

SIX LEVELS OF WATER SECURITY AND THEIR POSSIBLE RESPONDING FOR CLIMATE CHANGE IMPACT IN THE MEKONG DELTA

IPU Science for Peace Parliamentary Meeting: Water security and insecurity: Rebuilding peace with science

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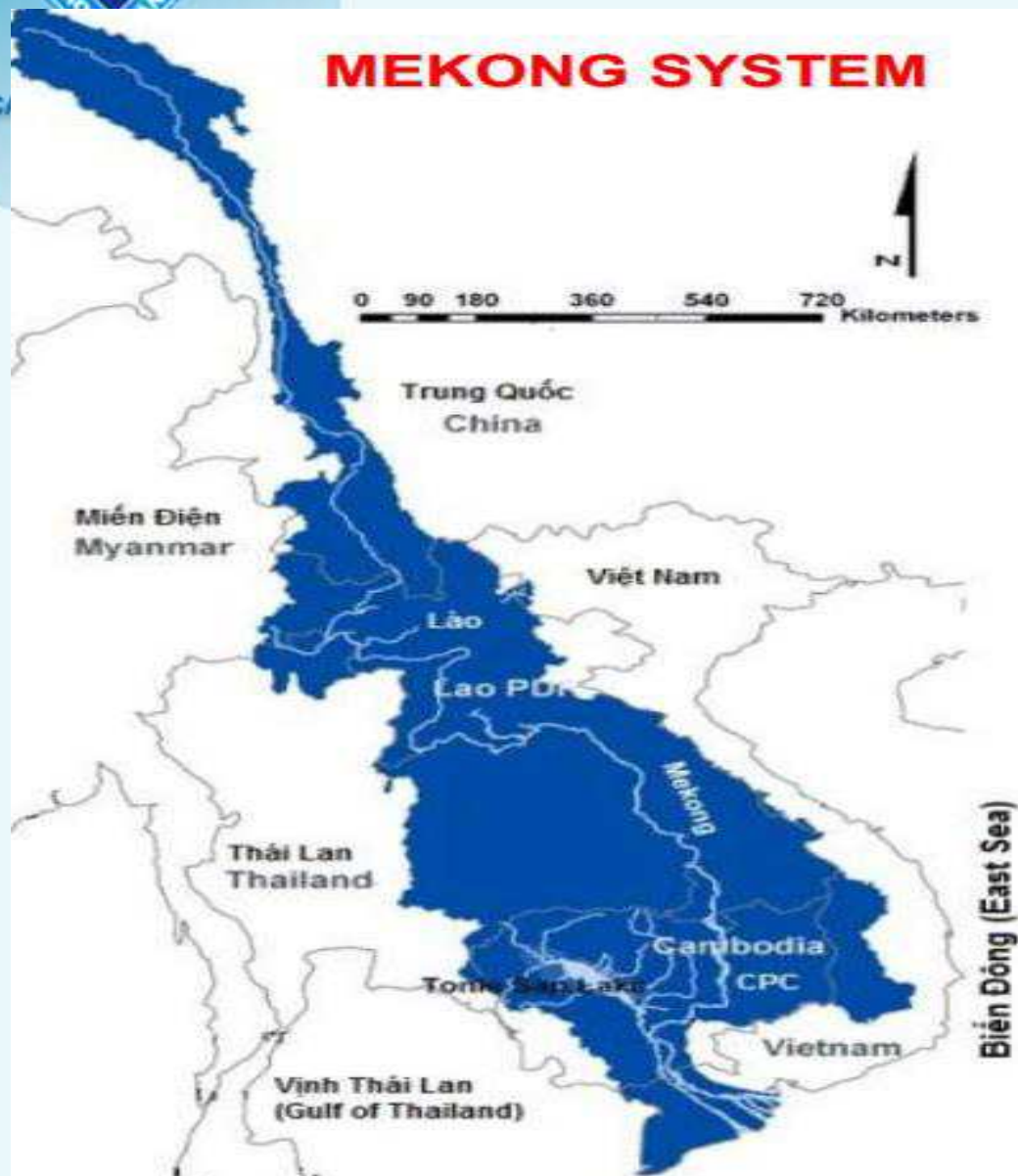
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- 2. Challenges on driver for transboundary conflict over water in the Region and on the Mekong River Commission**
- 3. Possible solutions by six levels of water mgt for the water security related to the climate change's impacts in the Mekong Delta**



VALUES OF WATER IN THE MEKONG RIVER AND VN MD

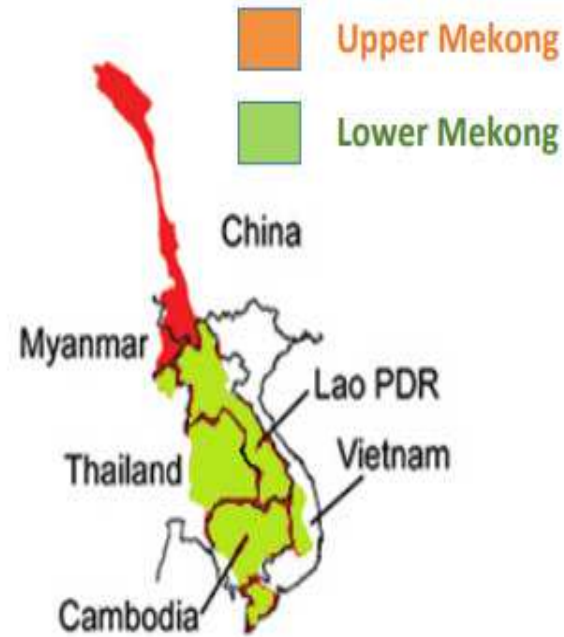
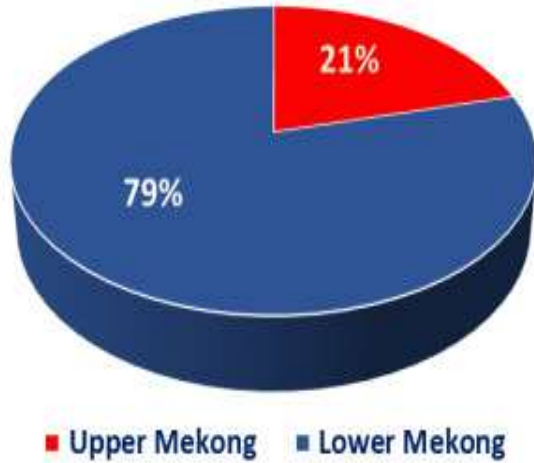
MEKONG SYSTEM



Mekong River Basin is the greatest basin in Southeast Asia, including partly territories of 6 nations: China, Myanmar, Thailand, Laos, Cambodia, and Vietnam.

Basin area:	795.000 km²
Length of mainstream:	4.350 km
Annual water volume:	470 billion m³
Sediment amount:	160 billion tons
Nature fish yield:	2,6 billion tons
Support capacity:	300 million people
Current population:	60 millions
Ethic groups:	95 ethics
Biodiversity:	2nd world ranked

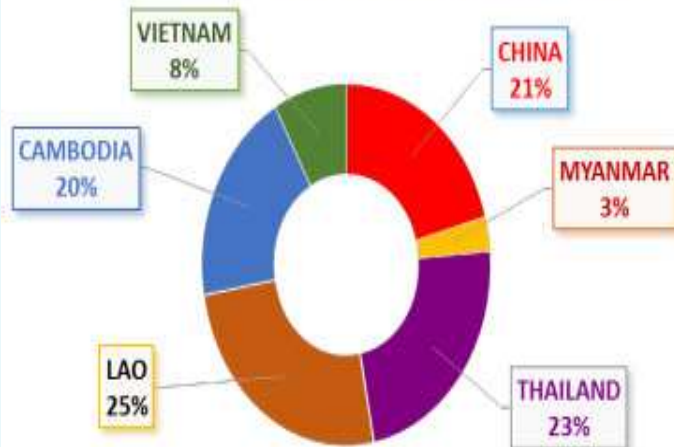
AREAS OF THE MEKONG BASIN



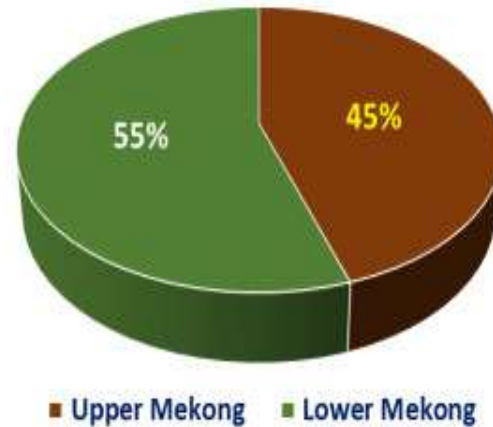
THE MEKONG RIVER BASIN



COUNTRY AREAS IN THE MEKONG BASIN



LENGTHS OF THE MEKONG MAIN STREAM



- One of the greatest rivers in the world.
- The biggest rice-supplying region in the world.
- The second world in natural fishery source diversity.
- The second world in biodiversity.
- The sixth world in alluvial tonnage.
- One of the most cultural diversity areas in the world.



ABOUT THE MEKONG DELTA



Bản đồ vị trí các tỉnh
VÙNG ĐỒNG BANG
SÔNG CỬU LONG



The Delta is considered as a large wetland with rich biodiversity for food security and fishery production of VN, Globalization, but it is also high vulnerable to change by natural forces and human activities.



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MAIN FOOD SECURITY OF VIETNAM AND THE WOLD

With 8 % of Basin Mekong River and 12% of VN Land, this region contributes:

- 40% of National Agro-sector GDP
- 50% total paddy outputs & 90% rice outputs for export
- 60% total fishery outputs & 5% total fishery export value.
- High Q fruits:>70% national production
- 50% meat and eggs production supplying to other regions
- Many OCOP products for market 's demands
- Tourism and other services by its bio diversification ...



CHALLENGES ON DRIVER FOR TRANSBOUNDARY CONFLICT OVER WATER IN THE MEKONG RIVER SYSTEM

The context



The background:

- Global development.
- Regional economic integration.
- Development needs in the Upper Mekong Basin.

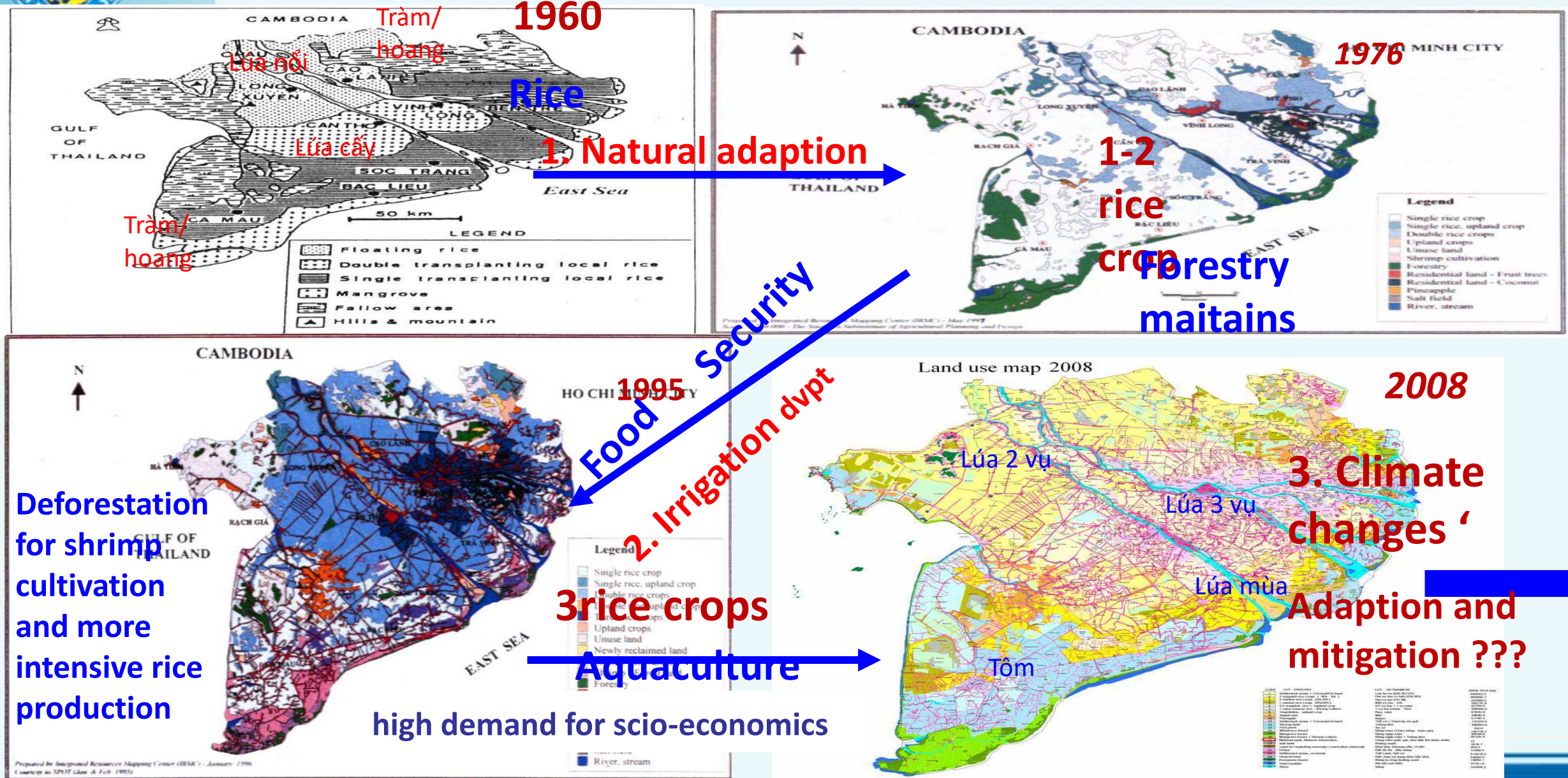
→ Drivers of environmental changes in the Lower Mekong Basin:

- Economic development, population growth, urbanization, rural/urban migration.
- Trends in land use, water use, atmosphere, biodiversity, wastes.

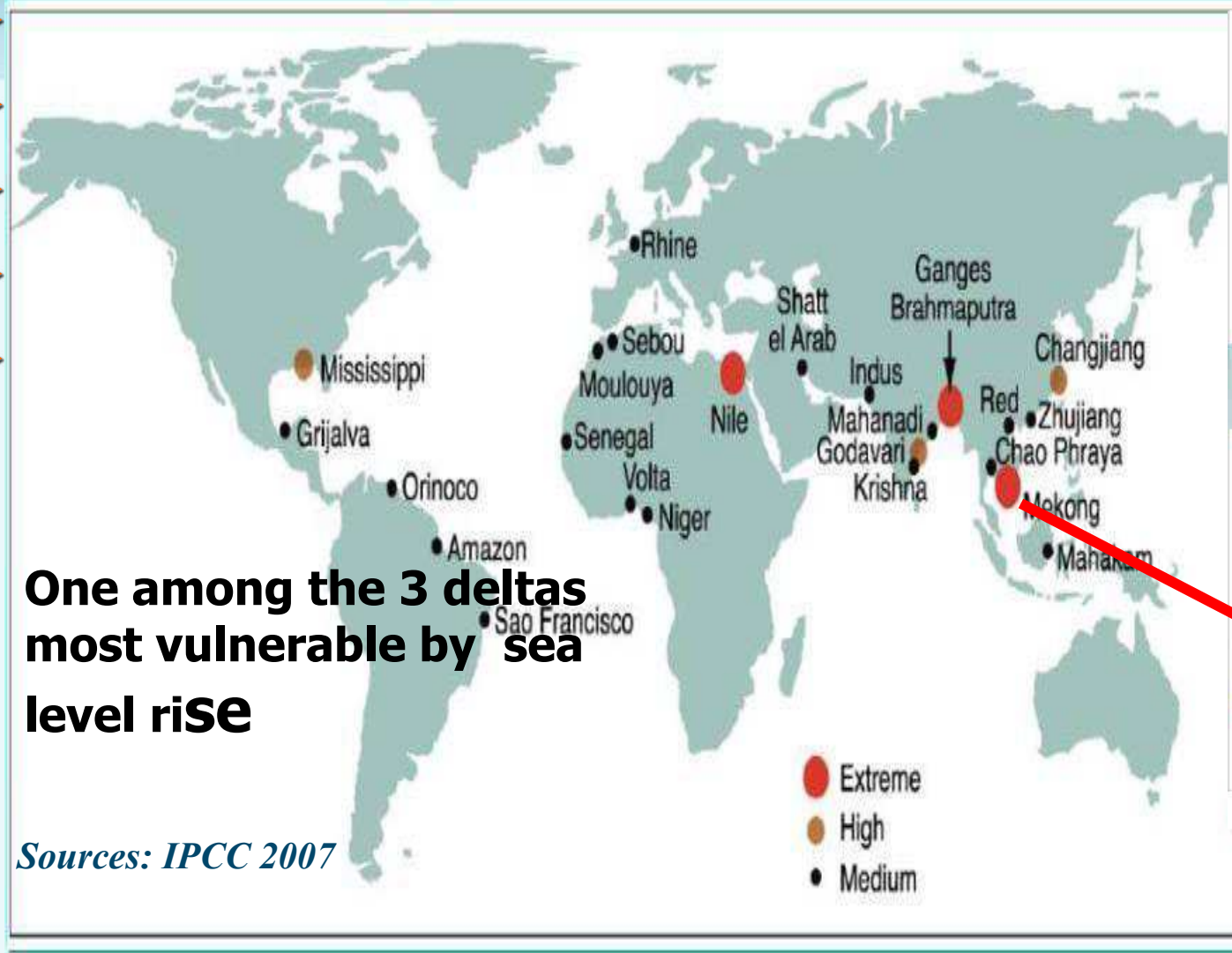
→ Understanding development spaces and policy implications:

- Identify the needs of different countries with their own economic development trajectories.
- Development scenarios, taking into account individual vs. cumulative impacts and benefit sharing policies.

Process of Mekong Delta development and Challenges of Natural Resources mgt and Climate Change Impacts

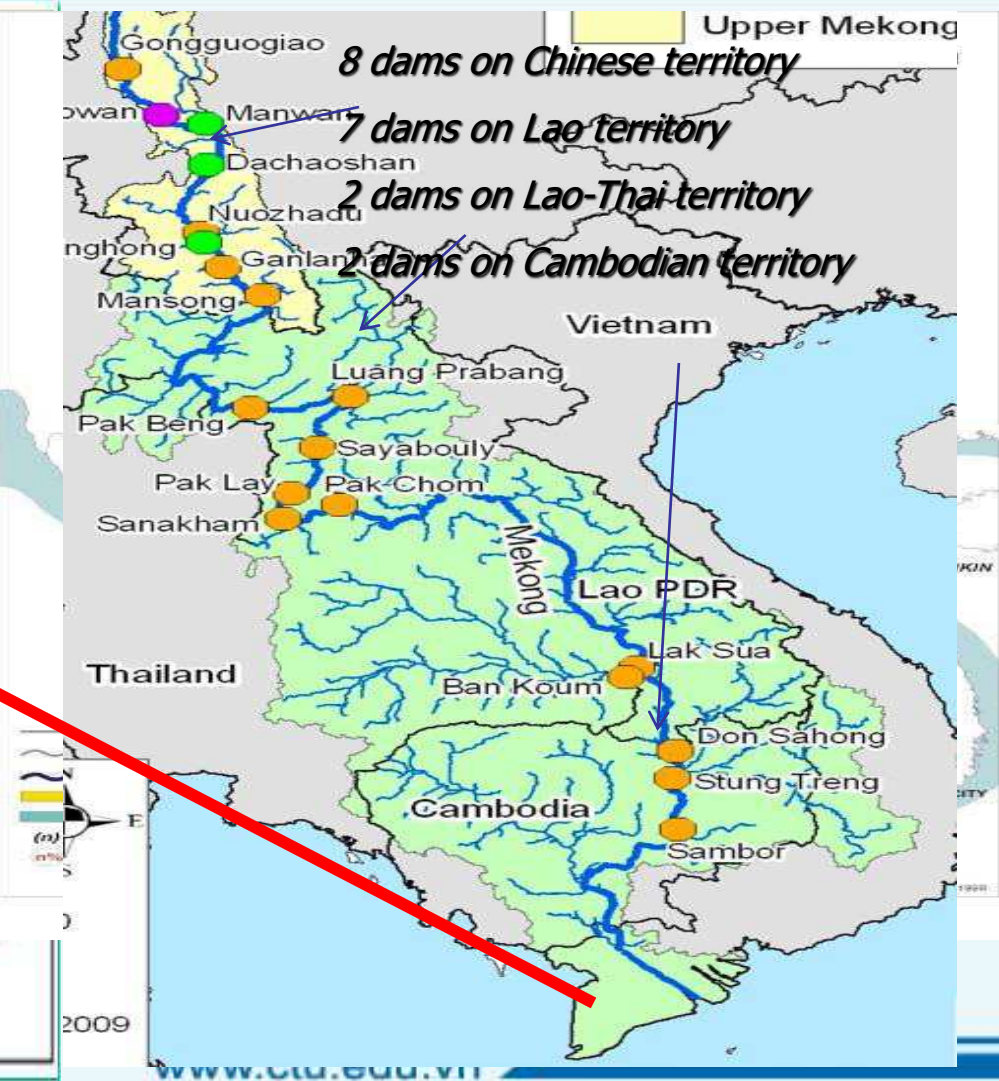


The MD with most venerable region by the climate change impacts by its upper dams construction



One among the 3 deltas most vulnerable by sea level rise

Sources: IPCC 2007

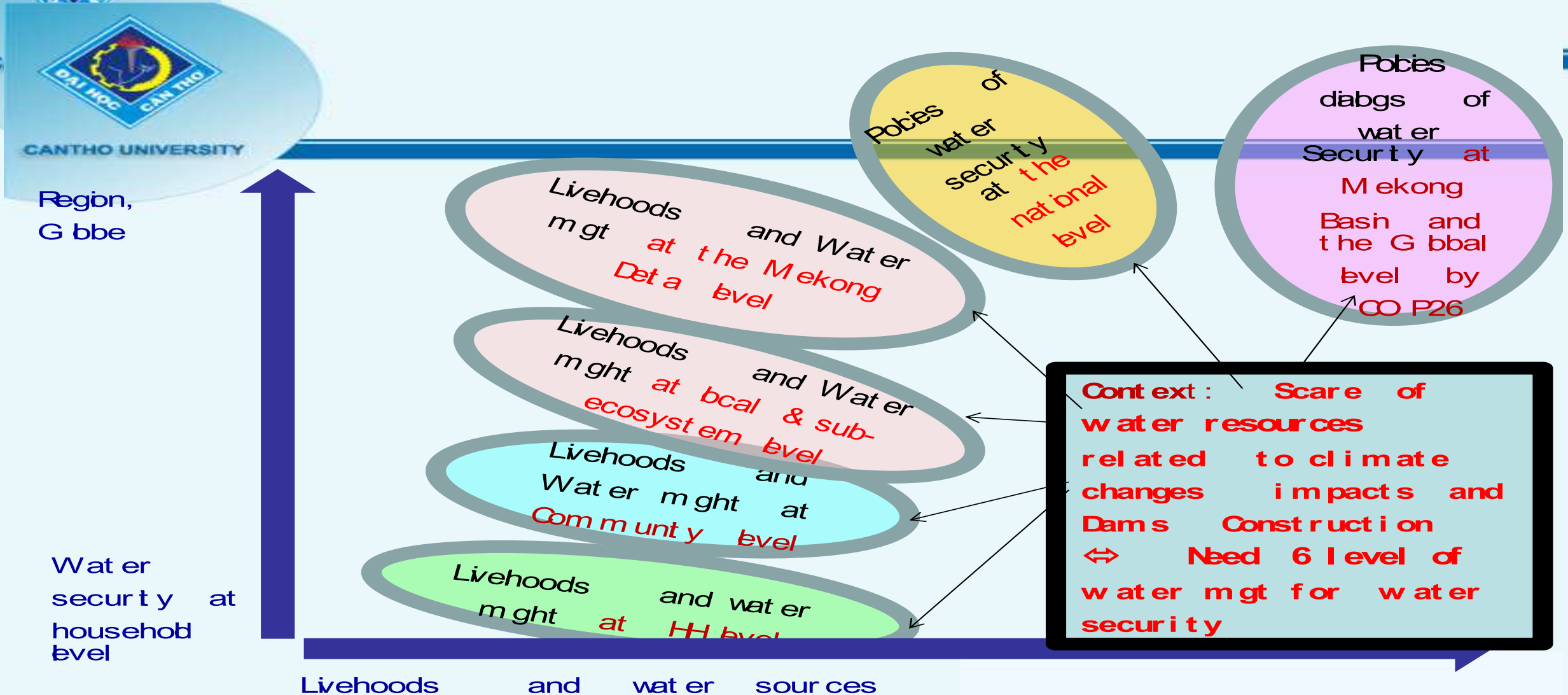


Negative impacts to the Lower basin and VN Mekong Delta

Events	Impacts of Mekong lower basin	Impacts of Mekong Delta
1. Dams construction develop. upper Mekong River.	Hydropower and social economic development → Changes of Water Flows to Mekong River : → Reducing flood, Alluvial deposits and Changes of the Ecosystem and demand more fresh water.	- Reducing flood and increase salinity 's instruction - Increasing coastal lines ' erosion (around 300 ha/year) - Lack of fresh water ; Un-balance of ecosystem for natural resource mgt and economic development.
2. Climate change impacts and Sea level raising.	Raising sea level and Changes of Hydrology regimes → Increasing sea water , Extremely weather ' impact, structural depression of Lower Basin & MD. → Vulnerabilities to community ' livelihoods	- Flooding & increasing salinity instruction - Increasing extremely weather by typhoons, rainfall distribution, drought, and increase temperature... → Vulnerabilities and opportunities for the communities ' livelihoods improvement .
3. Un-efficiency of natural resources mgt in the Mekong River basin and Mekong Delta.	- Un-coordinated water mgt for the land use planning and social economic development - Single sector implementation policy for social economic development and lack of integrated sectors planning for responding climate changes impacts.	- Intensive rice for the food security → Polluted water, degraded soils, poor rice farmers and less room for other economic sectors of social – economic development.. - Less consideration of Marine Economic s 's development and efficiency of coastal resource mgt..

→ All above, leading negative impacts for the Sustainable Lower Basin and Mekong Delta and also creating communities 's vulnerabilities and opportunities for their livelihoods improvement , particular for those whose have been living in the rural area of the Mekong Basin

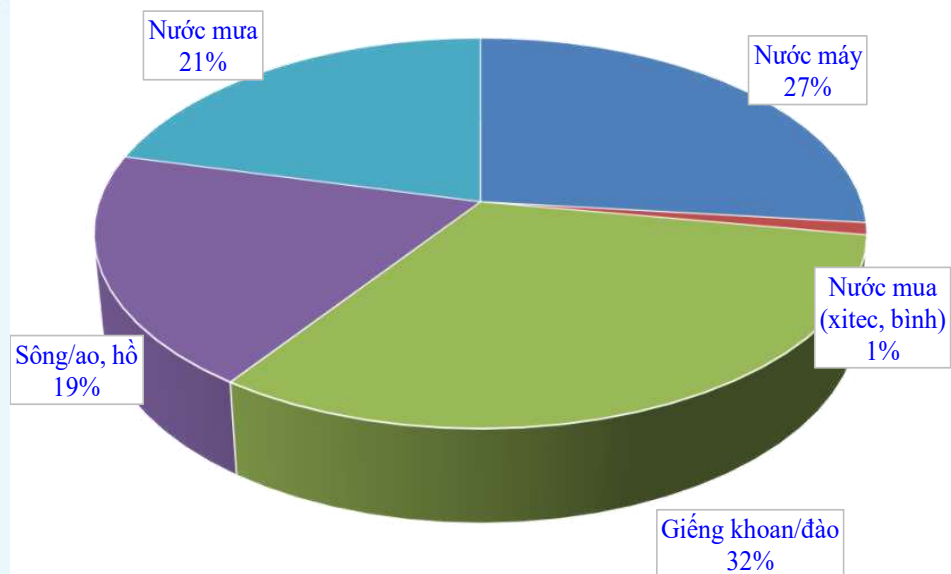
POSSIBLE SOLUTIONS BY SIX LEVELS OF WATER SECURITY



1. Water security at HH level

Water resource use & Possible Rainfall Harvesting for Dry Season uses

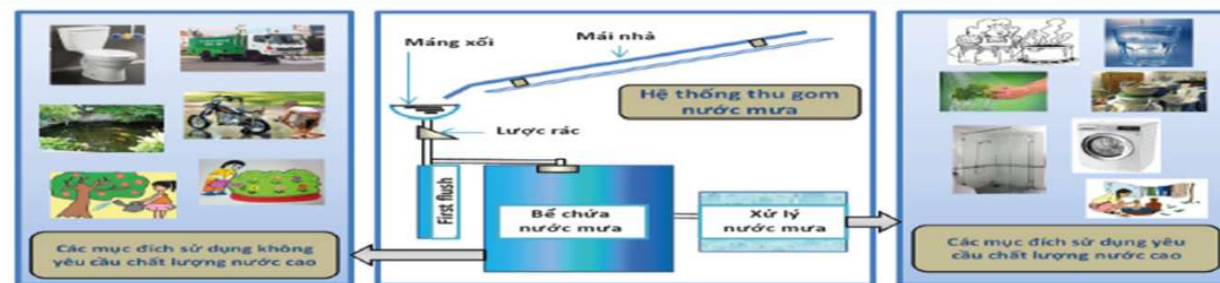
Thí vụ xem xét an ninh nguồn nước cấp độ Hộ
(GSO, 2012)



1. Rainy harvesting used for the dry season



HƯỚNG DẪN KỸ THUẬT THU GOM VÀ SỬ DỤNG NƯỚC MƯA Ở vùng Đồng bằng Sông Cửu Long Rainwater Harvesting Guidebook for the Mekong Delta



Australian
Aid



NHA XUẤT BẢN NÔNG NGHIỆP

2. Water security at the community level

Farming systems on alluvial soils



Vegetables or
sesame rotated
with rice

Longan orchard with beds & trenches



Integrated rice - fish - fruits/vegetables



Low carbon rice farming practices with 6 reductions of seeds, fertilizer, pesticides, water, harvesting lots and GHG ' emission

6 reductions	Reduction in amount	% of reduction
1. Rice	100 kg/ha	43 %
2. Fertilizer (N)	33kg/ha	23 %
3. Pesticides 's use	2 times of application	27%
4. Water irrigation	4 times of irrigation	40-50%
5. Post harvest losses	121kg/ha	30%
6. Reduction of GHG emission	2.5- 3 tons CO2/crop/ ha	

Results of rice cultivation/year : Reducing around 10-1 tons Co₂; **saving water around 40 -45%** and farmers benefits 10-15%



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3. Water Security at the Provincial Level

1. **Ecosystem approaches** for social economic development
2. Application of the results of **water security at the household and at the community level**.
3. **Spatial planning and integrated sectors** based on the Mekong Delta Planning.
4. **Implementation of the projects** related to the issues for responding climate change impacts.

Diversification of Agricultural production on the basis of ecosystem

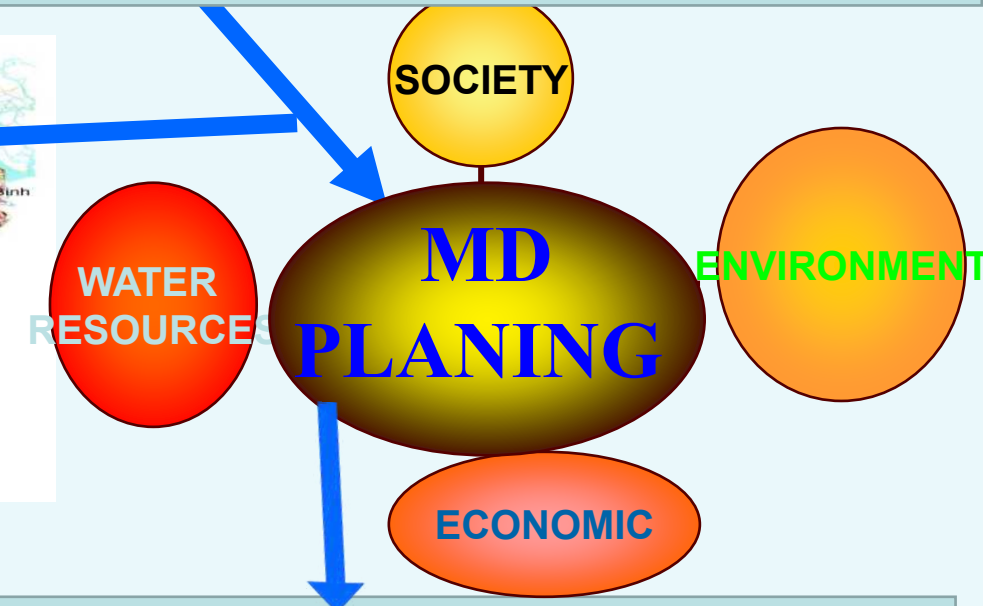
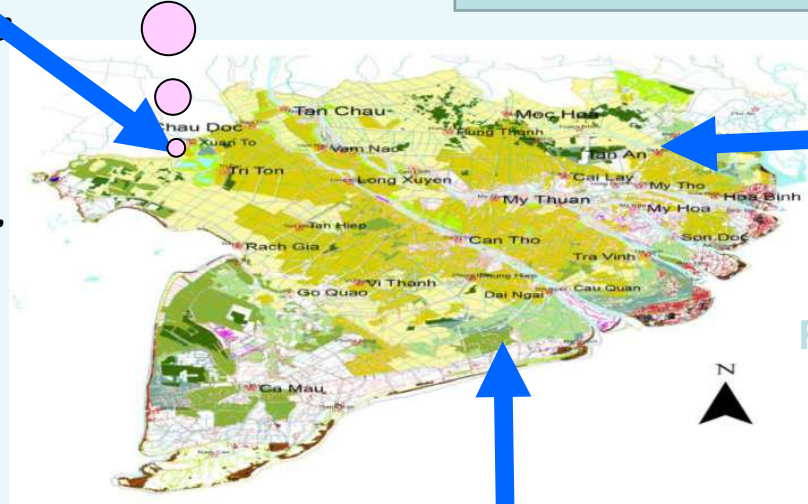


4. Water Security at Sub-Zones and Mekong Region

- Policies of responding to the climate changes impacts (120-CP)

Planning Law – VN Parliamentary 14, 2017:
Spatial Planning and Integrated sectors on the basic of water security for Sustainable MD development

1. *Ecosystem approaches with three main zones (upper – middle and coastal) and 6 sub-zones*
2. *Results applications by the water security and live hoods improvement at HH, Community and provincial level*



Marketing – Provincial linkages for sectors or products ‘as priority’ projects ⇔ Asking for investment and cooperation for sustainable Mekong Delta development



5. Water Security at the National level

1. Policy's improvement

- ***Institutions** on the basic of Implementing the Spatial Planning & Integrated sectors for sustainable MD effectively*
- ***Policy's feedback** on the basic of efficiencies of outputs by **four levels** of water security and livelihoods 'improvement above.*
- ***Improvement of integrated sectors** by carrying out the **projects** related to the water security and livelihoods improvement effectively.*

2. Policy's dialogs and asking for international 's investment

- ***MRC** 'policies ' dialogues*
- ***Global policies** ' dialogs related to the programs of responding to the climate changes impacts and COP26*



6. Water Security at the Global level : **Raising issues for policies debate to MRC International's Agencies**".

1. Water transboundary and Conflict of water mgt: Scientific base events by transparency and clear information for policies 'debate of the Hydropower by dams constructions and climate changes impacts to social-economic & resource mgt as:

- ➔ *Changes of water flows* ➔ trade-off by un-balance of ecosystem for social economic development and increase vulnerabilities of community's livelihoods
- ➔ *Reductions of nutrients movements and alluvial deposits to downstream* <➔ increasing erosions of coastal lines and Landslides etc
- ➔ *Reduction of biodiversity's* for the sustainable development related in social economic development, conservations, resources mgt
- ➔ *Reduction of fisheries resources and water way's transportation*
- ➔ *Reduction of water quality and quantity by different levels of water securities*

2. Monitoring the case of VN with 5 levels of water security and its lesson learned to feedback MRD & others

3. Opportunities of energy- balance by replacement of hydropower by other renewable energies such as wind ' energy, solar energy, biomass energy etc???



Concluding remarks

- ✓ ***Approaches of six levels of water securities** as the opportunities for responding the climate changes impacts and for reductions of the Dams constructions for Hydropower in the main stream Mekong River*
- ✓ ***Spatial Planning and integrated sectors** on the basic of the six level of water securities as opportunities for ecosystem services and social – economic development , particular Lower Mekong Basin should be concerned with.*
- ✓ ***Vulnerability ‘ reduction and look for opportunities of the communities improvement** for those whose have been living along Mekong River should be respected.*
- ✓ ***Raising issues and policies ‘ dialogs by 6 levels** of water security should be involved activities of MRC more effectively.*
- ✓ ***MRC’s coordination of water security by 6 levels** should be involved by priority projects as the basic information for International organizations to support Mekong River to cope with Climate changes impacts effectively*