IWRM & transboundary water cooperation

…with Mekong River as a case


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Water & Development Research Group

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PRESENTATION STRUCTURE

1. Integrated Water Resources Management
2. Transboundary (trb) waters
   - Transboundary rivers and their pressures
   - Transboundary agreements & organisations
   - Finland as a transboundary champion

3. Mekong River as a case
   - Mekong River Commission MRC and beyond
   - Mekong development: how to use IWRM, impact assessment and transboundary cooperation to address the hydropower boom

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INTEGRATION

- The buzzword of the day:
  almost everything should be ‘integrated’

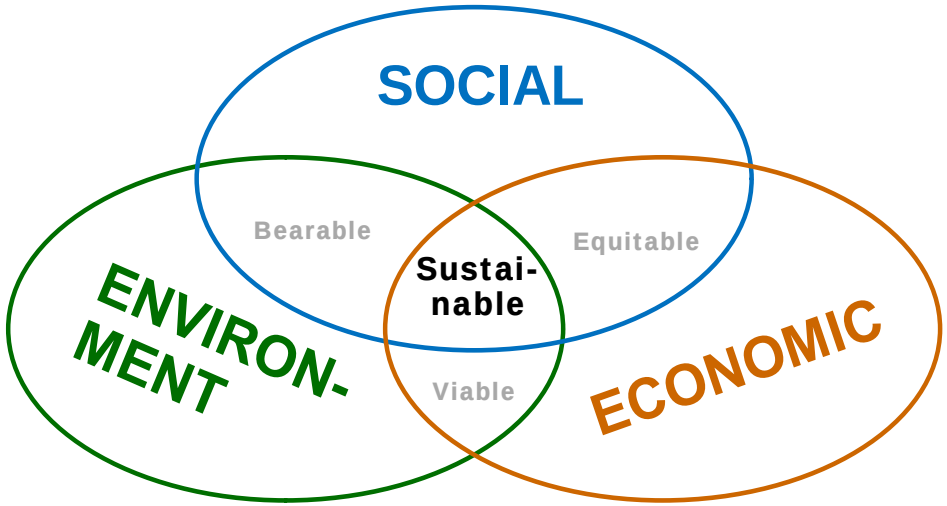
  → Different fields:
  - Management, impact assessment, policies
  - Also research (‘multi-disciplinarity’)

  → Different sectors & areas:
  - Water, forest, land, rural development, urban planning, coastal zones…

BACKGROUND

- Long, sporadic history (e.g. Egyptian farmers, the US in 1908)
- Present-day integrated approaches emerged in the 1970s as a response to **sectoral approaches**
- The concept of **sustainable development** in 1980s

→ Brought in also people and their livelihoods (not just about protecting environment)



DEFINING INTEGRATION

- Integrated ≠ comprehensive

- The beauty of integration: accepts that we cannot cover everything in every management context, as it would become too complex & messy

  → Need to find the most relevant things to focus on

- Based on comprehensive view, yet focusing on the most relevant things in a specific context

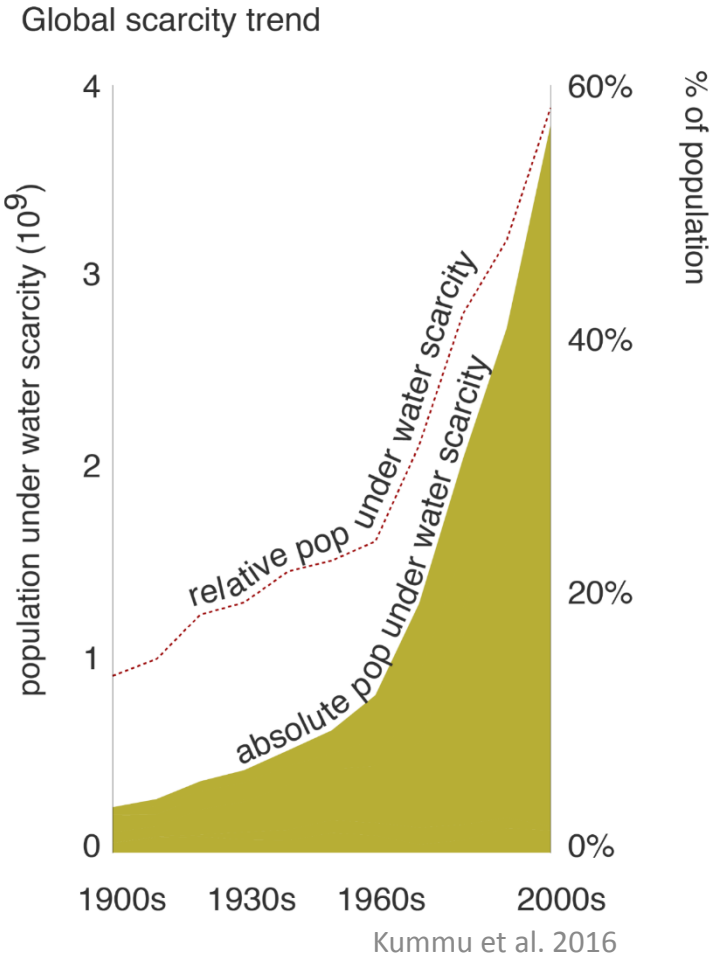
THE WATER PROBLEM

Volume of water is fixed, but its use is increasing

- Population growth
- Urbanisation
- Changes in consumption patterns & diet
- Climate change
- Decreasing water quality

→ Less water available per person

→ Competing water uses



Kummu et al. 2016

THE WATER PROBLEM

version 2

” There is a water crisis today.

But the crisis is **not** about having too little water to satisfy our needs.

It is a **crisis of managing water so badly** that billions of people –and the environment– suffer."

World Water Report 2000

SO WHAT TO DO?

- It is clear that we need to manage water in broader, more comprehensive ways

  → Taking into account various uses of water, including environment *(sustainability)*

  → Links to various different sectors *(defragmentation)*

- At the same time water use is becoming increasingly political

  → Increasing *participation*: key stakeholders included

- Integrated approaches seeking to address this ’triple challenge’ *(sustainability, defragmantation, participation)*

Integrated Water Resources Management IWRM

The Paradigm for water management currently

→ Binding agreement (WSSD, Rio+20, SDGs), not just a promise or an academic approach

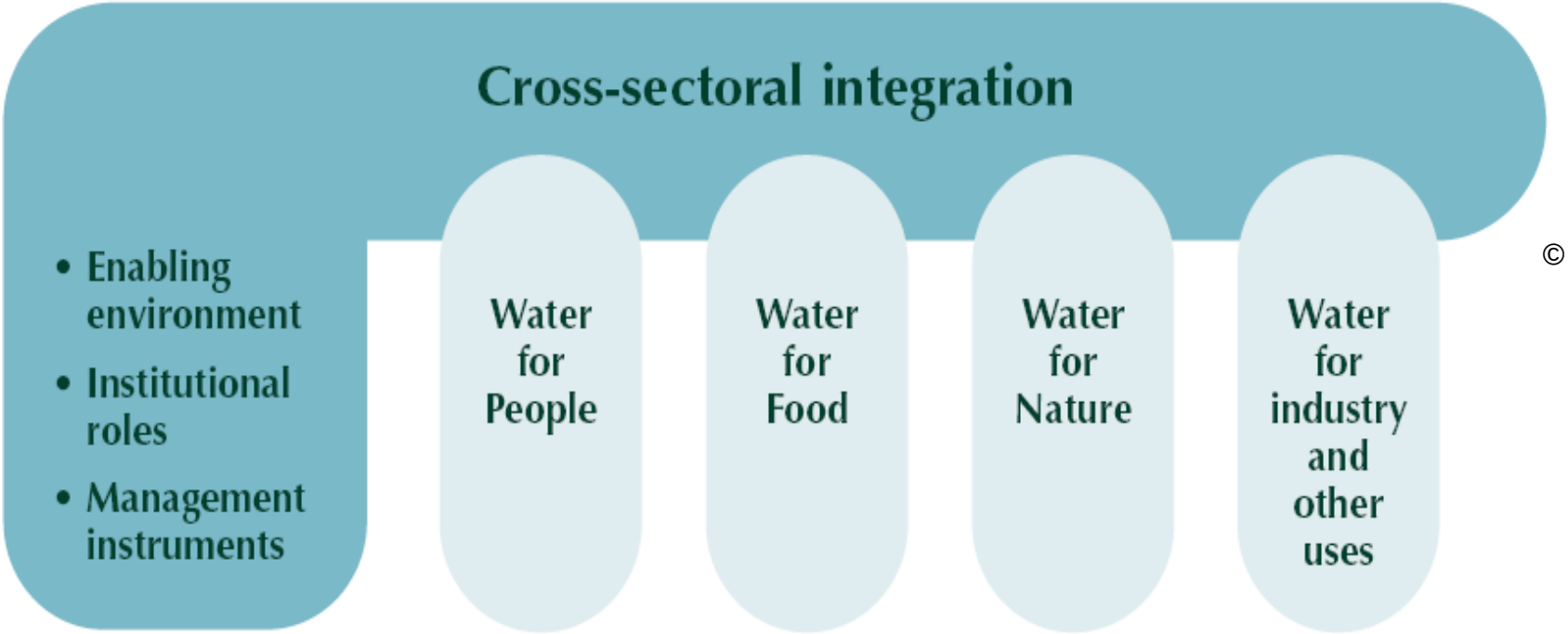
→ Hence, recognised also outside water field

”IWRM is a **process** which promotes **coordinated** development and management of **water, land and related resources**, in order to maximize the resultant **economic and social welfare** in an equitable manner without compromising the **sustainability** of vital ecosystems”

GWP 2000




INTERPRETING IWRM



- Focused on water use & utilisation within different sectors / users
- Emphasising institutions & mgt instruments

IWRM & SDGs

- IWRM applied in variety of settings, from small water bodies to transboundary rivers (like Mekong)

  → Yet, focus typically on national or at least on river basin level

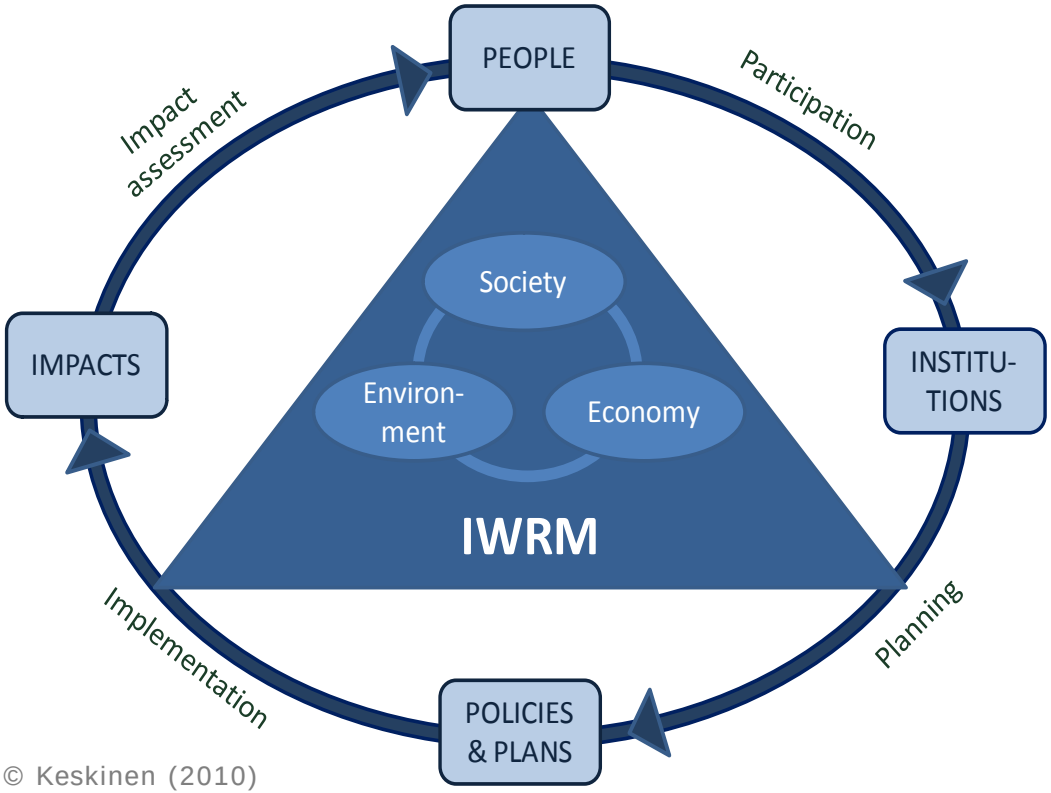
- SDGs are taking an ambitious aim with SDG Target 6.5

  → *"By 2030, implement integrated water resources management at all levels, incl. through transboundary cooperation as appropriate"*

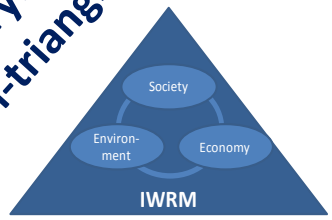
  Indicators:

  - *6.5.1 Degree of integrated water resources management implementation (0–100)*
  - *6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation*

THEORY VS. PRACTICE



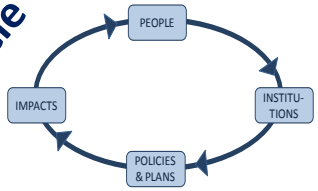
Theory: 'IWRM-triangle'



= ideal, objective, passive, consensual

vs.

Practice: Mgt cycle



= practical, subjective, active, contested

→ Even the most elaborate theory needs to be implemented – and it must also address the politics and power relations…

MORE ON IWRM

- Several websites, e.g. www.gwp.org
- Our Water & Development Research Group has also studied IWRM quite intensively

  → See e.g. Dr Theses of Mizanur Rahaman, Marko Keskinen & Virpi Stucki: wdrg.aalto.fi

DOUBLE BUBBLE

IWRM essentially tries
to ‘coordinate’ a balance
between environmental,
social & economic aspects
in water management:
is this even feasible?

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Transboundary:

crossing administrative borders, usually those between two independent countries. Commonly used term when talking about river basins shared by several countries (‘rajajoki’)

TRANSBOUNDARY (FRESH) WATERS

- There are 286 transboundary river & lake basins globally
  → Cover over 40% of population as well as land surface, and almost 60% of global water flow
- Many river basins seeing rapid development (e.g. hydropower, irrigation), with strong imbalances between upstream and downstream water use
  → Coupled with differing geopolitical power relations = recipe for tensions and even conflicts both within and between the riparian countries
- In addition to lakes and rivers (our emphasis), there are also number of transboundary aquifers & groundwater systems + marine ecosystems & oceans

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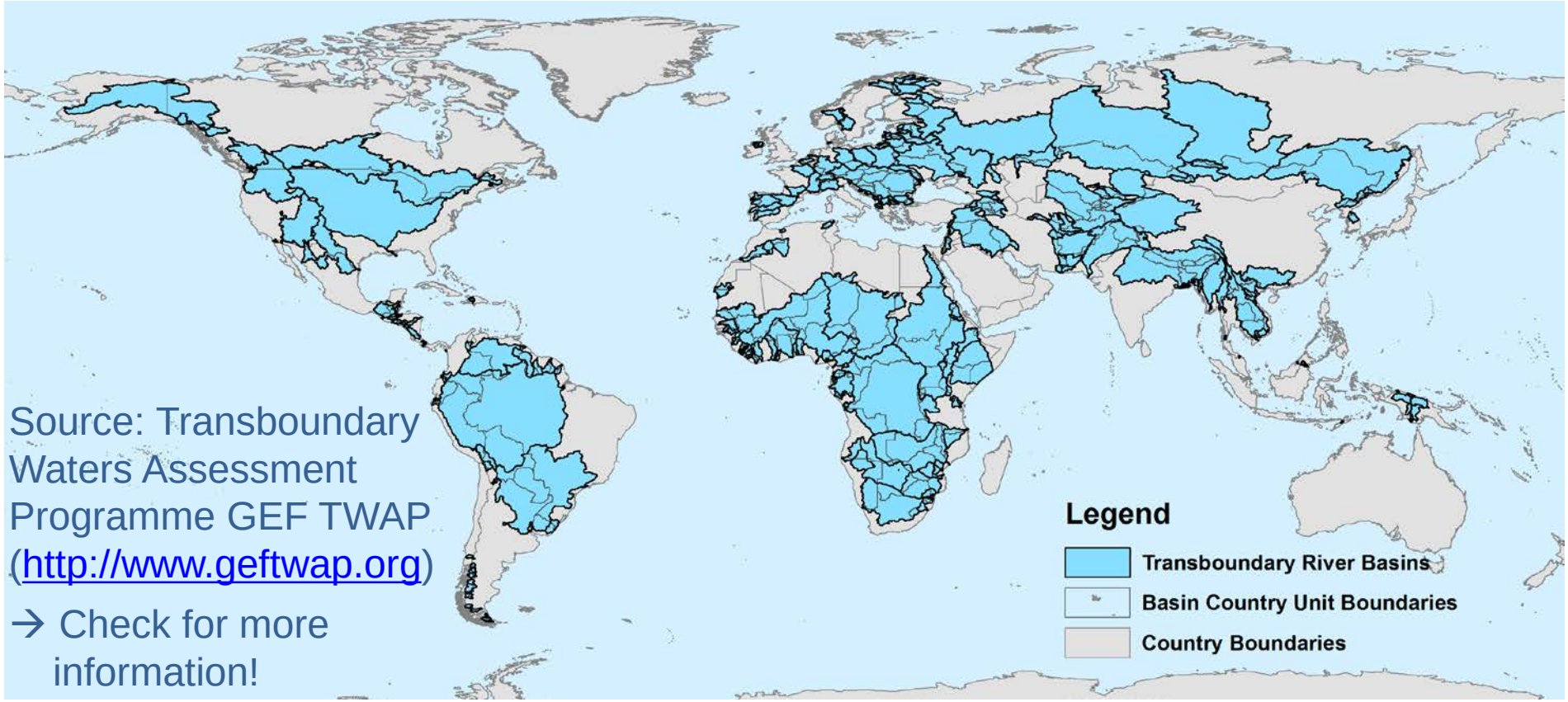
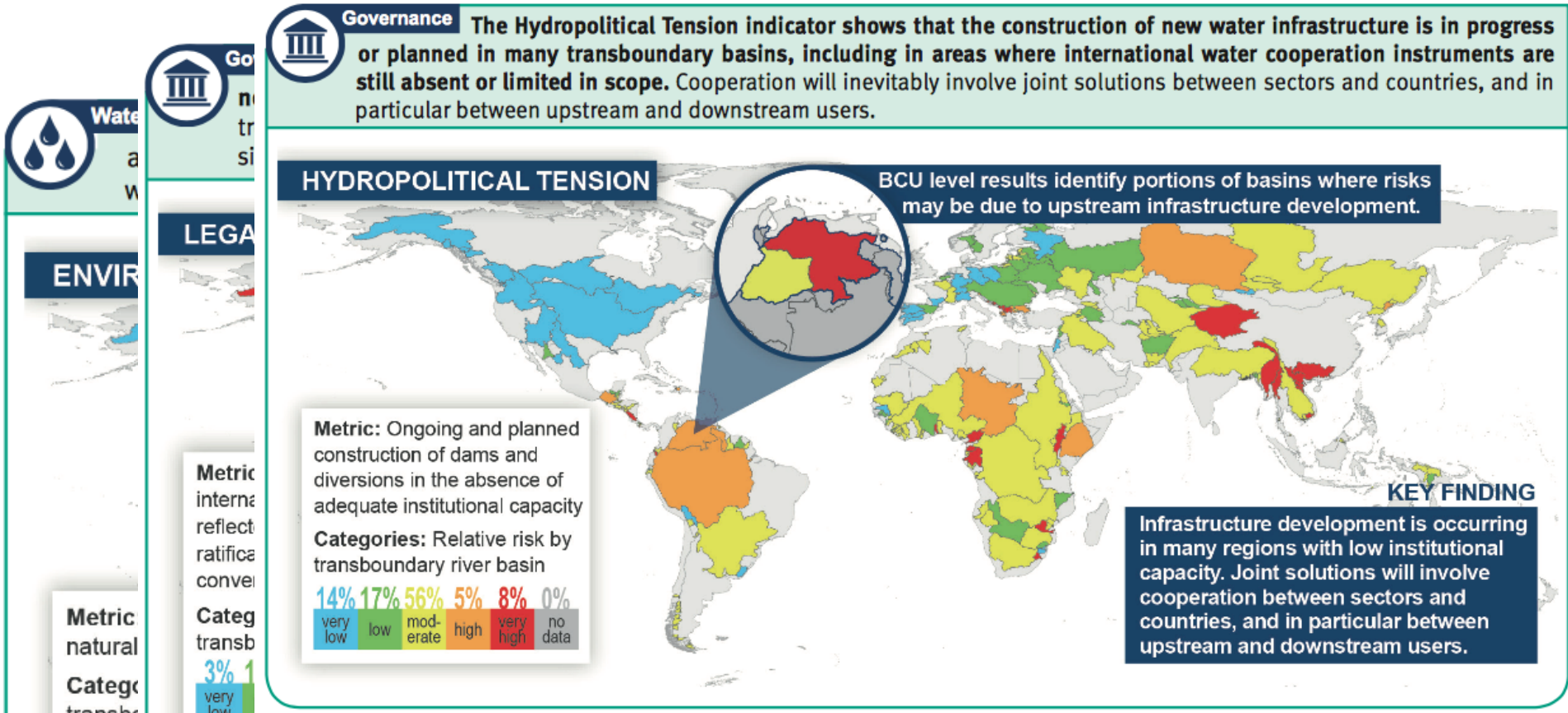


Source: Transboundary Waters Assessment Programme GEF TWAP (http://www.geftwap.org)

→ Check for more information!

DIFFERING PRESSURES …AND INSTITUTIONS



Very high relative risk transboundary river basins for Hydropolitical Tension: Bei Jiang/Hsi, Benito/Ntem, Ca/Song-Koi, Drin, Irrawaddy, Lake Turkana, Ma, Mira, Mono, Ogooue, Red/Song Hong, Sabi, Saigon, Salween, San Juan, Sanaga, Tarim, Thukela, Vardar.

Very high relative risk transboundary river basins for Legal Framework: Alsek, Atui, Awash, BahuKalat/Rudkhanehye, Baker, Baraka, Bei Jiang/Hsi, Benito/Ntem, Cancoso/Lauca, Catatumbo, Coco/Segovia, Corantijn/Courantyne, Coruh, Dasht, Digul, Essequibo, Gash, Hamun-i-Mashkel/Rakshan, Han, Helmand, Irrawaddy, Juba-Shibeli, Kaladan, Komoe, Kowl E Namaksar, Nyanga, Ogooue, Oiapoque/Oyupock, Orinoco, Patia, Salween, San Juan, Sanaga, St. Paul, Stikine, Tami, Tarim, Tumen, Yalu, Yukon.

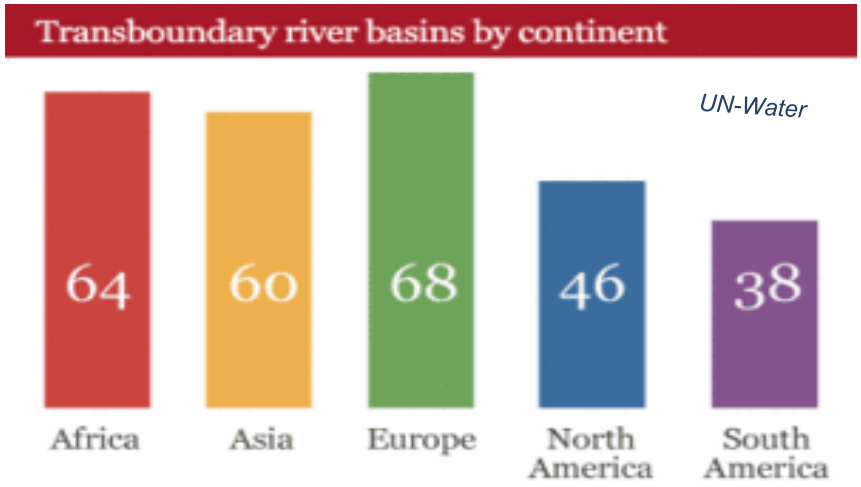
Source: Transboundary Waters Assessment Programme GEF TWAP (http://www.geftwap.org)

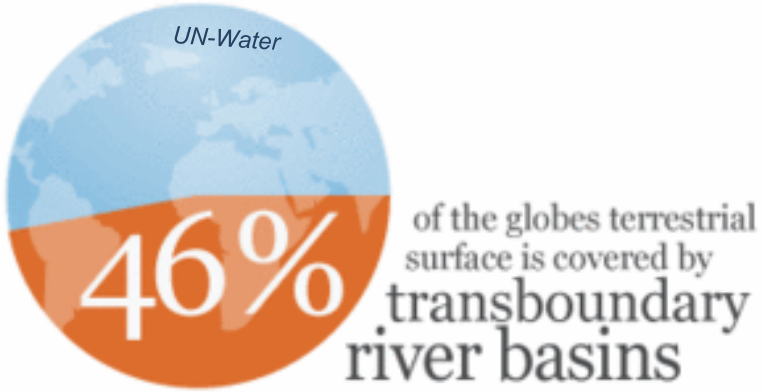
TRANSBOUNDARY GOVERNANCE

- Water governance and management in transboundary water bodies involves always several countries

→ Water special = the only(?) natural resource crossing borders in easily measurable manner. Also typically publicly owned.

→ Much more challenging than normal water governance: include upstream-downstream impacts and geopolitics





TRANSBOUNDARY GOVERNANCE

- Cooperation between the countries the key

  → Often rather formal and state-orientated: through joint organisations such as river basin commissions (e.g. MRC)

  → Other actors, too: e.g. multi-stakeholder platforms (Warner 2007)

- Different forms of cooperation: commonly starting from technical and proceeding towards political

  → Also, cooperation and conflict can co-exist! (Mirumachi 2010)

- Impact assessment and models having a central role

  → Impact assessment important part of transboundary mgt: what kind of impacts other countries will feel from a project

  → Model results provide the basis for (non)cooperation

COOPERATION vs. CONFLICT?

CO-EXISTENCE OF CONFLICT & COOPERATION

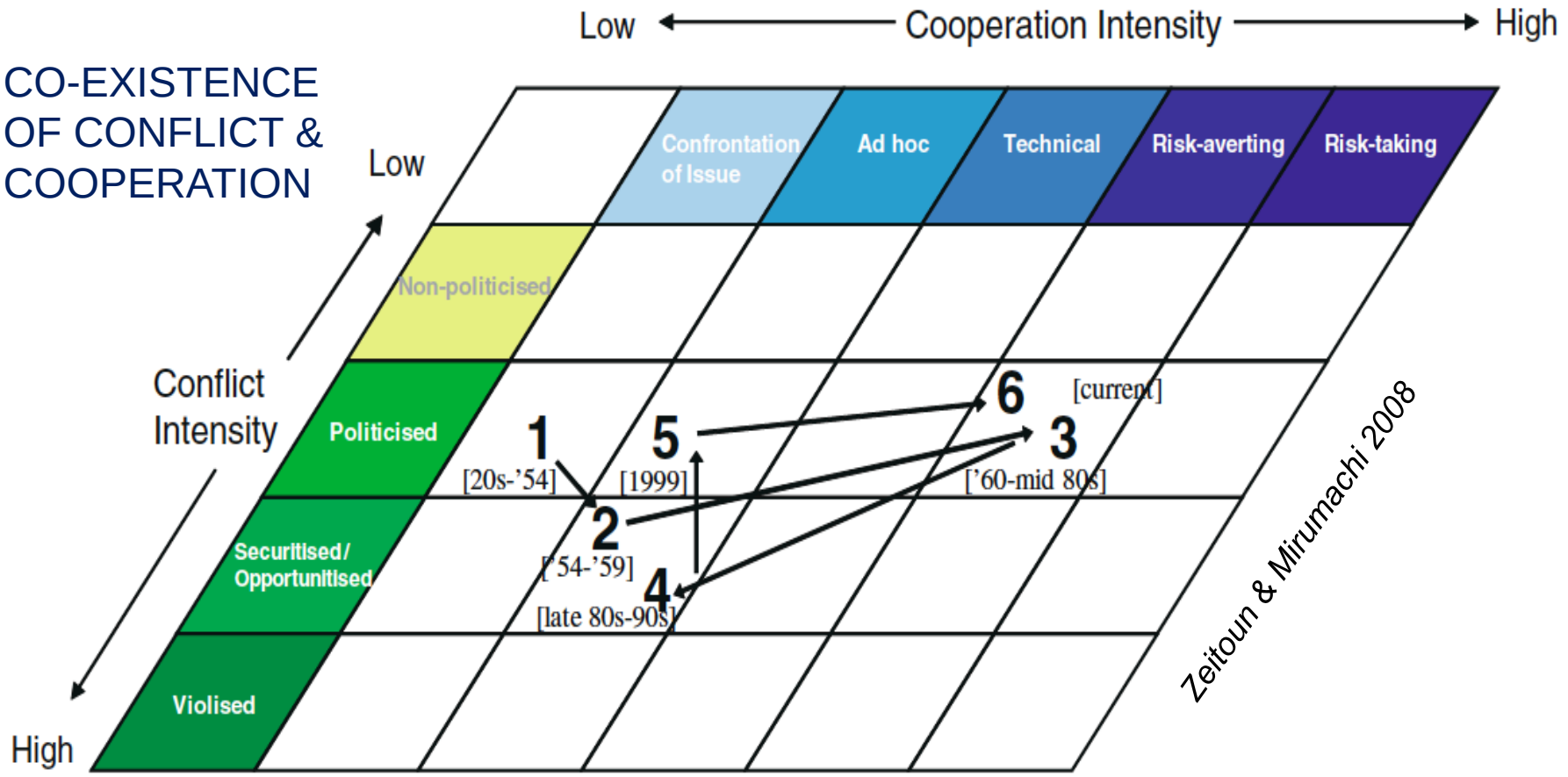


Fig. 3 The TWINS matrix of conflict and cooperation, applied to hydropolitical bilateral relations over time between Sudan and Egypt

INTERNATIONAL CONVENTIONS

- Two key international conventions on transboundary waters: both having a major Finnish contribution!
  - **UN 1997 Watercourses Convention** i.e. New York Convention
    (Convention on the Law of the Non-navigational Uses of International Watercourses, http://www.unwatercoursesconvention.org)

    → Entered finally into force on 17.8.2014

  - **UNECE 1992 Water Convention** i.e. Helsinki Convention
    (Convention on the Protection and Use of Transboundary Watercourses and International Lakes, http://www.unece.org/env/water)

    → The amendment of the convention opened it to all UN member states (not just UNECE countries) in 1.3.2016

    → UNECE Convention has a well-functioning organisational structure, including secretariat and working groups (unlike UN 1997 Convention)

INTERNATIONAL CONVENTIONS

- The reasons for the co-existence of these two conventions are many, and partly explain how political transboundary waters (and the UN) are…
- But the main point is the same: the duty to cooperate

  …to ensure the use of transboundary waters in reasonable and equitable manner i.e. do not cause significant harm
- Yet, these are 'only' general global frameworks

  → Actual cooperation defined in regional agreements and national laws + also through informal i.e. soft cooperation

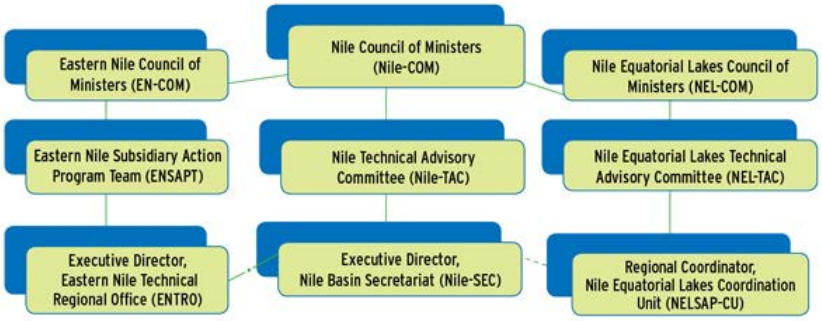
Downstream countries are usually more willing to cooperate: WHY?

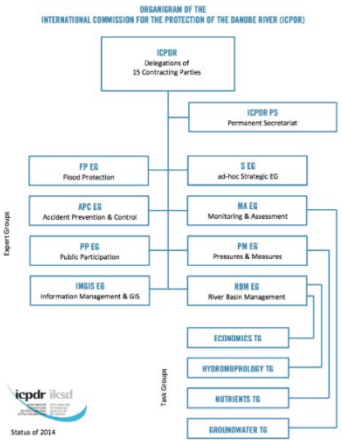
RIVER COMMISSIONS

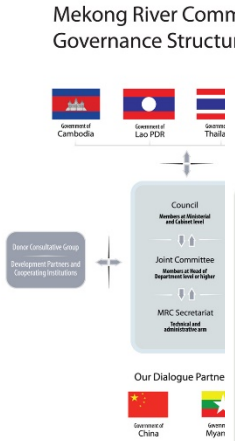
- Key organisations dealing with transboundary water mgt: usually established with a regional agreement

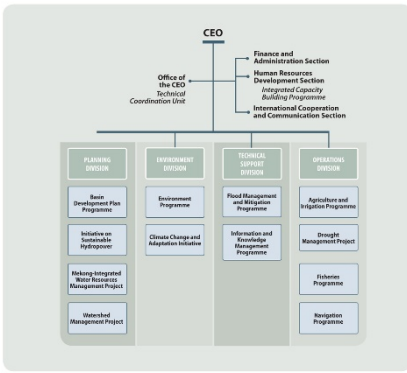
  → Typical organisational structure = council (between the states) + secretariat (coordination) + different types of working groups

- Also alternative forms of governance, such as different types of multistakeholder platforms *(e.g. Warner 2007, Dore 2012)*









RIVER COMMISSIONS: examples

- Many different types of commissions and their secretariats:

- Mekong River Commission MRC = very large (100+ people) secretariat: also about capacity building of riparian countries + filling the capacity gaps between the countries. MRC's focus is on sustainable and equal water use & development (donors' wish, too)
- Nile Basin Initiative bit similar than MRC (rather large and donor-darling), but clearly more focused on water-related investments
- International Commission for the Protection of the Danube River ICPDR has 14 European countries + EU as members, but its secretariat is only 10 people. ICPDR thus builds heavily on countries' own capacity and organisations = secretariat just coordinating forum + review platform.
- Vuoksi River: no secretariat, but all cooperation organised bilaterally through existing Finnish and Russian organisations (from central government i.e. ministries to regional scale i.e. ELY centers).

WATER DIPLOMACY

- Emerging concept to complement trb cooperation: puts more emphasis on political

"Water diplomacy is defined broadly to include all measures that can be undertaken **to prevent or peacefully resolve conflicts related to water availability, allocation or use between and within states**.!

WDC website (http://bit.ly/1uMX8Yg)

"…water diplomacy can thus be seen as **a political extension of water cooperation,** being particularly useful in situations where cooperation is laden with **competing interests, political agendas and even mistrust** between the parties.

Whereas water cooperation builds – and depends – on the idea of collaboration, water diplomacy has quite commonly **as its starting point weak or even non-existing cooperation.** In this way, one of the main goals of water diplomacy may simply be the establishment [and/or maintenance] of functioning process for water cooperation. " *Keskinen et al. (2013):* http://bit.ly/2EKQTfd

TRB RIVERS IN FINLAND

- Finland shares long borders –and hence many rivers– with Sweden (e.g. Muonionjoki, Tornionjoki), Norway (e.g. Tenojoki, Näätämöjoki & Paatsjoki) and Russia (e.g. Vuoksi, Saimaa & Paatsjoki)
  - Transboundary river agreements and joint Commissions/bodies with all three countries: bodies rather 'localised'
  - Cooperation on various issues, often at rather practical level (issuing permits, monitoring water quality, fisheries…)
  - Vuoksi River the most important river: has a discharge rule, with Finland paying compensations to Russia if those are violated and Russia compensating for hydropower losses

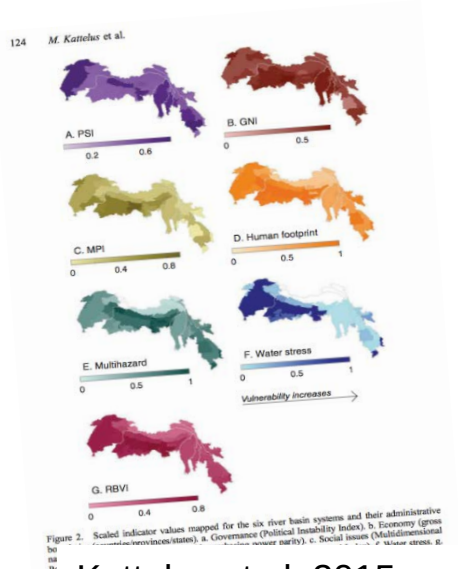
    → Finnish-Russian cooperation just selected best in the world!

MORE: Strategic Foresight Group (2017); Belinskij, Keskinen & Soininen (2017); Kotkasaari (2008); EC (2012); MMM (2015)

More on transboundary waters

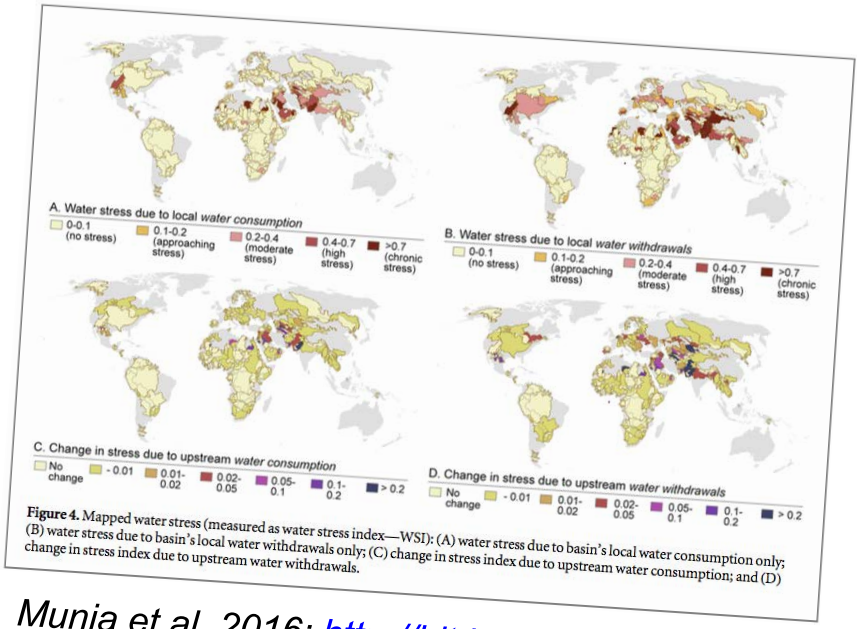
- Several websites, e.g. http://www.geftwap.org
- Our Water & Development Research Group has also studied this theme quite intensively

→ See e.g. these articles:



Kattelus et al. 2015: http://bit.ly/2DC78w9

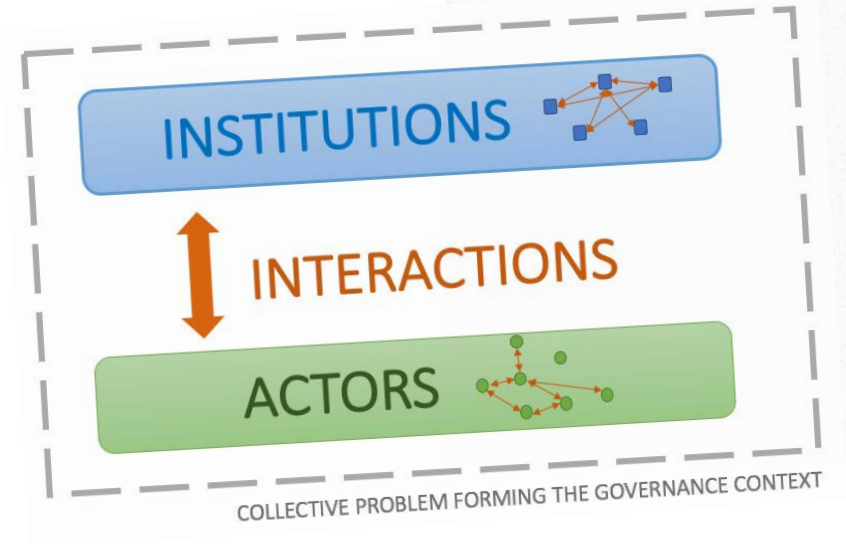
Keskinen et al. 2016: http://bit.ly/1T70BsT



Munia et al. 2016: http://bit.ly/2Ders9S

Group discussion

What kind of special characteristics transboundary setting brings to our Governance Frame and its governance elements? Why?



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THE GREATER MEKONG SUBREGION
PEOPLE'S REPUBLIC OF CHINA
YUNNAN PROVINCE
MYANMAR
LAO PDR
VIENTIANE
THAILAND
VIET NAM
CAMBODIA
BANGKOK
PHNOM PENH
YANGON
HANOI
SOUTH CHINA SEA
ANDAMAN SEA
Gulf of Tonkin
Gulf of Martaban
Gulf of Thailand
LEGEND :
National Capital
Cities/Towns
Rivers
Provincial Boundary
International Boundary
(Boundaries not necessarily authoritative)
Mekong is not the only major river in the 'Mekong Region'
→ Many rivers under intensive development, yet Mekong the most
Irrawaddy
Salween
Mekong
Red River
Chao Phraya
Kunming
MYANMAR
Mandalay
NAYPYIDAW
Rangoon
HANOI
LAO PDR
Luang Prabang
VIETNAM
VIENTIANE
THAILAND
BANGKOK
CAMBODIA
Tonle Sap Lake
PHNOM PENH
Ho Chi Minh City
Andaman Sea
Gulf of Thailand
South China Sea
250
km

(Lower) Mekong mainstream dams

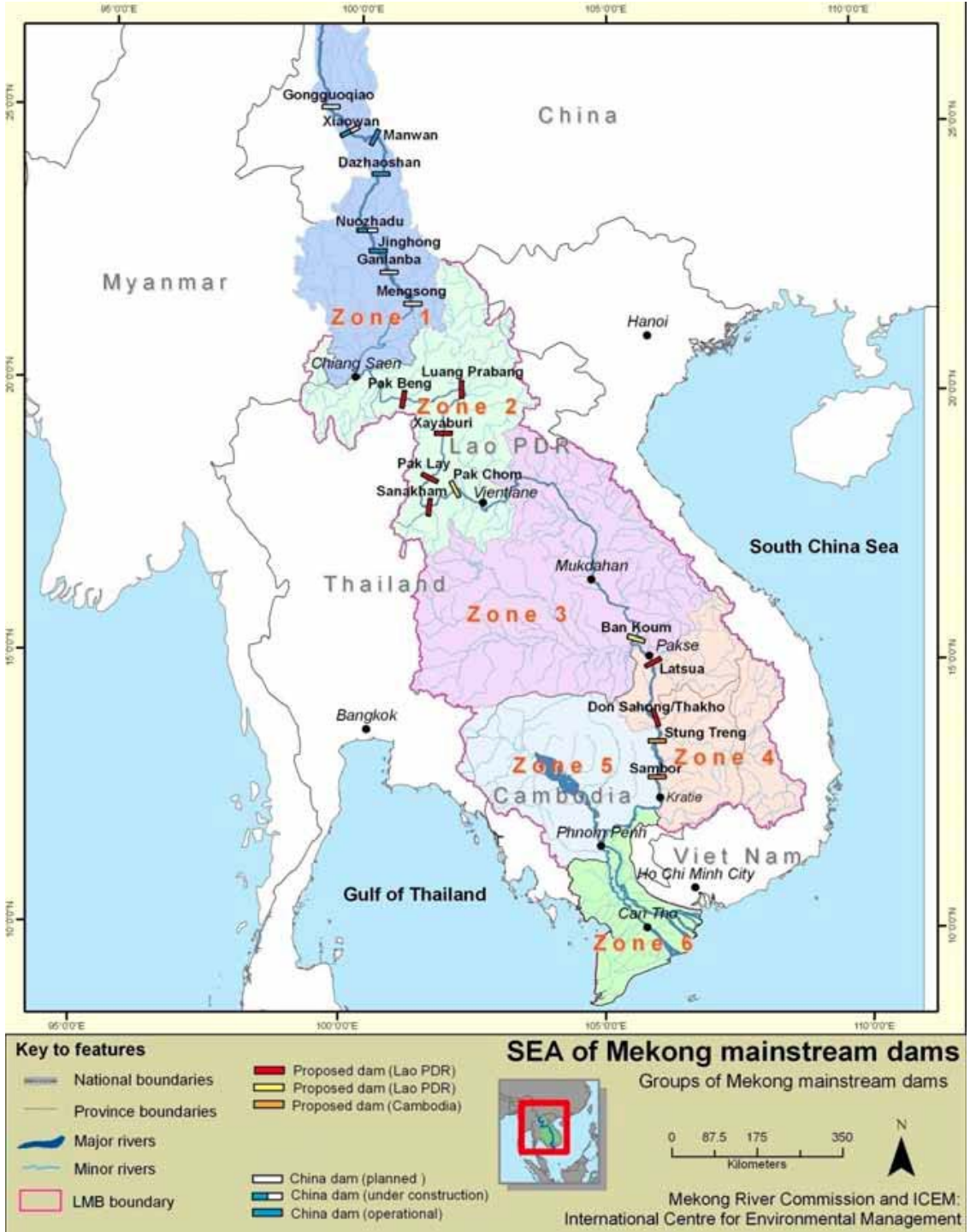
- Up to 12 dams planned to Lower Mekong River

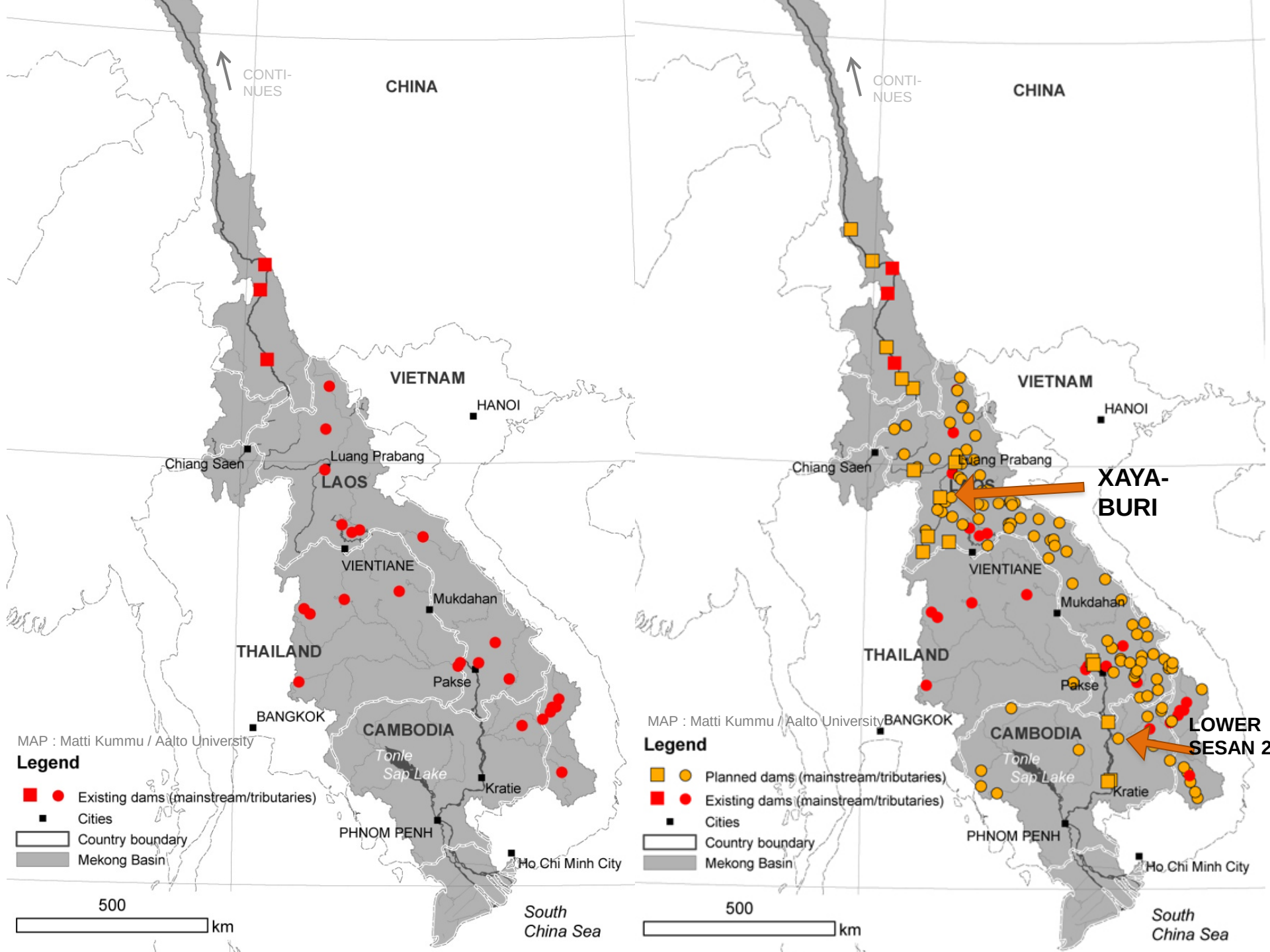
→ 8 across entire river, 1 partially & 1 diversion

→ Run-of-river dams without proper reservoirs: enabled by China's dams

→ First mainstream dams by MRC countries

→ By Mekong countries, but through BOT arrange-ment with private / semi-private project developers (e.g. from Thailand, China, Vietnam, France, Malaysia)

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NUES
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Mukdahan
THAILAND
Pakse
BANGKOK
CAMBODIA
Tonle
Sap Lake
Kratie
PHNOM PENH
Ho Chi Minh City
South
China Sea
MAP : Matti Kummu / Aalto University
Legend
Existing dams (mainstream/tributaries)
Cities
Country boundary
Mekong Basin
500
km
CONTI-
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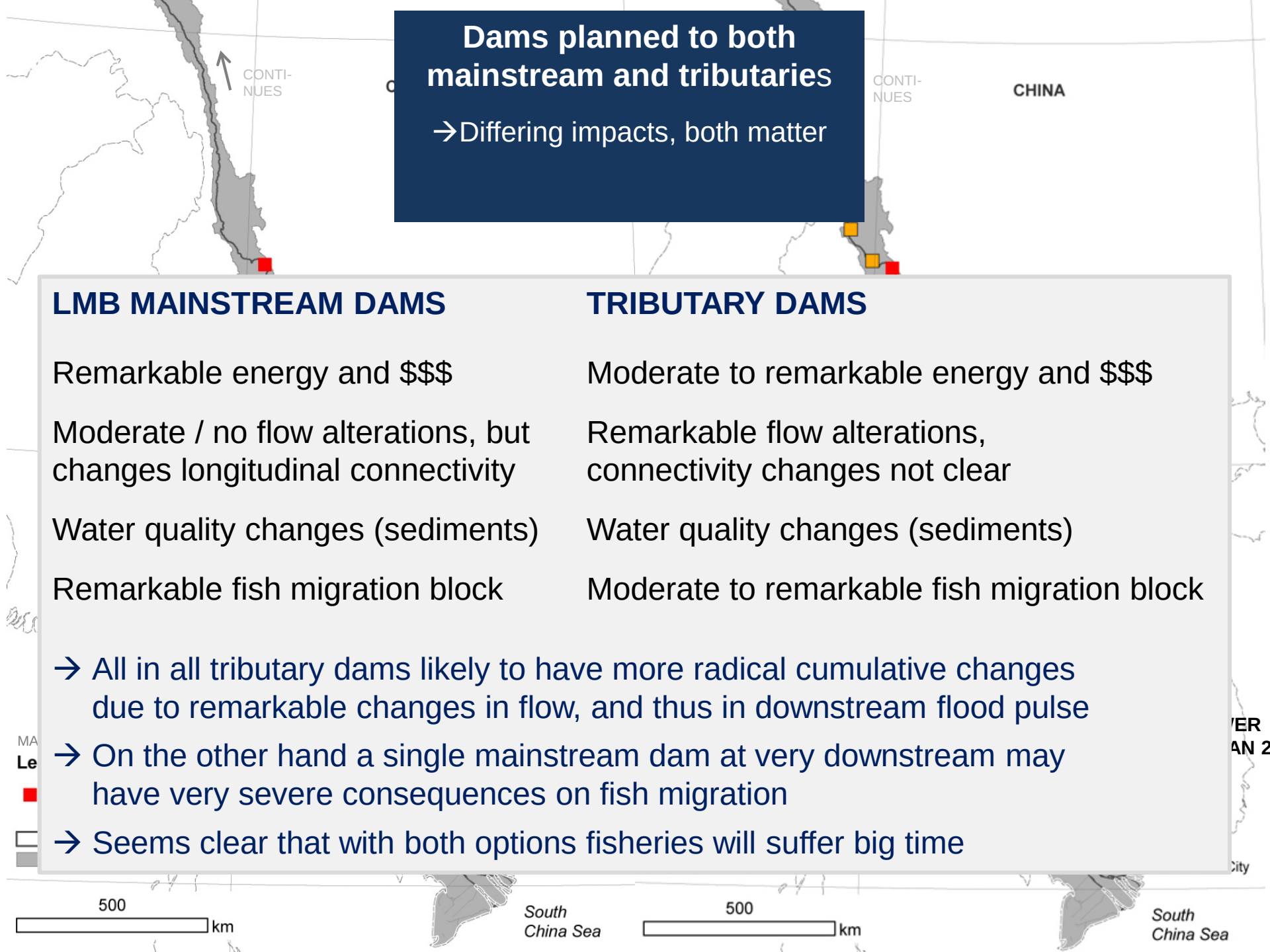
CHINA
VIETNAM
HANOI
Chiang Saen
Luang Prabang
XAYA-
BURI
VIENTIANE
Mukdahan
THAILAND
Pakse
BANGKOK
CAMBODIA
LOWER
SESAN 2
Tonle
Sap Lake
Kratie
PHNOM PENH
Ho Chi Minh City
South
China Sea
MAP : Matti Kummu / Aalto University
Legend
Planned dams (mainstream/tributaries)
Existing dams (mainstream/tributaries)
Cities
Country boundary
Mekong Basin
500
km



Dams planned to both mainstream and tributaries

→Differing impacts, both matter

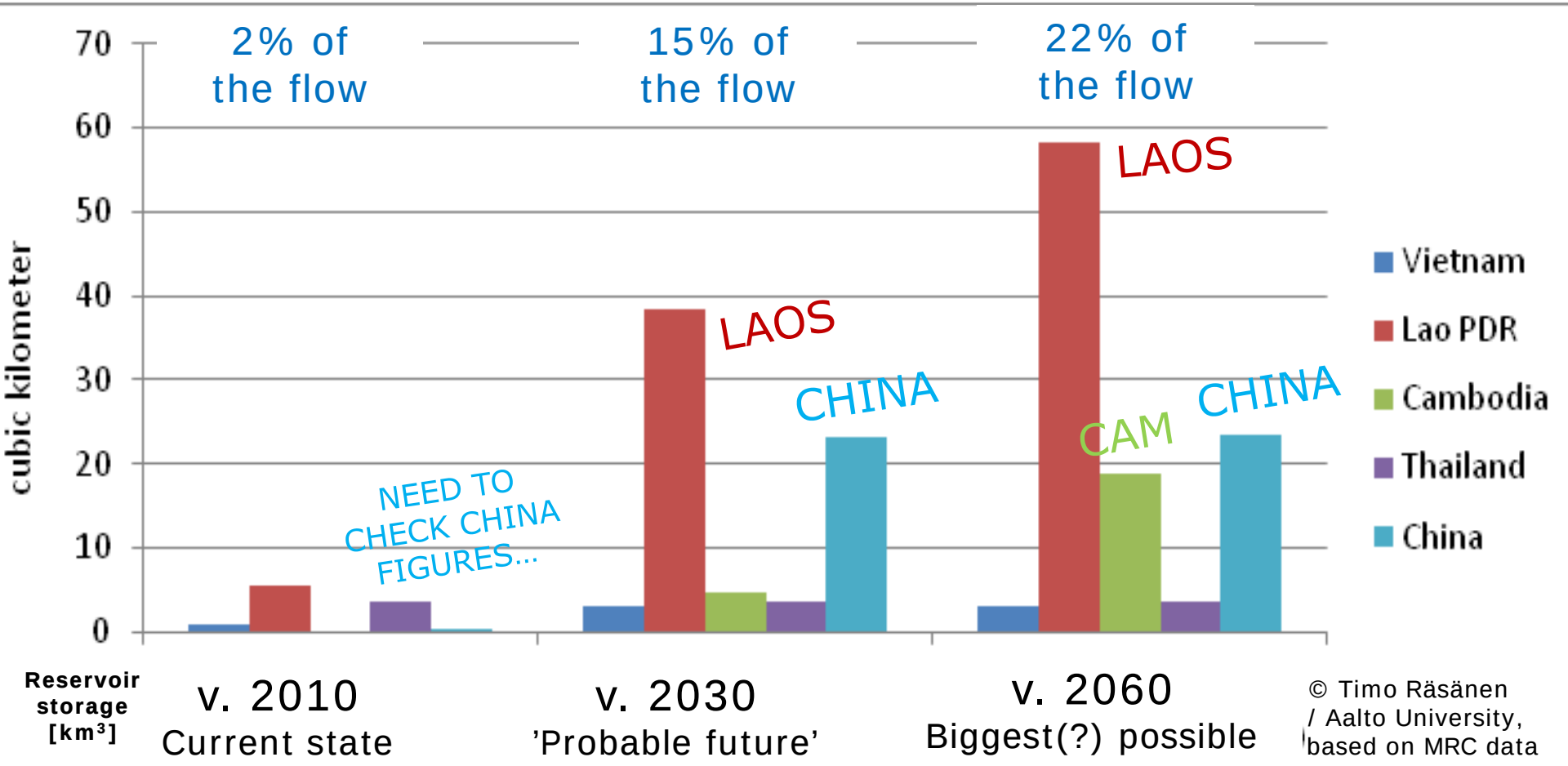
LMB MAINSTREAM DAMS	TRIBUTARY DAMS
Remarkable energy and $$$	Moderate to remarkable energy and $$$
Moderate / no flow alterations, but changes longitudinal connectivity	Remarkable flow alterations, connectivity changes not clear
Water quality changes (sediments)	Water quality changes (sediments)
Remarkable fish migration block	Moderate to remarkable fish migration block

→ All in all tributary dams likely to have more radical cumulative changes due to remarkable changes in flow, and thus in downstream flood pulse

→ On the other hand a single mainstream dam at very downstream may have very severe consequences on fish migration

→ Seems clear that with both options fisheries will suffer big time

Laos = hydropower center



→ Laos = most dams, most storage

Mekong River Commission

- The transboundary water management organisation

  → Members = four lower Mekong countries, China missing

  → Strongly supported by (Western) donors, incl. Finland

  → Big expectations, moderate achievements: particularly hydropower remained for long completely neglected

  → Now in challenging position due to Laos' mainstream dams

- Greatest achievement: regional planning and assessment processes, approved by MRC countries

  → Also strong link to IWRM: Basin Development Strategy is **IWRM-based**

= KEY REASON WHY IT FAILS?

MRC has been
a 'donor-darling'
& a kind of exemplary
super-star in
transboundary water
cooperation

→ *Yet, increasing questions about its actual ownership in the riparian countries*

→ *Recently challenged by Chinese-led and hydropower-focused Lancang-Mekong cooperation mechanism*

Recent developments

- Laos currently building two mainstream dams: Xayaburi dam in North and Don Sahong in South: more in the pipeline
- Cambodia: 400 MW Lower Sesan 2 dam planned (while concerned about Laos' dams impacts)
- Vietnam: concerned about the development (and slowness of MRC), so having its own mainstream study to understand the impacts to the delta
- Additional player emerging: China-led and more hydropower-focused Lancang-Mekong Cooperation Mechanism, with high-level meetings

Developing the Mekong

Two different but interlinked topics for discussion

1) Where to go?

- Countries' development plans (incl. energy policy), and related views on the river and water-related resources

  → *Very political (although in general development seen crucial)*

2) How to go there (preferably in sustainable way)?

- Planning processes, including energy planning & impact assessment

  → *Basically technical and apolitical: in reality political, too*

- Mekong in some ways a forerunner in cumulative impact assessment and transboundary cooperation, yet plenty of challenges as well

→ Finland (MfFA) and Finnish researchers and consultants have been rather active on this, often in collaboration with MRC

Developing Mekong: process

- It seems clear that Mekong will be developed

  → Hydropower the key

- Yet this can be done in many different ways

  → At the moment coordination is weak, and planning & implementation proceeds fast and separately

  → Existing cumulative impact assessments not really used for coherent hydropower planning (incl. mainstream vs. tributaries)

  → Assessments focus on flow, beyond that it's very vague

  → Participation: decisions still made without proper consultations with those impacted by the decisions (Xayaburi's PNPCA was, however, improvement)

Developing Mekong: impacts

- Current hydropower development plans would change radically the flow of the river and, thus, the benefits derived from the river
  - Increasingly centralised, government-led utilisation
  - Emphasis on non-agricultural sectors + urban areas, with greatest negative impacts on fish and delta
  - Simplified: upstream benefits, downstream suffers
- Yet, if the objective is poverty reduction (as is said), the development of rural areas is the key

→ Conflict thus both between and within the riparian countries about the development of the Mekong

Main points / questions

Mekong will be developed, but sustainability would require better plans & impact assessment

- Hydropower very likely part of the countries' energy plans

→So the question is not so much 'Hydropower or not?',
but 'How to ensure sustainable hydropower development?'

- Cumulative impacts remain a particular challenge

(Pöyry's report: responsibility of Laos & other riparian countries, not of a single project developer)

→Current piecemeal approach and project developers' mix not providing comprehensive and coherent picture of dams' impacts (+ / -)

→Proper cumulative IA and related comprehensive planning would lead, I believe, to more 'selective' dam development
(e.g. just selected tributaries, certain mainstream dams, limit on dam size)

→Positive news: plenty of knowledge & assessments exist already, they should 'just' be recognised and utilised

Main points / questions

Don’t forget the tributaries

• Current discussion has (understandably) been on mainstream dams, and on Xayaburi in particular

→Yet, in terms of flow changes, tributary dams will have greater impact than LMB mainstream dams, as the planned Lower Mekong dams will be run-of-river type without proper reservoirs

→Also greater negative impact to fish biodiversity *(Ziv et al. 2012)*

• Majority of the tributary dams in Laos as well, but Vietnam and Cambodia have also their (joint) plans

→ Calls thus (again) for more comprehensive plans and cumulative impact assessments

Main points / questions

Transboundary cooperation

• Finland and other donors (countries and banks) have been strong supporters of MRC and other multilateral cooperation mechanisms (e.g. GMS Program)

→Yet is seems that uni- and bilateralism as well as 'hidden multilateralism' is actually (still) defining the development agenda

→ The role and stance of 'official Finland' (MfFA) as well as Finnish actors working in the Mekong in and on this?

Group discussion

Pick two countries from the Mekong: one upstream, another downstream.

→ Discuss where the potential differences between these two countries lie – and why?

THANKS!

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