A Political Ecology Analysis of Hydropower in the Mekong Basin

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Outline

• Political Ecology – Brief Introduction
• Global Hydropower Re-emergence
• Mekong – my research and some results
• What about IWRM?
• Conclusions
Political Ecology

• Broad approach.
• Political ecology analyses how power and economics render resources, landscapes and marginalized people in instrumental terms.
• Is useful for understanding who stands to win and lose from environmental change.
• Helps to critically examine narratives and scale.
Political Ecology

• Environmental problems cannot be understood in isolation from the economic and political contexts within which they are created.

• To describe environmental problems is to consider the political and economic processes that generate those problems.

• Putting politics first: "All ecological projects (and arguments) are simultaneously political-economic projects (and arguments) and vice versa” (Harvey 1993).
Hydropower is often wrapped in narratives of modernity and man’s ability to tame nature or making the best use of natural resources for the (powerful) people.
Dams of the 20\textsuperscript{th} Century and their influence

• Over \textbf{45,000} large dams in the world (>15 m and/or reservoir volume > 3M m\textsuperscript{3}) holding back \textbf{15\%} of total annual global river runoff. (ICOLD/WCD, 2000)

• Dams contribute \textbf{12-16\%} to global food production (WCD, 2000)

• Hydropower accounts for \textbf{21\%} of world’s electricity supply (Renewable Global Status Report, 2007)

• 21\% of the global land area drains into dams. 33\% from 40N – 40S (Mulligan et al. forthcoming).
1860
(KCL Global Dam Database – 15m+ – 36,000 dams)
1960
2000
River fragmentation by Dams
Key Actors

• Within the hydropower the **hydraulic bureaucracy**, or hydrocracy is influential.
  
  - Ministries/departments of irrigation, energy, water
  - Politicians
  - Land elites
  - Development banks
  - Construction companies
  - **Increasingly private industry and state banks**
A new era of Hydropower

• Most hydropower in the G8 countries was developed during the 19th and 20th centuries.

• The World Commission on Dams report in 2000 called for a reassessment of the need for large dam projects.

• Global hydropower is expected to grow as much as 85% by 2050, an increase of 150 to 200 GW of new generating capacity (IEA 2011).

• Chinese banks are constructing approximately 300 projects in 78 countries worldwide. In Africa alone, China has invested $9.3 billion in hydropower by 2011.

• The potential impacts of today’s hydropower are arguably more significant than those of the past.
Mekong Basin
Mekong Basin

- 800,000 square kilometres
- 4300 km in length (12th longest)
- Second in biodiversity to the Amazon (1,300 fish species). 126 new species were discovered in 2011
- Home to approximately 70 million people
- 80% of the population live in rural areas and are dependent on natural resources
- Basin supports the largest inland fishery in the world. Approximately 2 Billion USD per year and 2.6 million tons of fish.
- 90% of the fish in the basin are migratory
Hydrology of the Basin

• The Mekong is a flood pulse river. The flood season accounts for 80 to 90% of the total annual flow (MRC 2010).

• Annual total flow 475,000,000,000 m3.

• Approximately 130 tributary river basins.

• Khone Falls & Tonlé Sap.
Dams in the Mekong Basin

• Relatively unchanged until the last 7-8 years.
• Over 120 Tributary dams proposed, planned or under construction
• Plans for 11 mainstream dams in the Lower Mekong Basin
• Funded primarily by regional state banks and private investors. Some international.
• Majority of Dams built in Laos with electricity sold to Thailand, Vietnam and China.
Mekong Hydropower
My Research

I use political ecology to critically examine hydropower development in the basin.

I use the impact assessment process as a starting point or lens to examine political and economic forces that cause environmental change.

One of my aims to find out who stands to win and lose from hydropower development and why.
The hydropower decision making process

Start → Construction begins

Impact Assessment Process

- Drivers, enablers of HP
- NGOs
- Media
- Local people
- States
- Industry
- Academics
Lao PDR

- Least developed country. 80% of population lives in rural areas.
- Tightly controlled communist state.
- Government policy of attracting inward investment. Sees natural resources as a primary revenue earner.
- Controls the most flow of the Mekong and many of the key tributaries are within the country.
- The country contains an enormous amount of biodiversity. Many new species discovered every year.
Narratives from Laos

• “Laos plans to become the battery of Asean, as it has abundant water supplies and mountainous terrain suited to hydropower development. Asean member countries and the world community should support this policy as the move will not only help the regional community get clean, low carbon energy but also help Laos to liberate itself from poverty.” (Minister for planning).

• “The development concept was to build a transparent dam, meaning that everything that enters the dam can pass through it.” (Deputy Minister for Energy and Mines)

• “The river's hydrology, or seasonal flows, will continue as normal because the same volume of water that flows upstream will flow downstream.” (Deputy Minister for Energy and Mines).
Mechanisms in Laos

- Large potential for hydropower – could generate $25 billion in foreign direct investment and 70% of electricity export revenues, or $2.6 billion a year.
- High demand for electricity from rich/powerful neighbours.
- High levels of corruption and cronyism/nepotism.
- Weak enforcement of law.
- Tightly controlled press.
- Weak grassroots civil society.
- Manufactured consent with NGOs in the country.
Thailand

• Cross border trade with Laos dating back over 40 years.
• The most developed economy in the lower basin.
• The Mekong river forms the border between Thailand and Laos.
• Influenced the structure of the 1995 agreement forming the MRC.
• Democracy although military has stepped in at times.
Narratives from Thailand

• “Thailand’s economic growth will skyrocket, stimulating electricity demand” (EGAT official).

• “Thailand’s relies too heavily on natural gas” (EGAT official)

• “Hydropower in Laos provides clean energy for Thailand” (Thai Minister for energy).
Mechanisms from Thailand

• Domestic hydropower is not possible.

• Externalise environmental and social impacts.

• EGAT is the main supplier and distributor.

• Thailand is heavily reliant on natural gas.

• Enablers in Laos help make hydropower a v.good investment.
China (Yunnan Province)

- Contributes approx. 10-12% of annual flow, but over 24% of the flow during the dry season.
- 4 existing mainstream dams on the Upper Mekong: (Manwan (1750 MW), Dachaoshan (1350 MW), Jinghong (1750 MW) and Xiaowan (4200 MW). Two more dams are under construction.
- Hydropower is a central aspect of the future energy policy.
- Key investor in the region – trade partner with Cambodia, Vietnam, Laos and Thailand.
- Communist state.
Mechanisms from China

• Hydropower is modern.

• Exporting expertise.

• Political influence in the basin.

• Profits and a source of investment.

• Cheap electricity.
Vietnam (Delta)

- Communist State.
- Occupies almost 50,000 sq km, 12% of Vietnam land area with a population of 20 million.
- Contains 37% of Vietnam’s cultivated area
- 2,600,000 ha (66% of Delta) used for farming and aquaculture.
- Produces more than half of Vietnam’s food 50% of Vietnam fishery, 60% of country’s fruit and 300,000 tonnes aquacultural products.
- Has been vocal about upstream development along with Cambodia.
Mechanisms within Vietnam

• Political influence.

• Potential for profits.

• Cheap electricity.

• Access to logging.
This results in dams that:

- Have little or no transparency
- Poor impact assessments
- Have no basin planning
- Are poorly designed - no flushing gates
- Are built solely for energy production
- Are locking up sites for 30-50 years with decommissioning costs never considered in agreements
- Have poor engineering design
- Are benefiting powerful actors at the expense of the environment and local people
What about IWRM?

• Environmental and social concerns and IWRM are primarily donor driven.

• Often local governments pay lip service to these concerns, but are more interested in “development”.

• This leads to, among other things, a disconnect between rhetoric and reality in hydropower.
## Rhetoric and Reality

### Pak Mun Dam Information

<table>
<thead>
<tr>
<th>Expectation</th>
<th>Real situation</th>
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</thead>
<tbody>
<tr>
<td>- Cost $135 m</td>
<td>- Cost $233 m</td>
</tr>
<tr>
<td>- Mitigation cost $11m</td>
<td>- Mitigation cost $32 m</td>
</tr>
<tr>
<td>- Dry Season HEP: 136 MW</td>
<td>- Dry season HEP 40 MW</td>
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<tr>
<td>- Irrigation 29,500 ha</td>
<td>- Irrigation None</td>
</tr>
<tr>
<td>- Displaced families 241 hhs</td>
<td>- Displaced families: 1700 hhs</td>
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<tr>
<td>- Reservoir fisheries 100kg/ha/yr</td>
<td>- Reservoir fisheries 10kg/ha/yr</td>
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<td>- Natural fisheries: fish ladder, first for a Mekong dam</td>
<td>- Wild fish 169 of 265 species upstream of the dam disappeared</td>
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Xiangjiaba Dam 6400 MW
Xiangjiaba Dam 6400 MW - Reality
Happy Fish?

average floods

chinese dam effects

surface gate

Friendly flushing
controlled concentration

bottom gate
"I confirm that there is no ground breaking set for Wednesday [7\textsuperscript{th} November] on the $3.5 billion Xayaburi dam". "It's not real," he said of the reports. "It's only...organizing a small group of media to visit, and some concerned people, scientists and other people." (Laos Deputy Prime Minister in WSJ)
Contractor denies breach in Dakrong Hydropower Plant dam

While local residents and authorities in the central province of Quang Tri worry that a section of the spillway channel has burst at the Dakrong Hydropower Plant 3, Mai Van Hue, director of Tan Hoan Cau Company and the main contractor of the plant, denies there has been any breach in the dam.

Hue is also chairman of the Truong Son Hydropower Company, investor of the Dakrong Hydropower Plant 3 project.

Ho Van Vien, chairman of the People’s Committee in Ta Long Commune of Dakrong District, where the plant is located, said that a section of the dam had burst on October 7.

Vien said he has already reported the matter to higher authorities, and the deputy chairman of the People’s Committee of Dakrong District has also examined and confirmed the dam breach.
Conclusions

• Narratives surrounding hydropower are often different than drivers and enablers.

• Hydropower is still seen as a part of nation building.

• Politics and economics (power) is causing hydropower to be developed that benefits the rich and disadvantages the poor.

• IWRM is donor driven.

• Hydropower dams are useful, but building them correctly is difficult, expensive and time consuming.
Questions?