



DELTAS

where the rivers meet the sea
ex. from Kenya & Ghana

Cees van de Guchte

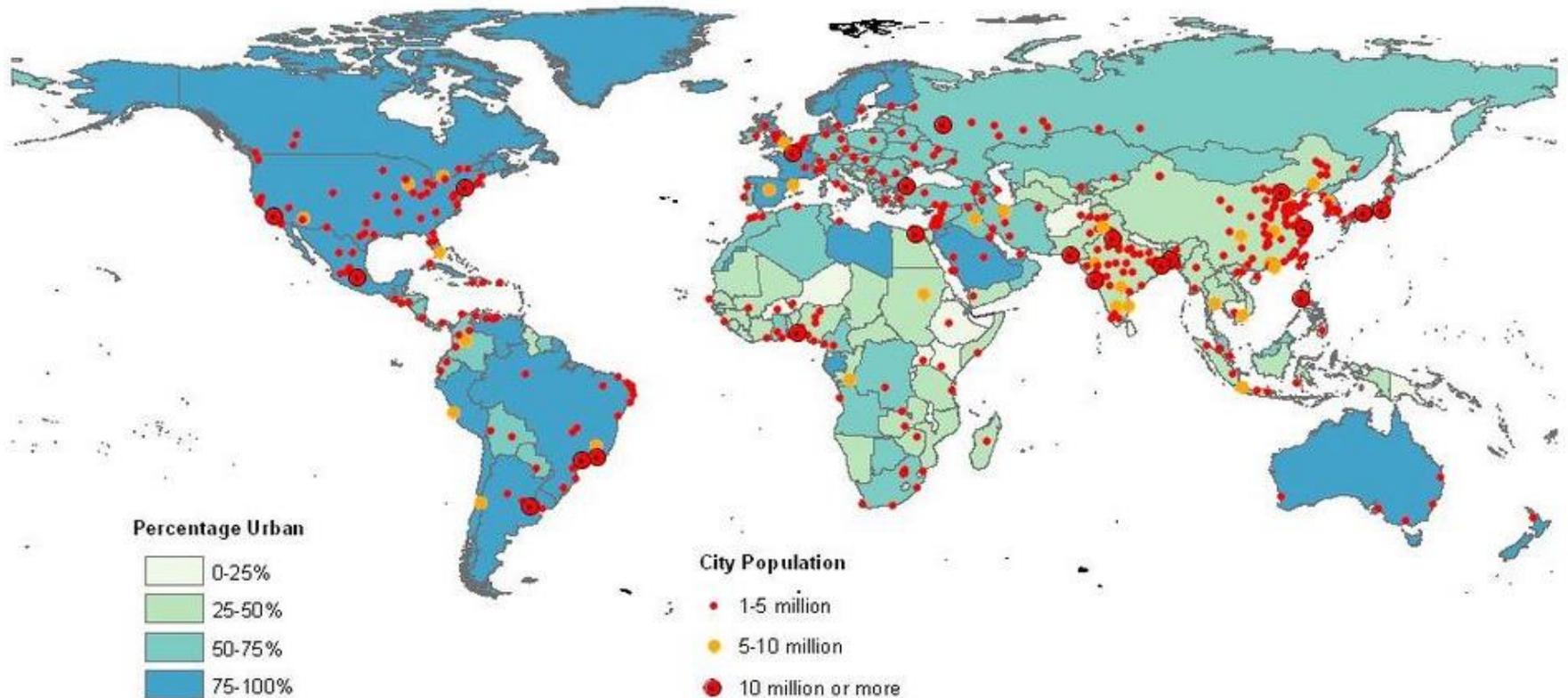
Deltares/DA/AGWA/S2S

URBANIZING DELTAS are the most **promising** regions of the world



World Urbanization Prospects, the 2009 Revision

Map 1: Urban Agglomerations in 2009 (proportion urban of the world: 50.1%)



Select year: [1975](#) [2009](#) [2025](#)

Source: United Nations, Department of Economic and Social Affairs, Population Division: *World Urbanization Prospects, the 2009 Revision*. New York 2010

Disclaimer: This thematic map is for data illustration purposes only.

The boundaries, names shown and designations used on this map do not imply official endorsement or acceptance by the United Nations.

URBANIZING DELTAS are the most **promising** regions of the world



Fertile land



Strategic positions for ports and trade



Excellent living conditions



Rich ecosystems

URBANIZING DELTAS are the most **vulnerable** regions of the world



New Orleans 2005



Japan 2011



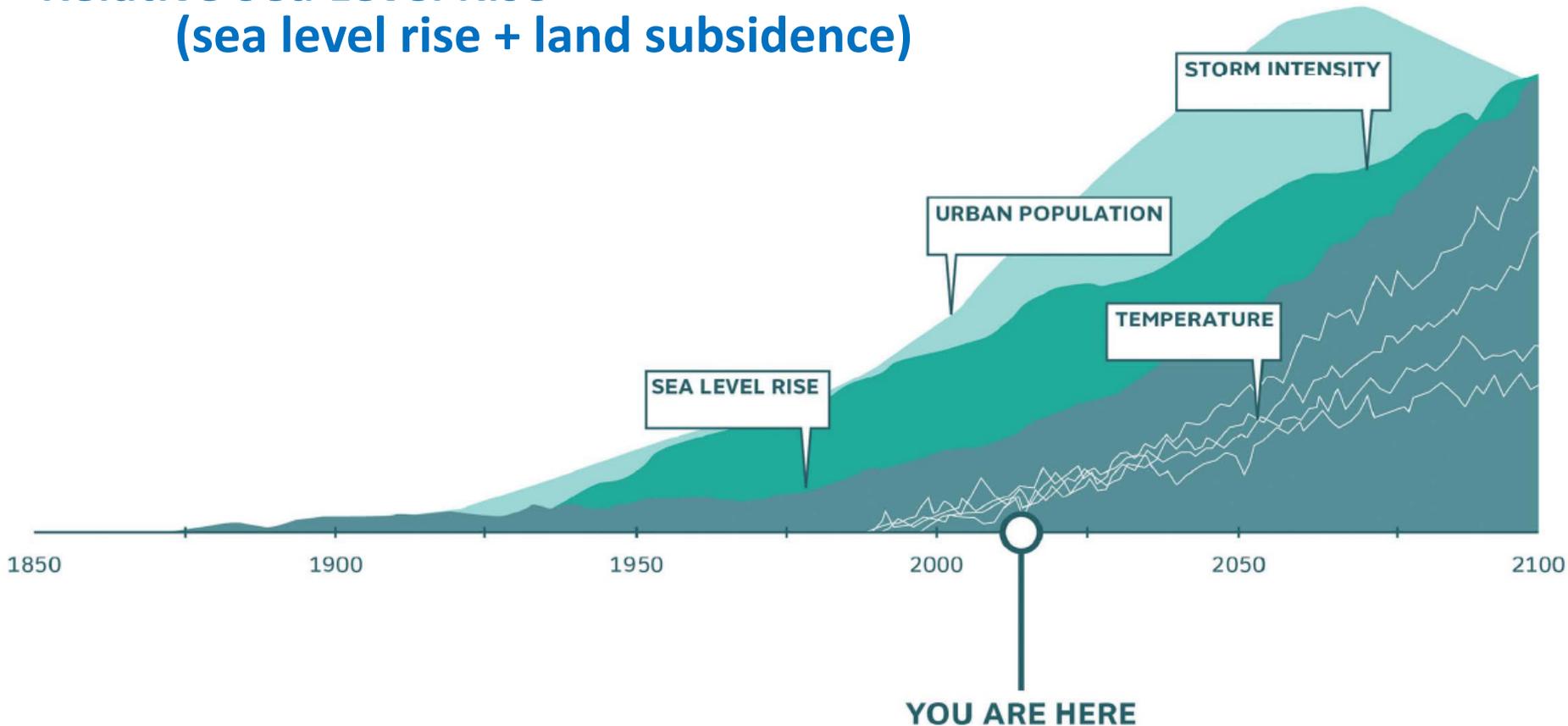
Bangkok 2011



New York 2013

The **vulnerability** of urbanizing deltas **is increasing** because of:

- Growing population and economic activities
- Relative Sea Level Rise
(sea level rise + land subsidence)





There is a need for **new perspectives** for urbanizing deltas, e.g.:

1. Restoring the delta's natural resilience and adaptation capacity;
2. Integrated land use planning: tuning scientific knowledge, spatial planning and engineering;
3. Smart flood risk policy: combinations of prevention, spatial adaptation and disaster risk management
4. Combining adaptation and mitigation, e.g. in sustainable port and industrial development
5. Halting pollution with chemicals and nutrients
6. Sustainable agriculture: a.o. diversification
7. Capacity building and research: extending the knowledge base
8. Social inclusiveness and community involvement
9. Multi-actor governance, at multiple scales, public and private
10. Creative financial mechanisms

Delta Alliance Wings



Delta Alliance Network

The **Delta Alliance** network currently connects 17 **Delta Alliance Wings** established in 15 delta countries. It has an international Governing Board and Advisory Committee. The international Secretariat is being hosted by the Netherlands.

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Kenya



- Deltas are where rivers flow into the sea, lowlands encounter bays and oceans, ...
- Land is fertile and easy to-work; transport people and goods over long distances
- Living in deltas has many advantages .. but also many disadvantages
 - dangers from flooding,
 - salt intrusion in times of drought.
- Climate change worsens the dangers and
- High demand and intensive use make deltas more vulnerable –threatens continuously the provision of ecosystems services .

Kenya

DELTA pillar of development



- Source of fertile soils and waters;
- Frontiers of economic development ;
- Hot spot of cultural activities;
- Home to more than 0.5 billion people

Ghana

Creating impact in urban deltas



Rapid urbanisation



Intensive farming



Port development



Infrastructure development



increasing flood risk



Land subsidence



Pollution



Ground water extraction

CHALLENGES FACING KENYAN DELTAS

- Over-exploitation of natural resources
- Poor land use practices
- Declining water quality
- Encroachment on sensitive ecosystems
- Unplanned and unregulated human settlements
- Lack of a national spatial planning
- Uncoordinated delta development activities
- Lack of Strategic Environmental Assessments
- Lack of effective governance
- Inadequate communication and awareness

Integrated approach

How to balance urbanization, economy, ecological quality, social equity and flood safety in urban deltas under changing conditions?

This requires a ***system-based and integrated*** approach that combines urban and landscape design, engineering, long term planning and governance and policy design.

Ghana

Challenges of the Volta Delta



E.g.: Lagoons, ecosystem and traditional livelihood under pressure of intensive agriculture, urbanization and (port) infrastructure development

Ghana

Understanding the main drivers



E.g.: what are main drivers for coastal erosion and flood risk: climate change, lack of sediment, sand mining, land subsidence or urbanization?

Ghana

Developing guiding principles and solutions for sustainable development



- (Port)infrastructure planning as key factor to steer urbanization?
- How to balance between coastal hardening and soft nature based solutions?
- How to preserve livelihood while allowing economic development?

Kenya

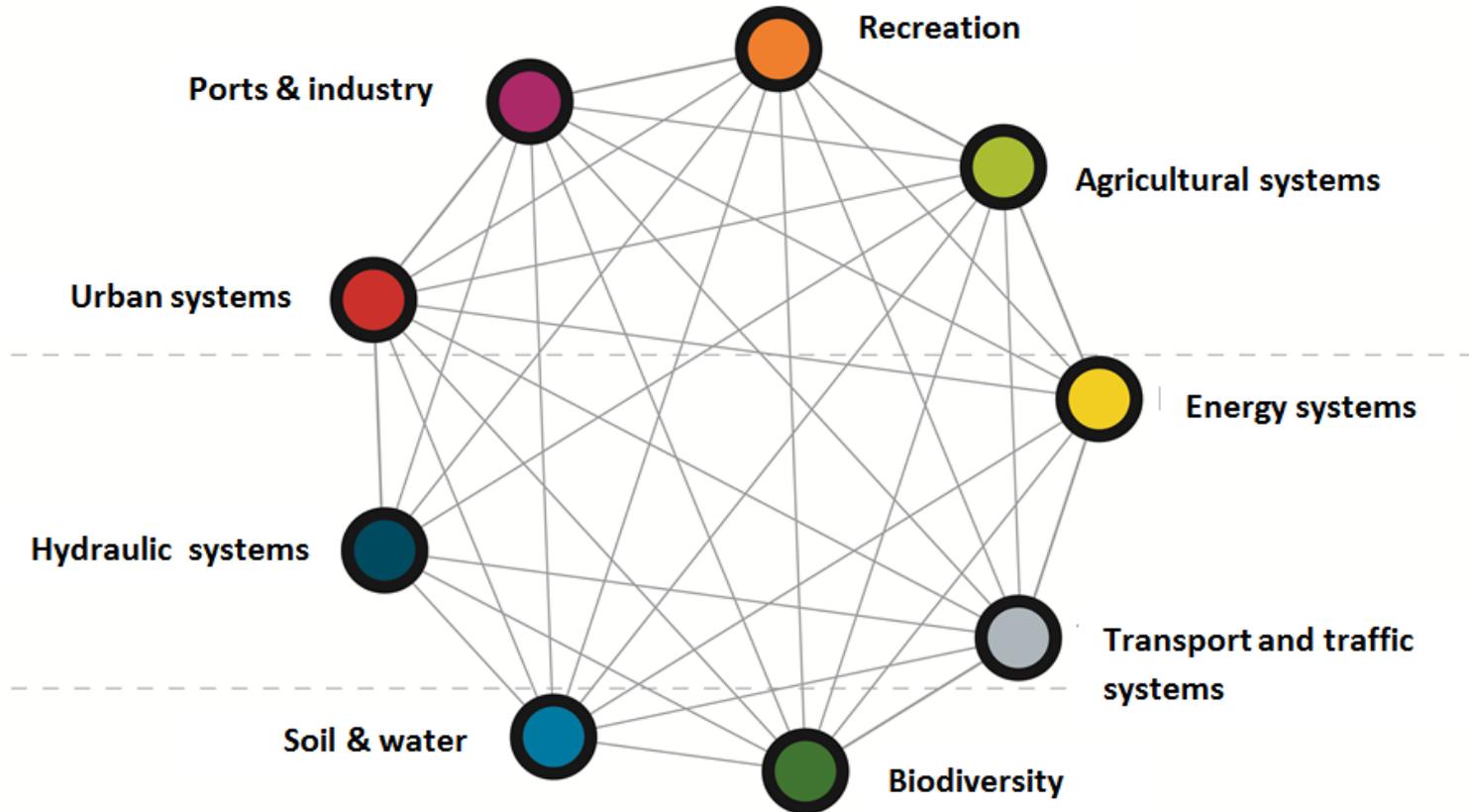
NEED FOR GOOD DELTA GOVERNANCE

- Attempts to reach rational decisions on the future of the deltas have largely failed due to the polarization of views between different stakeholders which has resulted in recourse to legal processes;
- The present impasse in harmonizing multiple development initiatives, local aspirations and conservation goals is unlikely to be achieved without a shift in approach;
- The then office of the former Prime Minister, in consultation with other line ministries, departments and COSs, initiated an innovative, pro-active initiative to address the challenges facing deltas;
- Established the Delta's Planning Inter-Ministerial Technical Committee (IMTC);
- Establishment of Deltas Management Board (KDMB)

RECOMMENDATIONS

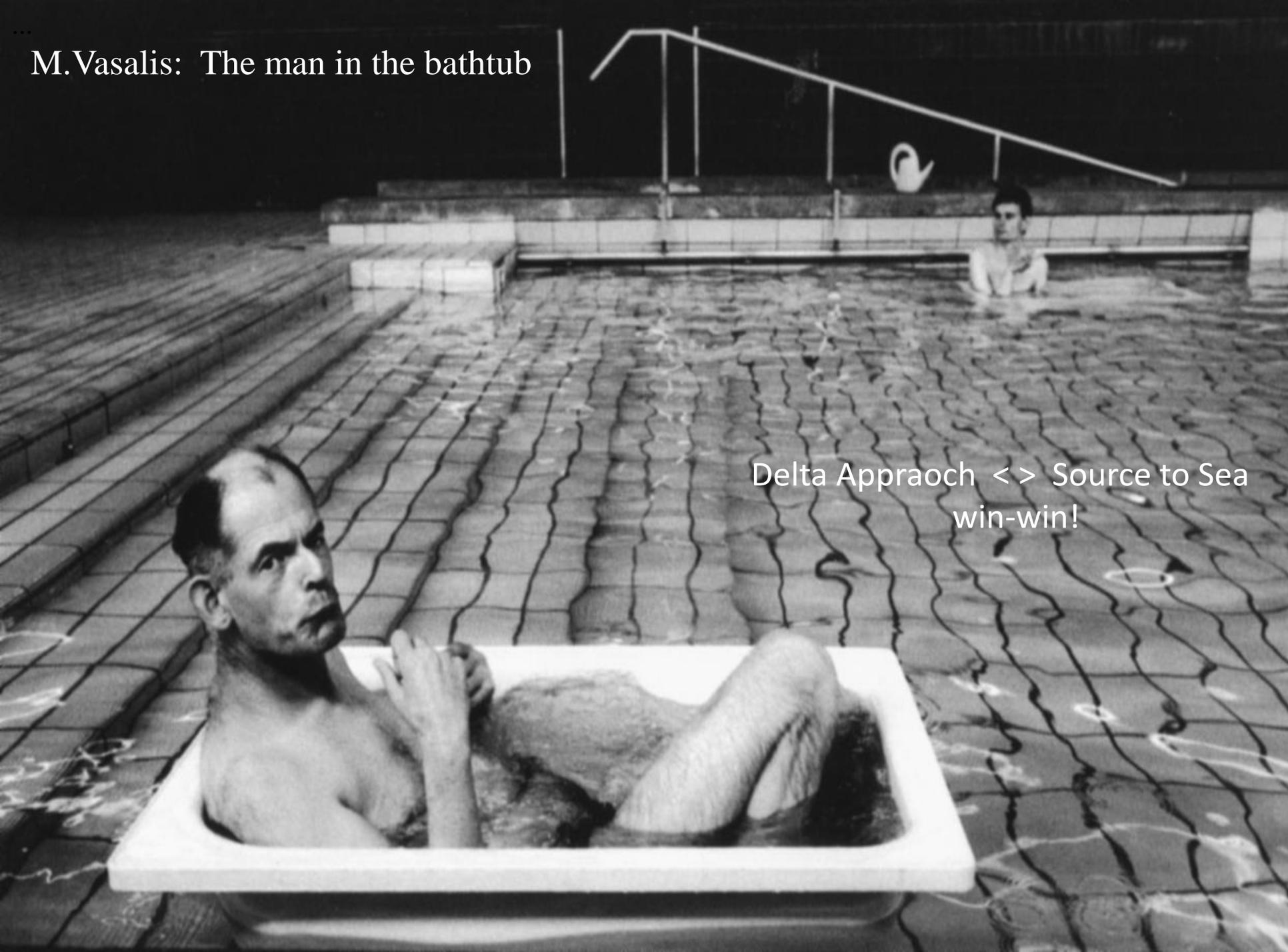
- Deltas should have:-
 - **Political good will;**
 - **Establishment of robust policy and legal instrument;**
 - **Dedicated resources for management;**
 - **Medium to Long term sustainable management tools**
 - **Capacity building**
 - **Local Community livelihood support systems**
 - **Strict application of delta management tools - ECOBA, DRUM, SUS, PIA, PPP, LUP AND SEA**

Integrated land use planning



Coordination among the subsystems (sectors) is necessary in order to increase resiliency and adaptability

M. Vasalis: The man in the bathtub



Delta Approach < > Source to Sea
win-win!

An aerial photograph of a large river delta system. The river branches out into many smaller channels, creating a complex network of waterways. The surrounding land is a mix of green vegetation and brownish soil. In the bottom left corner, a city with a dense grid of buildings is visible. The sky is a pale blue, and the overall scene is captured from a high angle.

Thank you

The delta, where the river meets the sea > S2S

Further
reading:

Comparative assessment of the vulnerability and resilience of 14 deltas

- Comprehensive overview of the current and future state of deltas
- Integrated scientific, social and management knowledge
- Detailed descriptions of deltas and Resilience scorecards
- Research gaps identified
- Overview adaptive measures

<http://www.delta-alliance.org/publications>

Synthesis report + Work document

