Catalysing Ocean Finance: Transforming Markets to Restore and Protect the Global Ocean

Expert Group Meeting on
Oceans, Seas and Sustainable Development: Implementation and follow-up to Rio+20
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Value of ‘blue’ ocean to the ‘green’ economy

- Food security
- Tourism
- Transport
- Energy (fossil fuels, renewables…)
- Ecosystem Services (carbon and nutrient cycling , climate moderation, habitat, etc.)
- Poverty Reduction – GDP contribution ocean sectors as high as 20% in some developing countries

Market value of ocean goods & services

Sector	Value
Fisheries & Aquaculture	$100 billion/year, 45 million jobs
Transport/Shipping	$435 billion/year, 13.5 million jobs, moves 90% international trade
Oil & Gas	30% global oil is offshore, $90 billion/year, increasing
Tourism	5% global GDP, 6% global jobs, coastal is major segment, ~$271 billion/year (US as proxy)
Global contribution of the 'ocean economy'	~$1 trillion/year, 500 million jobs

But our oceans – and trillions $ in goods and services - are at serious risk ….

Overfishing

Coastal hypoxia

Invasive Species

Habitat Loss

Ocean Acidification

Most are accelerating

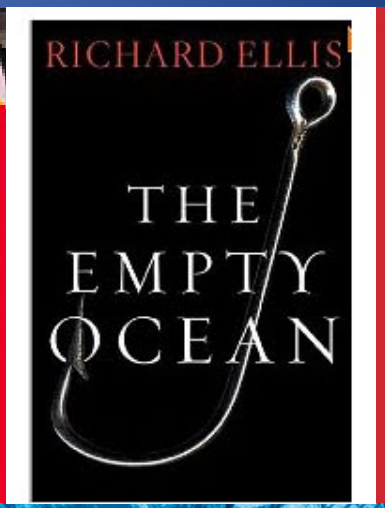
Global costs of poor ocean management on socioeconomic development

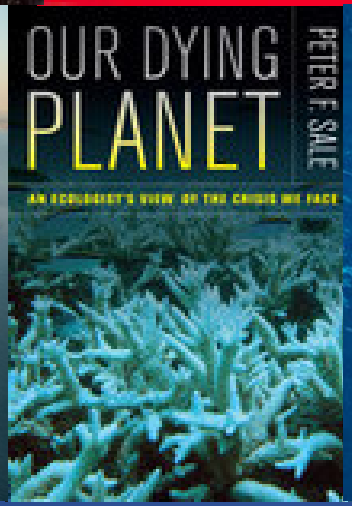
Ocean Issue	Costs to Society
Overfishing	$50 billion/year
Coastal Hypoxia/Eutrophication	$200 - $790 billion/year
Invasive Aquatic Species	$100 billion/year
Coastal Habitat Loss	Unknown but large
Ocean acidification	$1.2 trillion/year (2100) in “BAU” scenario
Total Costs **today** at least	$350 - $940 billion/year

Market & Policy failures drive ocean degradation

Ocean Issue	Market/Policy Failure(s)
Coastal hypoxia/eutrophication (fertilizer & manure run-off, poorly treated wastewater)	Lack of internalizing cost of nutrient damage into price of fertilizer and human & livestock wastewater management
Marine Invasive Species – shipping as main vector	Lack of internalizing economic damage invasives into shipping operations, internalize cost to clean up ship ballast water
Loss Coastal Habitats	Lack proper valuation of ecosystem services coastal habitats provide
Overfishing	Lack internalizing socioeconomic and environmental costs of overfishing into (sustainable) fisheries management; 'bad' subsidies to fisheries
Ocean acidification (dissolution of anthropogenic CO_2 into ocean)	Lack of proper price on carbon which incorporates environmental and economic damage of acidification

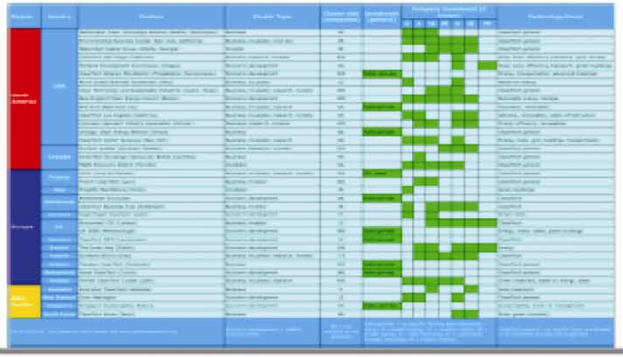
Is declining ocean health irreversible? - Not necessarily





Four Step planning approach to Catalysing Ocean Finance

Step 1: Prioritize ocean issues based on sound scientific & economic analysis



Step 2: Identify barriers creating market failures that drive ocean degradation

Barriers to Sustainable Ocean Use	
Information Barriers	
Regulatory Barriers	x
Technology Barriers	x
Institutional Barriers	
Financial Sector Barriers	x

Step 3: Determine appropriate mix of policy instruments to remove barriers

Public instruments

2. Select cornerstone public instrument

3. Select complementary public instruments

Underlying private finance

1. Identify finance type for underlying investment needs

Step 4: Implement policy instruments, catalyse public and private financial flows

	International	National Sub-national
Public funds	x	x
Environmental markets	x	
Private funds		x

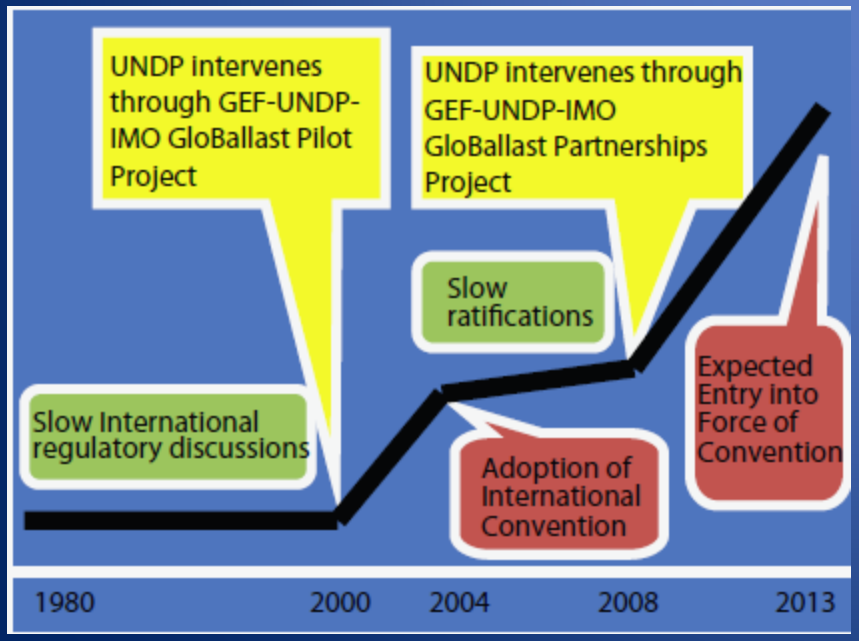
Three Ocean Planning Instruments (Volume II – Method. & Case Studies)

- Transboundary Diagnostic Analysis/Strategic Action Programme (TDA/SAP)
- Integrated Coastal Management/Framework for Sustainable Development of Coastal Areas (ICM/SDCA)
- Building on Regional and Global Ocean Legal Frameworks

Key Results from the Case Studies

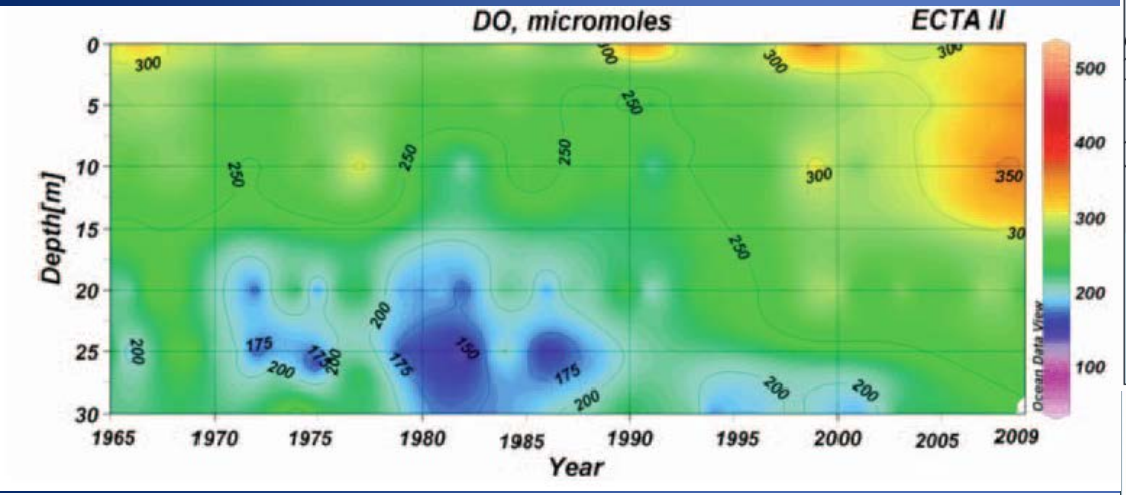
GEF-UNDP-IMO GloBallast Programme

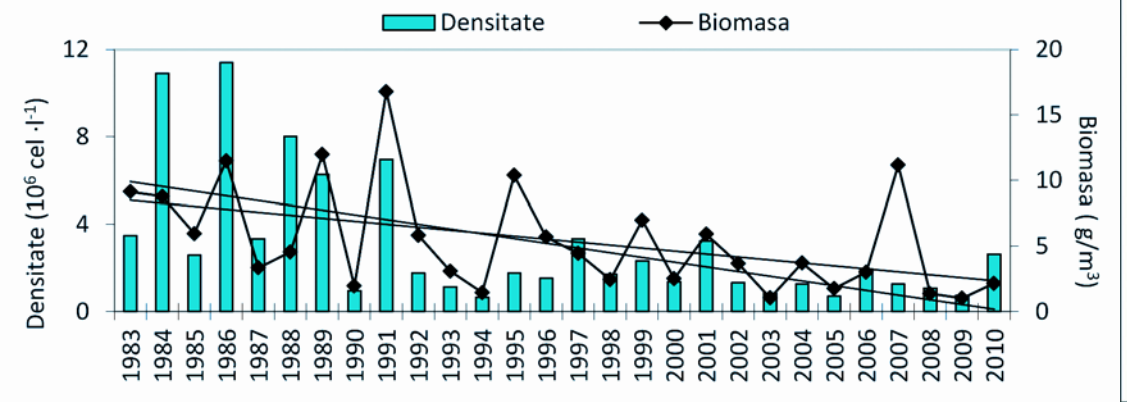
- 2004 adoption international convention ship's ballast water & sediments; likely to come into force soon
- 70+ countries & several regions reforming policies & legislation for convention compliance
- $100 million+ ballast water treatment R&D
- New ballast water treatment industry ~$35 billion

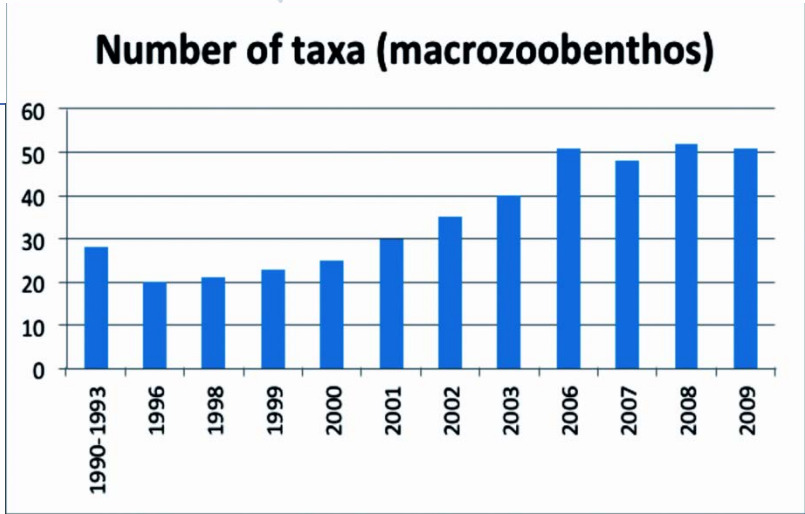


UNDP-GEF support to Reversing Eutrophication & Hypoxia in Danube River/Black Sea

- $3 billion catalysed nutrient reduction investments (>200) delivered 25,000 mt/year N, 4,000 mt/year P pollution reduction, comparable to observed reductions in Danube nutrient loads to Black Sea
- Reversal of large scale Black Sea hypoxic area, ecosystem in recovery
- For N, P, Chl-a, 68, 88, 100% Danube waters rated Class I or II water quality





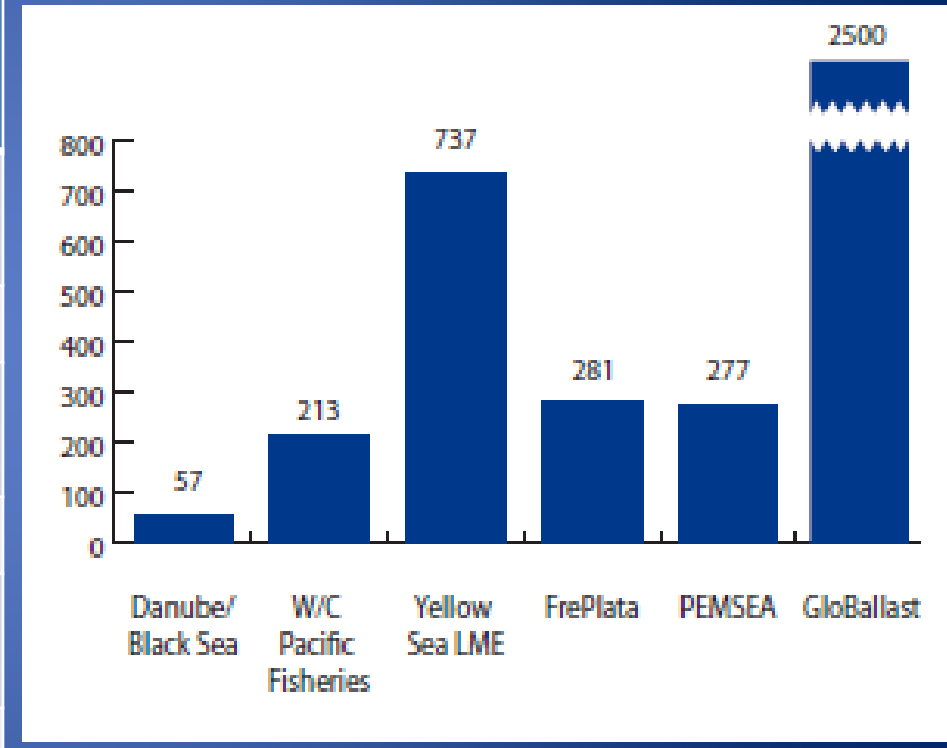


Tangible Impacts on other Marine Systems

Yellow Sea Large Marine Ecosystem – commitments to reduce fishing pressure 25-30%, reduce nutrient discharges 10% every 5 years through 2015, scale up MPAs and sustainable mariculture	**Rio de la Plata/Maritime Front** - $2.62 billion in commitments to pollution reduction and wetland protection
East Asian Seas/PEMSEA – 11% of region's coastline with ICM programmes against near zero baseline early 90's; 20% ICM target by 2015; over $10 billion in cumulative environmental investments leveraged through ICM programmes	**W/C Pacific Ocean Fisheries** – fisheries representing 40% world's tuna stocks moving towards sustainability – VMS, observers, ecosystem-based catch quotas, etc. Tripling of tuna landings/value by Pacific Island countries.

Case Studies – Catalytic Finance Ratios

UNDP/GEF Program	GEF Grant(s) ($ million)	Catalysed Public & Private Finance ($ million)	Catalytic Finance Ratio
Danube/Black Sea basin	51.89	2,983	57
Yellow Sea	15.1	10,863	737
Rio de la Plata/MF	9.31	2,620	281
PEMSEA	36.1	10,000	277
W/C Pacific Fisheries	15.1	3,214	213
GloBallast	14	35,000	2,500
TOTAL	**141.144**	**64,680**	**458**

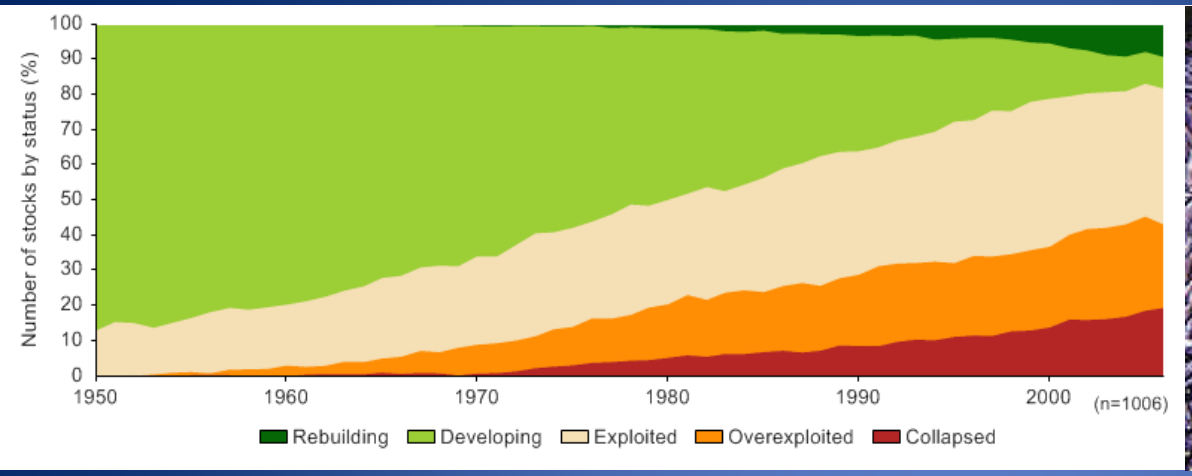


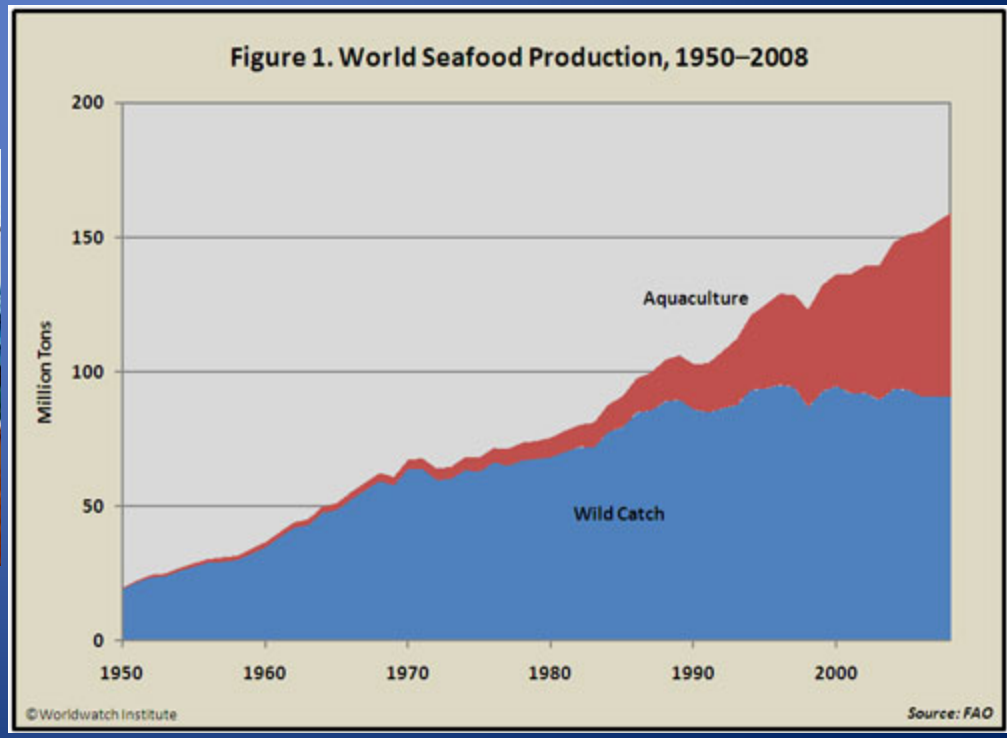
Using these UNDP/GEF results and public costs and other research/info as proxies, what would be the approximate:

- Public costs
- Catalysed finance
- Benefits

of scaling up proven ocean planning methodologies and policy instruments to address key ocean challenges globally?

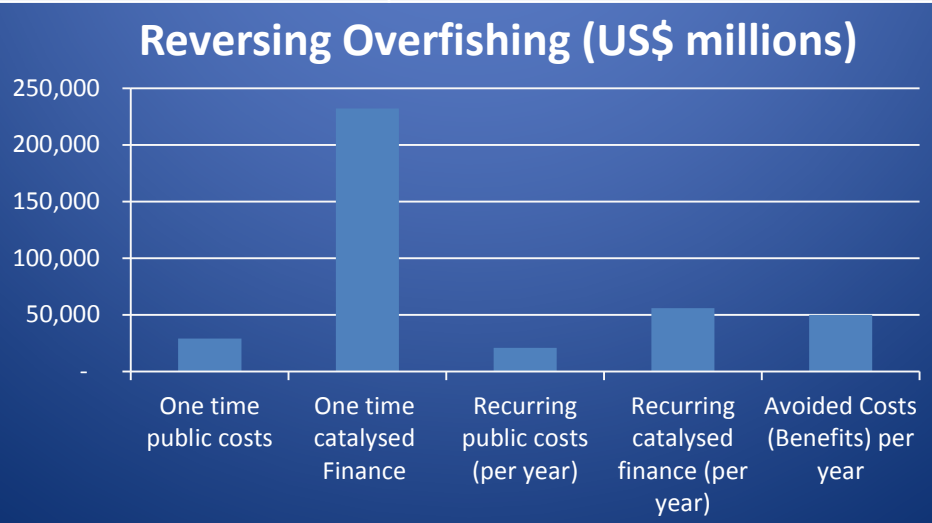
Fisheries exploitation trends



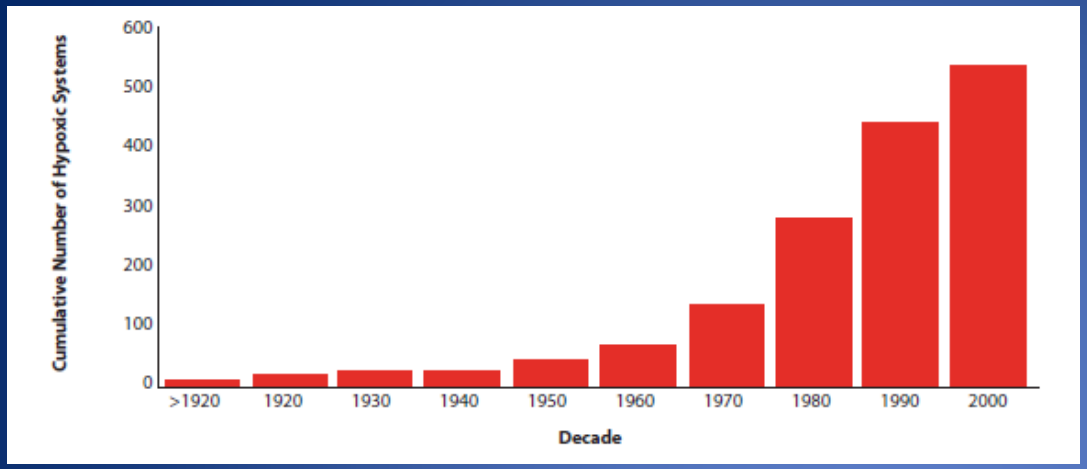


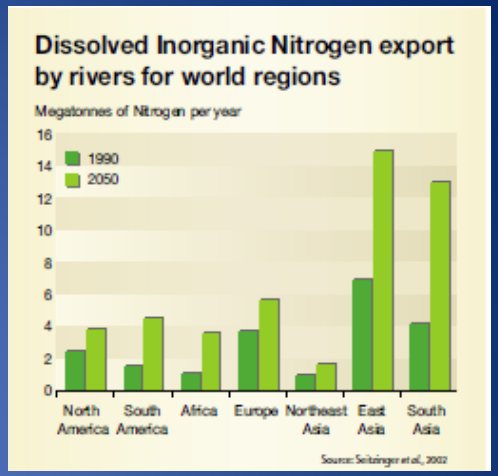
Restoring Depleted Fisheries

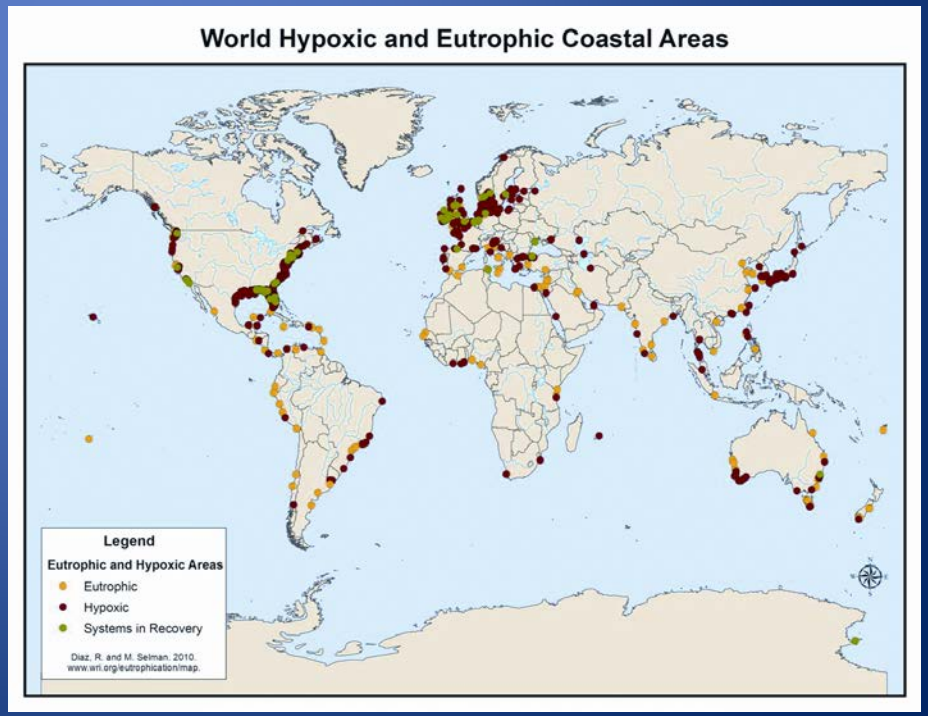
Strategic Planning Methodologies	Policy Instruments
Build on Global & Regional Legal & Institutional Frameworks • Complete WTO negotiations to phase out negative fisheries subsidies • Strengthen RFMOs & LME institutions	Shift negative fisheries subsidies $16 billion/yr to sustainable aquaculture, MPA, improved management
	Scale up Individual Transferable Quotas (ITQ), potential revenue up to $40 billion/year, $ to MPA, sustainable aquaculture, improved management
TDA/SAP: Scale up in ~50 LMEs/fisheries areas facing depletion/overexploitation	CBD Aichi Biodiversity Target #11: 10% oceans under MPAs
ICM as cross sectoral tool to promote sustainable fishing & aquaculture	Ensure sound science, ecosystem-based approaches, data sharing, precautionary principle in RFMOs & LME
	UN Fish Stocks Agreement, FAO Code of Conduct, Port State Measures, etc.



Coastal hypoxic & eutrophic areas increasing geometrically due to tripling of nitrogen loads to ocean

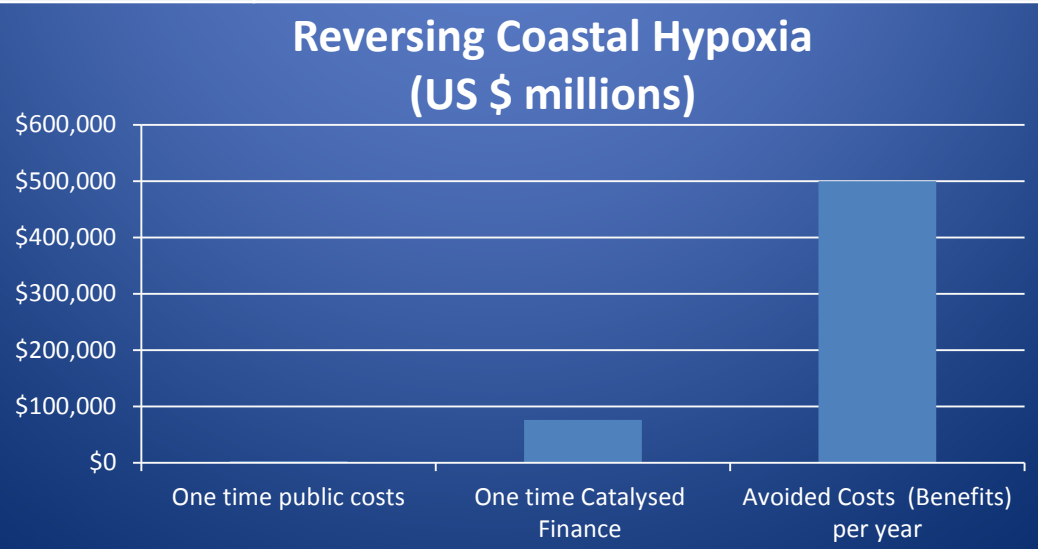




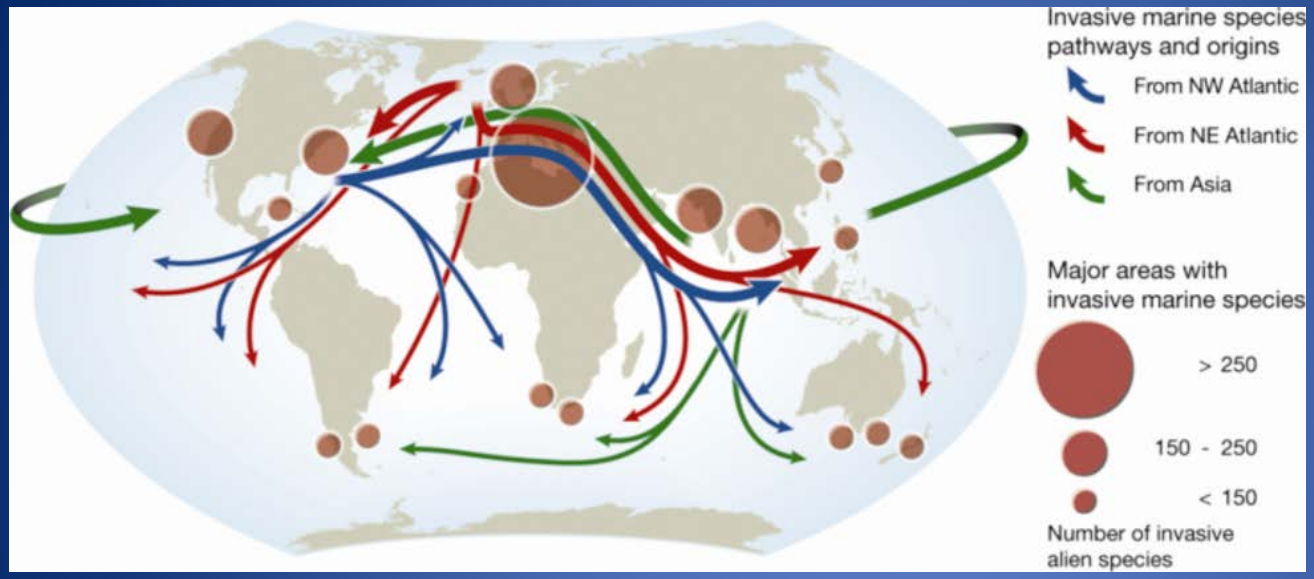


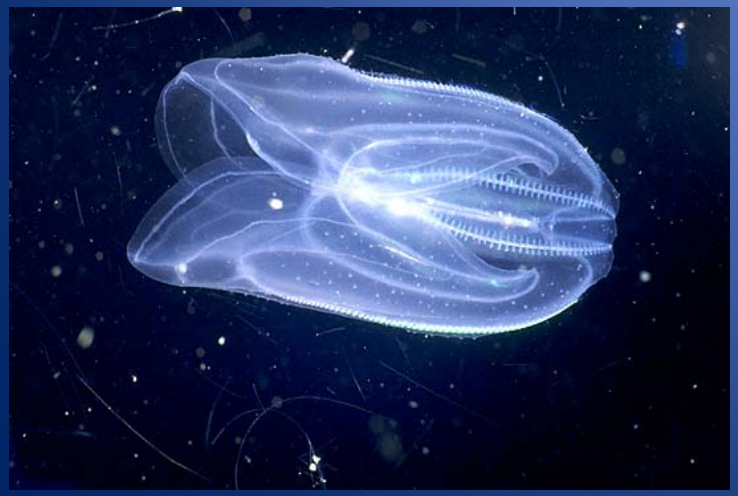
Reversing Ocean Hypoxia

Strategic Planning Methodologies	Policy Instruments
Scale up TDA/SAP in 20 remaining LMEs (& linked river basins) facing hypoxia	Nutrient management regulations
Scale up ICM in same LMEs as tool to leverage local level nutrient pollution reduction investments and protect nutrient sinks	Nutrient emissions cap and trade in river basins (national, regional)
	Fertilizer subsidy reform
	Subsidies to agricultural nutrient reduction practices and technology
	Subsidies to wastewater and industrial nutrient recovery & re-use
	Global nutrient reduction fund capitalised by innovative financial mechanism(s)



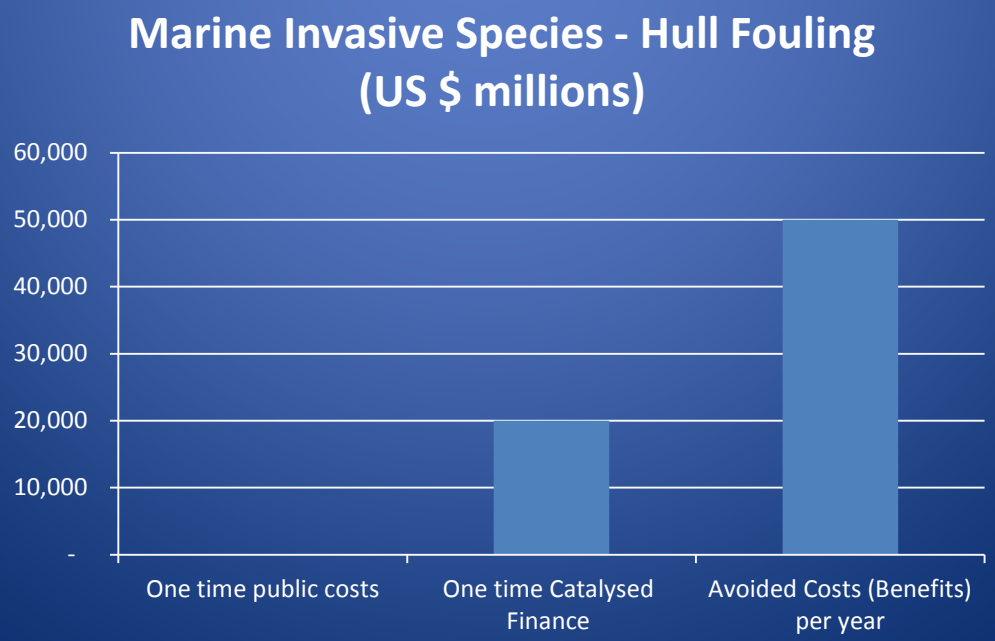
Risks from invasive species will worsen as shipping trade continues to grow rapidly



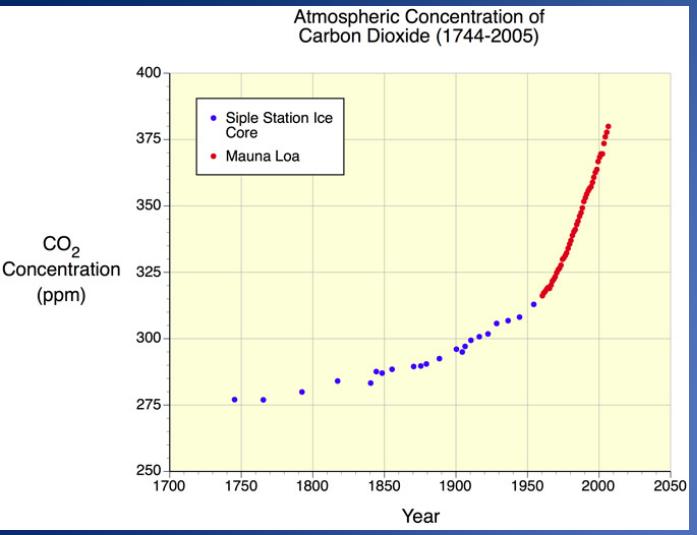


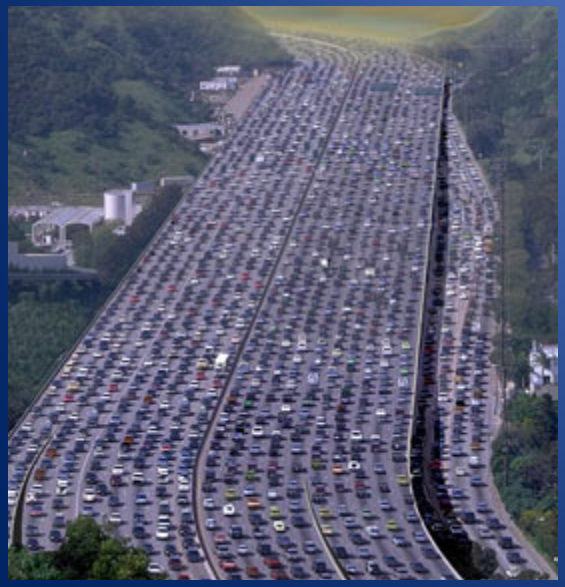
Preventing aquatic invasives – ship hull fouling

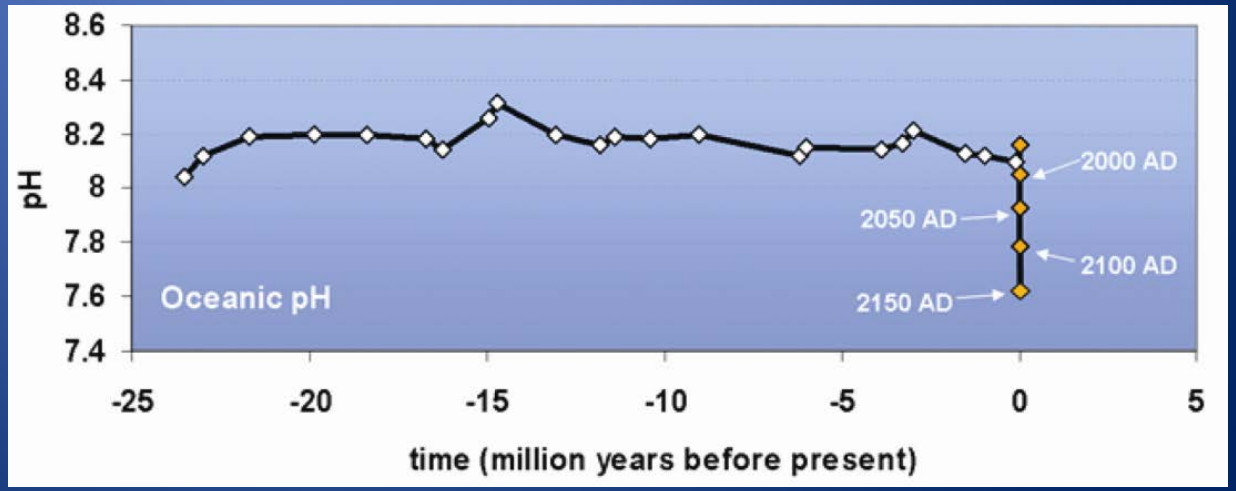
Strategic Planning Methodologies	Policy Instruments
Build on anticipated international instrument on Ship Hull Fouling	Tools, methodologies, standards & guidelines on hull fouling management
Incorporate hull fouling issue into LME TDA/SAPs where invasives are priority issue	Support to negotiations and enhanced capacity for implementation of possible new international agreement
	Facilitate private sector technology R&D



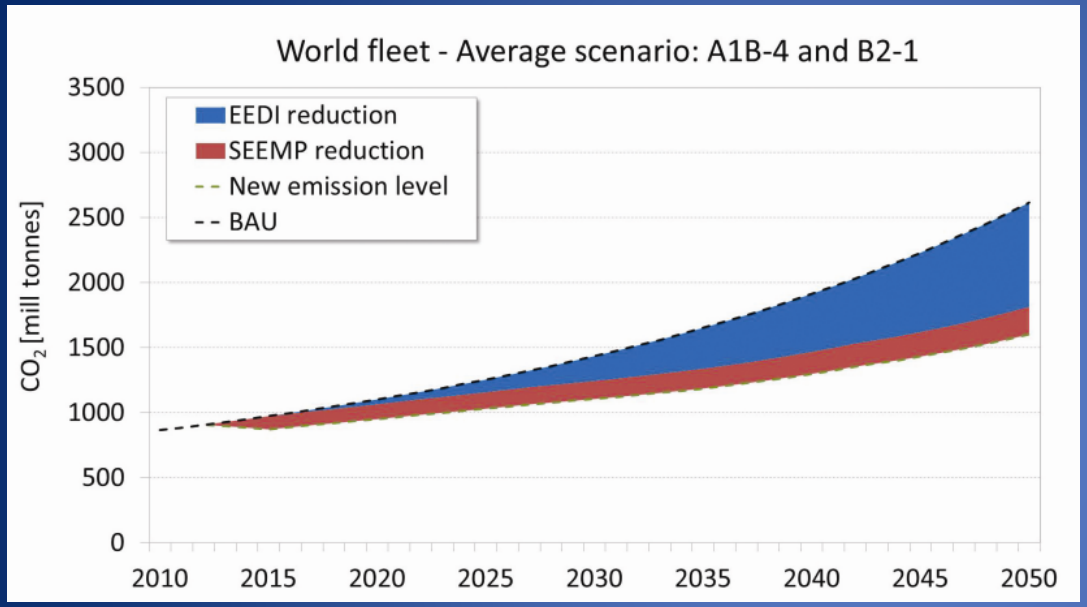
As atmospheric CO_2 continues to rise, ocean pH dropping (= increasing ocean acidity) at fastest rate in 25 million years, threatening very basis of marine ecosystems

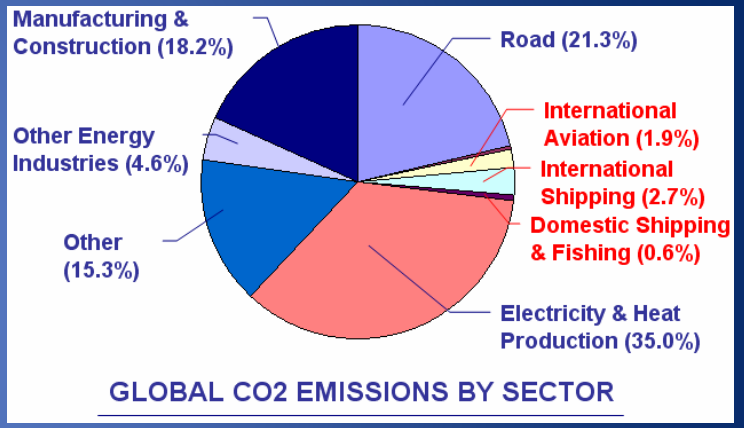


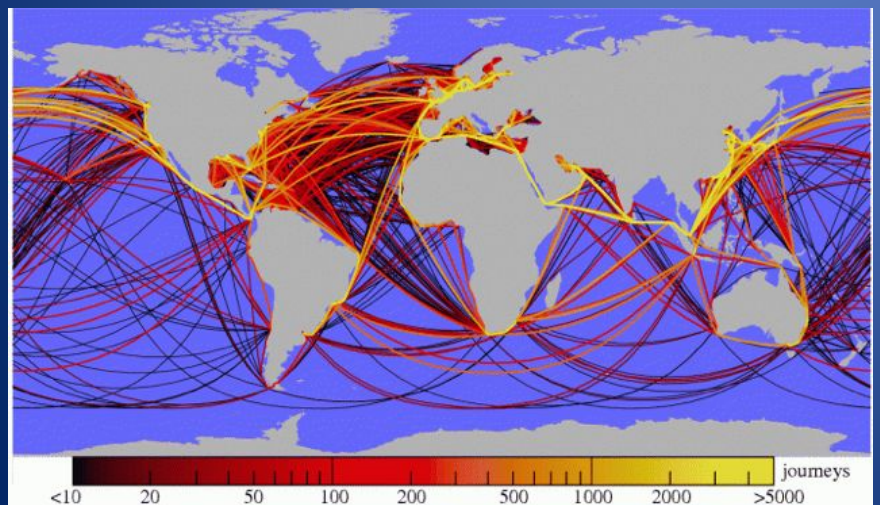




As international trade continues to grow rapidly, shipping CO_2 emissions projected to triple or more in BAU







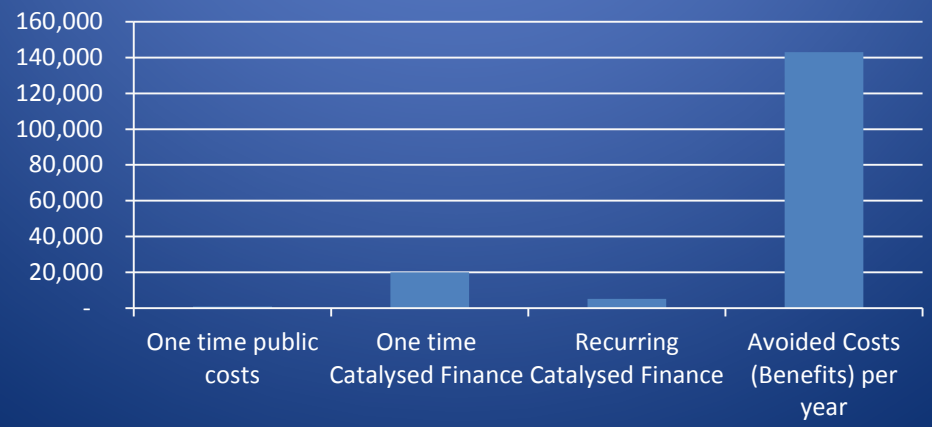
Blue Carbon – potential contribution to climate change mitigation

- "Blue Carbon" coastal habitats – mangroves, seagrasses especially – significant carbon sinks, much higher than tropical forests on a C/ha/year basis
- Comprehensive program to protect and restore key blue carbon sites could represent 0.4 – 3.0% (0.15 – 1.02 Gt CO_2/year) of present day CO2 emissions
- Beyond CC benefits, substantial additional economic benefits would be realized - adaptation benefits (protecting coasts from storm surges, etc.) and maintaining other ecosystem services of coastal habitats (fish spawning areas and nurseries, recreation, etc.).

Ocean sectors contribution to slowing ocean acidification

Strategic Planning Methodologies	Policy Instruments
Build on UNFCCC (or new MEA) • Ocean pH target (minimum) • Adoption & implementation of Blue Carbon	Amend UNFCCC to incorporate safe ocean acidity limit & catalyse action (or create new multi-lateral environmental agreement – MEA)
Build on new IMO ship energy efficiency guidelines	Blue carbon inventory methodologies
ICM, TDA/SAP to help promote scaling up local and national Blue Carbon initiatives	Tools, methodologies, standards & guidelines to promote uptake of IMO energy efficiency guidelines • Ship EE management plans (SEEMP) • Ship EE design standards (EEDI) • Facilitate private sector R&D

Ocean sectors contribution to reversing ocean acidification (US $ millions)



Conclusions

- Reversing ocean degradation is not an intractable problem
- Ocean sustainability can be a legacy of today's generation of decision makers
- A modest additional public investment of around $5 billion over 10-20 years could be sufficient to catalyse hundreds of billions, transform ocean markets and sustain the trillions of dollars in ocean goods and services into perpetuity
- But these ocean planning processes and catalysis of action and investment, take TIME, ocean degradation is geometric, need to take action immediately to prevent continued decline and possible 'tipping points'

Catalysing Ocean Finance credits & thanks

Authors:

- Volume II - Alfred Duda, Global Environment Facility (Chap 1.1); Yihang Jiang, UNDP-GEF Yellow Sea LME Project (Chap 1.2; Chap 1.3: Case Study #2); Andrew Hudson, UNDP-GEF (Chap 1.3: Case Study #1; Chap 3.1, 3.2); Percy Nugent, UNDP-GEF FrePlata Project, (Chap 1.3: Case Study #3); Adrian Ross, UNDP-GEF PEMSEA Programme (Chap 2.1, 2.2, 2.3: Case Study #4); Barbara Hanchard, UNDP-GEF-FFA Pacific Oceanic Fisheries Project (Chap 3.3: Case Study #5); Jose Matheickal, UNDP-GEF-IMO GloBallast Programme (Chap 3.3: Case Study #6); Volume I - Andrew Hudson/Yannick Glemarec

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- Designer: Kimberly Koserowski, First Kiss Creative LLC

- Project Management: Jane Fulton, UNDP

Ocean Hypoxia	Ocean Acidification	Overfishing	Marine Invasive Species
Reduce nutrient over-enrichment of coastal areas	Energy efficient shipping Protect & restore coastal carbon sinks	Reduce unsustainable fishing practices	Reduce aquatic species transfer via ship hull fouling
Strategic Planning Methodologies			
• Scale up TDA/SAP in 20 remaining LMEs (& linked river basins) facing hypoxia • Scale up ICM in same LMEs as tool to leverage nutrient pollution reduction investments and protect nutrient sinks	• Build on UNFCC – Ocean pH target (minimum) – Adoption of Blue Carbon • Build on new IMO ship energy efficiency guidelines • ICM, TDA/SAP to help promote scaling up local and national Blue Carbon initiatives	• Build on Global & Regional Legal & Institutional Frameworks – Complete WTO negotiations to phase out negative fisheries subsidies – Strengthen RFMOs & LME institutions • TDA/SAP: Scale up in ~50 LMEs/fisheries areas facing depletion/overexploitation • ICM as cross sectoral tool to promote sustainable fishing & aquaculture	• Build on anticipated international instrument on Ship Hull Fouling • Incorporate hull fouling issue into LME TDA/SAPs where invasives are priority issue
Policy Instruments			
• Nutrient management regulations • Nutrient emissions cap and trade in river basins (national, regional) • Fertiliser subsidy reform • Subsidies to agricultural nutrient reduction practices & technology • Subsidies to wastewater and industrial nutrient recovery & re-use • Global nutrient reduction fund capitalised by innovative financial mechanism(s)	• Amend UNFCCC to incorporate safe ocean acidity limit & catalyse action on low carbon economy • Blue carbon inventory methodologies • Tools, methodologies, standards & guidelines to promote uptake of IMO energy efficiency guidelines – Ship management plans (SEEMP) – Ship design standards (EEDI) – Facilitate private sector R&D	• Shift negative fisheries subsidies $16 billion/yr to sustainable aquaculture & MPAs • Scale up Individual Transferable Quotas (ITQ), $ to MPA, aquaculture, management • CBD Aichi Biodiversity Target 11-10% oceans under MPAs • Ensure sound science, EBA, data sharing, precautionary principle in RFMO & LME commission mandates • UN Fish Stocks Agreement, FAO Code of Conduct, Port State Measures, etc.	• Tools, methodologies, standards & guidelines on hull fouling management • Support to negotiations and enhanced capacity for implementation of possible new international agreement • Facilitate private sector technology R&D
Costs, Benefits & Catalysis			
• Public costs: – TDA/SAP LMEs: $1.0 billion (1 time) – ICM global: <$1.5 billion (1 time) • Benefits (avoided costs): $200-790 billion/year • Catalysed Finance: – TDA/SAP LMEs: $60 billion – ICM global: <$16 billion	• Public costs: $420-820 million (1 time) • Benefits (avoided costs) – Shipping on CC: $88 billion/yr (2050) – Blue Carbon on CC: $16-94 billion/yr (2050) – Shipping $90-310 billion/yr (fuel savings) by 2030 • Catalysed Finance: – Blue Carbon $0.3 - 5.1 billion/yr – Shipping ~$20 billion (1 time)	• Public costs: – RFMOs/LMEs: $496-600 million (1 time) – MPAs @ 10% ocean: – Establish $28 billion (1 time) – Operation $21 billion/yr • Benefits (avoided costs): $50 billion/yr • Catalysed Finance: – Shifted subsidies: $16 billion/yr – ITQ sales: $40 billion/yr – RFMOs/LMEs: $232 billion (1 time)	• Public costs: $20 million (1 time) • Benefits (avoided costs): $10-90 billion/yr • Catalysed Finance: $10-30 billion