



Meeting Challenges Through Multi-Layered Governance Including from Pollution

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Mundus maris

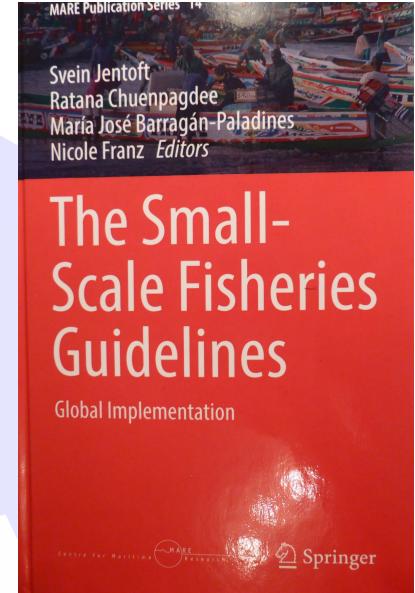
Sciences and Arts for Sustainability asbl

and

Quantitative Aquatics, Inc.

Global frameworks

- **Convention on Biological Diversity**
 - Aichi Targets
- **SSF Guidelines** - Voluntary Guidelines for Ensuring Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication – COFI 2014
- **SDGs – Agenda 2030 adopted in 2015**
- **Paris Climate Agreement 2015 – COP23 2017** – on implementation mechanisms
- **Ocean Conference 2017**
- **UN Negotiation: Protecting High Seas 2017**



Challenges of fisheries governance

Four actual or potential challenges⁽¹⁾:

- **Resource availability** – continued and regular
- **Economics, thus social impacts** of harvesting interactions among users
- **Technologies** – mutual incompatibility of different harvesting technologies
- **Allocation** – competition for access to resources unevenly distributed in space and time.

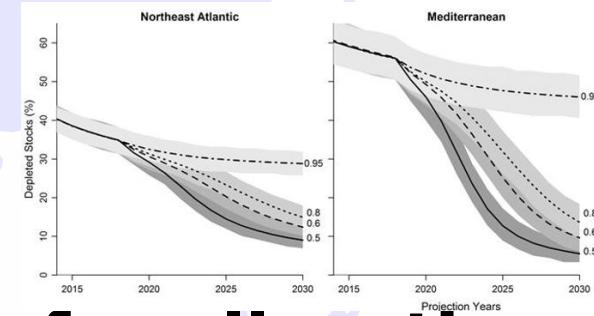


(1) adapted from Ruddle, K., 1997. The role of local management and knowledge systems in ICAM in the Pacific Region: A review. pp. 153-162 In ACP-EU Fisheries Research Initiative. Proceedings of the Third Dialogue Meeting, Caribbean and Pacific and the European Union. Belize City, Belize, 5-10 December, *ACP-EU Fish.Res.Rep.*, (3):180 p. ISSN 1025-3971

“Conventional” management

Focus on

- **Often contested policy formulation and enactment** as old-fashioned contrast between economic gain and environment protection
- **Resource assessment** with little credibility in political processes
- **Some form of political process for allocation**
- **Enforcement efforts**, often hampered by overlapping or incomplete responsibilities / means
- **Underlying attitude**: use of public natural resources as a social safety valve



Rise of environmental movement and the law

Influential studies have convincingly argued in favour of

- **Marine protected areas in coastal areas**
 - Formalisation in Aichi targets
- **Closing off much of the high seas to fishing** – supported by scientists and celebrities
- **Stopping bad fisheries subsidies**
 - failed again at the WTO



Effective Law must be underpinned by social consensus - legitimacy

“Traditional” (informal) management

Focus on

- **Resolving gear conflicts**
- **Resolving allocation issues**
- **Self-monitoring based on local knowledge systems**
- **Enforcement through social pressure and local political authority**
- **Underlying attitude:** safeguard **social organisation and livelihood**, defend against globalisation and challenge conventional management at times



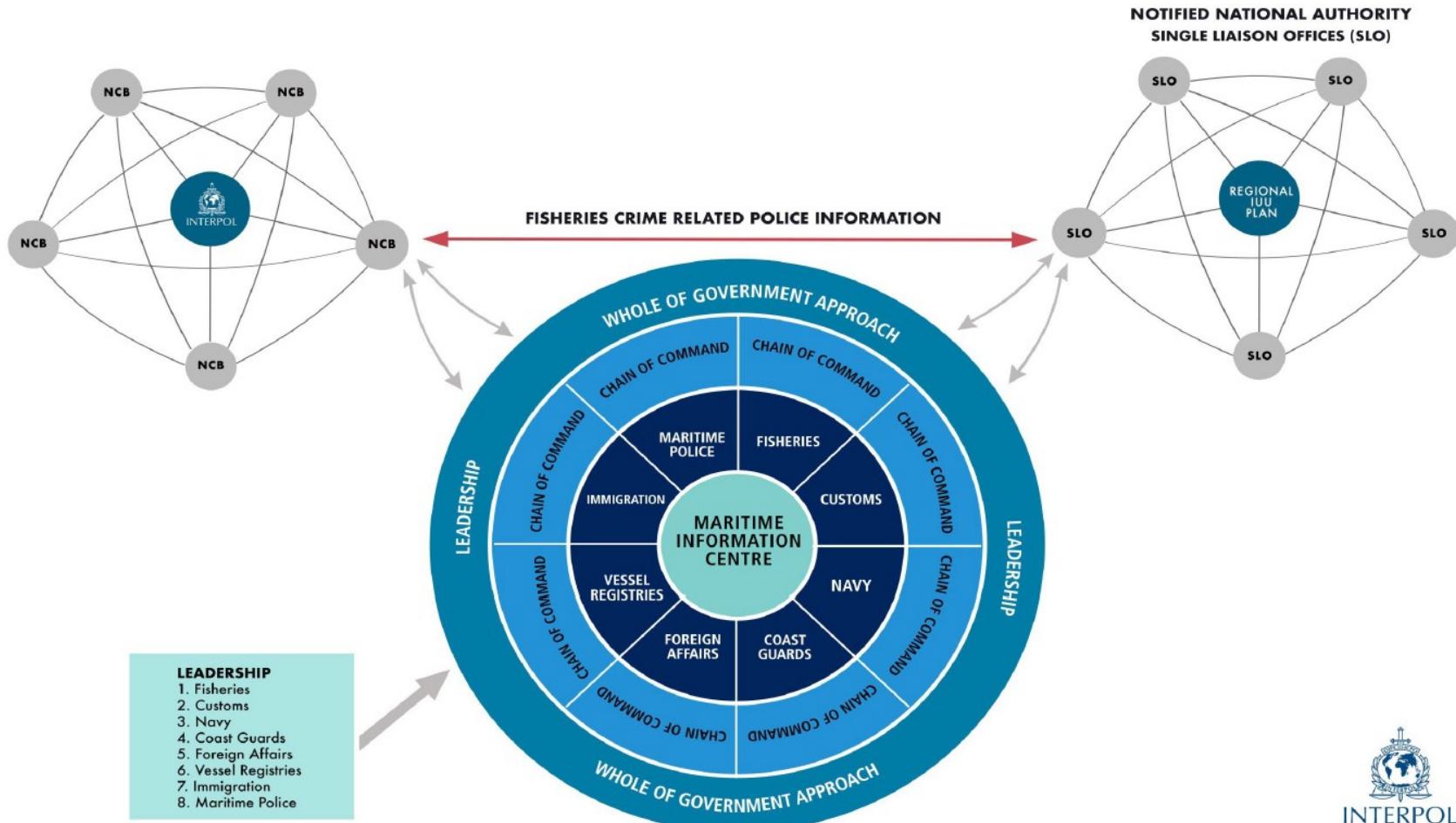
“Traditional” management break-down

From

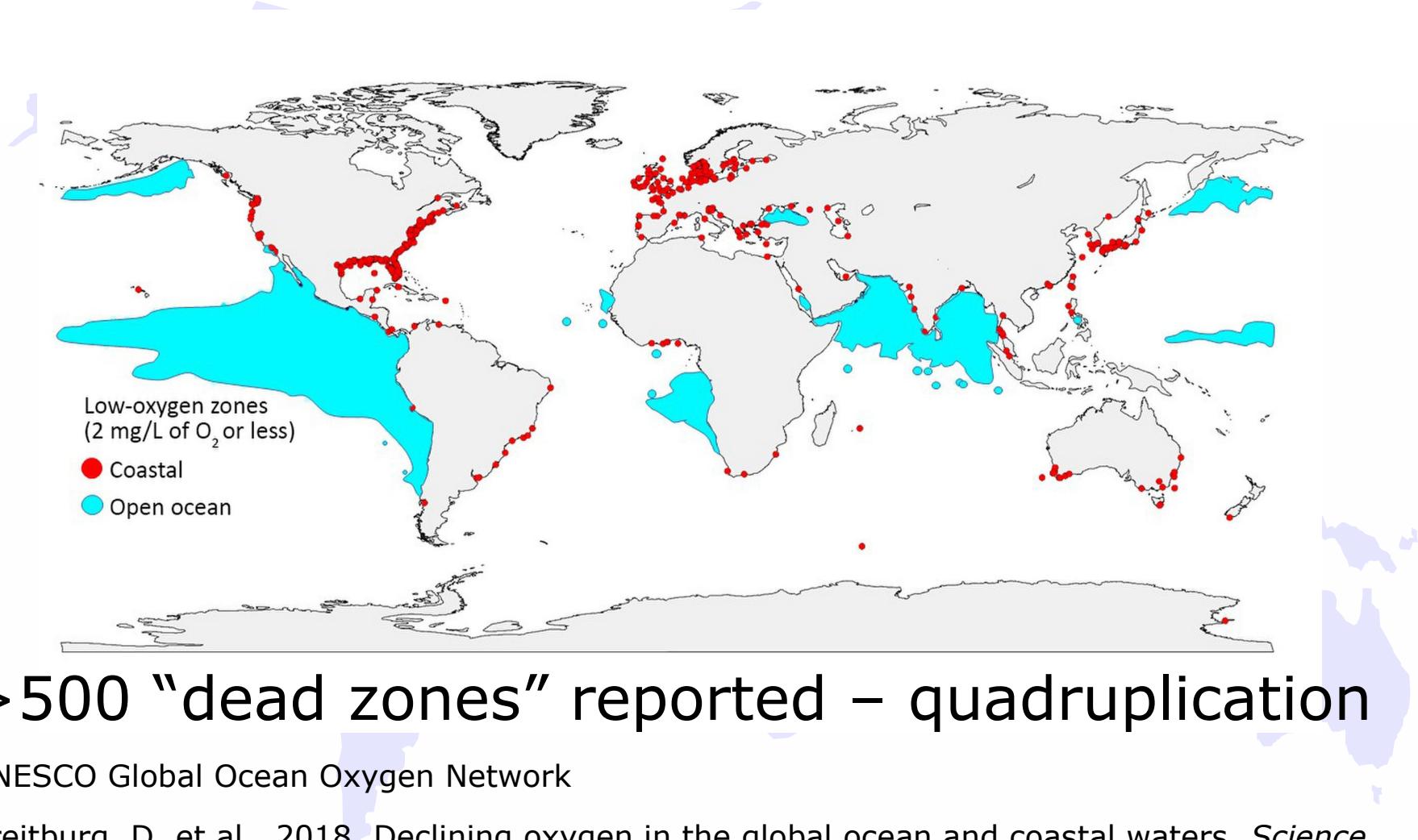
- Global markets
- Wreckless short-term profiteering
- Urbanisation
- New Technologies
- Erosion of social capital and authority
- Transnational organised crime
- Other factors



More than “ordinary” fisheries management



Challenges also from low oxygen zones



10 main ocean oxygen concerns

The first six are

- Increasing temperatures will reduce dissolved oxygen;
- Oxygen deficiency to worsen in estuaries, coastal areas and oxygen minimum zones in the open ocean;
- The ocean's capacity to produce oxygen is reducing.
- Habitat loss is expected to worsen, migration of species;
- Low oxygen will alter biogeochemical cycles & food webs;
- Lower oxygen concentrations will result in a decrease in reproductive capacity and biodiversity loss;



10 main ocean oxygen concerns

The last four are

- Local decreases of commercial species & aquaculture;
- Harmful Algal Blooms might benefit from nutrients released in bottom waters due to hypoxia;
- Reduced ocean oxygen concentrations will increase greenhouse gas emissions with feedbacks on climate change;
- Scenarios for oxygen depend on many drivers related to global environmental change and land-use, including warming, growing human population, and extensive coastal agricultural practices. They act together in affecting marine ecosystems.

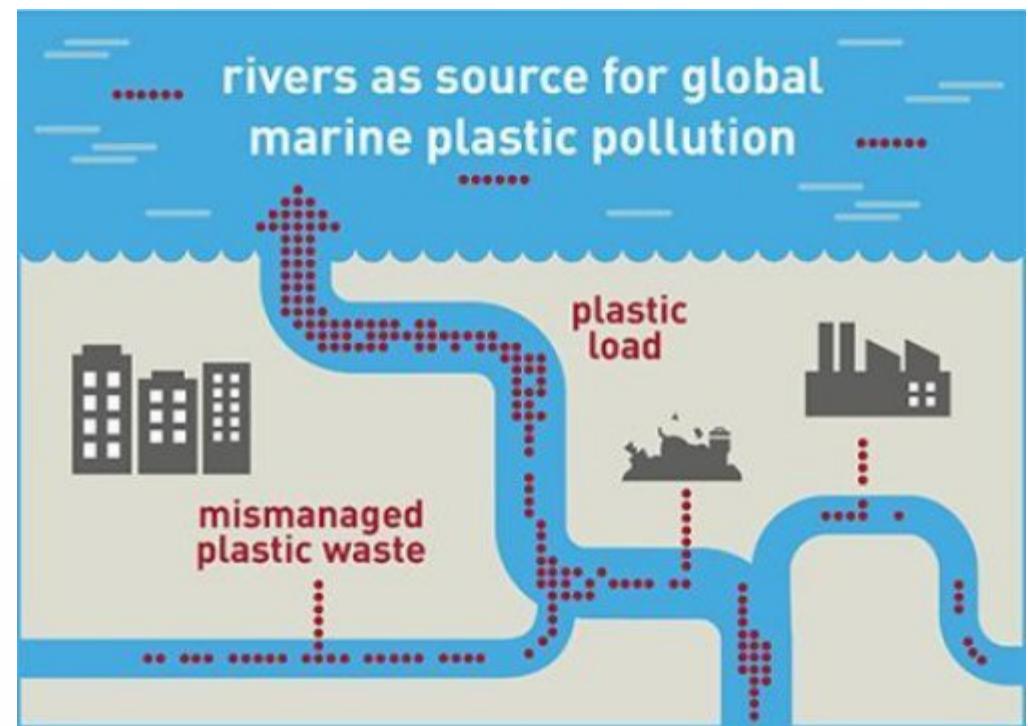


More Challenges - from plastic

Ten major rivers account for 88-95% of marine plastic:

Yangtze,
Indus, Yellow,
Hai He, Nile,
Ganges, Pearl,
Amur, Niger,
Mekong

Clean-up at source!



Schmidt, C., T. Krauth & S. Wagner, 2017. Export of Plastic Debris by Rivers into the Sea. Environ. Sci. Technol., 51(21):12246–12253
DOI: 10.1021/acs.est.7b02368

Wide range: 0.41 to 4×10^6 tons/y mismanaged waste

Collaborations of formal and informal institutions often increase legitimacy

In some places

there are encouraging experiences with tacit collaboration between public administrations and traditional leaders with a division of labour as each one alone can not master the multiple challenges

Conversely, we noted in field work that the collapse of such collaboration is harmful to both sides e.g. in Senegal



Combinations of formal and informal approaches are worth exploring

“Division of labour” between traditional leaders in charge of social conflict solution and public authorities in charge of law enforcement and management

- BFAR: National Fisheries Monitoring Center housing the Vessel Monitoring System
- A partnership between Global Fishing Watch and the government of Indonesia, Vessel Monitoring System (VMS) makes data available to the public.
- In some countries ss fishers also support VMS
- Citizen science can also play a role.

**I'm still a baby,
let me live and grow**



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Thank you

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