



HUMAN NATURE

Ecosystem Change and Emerging Issues for Financial Institutions

First Group Workshop for the UNEP FI Biodiversity and Ecosystem Services Workstream

London, 5th April 2007



World Resources Institute



AGENDA: Global Ecosystem Change and Emerging Issues for Financial Institutions

- 1. The Millennium Ecosystem Assessment**
2. Business Implications of Ecosystem Change
3. Emerging Issues for Financial Institutions



The Millennium Ecosystem Assessment is the largest check up of the world's ecosystems

Largest assessment of health of ecosystems ever undertaken



Examined **links** between ecosystems and human well-being



Photo courtesy of USDA NRCS

Partnership of UN agencies, four conventions, business, and NGOs



VNU <www.vnu.com>

Provide **productive framework** to decision-makers



Photo courtesy of USDA NRCS

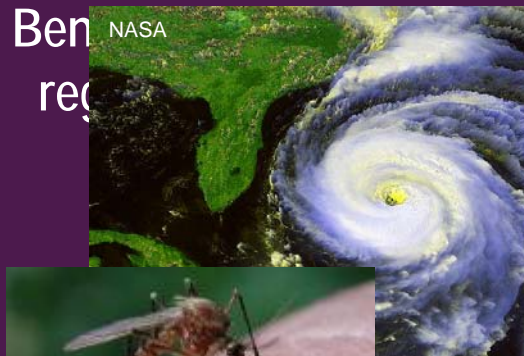
1360 experts from 95 countries over 4 years; peer reviewed

Types of ecosystem services

Provisioning



Regulating



Cultural

Non-
fro



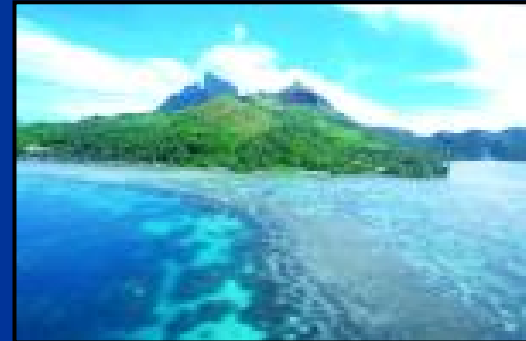
MA Findings

Over the past 50 years, humans have changed ecosystems more rapidly and extensively than ever before.

The changes have been brought on to meet rapidly growing demands for food, fresh water, timber, fiber, and fuel.

This has contributed to substantial net gains in human well-being and economic development.

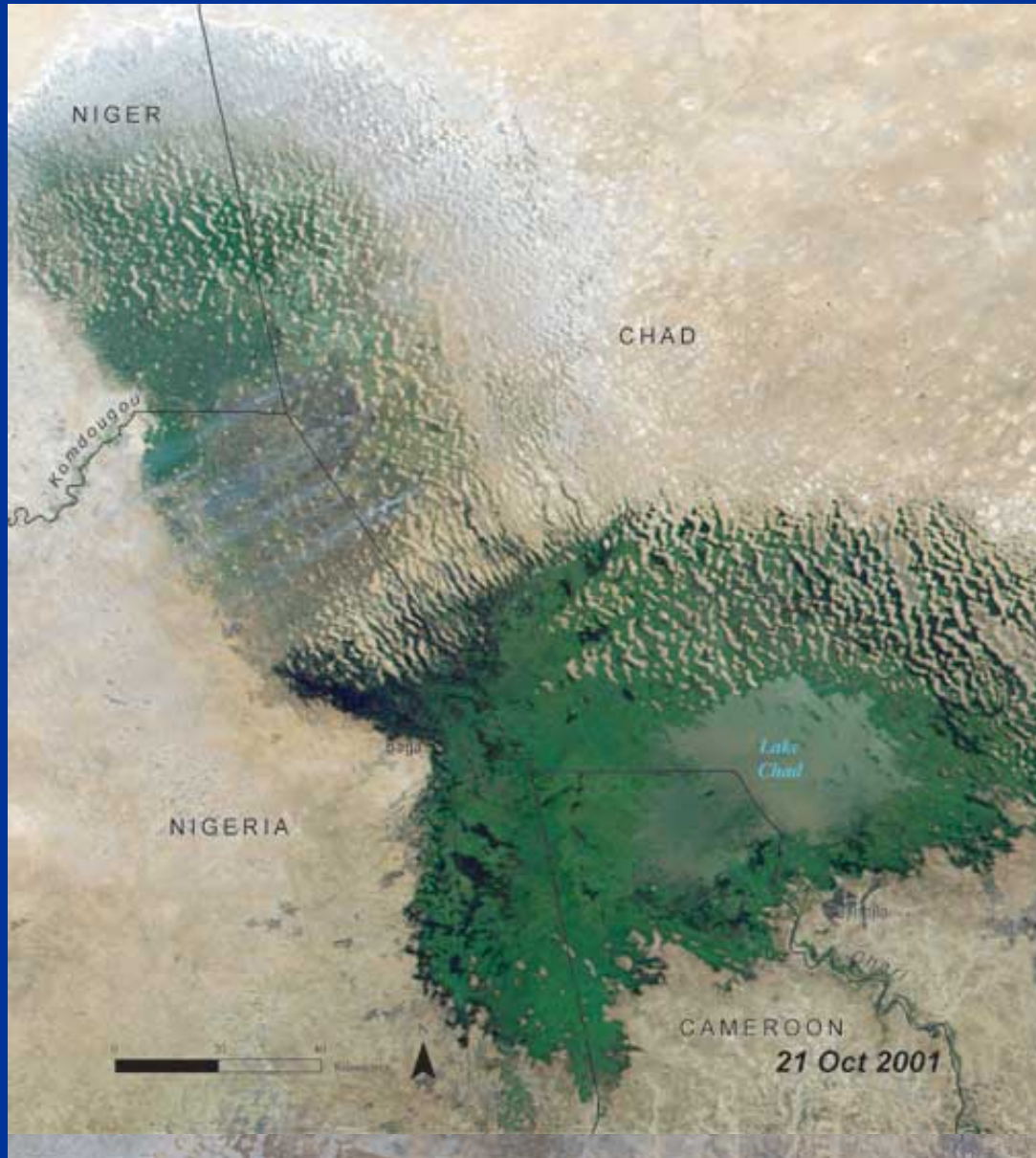
But these gains have been achieved at growing costs...



The world's balance sheet flashing red!

	Degraded	Mixed	Enhanced
Provisioning	<ul style="list-style-type: none"> • Capture fisheries • Wild foods • Biomass fuel • Genetic resources • Biochemicals, natural medicines, & pharmaceuticals • Fresh water 	<ul style="list-style-type: none"> • Timber • Fiber (e.g., cotton, hemp, silk) 	<ul style="list-style-type: none"> • Crops • Livestock • Aquaculture
Regulating	<ul style="list-style-type: none"> • Air quality regulation • Regional & local climate regulation • Erosion regulation • Water purification & waste treatment • Pest regulation • Pollination • Natural hazard regulation 	<ul style="list-style-type: none"> • Water regulation • Disease regulation 	<ul style="list-style-type: none"> • Carbon sequestration
Cultural	<ul style="list-style-type: none"> • Spiritual, religious, & cultural heritage values • Aesthetic values 	<ul style="list-style-type: none"> • Recreation & ecotourism 	

Degraded: Fresh water



Water withdrawals from rivers and lakes doubled since 1960

Lake Chad

1960: World's 6th largest lake

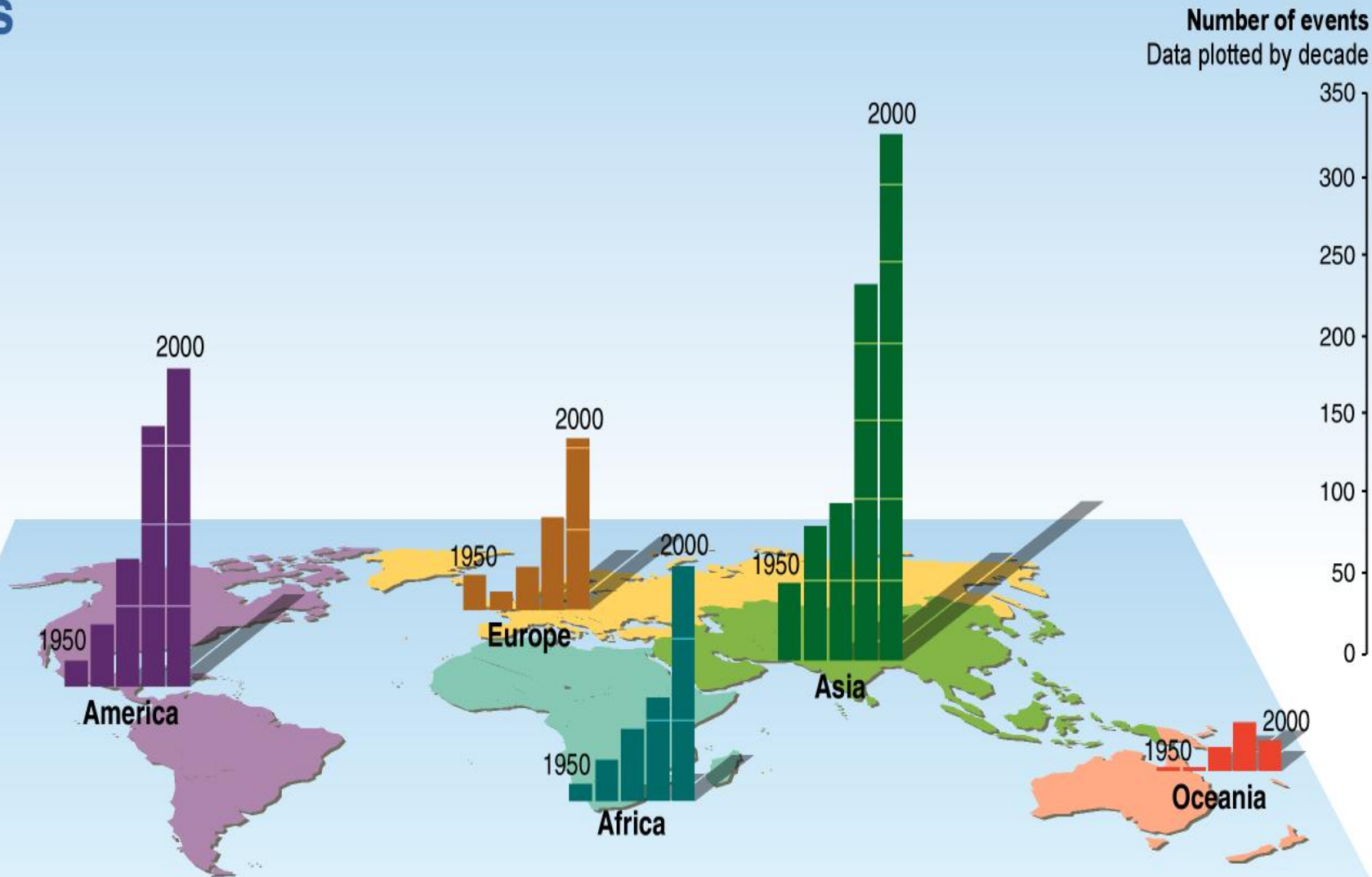
1963 – 2001: Shrank 95%, wetlands spoiled

Photos taken approx. same date each year

Source: UNEP – ONE PLANET MANY PEOPLE: Atlas of our Changing Environment

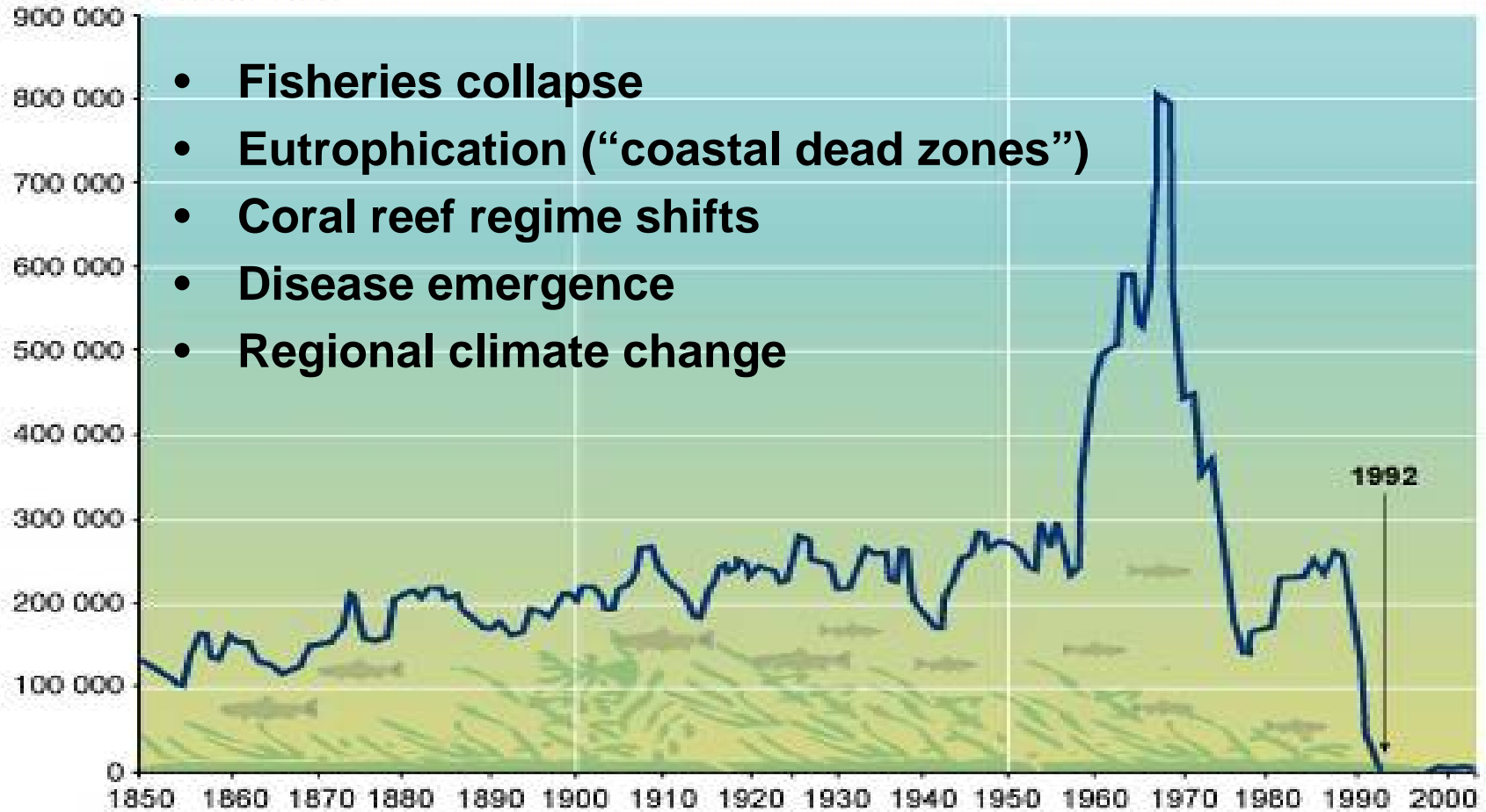
Degraded: Natural hazard regulation

Floods



Increased likelihood of abrupt changes

Fish landings in tons



- Fisheries collapse
- Eutrophication (“coastal dead zones”)
- Coral reef regime shifts
- Disease emergence
- Regional climate change

Source: Millennium Ecosystem Assessment

Atlantic Cod off Newfoundland



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Trends identified by the MA are important to business because companies and ecosystems are inter-related



Use of ecosystem services



Impacts on ecosystem services



Examples of industries benefiting from ecosystem services

NOT EXHAUSTIVE

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Beverage
Electric utility
Agribusiness

Agribusiness
Insurance
Comm. real estate
Tourism

Risks to businesses from ecosystem change

Potential risks

Description

Operational

- Reduced availability of inputs
- Higher cost of inputs
- Disruption to business operations

Regulatory & legal

- New government regulations, extraction moratoria, user fees, penalties, etc.
- Lawsuits
- Restrictions on expansion of operations
- Higher transaction costs

Reputational

- Damage to brand & image
- Challenge to “license to operate”

Market

- Changes in customer preferences

Financing

- More rigorous lending policies



Corporate value

What new business opportunities does ecosystem change pose?

Potential opportunity

Example

New markets

- Water quality trading
- Wetland banking, endangered species banking
- Biodiversity offsets
- Certified sustainable products

New businesses

- Environmental asset finance and brokerage
- Ecosystem restoration or consulting

New products, services, technologies & practices

- Those that mitigate or reverse ecosystem degradation
- Those that improve efficiency of ecosystem use

New revenue streams from assets

- Payments for ecosystem services (e.g., watershed protection, carbon sequestration, recreation)

First mover advantages

- Enhanced image
- Operational or cost advantages
- Establishing yourself as a trusted partner



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How are financial institutions implicated?

NOT EXHAUSTIVE



Wrapping your head around the issue?

NOT EXHAUSTIVE

Factor

Opportunities for additional research

Corporate level

- Brand name
- Direct impacts

Portfolio

- Country specifics
- Sector specifics

Type of asset

- Corporate financing
- Project financing
- Time frame



Brazil: Deforested area



India: Water scarcity





NOT EXHAUSTIVE

Four key steps for success



MA FINDINGS: Key resource to inform these steps

World Resources Institute MA follow up activities

1. Develop and pilot test corporate an “ecosystem services review”
2. Publish guide on policy and governance implications of the MA
3. Publish guide on mainstreaming ecosystem services in public sector decisions
4. Policy paper on implications of the MA for the MDBs
5. Develop poverty & ecosystem service mapping tool (Kenya, Uganda)
6. Develop coral reef ecosystem services valuation tool (Caribbean)
7. Roll out agricultural nutrient trading platform and markets (U.S.)





Thank you!

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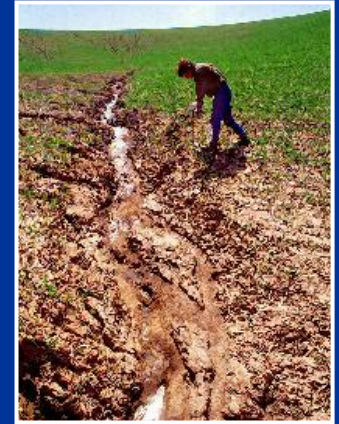
APPENDIX



Market failures: Trade-offs costs between ecosystem services

Most provisioning services have a market value, while most regulating services don't

Trade off: Some provisioning services are being enhanced but at the cost of regulating and cultural services



Pictures: Trade off costs for agriculture



New regulations? New markets?

Market failures: Ecosystem values unaccounted for

Ex) Mangrove Conversion to Shrimp Farm

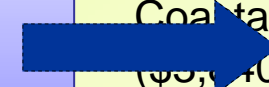


Mangrove Ecosystem

Net present value per hectare (So. Thailand)	
Mangrove (timber & NTP only):	\$820
Convert to shrimp farm:	\$8,340
Mangrove (incl. coastal protection):	\$35,900
Conv	



Coastal protection (\$3,900)



Note: 10% discount rate

Source: Millennium Ecosystem Assessment; Sathirathai and Barbier 2001

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Mangrove

- Fishery nursery (\$70)
- Timber and non-timber products (\$90)

Shrimp Farm

- Less subsidies (-\$1,700)
- Pollution Costs (-\$230)
- Restoration (-\$8,240)

Shrimp Farm