



Integrating climate and environment into agriculture and vice-versa: an institutional stocktake from IFAD and the World Bank

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Enabling poor rural people
to overcome poverty

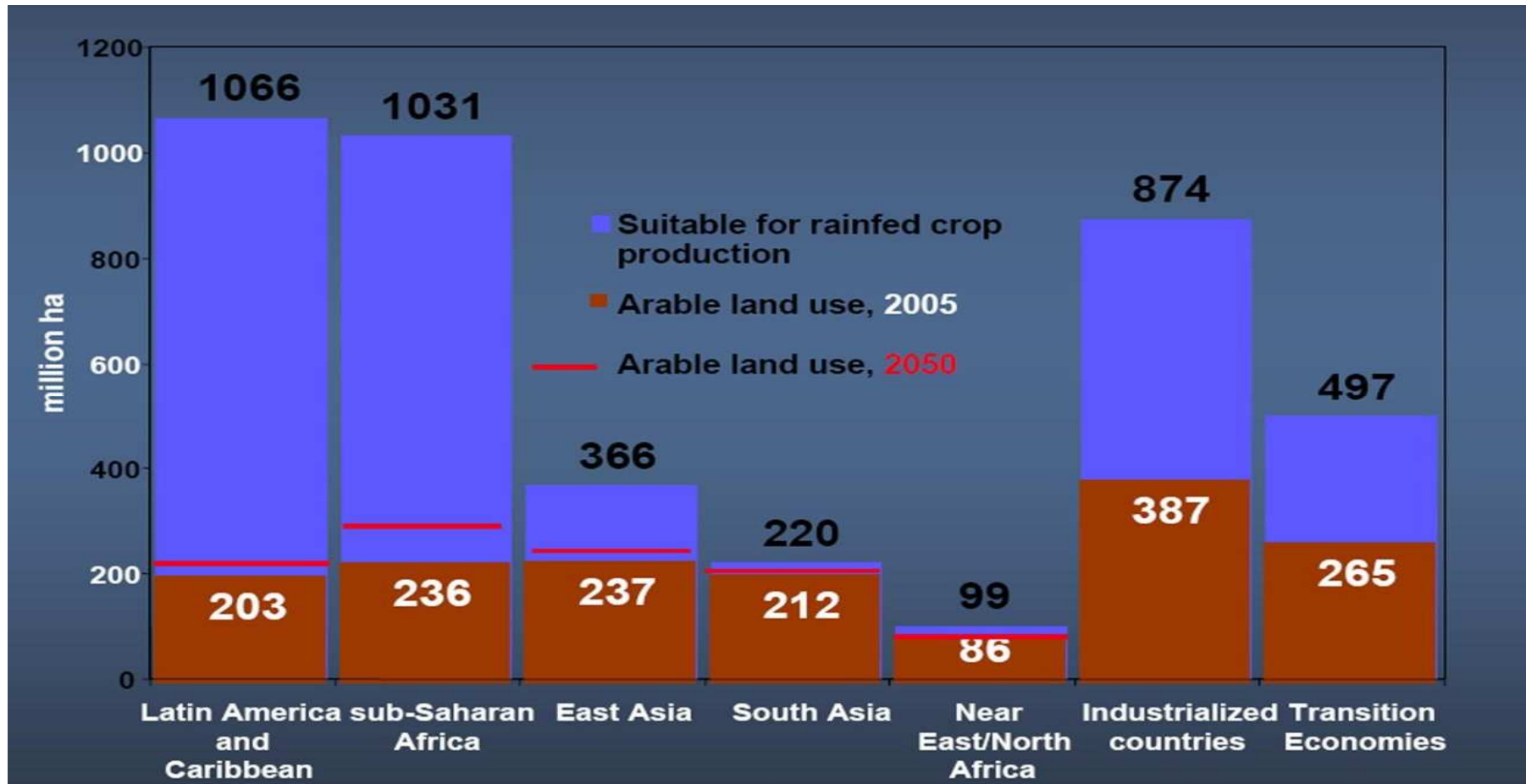
3 propositions

1. Costs of lack of integration of agendas is accelerating in developing countries
2. Systematic integration? Progress, but not there yet...
3. Need a clearer message on sustainable agriculture

1. Costs of lack of integration of agendas is accelerating

- Pressures for food production growing;
 - Population
 - Dietary habits
 - Limits to extensification
 - Additional demands from energy markets
- Environmental impacts
- Poverty impacts: majority (70%) of IFAD's work supporting people in fragile agro-ecological zones. Smallholder and rural focus

Scope for extensification?



Enabling poor rural people to overcome poverty



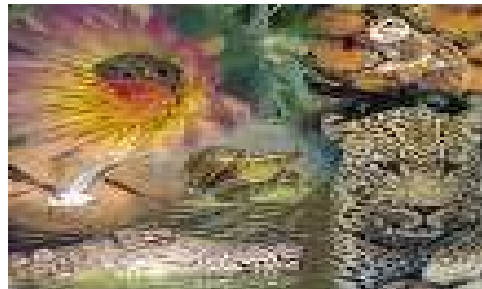
Source: FAO, from Schmidhuber (2009); Data from Bruinsma

Agriculture: victim and villain?

Desertification/land degradation



Biodiversity loss



Deforestation/Soil erosion



Weather variability/
climate change



Water scarcity



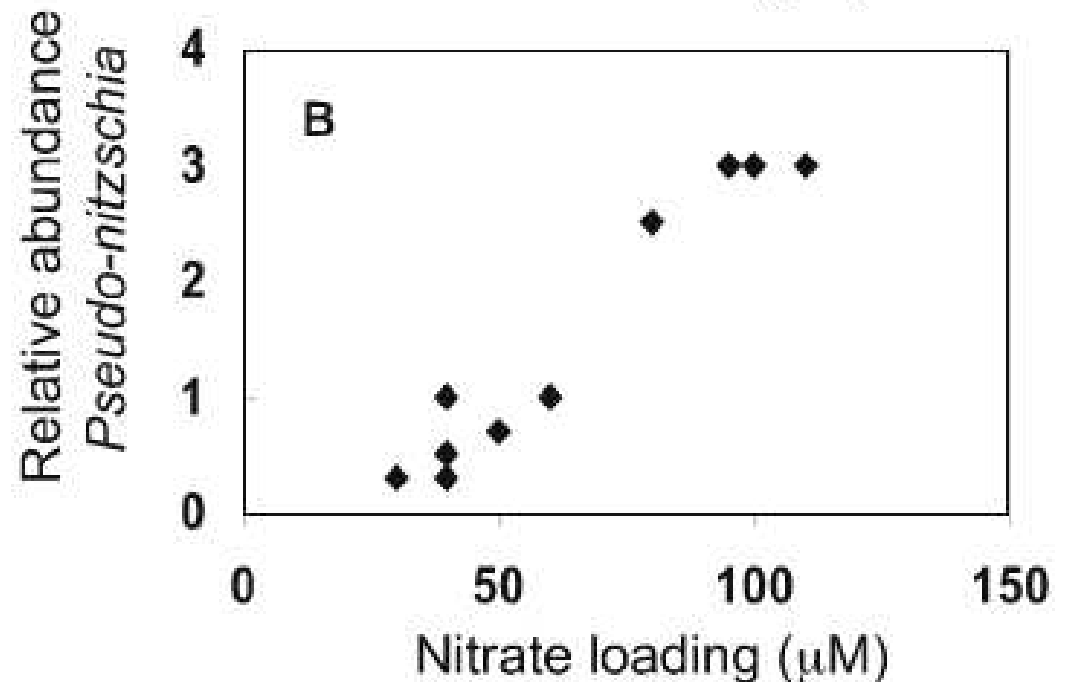
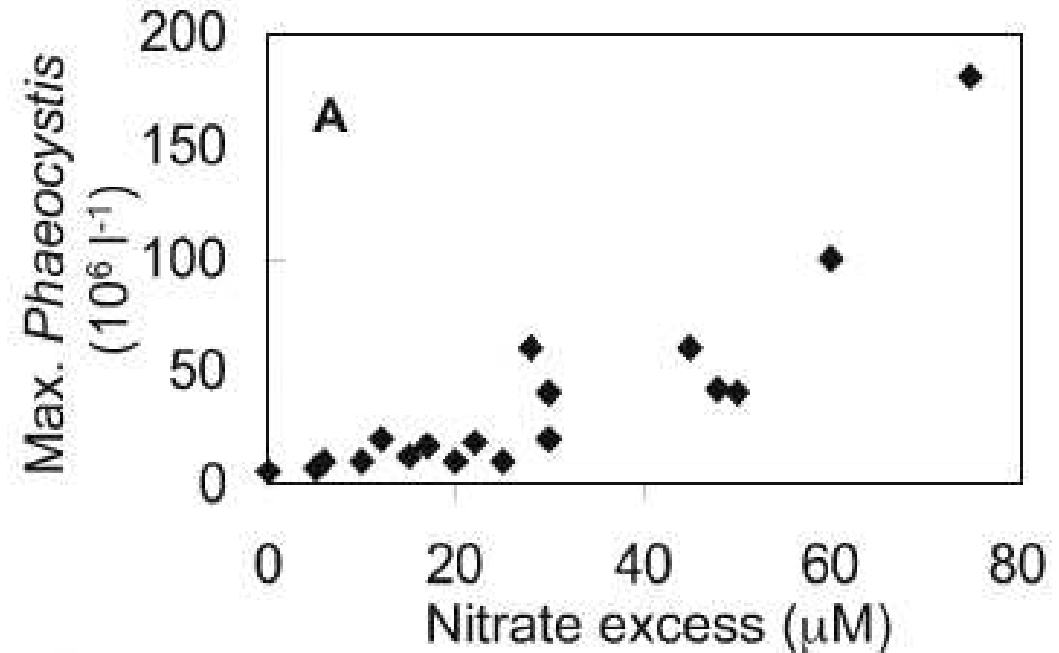
Pollution



Harmful Algal Blooms (HAB) as a function of excess nitrate:
Eastern Channel and Southern Bight of the North Sea 1980-1990

HAB as a function of nitrate loading in the Gulf of Mexico

Source: FAO



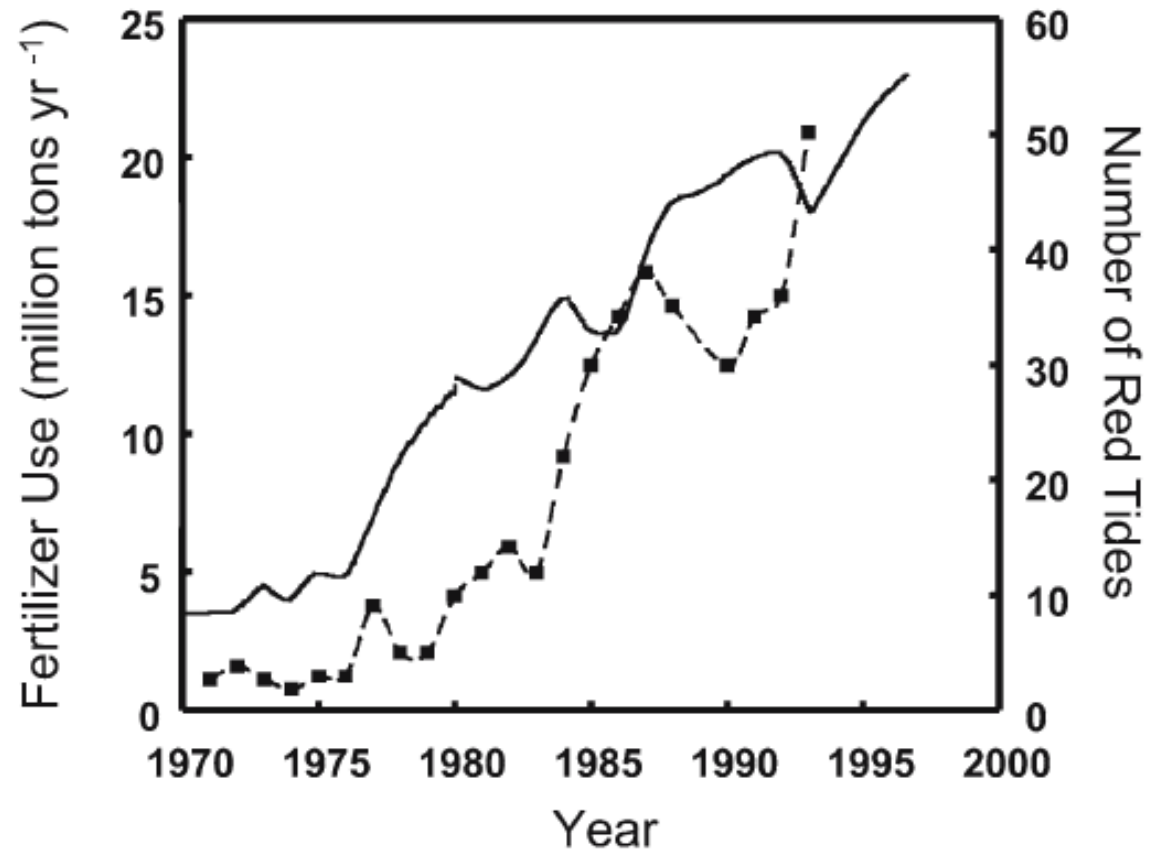
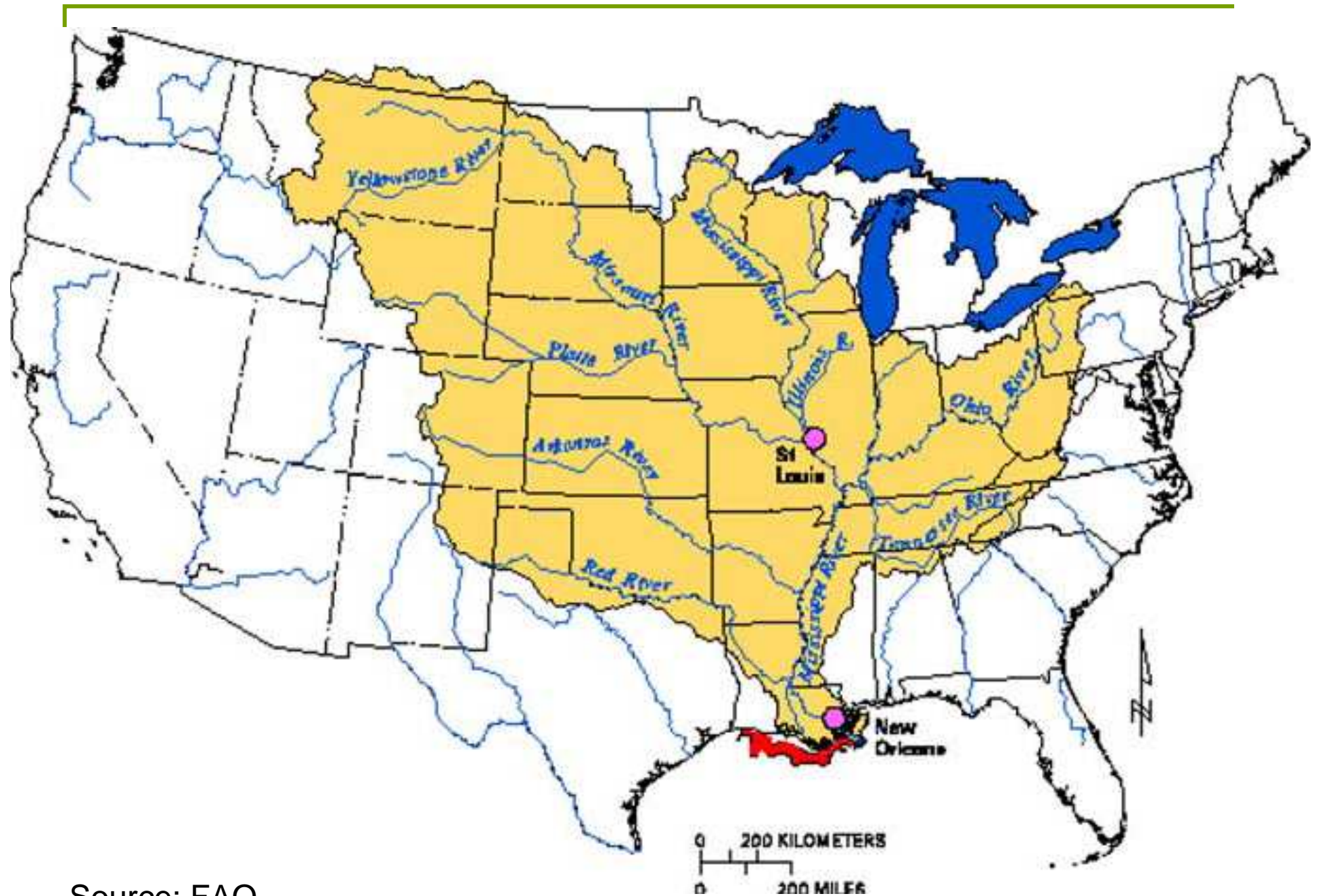
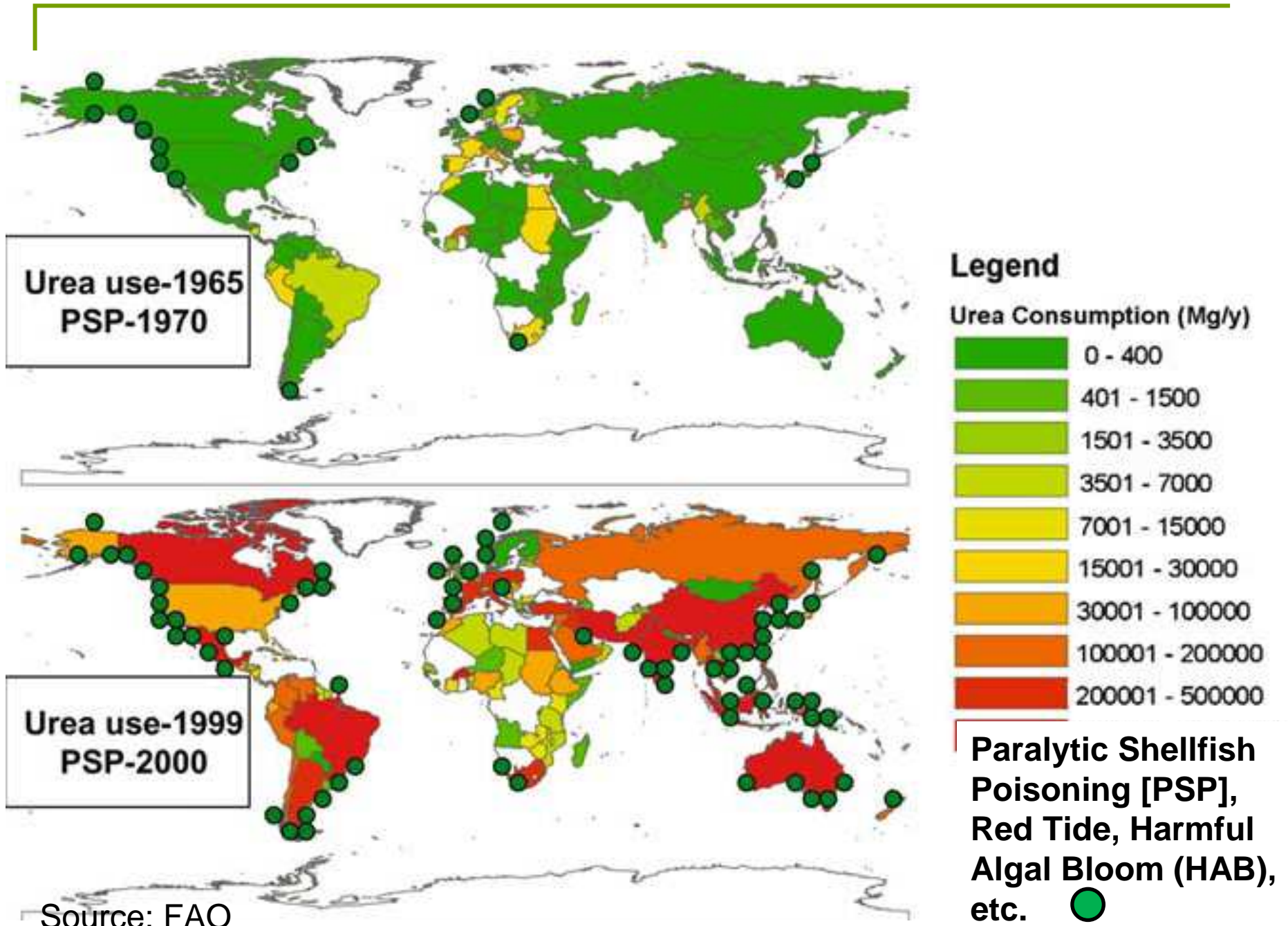


Fig. 26.3. Trends in nitrogen fertilizer use (*solid line*) and the number of red tides (*dashed line*) reported for Chinese coastal waters through the mid-1990s.

Source: FAO



Source: FAO



Source: FAO

Climate Change is multiplying threats

Biophysical drivers

- Temperature
- Extreme events frequency, intensity
- Rainfall patterns
- Seasonal shifts
- Sea level rise

RURAL LIVELIHOODS

(migration, labor availability, food insecurity, conflict, forced sale of livestock and other assets)

e.g. food insecurity in Niger, rural livelihoods in the high Andes (Altiplano) in Peru.

e.g. damage to irrigation systems and other agricultural infrastructure in Viet Nam

RURAL INFRASTRUCTURE

(rural roads, storage and processing, irrigation systems)

AGRICULTURAL PRODUCTIVITY

(food and cash crops, livestock and fisheries)

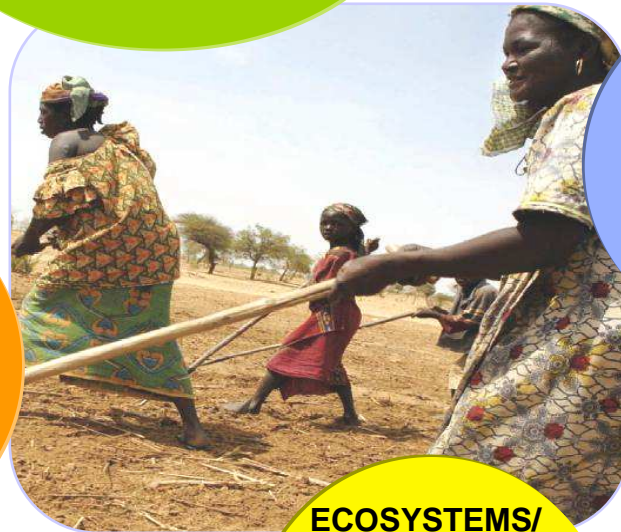
e.g. rice production in Sierra Leone, rain-fed agriculture in Yemen, livestock sector in Mongolia (drought and Dzud)

ECOSYSTEMS/ ENVIRONMENTAL PROCESSES SUSTAINING AGRICULTURAL PRODUCTION

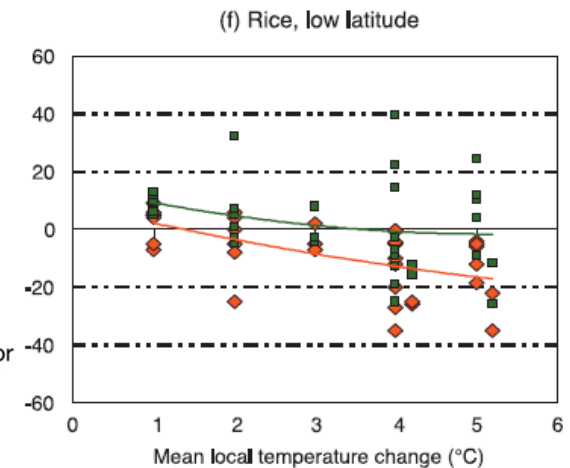
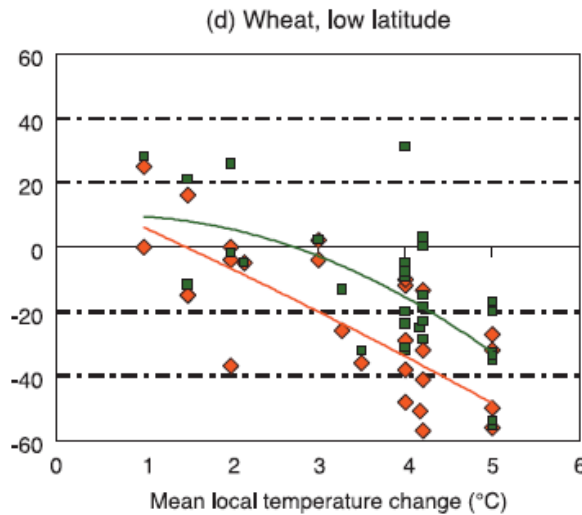
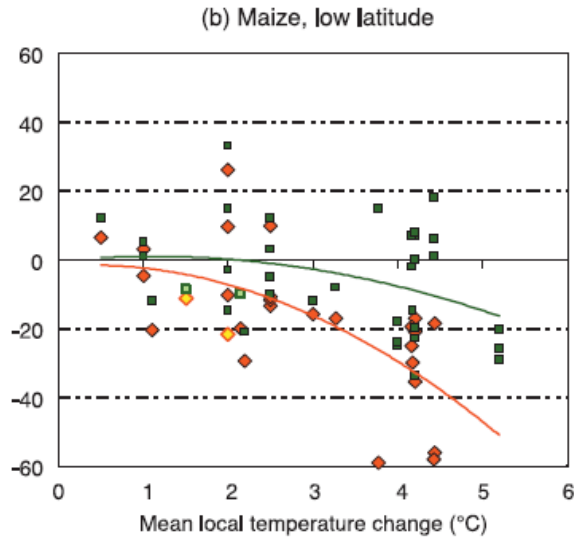
e.g. coastal ecosystems in Sri Lanka; rangeland ecosystems of Eastern Morocco

Global Rules Response

- Global carbon target
- Finance
- Adaptation Framework
- Land use mitigation rules



Cereal yield responses to climate change.

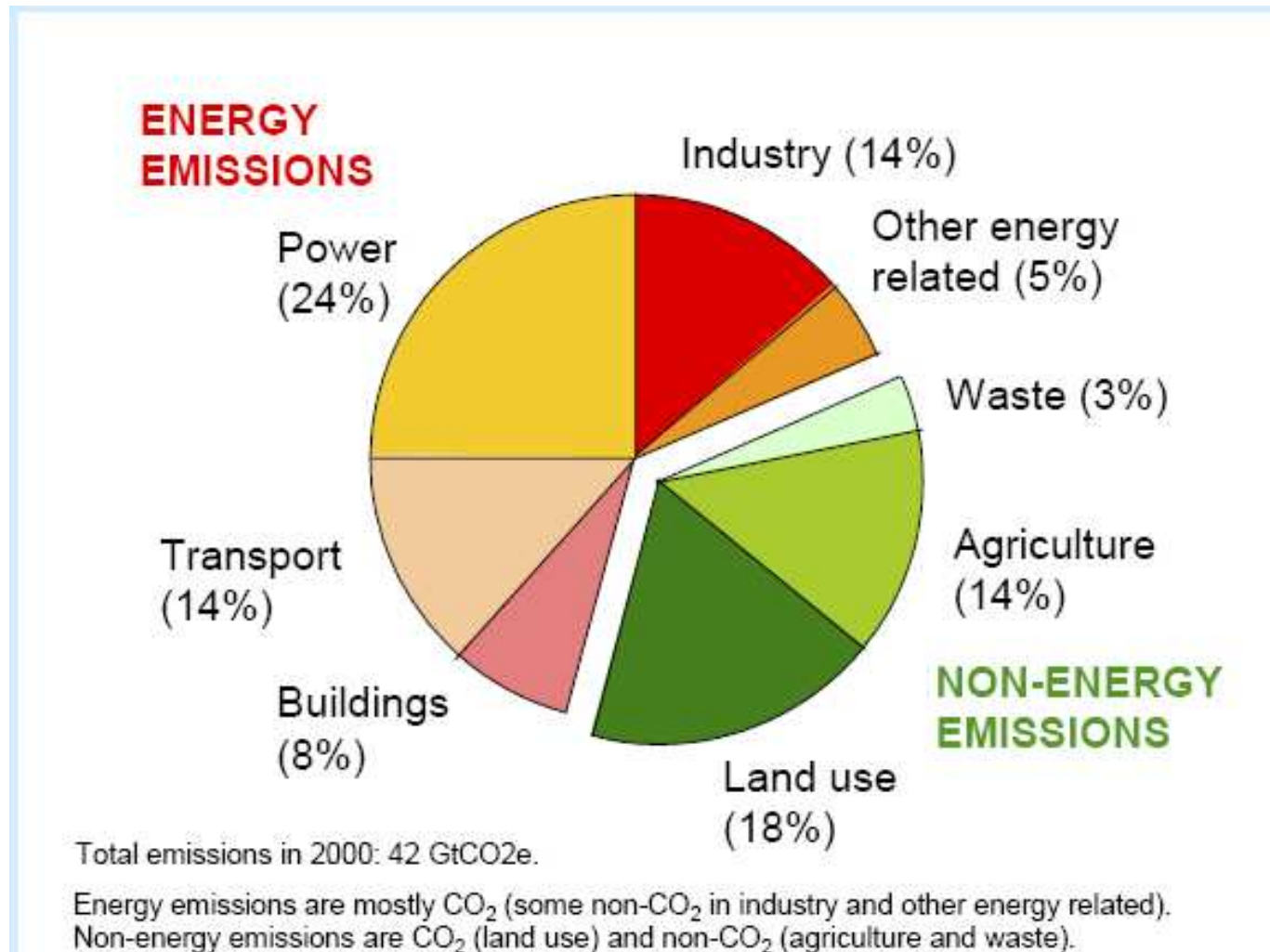


Results of 69 published studies at multiple simulation sites.

Cases without adaptation (red dots)
with adaptation (dark green dots)

Enabling poor

But agriculture also a contributor to the emissions



Source:
Stern
Review

2. Systematic integration? Progress, but not there yet...

- IFAD's portfolio
- IFAD's policies and approaches
- And vice-versa - climate negotiations

IFAD's Portfolio

- Evaluations
- Volume for NRM. Role of GEF
- ENRM Portfolio Review:
 - Progressively more focus on NRM and CC - main focus is on land degradation/water scarcity
 - Main approach - empowerment of communities and local institutions for sustainable NRM
 - Sometimes still compartmentalised/stand-alone, often grant-funded. Tracking of environmental impacts/ecological baseline

Review of ENRM Portfolio - Environmental issues addressed

Sample:

Reviewed 25/157 Loans completed between 2004-2009 – historical sample
9 Annual Report on Results and Impact of IFAD Operations (ARRIs)

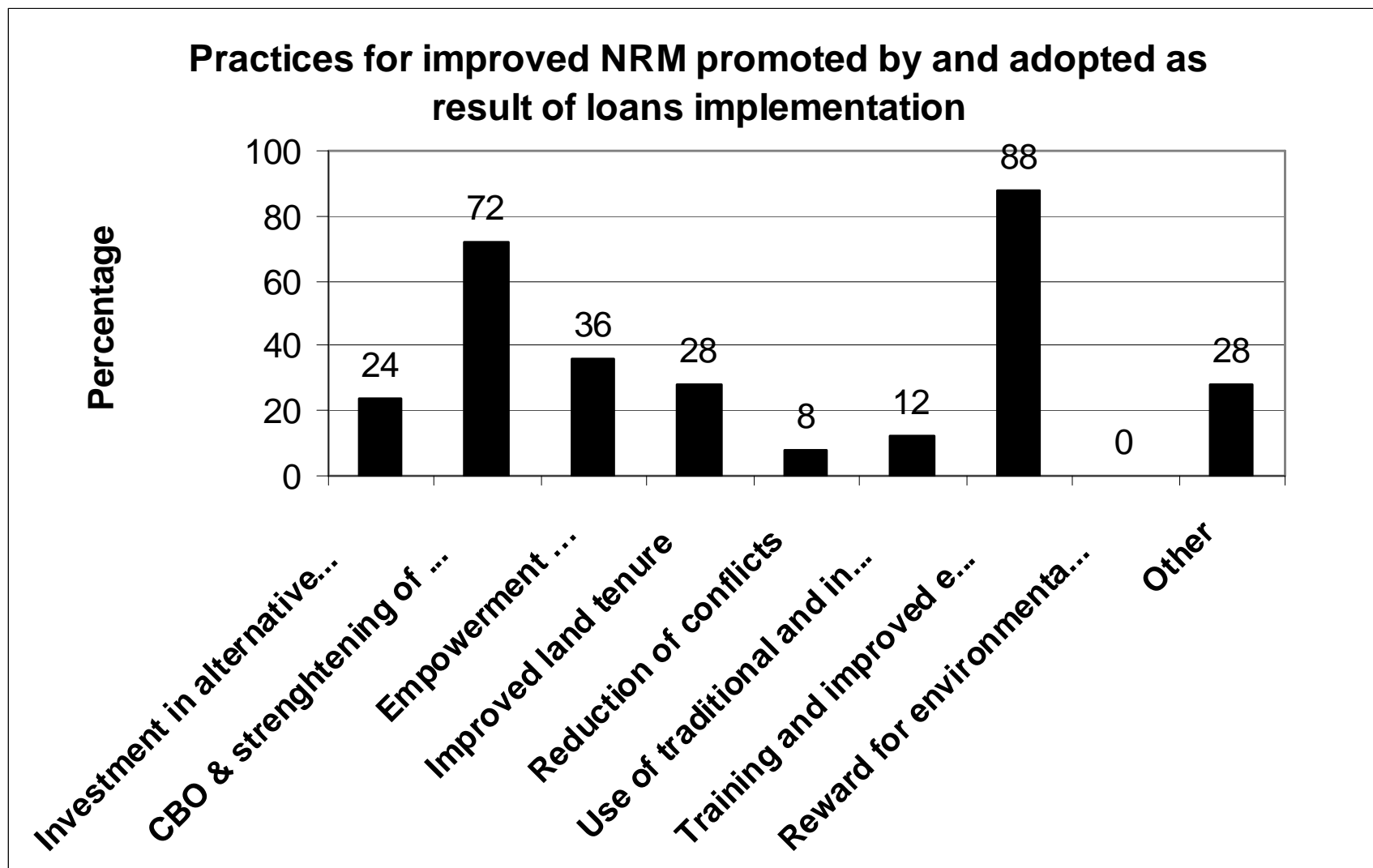
■ Overexploitation of NR	60%
■ Land/soil degradation	52%
■ Deforestation and forest degradation	32%
■ Water scarcity	28%
■ Climatic hazards	24%
■ Loss of biodiversity	8%
■ Other	32%



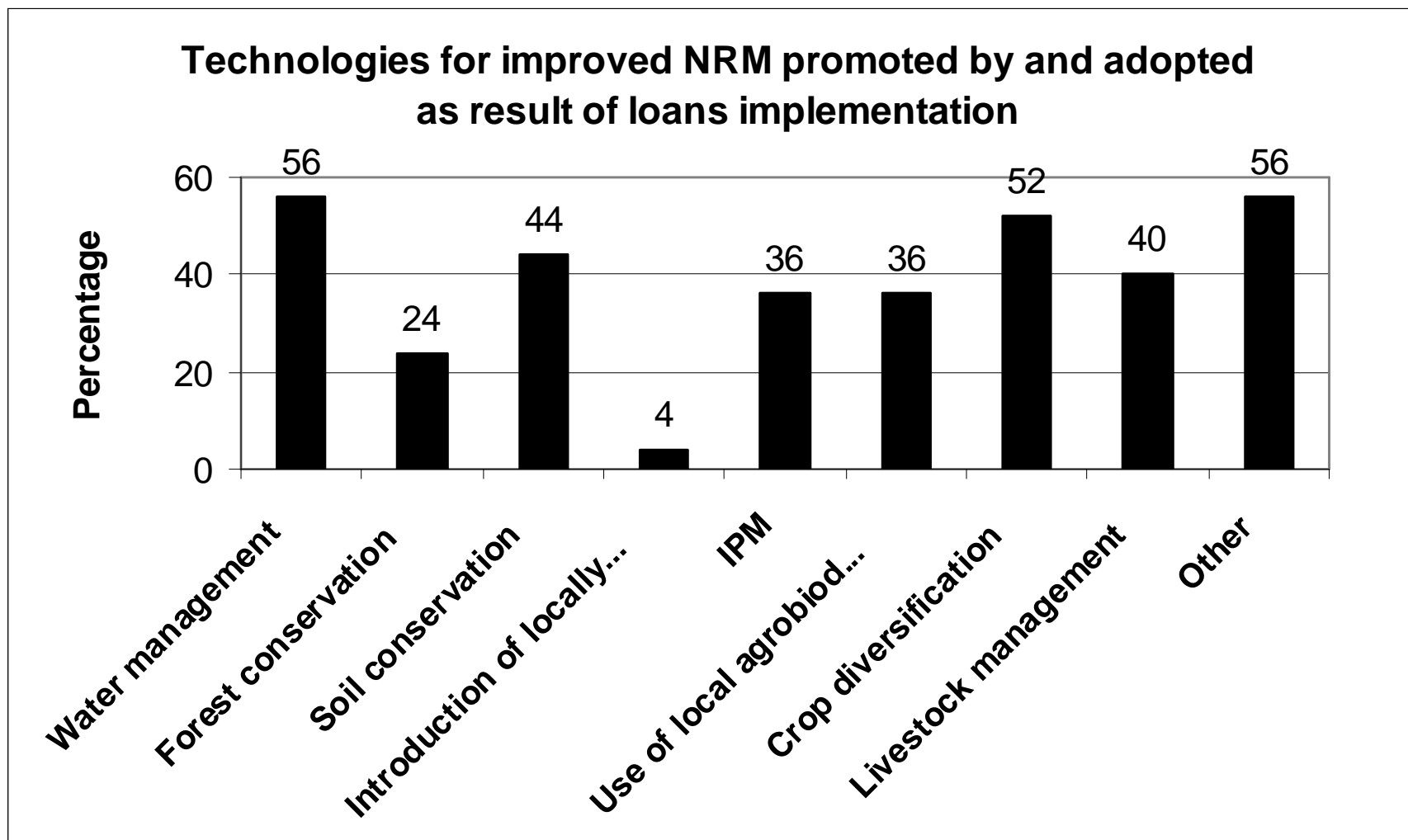
to overcome poverty



ENRM Portfolio Review - NRM Practices



ENRM Portfolio Review - NRM Technologies



Policies and approaches

- Environmental and Social Assessment Procedures (2009)
- Climate Change Strategy (2010)
- Environment and Natural Resource Management Policy (2011)
- Wider quality improvements/reforms - direct access and country presence, QE/QA, RMF

Climate Change Strategy 2010

Goal:

To maximize IFAD's impact on rural poverty in a changing climate

Purpose 1

To support innovative approaches to helping smallholder farmers build their **resilience** to climate change

Purpose 2

To help smallholder farmers take advantage of available **mitigation incentives** and funding

Purpose 3

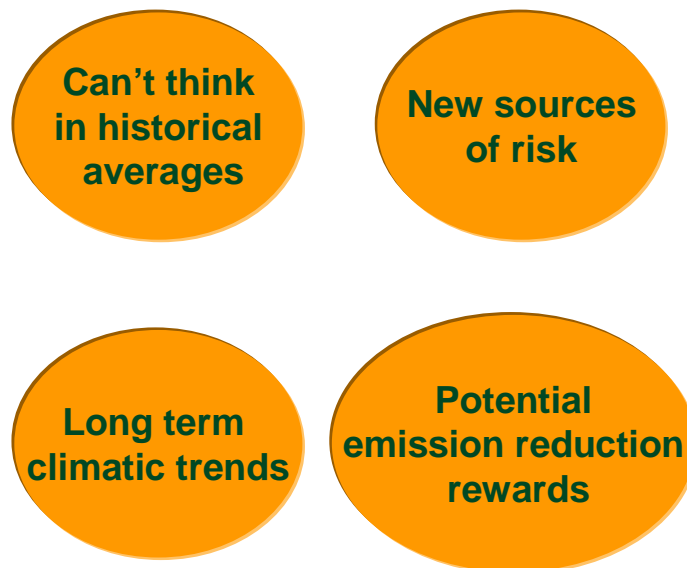
To inform a more **coherent dialogue** on climate change, rural development, agriculture and food security

Climate Change Strategy: Approach

Continued emphasis...



Anything different?



- NRM, sustainable agriculture

Adaptation

Vulnerability focus

Impacts focus

Addressing the drivers of vulnerability

Activities seek to reduce poverty and other non-climatic stressors that make people vulnerable

- E.g.
- sustainable land and water management
 - agricultural value added and more efficient inputs
 - more resilient agro-ecosystems

Building response capacity

Activities seek to build robust systems for problem solving

- E.g.
- new drought, flood and heat tolerant crop varieties and livestock breeds
 - small-scale sustainable water supplies

Managing climate risks

Activities seek to incorporate climate information into decision-making

- E.g. better agro-meteorological warning systems; weather risk insurance

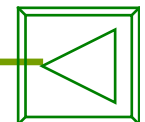
Confronting climate change

Activities seek to address impacts associated exclusively with climate change

- E.g. glacial lake burst dams

(Spectrum: Heather McGray, WRI, 2007)

Enabling poor rural people to overcome poverty



Operations

Supportive not compliance driven approach, based on early intervention and integration

- Enhanced inputs to COSOP, programme design and implementation
- New tools – including enhanced ESA inputs
- RB-COPSOP formulation and QE guidelines
- Quality enhancement implementation
- Next strategic framework

Knowledge, Innovation and Advocacy

- Continued engagement on global dialogue, incl GDPRD
- New partnership(s) to access expert advice and staff training
- Internal climate and environment network (CEN) to manage KM

Resource Mobilization

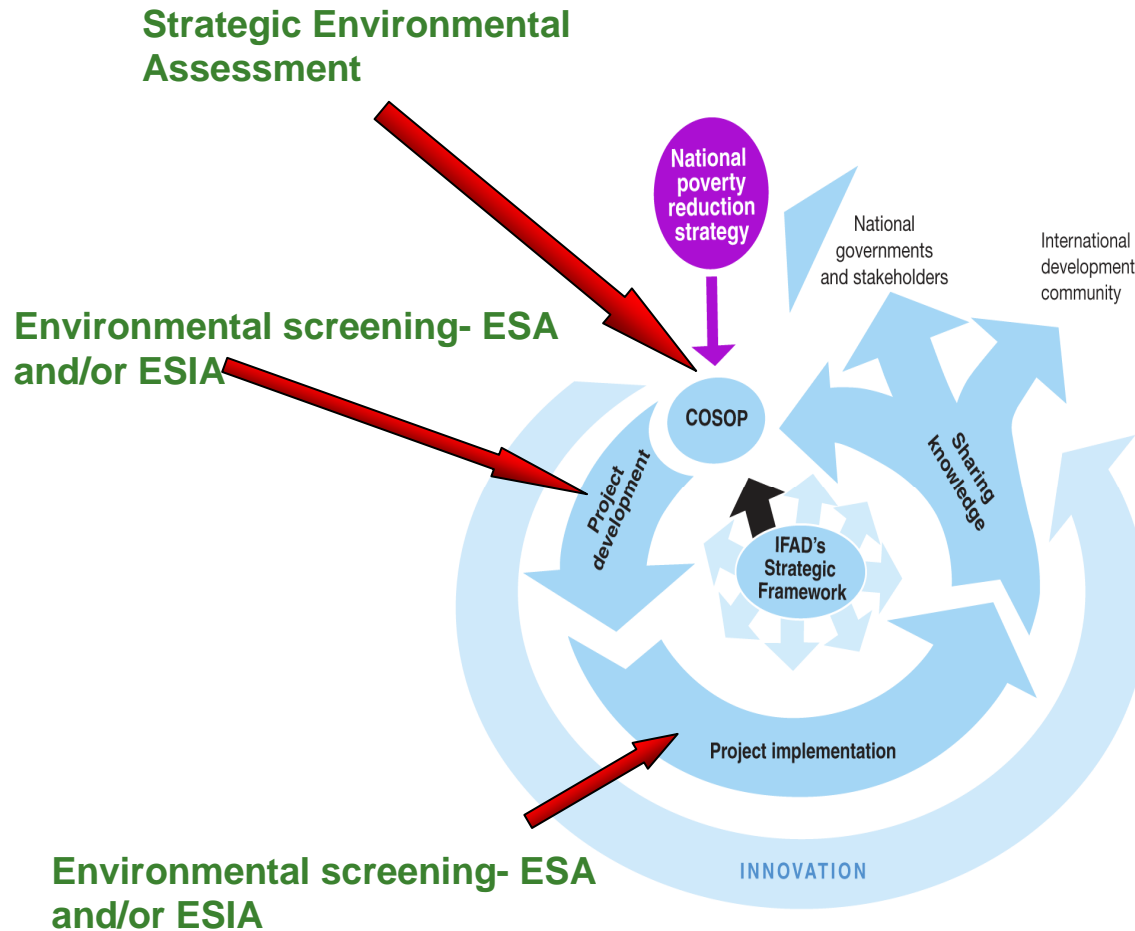
Supporting use of core replenishment in run-up to 9th replenishment, and cycle alignment/integration

- Greater use of GEF resources – GEF-5 and LDCF (business plan)
- Others – adaptation fund, foundations, bilaterals, carbon market (BioCarbon Fund)

Organisation

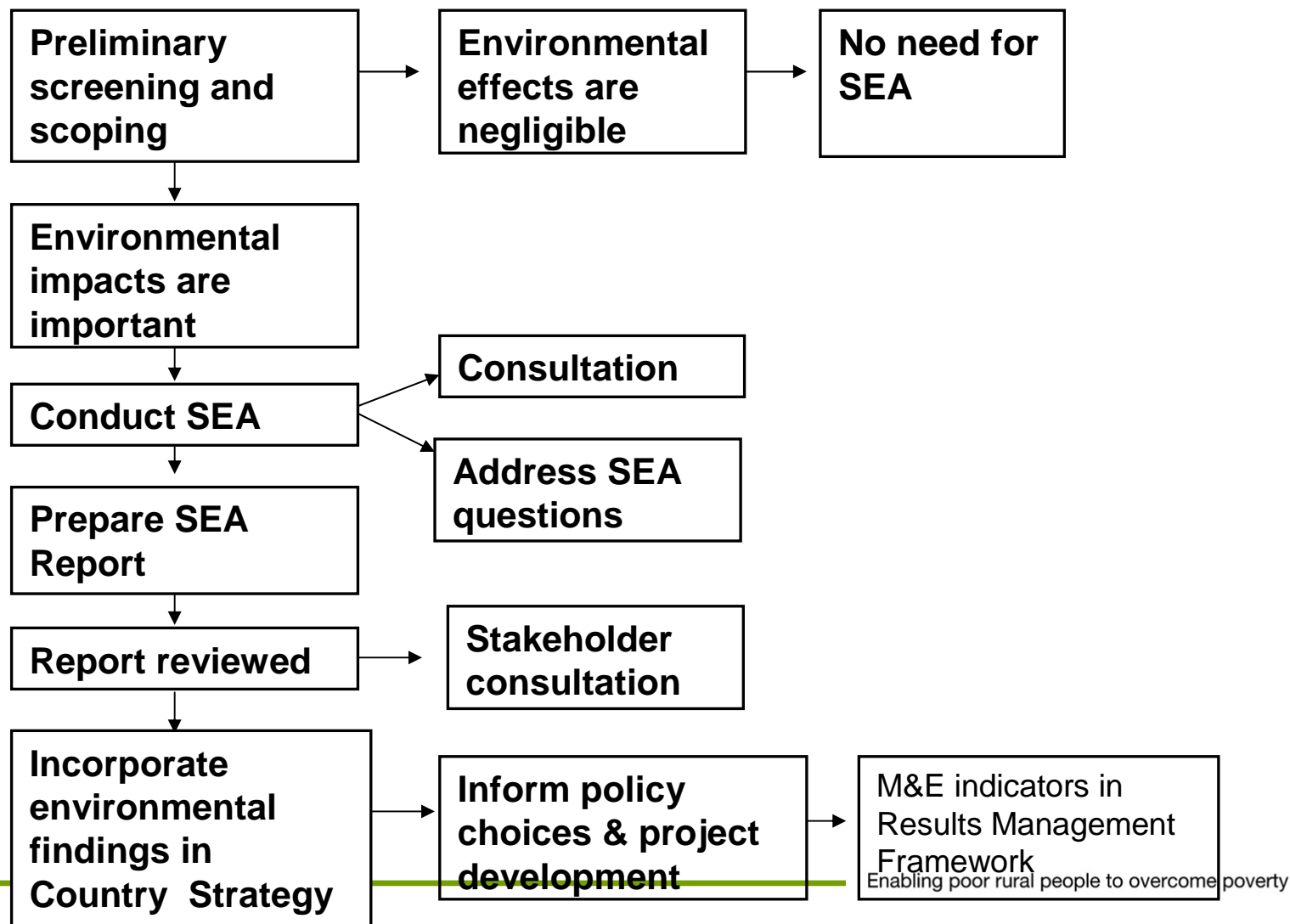
- Greater use of existing in-house skills and people
- New organisational structure with increased dedicated expertise on climate and environment
- Demonstrating environmental awareness internally.

Environmental and Social Procedures



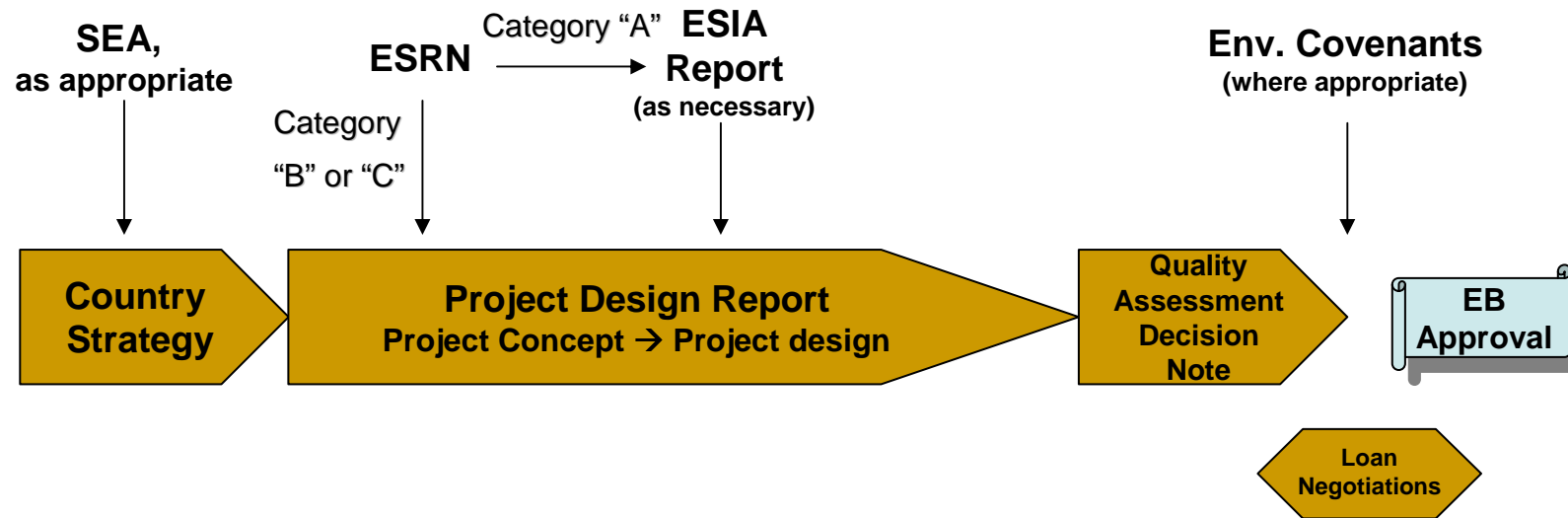
- 2009 updated procedures
- Earmarked funding
- ENRM review

Strategic Environmental Assessment (SEA) in Country Strategy



• Source: adapted from CIDA (2004)

IFAD's Quality Enhancement (QE) process

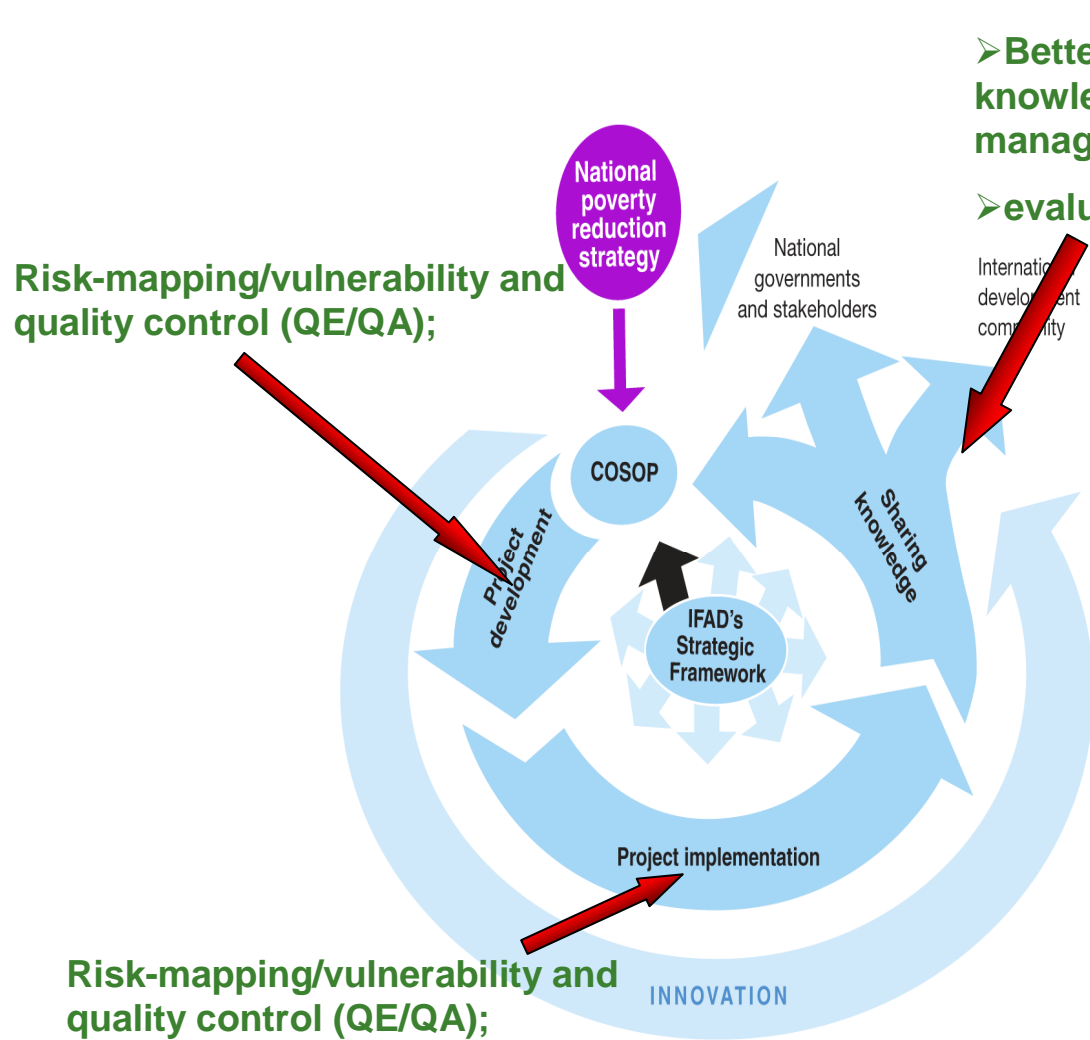


SEA = Strategic Environmental Assessment

ESRN = Environment and Social Review Note

ESIA = Environment and Social Impact Assessment

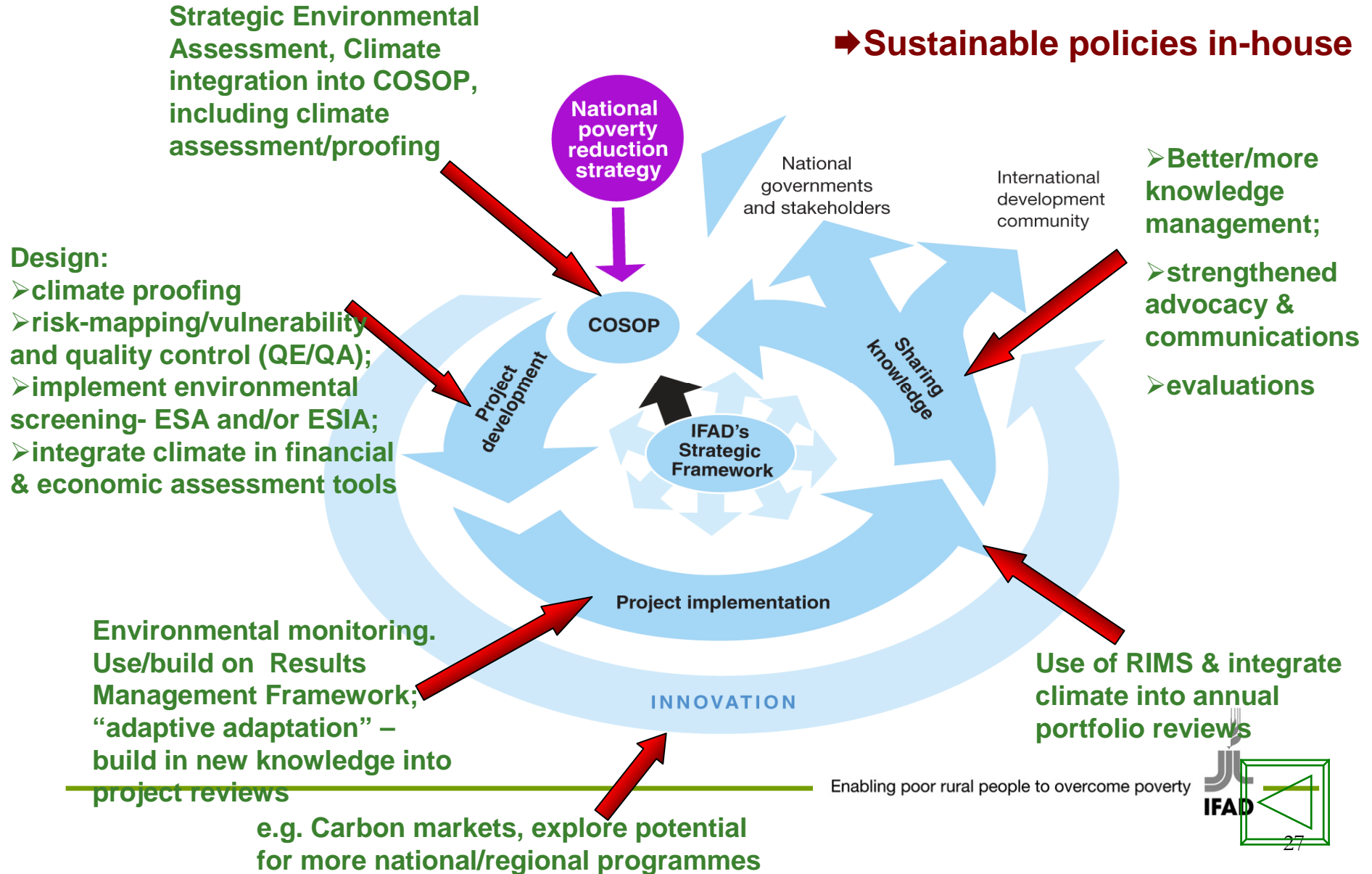
Wider quality improvements



Key Success Factors domains

- Country relevance, commitment and partnerships
- Targeting, gender and participation
- **Best practices and lessons learnt within the context of IFAD's Strategic Framework**
- Institutional aspects and implementation arrangements
- **Risks and sustainability**
- Innovation, learning and knowledge management

Integration into IFAD Operating Model



And vice-versa – climate negotiations

Size of Global Emission Reductions: poverty becoming part of case for action, although food security weak part of narrative

Framework for Adaptation: recognition of role of agriculture



Mitigation Rules: still unclear. Good technical work to enable sector engagement in CDM and NAMAs, but held back by wider challenges

Financing the deal: major potential for agriculture if there is ground coherence reflected up through financing system, and cobenefits rewarded

3. Need a clear message on sustainable agriculture

- Delivers environment, food security and poverty objectives – co-benefits not widely appreciated
- A new paradigm? Analogy with energy: GM=nuclear, organics=renewables... polarized debate
- Do we have the evidence base on the potential for scale-up?
- Another analogy – with trade liberalisation: should not make sustainable agriculture investments contingent on global carbon markets

- Agroecological approaches to agricultural development - Jules Pretty (2006)
- Sustainable Crop Intensification – FAO 2009
- "Doubly green" revolution - Gordon Conway (1999)
- Dynamic integrated agricultural production - Agricultural Technology for Development” Report of the Secretary General; UN General Assembly, August 2009
- Ecologically efficient agricultural intensification – European Commission
- Ecologically intensive agriculture - CIRAD
- Evergreen revolution - Dr M.S. Swaminathan, 1999
- Low external input technology (LEIT) agriculture – ODI 2006
- Multifunctional agriculture - International Assessment of Agricultural Knowledge Science and Technology (2008)
- Sustainable agriculture - Sustainable Agriculture Initiative
- Sustainable agricultural intensification - Godfray et al, 2010; Royal Society, 2009; Conway and Waage, 2010)

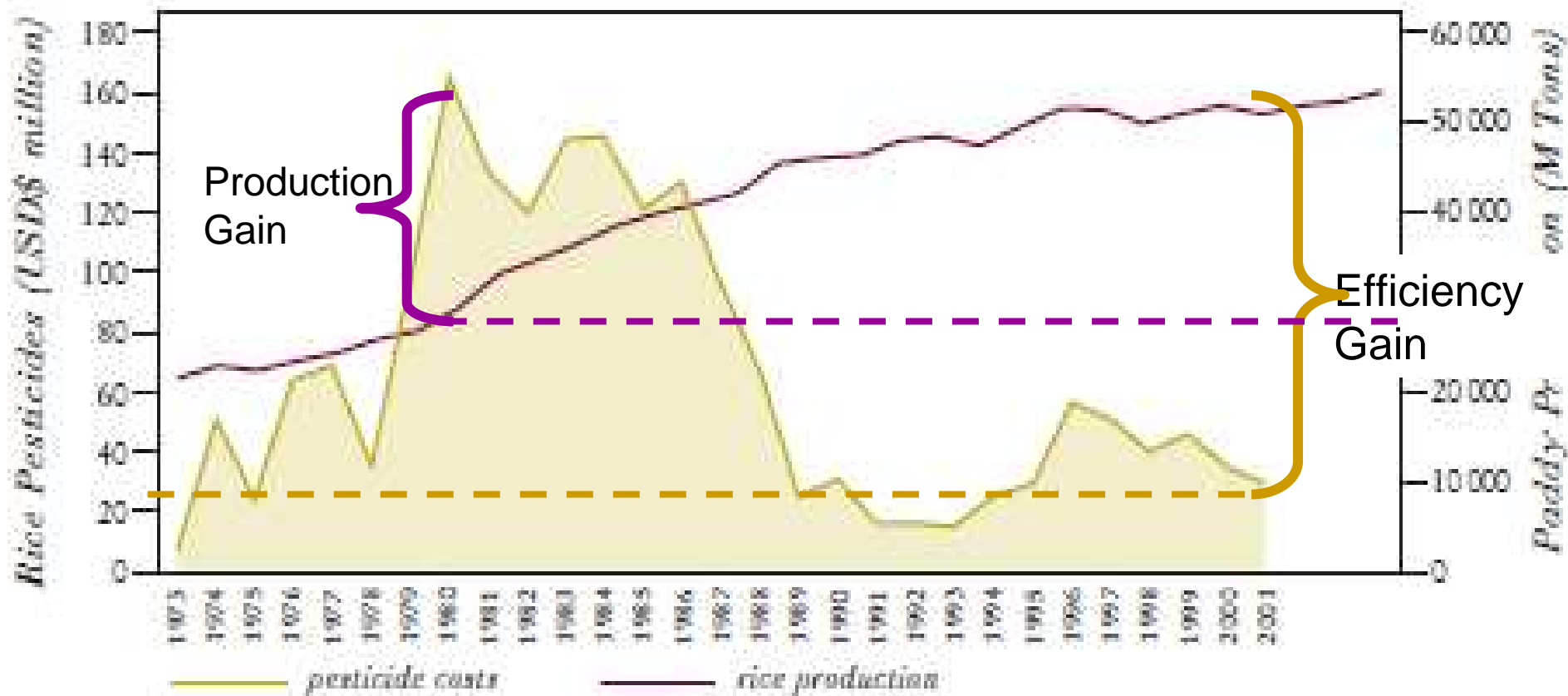
Many new (and old) approaches...

- ❑ Conservation Agriculture
- ❑ Integrated Pest Management IPM
- ❑ Integrated Plant Nutrient Management IPNM
- ❑ Better integration of crop and livestock systems
- ❑ Better agriculture water management.
- ❑ Watershed management – landscape management.
- ❑ Organic agriculture
- ❑ Fisheries management
- ❑ Rangeland management
- ❑ More broadly – integrated food energy systems (IFES)
- ❑ Etc

....knowledge and often technology-intensive

Examples: Integrated Pest Management

INDONESIA: RICE PRODUCTION VS. PESTICIDE COSTS (1973–2001)



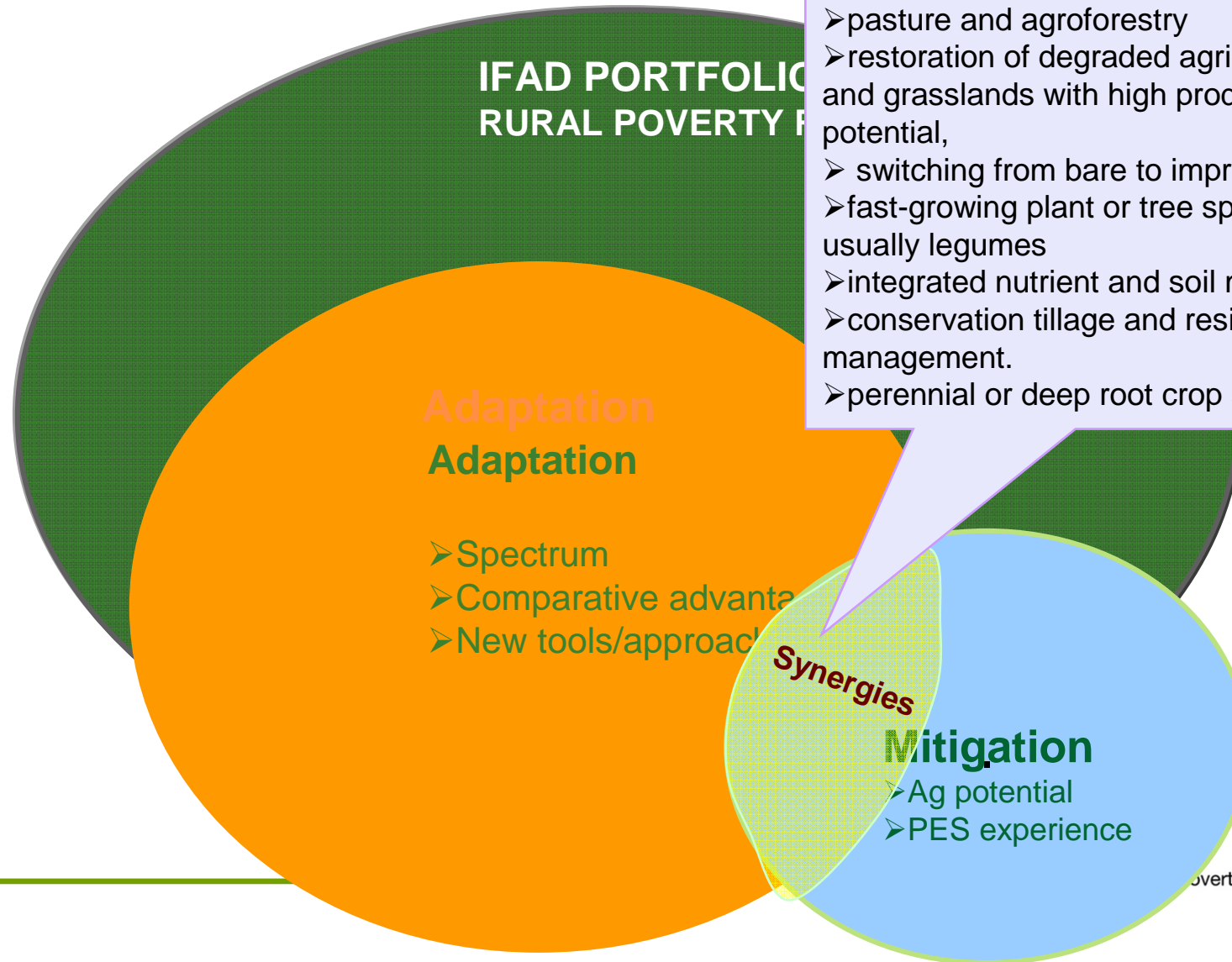
Examples – Innovation and efficiency

Farmers who use Urea Deep Placement (UDP) can increase yields by 25% while using less than 50% as much urea as before.

The effectiveness of UDP technology in Bangladesh was proven through research funded by the International Fund for Agricultural Development (IFAD) and implemented with the assistance of IFDC--An International Center for Soil Fertility and Agricultural Development.

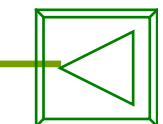


“Multifunctionality” – IFAD’s Climate Strategy



Win-wins...

- pasture and agroforestry
- restoration of degraded agricultural land and grasslands with high production potential,
- switching from bare to improved fallows
- fast-growing plant or tree species — usually legumes
- integrated nutrient and soil management,
- conservation tillage and residue management.
- perennial or deep root crop systems



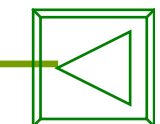
Agriculture and land use mitigation in agriculture: What Physical Potential?

- Crop management
- Rangelands and pasture management
- Livestock management
- Restoration of degraded
- Coastal management and fisheries
- Bio-energy

• **Conservation Agriculture - Switching to "no-tillage" or "low-tillage" techniques to preserve carbon stored in soil;**
• **Nutrient management, Tillage and residue management, rice management, peaty soils, agro-forestry, set-aside, land cover change, water management etc.**

Bio-energy (crop residue, cellulosic crops (e.g., switchgrass, sugarcane etc); Biofuel, biogas etc.

**on in
ons and
and
biofuel**



Synergies and tradeoffs between food security and climate change mitigation

Food Security Potential

<p>Food Security Potential : High Carbon Mitigation Potential: Low</p> <ul style="list-style-type: none"> •Expand crop onto marginal lands •Expand high energy -intensive irrigation 	<p>Food Security Potential : High Carbon Mitigation Potential: High</p> <ul style="list-style-type: none"> •Restore degraded land •Expand low energy-intensive irrigation •Soil & water conservation structures/techniques •Agro-forestry options that increase food or incomes
<p>Food Security Potential : Low Carbon Mitigation Potential: Low</p> <ul style="list-style-type: none"> • Bare fallow • Continuous cropping without use of nutrients • Over-grazing 	<p>Food Security Potential : Low Carbon Mitigation Potential: High</p> <ul style="list-style-type: none"> •Reforestation/afforestation •Restore organic soils •Agro-forestry options with limited food or income benefits

Carbon Mitigation Potential

Source: Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies, FAO 2009

Enabling poor rural people to overcome poverty



Summary

- Costs of lack of integration of agendas is accelerating in developing countries
- Have made some progress to systematic integration, but not there yet
- Need a clear message on sustainable agriculture: uniquely poised to deliver environment, food security and poverty objectives