

# Making water resources management more adaptive – insights from a comparative study of water governance regimes

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# Outline

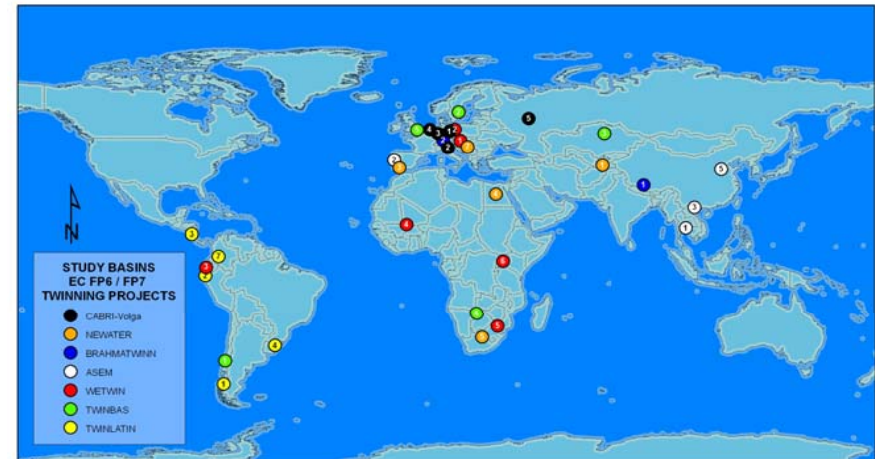
- Adaptive governance
- Design and approach
- Research findings
- Policy implications
- Limitations and conclusions

# Adaptive governance

- Uncertainties about
  - Direction and magnitude of climate changes
  - Sensitivity and vulnerability of ecosystems & sectors
  - Effectiveness of interventions
- Adaptive governance
  - Integrated and forward-looking analysis
  - Automatic policy adjustment
  - Formal policy review
  - Multi-stakeholder deliberation
  - Decentralization of decision-making
  - Enabling self-organization
  - Promoting variation (i.e. experiments)

# Design

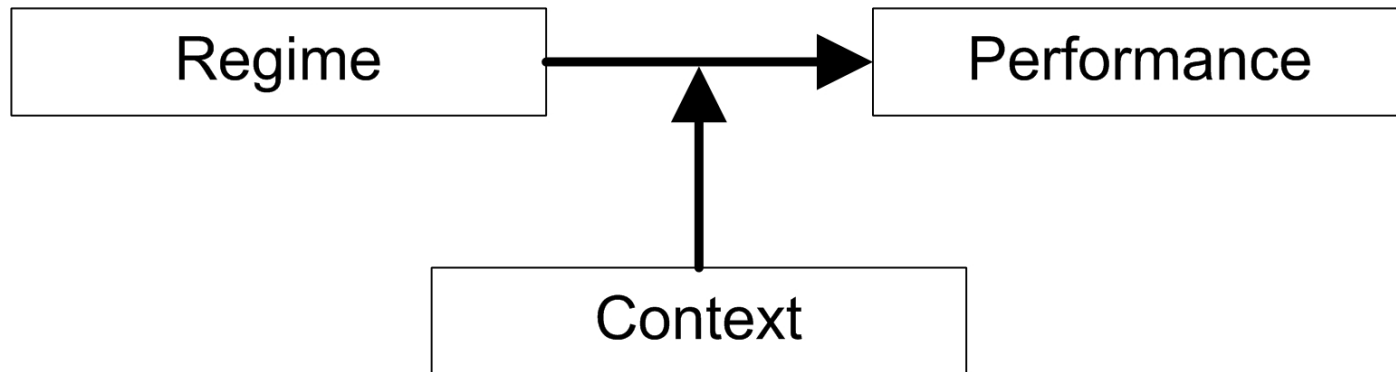
- **Goal:** synthesizes research in EU-twinning basins on adaptive and integrated water resources management
- **Approach:** systematically collect information from previously studied basins through expert workshops
- **Datasets:** indicator questionnaire & best practice reports



Biobio/Chile	Norrström/Sweden	Brahmaputra/Nepal
Catamayo/Peru	Nura/Kazakhstan	Tisza/Hungary
Catamayo/Ecuador	Okavango/Namibia	Guadiana/Spain
Cauca/Colombia	Thames/UK	Elbe/Germany
Quaraí/Brasil	Kyoga/Uganda	Rhine/TheNetherlands
Cocibolca/Nicaragua	Niger/Mali	Amudarya/Uzbekistan
Baker/Chile	BangPakong/Thailand	Orange/SouthAfrica
Cuareim/Uruguay	Volga/Russia	RedRiver/Vietnam
Guayas/Ecuador	Brahmaputra/Bhutan	Olifants/SouthAfrica
Paute/Ecuador	Brahmaputra/India	

Coordinating **Twin**ning partnerships **towards** more adaptive **Governance** in river basins

# Framework



- Explored associations between properties of governance regimes and performance adjusting as appropriate for influence of context

# Questionnaire



No.	Indicator	Score	Comments
<b>I) Characteristics of environmental governance regimes</b>			
<b>a) Water policy, institutional &amp; legal framework (formal and informal)</b>			
1.	Domestic water legislation (laws, by-laws, etc.) in place?	D	There are some specific laws or regulations such as irrigation act, ground water act, and institution establishment regulation such as Office of Prime Minister regulation to establish River Basin Organization มีกฎหมายเฉพาะบางอย่าง เช่น พรบ.ชลประทาน พรบ.น้ำบาดาล และระเบียบจัดตั้งหน่วยงาน เช่น คณะกรรมการลุ่มน้ำ
2.	Domestic Water Law: Public character of water and legal status of water use rights	C	Rights for water are not clearly identify
3.	Domestic Water Law: Explicit recognition of traditional and indigenous water uses	C	There is no consideration for traditional and indigenous water users. ไม่มีการพิจารณาน้ำเพื่อการใช้สำหรับผู้ใช้รูปแบบดั้งเดิม มีเฉพาะคลองสาธารณะที่มีข้อตกลงในการพิจารณาสิทธิในการใช้น้ำของแต่ละภาคส่วน เนื่องจากมีข้อขัดแย้งในการใช้น้ำมาก่อน
4.	Domestic Water Law: On flow availability, third party rights and ecological requirements	E	Environmental impacts are not identify in laws, but there are some considerations in implementation ไม่มีการกล่าวถึงผลกระทบต่อสิ่งแวดล้อมในกฎหมาย มีแต่การเจรจา ปฏิบัติ
5.	Integration of domestic water legislation	C	One single piece of legislation to coordinate/integrate the water-related framework does not exist. มีกฎหมายแยกกัน ไม่รวมกันเป็นกฎหมายเดียว
6.	Multilevel structure of domestic water legislation and subsidiarity	C	Law on Decentralization of Authorities exists but they are in general not specified water resources. However, subsidiarity exists in Regulations for Establishing of National Water Resources Committee and River Basin Committees. มีกฎหมายกระจายอำนาจ คณะกรรมการลุ่มน้ำ อนุกรรมการลุ่มน้ำ คณะกรรมการทรัพยากรน้ำแห่งชาติ (กนช)

# Indicators

- Regime
  - Legal frameworks
  - Formalized basin principles
  - Polycentric arrangements
- Performance
  - Good governance principles in practice
  - Climate change adaptation policies
  - Environmental management systems in place
- Context
  - Economic & institutional development
  - Water availability
  - Extent of watershed modification

# Measures

- Performance, regime & context **measures** were developed by aggregating scores from 2-10 individual indicators
- Summed scores for each indicator with 1 meaning a 'highest possible' and 0 'lowest' (i.e. equal weight)
- divided by number of indicators so that all composite measures varied between 0 and 1
- Responsiveness to climate change was one of the key performance measures we analyzed:

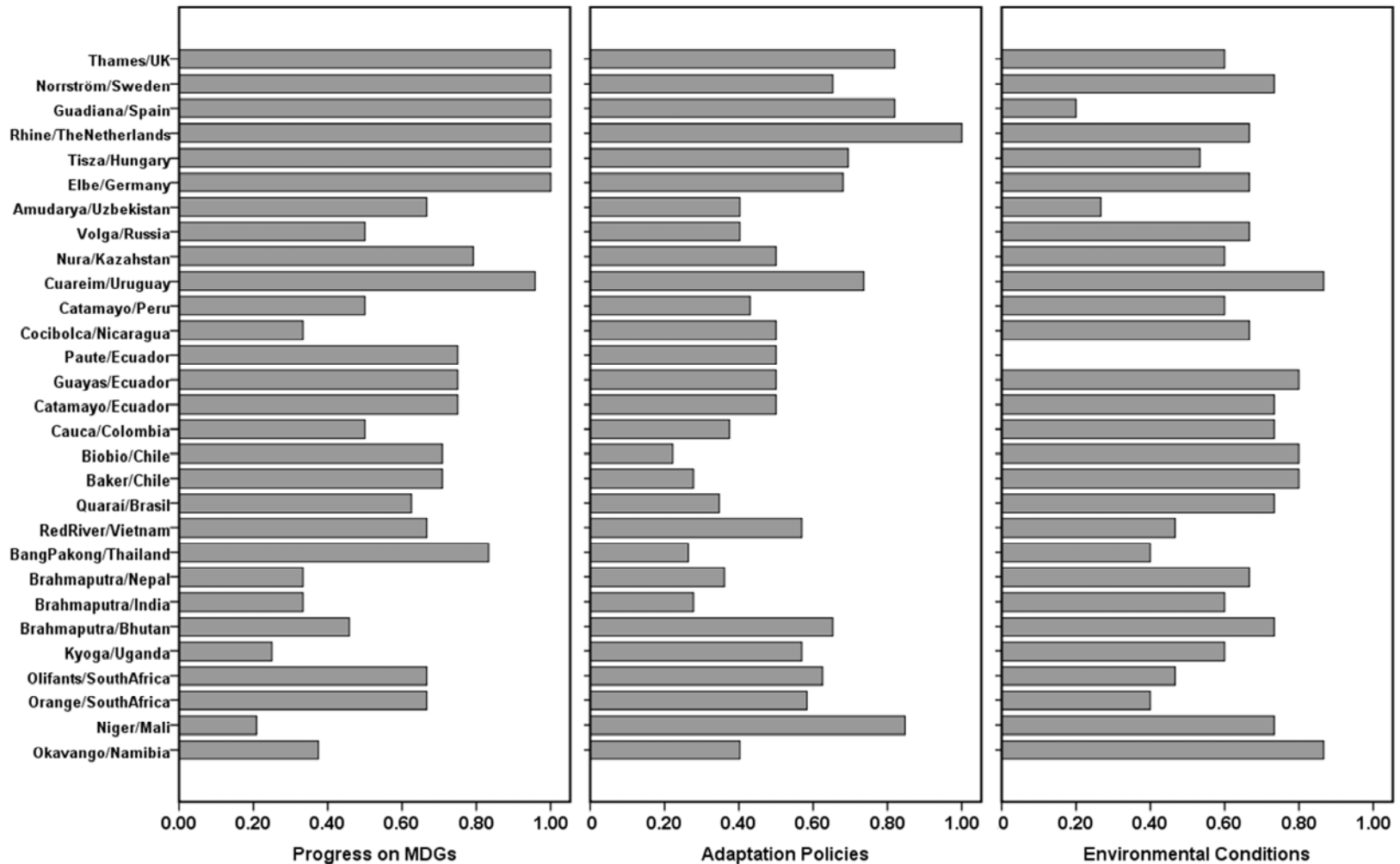
P4	Responsiveness to climate change or 'adaptation policies'	Questions 81-86 $\frac{((4-q81)/3+(5-q82)/4+(3-q83)/2+(4-q84)/3+(5-q85)/4+(3-q86)/2)/6}$
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# Indicators used for P4

- ❑ Strategy for adaptation to climate change in water sector
- ❑ Availability of specific knowledge enabling adaptation
- ❑ Awareness of water managers regarding adaptation to climate change
- ❑ Coordinated implementation process regarding adaptation to climate change (e.g. plan)
- ❑ Operational activities
- ❑ Ways to deal with climate variability (Floods and droughts)

# Variation in performance



# Associations

Performance Regime	P1 MDG goals	P2 Good governance	P4 Adaptation Policies	P5A Environmental conditions	P5B Environmental management
R1 Legal frameworks	-	+	+		
R2 Basin principles		+			
R3 Informal-formal		+			
R5 Econ. instruments		+	+		
R4 Polycentricity	-	+	+		
R8 Knowledge	-	+			+
R9 Adaptive capacity		+	+		
R10 IWRM		+	+		
R12 Good governance principles in legislation	-	+	+		
Context variables	C1	C1 & C4	C1	C3	C1

# Context

Performance Regime	P1 MDG goals	P2 Good governance	P4 Adaptation Policies	P5A Environmental conditions	P5B Environmental management
R1 Legal frameworks	-	+	+		
R2 Basin principles		+			
R3 Informal-formal		+			
R5 Econ. instruments		+	+		
R4 Polycentricity	-	+	+		
R8 Knowledge	-	+			+
R9 Adaptive capacity		+	+		
R10 IWRM		+	+		
R12 Good governance principles in legislation	-	+	+		
<b>Context variables</b>	C1	C1 & C4	C1	C3	C1

# Policy implications

Performance Regime	P1 MDG goals	P2 Good governance	P4 Adaptation Policies	P5A Environmental conditions	P5B Environmental management
R1 Legal frameworks	-	+	+		
R2 Basin principles		+			
R3 Informal-formal		+			
R5 Econ. instruments		+	+		
R4 Polycentricity	-	+	+		
R8 Knowledge	-	+			+
R9 Adaptive capacity		+	+		
R10 IWRM		+	+		
R12 Good governance principles in legislation	-	+	+		
Context variables	C1	C1 (C4)	(C1)	C3 (C1)	C1

# Legal frameworks

- Proposition:
  - legal frameworks (water laws) that recognize rights and administrative structures to implement them support adaptive governance
- Measured:
  - water legislation and administrative structures
- Evidence:
  - Views on best practices mixed
  - High performing have legal frameworks, but presence of legal frameworks is not guarantee of high performance

# Polycentric arrangements

- Proposition:
  - multi-level and –centred systems of governance that foster horizontal and vertical coordination as well as sharing of power and authority support adaptive governance
- Measured:
  - vertical and horizontal coordination structures and levels of decentralization
- Evidence:
  - Overly centralized and fragmented regimes score low
  - Best practice reports emphasize quality of coordination among and within levels

# Economic instruments

- Proposition
  - Use of multiple economic instruments supports adaptive governance
- Measured:
  - pricing, tradeable permits, polluter-pays, environmental subsidies, PES, taxes
- Evidence:
  - Many different instruments included making generalizations from best practice experiences hard
  - Fairness and equity often key issues



# Adaptive capacity

- Proposition
  - Presence of innovative ways for dealing with uncertainty supports adaptive governance
- Measured:
  - Attention to reversible and flexible options, safety margins, use of scenarios
- Evidence:
  - Strategies used and among best practice experiences
  - But: relationship between strategies and institutional settings unclear

# IWRM

- Propositions:
  - IWRM supports adaptive governance
- Measured:
  - principles formalized in legislation, river basin management plans based on IWRM, capacity to implement
- Evidence:
  - Experts' best practices often refer to IWRM principles, and value as a 'no regrets' option
  - But: lack of capacity and inter-agency competition are recurrent barriers and adaptive elements not automatic

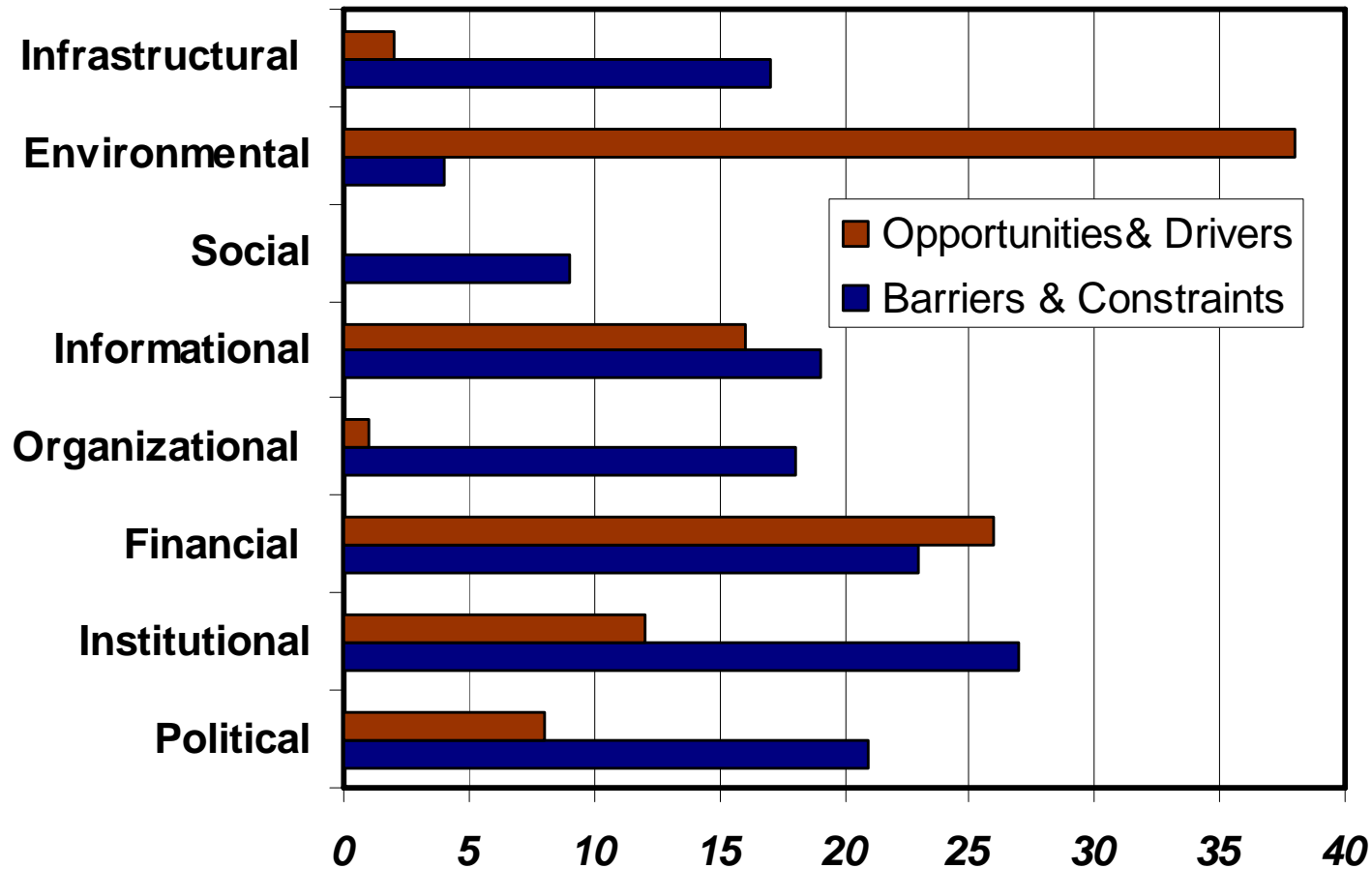
# Good governance principles

- Propositions:
  - Good governance supports adaptive governance
- Measured:
  - participatory, transparency, effective, inclusive
- Evidence:
  - Many best practices identified by experts concerned processes and tools for stakeholder engagement
  - But exactly what mechanisms are involved was not clear from this study

# Summary

- Legal frameworks
- Polycentric arrangements
- Economic instruments
- Adaptive capacity (dealing with uncertainty)
- IWRM
- Good governance

# Barriers and opportunities



# Transfers

- Attempts were made to transfer several types of best practices
- Strategies
  - move from a pilot site or success story in one location to other sites in same or a different country.
  - make use of pre-existing platforms for local engagement or research knowledge.
- factors found to be important to success in transfers
  - sufficient technical and financial support.
  - Support of international organizations was also acknowledged.
- transfers involve adjustment to fit social, institutional and environmental context.
- This makes generalizations about how to make successful transfers and overcome barriers difficult

# Limitations

- basin-specific indicators were based on judgments of experts
- some variables used to derive performance measures were national level rather than basin specific
- Performance measured in terms of systems in place and not ultimate social and environmental outcomes
- initial sample of “Twinning” basins is not ideal – all ‘developed country’ basins are in Europe

# Conclusions

- Several features of governance regimes have an impact on performance
- Context has an influence on performance, but does not determine it completely.
- Polycentricity, legal frameworks, economic instruments, integration, good governance, and innovative ways for dealing with uncertainty seem to improve responsiveness to climate change, but none is sufficient on its own.
- There are no panaceas.



# Questions

1. What features of water governance systems enable them to cope with complexity and uncertainty in the context of climate change?
2. How can water policies and programs support transitions towards more adaptive governance?
3. How can adaptive governance approaches be transferred across different basins?