Session:

Macroeconomic benefits of hydropower
Can we quantify them?

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For more information: www.hydropower.org/congress
VALUE CREATION AT HYDROPOWER PROJECTS

IHA World Congress 2015
Session: Macroeconomic Benefits
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Knowing the actual or potential value creation of a project can help:

- Stakeholder & customer engagement
- Identify joint development projects or collaboration within a region
- Identify sources of financing
- Help with licensing processes
- Present a balanced picture of positive and negative impacts

The Value Creation methodology has been tested in 2014-15 on four projects in France and one in Laos. It has been presented at the 7th World Water Forum.
5 Evaluation Categories

Electricity Services:
- Production of Electricity, Operation & Maintenance of Infrastructure, Taxes and Charges, …

Economic Values
- Drinking Water, Irrigation, Tourism and Leisure Activities, Fish Farming, …

Societal Values
- Employment, Health services, Education, Social cohesion, Heritage Value, Professional Training, Living Conditions, …

Environmental Values
- Greenhouse Gas Reductions, Biodiversity Protection, Rehabilitation of Environments, Knowledge Acquisition, …

Risk Management
- Flood and Drought Protection, …

A 10-Step Guidance Document has been produced
The Nam Theun 2 project

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Nam Theun 2 : Sources of Value Creation

- Major contribution to national electrification
- Major source of national revenue (through electricity export to Thailand)

Social programmes
- **Infrastructure**: Electrification of 17 villages, construction of modern housing, roads, schools and medical centres,
- **Nakai Programme** at the reservoir: development of livelihoods and economic activities for resettled populations
- **Downstream Programme**: nature restoration and enhancement of livelihoods of downstream populations

Environmental Programmes
- Water quality monitoring,
- Flora and fauna monitoring and protection,
- Creation of a protected nature zone of more than 4000 m²

Nam Theun 2 facts:
- Small dam (h= 48m)
- Big reservoir (S= 489km²)
- Water Diversion between river basins
- 1080 MW – 6 TWh
- Reservoir Filling: April 2008
- Begin of operation: March 2010

- **Environmental and Social Programme**
  - An iterative process with stakeholders led to the ToR
  - Obligations and commitments are factored in E&S budget
  - Budget E&S ~ 13% operating cost
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<thead>
<tr>
<th>TOPICS</th>
<th>CATEGORIES OF VALUES</th>
<th>KEY FIGURES</th>
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<tbody>
<tr>
<td>Electricity</td>
<td>Construction of the Hydropower Plant</td>
<td>8000 workers, Total Budget of 1.3 bn USD</td>
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<td>Production of Electricity</td>
<td>Turnover of 250 M USD/an. 290 jobs in 2014</td>
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<td>Taxes</td>
<td>80 M USD/yr</td>
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<td>Economic values</td>
<td>Fisheries on the Nakaı Plateau</td>
<td>Development of commercial fishing activities, Total revenues of USD 725 000 in 2013</td>
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<td>Fisheries downstream</td>
<td>Estimated Net loss of downstream fisheries with Pre-dam situation due to Dam and other Socio-economic factors</td>
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<td>Forest extraction on the plateau</td>
<td>Between 80 and 90 jobs created for the Village Forestry Development extraction royalties around USD 200 000 in 2011 and 2012. No royalties in 2013 and 2014.</td>
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<td>Tourism</td>
<td>Creation of a visitor center. 4 000 visitors/yr</td>
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| Societal values | HEALTH | AT LEAST USD 375,000/YR INVESTED ON HEALTH PROGRAMS FROM 2005 TO 2013.
CHILDHOOD MORTALITY ON THE PLATEAU REDUCED BY ALMOST 58% FROM 2008 TO 2013 (AGAINST A REDUCTION OF 17% AT NATIONAL LEVEL).
ESTIMATED NET BENEFITS OF 1M USD FOR 2013 FOR 1000 LIVE BIRTHS. |
| Employment | 630 JOBS DIRECTLY LINKED TO NT2 IN 2014 AND LOCATED IN LAOS |
| Environmental values | GHG EMISSIONS | 0.7 T CO2 / MWh/ YEAR AVOIDED IN COMPARISON TO GAS ALTERNATIVES.
WIDELY RECOGNISED RESEARCH PROJECT ON GHG FROM RESERVOIRS |
| BIODIVERSITY, HABITATS, RIVERS | SEVERAL HABITATS AND MIGRATION WAYS DESTRUCTED OR DETERIORATED. USD 2.4M ALLOCATED TO ENVIRONMENTAL ACTIONS |