Executive Summary

Scope of Indian fisheries management:

- Total Indian population - 1,147,995,898 (July 2008)
- Fish - Source of cheap and nutritious food
- Fisheries - Livelihood > 14 million people - Employment generator – Socio-economic development – Stimulates growth of subsidiary industries
- Five year plans
- Indian institutions – conservation of natural resources and biodiversity with local community through education campaigns public participation and joint participation – bringing important funds to uplift living standards
Challenges:

- Fish stocks depleted → Food insecurity → Unemployment → Poverty → Intra and inter conflicts between fishermen and industries
- Accurate data on assessment of fishery resources and their potential of fish production
- Development of sustainable technologies, yield optimization
- Harvest and post-harvest operations, landing and berthing facilities
- Welfare of fishermen:
  - marginalization, lack of awareness and communication
  - lack of equity and power sharing, empowerment of resource users
- Non-conducive national policy and legislative frameworks
- Insufficient institutional linkages
- Lack of personnel with requisite capacity
- Funding
Recommendations:

- Amendment/upgradation of existing acts in tune with Code of Conduct for Responsible Fisheries (CCRF) and other legal instruments.
  
  Marine Fishing Regulation Act (MFRA)
  Maritime Zones of India (Regulation of fishing by foreign vessels) Act, 1981

- International agreements: Acceded 1995 UN Fish Stock Agreement - yet to accede 1993 Compliance Agreement.

- Regional Fisheries Management Organization / Arrangements (RFMO/As)

- Framing of a ‘marine fisheries management model’ for fishery resources (including depleted stocks) in Exclusive Economic Zone (EEZ) - based on CCRF and other legal instruments.

- National Plan of Action (NPOA) for fishing capacity, sharks, sea birds and Illegal, Unreported and Unregulated (IUU) Fishing.
Contents

1. Physical profile and status of fisheries
2. Fisheries law and policy
3. Conclusion and recommendations
1. Physical profile and status of fisheries

Latitudes 80° 4' N and 37° 6' N
Longitudes 68° 7' E and 97° 25' E

Neighbouring Countries:
North-west : Afghanistan & Pakistan
North-east : China, Bhutan & Nepal
East : Myanmar & Bangladesh
South : Sri Lanka

Total area – 3.29 M km²
Coastline – 8,118 km
EEZ – 2.02 M km²
Continental shelf area – 0.53 M km²
Fish production – 6.57 Mt (Mar. 2.82)
Export (fisheries products) – 0.55 Mt
GDP from fisheries - $7,108 M
(1.07% of total)
Fishing crafts – 0.2 M
Physical profile

Exclusive Economic Zone (EEZ) of India
Status of fisheries

Fish Production by Source

1950 - 51

- marine contribution decreasing

1979 - 80

2005 - 06

Marine 71%

Marine 64%

Marine 43%

Inland 29%

Inland 36%

Inland 57%

- marine contribution decreasing
### Status of fisheries

**Fish stock depletion**

<table>
<thead>
<tr>
<th>Species</th>
<th>Marine Fish Landings (in tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2000</strong></td>
<td><strong>2005</strong></td>
</tr>
<tr>
<td>1. <em>Hilsa ilisha</em> (Tenualosa)</td>
<td>47500 35560</td>
</tr>
<tr>
<td>2. <em>Sardinella longiceps</em> (Indian Oil Sardine)</td>
<td>3327425 271759</td>
</tr>
<tr>
<td>3. <em>Scomberomorus</em> (Seerfish)</td>
<td>42277 40354</td>
</tr>
<tr>
<td>4. <em>Auxis thazard</em> (Frigate and Bullet Tuna)</td>
<td>8743 6403</td>
</tr>
<tr>
<td>5. <em>Katsuwonus pelamis</em> (Skipjack Tuna)</td>
<td>23360 7019</td>
</tr>
<tr>
<td>6. <em>Rastrelliger kanagurta</em> (Indian Mackerel)</td>
<td>78821 54149</td>
</tr>
<tr>
<td>7. <em>Thunnus albacare</em> (Yellow Fin Tuna)</td>
<td>7711 967</td>
</tr>
<tr>
<td>8. Penaeid Shrimp</td>
<td>204587 141523</td>
</tr>
</tbody>
</table>

*Note: The table shows the marine fish landings (in tonnes) for different species in the years 2000 and 2005.*
Status of fisheries

How did we reach here?

 Advances in Fishing Technology

 High-Efficiency Fishing Practices

 Need for Greater Efficiency

 Lower Fish Populations

 Wasteful Usage

 Higher Catches

 Greater Food Abundance

 Lower Profits

 Lower Market Prices

 Start here
Status of fisheries

Ecosystem Overfishing

FISHING

PHYSICAL IMPACT OF FISHING GEAR
- Economic discards
- Regulatory discards
- Collateral mortality

BYCATCH

INCIDENTAL MORTALITY
- Discarded bycatch and offal

HARVEST MORTALITY

Habitat modification or destruction

BIOLOGICAL INTERACTIONS
- Predator-prey interactions
- Competitive interactions
- Changes in marine food webs

DECLINE IN MEAN TROPHIC LEVEL

ALTED ECOSSYSTEM STRUCTURE AND FUNCTION

Source: Adapted from Pauly et al., 1998; Gołii, 2000.
Art: John Michael Yarson
Fish Stock Depletion

- Vulnerable/threatened shark population.
- Incidental catch of seabirds.
- Destructive fishing gears, bottom trawling and pair trawling methods.
- Fishing during breeding seasons.

Food Insecurity

Unemployment

Poverty

Conflicts
State and activity-wise marine fisher population

- West Bengal
- Orissa
- Andhra Pradesh
- Tamil Nadu
- Pondicherry
- Kerala
- Karnataka
- Goa
- Maharashtra
- Gujarat
- Daman & Diu

Population categories:
- Fishing
- Fishing allied
- Non-fishing
Engagement profile of active marine fishers in India

- Full time: 81%
- Part time: 13%
- Occasional: 6%
Status of fisheries

Composition of marine landing in 2005

- Demersal fishes: 32%
- Pelagic fishes: 26%
- Marine fishes: 25%
- Cephalopods and Molluscs: 3%
- Crustaceans: 14%
Procedure for allocation of funds to fisheries sector

1. National Development Council
   - Direction & priorities

2. Planning Commission
   - Working Group (Fisheries)
   - Recommendations

3. Ministry of Finance
   - Plan size

4. Ministry of Agriculture
   - Work plan

5. Funding decisions
   - Work plan
# Status of fisheries

## Potential yield from continental shelf of India

<table>
<thead>
<tr>
<th>Region / Resource</th>
<th>West coast</th>
<th>East coast</th>
<th>Lakshadweep</th>
<th>Andaman and Nicobar</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demersal</td>
<td>1.251</td>
<td>0.656</td>
<td>--</td>
<td>0.022</td>
<td>1.933</td>
</tr>
<tr>
<td>Pelagic</td>
<td>1.106</td>
<td>0.434</td>
<td>0.063</td>
<td>0.139</td>
<td>1.742</td>
</tr>
<tr>
<td>Oceanic</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.246</td>
</tr>
<tr>
<td>Total</td>
<td>2.357</td>
<td>1.090</td>
<td>0.063</td>
<td>0.161</td>
<td>3.921</td>
</tr>
</tbody>
</table>
### Status of fisheries

**Growth in fisheries exports and integration with international markets**

<table>
<thead>
<tr>
<th>Five-Year Plan</th>
<th>Average annual exports</th>
<th>Average annual production</th>
<th>Per cent exports of production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity ('000 t)</td>
<td>Value (Rs. billion)</td>
<td>Quantity ('000 t)</td>
</tr>
<tr>
<td>VIII</td>
<td>287</td>
<td>309.4</td>
<td>4,819</td>
</tr>
<tr>
<td>IX</td>
<td>379</td>
<td>553.6</td>
<td>5,595</td>
</tr>
<tr>
<td>X</td>
<td>463</td>
<td>671.6</td>
<td>6,301</td>
</tr>
</tbody>
</table>

**1 USD ~ 50 INR**
A. International framework

- Legal framework
  - 1995 UN Convention Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks

- Institutional framework
  - 1995 FAO CCRF
  - 1993 FAO Compliance Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas
  - 1993 FAO IPOAs

- Political framework
  - Johannesburg Summit 2002 – World Summit on Sustainable Development (WSSD)
2. Fisheries law and policy

B. Regional framework

- RFMO/As
  - Indian Ocean Tuna Commission (IOTC)
  - Asia-Pacific Fishery Commission (APFIC)
  - Bay of Bengal Programme – Inter Governmental Organisation (BOBP-IGO)
  - Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
  - INFOFISH

- Environmental Organizations
  - Bay of Bengal Large Marine Ecosystem (BOBLME)
  - South Asia Co-operative Environment Programme (SACEP)
  - Coastal Oceans Research and Development in the Indian Ocean (CORDIO)
  - The World Wide Fund for Nature (WWF) Projects
  - Technical Cooperation Group (TCG) of Indian Ocean Marine Affairs Commission (IOMAC)
2. Fisheries law and policy

- Political Organizations
  - Indian Ocean Rim Association for Regional Cooperation (IOR-ARC)
  - South Asian Association for Regional Cooperation (SAARC)
  - Association of South East Asian Nations (ASEAN) East Asia Summit (EAS) and ASEAN Regional Forum (ARF)
  - Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)
  - Global Environment Facility (GEF)

C. National framework

- Mandate and authority
- Fisheries legislation: Legal and policy framework
- Institutional structure
  - Role of Central Government
  - Role of the State Governments
  - The National Fisheries Development Board (NFDB)
### Status of fisheries

#### Statutes that relate to the fisheries

<table>
<thead>
<tr>
<th>Title of Law/Decree</th>
<th>Decree / Law No.</th>
<th>Year Enacted / Revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Constitution</td>
<td></td>
<td>1950</td>
</tr>
<tr>
<td>The Coast Guard Act</td>
<td>44</td>
<td>1978 / 2002</td>
</tr>
<tr>
<td>The Environment (Protection) Act</td>
<td>29</td>
<td>1986 / 1991</td>
</tr>
<tr>
<td>The Coastal Aquaculture Authority Act</td>
<td>24</td>
<td>2005</td>
</tr>
</tbody>
</table>
Rapid modernization and emergence of distant-water fishing forced government to intensify its involvement in fisheries management: conflict resolution and Monitoring Control and Surveillance (MCS) and safety at sea.

Marine capture fisheries riddled with issues of multi-species, open access and overfishing - creates conflicts among fishermen.

Optimal utilization

Poverty trap of traditional and small-scale fishers and threat to livelihoods – lack of alternate and supplementary jobs, seasonal migration and absence of mobility of labour to other sectors and high rate of illiteracy and indebtedness.

Participatory approach needed.
Conclusion

- Adopt co-management approaches
- A comprehensive long-term policy for:
  - fisheries development for resource exploration and exploitation
  - conservation and regulation
  - leasing and application of rent on resource utilization
  - domestic and export marketing
  - mariculture and coastal aquaculture activities and human resource utilization and management to be evolved and implemented in a phased manner
A. The ratification and implementation of international instruments
B. Implementation of the regional instruments
C. National fisheries related laws and regulations reformation
D. The potential approaches for sustainable management and recommended measures

- Centralized to decentralized management
  - Licensing of fishing boats
  - Enforcement through monitoring, control and surveillance (MCS)
  - Policy development and operational management, political goodwill
- Rights-based fisheries management strategy
  - Threats to coastal communities
  - Rights to fisheries and implementation of policy instruments
  - Social justice with resource management
- Community based fisheries management (CBFM) strategy
- Co-management strategy, women’s active participation, funding
Recommendations

- Ecosystem-based management strategy
  - Management of ocean fishery resources
  - Fisheries management vs. fisheries exploitation
  - Deep-sea fishing
  - Harnessing of offshore resource
  - Responsible fishing
  - Fisheries exports
  - Diversification and composite farm practices
  - Fiscal reforms and policy trends in environmental management and sustainable development
  - Ecosystem-based management
  - Large marine ecosystem (LME) concept and approach
  - Marine Protected Areas (MPAs)
  - Integrated Coastal Management (ICM)
  - Temporal and spatial fishing restrictions
  - Research and information sharing
NPOA - Capacity

- Compliance Agreement 1993 to be acceded.
- Framing of a ‘marine fisheries management model’ for fishery resources (including depleted stocks) in EEZ.
- MCS to disallow destructive gears and to check further increase of trawler fleet.
- Offshore waters under-fished as the maximum number of resource specific fishing vessels like Tuna Long Liners, Squid Jiggers
- Encouraging and involving local community for diversified sustainable and eco-friendly fishing methods.
- Alternative income generating activities for fishermen during trawl ban period – Self Help Groups (SHGs).
**Recommendations**

**NPOA - Sharks**

- Vulnerable/threatened shark population assessment initiated.
- Protection of critical habitats.
- Implementation of harvesting strategies.
- Involvement of stakeholders in management, research and educational initiatives.
- Minimization of bycatch and discards – full use of dead sharks encouraged.

**NPOA - Seabirds**

- Assessment of incidental catch of seabirds initiated.
- Training and publicity.
- long-line fisheries.
NPOA – IUU fishing

- Steps taken to ensure a comprehensive and coordinated approach to address IUU Fishing.
- Active member of UN, FAO and RFMO/As.
- The Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 - enforced by Indian Coast Guard.
- Installation of Vessel Monitoring System (VMS) - in final stage.
- Proper monitoring of legal instruments under State level MFRAs.
- IUU fishing is dynamic in character - conditions in fisheries change in short period of time - revision from time to time.
- CCRF disseminated to end users though translations etc. to the regional languages.
Thank you