Introduction to the BOAT

(Benefit Opportunities Assessment Tool):
Overview and A Multi-stakeholder Analysis of Benefit-enhancing Scenarios in the Takong Basin

IUCN Global Water Programme
Concept 1
River basins offer different types of benefits that can be shared, vs. sharing the allocation of water

Concept 2
Watersheds can be managed with decisions based on sharing benefits equitably among stakeholders

Concept 3:
Opportunities for enhancing benefits can be identified jointly

Concept 4
Several methods to value and distribute benefits and costs exist, with different data needs

Concept 5
Negotiation based on benefit-sharing takes a win-win approach

Concept 6
Implementation of benefit-sharing requires functional institutions
Concept 3:
Opportunities for enhancing benefits can be identified jointly

Skill 3
Identify and build benefit enhancing scenarios using BOAT exercise

• Presentation (non-cooperation scenario) and exercise (benefit-sharing scenario)
• Takong fictive scenarios
• Emphasis on multiple stakeholders
• Qualitative impacts and benefit enhancement opportunities
NOTE: The examples used in this presentation (non-cooperation) and exercise (benefit-sharing) are simplified for educational purposes.

Real-life situations will present higher complexity in terms of costs and benefits.
Description of the Takong Basin
Konfundesia: Geography and Climate
Konfundesia’s Biodiversity
Konfundesia’s Autonomous Regions & Cities
Konfundesia’s Agriculture & Industry
Tourism in Konfundesia
Akinonia: Geography & Climate
Akinonia’s Departments and Cities
Akinonia’s Agriculture & Industry
Akinonia’s Mining
Examining Qualitative Impacts on Stakeholders

- Water use activities may have positive or negative impacts (externalities) on other water users.
- A first step consists in examining the balance of positive and negative impacts across different activities/sectors in a shared basin.
- How can joint changes in water management enhance benefits for the most stakeholders and both riparian countries?
Benefit Opportunities Assessment Tool (B.O.A.T.)

a) Non-cooperation scenario
b) Benefit-sharing scenario
a. Non-cooperation scenario (start)

1. The hydropower sector and the city of Estambay in Konfundesia derive benefits from the building of the Edara Hydroelectric Dam.

The costs associated with the reduced flows are borne by:
- the hydropower sector in Akinonia – in particular the Papyrus Dam found downstream;
- the agricultural sector in Konfundesia but also in Akinonia due to decreased flows for riverine habitats and saline water intrusion at the delta downstream;
- riverine ecosystems in both countries, which in Akinonia translates into costs for the tourism and fishing sectors due to reduced sediment (beach replenishment) and nutrient (fishery support) supply as well as in terms of threatened cultural sites due to increased erosion.
a. Non-cooperation scenario (cont’d)

2. The agriculture sector and the city of Estambay in Konfundesia derive benefits from the **Biofuel Expansion in the Metis Region** which is expected to increase both energy security for transport and/or trade.

The costs associated with the reduced flows are borne by

- the agricultural sector in Akinonia due to increased pollution from e.g. fertilizers being carried downstream;
- the riverine ecosystems in both countries, which in Akinonia translates into costs for the tourism and fishing sectors due to the same land-based pollution issues around the coast.
The hydropower sector and the city of Styropolis in Akinonia derive benefits from expanding the Papyrus reservoir.

The costs associated with the flooding of the area upstream of the dam are borne by the city of Estambay (Konfundesia) in terms of restricted operations for the Tarpon Canal and increased water-related diseases.

The costs associated with the reduced flows are borne by

- the agricultural sector in Akinonia due to increased pollution from e.g. fertilizers being carried downstream;
- the riverine ecosystems in Akinonia i.e. downstream of the reservoir and that translates into costs for the tourism and fishing sectors due to reduced sediment (beach replenishment) and nutrient (fishery support) supply as well as in terms of threatened cultural (historical) sites due to increased erosion.
In Akinonia under non-cooperation, the number of negative impacts on sector-specific stakeholders outweighs the number of positive impacts, whereas these are balanced out by the number of positive impacts on sector-specific stakeholders in Konfundesia.

Overall, stakeholders as a group in Akinonia and Konfundesia incur a large number of negative impacts or no positive impact from carrying out the different projects with no cooperation.

However, note that relative valuation of benefits and costs for stakeholders remains to be determined.

### Konfundesia and Akinonia projects

<table>
<thead>
<tr>
<th>NO COOPERATION</th>
<th>Stakeholders</th>
<th>Net number of impacts per project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water use activities</td>
<td>Hydro K</td>
<td>Hydro A</td>
</tr>
<tr>
<td>Hydropower production at Edara Dam</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Biofuel expansion in Metis</td>
<td>-</td>
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<tr>
<td>Hydropower production at Papyrus Dam</td>
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</table>

**Aggregated net number of negative impacts: Konfundesia 0**

As a group, stakeholders in Konfundesia incur a net number of 0 negative impacts.

**Aggregated net number of negative impacts: Akinonia -10**

As a group, stakeholders in Akinonia incur a net number of 10 negative impacts.
B.O.A.T. EXERCISE

a) Non-cooperation scenario

b) Benefit-sharing scenario

Groups/pairs:
1. ...
2. ...
3. ...
b. With cooperation (b-s scenario) (partially filled out)

-> Fill out the empty cells in the spreadsheet based on the information on the following slides/relevant page on your handout

### WITH BENEFIT SHARING

<table>
<thead>
<tr>
<th>Water use activities</th>
<th>Hydro K</th>
<th>Hydro A</th>
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<tr>
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</tr>
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</table>

**Aggregated net number of impacts:**

- Konfundesia: 0
- Akinonia: 0

on individual stakeholders (positive): ?

on individual stakeholders (negative): ?
b. With cooperation (benefit-sharing opportunities)

1. Reoperating the Edara dam would not create new water for the agriculture sector in Konfundesia, which still bears the costs of this project together with Akinonia’s hydropower sector, but would curb the problem of saline water intrusion at the delta for the agriculture sector in Akinonia. Reoperation would also provide the environmental water needed for the riverine ecosystems to go back to less degraded (prior-to-dam) conditions. In Akinonia i.e. downstream of the reservoir, these translates into benefits for the tourism and fishing sectors due to released sediment (beach replenishment) and nutrients (fishery support) as well as for the cultural (historical) sites of Gloria due to curbed erosion.

2. The biofuel expansion project in Metis is not considered as part of the cooperation efforts at this stage and no changes to the net negative impacts on sector-specific stakeholders are therefore to be reported.
b. With cooperation
(benefit-sharing opportunities)

3. Enlarging the hydropower capacity of the Edara Dam to provide for Akinonia’s energy needs as well could in turn lead to the removal of the Papyrus Dam and consequently the drainage of the reservoir. The costs associated with this operation would be of course borne by the hydropower sector in Akinonia, but benefits would be derived for:

- The agriculture sector in Akinonia thanks to the new land freed up by the drainage of the reservoir;
- The city of Estambay as the drainage of the reservoir would also eliminate restrictions to operate the Tarpon Canal and the risk of water-related diseases;
- The hoteliers, fishermen and cultural (historical) sites of Gloria thanks to the sedimentation mitigation measures.
b. With cooperation (end) (benefit-sharing opportunities)

Under the cooperation scenario, for each country the number of positive impacts on sector specific stakeholders balances with or outweighs the number of negative impacts.

7 Stakeholders incur a larger number of positive than negative impacts; 2 stakeholders incur a larger number of negative impacts. Impacts for 2 stakeholders balance out.

As a group, stakeholders from both countries are better off qualitatively relative to non-cooperation.

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<tr>
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Net number of impacts per stakeholder:

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<th>Aggregated net number of impacts: Konfund 4</th>
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<th>-2</th>
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<th>3</th>
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<tbody>
<tr>
<td>Akinonia 4</td>
<td>As a group, stakeholders in Konfundesia incur a net number of 5 positive impacts</td>
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<td>As a group, stakeholders in Akinonia incur a net number of 1 positive impact</td>
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## Konfundesia and Akinonia projects

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<td>-3</td>
</tr>
</tbody>
</table>

| Net number of impacts per stakeholder | 1 | 0 | 0 | -3 | 1 | 1 | -2 | -3 | -3 | -2 |

### Aggregated net number of negative impacts:

- **Konfu**: 0
- **Akinon**: -10

As a group, stakeholders in Konfundesia incur a net number of 0 negative impacts.

As a group, stakeholders in Akinonia incur a net number of 10 negative impacts.

### Impacts on individual stakeholders:

- **Konfu**:
  - 2 stakeholders incur a larger number of positive than negative impacts; 1 stakeholder incurs a larger number of negative impacts. Impacts for 1 stakeholder balance out.
  - 1 stakeholder incurs a larger number of positive than negative impacts. Impacts for 1 stakeholder balance out.

- **Akinon**:
  - 1 stakeholder incurs a larger number of positive than negative impacts; 4 stakeholders incur a larger number of negative impacts. Impacts for 1 stakeholder balance out.
  - 4 stakeholders incur a larger number of negative impacts. Impacts for 4 stakeholders balance out.

### Impacts on individual stakeholders overall:

- 3 stakeholders incur a larger number of positive than negative impacts; 5 stakeholders incur a larger number of negative impacts. Impacts for 2 stakeholders balance out.
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<td>Konfun</td>
<td>1</td>
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<td>3</td>
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<td>0</td>
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<tr>
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<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
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</tbody>
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**Aggregated net number of impacts:**
- **Konfun**: 4 stakeholders incur a net number of 5 positive impacts.
- **Akinon**: 4 stakeholders incur a net number of 1 positive impact.

**Impacts on individual stakeholders**
- **Konfun**: 2 stakeholders incur a larger number of positive than negative impacts. Impacts for 2 stakeholders balance out.
- **Akinon**: 5 stakeholders incur a larger number of positive than negative impacts; 1 stakeholder incurs a larger number of negative impacts.

**Impacts on individual stakeholders overall**
- 7 stakeholders incur a larger number of positive than negative impacts; 1 stakeholder incurs a larger number of negative impacts. Impacts for 2 stakeholders balance out.

Again, the incidence of negative impacts is less overall, but need valuation of benefits and costs to know exactly how much stakeholders are affected, in terms of derived benefits. Also, what compensation mechanisms might help to lessen net negative impacts?