Joint Collaboration in Research and Educational Exchange Between Thuyloi & Kyoto Universities

Presenter: La Vinh TRUNG, Ph.D

Thuyloi University - Vietnam

Kyoto, 24 - 26, March, 2016

CONTENT

1. Introduction about Thuyloi University
2. Collaborative research between Thuyloi and Kyoto University
3. Educational and cultural exchange activities

1. Introduction about Thuyloi University (TLU)

Main campus in Hanoi, since 1959

New campus in Hung Yen province: in progress

175 Tay Son street, Dong Da district, Hanoi

- 9 specialized faculties;
- 5 Institutes;
- Consultant Company/Office
- 4 Centers;
- Supporting departments

Institute of Education and Scientific Application

In Central Region: Developed since December 1986

Main office: 115 Tran Phu,Phan Rang-Thap Cham, Ninh Thuan

Branches: Dalat, Lam Dong Province; Quy Nhon, Binh Dinh Province; and Phan Thiet, Binh Thuan Province.

Thuy loi University – The Southern Campus :

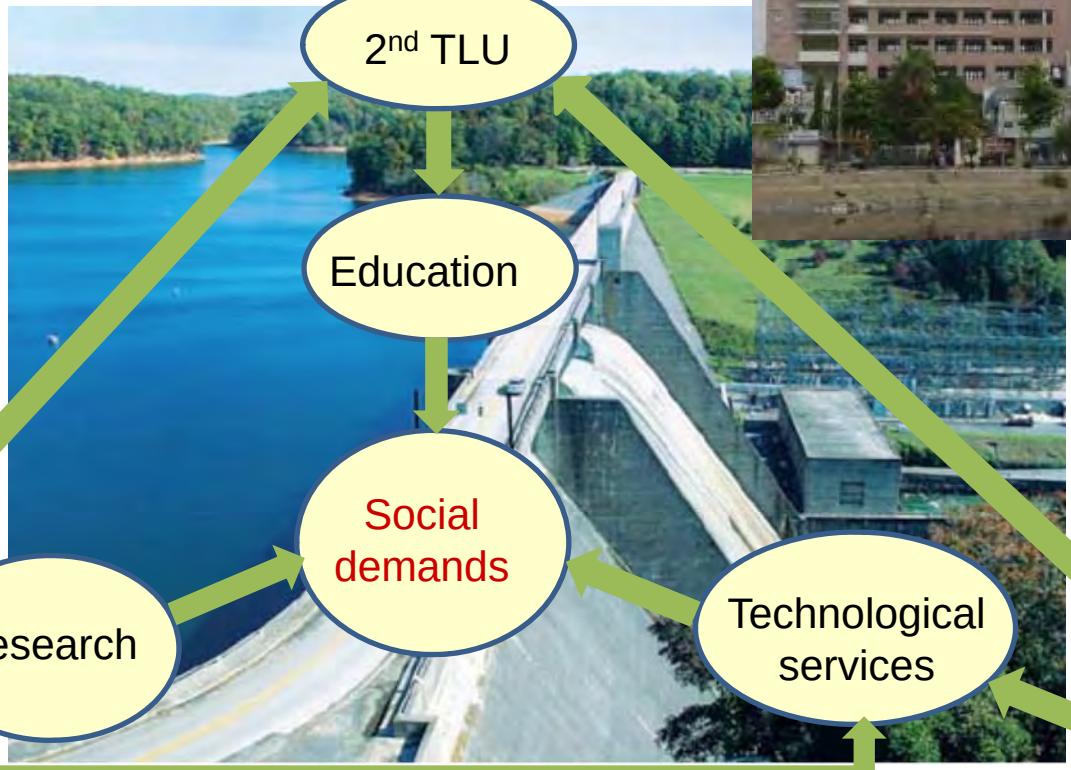
- Hochiminh City
- Binh Duong province

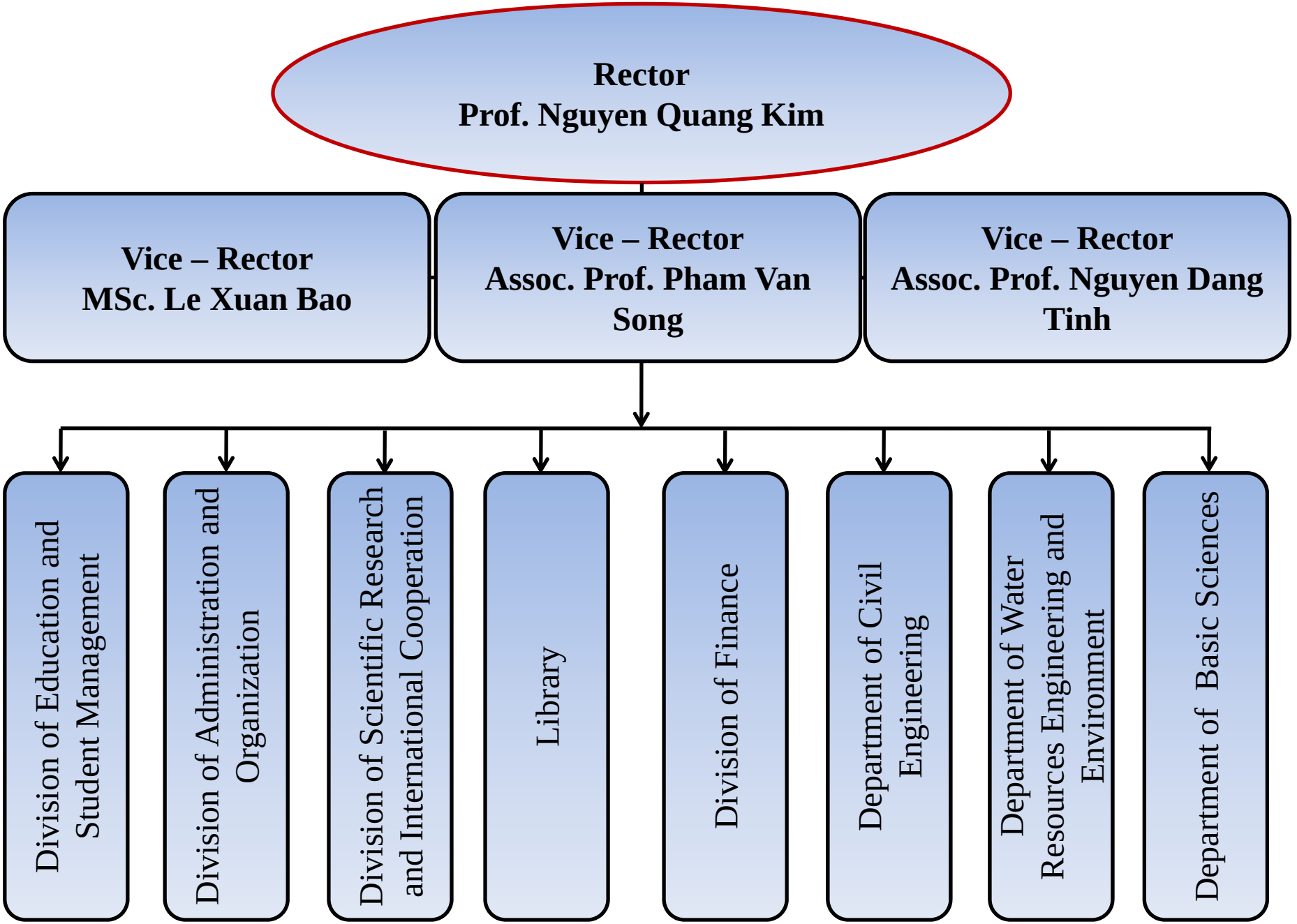
- 2th Campus of TLU;
- Institute for Water and Environmental Research;
- Company for Consultant and transfer water engineering.

- Development of the organizations

1976	1986	1997	2003	2007
DH1 Association	Center of DH 1	The 2th Base of Water Resources University	The 2th Base	The 2th Campus
			The Company	The Company
				The Institute

Tripod development model:




Rector
Prof. Nguyen Quang Kim
Vice – Rector
MSc. Le Xuan Bao
Vice – Rector
Assoc. Prof. Pham Van Song
Vice – Rector
Assoc. Prof. Nguyen Dang Tinh
Division of Education and Student Management
Division of Administration and Organization
Division of Scientific Research and International Cooperation
Library
Division of Finance
Department of Civil Engineering
Department of Water Resources Engineering and Environment
Department of Basic Sciences

Achievements: Education

Education

Under-graduate

- Water Resources Engineering
- Water Supply and Drainage
- Hydraulic Structure
- Construction Engineering and Technology
- Transportation Engineering

Graduate

- Master program, in Vietnamese, 4 fields
- Vietnam-Belgium Master program
- Doctoral program

Achievements: Research and Engineering services

1. Scientific research, development and technology transfer: irrigation, hydropower, technical geology, disaster prevention and mitigation, water supply and drainage system, infrastructure, environment…

2. Engineering Services: consultancy, construction design, surveillance and inspection, training courses

3. Cooperation with other organizations within and outside the country.

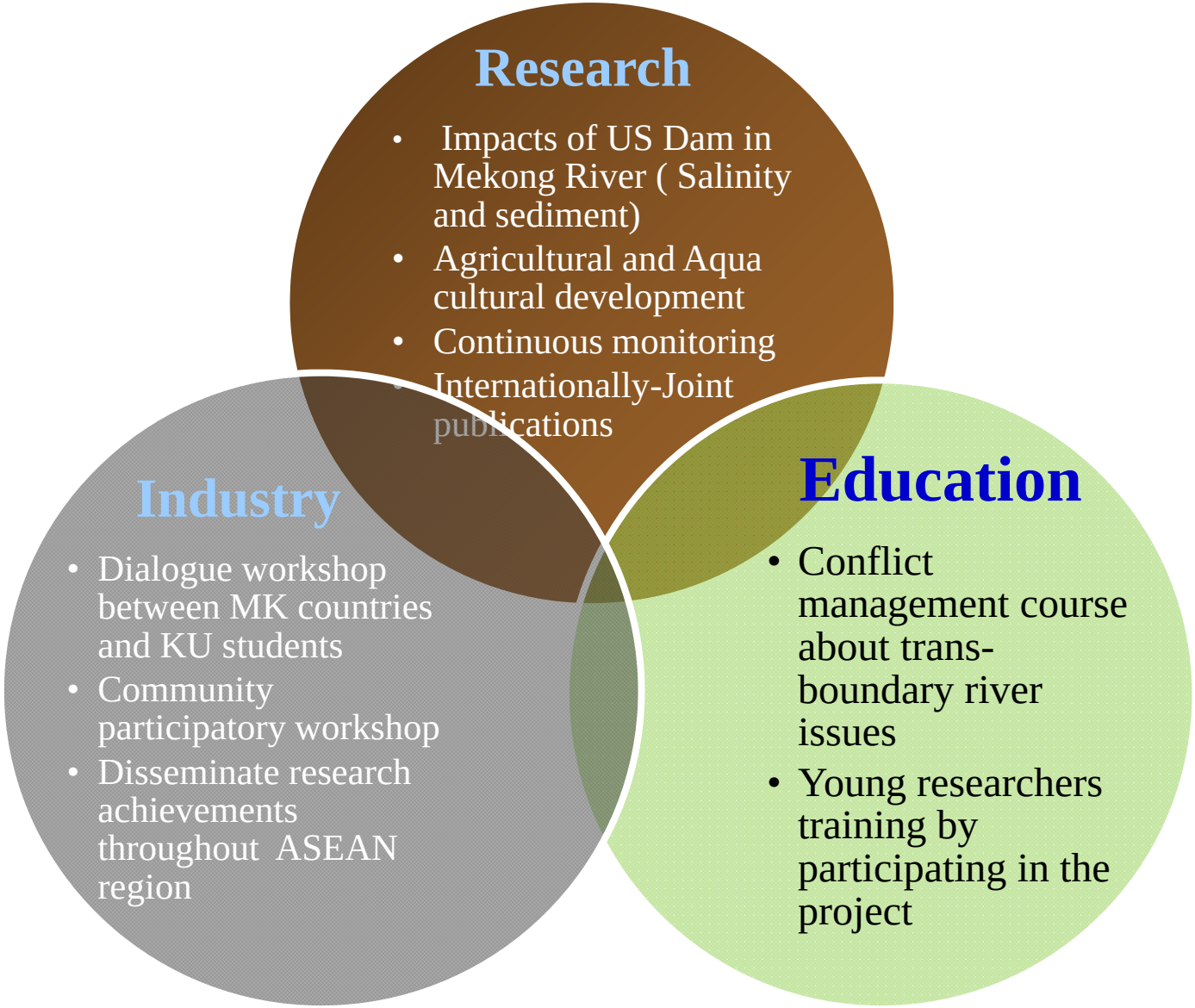
Achievements: International Cooperation

No	University	Nation
I	**Europe**	
1	University of Liege, University of Bruxelles	Belgium
2	University of Brescia	Italy
3	Technical University of Civil Engineering Bucharest	Rumania
4	Delft University of Technology	Netherland
5	École Nationale Supérieure de Techniques Avancées	France
6	Dresden Technical University, University of Karlsruhe	Germany
II	**Asia**	
7	Tohoku University, Kyoto University, Kyushu University, Ibaraki University	Japan
8	Hohai University	China
9	Nanyang Technological University	Singapore

Thuy loi University – Southern Campus in Ho Chi Minh City


SẢN VIỆT NAM QUANG VINH MUÔN NĂM
THE JOINT MASTER PROGRAM
SUSTAINABLE HYDRAUL
RUCTURES
UNIVERSITY OF LIÈ
ATER RESOURCES UNIV
FIRST COHORT
MONY

Overall Goals and Plans of JASTIP project: Research, Education and Industry



2. Collaborative research between Thuyloi and Kyoto University

MEKONG RIVER BASIN

Upper Mekong

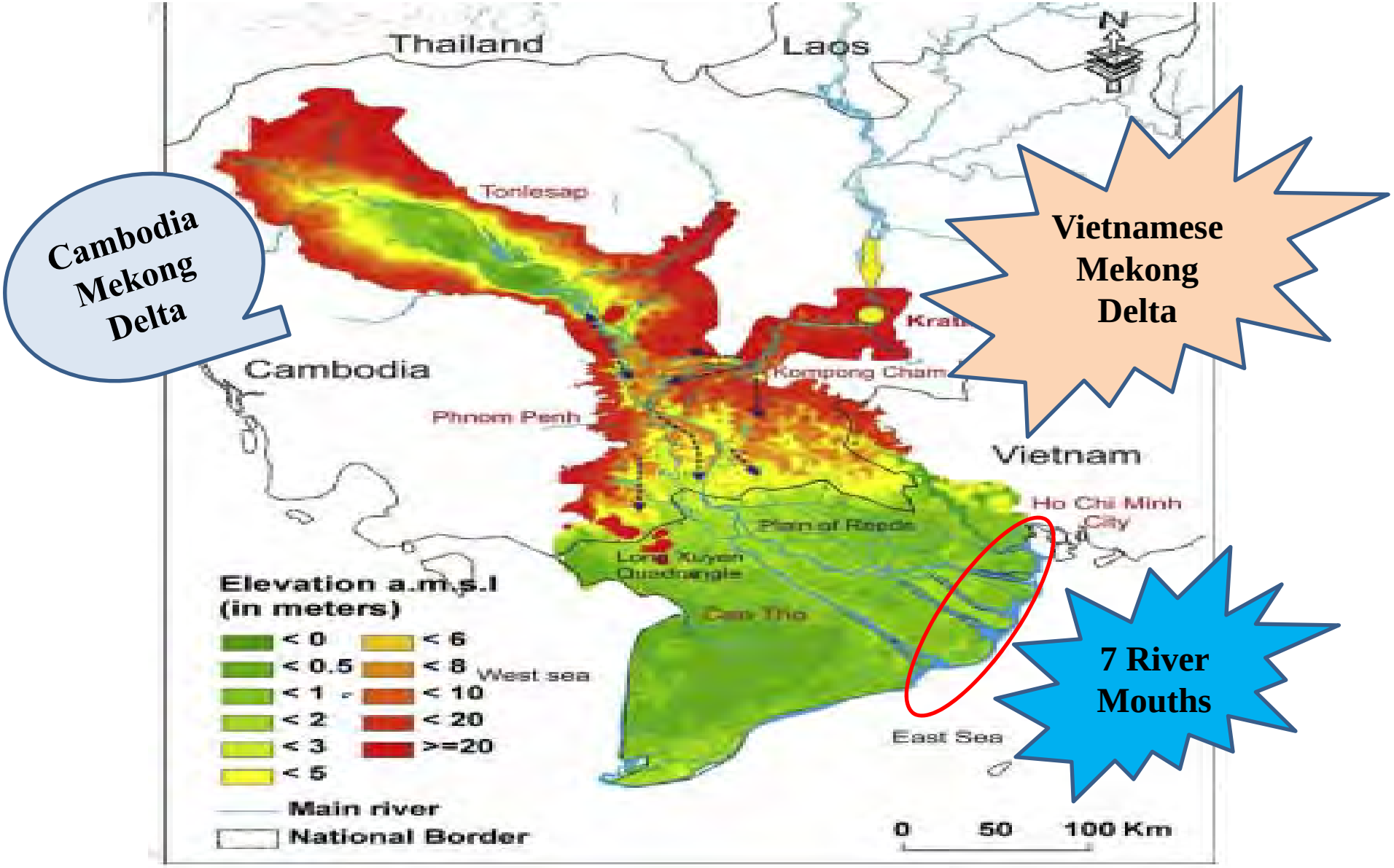
- 24% of total area

- Length: 4,880 km
- Annual suspended sediment: 160 Mt/year

Lower Mekong

- 76% of total area

MEKONG DELTA



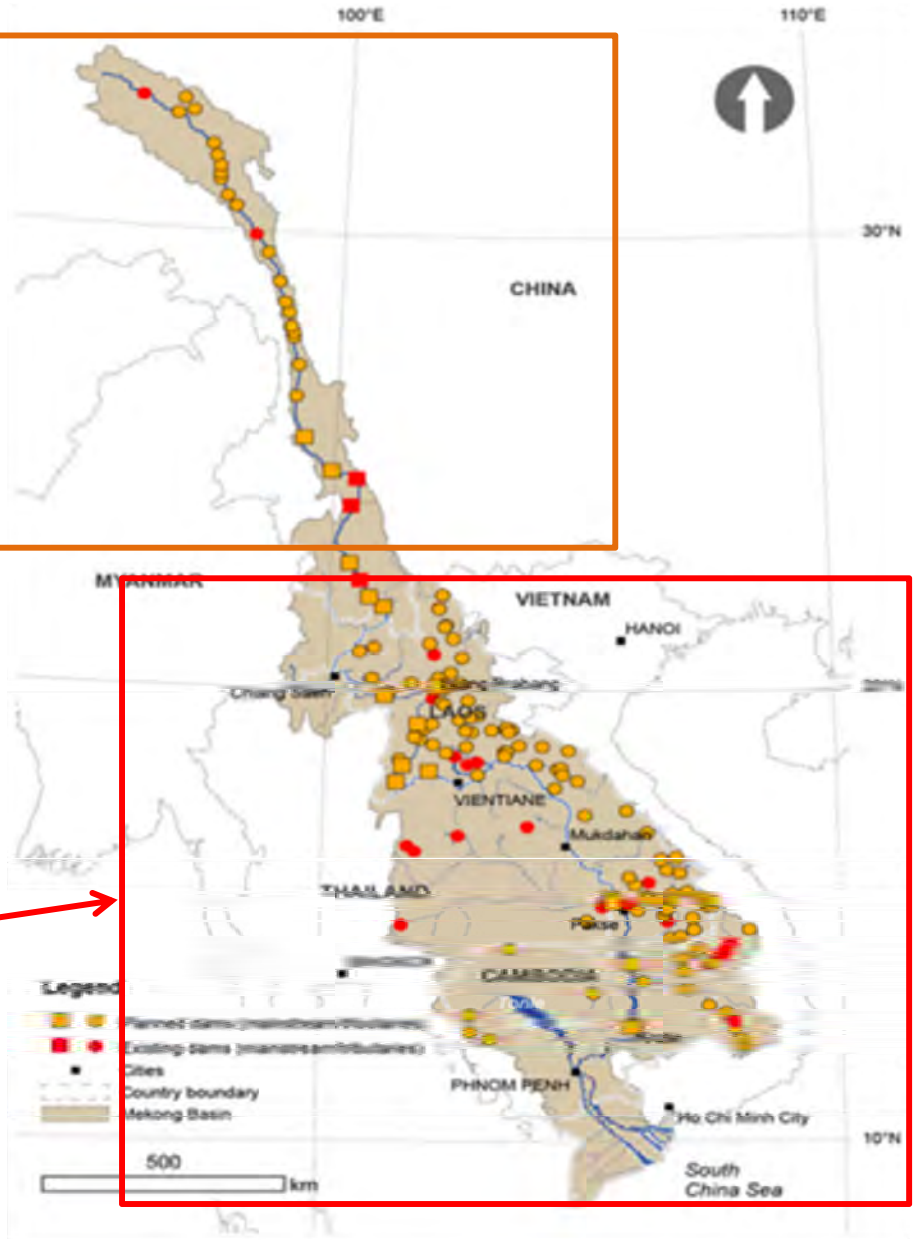
(Dung et al., 2015)

MAINSTREAM AND TRIBUTARY DAMS

Upper Mekong: 21 dams

There are many plans for dam construction along Mekong River and its tributaries

Lower Mekong: 136 dams
+ 31: under construction
+ 82: completed within 20 years
+ 136: completed within 40 years

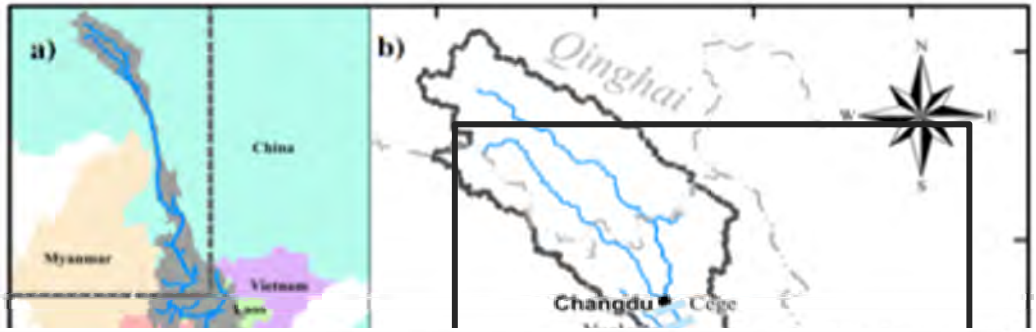


Keskinen et al., 2012

CHINESE HYDROPOWER DAMS

Xizang section

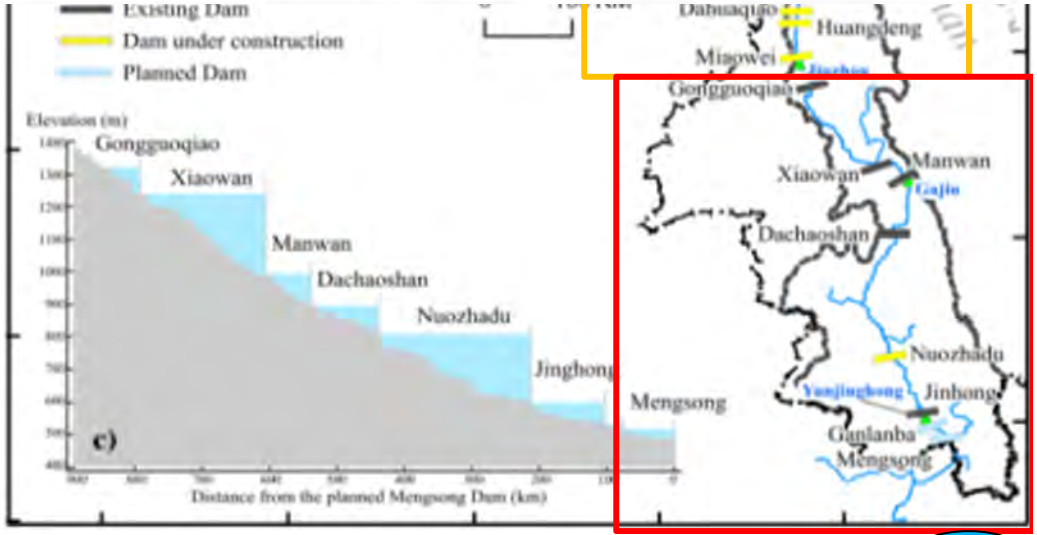
- **6 dams**: Cege, Yuelong, Kagong, Banda, Rumei and Guxue.
- **Construction**: 2015-2030



Dam	Catchment area (km^2)	Annual inflow (m^3/s)	Normal storage water level (m)	Dam height (m)	Total storage ($10^8 m^3$)	Active storage ($10^8 m^3$)	Installed capacity (MWh)	Guaranteed capability (MW)	Annual generation (10^4 MWh)	Reservoir filling
Gongguoqiao	97 300	985	1319	130	5.10	1.20	750	390	406	Sep. 2011
Xiaowan	113 300	1220	1240	292	151.32	98.95	4200	1854	1889	Dec. 2008
Manwan	114 500	1230	994	132	10.60	2.57	1500	807	781	Mar. 1993
Daochaoshan	121 000	1340	899	120.5	8.84	3.67	1350	712	670	Nov. 2001
Nuozhadu	144 700	1750	812	260	223.68	121.95	5500	2403	2378	Nov. 2011
Jinghong	149 100	1840	602	107	12.33	2.49	1500	833	806	Apr. 2008
Total					411.87	230.83	14800	6999	6929	

Lower Yunnan section (lancang-cascade)

- **6 completed**: Gongguoqiao (2011), Xiaowan (2008), Manwan (1996), Dachaoshan (2001), and Jinhong (2008), Nuozhadu (2012)
- **2 planned**: Ganlanba, and Mengsong



(Fan et al., 2015)

LOWER MEKONG MAINSTREAM DAMS

12 dams: planned/under construction

(13,000 MW)

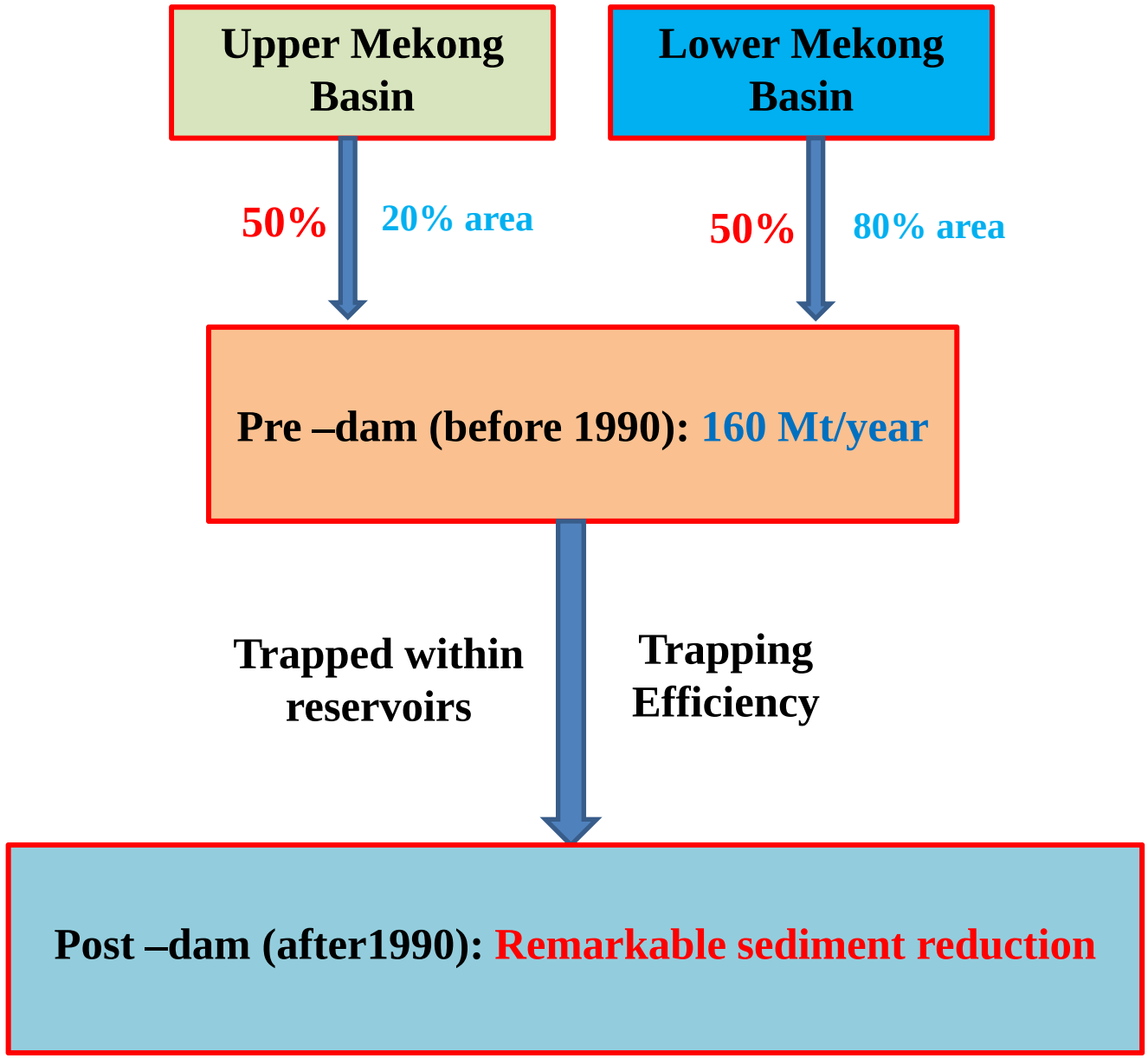
- **Laos:** 8
- **Lao-Thai border**: 2
- **Cambodia**: 2

Xayaburi dam: under construction

+ ***Undergone controversy***

Triet and Beilfuss

SEDIMENT IN MEKONG RIVER

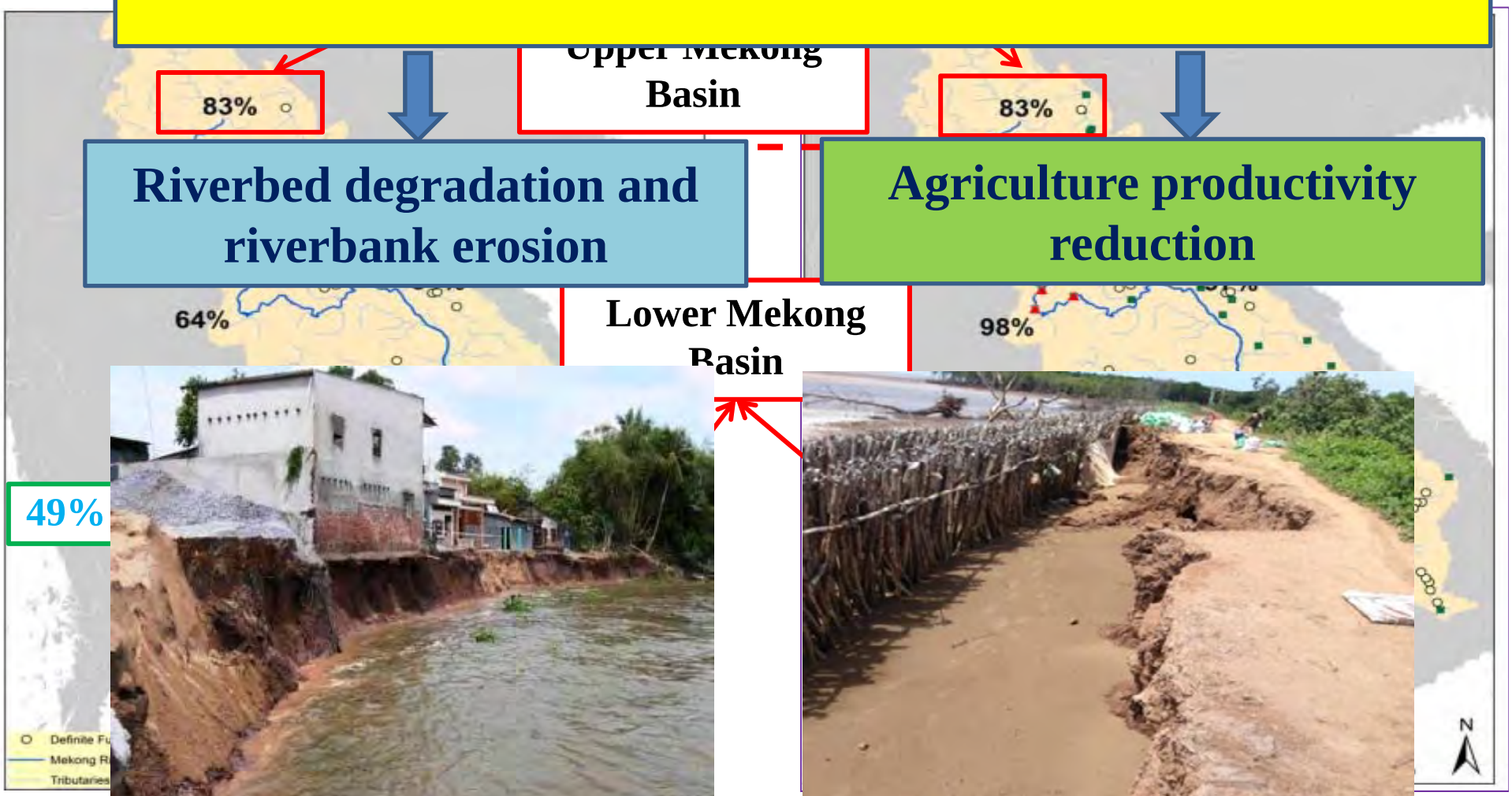


SEDIMENT TRAPPING EFFICIENCY

Sediment starvation in rivers

Riverbed degradation and riverbank erosion

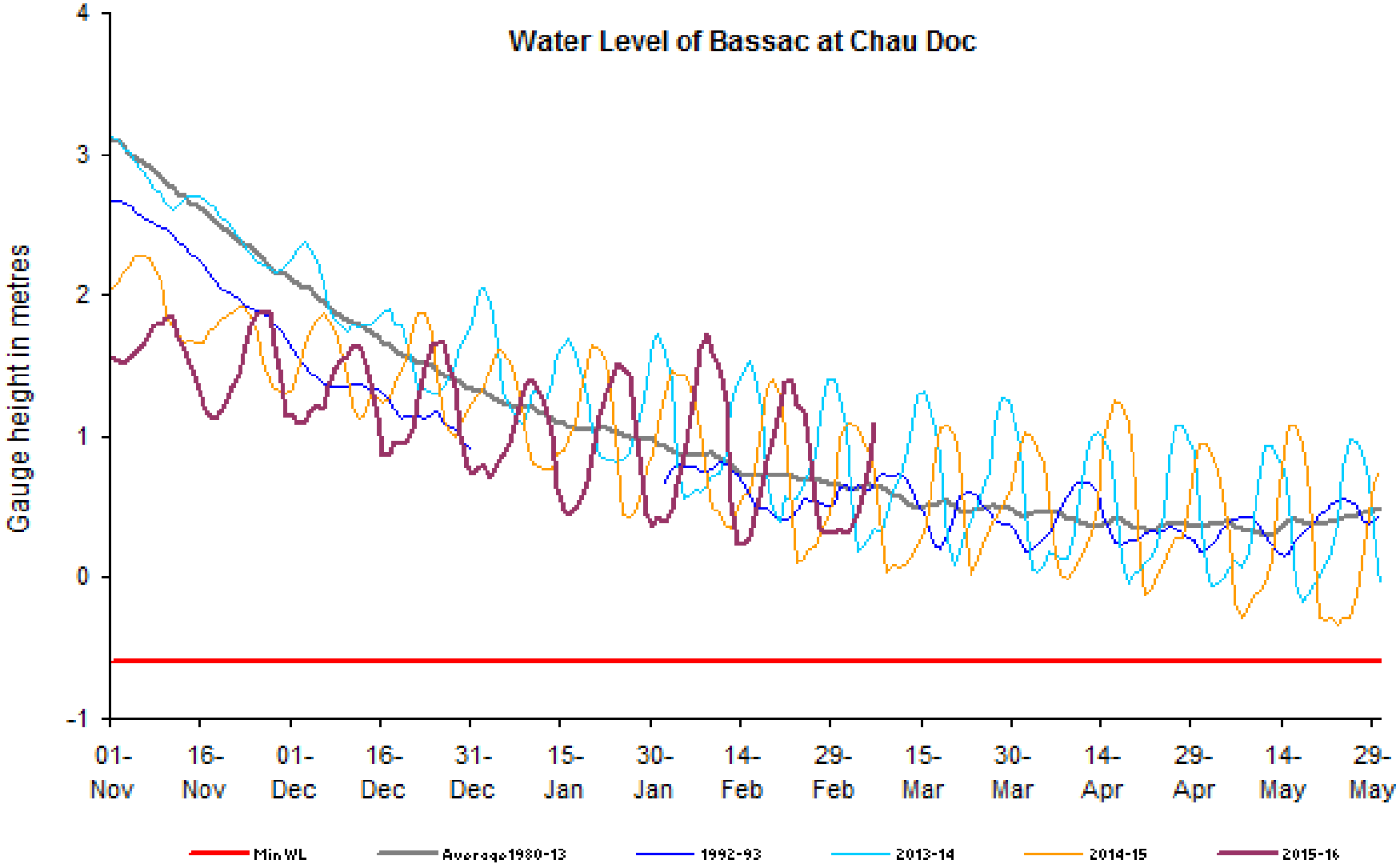
Agriculture productivity reduction



(Kondolf et al., 2014)

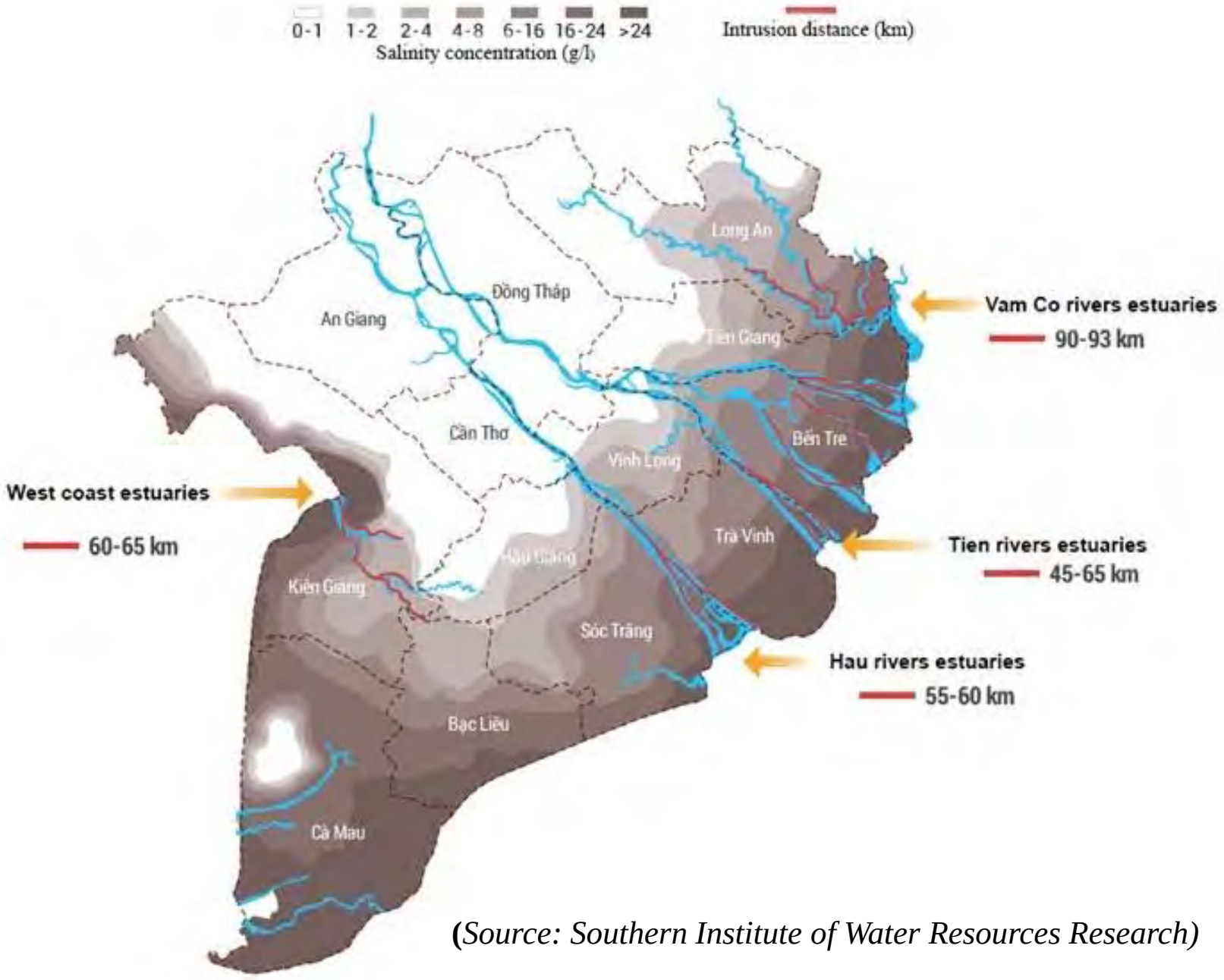
FLOW REDUCTION AND SALINITY INTRUSION

FLOW REDUCTION AND SALINITY INTRUSION



Source: Mekong River Committee

Map of Salinity Intrusion in the Vietnamese Mekong Delta (March, 2016)



(*Source: Southern Institute of Water Resources Research)*

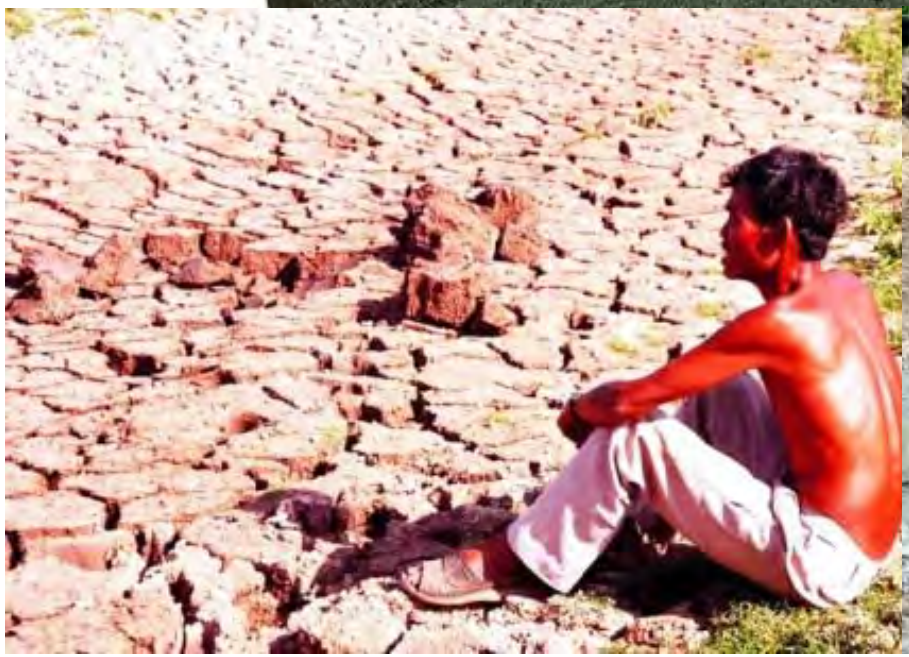
Damaged rice crop area due to drought and salinity intrusion (March, 2016)

Kiên Giang
34.000

Sóc Trăng
6.000

Tiền Giang
10.740

Trà Vinh
12.000



Research Project: Impacts of Upstream Dam Developments on Mekong Delta

Sediment reduction

- Evaluate the impact of upstream dams on sediment flux along main rivers in Vietnamese Mekong Delta
- Correlate the erosion rate of Mekong and Bassac riverbanks with the development of upstream dams
- Evaluate the combined influence of upstream dams and dyke system on lateral flow and sediment interchange between rivers and floodplains

Salinity Intrusion

- Define and classify flood flow characteristics (flood factors) under controls of upstream dams
- Integrate flood factors into salt intrusion simulation to extend advance time of forecasting

EXPECTED OUTCOMES OF THE PROJECT

- Better understanding of the impacts of dams upstream on sediment reduction and salinity intrusion, and the consequence upon agricultural (rice) productivity
- Raising the awareness among community of Mekong Countries about dam impacts and transboudary river issues
- Collaborative research, data and experience sharing for sustainable development.
- Joint publications and research proposal

PROPOSED FRAMEWORK FOR THE PROJECT IN THE TERM OF 5 YEARS

Activity	Year						
	2015	2016	2017	2018	2019	2020	2021
Available data collection and analysis							
Equipment installation and monitoring							
Numerical simulation set-up							
Conflict management course							
Outcome analysis and paper publication							
Final recommendation and proposition of mitigative measures							

SOME WORK DONE…

- Representative Office of Kyoto University in the Southern Campus of Thuyloi University:
  + Meeting and discussion among TLU and KU researchers.
  + Data collection and analysis
  + Workplace of PhD Students

- Field trip for equipment installation and measurement: monitoring turbidity and salinity concentration at 3 locations

- Hydro-Asia in Lao PDR: networking, research results sharing

Representative Office of Kyoto University in the Southern Campus of Thuyloi University

Representative Office of Kyoto University in the Southern Campus of Thuyloi University

Salinity installation in An Lac Tay


26/2/2016


26/2/2016


26/2/2016

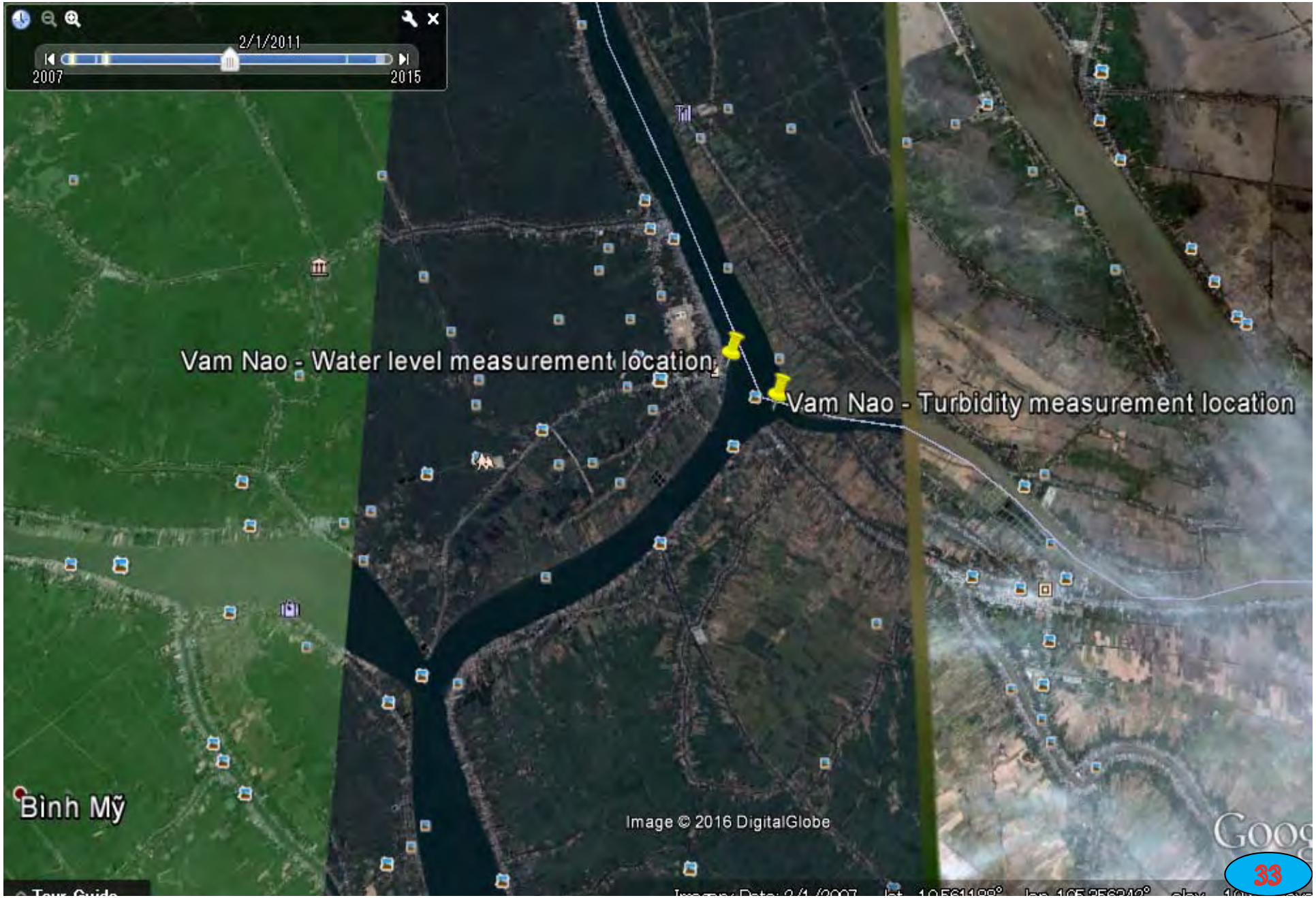

26/2/2016


26/2/2016


26/2/2016


26/2/2016

Turbidity installation in Vam Nao Station




27/2/2016


27/2/2016


27/2/2016


ATU75W2-U
0221
27/2/2016


27/2/2016


27/2/2016


27/2/2016


27/2/2016

Turbidity installation in Tan Chau


27/2/2016


28/2/2016


28/2/2016


28/2/2016


28/2/2016


28/2/2016


28/2/2016


28/2/2016

Hydro - Asia in Lao PDR

3. Educational and cultural exchange activities

1. Two PhD Students will be joining in the project, and some other Master students as well.

2. Summer course for undergrads (every year)

3. Workshop Dialogue by Students and researchers from MK countries. The participations of KU students, other ASEAN countries, JASTIP are very welcome!

3. Educational and cultural exchange activities


Thank you very much for
your attention.