:
<http://pubs.iied.org/G03625.html>



Payments for ecosystem services in developing world fisheries. *Fish and Fisheries*. Bladon, A., Short, K., Mohammed, E. Y., and Milner-Gulland, E. J. 2014.

Payments for Ecosystem Services (PES) is a powerful economic tool that gives positive conditional incentives for the provision of additional ecosystem services over the status quo, which has been used widely in terrestrial conservation. Interest in the concept of marine PES has recently emerged, but the fluid, transboundary and often common pool nature of marine ecosystems presents challenges for PES design and implementation. Here, we consider the potential role of PES in addressing current gaps in fisheries management. Used in combination with conventional regulatory approaches, PES may increase private sector engagement and generate more sustainable financing for fisheries management whilst spreading accountability throughout the supply chain.

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Economic incentives for marine and coastal conservation: prospects, challenges and policy Implications. Mohammed, E. Y. (Ed.). 2014.

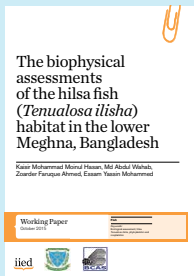
This book shows how economic instruments can be used to incentivize the conservation of marine and coastal resources. It is shown that traditional approaches to halt the decline focus on regulating against destructive practices, but to little effect. A more successful strategy could be to establish schemes such as payments for ecosystem services (PES), or incorporate an element of financial incentives into existing regulatory mechanisms. Examples, both terrestrial and marine, from across the world suggest that PES can work to protect both livelihoods and environments.



Food and feeding ecology of hilsa (*Tenualosa ilisha*) in Bangladesh's Meghna River basin. Hasan, H. M., Wahab, A., Ahmed, F. Z., and Mohammed, E. Y. 2015.

Hilsa shad (*Tenualosa ilisha*) is one of the most important tropical fish of the Indo-Pacific region, especially in Bangladeshi waters. The hilsa fishery has declined significantly since 2002 mainly due to overfishing, habitat destruction and pollution; the Government of Bangladesh and researchers are therefore working to ensure its sustainable management. This study on hilsa food and feeding ecology offers essential information for policymaking and the effective management of the hilsa fishery. It is based on a year-long study of hilsa specimens collected from the Meghna River at Chandpur across a range of age groups, from fry to adult. An analysis of the specimens' gut contents, and of the water itself, identified a range of phytoplankton and zooplankton genera; it also established the hilsa's food preferences at various stages in the life cycle using Ivlev's 'electivity index'.

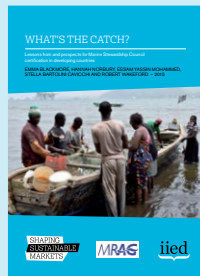
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The biophysical assessments of the hilsa fish (*Tenulosa ilisha*) habitat in the lower Meghna, Bangladesh. Hasan, H. M., Wahab, A., Ahmed, F. Z, and Mohammed, E. Y. 2015.

The common Indian shad 'hilsa' (*Tenulosa ilisha*) is the most important anadromous fish species of Bangladesh that migrates through the Padma-Meghna River systems. A study was carried out between January and December 2014 to assess the physical, chemical, and biological parameters of the habitat of the hilsa fishery areas. While the parameters were found to be at 'acceptable' levels, some measures are needed to improve the quality of water to ensure successful migration and reproduction of the hilsa fish. Efforts must be made to minimize, or where possible, eliminate non-fishing related stresses such as siltation and pollution and integrate them into the overall hilsa fisheries management action plan.

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What's the catch? Lessons from and prospects for the Marine Stewardship Council certification in developing countries. Blackmore, E., Norbury, H., Mohammed, E. Y., Bartolini Cavicchi, S. and Wakeford, R. 2015.

Worldwide fish stocks are of enormous importance to the global economy, livelihoods and food security, contributing about US\$274 billion to global gross domestic product per annum. Fishing is particularly important in developing countries, where over half of the world fish catch originates. But almost 29 per cent of fish stocks are now estimated to be fished at a biologically unsustainable level. Among the certification schemes offered as market-based incentives for sustainable fishing, the Marine Stewardship Council's standard is the most extensive, representing nine per cent of global capture production. Yet only eight per cent of the world's certified fisheries are from developing countries, and even fewer are small-scale. This report assesses barriers and drivers to certification for small-scale developing world fisheries, as well as the environmental and socio-economic impacts of MSC certification. It also outlines future research needed to understand what factors will allow more fisheries to overcome the challenges of achieving MSC certification.

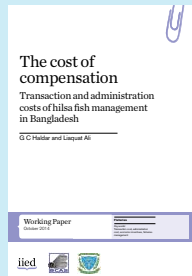
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Mitigating unintended local economic impacts of the compensation scheme for hilsa management. Mohammed, E. Y., Chowdhury, S. A., and Ali, L. 2015.

Management of Bangladesh's hilsa fishery is moving from regulatory regimes that often ignore the short-term cost imposed on fishers to an approach that combines regulations with incentives or compensation packages. This approach offers a major breakthrough, but needs careful design to minimise, and where possible eliminate, unintended negative socioeconomic consequences beyond the fishery. Even though unintended local impacts are often short term or seasonal, their effect on vulnerable and less resilient communities can be significant. This briefing discusses the hilsa fishery and suggests ways to ensure management through seasonal closures does not damage other aspects of the local economy.

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The cost of compensation: Transaction and administration costs of hilsa fish management in Bangladesh. Haldar, G. C., Ali, L. 2014.

The government of Bangladesh has introduced an economic incentive mechanism to sustainably manage the country's hilsa fishery – a sector that provides 450,000 fishers with their main livelihood and accounts for about 1 per cent of Bangladesh's gross domestic product (GDP). Under its hilsa management plan, fishing is banned for several months a year in a number of sanctuary areas, and during these periods affected fisher households are offered food assistance and support for alternative income generation activities. While economic incentive mechanisms of this kind have been hailed as the most cost-effective and efficient way to manage natural resources, their efficiency depends on how much the incentives cost to implement. This paper investigates the transaction and administration costs of delivering economic incentives under the hilsa management plan in Bangladesh, in order to better understand what costs are incurred and why; and offers some recommendations to improve the scheme.

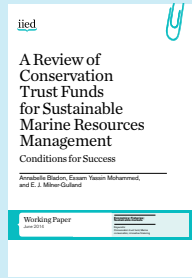
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Payments for coastal and marine ecosystem services: Prospects and principles.
Mohammed, E. Y. 2012.

Coastal and marine resources provide millions of impoverished people across the global South with livelihoods, and provide the world with a range of critical 'ecosystem services', from biodiversity and culture to carbon storage and flood protection. Yet across the world, these resources are fast-diminishing under the weight of pollution, land clearance, coastal development, overfishing, natural disasters and climate change. Traditional approaches to halt the decline focus on regulating against destructive practices, but to little effect. A more successful strategy could be to establish payments for ecosystem services (PES) schemes, or incorporate an element of PES in existing regulatory mechanisms. Examples from across the world suggest that PES can work to protect both livelihoods and environments. But to succeed, these schemes must be underpinned by robust research, clear property rights, equitable benefit sharing and sustainable finance.

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A Review of Conservation Trust Funds for Sustainable Marine Resources Management: Conditions for Success. Bladon, A., Mohammed, E. Y., and Milner-Gulland, E. J. 2014.

Conservation Trust Funds (CTFs) are a source of sustainable financing for long-term biodiversity conservation, in particular for protected areas management. Through a review of 12 case studies from Africa, Asia, Latin America, the Caribbean, and Australasia, this research report provides a broad overview of how to create a CTF, describing its legal and institutional structure, fund generation and delivery, and identifying when it might be an appropriate tool. The lessons learnt from the case studies provide guidance on best practice and an insight into the conditions for the sustainability and success of the funds, and thereby their value to conservation.

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Direct economic incentives for sustainable fisheries management: the case of Hilsa conservation in Bangladesh. Mohammed, E. Y. and Wahab, A. 2013.

A scheme offering payment for Hilsa conservation in Bangladesh offers a rare example of a direct economic incentive mechanism being used for sustainable fisheries management. Hilsa is one of the most important single-species fisheries in the Bay of Bengal. More than half a million people depend on it for their livelihood and 250 million Bengali people depend on it for nutrition.

This study examines how a direct economic incentive mechanism can complement regulatory fisheries management approaches. We explore the merits of the Bangladesh scheme, but argue that its effectiveness could be enhanced by an improved understanding of the complex socioeconomic and ecological systems underpinning the fishery. Such schemes need to accurately identify the beneficiaries of the scheme, design the right compensation packages, and empower local fishing communities to monitor and enforce compliance. Better regional co-operation between the three countries which make up the Bay of Bengal (Bangladesh, India, and Myanmar), will also be vital to the conservation of the Hilsa fishery.

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<http://pubs.iied.org/16527IIED>



Fisheries and the post-2015 development agenda. IIED briefing papers. Mohammed, E. Y. 2014.

Marine ecosystems support a diversity of living resources that sustain the livelihoods of millions of people. Fish trade provides an important source of revenue to service international debt, fund national governments, and pay for food imports for domestic consumption in many developing countries. But world fish stocks are running dangerously low. If current trends continue, we are likely to see 'fishless oceans' by 2050 and millions of livelihoods lost. Therefore, as countries debate and define goals and targets for development after 2015, fisheries must be central to the agenda.

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Get involved

There are many ways to get involved with this work and stay in touch: Visit **www.iied.org/fisheries** and work with us to ensure the programme best meets your needs. Email us with your ideas and feedback.

Sign up to FishNet – www.fishnet.ning.com.

You will be able to interact with other people with an interest in fisheries, share information and play your part in achieving our common goal of creating healthy marine and coastal ecosystems and resilient fisher communities.

Get in touch – eymohammed@iied.org

About our funders

We are grateful to the following funders for their support over the last year

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