Governance of climate change policies in polycentric urban regions

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BACKGROUND

- Climate change is a problem that is both **global and local** in nature ('glocal') thus calling for responses at **multiple administrative levels** (Gupta, 2007)

- Being a **particularly complex** problem it also calls for **integrated policy** action (energy, transport, water, planning, health, disaster management, research etc.)

- Cities are **perpetrators** of climate change but also their main **victims** too and the **solution** - it is in the cities that effective solutions to mitigate emissions and adapt to the impacts of climate change can be devised

- **Delta urban regions** are particularly **vulnerable** to climate change impacts due to the **tension between the natural environment and intensive urbanisation**:
  - **Rising sea levels** particularly dangerous for **low-lying areas**
  - Prone to river **flooding**
  - Damage of infrastructure and other physical assets from extreme weather events → costly and harmful for the **economic activity**, which tends to be concentrated in deltas
  - Threat to the **dense population** living in deltas
  - **Public health** implications of higher average temperatures
  - Stress on **water resources**, etc.

Obstacles to implementation of urban climate change policies:

- **Institutional blockage** - clashes of interests and priorities across the departments of sub-national authorities
- **Mismatch of priorities** across the levels of governments
- **Insufficient capacity** and expertise
- **Lack of appropriate funding** to reach national targets
- **Lack of devolved authority**, appropriate responsibility and/or financial autonomy
- **Difficult co-ordination between municipalities** within metropolitan and functional areas

(Gupta, 2007; Corfee-Morlot et al., 2009, Betsill and Bulkeley, 2007)

RESEARCH QUESTIONS AND DESIGN

1. How do the do the features of the administrative and institutional systems shape urban regions' governance? How do they affect the governance of climate change policies at the regional level?

2. To what extent and how do the climate change policies influence the patterns of governance in urban regions?

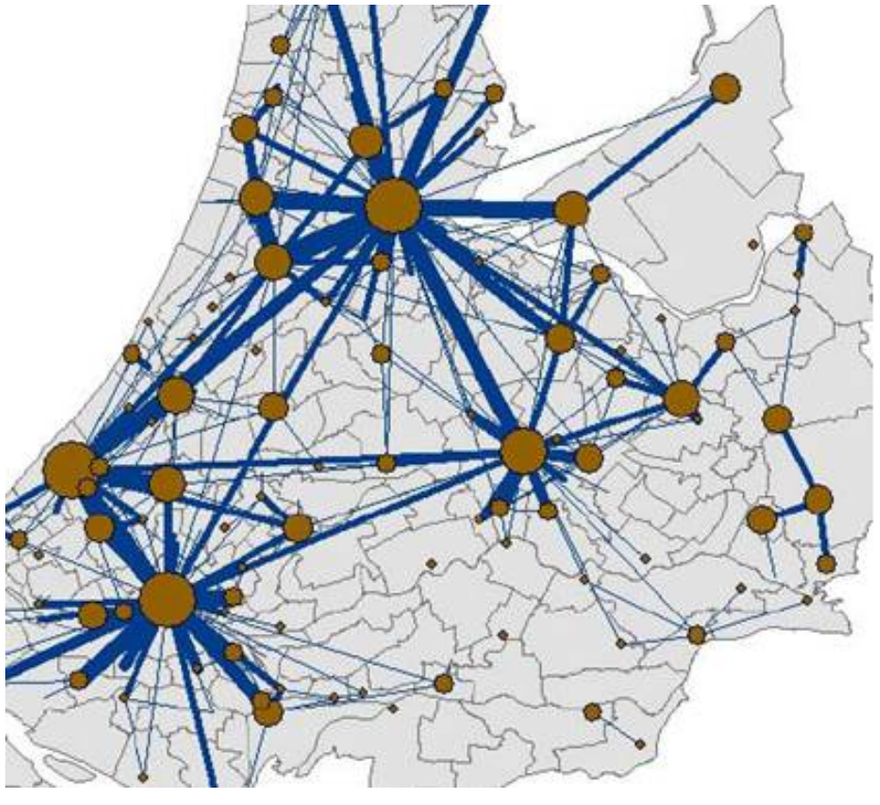
3. What are the challenges and bottlenecks for vertical, horizontal and cross-sectoral coordination?

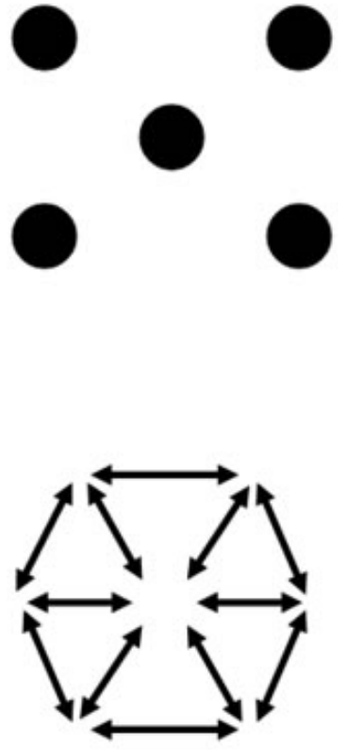
- A comparative study of the climate change governance in **Dutch and Chinese polycentric urban regions**:
  - Randstad
  - Hong Kong - Pearl River Delta

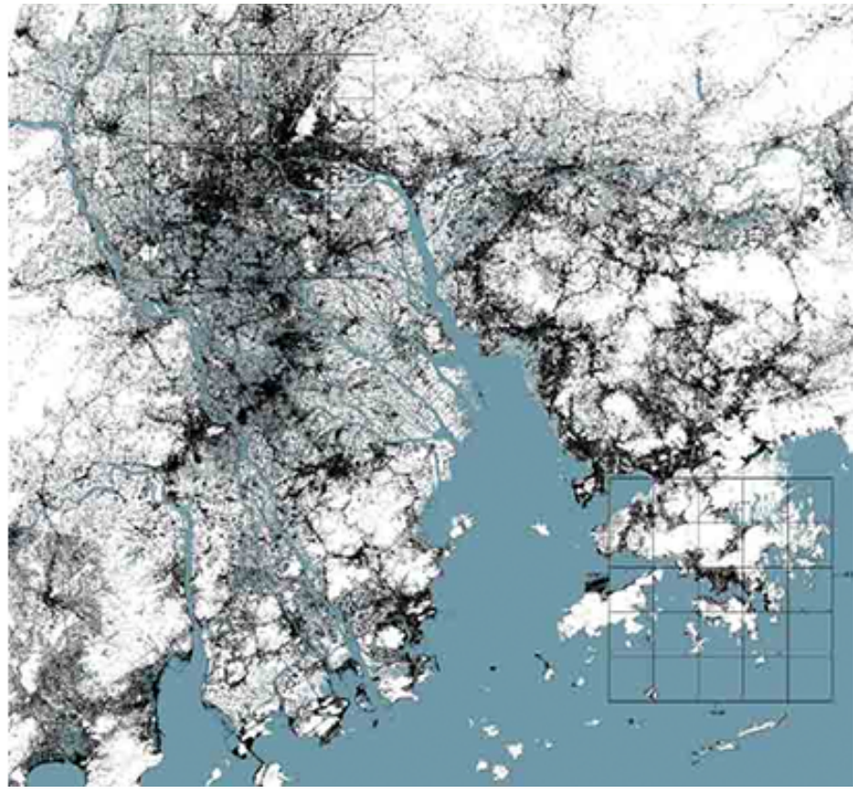
- **Multi-level governance** as a conceptual framework (e.g. Hooghe and Marks, 2001; Hooghe et al. 2010)

- **Mixed research methods**: semi-structured interviews and Social Network Analysis

OVERVIEW OF THE CASE STUDIES



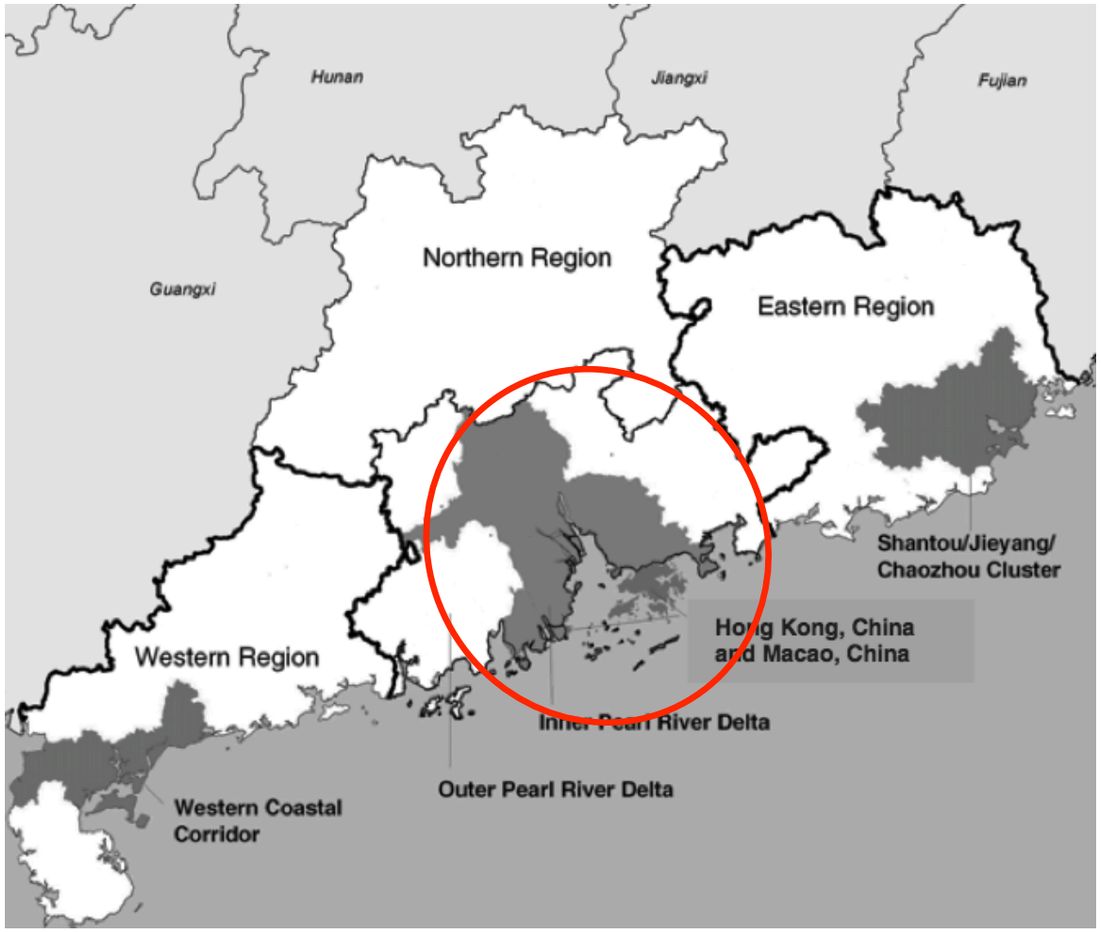




Randstad (NL)

Hong Kong-Pearl River Delta (CN)

Source: OECD, 2007

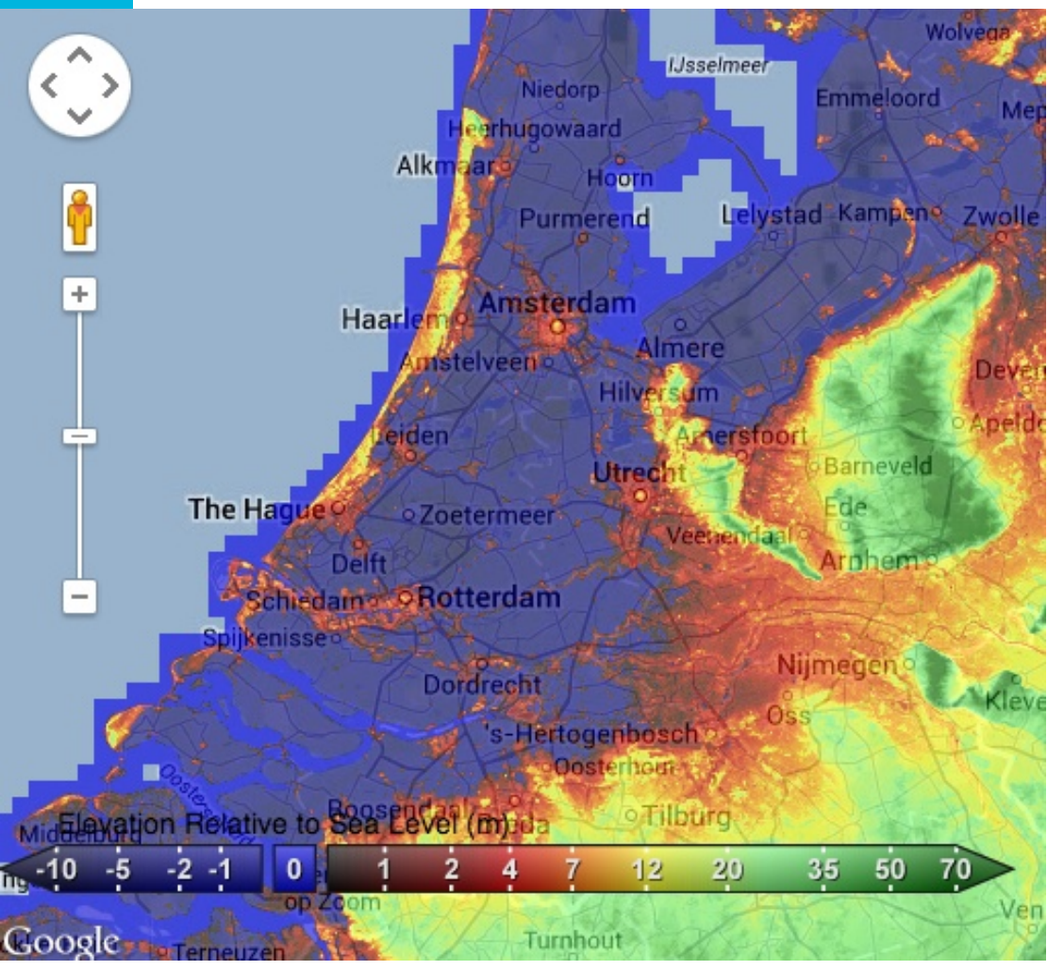


Source: OECD, 2010

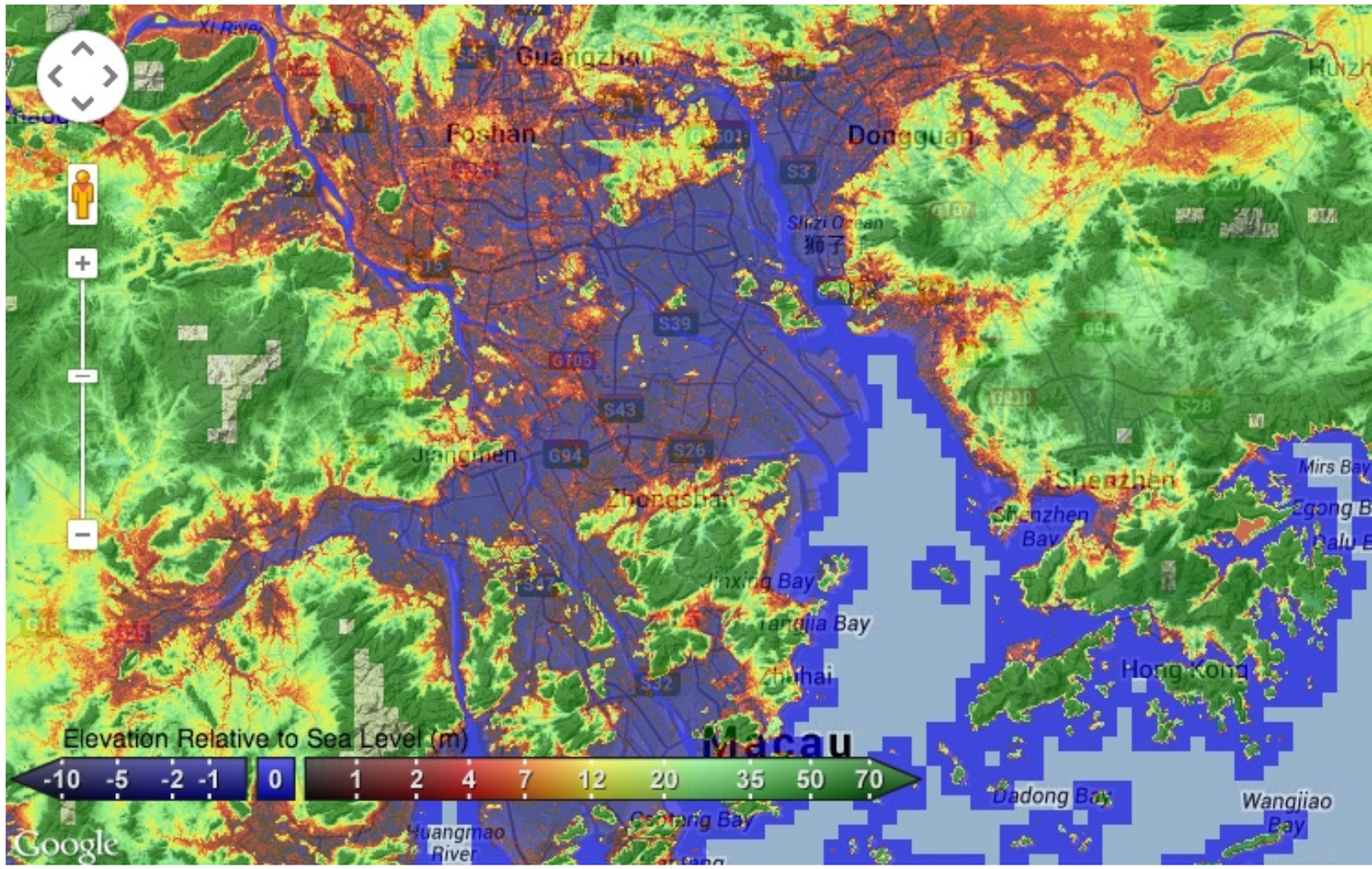
Similarities

- **Polycentric** and low-lying **delta** regions
- **High density** of urban settlements and disproportionate concentration of **economic activity**
- **Extreme vulnerability** to the impacts of climate change – pressing need for effective adaptation policy to prevent huge human and material costs of flooding from the rising sea level, heavy rainfall, river flooding
- **Pioneers** of urban climate change policies
- **Highly complex and shifting governance** arrangements in both regions
- **Cross-boundary governance** is an issue in both cases

Areas exposed to flooding as a result of the rising sea level



Randstad (NL)



Hong Kong-Pearl River Delta (CN)

Source: www.globalwarmingart.com/wiki/Special:SeaLevel

Rank	Country	Urban Agglomeration	Exposed Population Current	Exposed Population Future
1	INDIA	Kolkata (Calcutta)	1,929,000	14,014,000
2	INDIA	Mumbai (Bombay)	2,787,000	11,418,000
3	BANGLADESH	Dhaka	844,000	11,135,000
4	CHINA	Guangzhou	2,718,000	10,333,000
5	VIETNAM	Ho Chi Minh City	1,931,000	9,216,000
6	CHINA	Shanghai	2,353,000	5,451,000
7	THAILAND	Bangkok	907,000	5,138,000
8	MYANMAR	Rangoon	510,000	4,965,000
9	USA	Miami	2,003,000	4,795,000
10	VIETNAM	Hai Phòng	794,000	4,711,000
11	EGYPT	Alexandria	1,330,000	4,375,000
12	CHINA	Tianjin	956,000	3,790,000
13	BANGLADESH	Khulna	441,000	3,641,000
14	CHINA	Ningbo	299,000	3,305,000
15	NIGERIA	Lagos	357,000	3,229,000
16	CÔTE D'IVOIRE	Abidjan	519,000	3,110,000
17	USA	New York-Newark	1,540,000	2,931,000
18	BANGLADESH	Chittagong	255,000	2,866,000
19	JAPAN	Tokyo	1,110,000	2,521,000
20	INDONESIA	Jakarta	513,000	2,248,000

Table 1: Top 20 cities ranked in terms of population exposed to coastal flooding in the 2070s (including both climate change and socioeconomic change) and showing present-day exposure (Source: Nicholls et al (2007), OECD, Paris)

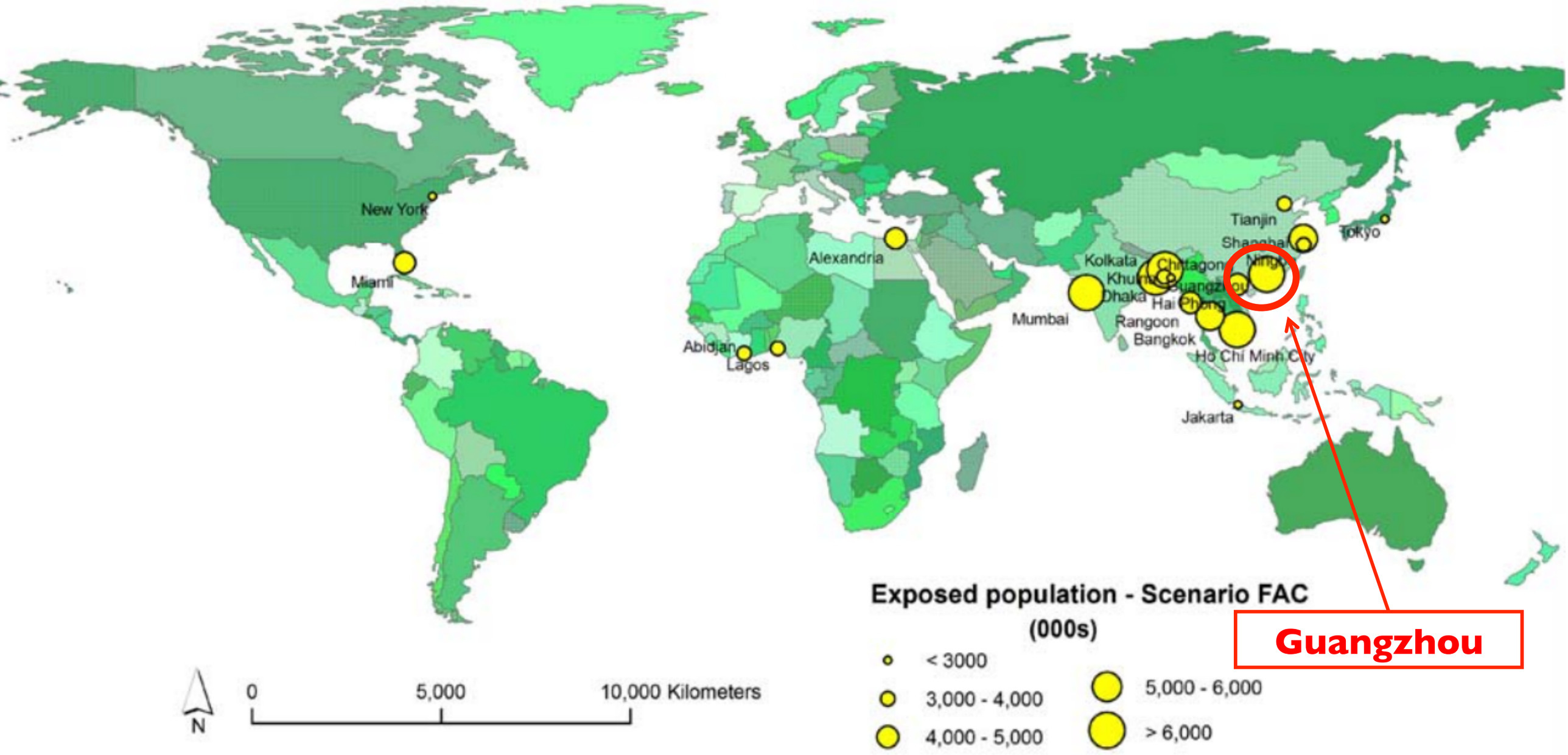


Figure 2: Map showing the Top 20 cities for exposed population under the future climate change and socioeconomic change scenario
(Source: Nicholls et al (2007), OECD, Paris)

Rank	Country	Urban Agglomeration	Exposed Assets Current ($Billion)	Exposed Assets Future ($Billion)
1	USA	Miami	416.29	3,513.04
2	CHINA	Guangzhou	84.17	3,357.72
3	USA	New York-Newark	320.20	2,147.35
4	INDIA	Kolkata (Calcutta)	31.99	1,961.44
5	CHINA	Shanghai	72.86	1,771.17
6	INDIA	Mumbai	46.20	1,598.05
7	CHINA	Tianjin	29.62	1,231.48
8	JAPAN	Tokyo	174.29	1,207.07
9	CHINA,	Hong Kong	35.94	1,163.89
10	THAILAND	Bangkok	38.72	1,117.54
11	CHINA	Ningbo	9.26	1,073.93
12	USA	New Orleans	233.69	1,013.45
13	JAPAN	Osaka-Kobe	215.62	968.96
14	NETHERLANDS	Amsterdam	128.33	843.70
15	NETHERLANDS	Rotterdam	114.89	825.68
16	VIETNAM	Ho Chi Minh City	26.86	652.82
17	JAPAN	Nagoya	109.22	623.42
18	CHINA	Qingdao	2.72	601.59
19	USA	Virginia Beach	84.64	581.69
20	EGYPT	Alexandria	28.46	563.28

Table 2: Top 20 cities ranked in terms of assets exposed to coastal flooding in the 2070s (including both climate change and socioeconomic change) and showing present-day exposure (Source: Nicholls et al (2007), OECD, Paris)

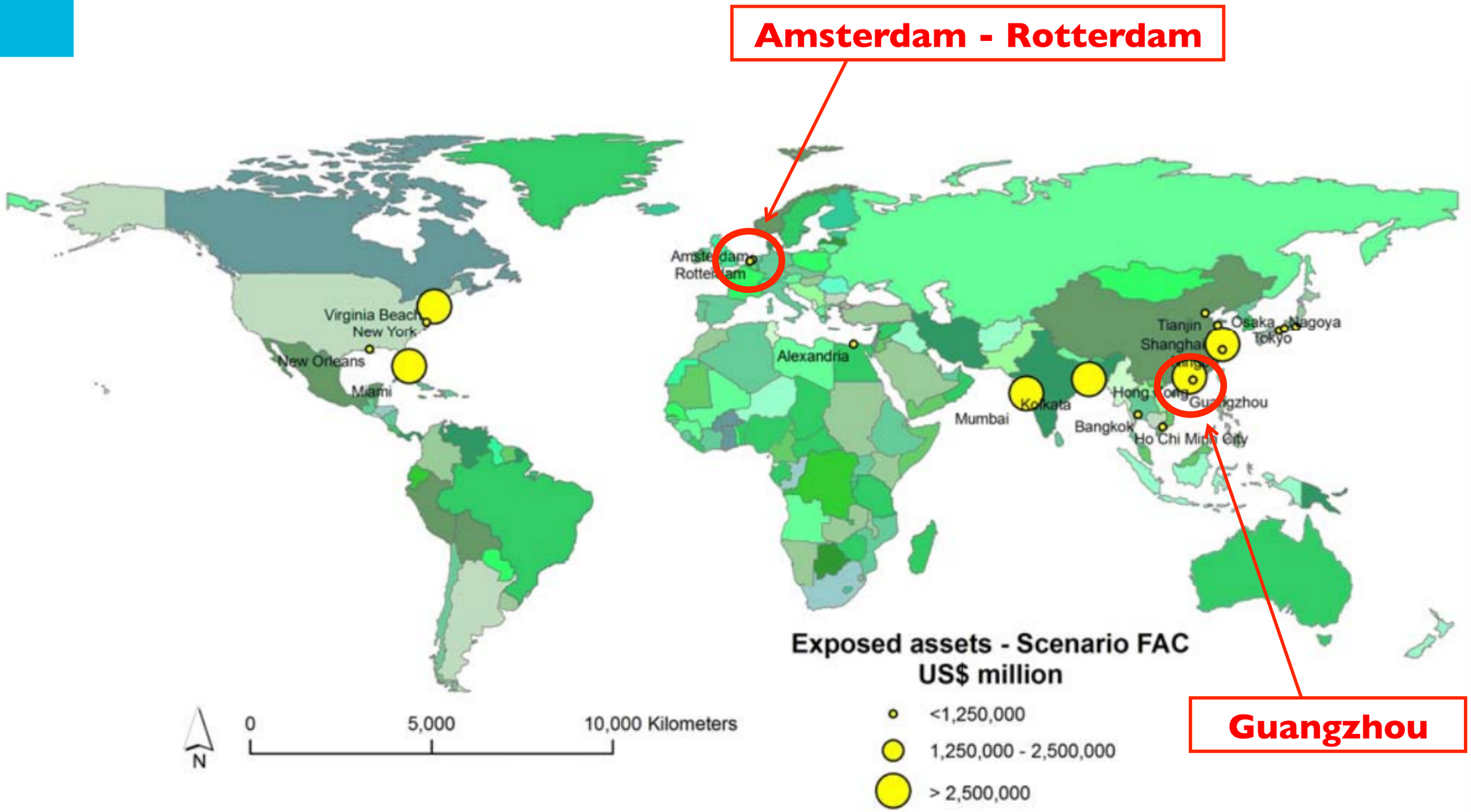
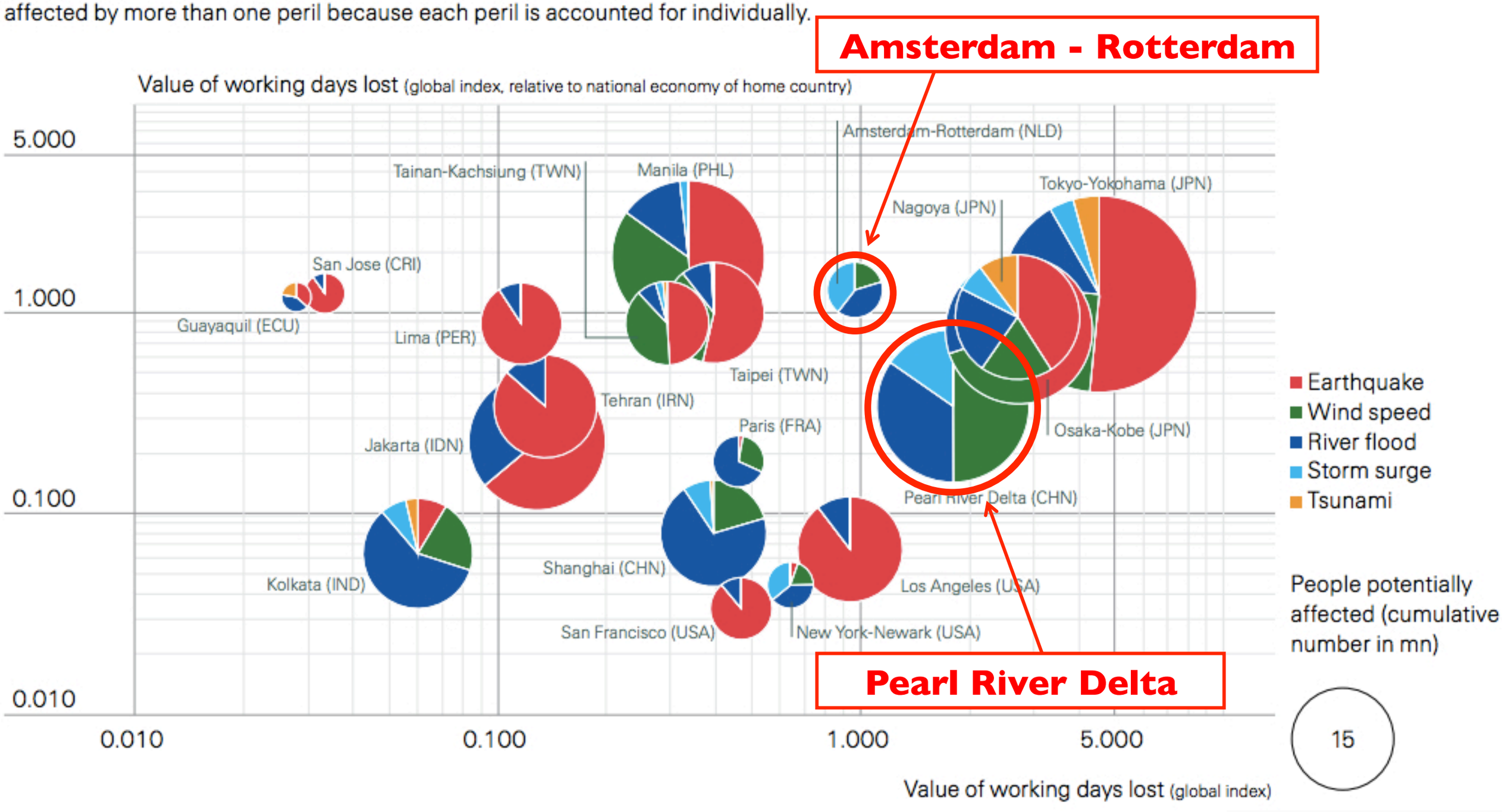


Figure 3: Map showing the Top 20 cities for exposed assets under the future climate change and socioeconomic change scenario
(Source: Nicholls et al (2007), OECD, Paris)

Figure 8: Impact of all perils by metropolitan area – Top 10

The chart includes the aggregate number of people potentially affected by all relevant perils (bubble size) and global rankings by the value of working days lost, in absolute terms (x-axis) and in relation to the country's national economy (y-axis). Residents are counted multiple times when affected by more than one peril because each peril is accounted for individually.



Source: Swiss Re, 2014

Differences

RANDSTAD	HK-PRD
Unitary **decentralised** state and **liberal democracy**	Unitary system with **multiple levels** and **authoritarian single party rule**
The **polder model** - consensus-based policy-making, but slow decisions	**No traditions of participatory** policy-making
A high degree of **autonomy of sub-national authorities**	**Hierarchical relations** between the levels of government
Bottom-up collaboration culture and a well-developed **network of overlapping jurisdictions**, but **high complexity**, **blurred accountability**, **tensions** across levels and **competition**	**Top-down** steering, less scope bottom-up initiatives, and **underdeveloped horizontal collaboration**
European Union membership - EU policies and strategic objectives matter and involve constraints and opportunities for the national government and sub-national authorities	**Less relevance of the supranational layer** (no EU equivalent), but pivotal importance of **cross-boundary cooperation** (Guangdong-Hong Kong-Macau)
Considerable size of the urban region in the EU context, but **small as compared to PRD**	**Bigger** scale, **extremely rapid urbanisation and industrialisation**

PRELIMINARY FINDINGS FROM THE RANDSTAD CASE

Actors

State	Non state	Knowledge	Beyond NL
Municipalites – the key actors	Maritime **business** (dredging)	**Universities**	**EU**– guidelines, funding
Port authorities	**Energy** companies	**Research** institutions	Belgian **Flanders**
City regions –coordinating strategies of municipalities	Environmental **NGOs**	Cross-sectoral **think tanks**	
A myriad of **deliberative and cooperative bodies,** multi- and single-purpose			
Waterboards – an additional layer of sub-national governement for managing flood protection infrastructure			
Safety regions – disaster management			
Provinces – planning and coord.			
Rijkswaterstaat - national water authority			
Ministry of Infr. and Env.			

The wider institutional system and the governance of climate change policies at the regional level

- **Mismatch between the boundaries** of sub-national bodies - provinces, waterboards, safety regions, regions for the purpose of adaptation policy (Delta programme) → **difficult coordination**

- **Provinces are the weaker tier** of government sandwiched between the powerful central government and municipalities – this is also reproduced in climate change governance

- The **resourceful municipalities** (e.g. Rotterdam) and **city regions** (e.g. Drechtsteden, Haaglanden) are the **key actors**

- **Polder model** → a wide variety of actors at different levels are involved in deliberation and decision making to foster a broad consensus → **joint decision trap**

- **Historically rooted centrality of water management –** key for state building and the very existence of a large part of the Dutch territory → **focus on water** (adaptation), **water authorities** are one of the **most important** actors

- **Current shifts in the administrative systems matter:**
  - **Decentralisation** and **'trimming down'** of the state

  - **Mergers of regions** (The Hague + Rotterdam) and **provinces** (Amsterdam + Utrecht + Flevoland) → **uncertainty** about the future roles responsabilities, and resources in climate change policy

Influence of climate change policies on the patterns of governance in urban regions

- **New cross-level, horizontal and cross-sectoral coordination bodies**: committees and working groups as part of the Delta Programme, Room for River, Knowledge for Climate, municipal or city-regional adaptation policies

- Climate change challenge requires cross-sectoral cooperation, thus **municipalities and city regions engage in closer collaboration** with:
  - **Waterboards** - **adaptation** strategies and construction of new dikes **Energy companies** – engaging them in **mitigation** policies
  - **Port Authorities** – using the **heat** generated by the ports to heat houses
  - **Maritime companies** to acquire **knowledge, city branding** based on excellence in climate adaptation and maritime industry (Rotterdam, Drechtsteden), **enact projects** (e.g. Sand Engine)

- **However**, this new cross-sectoral cooperation is also part of a **wider trend**:
  - Traditional centralised approach to **water management**, with the predominant role of Rijkswaterstaat, is **shifting towards decentralisation**
  - More **general decentralisation trend** since the 1990s - towards subsidiarity
  - **Shrinking state** - sharing the burden and responsability for policies with the citizens (represented by the local authorities), businesses and NGOs, state as facilitator → trend reinforced in the context of **austerity**
- Thus, **climate change policy** is not the cause of these changes, but it **catalyses them and galvanises** cross-sectoral cooperation around new issues

Governance challenges

- **Institutions:**
  - **Polder model prevents effective decision-making**
  - **Complexity** of governance arrangements
  - Policy in flux because the **system in flux – uncertainty**

- **Ideas:**
  - **Paradox: too much focus on water, too much trust in the flood protection system** limits awareness of the threat and undermines public support for adapatation policies
  - **Difficult cooperation between municipalities and waterboards** due to diffierent approaches and ways of doing things

- **Interests:**
  - Difficuties in **encouraging business** to take part
  - **Who pays** for infrastructure to protect unembanked areas in cities?
  - Who takes **responsability** (floods, heat-related deaths, etc.)?

IN CONCLUSION

- **Administrative system** and **national institutional characteristics are fundamentally important** factors determining how cities and urban regions address climate change challenge

- **Increasing cross-level and cross-sectoral collaboration** observed in climate change policy **is part of a wider trend of transformation of the state** and **paradigm shift**

- However, **climate change threat and policy catalyse those changes**

- A variety of **bottlenecks** and **challenges**: institutions, ideas, interests

Thank you.

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