Making Knowledge Count

The SDGs and the Satoyama Initiative: Relevance and Relationships for Transforming Our World Connecting the local, national and international actions

A Case Illustrated through TRUs of Sundarbans in Bangladesh

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Objective

- Increase knowledge and understanding of SEPLS and make information widely accessible in relation to relevant SDGs, connecting the local, national and international actions

Relevant SDGs Related to the Presentation

- Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
- Goal 13: Take urgent action to combat climate change and its impacts
Policy Making: A Complex Process

- Donors
- Civil Society
- Private Sector
- Cabinet
- Parliament
- Ministries

Steps in the Process:
- Agenda Setting
- Decision Making
- Policy Formulation
- Policy Implementation
- Monitoring and Evaluation

Interactions and Feedback Loops:
- Connections between all stakeholders indicate the complexity and interdependence in policy making.
An Analytical Framework

External Influences

- Campaigning, Lobbying
- Scientific information exchange & validation

Politics and Policymaking

- Media, Advocacy, Networking
- Research, learning & thinking

Policy analysis, & research

political context

links

evidence
Factors influencing policy making: Evidence

Source: Phil Davies Impact to Insight Meeting, ODI, 2005
## Different Notions of Evidence

<table>
<thead>
<tr>
<th>Researchers’ Evidence</th>
<th>Policy Makers’ Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Scientific’ (Context free)</td>
<td>Colloquial (Contextual)</td>
</tr>
<tr>
<td>Proven empirically</td>
<td>Anything that seems reasonable</td>
</tr>
<tr>
<td>Theoretically driven</td>
<td>Policy relevant</td>
</tr>
<tr>
<td>As long as it takes</td>
<td>Timely</td>
</tr>
<tr>
<td>Caveats and qualifications</td>
<td>Clear Message</td>
</tr>
</tbody>
</table>

Source: Phil Davies Impact to Insight Meeting, ODI, 2005
A Framework through the lens of People, Policy and Science
Knowledge Generation – Towards Inter-disciplinary Multiple Evidence Base

Power Closes Down Risk Discourse

knowledge about possibilities
unproblematic problematic

knowledge about likelihoods
unproblematic RISK AMBIGUITY

problematic

uncertainty ignorance

risk focus is shaped by power – Beck’s “organised irresponsibility”
Mangrove ecosystem plays a crucial role in maintaining the stability of forest and aquatic ecosystems:

- prevent erosion;
- provide an indispensable input of organic carbon into the aquatic ecosystem;
- provide a sustainable source of wood and wood products;
- serve as an essential habitat for a variety of wildlife.

Direct contributions of IPLCs towards this target include:

- Protection and restoration of vulnerable ecosystem
- Low-impact lifestyles in vulnerable ecosystems,
- Innovative adaptation to changing climate, and
- Active advocacy on climate change issues.
The Sundarbans

- World’s largest single tract of mangroves comprising a total area of 10000 square kilometres placed in between Bangladesh and India
- Bangladesh part of the Sundarbans belongs to the area of 6071 square kilometres (62% of the total Sundarbans area)
- Declared as Reserve Forest (RF) in 1875, where some form of resource extraction is allowed but no one is permitted to settle, cultivate and graze inside the forest (Need Permit to enter or collect resources)
- UNESCO has declared three wildlife sanctuaries as 798th World heritage site in 1997
- Ramsar convention in 1992 declared Sundarbans as the 560th Ramsar site.
The Sundarbans

Biodiversity

- 334 species of vegetation
- 49 species of mammals (Including Famous Royal Bengal Tiger)
- 53 species of reptile
- 120 species of bird
- 8 species of amphibians
- 300 species of fish

Traditional Resource User Groups

- 3.5 million people directly or indirectly depend on the Sundarbans for livelihood
- Bawali (Wood Cutter and Nypa Palm collector)
- Mouwali (Honey Collector)
- Jele (Fisher man)
- Chunari (Snail and Oyster Collector)
- Prawn fry collector
- Crab farmer
- Small scale honey and timber businessman
Vulnerability Mapping

Conceptual Planning

Distribution of Responsibilities

Finalisation of Indicators

Vulnerability Mapping
The Map
Climate Change impacting the Sundarbans

*Anthropogenic pressure- driven Climate Change*

Illicit destruction of the forest; conversion of forest land into commercial shrimp cultivation; use of agrochemicals etc.

**Cyclone **Sidr**
- Hit south-west coast of Bangladesh on 15 Nov, 2007
- Total loss: USD 1.7 billion or 2.6% of GDP
- One-fourth of total Sundarbans damaged
- Specifically, 8% to 10% - destroyed completely and 15% - damaged partially

**Cyclone **Aila**
- Hit same region on 25 May, 2009
- Forced 50,000 people to be homeless
- The wave was 20 feet high
- Trees were uprooted and several species of flora and fauna lost their lives
A. Protection and Restoration of Vulnerable Ecosystem: Traditional Rules and Practices

- **Mouals (honey/wax collectors):** In case of collecting honey from the honeycombs, the Mouals usually cut a specific section (about two thirds) of the honeycomb and leave the rest for reproduction; try to make sure that no young bees are being killed while collecting honey; squeeze beehives by hand.

- **Bawalis (wood collectors):** Bawalis leave at least one stem in each clump of trees after cutting. Once they have harvested wood from a compartment, in the following year they won’t use this compartment for harvesting, but will harvest on a cyclical basis so that there will be adequate re-growth of plants.
Protection and Restoration of Vulnerable Ecosystem: Traditional Rules and Practices

- **Golpata (Nypa fruticans) Harvesters**: exploitation in any area is not allowed more than once in a year and is not allowed during June to September (growing period); cutting only the leaves that are approximately 9 ft long and cutting in a way so that the central leaf and the leaf next to it in each clump must be retained; the flowers and fruits should in no way be disturbed.

- **Jele (Traditional Fisher-folks)**: Fishers avoid catching fish fry; don’t use ‘jal’ net (very small-meshed net); use big-meshed net for rivers and small-meshed net for closed water bodies; don’t catch all species of fish and also avoid fishing in the spawning period.
Proposing Reforms: Regulations, Pricing and Markets

- BUREAUCRACY
- POLITICIANS

Vertical Hierarchy

Horizontal Collusion

Sustainable Yield and Economic Rent

Rent

Maximum Rent

Rent to Owner (Community or NGO)

Extra Payment/Unofficial Rent: R_d D_1 D_2 R_1

Total Loss of Rent (Revenue): R_d D_1 D_2 R_1

Rent/Intermediation: R_d D_1 D_2 R_2

Supply of NR

Addition of Natural Resource

Additional Exploitation of Natural Resource

Revenue Curve

Total Cost

Variable Cost

Economic Value

Exploitation Rate

MSY = Maximum Sustainable Yield
MER = Maximum Economic Rent

NR = Natural Resource

UNNAYAN ONNESHAN
Example – II: Innovative Eco-system based Adaptation to Climate Change
Community based Mangrove Aqua Silvi (CMAS) Culture

A practice of integrated cultivation of some mangrove faunal species - crabs, oyster or fishes (e.g: Shrimps, Bhetki [Lates calcarifer] Tengra (Mystus tengara), Baila (Awaous guamensis), Tilapia (Tilapia nilotica) etc.), and floral species - Golpata (Nypa fruticans), Keora (Soneratia apetala), Goran (Ceriops decandra) etc.

The CMAS Pioneer

Khoybor Sardar, aged about 60, is a marginal farmer cum traditional collector (Bawali) of resources from the Sundarbans who resides in the village of Nanksha, upazila of Koyra under the district of Khulna. The enthusiastic farmer pioneered the integrated cultivation of some mangrove species, both floral and aquatic, like Golpata, Keora, Goran, shrimp and some types of finfish (Bhetki, Bangal and the like).
### Economic and Ecological Return of CMAS Culture

<table>
<thead>
<tr>
<th>Economic Return (Benefits&gt;Cost)</th>
<th>Mangrove Cultivation (flora):</th>
<th>Mangrove Aqua Farming (fauna):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Income (per ‘Bigha’/per year): BDT 56250</td>
<td>Total Income (per ‘Bigha’/per year): BDT 1,83,000</td>
</tr>
<tr>
<td></td>
<td>Total Cost (per ‘Bigha’/per year): BDT 1800</td>
<td>Total Cost (per ‘Bigha’/per year): BDT 14,750</td>
</tr>
<tr>
<td></td>
<td>Net Benefit: BDT 54450</td>
<td>Net benefit: BDT 173250</td>
</tr>
<tr>
<td></td>
<td>Cost Benefit Ration: 1:32</td>
<td>Cost-Benefit Ratio: 1:12</td>
</tr>
</tbody>
</table>

| Ecological Return               | Protection from River and Land erosion, Reduce Pressure on Shundarbons, Biodiversity Conservation, Providing Breeding Ground for Aquatic Species, Carbon Sequestration, Utilization of Salinity rich Land etc. |

*Source: Unnayan Onneshan, unpublished manuscript*
Example- III: Mapping Vulnerable Areas and Accounting Vulnerable People

<table>
<thead>
<tr>
<th>Area in Hectares</th>
<th>Area in Sq km</th>
<th>Total Area in Sq km</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Vulnerable Area</td>
<td>4701</td>
<td>47.01</td>
<td>12.77</td>
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<tr>
<td>Medium Vulnerable Area</td>
<td>10656</td>
<td>106.56</td>
<td>28.95</td>
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<tr>
<td>Low Vulnerable Area</td>
<td>13493</td>
<td>134.93</td>
<td>36.65</td>
</tr>
<tr>
<td>Total Population</td>
<td>Population Density</td>
<td>Future Migrated Population</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>234804</td>
<td>637</td>
<td>29.945</td>
<td>12.75</td>
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</tbody>
</table>
Example – III: Accounting River Bank Erosion Induced Migration

<table>
<thead>
<tr>
<th></th>
<th>Area in Hectares</th>
<th>Area in sq km</th>
<th>Total Area in sq km</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement</td>
<td>2720</td>
<td>27.20</td>
<td></td>
<td>7.39</td>
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<tr>
<td>Agricultural Land</td>
<td>22708</td>
<td>227.08</td>
<td></td>
<td>61.69</td>
</tr>
<tr>
<td>River</td>
<td>7941</td>
<td>79.41</td>
<td></td>
<td>21.57</td>
</tr>
<tr>
<td>Eroded area</td>
<td>3443</td>
<td>34.43</td>
<td></td>
<td>9.35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>368.12</strong></td>
<td></td>
<td><strong>368.12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Population</th>
<th>Population Density</th>
<th>Migrated Population</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,34,804</td>
<td>637</td>
<td>21,961</td>
<td>9.35</td>
</tr>
</tbody>
</table>
Example III: Accounting Drought Induced Migration

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Area in Hectares</th>
<th>Area in sq km</th>
<th>Total Area in sq km</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Land</td>
<td>29838</td>
<td>298.38</td>
<td>410.83</td>
<td>72.63</td>
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<tr>
<td>River</td>
<td>4455</td>
<td>44.55</td>
<td></td>
<td>10.84</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Total Drought Prone Area In recent year</strong></th>
<th>Area in Hectares</th>
<th>Area in sq km</th>
<th>Total Area in sq km</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11323</td>
<td>113.23</td>
<td>410.83</td>
<td>27.56</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Population</th>
<th>Population Density</th>
<th>Total Population in Drought prone area</th>
<th>Number of household in the Drought prone area</th>
<th>Seasonal Migrated Population</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>360676</td>
<td>877.92</td>
<td>99406</td>
<td>19881</td>
<td>1988</td>
<td>10</td>
</tr>
</tbody>
</table>
Bridging the Gap

Science-Policy Gap

Social Learning

Constraints (barriers)

knowledge creation

Social Action

knowledge transmission

competing belief systems

Uncertainty Sources

SCIENTIFIC

EXPERIENTIAL

TRANSMISSION

COGNITIVE DYSSONANCE

COGNITION

VOLITION
IPSI Flagship Deliverables w.r.t SDGs

- **Strength:** Multiple partnership base – academia, inter-governmental, NGOs
- **Capacity:** Interdisciplinary, Independent, Representative, Multiple Approach based Evidence
- **Products:** Annual Flagship Reports
  - Local Biodiversity Outlook
  - Eco-system-base Target specific Annual Monitoring Report