

Proposed approach to formulation and assessment of basin-wide development scenarios in the Lower Mekong Basin

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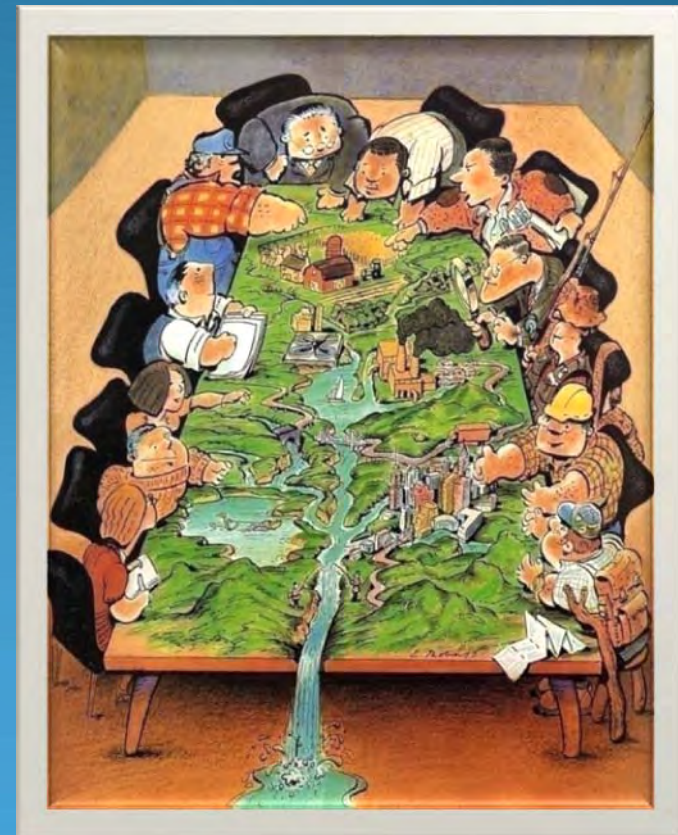
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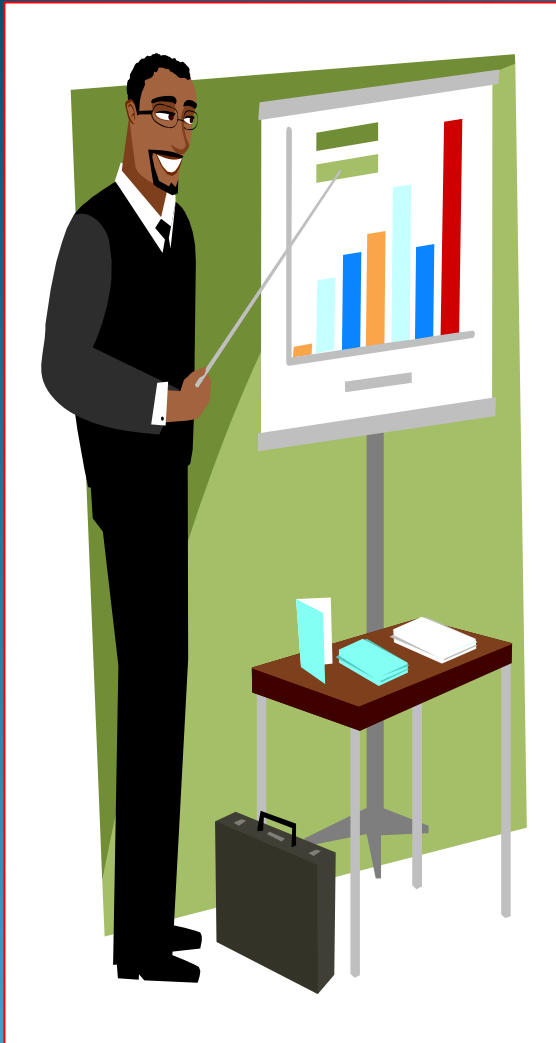
MRC-BDP Stakeholder Consultation

Date: 12-13 March 2008

Venue: Lao Plaza Hotel, Vientiane, Lao PDR



Outline

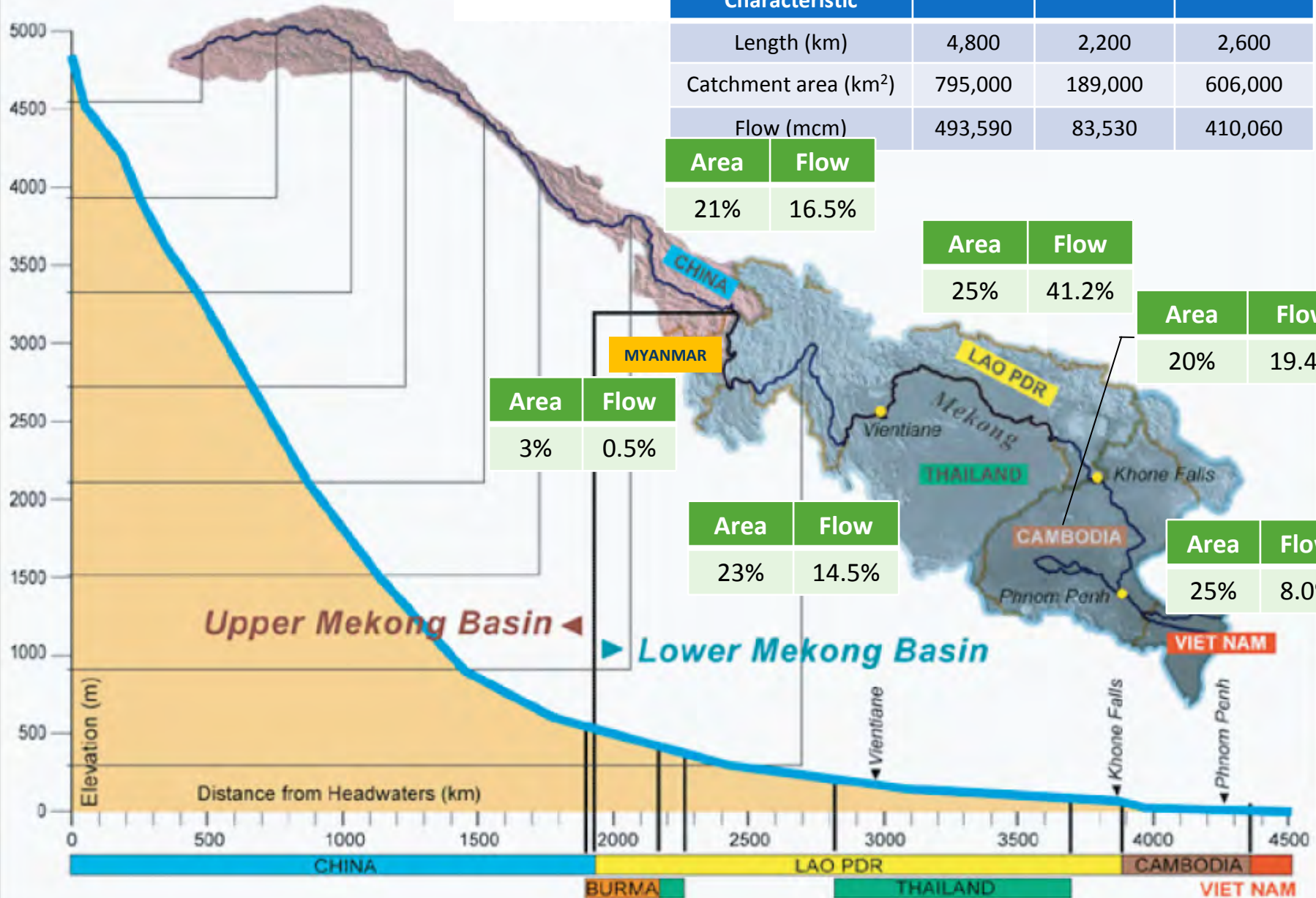


1. The Mekong River Basin
2. Scenario based planning
3. Proposed approach to formulation and assessment of basin-wide development scenarios
4. Process and schedule to achieve basin-wide development scenarios

The Mekong River Basin

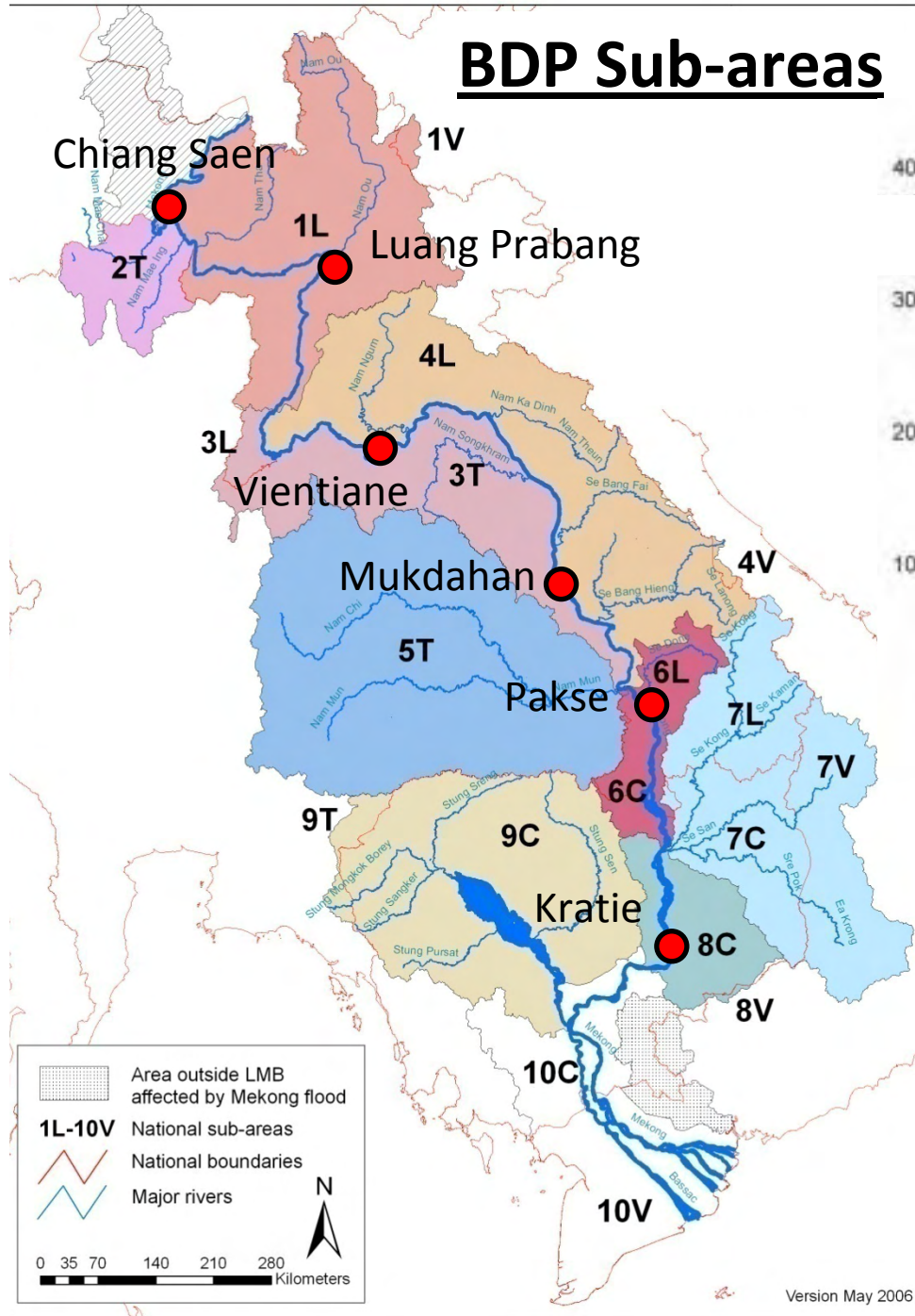


8th largest and 12th longest river of the world

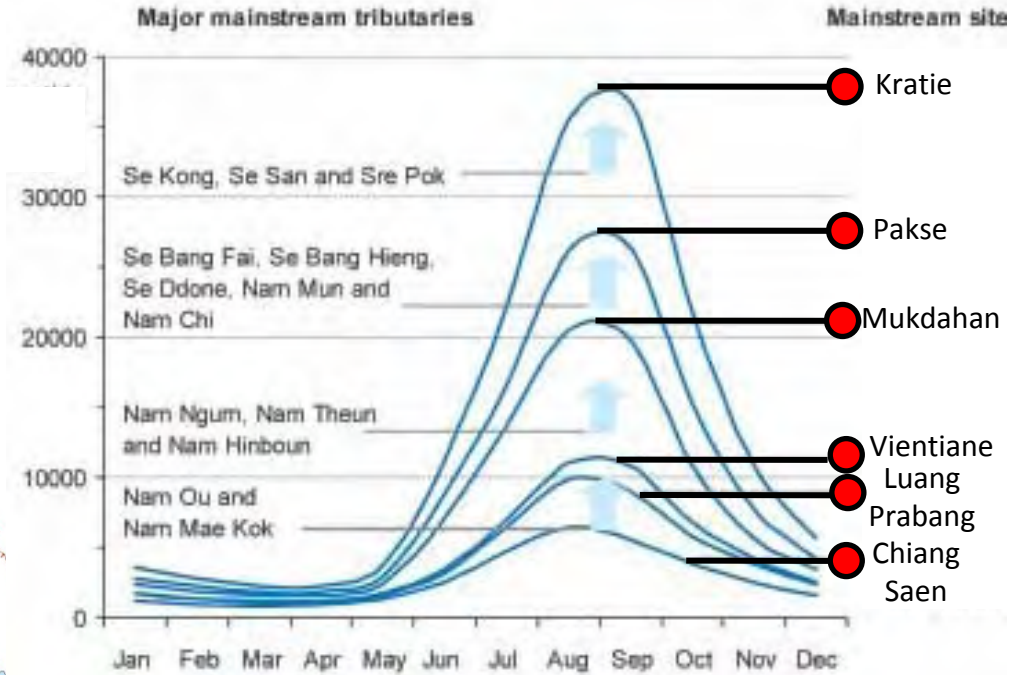


Source: Presentation on flow contribution to the Mekong Mainstream (1985-2000-using DSF), The 7th Meeting of the Technical Working Group, 3-5 October 2007

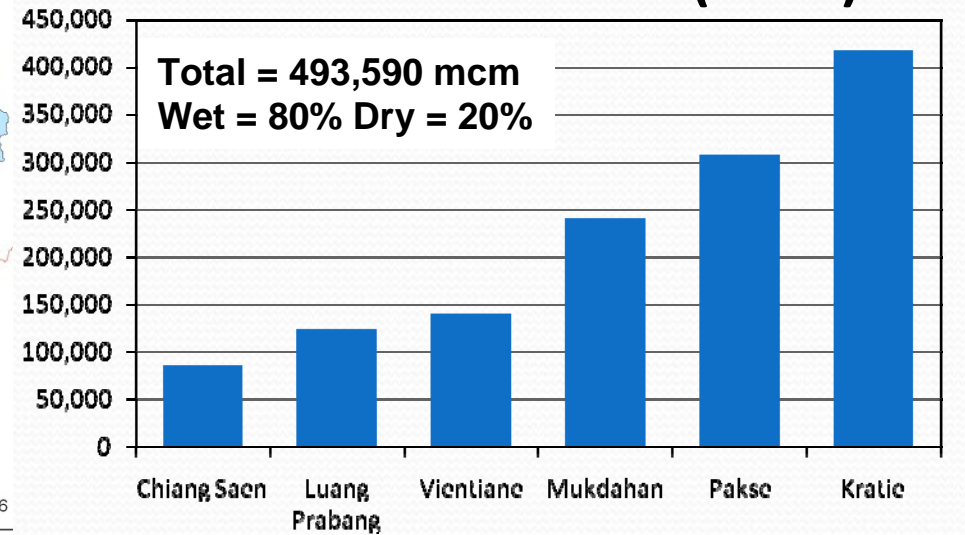
BDP Sub-areas



Mean monthly flow (m³/s)



Mean annual flow (mcm)



Active water utilization

Mean annual modeled diversions and dam storage by countries (1985-2000)
from Baseline Scenario

Unit: mcm

Sector	Lao PDR	Thailand	Cambodia	Viet Nam	Total	Total to mean annual flow (%)
Irrigation	2,500	8,100	4,300	25,100	40,000	8.10
Water supplies	109	784	123	435	1,450	0.29
Hydropower dam	4,977	28,906	-	779	34,662	7.02
Irrigation dam	-	2,435.7	-	-	2,435.7	0.49

❖ Mean annual flow is about 493,590 mcm

Socio-economic situation



Projected population

Portion within Mekong Basin	2002 Population (million)	Annual Growth Rate ()	2010 Projected Population (million)
Cambodia	13.8	2.5	16.8
Lao PDR	5.1	2.86	6.4
NE Thailand	21.1	0.87	22.6
Viet Nam delta	16.6	0.9	17.8
Total	56.6	(Average) 1.54	63.6

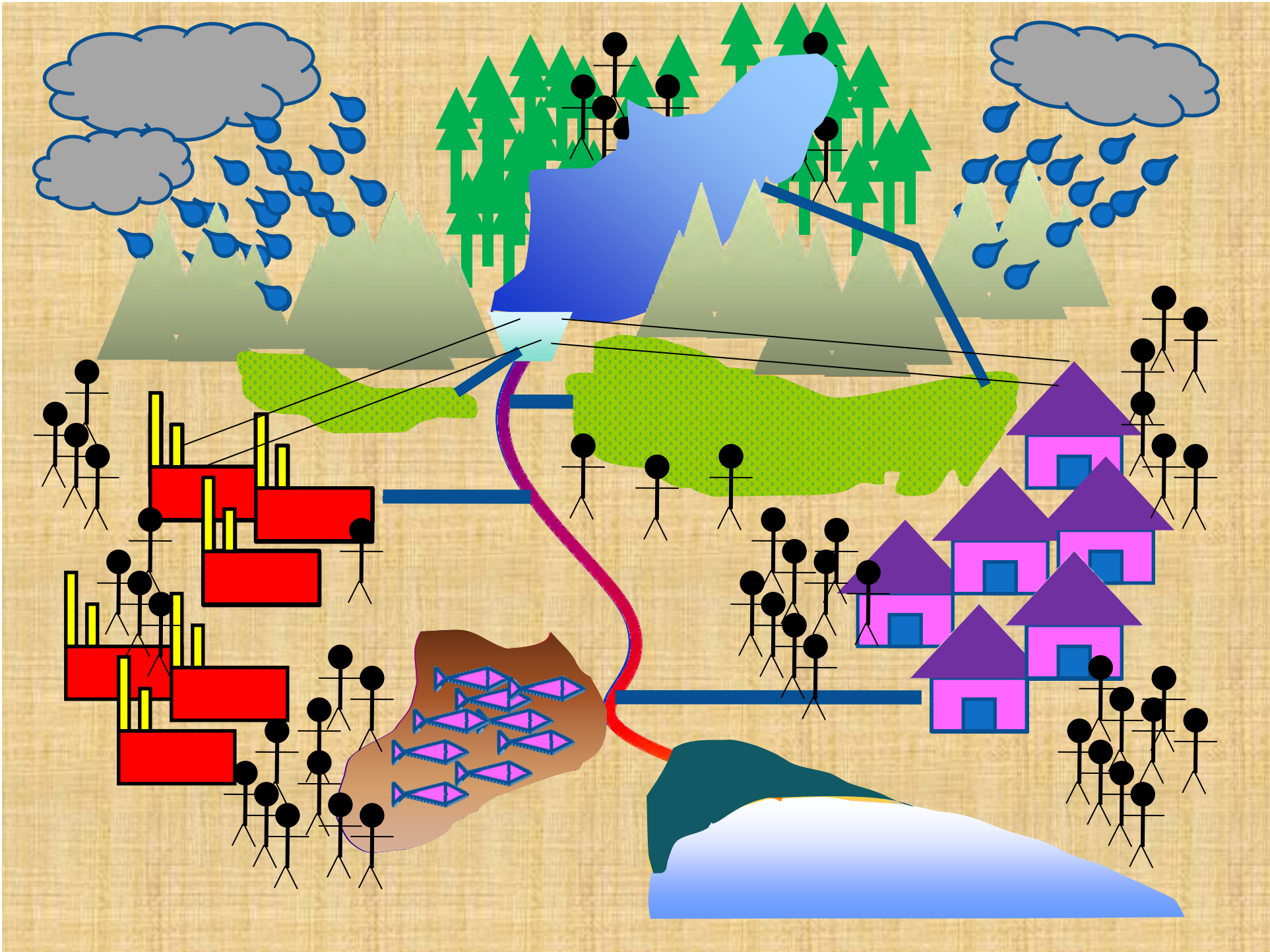
Socio-economic trend

	GDP (US\$ billions)		Per Capita GDP (US\$)		Poverty rate % (national line)	
	1995	2004	1995	2004	1993	2003
China	700.2	1,649.4	578.1	1,268.7	6.7 ^b	3 ^c
Myanmar	5.5	9.1	122.6	167.1	35 ^d	25 ^e
Lao PDR	1.8	2.4	382.1	415.7	45 ^a	33.0
Thailand	168.0	163.5	2,825.7	2,521.2	13.1 ^{2,f}	<2
Cambodia	3.4	4.4	321.1	314.1	39 ^a	36.0
Viet Nam	20.7	43.9	288.0	534.8	50.9 ^a	29.0

Scenario-based planning

“Scenarios help us to review how plans and decisions today can change our future by thinking through what the impacts will be”





Main Driving Forces ...

Population growth
Economic growth
Technology development
Climate change

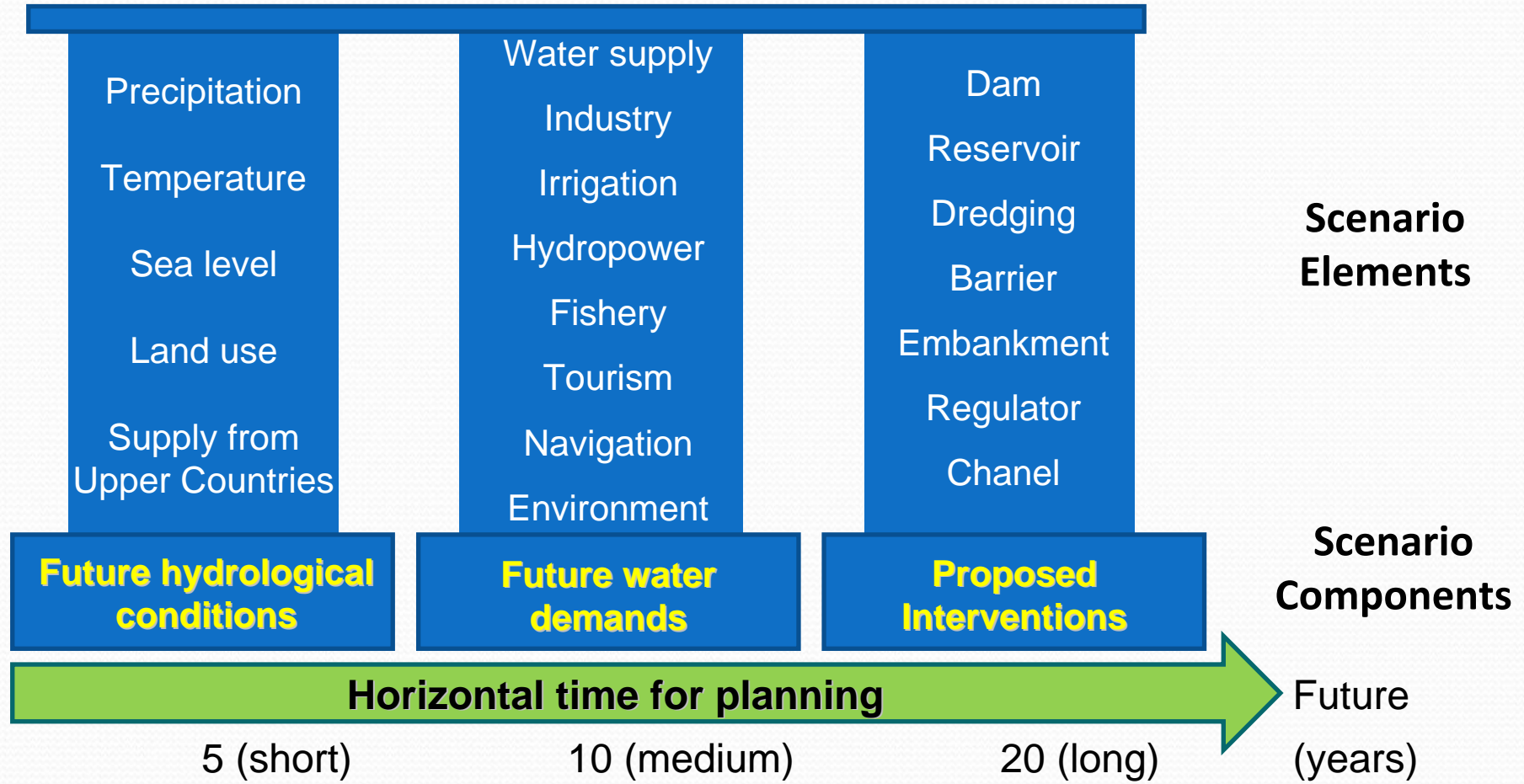
... Causing changes in

Demands
Development needs
Management practices
Climate patterns

What is a scenario?

- In general, A scenario is a “*What if*” case
 - *What* are the impacts on LMB *if* upper counties construct dams on the main stream?
 - *What* are the benefits and losses *if* we increase irrigation areas?
 - Etc....
- A scenario is a hypothetical combination of possible changes in *hydrological condition* and/or *multi-sector water demands* and/or *proposed interventions*, describing a most realistic future situation

Scenario components and elements



Basin-wide development scenarios in BDP2 context

- The BDP2 is designed to produce a ***IWRM-based Basin Development Plan***. The plan comprises following three elements; ***development scenarios***, an IWRM-based basin strategy and a project portfolio
- The formulation of basin-wide development scenarios will ***consider all existing, significant planned and proposed water and related resources development projects for long-term perspective*** during next 20 years
- The assessment will focus on ***tranboundary implications*** either in term of impacts (hydrology, environment and social impacts) or benefit/cost between two or more countries

Development challenges

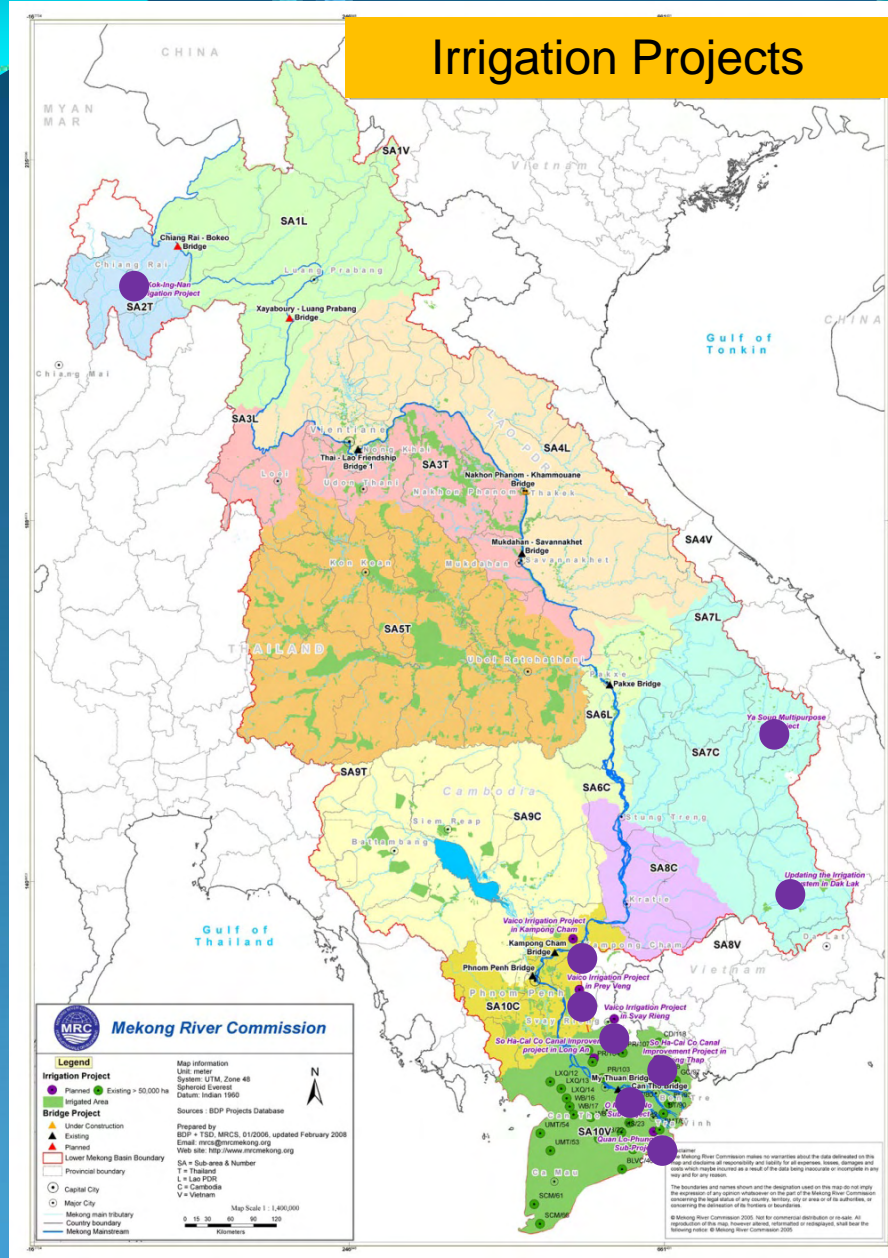
- Increased food security through more efficient land and water development and irrigation;
- Appropriate development of the basin's hydropower potential to help meet the increasing need for energy;
- Maintenance of productive fisheries and enhanced aquaculture of indigenous species for increased food security and economic output;
- More active and efficient river transportation through increased freedom of navigation to increase social development, international trade and tourism opportunities;
- Avoidance, minimization and mitigation of people's suffering and economic losses due to floods and droughts;
- Protection of the environment, natural resources, aquatic life and ecological balance of the basin from pollution or other harmful effects from development.

Source: MRC Strategy Plan 2006-2010

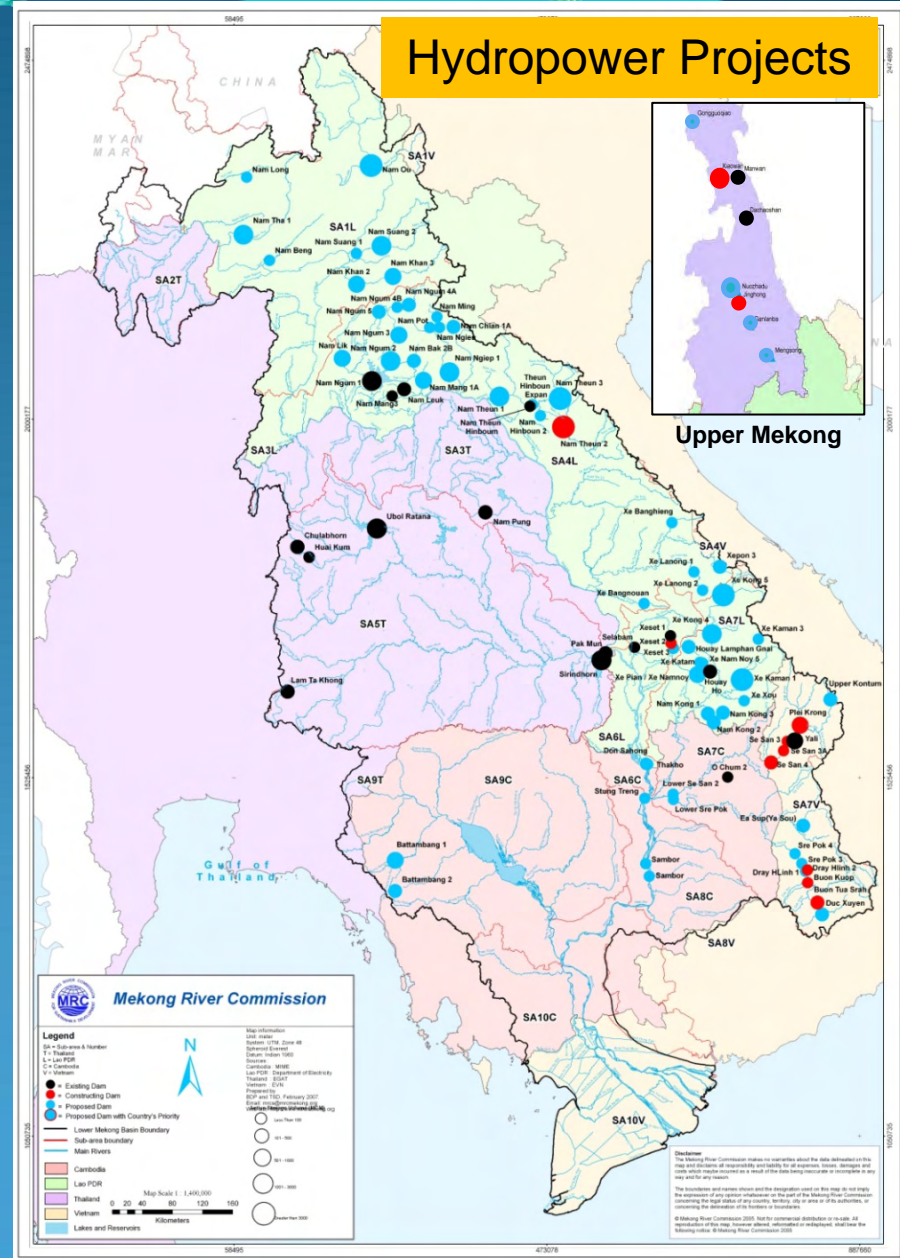
Sectors

Water supply (D&I)
Irrigation
Hydropower
Fishery
Tourism
Navigation
Flood and drought
management
Watershed management
Environment

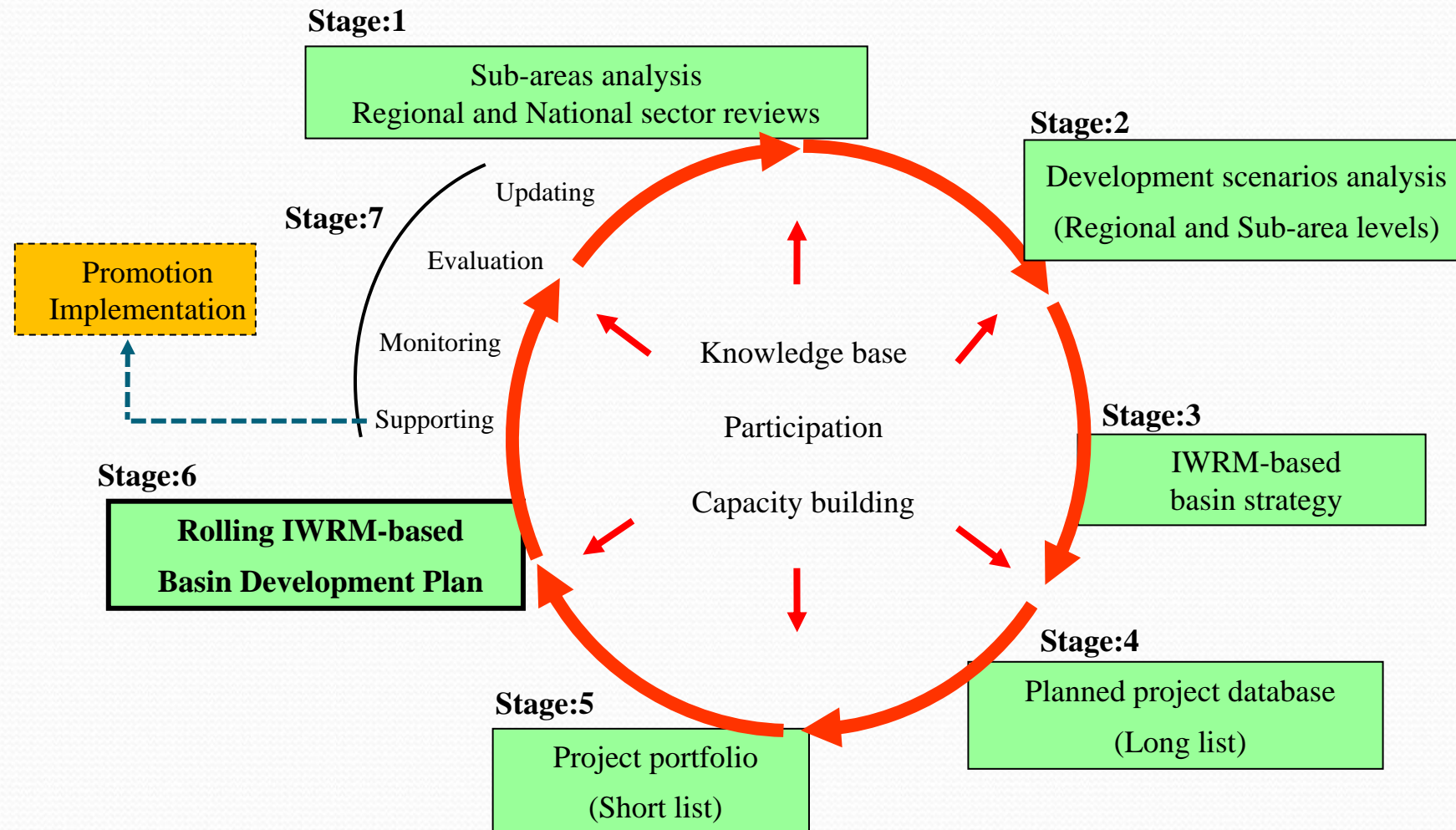
Irrigation Projects



Hydropower Projects

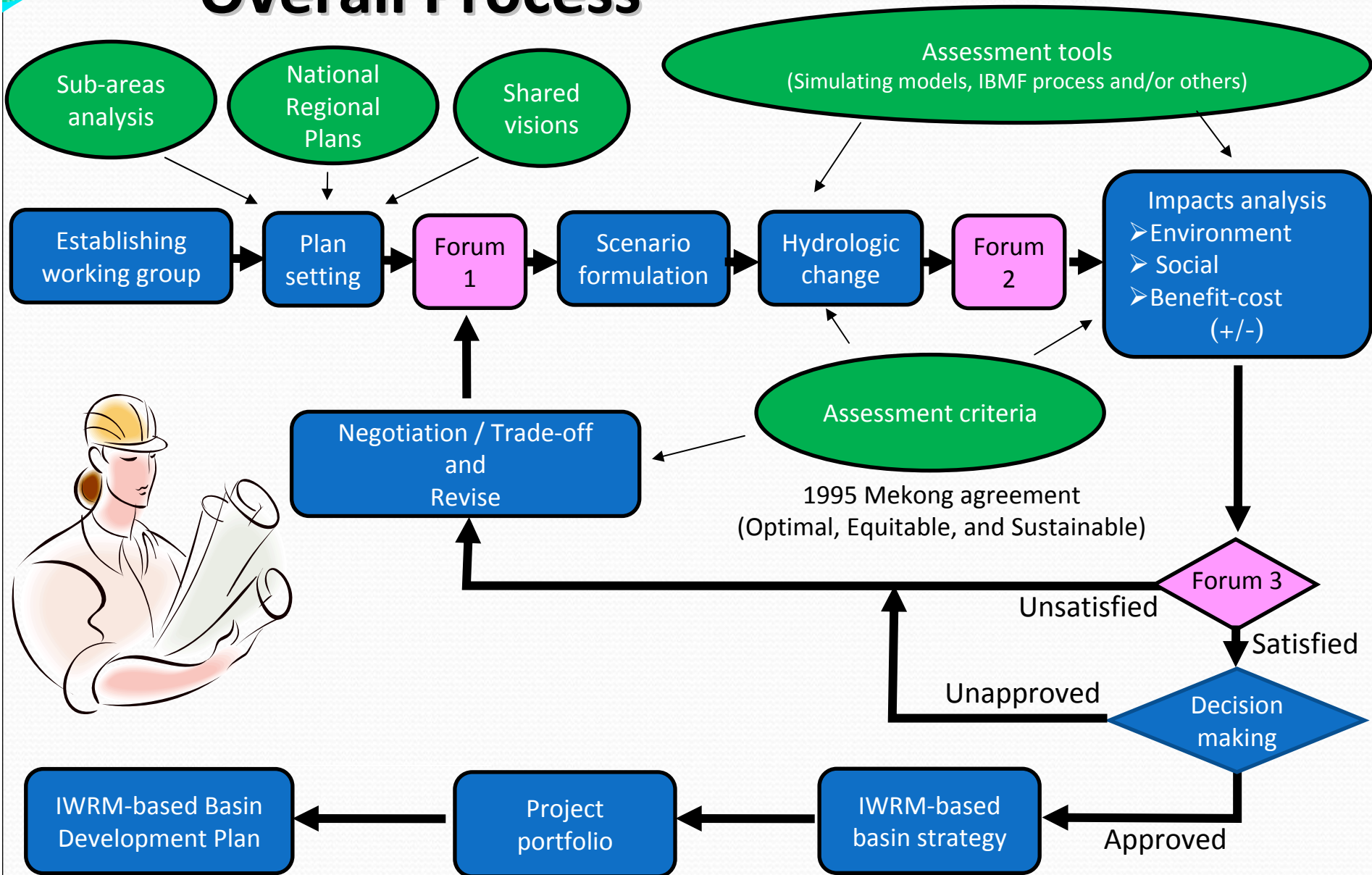


When are scenarios used?

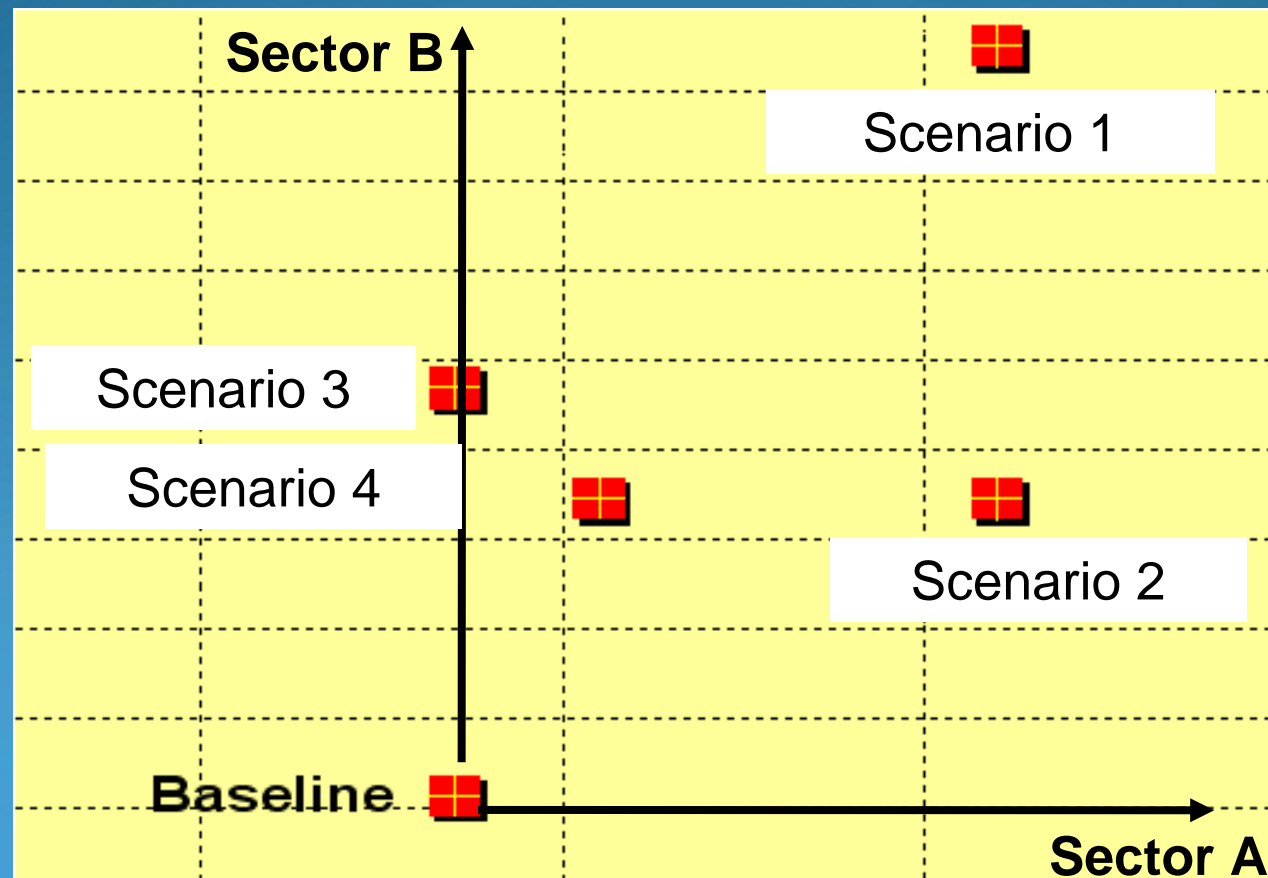


BDP Planning Cycle

Overall Process



Proposed approach to formulation and assessment of basin-wide development scenarios

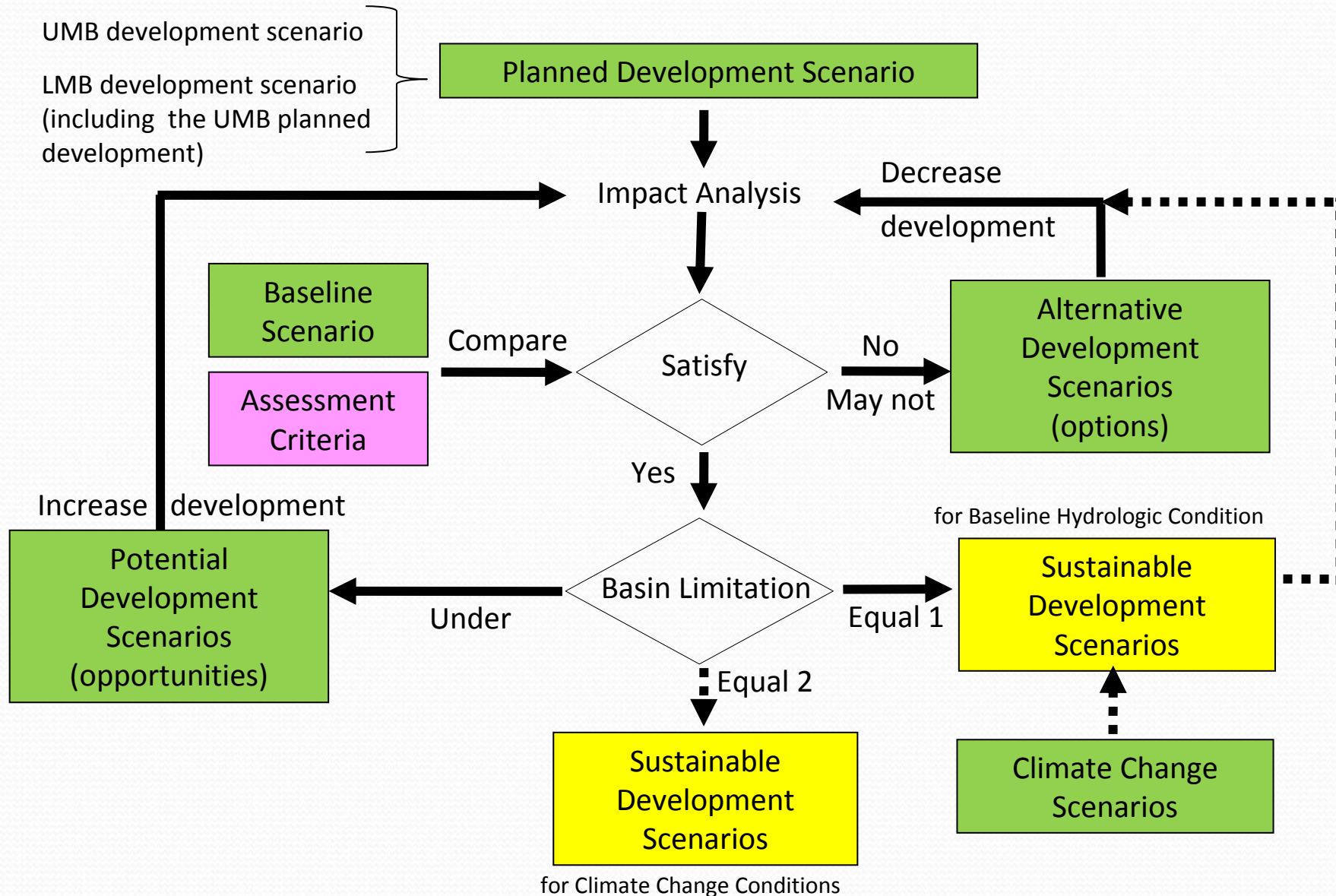


Type of scenarios and their purposes

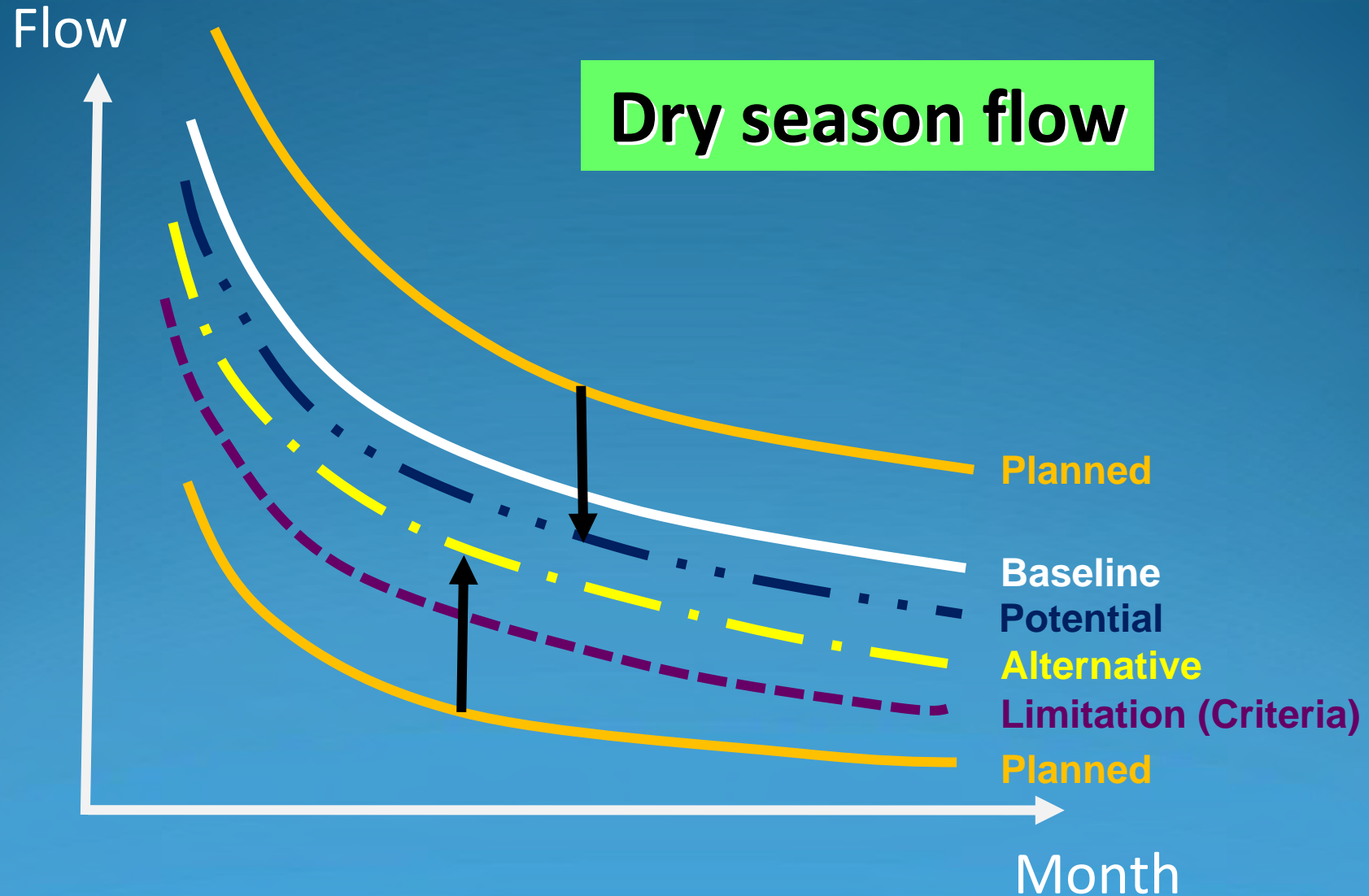
Scenario	Purpose
Baseline scenario	<ul style="list-style-type: none"> To be a reference for comparing with other scenarios
20 years planned development scenario (most realistic case)	<ul style="list-style-type: none"> To see the impacts of planned significant development projects (national and regional) in the next 20 years in the basin
Alternative development scenario (options)	<ul style="list-style-type: none"> To find out appropriate planned development alternatives by maximizing regional benefit and minimizing harmful effects on social and environment
Potential development scenario (opportunities)	<ul style="list-style-type: none"> To determine further development opportunities within basin limitations
Climate Change scenario	<ul style="list-style-type: none"> To analysis the impact of possible climate change in future on basin development plan

Main assumption: All planned development projects will be happened in next 20 year

Approach of scenario formulation



Application of scenarios



Impacts on what?

Vision for the Mekong River Basin

" An economically prosperous, socially just and environmentally sound Mekong River Basin"

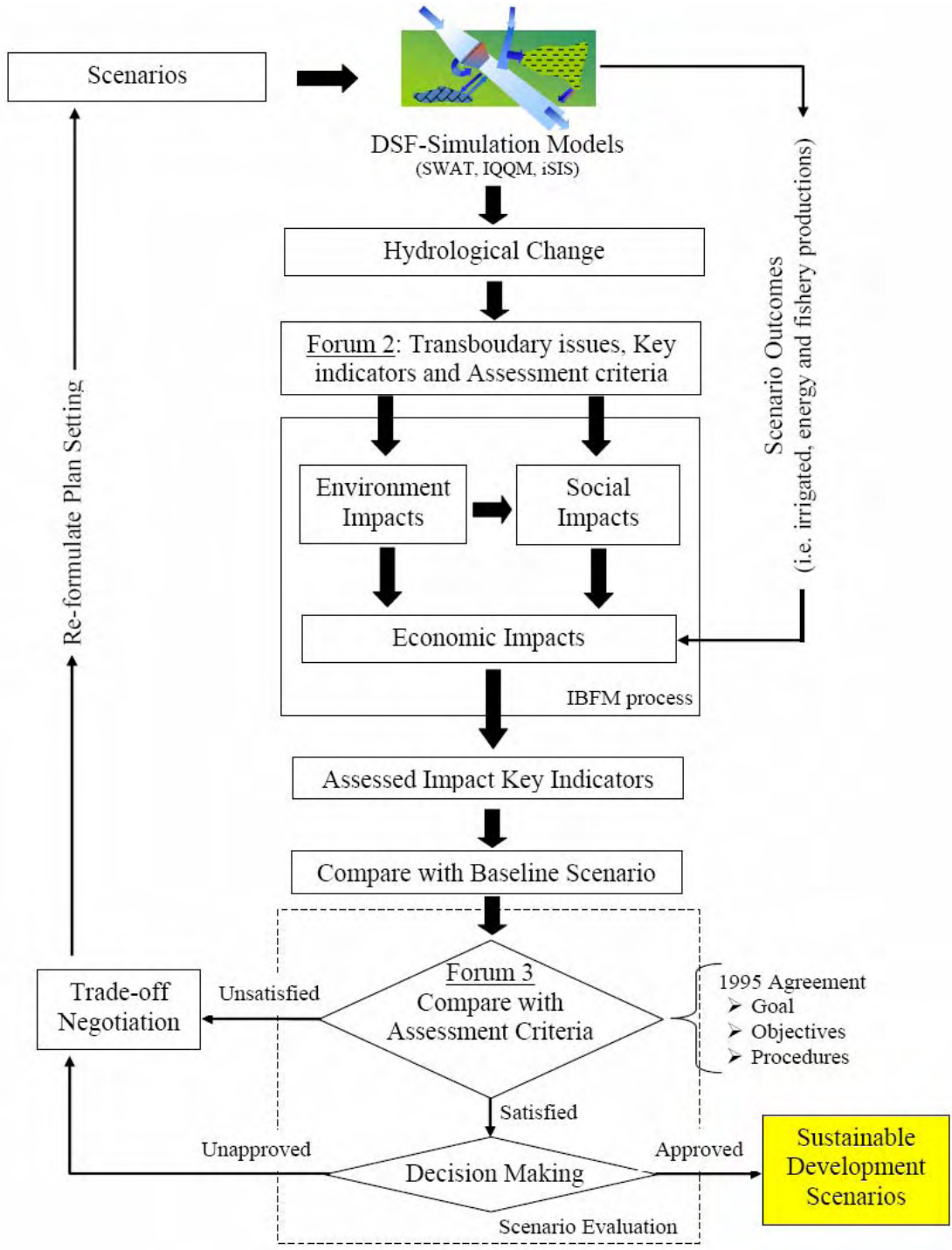
1995 Agreement

Article 6:

Maintenance of
Flows on the
Mainstream

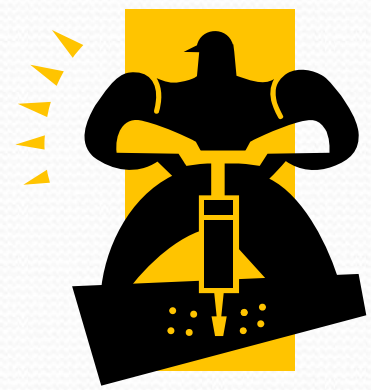
A Part of Strategic Directions for IWRM in the Lower Mekong Basin

*" Economic development and
poverty alleviation, social
development equity and
environment protection"*



Proposed approach to assess impacts and evaluate the scenarios

- Key impact indicators
- Assessment tools
- Assessment criteria



“SMART” indicators

- **Simple** – to derive and understand
- **Measurable** – to allow quantitative simulation & objective analysis
- **Agreed** – by all key stakeholders as being representative of the issues
- **Realistic** – to measure at the required time and spatial scales
- **Timely** – can be measured/simulated quickly to allow management to respond

Background of assessment criteria for evaluation of development scenarios

- 1995 Agreement is a agreement on the cooperation for the **sustainable** development of the Mekong River Basin
- Art 1: Areas of Cooperation
 - “ To cooperation in..... in a manner to **optimize** the multiple-use and mutual benefits of all riparians and to **minimize** the harmful effects that might result from natural occurrence and man-made activities”
- Art 5: **Reasonable and Equitable** Utilization
- Procedure for **the Maintenance of Flows on the Mainstream (PMFM)**

Example of indicators and assessment criteria

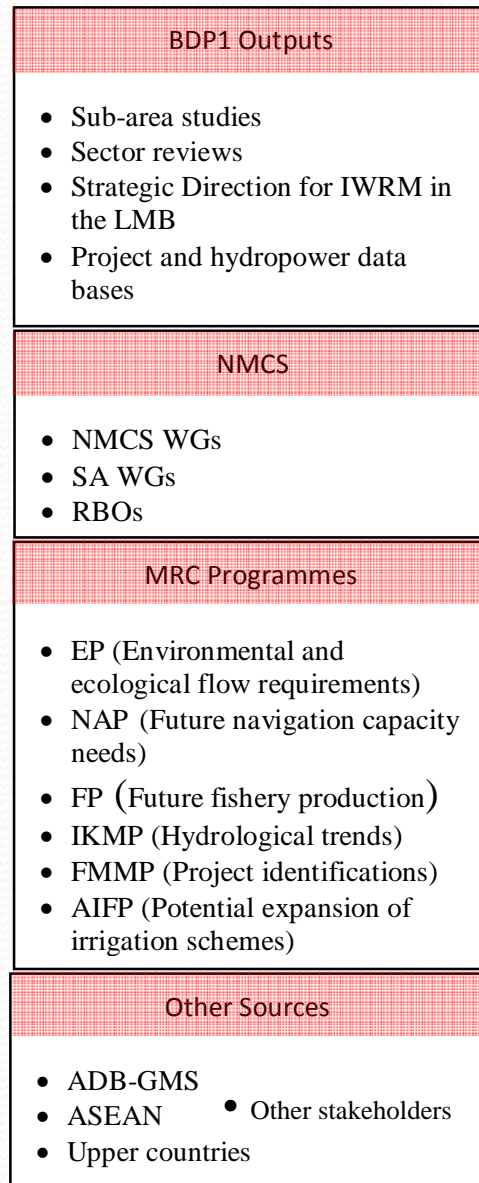
Goal	Primary objectives	Indicators	Criteria	
Sustainable development	Optimal development ➤ Economically beneficial ➤ Social just ➤ Environment sound	Economic	Agriculture production	Target or Max
			Energy production	Target or Max
			Fishery production	Target or Max
			Others	
		Social	Employment and incomes	Target or Max
			Freshwater fisheries	Target or Max
			Flood damage-household	Limitation or Min
			Others	
		Environment	Dry season flow	Limitation or Min
			Salinity intrusion	Limitation or Min
	Wetland production		Target or Max	
	Water quality and sediment		Limitation or Min	
	Others			
	Equitable development ➤ Equally beneficial to each member State	Net economic value for each country	Equitable sharing	
Net economic value for each sectors		Equitable sharing		

Process and schedule to achieve basin-wide development scenarios

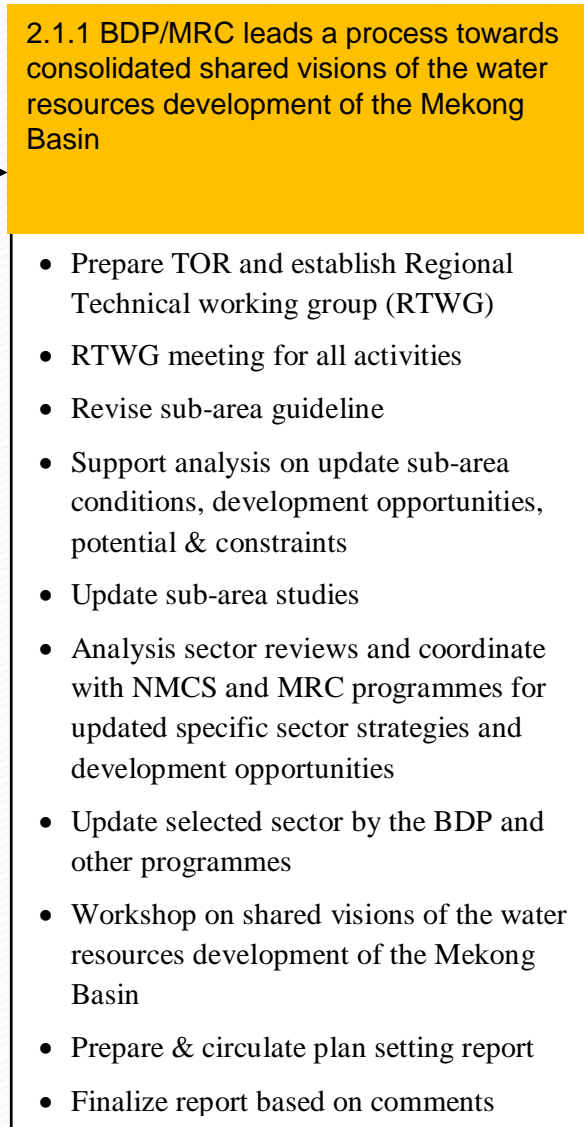


Process to achieve Output

Inputs

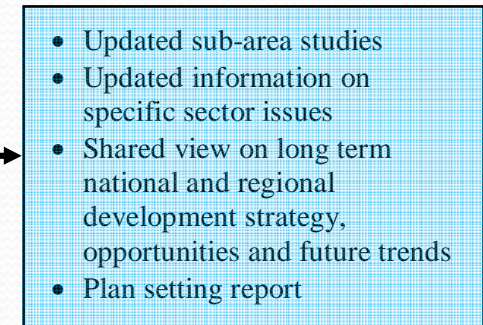


Activities



Activities 2.1.2

Milestones/Output



Inputs

BDP1 Outputs

- Sub-area scenarios element identified
- 20-years scenarios
- Set up model

Tools and Instruments

- DSF
- IBFM
- RAM
- PWQ
- PMFM

NMCS

- Modeling specialist
- Experts

MRC Programmes

- EP (Climate change scenarios and IBFM)
- IKMP (Modelling and Hydrology team)

BDP2 Outputs

- Project database
- Upgraded tools

Activities

2.1.2 Concretize large scale development options, opportunities, and constraints and analyse costs, benefits and impacts

- Prepare & circulate discussion paper
- Revise discussion paper based on comments
- Regional scenario formulation
- Mobilize international and regional experts to review scenario formulation
- Prepare and collect data as necessary
- Analyse the impacts
 - Hydrologic
 - Environment
 - Social
 - Economic
- Prepare & circulate draft working paper
- Revise scenarios assessment based on comments
- Mobilise international and regional experts to review scenario assessment

Milestones/Output

- Regional Working Group on development scenarios established
- Discussion paper on scenario formulation and assessment
- Draft on scenario formulation
- Draft on hydrological impact assessment
- Draft on Environmental impact assessment
- Draft on Social impact assessment
- Draft on economic impact assessment
- Draft & Final report on scenario formulation and assessment
- Review report from international and regional experts

Output 2.1

Regional/basin-wide scenarios and development opportunities identified, assessed and impacts analysed

Plan Schedule

Number	Components/Outputs/Activities/Tasks	2007			2008					2009																	
		S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
BDP.2.1	Basin-wide development scenarios																										
BDP.2.1.1	BDP/MRC lead a process towards consolidated shared visions of the water resources development of the Mekong Basin																										
BDP.2.1.1.1	Prepare TOR and establish regional working group on development scenarios																										
BDP.2.1.1.2	Regional working group meetings																										
BDP.2.1.1.3	Revise sub-area guideline																										
BDP.2.1.1.4	Support analysis on update sub-area conditions, development opportunities, potential & constraints																										
BDP.2.1.1.5	Update sub-area studies																										
BDP.2.1.1.6	Analysis sector reviews and coordinate with NMCS and MRC programmes for updated specific sector strategies and development opportunities																										
BDP.2.1.1.7	Address gaps in sector by the BDP and other MRC programmes																										
BDP.2.1.1.8	Prepare & circulate plan setting report																										
BDP.2.1.1.9	Finalize report based on comments																										
BDP.2.1.2	Concretize large scale development options, opportunities, constraints and analyze costs, benefits and impacts																										
BDP.2.1.2.1	Prepare & circulate discussion paper on scenarios formulation and analysis																										
BDP.2.1.2.2	Revise discussion paper based on comments																										
BDP.2.1.2.3	Regional scenario formulation																										
BDP.2.1.2.4	Mobilize international and regional experts to review scenario formulation																										
BDP.2.1.2.5	Prepare and collect data as necessary																										
BDP.2.1.2.6	Analyze the impacts (Hydrologic)																										
BDP.2.1.2.7	Analyze the impacts (Environment, Social, Economic)																										
BDP.2.1.2.8	Prepare & circulate draft report on scenario formulation and assessment																										
BDP.2.1.2.9	Revise scenarios assessment based on comments																										
BDP.2.1.2.10	Mobilize international and regional experts to review scenario analysis																										





Thank you