SEA process in a snapshot

MONTH

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<thead>
<tr>
<th>Oct/Nov</th>
<th>Dec</th>
<th>Jan</th>
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**Scoping**

- Stakeholder engagement plan
- Sustainable development objectives
- Pipeline hydropower projects (HPP)
- Key E&S issues and strategic themes
- GIS and spatial layers

**Inception**

- Inception and baseline assessment report
- Categorization of pipeline HPP
- Sensitivity ratings for river basins

**Trend analysis**

- Define BAU hydropower case

**Spatial analysis**

- Sustainable development pathway

**Policy recommendations**

- Avoidance
- Enhancements
- Mitigations

**Further studies**

- Capacity building

**Local communities**

- Regional river basins
- AG, EG & HDWG
- Baseline Assessment Workshops

**Impact assessment workshop**

- AG
- EG

**Mitigations and recommendations**

- Final stakeholder workshops

**Final SEA report**
Strategic themes

1. Social issues, conflict and livelihoods
2. Economic development
3. Hydropower
4. Geomorphology and sediment
5. Aquatic ecology and fisheries
6. Biodiversity and environmental quality
7. Climate change and extreme events
Economics and river basin development
Scope of economic analysis

**Productive sectors**
- Fisheries
- Agriculture
- Forestry
- Mining
- Hydropower

**Ecosystem services valuation**
- River flows and water quality
- Geomorphology and sedimentation
- Biodiversity & protected areas
- Flood and drought

**Distributional analysis**
- Livelihoods & poverty
- Ethnic minorities

**In addition:**
- Macro-economic considerations
- Economic approaches to
- enhancement, mitigation, avoidance
1. Economic analysis of impact on productive sectors

- Important productive sectors including fisheries, forestry, agriculture, mining, navigation will be directly and indirectly impacted by HP development

- Economic analysis will assess the nature and extent of these impacts

- It will assess the interactions between these productive sectors and hydropower development
2. Economic valuation of environmental impacts

- Hydropower development will affect ecosystem goods and services elaborated under themes (e.g. flooding, fisheries, biodiversity)
- Economic valuation methods can be used to estimate the economic value HP impacts
- Absence of detailed information will necessitate use of transfer pricing approaches
3. Distributional analysis

• Costs and benefits of HP development unlikely to be distributed equally

• Distributional analysis will seek to elaborate which groups bear the costs/benefits of the economic impacts on:
  • Productive sectors
  • Ecosystem goods and services

• Conducted in close consultation with social sector experts
Economic approaches to enhancement, mitigation and avoidance

- Enhancement through employment creation, electrification, multiple use of reservoirs etc.
- Adjustment funds for sectors affected by hydropower
- Benefit sharing for impacted communities
- Local government funds for mitigation
Aquatic ecology & fisheries
Main river reaches classification from WWF/Lehner 2014

Mainstem
- Rock cut river channel
- Braided channel
- Meandering channel with alluvium
- Large floodplains
- Large delta

Tributaries

<table>
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<tr>
<th>Moist broadleaf forest low elevation</th>
<th>low gradient</th>
<th>high gradient</th>
<th>sediment</th>
<th>floodplains</th>
<th>floodplains &amp; sediment</th>
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<tr>
<td>Dry broadleaf forest</td>
<td>low gradient</td>
<td>floodplains</td>
<td>sediment</td>
<td>floodplains</td>
<td>floodplains &amp; sediment</td>
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<tr>
<td>Karst</td>
<td>Low elevation</td>
<td>high elevation</td>
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Distribution of freshwater fish species throughout the Eastern Himalaya and Indo-Burma hotspots

From IUCN: Status and distribution of freshwater biodiversity in the eastern Himalaya and Indo Burma hotspot
Degree of fragmentation and disturbance of river ecosystems

Source: Grill & Lehner for WWF 2016
THANK YOU