



# FACTSHEETS TII

THE ECONOMICS OF ECOSYSTEMS  
AND BIODIVERSITY-INDIA INITIATIVE



**FORESTS**



**INLAND  
WETLANDS**



**COASTAL  
AND  
MARINE  
BIODIVERSITY**



Ministry of Environment, Forest  
and Climate Change  
Government of India



**giz** Deutsche Gesellschaft  
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Zusammenarbeit (GIZ) GmbH



सत्यमेव जयते



FOREWORD

With just 2.4% of the world's land area, 17% of the global human population as well as a large livestock population, India yet accounts for nearly 7-8% of all globally recorded species. We are a mega-diverse country seeking economic development while maintaining the integrity of our biodiversity and ecosystem services. We need to ensure that our natural capital is maintained so that ecosystem services continue to support both human well-being and socio-economic prosperity.

In 2011, the Ministry of Environment, Forest and Climate Change launched 'The Economics of Ecosystem and Biodiversity – India Initiative (TII)' with the goal of making the value of India's natural heritage explicit and for factoring such values into economic development planning. Fourteen projects were commissioned under TII, with multi-disciplinary teams mentored by eminent ecologists and economists, to ensure balanced application of methodological approaches within the relevant ecological and development context of each case study site.

I am now pleased to present here the fourteen factsheets that offer insights that are authentic based on a robust methodology yet startling in their revelation of the true worth of our natural capital. For instance, some of the TII case studies have shown that:

- During its life time, a single vulture provides scavenging benefits worth around ₹695,000. In absence of these natural scavengers, India will have to build carcass disposal plants in virtually each of our villages and cities. It makes better economic sense to invest in vulture conservation instead of investing in carcass disposal plants!
- Ecosystem services (timber, fuel-wood, NTFP, carbon, recreation) from just 10 sq. km. of the Western Ghats forests are worth over ₹23 million. Failure to recognize these values would lead to distorted policies with detrimental environmental and human consequences.
- Loktak Lake in Manipur provides US\$3 million worth of water for hydropower generation. However, this value is not accounted for in hydropower pricing. Factoring biodiversity and ecosystem services values in Loktak Lake will make water management more efficient
- Every ₹invested in Chilika restoration has sustained ₹5 worth ecosystem services benefit.

I compliment all the TII case studies investigators for presenting the economic benefits of biodiversity, growing costs of biodiversity loss and ecosystem degradation, and drawing together expertise from the fields of science, ecology, economics and policy to find practical solutions.

Contribution of the following persons is also appreciated: Dr. Kirit Parikh (Chairman, Scientific and Technical Advisory Group of TII and former Member, Planning Commission), Mr. Hem Pande (Special Secretary, MoEFCC), Dr. J. R. Bhatt (Scientist 'G', MoEFCC) and Mr. Edgar Endrukaitis (Programme Director, GIZ) for their guidance and support to the TII case studies. I would like to thank the Federal Ministry for Economic Cooperation and Development (BMZ), Government of the Federal Republic of Germany and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH for their support to the TII process.

I am sure the fact sheets would not only provide interesting facts and figures, they will also motivate us all to conserve our biodiversity for the significant services and benefits they provide.



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# FISHING HOLIDAY



PHOTO: R NARAYAN KUMAR

Millions of fishers along India's vast coastline eke out a living, contribute to national development and are learning to cope up with conservation of marine resources. Seasonal Fishing Ban (SFB) has been followed since the late 80's to protect breeding fish population during peak spawning season. An economic valuation of SFB in five of the maritime states shows improved ecosystem services in the form of catch, fisher income, biodiversity, respite to the sea floor and reduced carbon emissions. These benefits outweigh the costs of a ban.

The Economics of Ecosystems and Biodiversity - India Initiative (TII) aims at making the values of biodiversity and linked ecosystem services explicit for consideration and mainstreaming into developmental planning.




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**SEASONAL FISHING BAN RESTORES COASTAL ECOSYSTEMS AND SUPPORTS FISHERIES**

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## Findings

- About **10.36 million** fishing hours are reduced due to SFB, equivalent to **408,000 tonnes** of CO<sub>2</sub> emitted and a savings of **156.58 million litres** of diesel.
- In 2014, an amount of **₹8.3 billion** (US\$ 137m) was saved on diesel during fishing ban.
- The estimated economic value (based on landing price) of the incremental growth of fish attained due to a fishing ban of **45-60 days** was a total of **₹1.07 billion** (US\$ 18m) in the five states.
- The transaction cost, which includes information to fishermen and enforcement of the ban amounts to **₹45.78 million** (US\$ 0.76m) in the five states.
- Estimated net social benefit due to SFB in five states was **₹1.09 million** (US\$ 18,167).

## Recommendations

- SFB may be strengthened to facilitate sustainability of resources, increase in catch and fisher income.
- Extend research to other maritime states not considered under this study.
- SFB should be combined with other management measures, such as an ecosystem-based approach, marine protected areas, no-take zones, regulated entry, catch quotas, certification, protection of endangered species, mesh size regulation and minimum legal size at capture.
- Create awareness among fisherfolk about sustainability.
- Regular monitoring and impact assessment.

### Implementing Partner



Central Marine Fisheries  
Research Institute  
[www.cmfri.org.in](http://www.cmfri.org.in)

**Based on** Economic Valuation of Seasonal Fishing Ban on Marine Fisheries Services in Selected Maritime States of India.

**Researchers:** Dr R. Narayana Kumar, Dr J. Jayasankar, Dr Shyam S. Salim and Dr (Smt.) U. Ganga  
**Technical Advisor:** Dr E. Vivekanandan, Emeritus Scientist & Consultant (CMFRI, Kochi).

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## India, a Biodiversity Hotspot

India is one of the 17 mega-diverse countries in the world. It faces unique circumstances as well as challenges in the conservation of its rich biological heritage. With only 2.4% of the world's geographical area, her 1.2 billion people co-exist with over 47,000 species of plants and 91,000 species of animals. Several among them are keystone and charismatic species. In addition, the country supports up to one sixth of the world's livestock population. The rapid growth of her vibrant economy as well as maintaining its natural capital are both essential to maintaining ecosystem services that support human well-being and prosperity.

## Indo-German Biodiversity Programme

The Ministry of Environment, Forest and Climate Change, Government of India is collaborating with the Federal Ministry for Economic Cooperation and Development (BMZ), Government of Germany and the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB), Government of Germany. The Indo-German Biodiversity Programme comprises the following:

- The Economics of Ecosystems and Biodiversity - India Initiative (TII)
- India Business and Biodiversity Initiative (IBBI)
- Conservation and Sustainable Management of Existing and Potential Coastal and Marine Protected Areas
- Himachal Pradesh Forest Ecosystem Services Project
- Access and Benefit Sharing Partnership Project

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