

# SEA OF HYDRO ON MAINSTREAM MEKONG

Mekong River Commission

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ICEM – International Centre for Environmental Management



CHINA

TIBET

SICHUAN

HUBEI

ANHUI

NEPAL

Brahmaputra

Lhasa

Yushu

Xi'an

Wuhan

Hefei

Nanjing

Shanghai

Ningbo

Nanchang

Chongqing

Guiyang

HUNAN

Changsha

Fuzhou

FUJIAN

Taipei

Lucknow

Patna

Rangpur

Sylhet

Guwahati

Kohima

Imphal

YUNNAN

Kunming

Liuzhou

Guangzhou

Canton

Hong Kong

INDIA

Kolkata

Calcutta

Bhubaneswar

Chittagong

Mandalay

MYANMAR

Naypyidaw

VIETNAM

Hà Nội

Haiphong

Haikou

Vinh

LAOS

Vientiane

Chiang Mai

Yangon

Rangoon

Bassein

Nakhon Sawan

Ratchathani

THAILAND

Bangkok

CAMBODIA

Buôn Mê Thuột

Phnom Penh

Đà Nẵng

Qui Nhon

Nha Trang

Đà Lạt

Ho Chi Minh City

Nakhon Si Thammarat

South China Sea

Spratly Islands

(disputed)

PHILIPPINES

Manila

Baguio

Apariti

LUZON

Bay of Bengal

Andaman Sea

Gulf of Thailand

Kota

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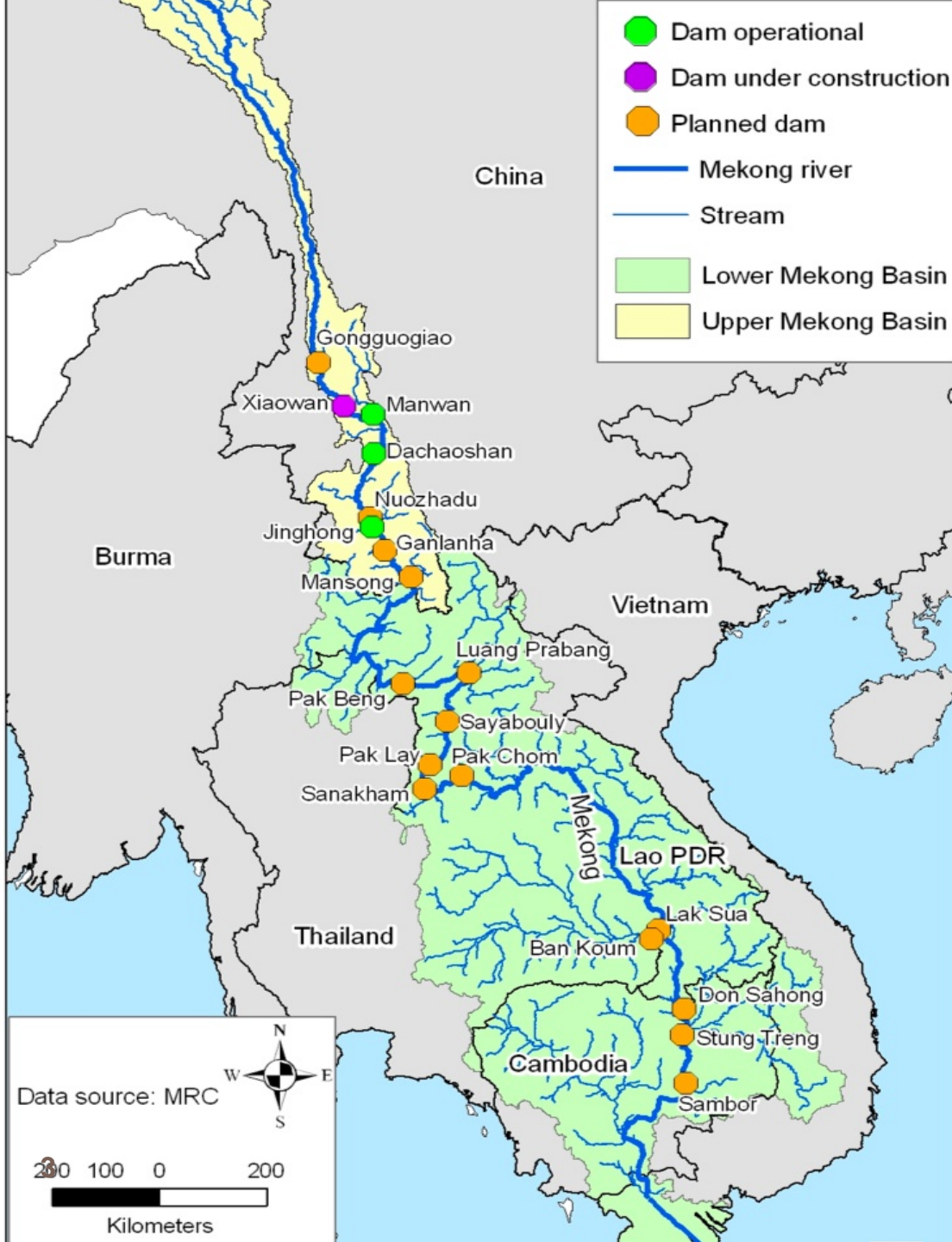
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## Dams on the mainstream Mekong

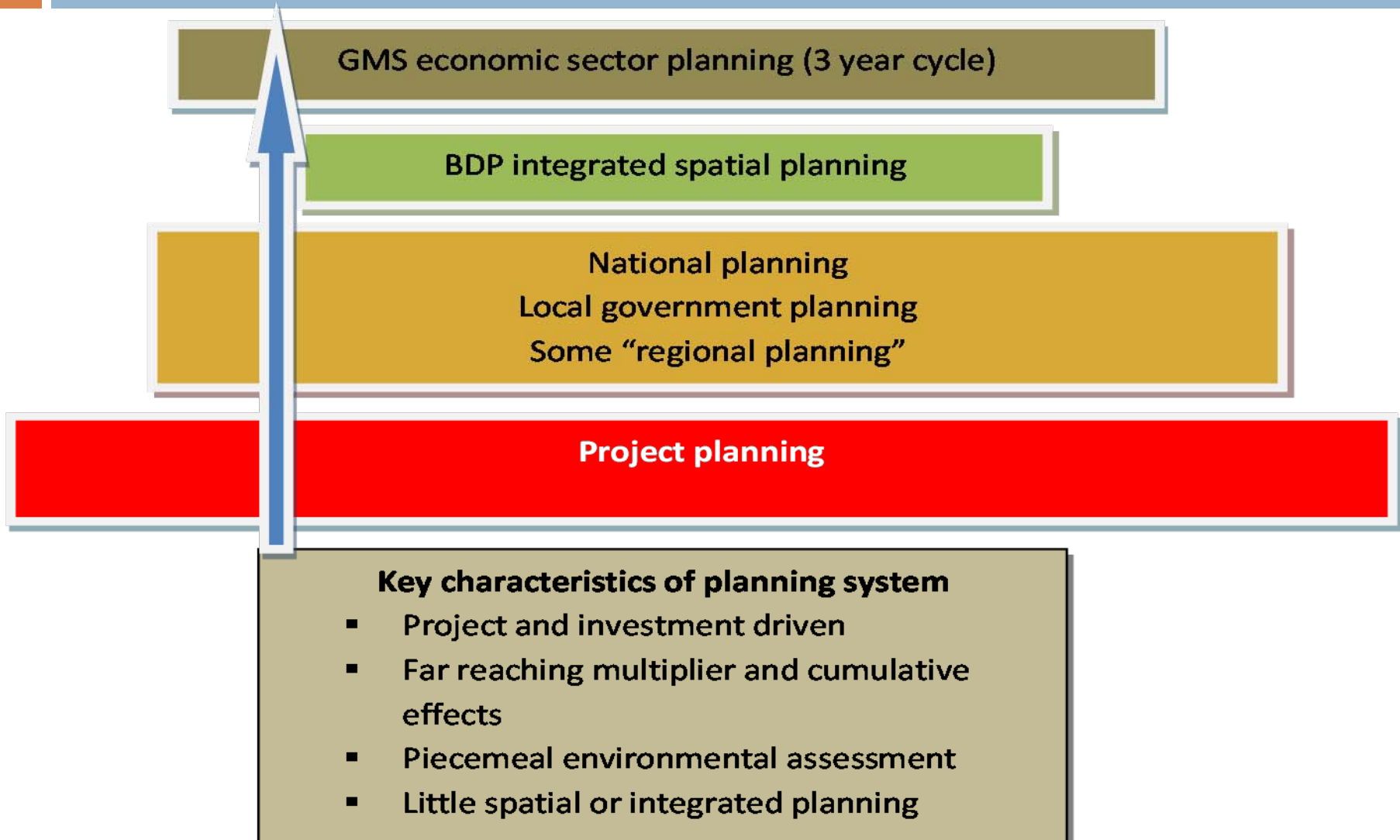
Upper Mekong – 8 existing or planned  
 Lower Mekong – 11 planned

## Dams on Mekong Tributaries

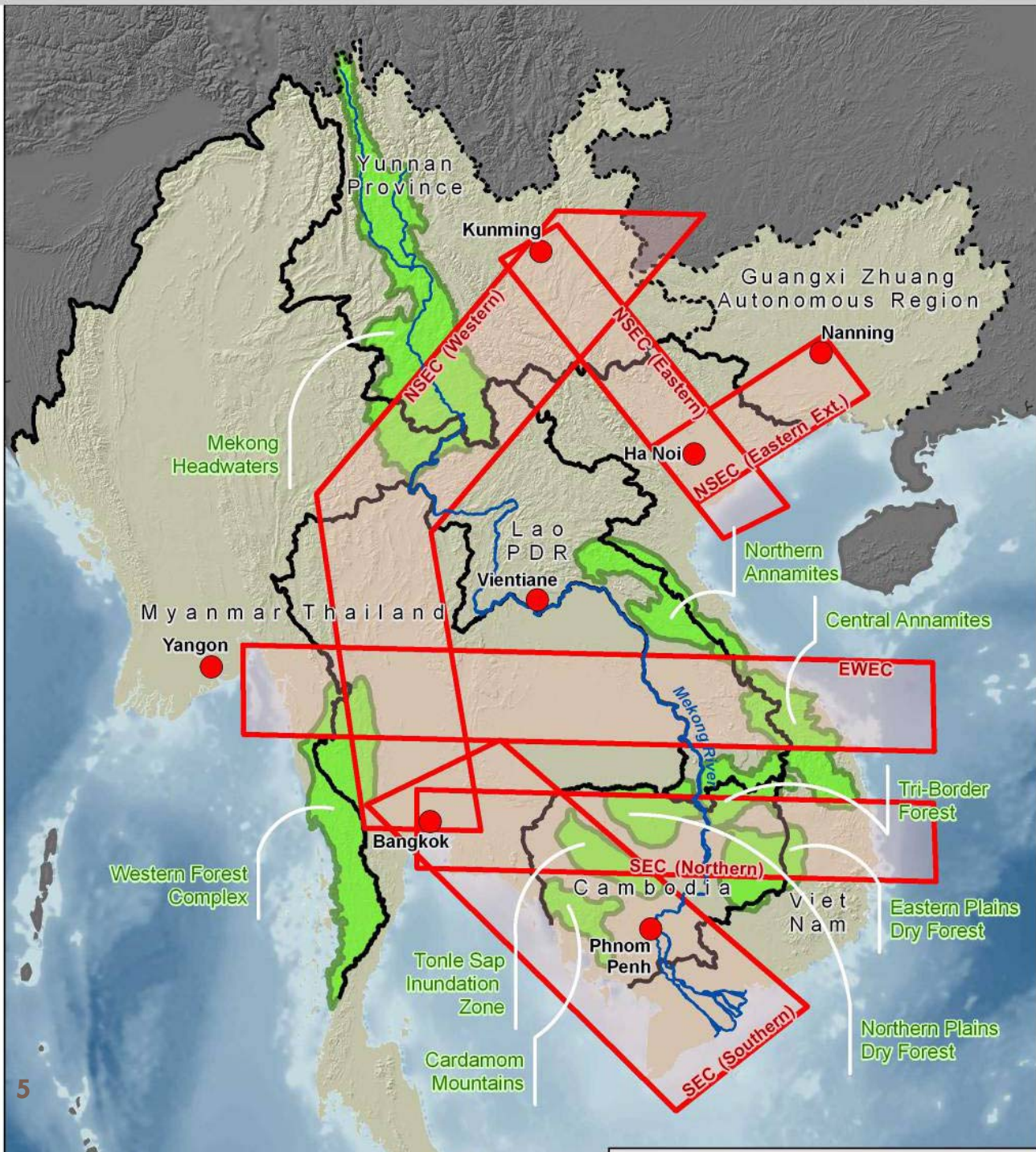
Existing and planned – 94 (only hydro dams – does not include irrigation dams)

# Mekong region development planning “system”

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# Greater Mekong - trends

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## Economic:

- \$10-15 billion investment over 10 years to 2010 to catalyze economic integration (“connectivity”)
- \$15 billion investment over the next 10 years for that purpose
- Gross domestic product (GDP) per capita is expected to double by 2015

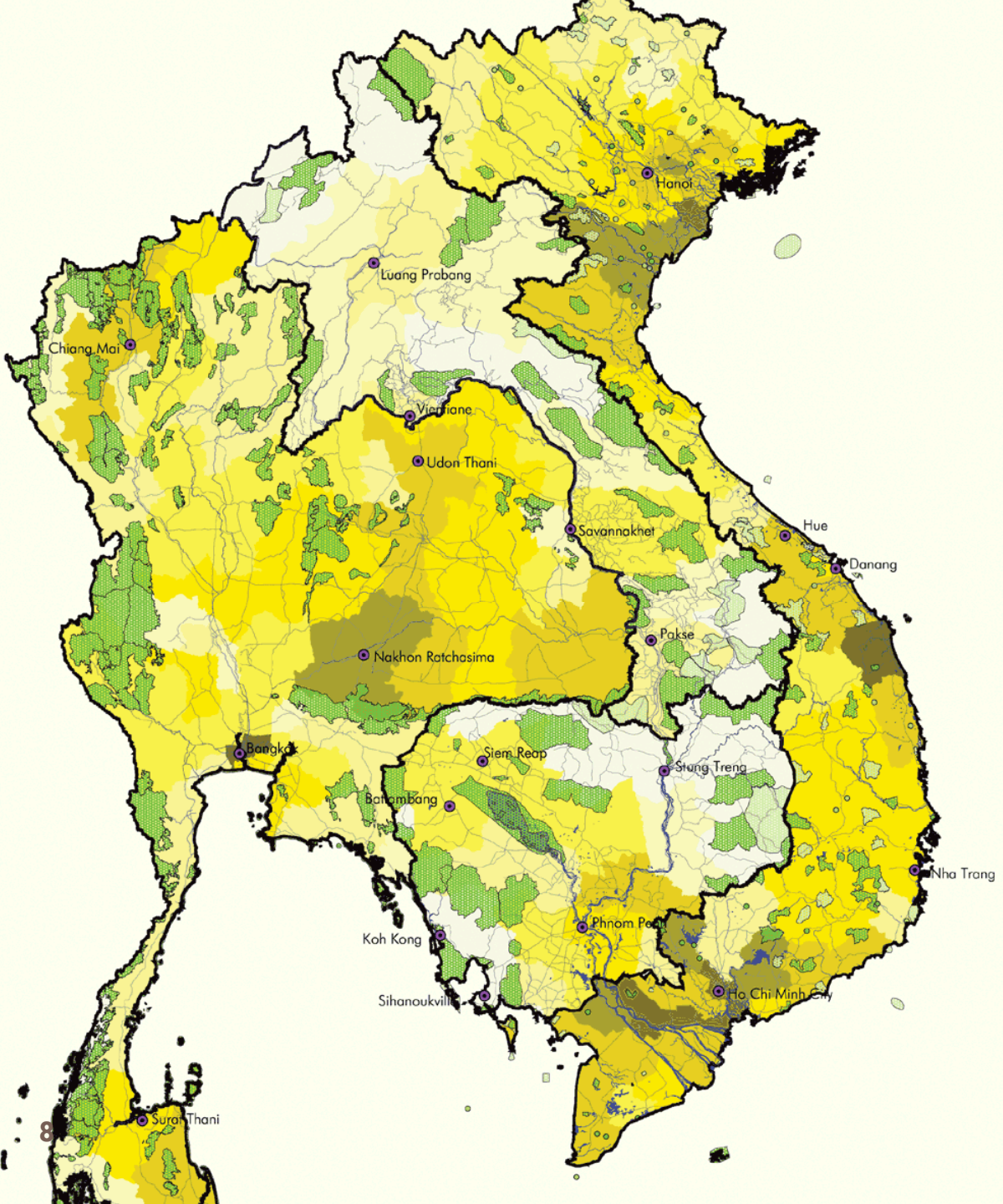
# Greater Mekong - trends

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## Social systems:

- GMS population 301 million, by 2015 expected to be 345 million
- More than 60 million in LMB dependent on the Mekong for food, energy, water and transport
- Some 300 ethnic minority groups in the GMS – an increasing number threatened
- 15% of GMS population in Laos and Cambodia











# GMS trends

## Natural systems:

- 30% of its remaining land and water habitats at risk over the next 20 years
- Terrestrial biodiversity under acute stress in many areas
- Freshwater fisheries of the Mekong River Basin have a commercial value of US\$2 billion pa and provide 80% of the animal protein for inhabitants
- 70% of commercial species are long distance migrants

# Purpose of the SEA

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- *“SEA of Proposed Hydropower Development on the Mekong Mainstream in the Lower Mekong Basin, Consultancy Services for Phase 2, Assessment”*
- Identify the potential opportunities and risks as well as contribution of hydropower to regional development by assessing:
  - ▣ alternative mainstream Mekong hydropower development strategies,
  - ▣ the regional distribution of costs and benefits with respect to economic development, social equity and environmental protection.



# Objectives of the SEA

1. Provide an understanding of the implications of mainstream hydropower development and specific policy-level recommendations on whether and how those hydropower projects should best be pursued;
2. Provide an initial baseline and assessment framework for individual mainstream project EIAs, thereby supporting the Procedures for Notification, Prior Consultation and Agreement;
3. Serve as a methodological framework for sub-basin hydropower SEAs in the LMB, which will be carried out as input to MRC's Basin Development Plan; and
4. Include capacity building to strengthen the respective analytical SEA capabilities in the concerned line agencies of the MRC Member States.

# Working principles

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1. Build on past SEA experience in the region
2. Test SEA in addressing transboundary concerns
3. Build on existing data and analysis
4. Work closely with NMCs and line agencies
5. Draw from MRC programs and line agencies of MRC Member States, and other stakeholders
6. Internalise the full costs and benefits of development in the assessment
7. Aim for broad stakeholder involvement and comprehensive consultation
8. Build capacity in application of SEA
9. Support MRC in informing member countries on progress and results of the SEA
10. Nurture working relationships between the main stakeholders through good communications.

# SEA expected outputs

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1. A comprehensive SEA of mainstream hydropower development in the LMB
2. Recommendations for institutional and policy reform
3. Environmental safeguards and mitigation measures linked to hydropower planning in the LMB.
4. Recommendation for improving the guidelines for SEA in the hydropower sector
5. Training materials for SEA practitioners in the hydropower sector
6. A set of tools and a database for future SEAs in the hydropower sector.
7. Enhanced capacity for conducting SEAs

# What is an SEA?

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- SEAs can follow similar steps to EIA but have much larger boundaries in terms of time, space and subject coverage
- SEAs define approaches for managing the broader strategic issues usually relating to more than one project
- SEA includes assessment of cumulative impacts (eg of many projects within a plan)
- SEAs serve as an umbrella level of analysis that shapes more specific SEAs and EIAs and improves their quality



# SEA is...

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- An analytical and participatory approach
- that aims to integrate environmental considerations into policies and plans
- and evaluate inter linkages with economic and social considerations.

# SEA can...

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## Evaluate

- (i) **an existing plan** (to improve environmental performance in on-going implementation) or
- (ii) **an existing plan which is to be revised**  
or
- (iii) **Contribute to preparing a new plan** (so that it addresses environmental concerns as the plan takes shape).

# SEA may have different forms

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It may:

- focus (i) only on environmental impacts or (ii) integrate environmental, social and economic dimensions of sustainability;
- engage (i) a broad range of stakeholders or (ii) be limited to expert evaluation;
- be conducted (i) in a short time frame or (ii) over a long period;

# SEA is best....

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- carried out as part of “the plan” formulation
- based on quick appraisal techniques

It is much less effective as:

- a “stand alone” procedure
- a “mega-EIA”



# Outcomes of SEA

SEAs can lead to revisions and adjustments to “the plan” and its implementation including:

1. area wide and cross sectoral mitigation,
2. more detailed assessments, studies and plans,
3. overarching safeguards and zoning to ensure valuable assets are maintained and enhanced,
4. innovations to planning and management procedures
5. assessment of a wider range of options to meet development goals.

# SEA in China

## SEA to be applied to

- land use plans and plans for regions, river basins and sea areas plans prepared by ten main development sectors - industry, agriculture, animal husbandry, forestry, energy, water, conservation, transportation, urban construction, tourism and natural resources development.
- A draft plan without an SEA cannot be approved and implemented.
- Projects under plans cannot proceed without an SEA of the plan
- China, 37 SEAs have been conducted at national level and more than 100 at local government level.

# SEA in Vietnam

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- Strong legal basis for SEA of strategies and plans (not policies)
- Shifts responsibility to plan “owners”
- An open process with stakeholder involvement
- Extensive program of piloting SEAs – 6 at national level and some 20 at local level.
- Vietnam’s SEA – similar to “sustainability analysis” – it covers environmental, social and economic affects
- Hydropower the focus of three most comprehensive SEAs under the new legal framework

# Vietnam

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SEA for 6 categories of strategies and plans:

1. National socio-economic development
2. Sector development (each central govt. agency)
3. Provinces and cities
4. Inter-provincial (regional) – land use, forest protection and development, natural resource development
5. Key economic regions
6. River basins



# Mekong regional SEAs

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- Only three at regional level (on-going):
  - I. the GMS NSEC SAP and
  - II. the MRC hydro on mainstream Mekong
  - III. The MRC three “Ss” cumulative assessment
- ADB GMS Power Trade RETA to conduct two pilot SEAs for two river basins in the region
- ADB EOC to conduct SEA of EWEC
- MRC BDB scenario assessment – similar to an SEA?

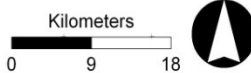
# Costs of SEA

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- European experience shows that SEAs costs 3-10% of the total cost of the development planning process
- In UK – 400 SEAs are conducted each year
- SEAs become less expensive as methods, skills and procedures are fine tuned and agencies understand their obligations (builds on information from previous assessments)
- If spatial and sector planning is done well – then SEAs become just a tool for reinforcing good practice



# Quang Nam Province Viet Nam

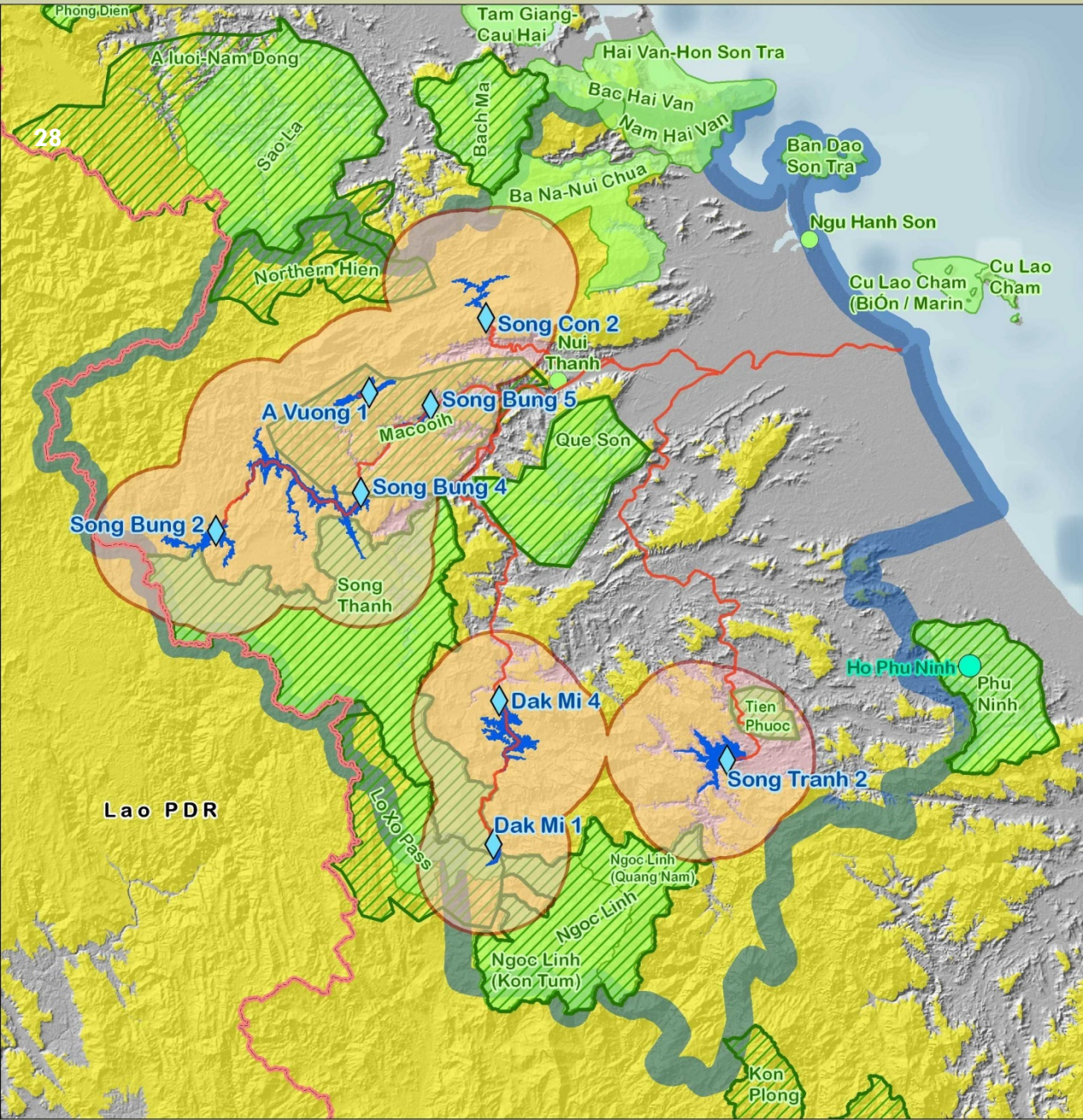


## The SEA Study Area

- Viet Nam, Provinces
- Rivers and Waterbodies
- Vu Gia-Thu Bon Watershed



# Viet Nam - Vu Gia-Thu Bon Basin: Hydropower Projects



The focus of  
the SEA:

8 large projects

60 medium and small  
projects

8 Large  
hydropower  
projects and  
their 10 km  
zone of  
influence

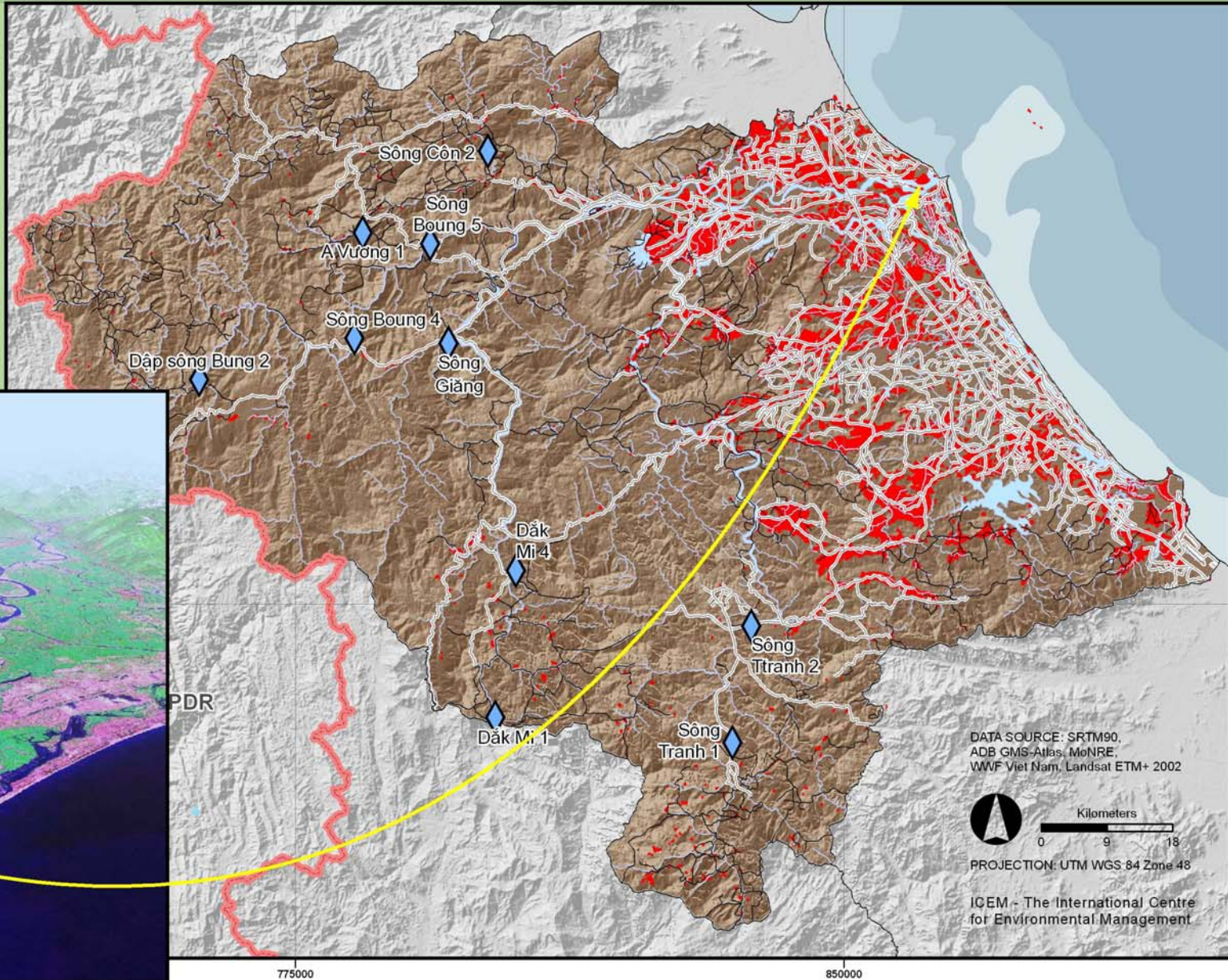


# Quang Nam Province, Viet Nam

## Population Distribution and Road Network

### Key to Features

-  Viet Nam, Intl. Border
-  Viet Nam, Provinces
-  Minor Road
-  Major Road
-  Settlement
-  Rivers and Waterbodies
-  Hydropower Dams



DATA SOURCE: SRTM90,  
ADB GMS-Atlas, MoNRE,  
WWF Viet Nam, Landsat ETM+ 2002



PROJECTION: UTM WGS 84 Zone 48

ICEM - The International Centre  
for Environmental Management

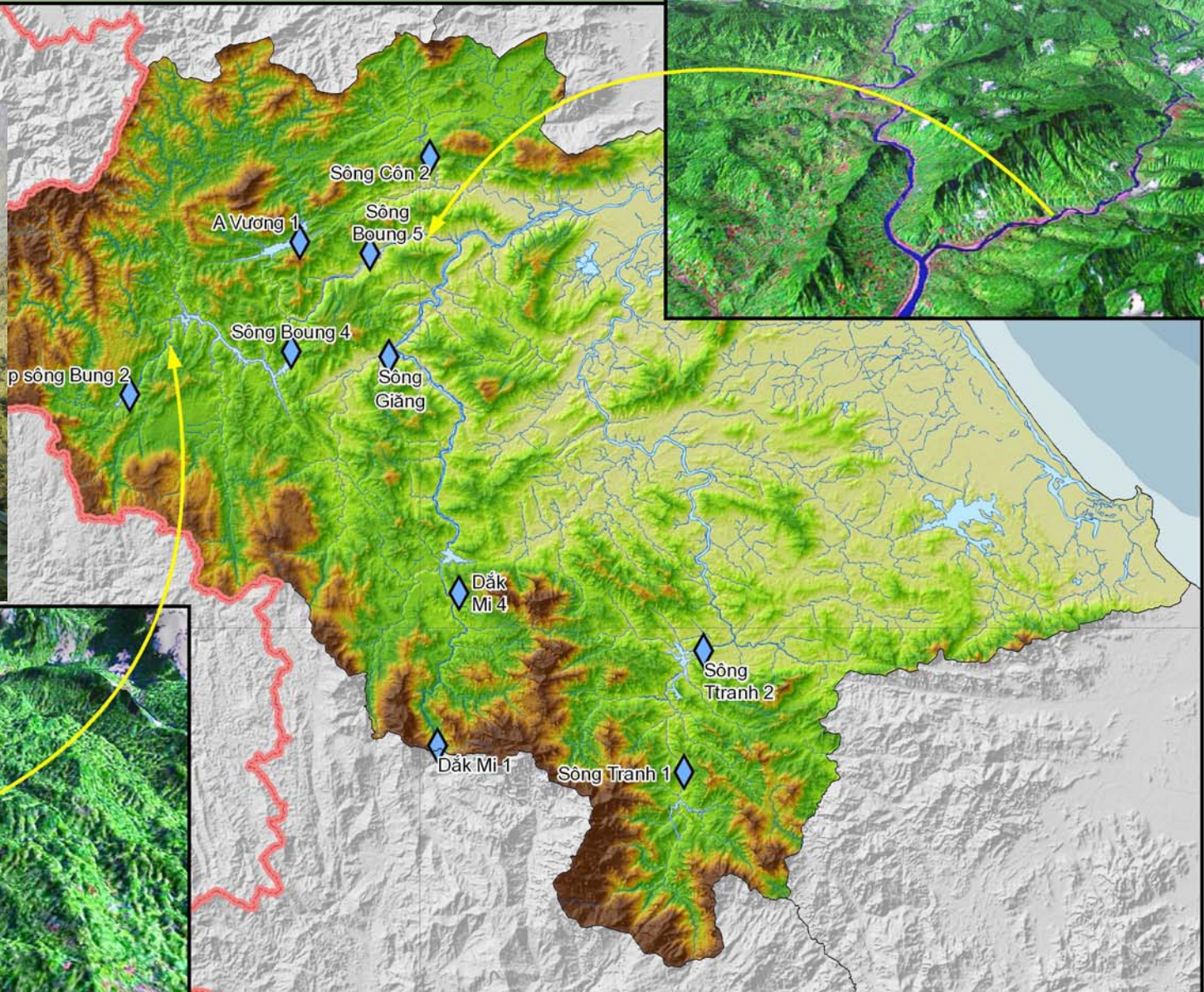


# Quang Nam Province, Viet Nam

## Hydropower Schemes

### Key to Features

 Viet Nam, Intl. Border



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# What “plan” is targeted in this SEA?

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- Eleven separate project proposals (and 8 on the upper Mekong)
- Is “the plan”:
  - ▣ The GMS energy strategy?
  - ▣ The BDP?
  - ▣ An amalgam of the national power development plans of the four LMB countries?



# Characteristics and opportunities for the SEA

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- The SEA is not being conducted as a formal requirement within a legal framework -- but it is supported by the MRC member countries
- It is not addressing an existing plan or one in preparation but a group of “feasible” project proposals for the same river
- The projects are all in the planning stages so, in principle remain open to influence
- Most of the projects have not been subject to EIAs or any form of cumulative impact assessment so those more specific studies are open to influence
- A broad development plan for the LMB is under preparation so is open to influence
- National power development plans are under review and therefore open to influence
- The GMS energy strategy is regularly reviewed and there open to influence

# Broad issues for the SEA

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- People affected – resettlement and livelihoods, minorities
- Power provision and development
- Fish migration and fisheries
- Local economies and employment
- Agriculture and food security
- Flood management
- Navigation
- Tourism
- Climate change
- Other key strategic issues to be identified

# Issues for in depth study

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## High priority:

1. The impacts of the mainstream hydropower projects in Yunnan Province, especially downstream effects
2. Macro-economic analysis of the distribution of costs and benefits of hydropower
3. Power/energy development

## Others:

- Climate change threats and adaptation
- Fish migration and impacts on fisheries

# Steps in the SEA

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## **1. Scoping**

1. Identification of key issues for development of the river basin
2. Scoping of key issues to define the BIG concerns
3. Defining the sustainability objectives for the SEA
4. Identification of additional studies as part of the SEA

## **2. Baseline assessment and trend analysis**

1. Gathering of the “evidence base” in each country
2. Analysis of past trends and current situation in the key development issues

# Steps in the SEA

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## **3. Risk (impact) assessment**

1. Developing scenarios
2. Defining future trends in the key issues under each scenario:
  - ▣ Without hydropower development
  - ▣ With hydropower development
3. Assessing the combined/cumulative effects of future trends in the key issues under each scenario
4. Valuation of risks and development options

## **4. Avoidance, enhancement and mitigation**

1. Identifying avoidance, enhancement and mitigation measures

# Example of linking an SEA with the planning and consultation process

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