# Mekong Basin Connect: Vietnam

Introductory Presentation

Brian Eyler, Southeast Asia Program Director,
& Courtney Weatherby, Southeast Asia Program Research Analyst
Stimson Center

STIMSON ERG The Nature Conservancy IUCN

## The Problem

- Vietnam is highly vulnerable to poorly planned hydropower development upstream
- Vietnam has not yet found an effective strategy to influence regional hydropower planning

STIMSON

## Mekong Basin Connect Outcomes

1. Vietnam's increases engagement with Laos and Cambodia to promote basin-wide planning, investment in renewable energy, and cross border power trade
2. Vietnam increases power purchase from Laos and Cambodia
   a) Meet Vietnam's rising energy demand
   b) Drop carbon emissions by reducing need to build more coal fire plants
   c) Increase investment opportunities for Vietnam in Laos and Cambodia
   d) Increase employment opportunities and economic transactions
3. Reduces number of future dams in the Mekong Basin
4. Significantly reduces ecological, social, and political risk to Vietnam and relieve pressure on the Mekong Delta

STIMSON

## Workshop Mission

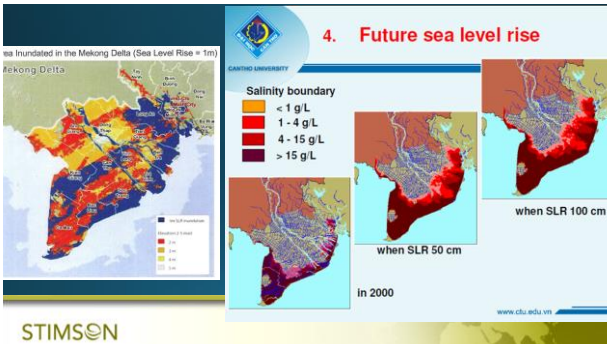
- **Objectives:**
  - Build political support for a new approach to strategic engagement with Laos and Cambodia
  - Identify opportunities and linkages for cross-ministerial cooperation and coordination on basin-wide water-energy planning
  - Introduce water-energy stakeholders to tools and resources to craft new policy approach with Laos and Cambodia

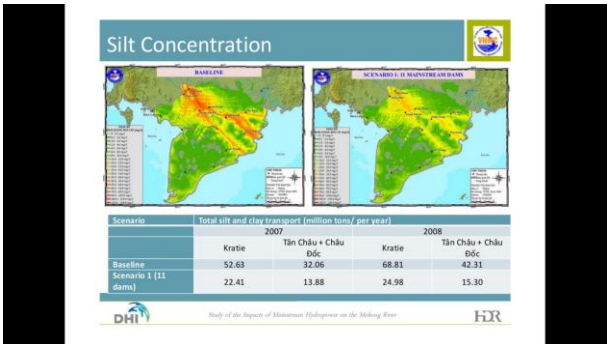
STIMSON

## Question: Why Vietnam?

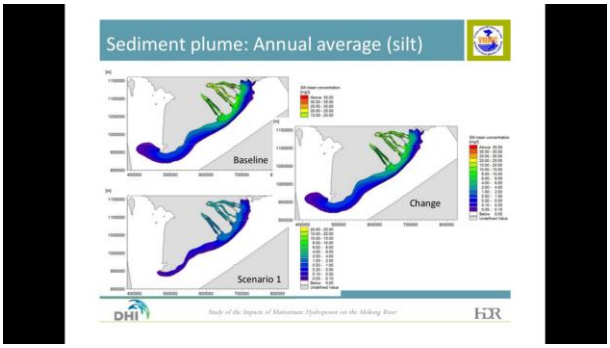
- 10-12% annual energy demand increase – more than triple power consumption through 2030
- Take advantage of new technologies and regional energy sources for multiple benefits
- Opportunity to play larger role in regional energy market
- Effective political institutions and technical capacity
- Seize this opportunity to rise as a regional sustainability leader

STIMSON



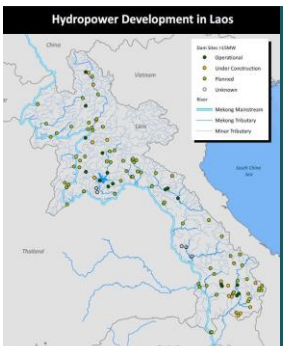

| Scenario | Total silt and clay transport (million tons/ per year) | | | |
|---|---|---|---|---|
| | 2007 | | 2008 | |
| | Kratie | Tân Châu + Châu Đốc | Kratie | Tân Châu + Châu Đốc |
| Baseline | 52.63 | 32.06 | 68.81 | 42.31 |
| Scenario 1 (11 dams) | 22.41 | 13.88 | 24.98 | 15.30 |




## Losses in protein due to reduced fish supply resulting from dams.

| Scenario | Min/ max | Cambodia | Laos | Thailand | Viet Nam | Mekong basin |
|---|---|---|---|---|---|---|
| National portion of Mekong Basin fish catch (%) (ICEM, 2010) | min | 23 | 4 | 27 | 18 | |
| | max | 51 | 8 | 35 | 34 | |
| Scenario 1: Protein lost as a portion of the non-fish meat and milk diet (%) | min | **29** | **12** | 3 | 2 | 5 |
| | max | **63** | **24** | 4 | 4 | 5 |
| Scenario 2: Protein lost as a portion of the non-fish meat and milk diet (%) | min | **42** | **17** | 4 | 3 | 8 |
| | max | **148** | **55** | 9 | 9 | 12 |

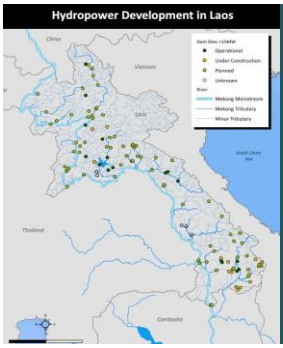
Source: Pittock J., Orr S., Chapagain A, Dumaresq D. "Dams on the Mekong: Lost fish protein and the implications for land




**Within the problem lies opportunity**

- Laos has no plan or strategy for basin wide development
- Energy sector progress is dictated by outside investment
- Project by project approach is problematic for all
- Need for a basin-wide, system scale vision
  - Mainstream + tributaries
  - Integrated water resource management
  - Hydropower + solar + wind + other
- It's not too late to gain a seat at the negotiating table

| SUMMARY DATA FOR LAO DAMS >15 MW | | | |
|---|---|---|---|
| STATUS | NUMBER OF PROJECTS | TOTAL CAPACITY (MW) | PERCENT OF TOTAL DAMS |
| Completed | 29 | 3328.95 | 14.51% |
| Currently under construction | 26 | 4145 | 18.07% |
| To begin construction prior 2020 | 9 | 1487 | 6.48% |
| To begin construction after 2020 | 24 | 3816.9 | 16.64% |
| Feasibility study approved | 13 | 1973.9 | 8.60% |
| Under feasibility study | 39 | 8192 | 35.70% |
| TOTAL | 140 | 22943.75 | 100.00% |

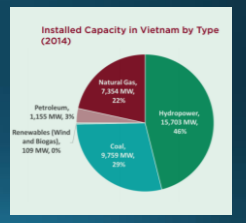



**Basin-wide design strategies and options**

- Replacing mainstream dams with other renewables, tributary dams, and grid
- Concentrating cascade upstream to promote fish connectivity
- Avoiding dams at mouths of tributaries
- Preserving tributary systems with high/rich sediment contribution

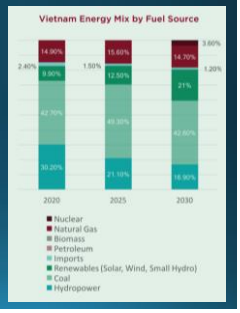
## Vietnam Energy Demand

- Vietnam's energy demand growth through 2030 will remain high, between 7.5 and 11% annually
- Overall capacity will more than triple from 33,964 MW in 2014 to 129,500 MW in 2030
- Location matters: growth rates are highest in the north, but the gap between supply and demand is highest in the south.



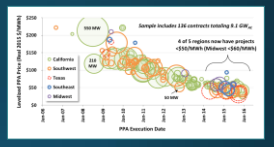

## Challenges and Opportunities for Vietnam?

- Major trends in energy mix:
  - Diversification
  - Significant addition of thermal coal capacity
  - Significant growth in renewables
- Nuclear power projects are now suspended— what will replace them?
- MOU for power purchase from Laos is higher than planned imports in PDP VII
  - MOU with Laos: 1,000 MW in 2020, 3,000 MW in 2025, and 5,000 MW by 2030
  - Total Imports in PDP VII: 1,440 MW in 2020, 1,447 MW in 2025, and 1,554 MW in 2030
- Opportunity to be more ambitious on non-hydropower RE targets both domestically and import from Laos




## Global Price Drop of RE Technologies

- 2016 drops in global price of commercial-scale solar (13%) and wind (10.75%)
  - Solar record lows in 2016 of <3 c/kWh
  - India: Solar prices < coal prices
- Economies of scale
- Overcapacity in solar panel and inverter production in China
- Improvements in system installation and design
- Supportive government policy and financing options
- Renewable technologies are now competitive on an economic basis

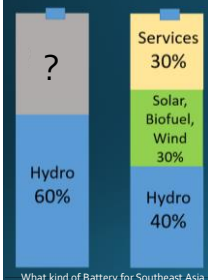



| Current Price of Electricity (c/kWh) by Energy Source in Vietnam | |
|---|---|
| Solar | 9.1 c/kWh ↓ |
| Wind | 7.8 c/kWh ↓ |
| Coal | 5-6 c/kWh ↑ |
| Imports | 6 -7 c/kWh ↑ |
| Hydropower | 4 c/kWh |

## Regional Energy Trade & Energy Interdependence

- Opportunity for Vietnam can invest in Lao power grid and regional connections
  - Supports strategic, system scale strategy
  - Flexibility for Laos and Vietnam
- Challenges of implementation:
  - Cost of infrastructure build-out
  - Tariff restructuring in Vietnam
- MDB support for grid investment (ADB, World Bank, AIIB)
- Energy interdependence = Energy security

## Vietnam as Power Purchaser?




What kind of Battery for Southeast Asia will Laos become?

- Vietnam can influence which projects are built via power purchase agreements based on sustainability concerns
- 5,000 MW from Laos by 2030 should be a mix of electricity sources
- Benefits to cross border renewable investments
  - FDI and job creation for Vietnamese firms
  - Lower population density and land prices = lower cost of electricity

## The First of Many Steps

- Identify key stakeholders
- Identify will, base-lines, and current capacity
- Identify roadblocks
- Build leadership

STIMSON

## Mekong Basin Connect Outcomes

1. Vietnam's increases engagement with Laos and Cambodia to promote basin-wide planning, investment in renewable energy, and cross border power trade
2. Vietnam increases power purchase from Laos and Cambodia
   a) Meet Vietnam's rising energy demand
   b) Drop carbon emissions by reducing need to build more coal fire plants
   c) Increase investment opportunities for Vietnam in Laos and Cambodia
   d) Increase employment opportunities and economic transactions
3. Reduces number of future dams in the Mekong Basin
4. Significantly reduces ecological, social, and political risk to Vietnam and relieve pressure on the Mekong Delta

STIMSON