

DeltAlliance

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Comparative assessment of the vulnerability and resilience of deltas

Extended version with 14 deltas

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Continent	Country	Delta	No
Africa	Egypt	Nile	1
	Kenya	Tana	11
	Mozambique	Incomati	2
	Mozambique	Zambezi	12
Asia	Bangladesh	Ganges-Brahmaputra-Meghna	3
	China	Yangtze	4
	Indonesia	Ciliwung	5
	Myanmar	Ayeyarwady	13
	Vietnam	Mekong	6
	Europe	The Netherlands	Rhine-Meuse
Romania		Danube	8
N-America	United States of America	California Bay-Delta	9
	United States of America	Mississippi River Delta	10
Z-America	Argentina	Parana	14

Many delta stakeholders involved..

Synthesis report

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Work documents with Delta descriptions

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Yangtze Wenwei Ren, Yi Yong, Xinghua Fu, World Wide Fund for Nature, China

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Rhine Meuse Bart Makaske, Alterra-Wageningen UR, the Netherlands
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Danube Adrian Stanica, Nicolae Panin, National Institute for Research and Development of Marine Geology and Geocology, Romania

California Bay-Delta Peter Wijsman, Arcadis, USA

Mississippi Anthony Fontenot, Princeton University, USA
 Richard Campanella, Tulane University, USA

Approach of comparative assessment

- Same approach as in the first comparative assessment of 10 deltas
- Extended with 4 deltas: Tana, Zambezi, Ayeyarwady and Parana
- No updating of earlier 10 delta descriptions (except for some parts of Rhine-Meuse)
- Comparative assessment of all 14 deltas

synthesis report, working documents at www.delta-alliance.org

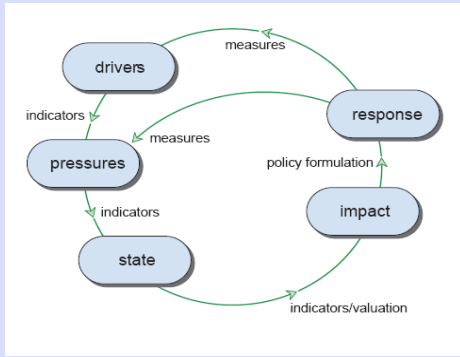
DPSIR + Spatial layers approach => indicators => **delta scorecard** (expert judgement by local experts)



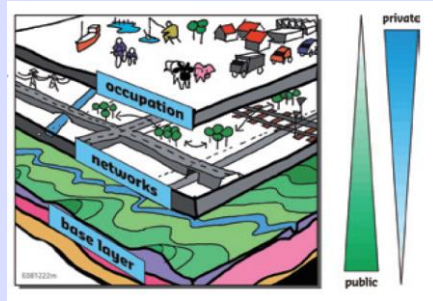
Example of Parana delta

DPSIR + Spatial layers approach

D-P-S-I-R

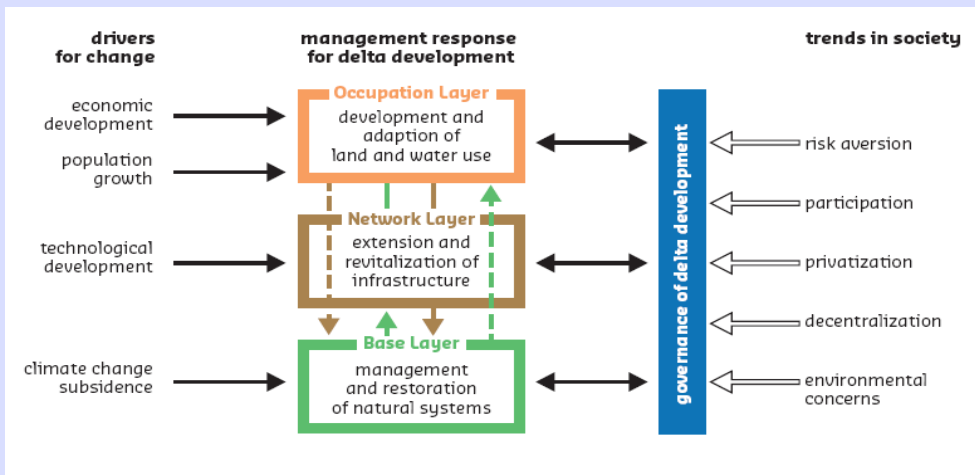


Spatial layers

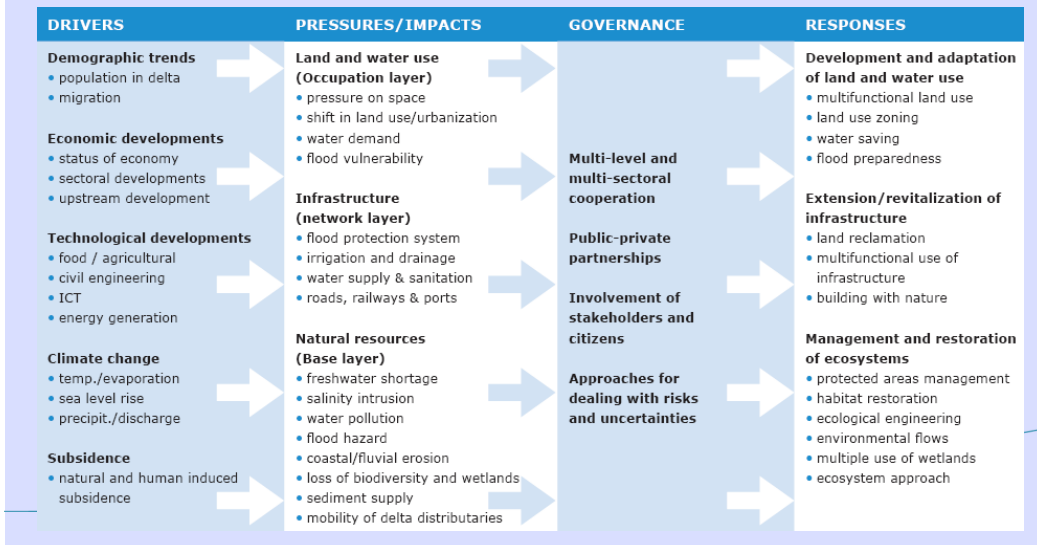


Governance

Framework for assessment



Towards indicators of change



Delta description - format

- Drivers of change
 - Pressures / potential problems
 - Land and water use (occupation layer)
 - Infrastructure (network layer)
 - Natural resources (base layer)
 - Governance (institutional and organisation aspects)
- } Delta Scorecard
- Adaptive measures
 - Technical methods and tools
 - Research gaps and opportunities for knowledge exchange
 - Lessons learned

Comparative overview of Delta scorecards

Current situation	Land and water use (occupation layer)	Infra-structure (network layer)	Natural Resources (base layer)	Governance	Resilience & Sustainability Indicator		
					Current	Moderate Scenario	Extreme scenario
Nile delta	--	0	-	0	-	-	--
Tana	-	-	0	-	-	-	--
Incomati delta	0	-	-	-	-	-	--
Zambezi	+	-	+	-	0	0	-
Ganges-Brahmaputra-Meghna delta	--	--	--	0	--	-	--
Yangtze delta	-	+	-	0	0	0	--
Ciliwung delta	--	--	--	-	--	--	-
Ayeyarwady	-	--	--	-	-	0	-
Mekong delta	0	0	-	0	0	+	0
Rhine-Meuse delta	+	++	0	+	+	0	-
Danube delta	+	+	+	0	+	0	0
California Bay-Delta	0	-	-	0	-	0	-
Mississippi River Delta	0	0	-	0	-	0	-
Parana	+	0	-	0	+	0	-

resilience/sustainability: ++ (very good), + (good), 0 (medium), - (low), -- (very low)

Comparative overview of delta score cards - Conclusions

For most of the deltas current resilience and sustainability is not satisfactory

Reasons differ per delta but some general mechanisms:

- Imbalance between demands and supply with regard to land and water use
- Inadequate or ageing infrastructure in the delta
- Disruption of the natural delta processes
- Inadequate governance to address problems and implement solutions

Research gaps and opportunities for knowledge exchange and collaboration

	Nile	Tana	Incomati	Zambesi	Ganges-Brahmaputra Meghna	Yangtze	Cilwung	Ayeyarwady	Mekong	Rhine- Meuse	Danube	California Bay-delta	Mississippi River delta	Parana
Occupation layer														
Socio-economic scenarios (9)	•	•	•			•	•	•			•		•	•
Water use and treatment (9)	•	•	•	•	•		•	•		•				•
Integrated spatial planning (9)	•	•	•	•	•		•	•		•				•
Ecosystem services (9)	•	•	•	•	•	•	•	•		•	•			•
Land-use change modelling (8)	•	•		•	•		•	•				•		•
Adaptation to salinisation (4)	•	•			•			•						
Network layer														
Freshwater management (11)	•	•	•	•	•		•	•	•	•		•		•
Dikes and dams (7)	•	•			•		•	•		•		•		
Transport (5)	•		•	•			•	•						
Flood forecasting/early warning systems (5)		•		•	•			•						•
Base layer														
Effects of changes/ eco-system functioning (13)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Building with nature and natural safety (10)	•	•			•	•	•	•	•	•	•	•	•	•
Monitoring changes (11)	•	•		•	•	•	•	•	•	•	•	•	•	•
Predicting changes (11)	•	•		•	•	•	•	•	•	•	•	•	•	•
Base-layer data management (7)		•		•	•		•	•					•	•
Governance														
Governmental roles and arrangements (10)	•	•		•			•	•	•	•		•	•	•
Integrated delta management (10)	•	•	•	•	•	•	•	•			•			•
Communication/capacity building (6)	•	•	•		•		•	•						
Financial arrangements (6)		•			•		•	•		•		•		
River basin cooperation (3)			•		•			•						
Policy impact studies (3)		•					•	•						

