

Effects of Localized Anthropogenic Stress and
Compounding Impacts of Climate Change on
the Sustainability of Coral Reef Ecosystems
and the Implications for Management

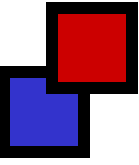


Process Background for the Bleaching
Working Group
Oct. 9, 2002



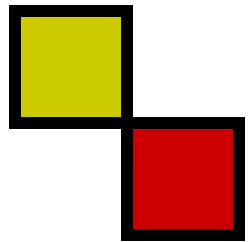
Goal: to fill key information gaps in our fundamental understanding of coral reef ecosystem sustainability

Objectives:

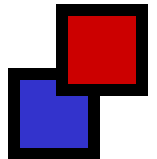
- **to test specific hypotheses related to major human and natural factors affecting coral reef vulnerability and resilience**
 - **to build capacity in developing countries with coral reefs**
- 



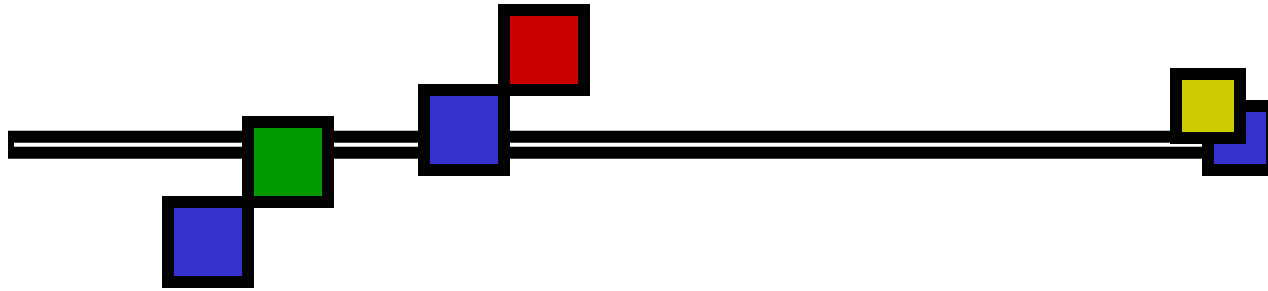
GEF has four focal areas...



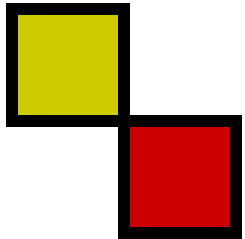
- Climate Change
- Montreal Protocol
- Biodiversity
- International Waters



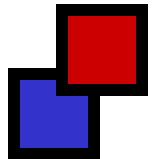
To qualify, the developing countries have to be signatories to various international conventions and treaties

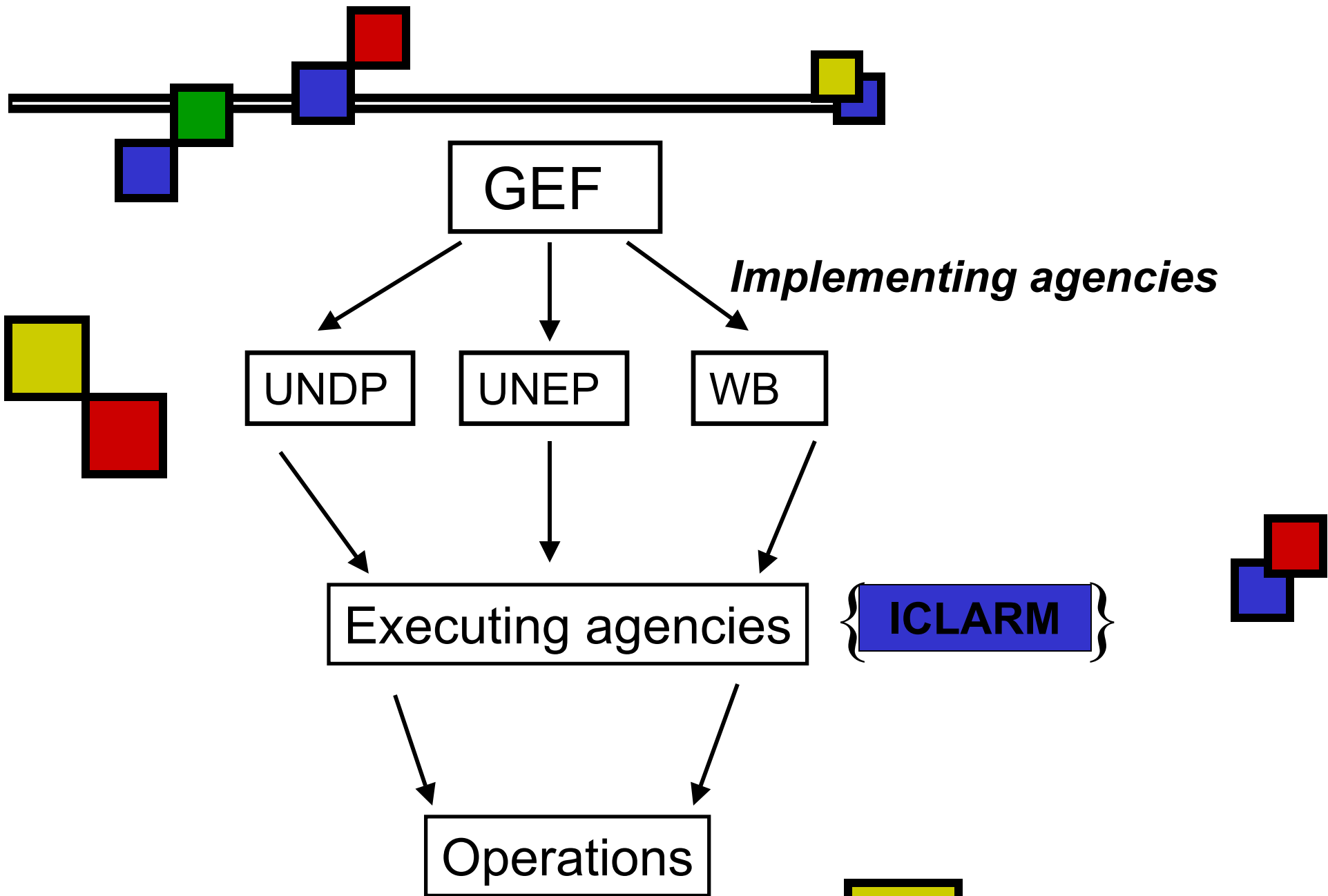


Targeted Research in GEF Context



- Definition: Applied investigations that fill information gaps related to environmental management and implementation of GEF operational programs.





Why is the World Bank Interested?

Project / Program/ Activity	World Bank Region	Fiscal Year of Project Start-up	Project Status	Project Amount (USD millions)
Egypt, Private Sector Tourism and Environmental Management Project	MNA	1993	Active	5.00
OECS Countries (Caribbean) Ship Waste Management	Latin America/ Caribbean (LAC)	1995	Active	12.5
OECS Countries (Caribbean) Waste Management (Coastal)	LAC	1995	Active	50.5
Gulf of Aqaba Environmental Action Plan	MNA	1996	Active	2.70
Madagascar, Second Environment Program Support Project	Africa	1997	Active	6.60
Mozambique – Marine and Coastal Biodiversity Management Project	Africa	2001	Active	5.00
Indonesia - Coral Reef Monitoring and Rehabilitation Program (COREMAP)	EAP	1998	Active	33.1
Indonesia: COREMAP, Phase II	EAP	2002	Preparation	27.0
Indian Ocean Commission - Coral Reef Monitoring GEF Medium-Sized Project	Africa	2000	Active	1..36
World Bank/Netherlands Partnership - Western Indian Ocean Bleaching: CORDIO (Regional)	Africa	1999	Active	0..35
MesoAmerican Barrier Reef System Initiative (Regional)	LAC	2001	Active	24.2
Strategic Action Programme for the Red Sea and Gulf of Aden (Regional)	AFR/MNA	1999	Active	19.50
Seychelles – Marine Ecosystem Management Project	Africa	1999	Active	1.40
Philippines –Mindanao MPA Management	EAP	1999	Active	2.50
Viet Nam – Han Mun MPA (with IUCN and Danida)	EAP	2001	Active	2.00
Samoa - Marine Biodiversity Protection and Management	EAP	1999	Active	1.61
Colombia - Conservation and Sustainable use of the Serrania del Baudo	LCR	2000	Active	0.75
Marine Electronic Highway	EAP (Regional)	2003	Preparation	6.00
Caribbean Planning for Adaptation to Climate Change (Phase 1)	LAC Regional	1997	Active	6..5
MACC - Caribbean Regional: Mainstreaming Adaptation to Climate Change (Phase 2)	LAC (Regional)	2002	Preparation	5.00
Indonesia Bali Marine Conservation Center	East Asia-Pacific	1999	Preparation	3.75
Bay of Bengal - Large Marine Ecosystem	South Asia	2002	Preparation	12.00
Indonesia - Komodo Tourism	EAP	2002	Preparation	5.00
Philippines - Palawan	IFC (Regional)	2002	Preparation	6.00
Colombia – San Andres - CORALINA	LAC	1999	Preparation	1.00
Western Indian Ocean Fisheries	AFR (Regional)	2004	Preparation	5.00
TOTAL				246.32



THE WORLD BANK

Bank's sectoral
and operational
policies

Policy dialogue

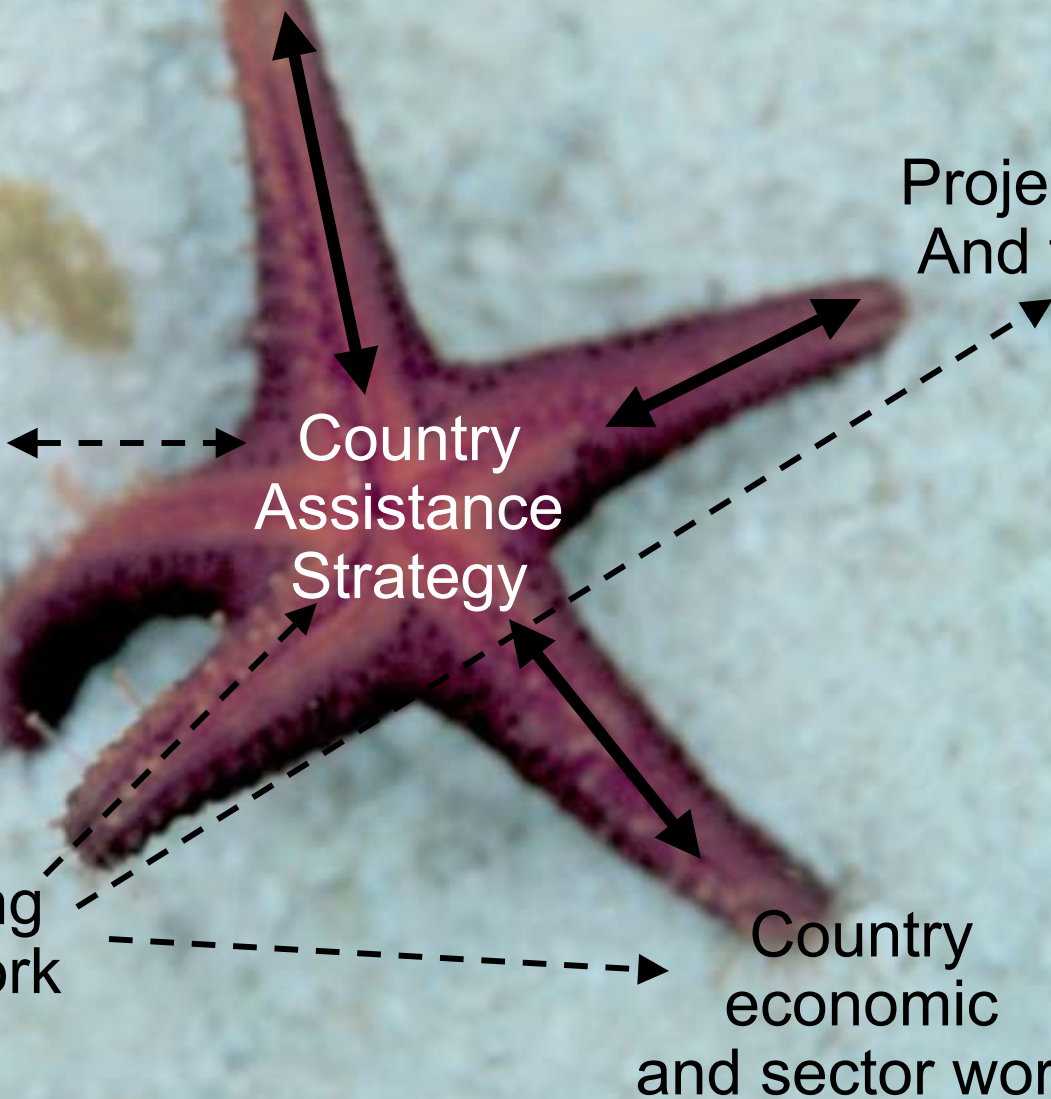
Project design
And financing

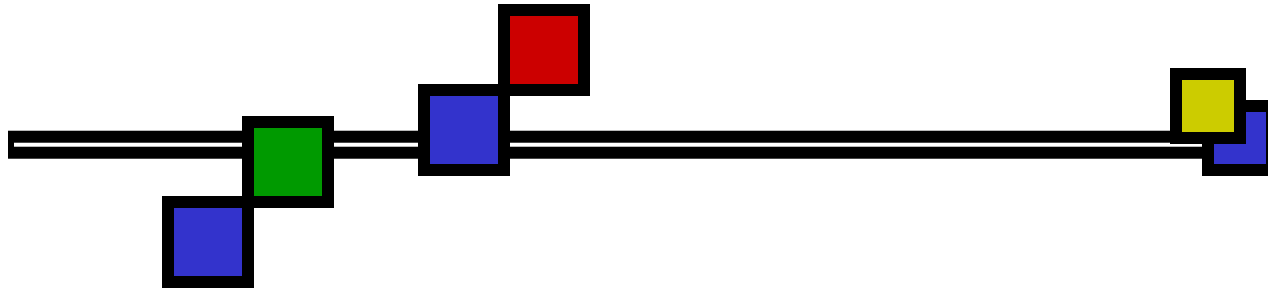
Country
Assistance
Strategy



Supporting
Analytical work

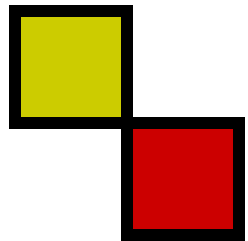
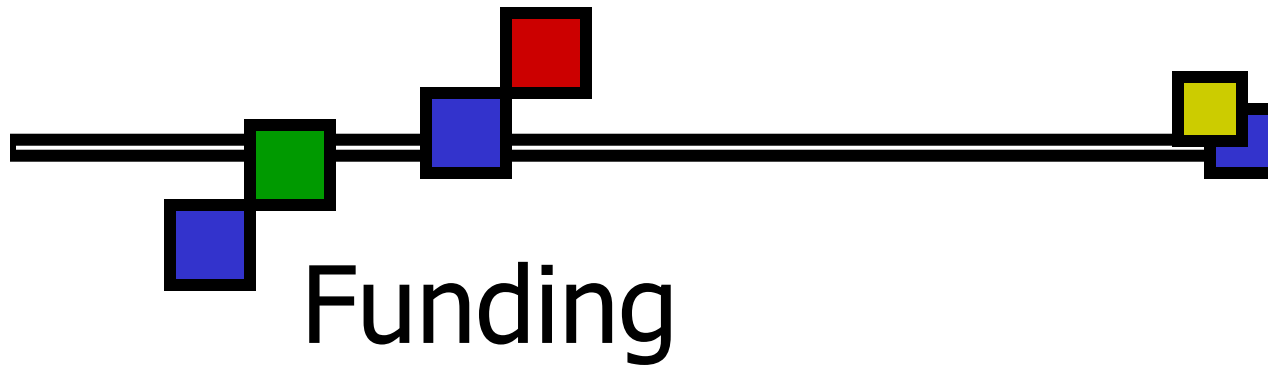
Country
economic
and sector work



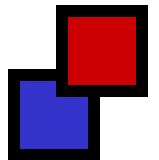


Long-Term, Collaborative Effort

- GEF funding is being sought to support the first phase of this effort, which is anticipated as part of a long-term program of 10- 15 years.
- The proposed Project will seek to expand its network of financing partners during preparation and implementation of Phase 1 (first five years).

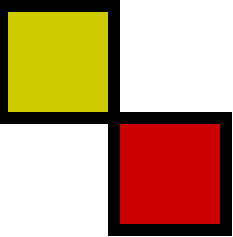
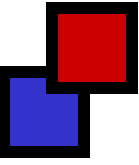


- Current Estimated Project Cost ~\$16 million
- Proposal to GEF for \$8 million
- GEF Funding requires 1:1 match
- Need for partnerships to increase resources and sustainability
- Need to link research w/capacity building





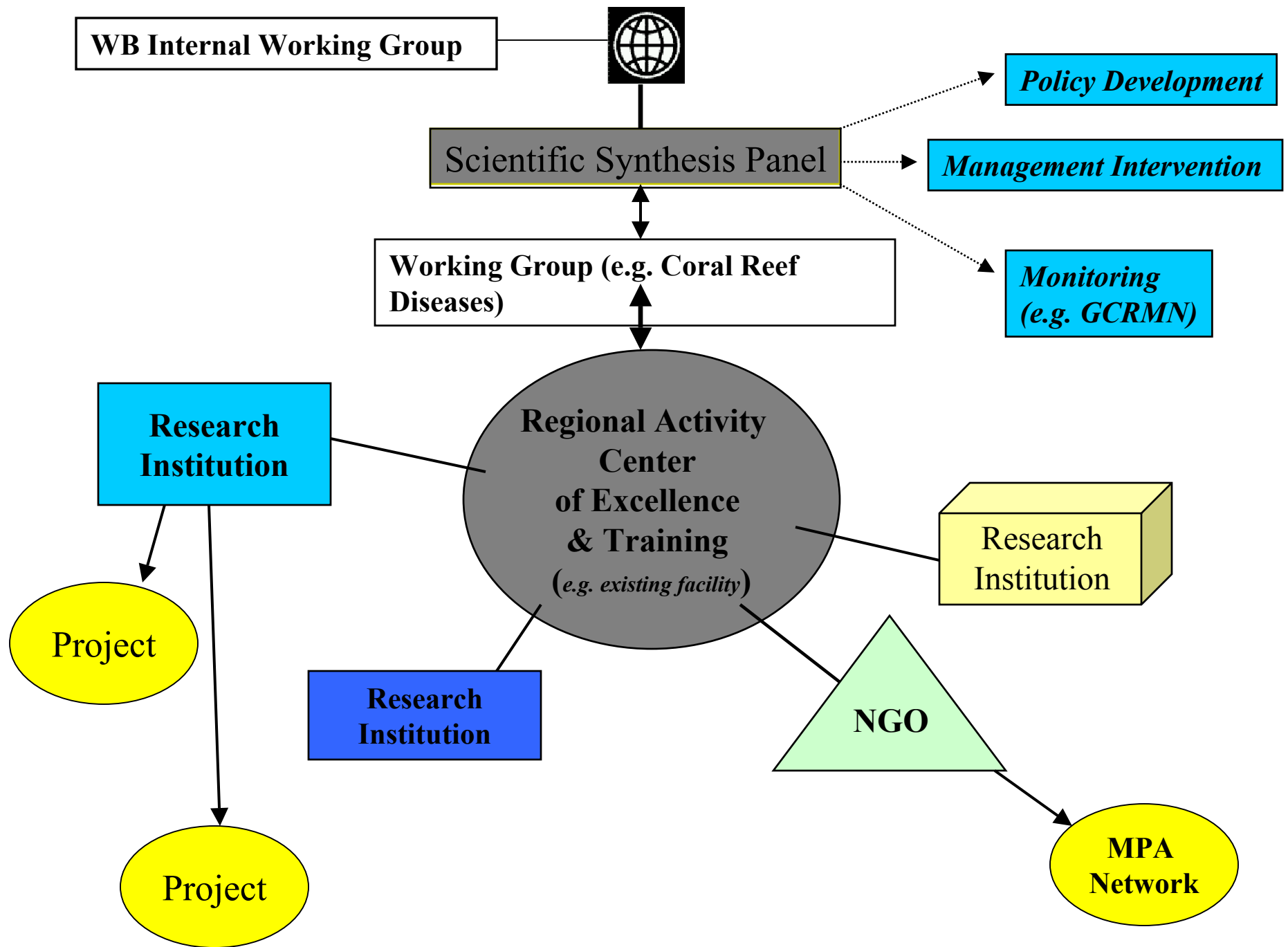
Capacity Building

- 
- **What is capacity?** Capacity is the ability of individuals, groups, organizations and institutions to address and manage environmental problems as part of efforts to achieve sustainable development.
 - **Aim of capacity building:** To build capacity, where none exists, and develop, strengthen, enhance, improve and retain the capabilities of countries to achieve the objectives of global environmental management, especially in the context of the conventions to which they are parties.
- 



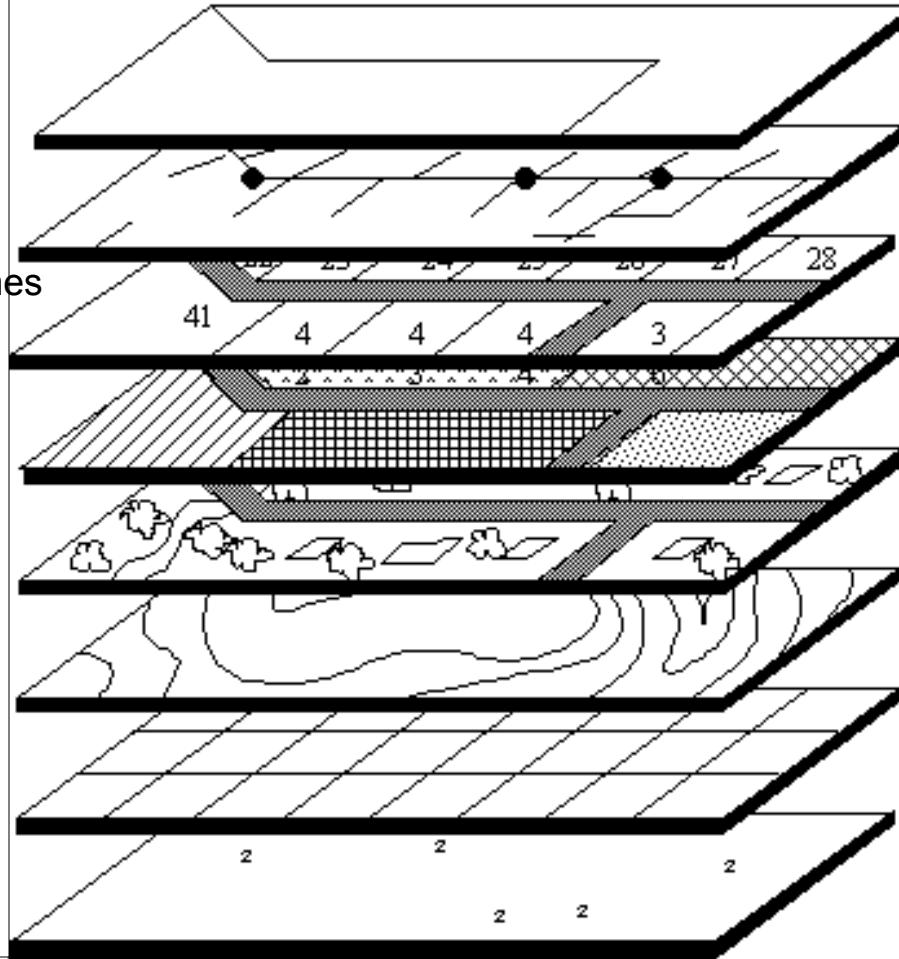
Common capacity issues:

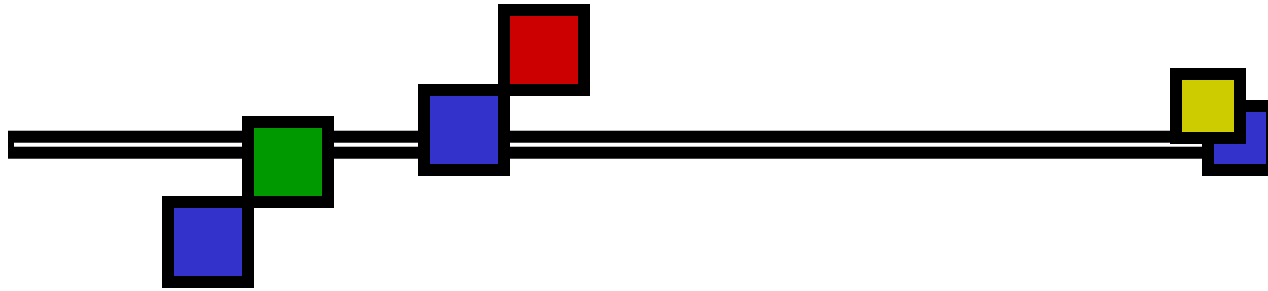
1. Low levels of awareness and knowledge limit ability for discussion, decision-making and action.
2. Lack of information management, monitoring and observations hampers policy and decision-making.
3. Science and technology are ineffectively mobilized in support of policy and decision-making.
4. Cooperation and networking within regions is often lacking.
5. Financial resources and technology are lacking or inadequate.



Working Group Collaboration

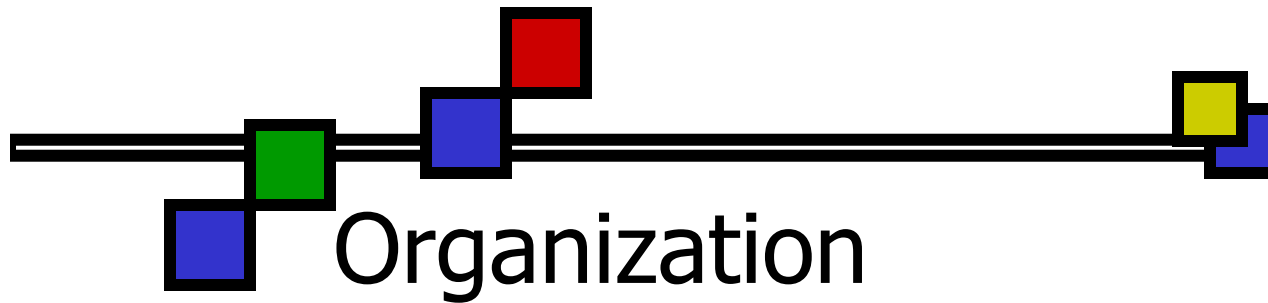
- Connectivity
- Impacts & Trends
- Inter-Regional Distributions, Zones & Comparisons
- Local Ecological Dist., Responses
- Community Structure
- Individual samples





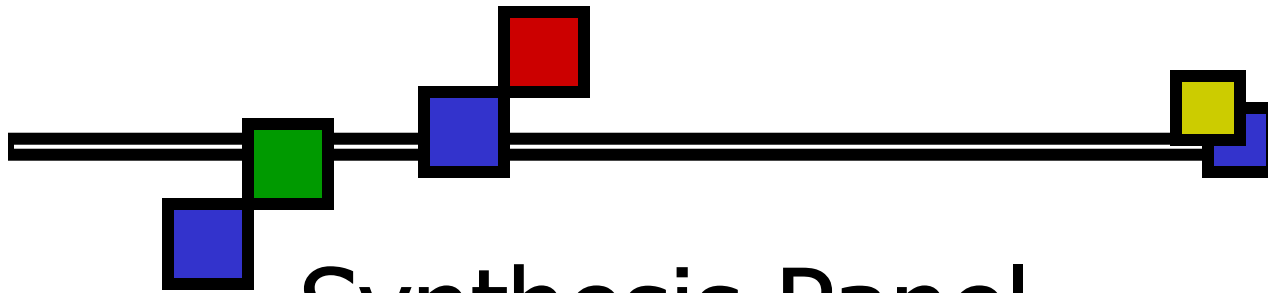
Where are we now?

- Project Preparation
 - PDF Block B (\$350K from GEF)
 - \$350K additional co-financing in cash and in kind from partners
 - ICLARM executing agency for preparation phase
 - 1 year to put proposal together
 - Submit to GEF Council in July 2003



- Six International Working Groups

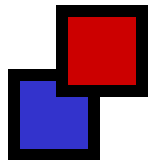
- Coral Diseases (Chair: Drew Harvell, USA)
- Coral bleaching (Chair: Hoegh-Guldberg, Australia) in partnership with UNESCO/IOC)
- Remote sensing (Chair: Peter Mumby, UK)
- Large Scale Ecological Processes & Reef connectivity (Chair: Peter Sale, USA)
- Modelling & Decision Support (Chair: John McManus, USA)
- Reef Restoration and Remediation (Loke Ming Chou University of Singapore)



Synthesis Panel

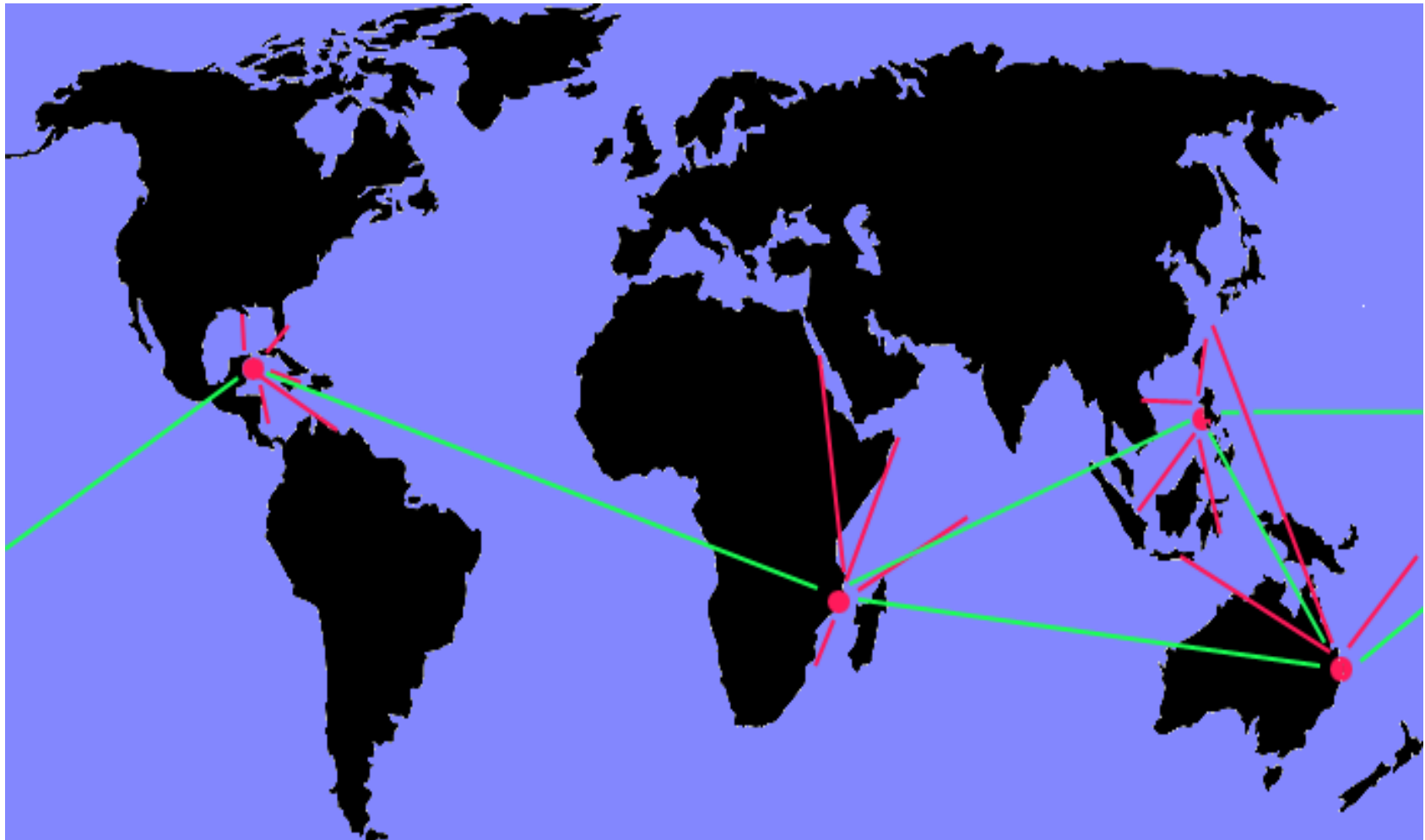
To guide the research, synthesize information and interpret it for policy and decision-makers.

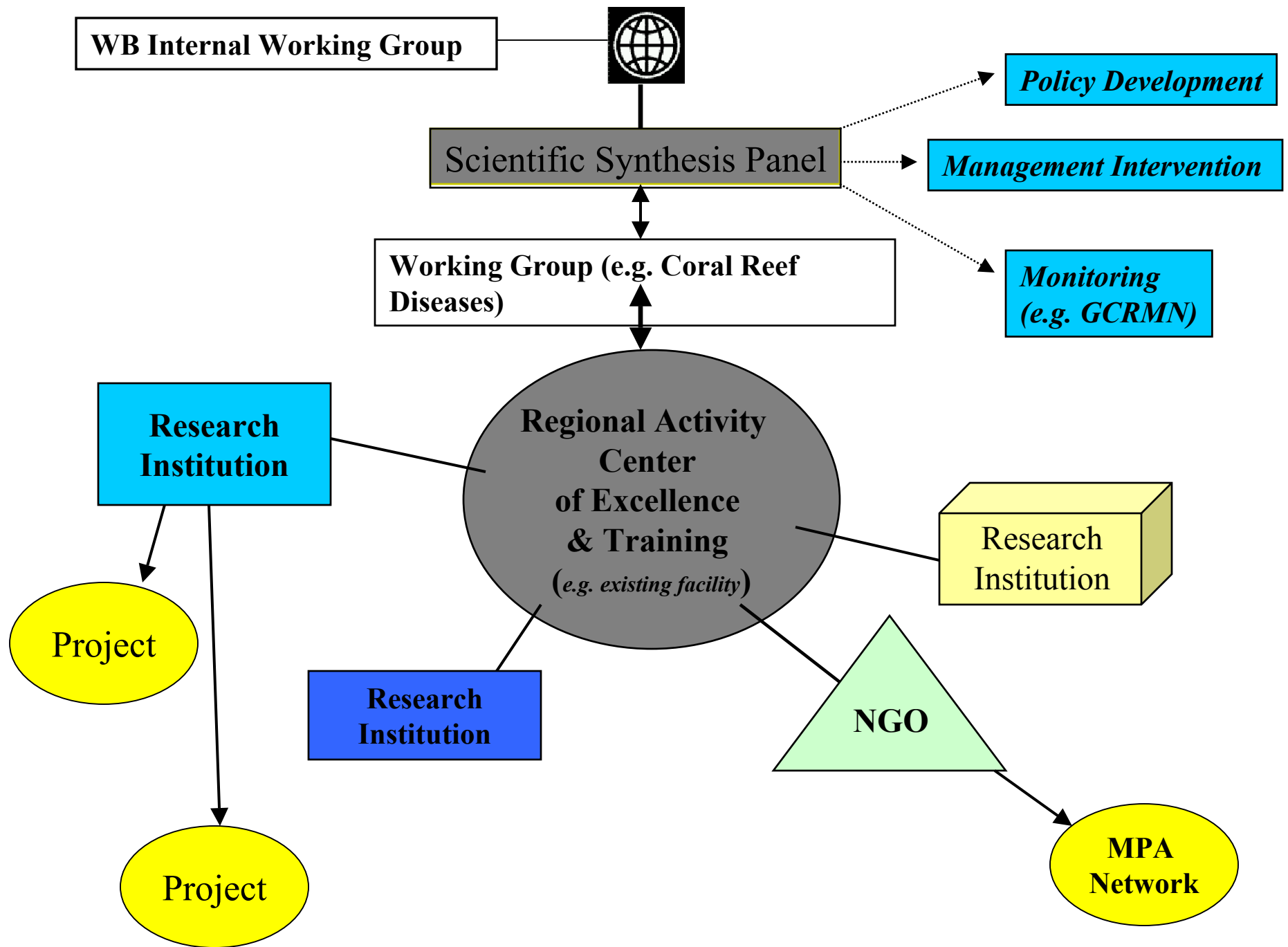
- Nancy Knowlton (U.S.A) Chair
- Robert Watson (IPCC)
- John Dixon (**Resource Economist, World Bank**)
- Angel Alcala, Silliman University
- 6 Working Group Chairs



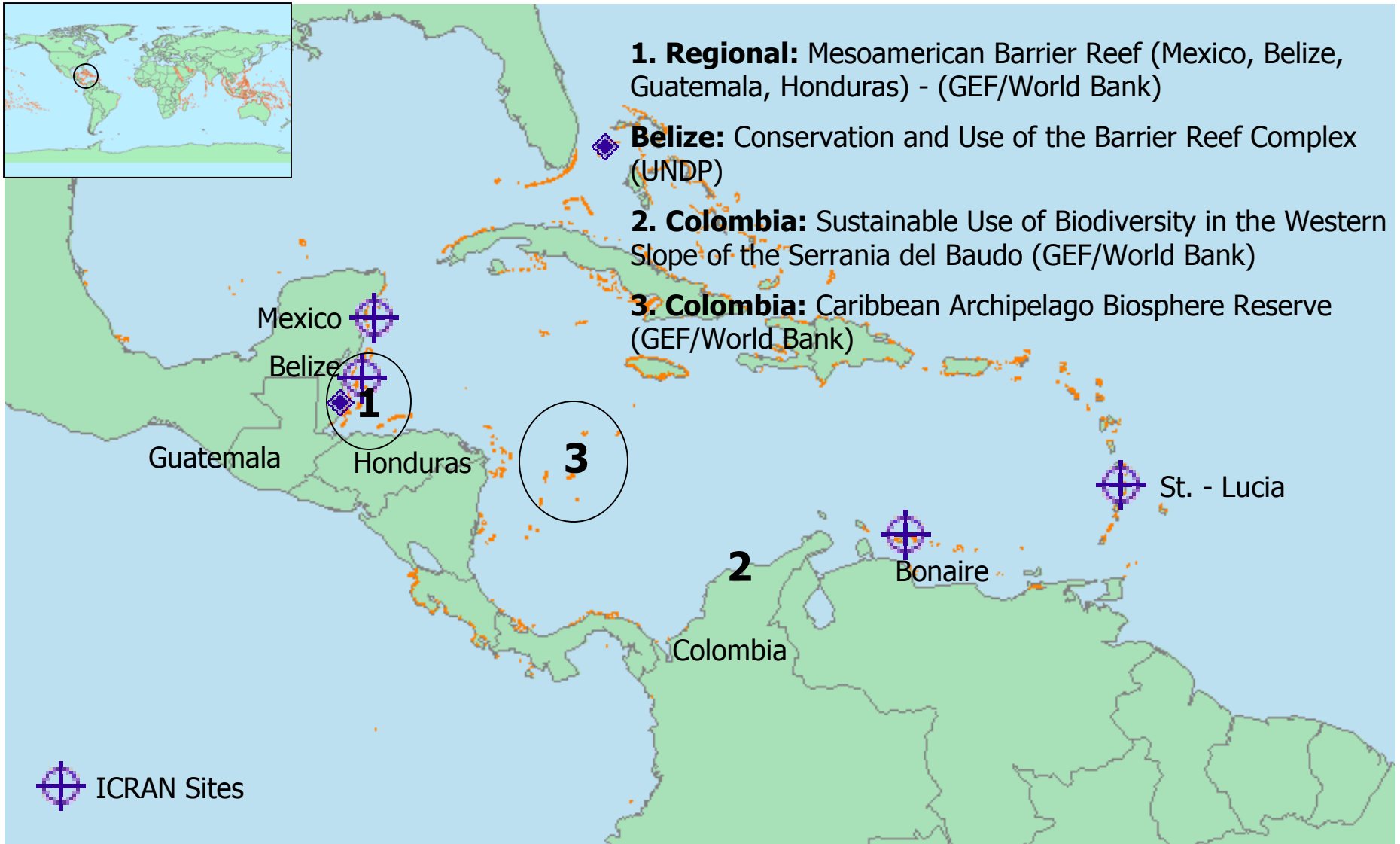
Concept: Four Nodes

Satellite sites to extend capacity/outreach

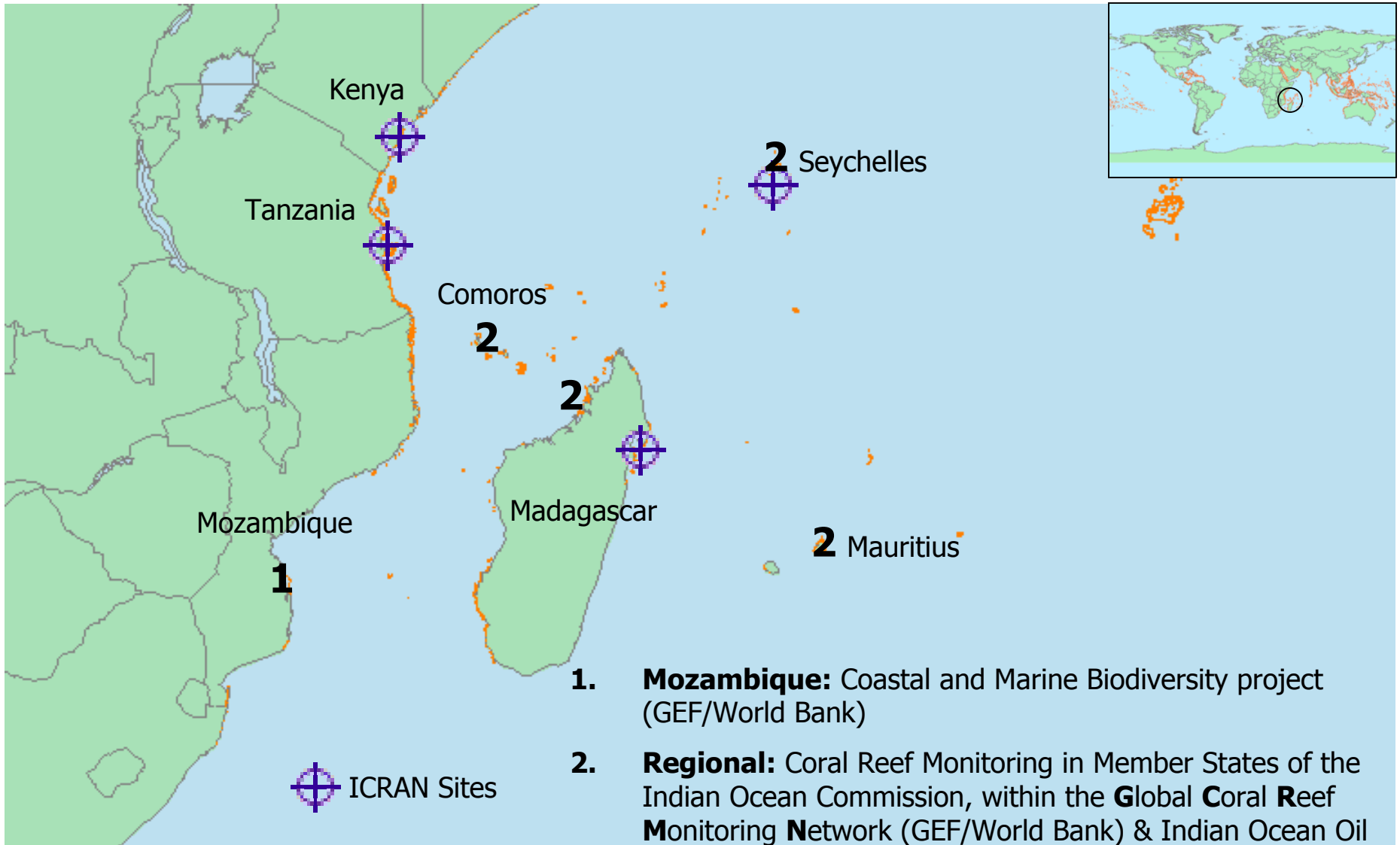




Central America



East Africa and Southern Indian Ocean

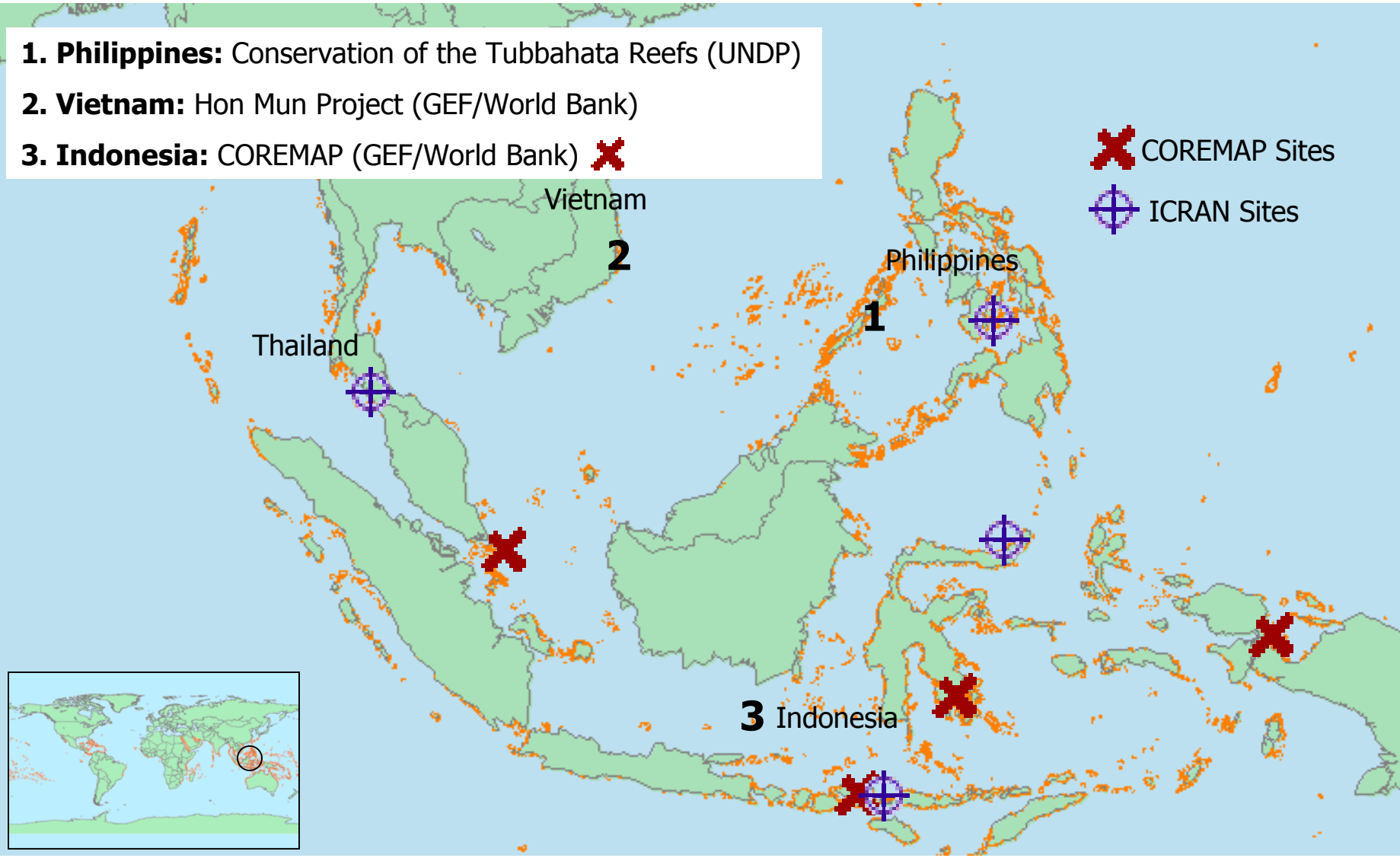


1. **Mozambique:** Coastal and Marine Biodiversity project (GEF/World Bank)
2. **Regional:** Coral Reef Monitoring in Member States of the Indian Ocean Commission, within the **Global Coral Reef Monitoring Network** (GEF/World Bank) & Indian Ocean Oil Spill Contingency Planning Project

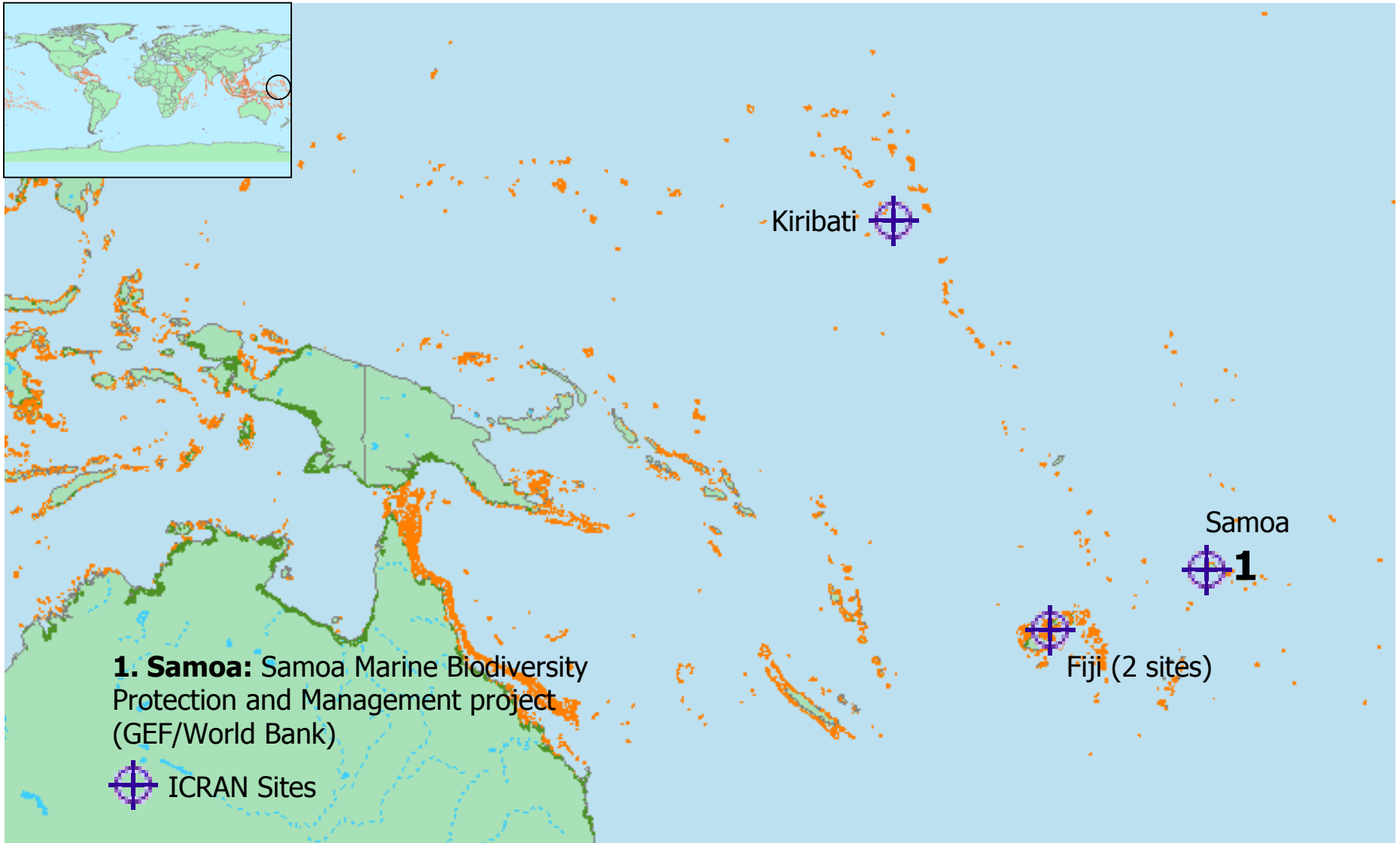
Southeast Asian

- 1. **Philippines:** Conservation of the Tubbahata Reefs (UNDP)
- 2. **Vietnam:** Hon Mun Project (GEF/World Bank)
- 3. **Indonesia:** COREMAP (GEF/World Bank) ✖

✖ COREMAP Sites
⊕ ICRAN Sites

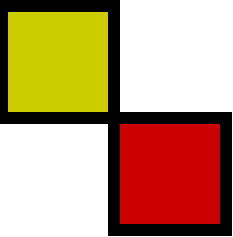
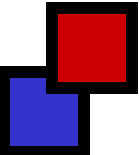


Southwest Pacific



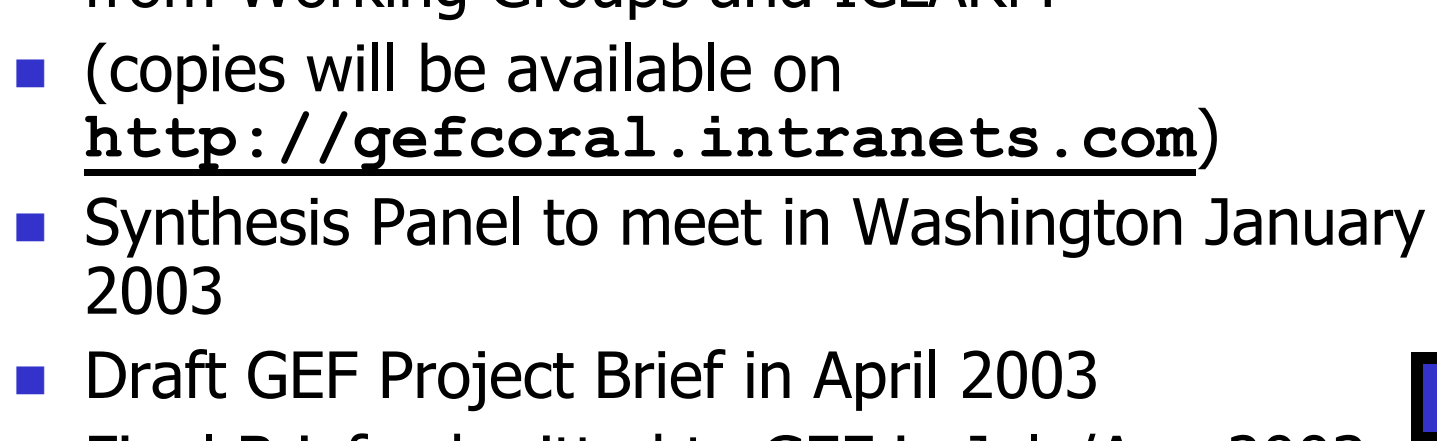


Progress so far...

- 
- 5 of 6 WG have already met (last one in early Sept at RSMAS: "Connectivity" - Large Scale Ecological Processes)
 - Idea is to meet at least twice before finalizing concept and experimental design
 - Remote Sensing WG to meet in Seattle in October (3rd meeting)
 - Restoration & Remediation WG early Oct.
 - Bleaching and Remote Sensing have met the most to date, with joint meetings held in Heron Island (Feb-Mar 2002) and a paper published..
- 



Next Steps

- Agreement on Objectives, Sites, Experimental Designs
 - Draft Project Concept Document with inputs from Working Groups and ICLARM
 - (copies will be available on <http://gefcoral.intranets.com>)
 - Synthesis Panel to meet in Washington January 2003
 - Draft GEF Project Brief in April 2003
 - Final Brief submitted to GEF in July/Aug 2003 for October Council Meeting & Work Program
 - January--March 2004: finalization of Bank Project Document, appraisal and submission to GEF and Bank Board of Directors
- 

Block B Timing ...

E.g. Review issues, state-of-the science, Working Group issues and possible collaborations; define priorities.

Synthesis Panel Meeting
(May, 2002)

Working Group s
Convene/Reconvene

Review issues, state-of-the science, define priorities.

Other Working Group s' & Panel's Input

Develop/Refine Approaches

Begin Proposal Outlines (through the Internet)

Define **Field Networks**; developing Country endorsements.

Formalize Links to Sites and to other WG's

This to include proposal coordination or joint participation in pilot sites/activities.

Finalize Drafts and Targeted Priorities. Report on Co-financing.

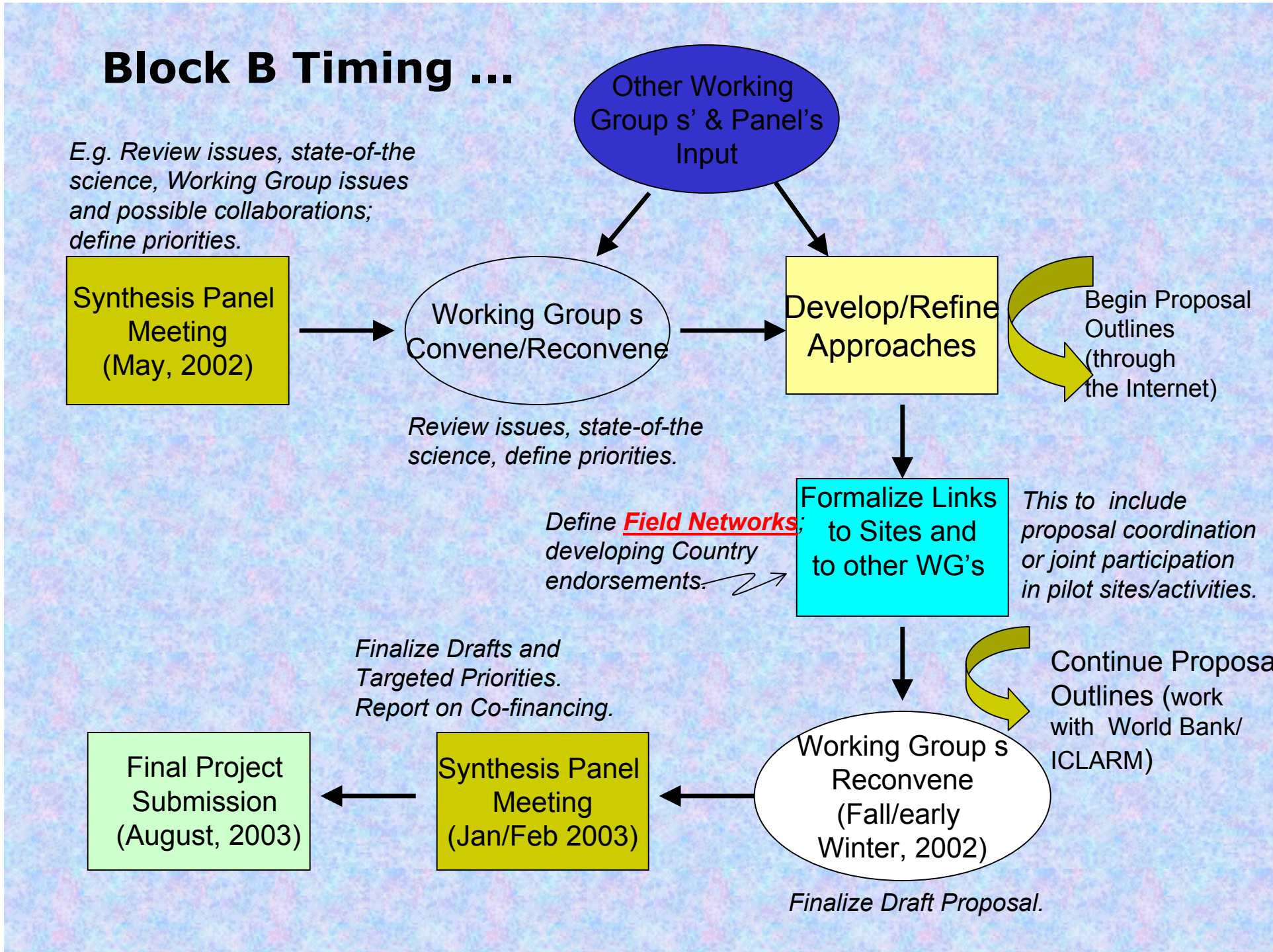
Final Project Submission
(August, 2003)

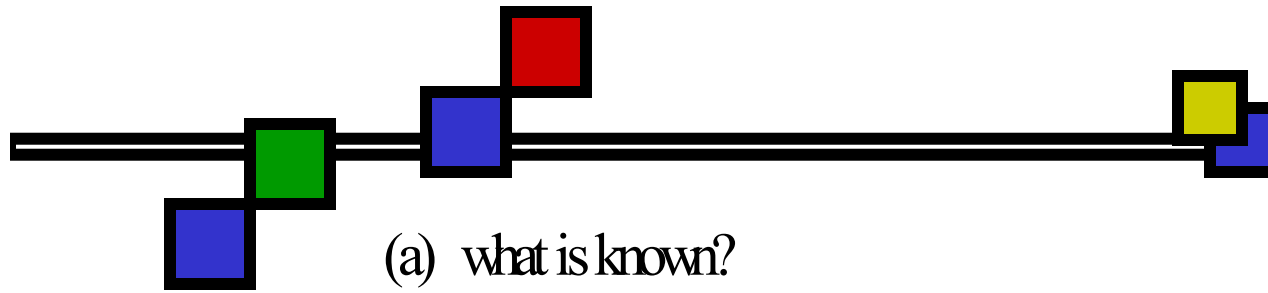
Synthesis Panel Meeting
(Jan/Feb 2003)

Working Group s Reconvene
(Fall/early Winter, 2002)

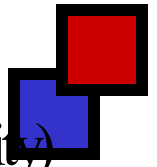
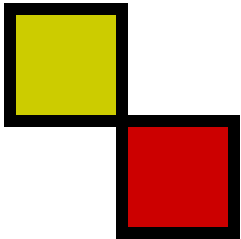
Continue Proposal Outlines (work with World Bank/ ICLARM)

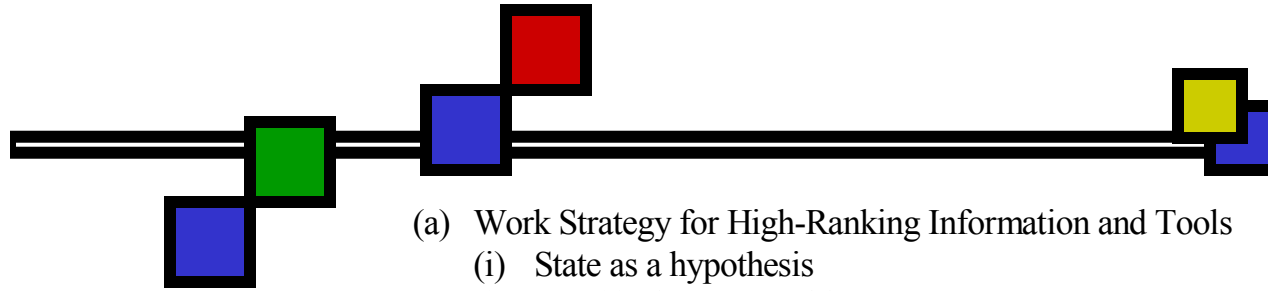
Finalize Draft Proposal.





- (a) what is known?
- (b) what is unknown? – GAPS
- (c) Rank unknowns
 - (i) urgency
 - (ii) importance
 - (iii) synergy
 - (iv) Time and money feasibility
 - 1. co-funding (ideas directed to National funding)
 - 2. scope of problem/cost-effectiveness of funded activities
 - a. cost of tool adoption (implementation, transfer and sustainability)
 - i. special pool for important, yet expensive projects
- (v) Timeline of delivery: Short, Medium and Long Term Outcomes
 - 1. 5-Year Products
 - 2. 15-year Products





- (a) Work Strategy for High-Ranking Information and Tools
 - (i) State as a hypothesis
 - (ii) Specify the measurable outcomes
 - (iii) Quality Control/Standardization across sites
 - 1. i.e. Standard Operating Procedures as a product
- (b) Approximate, initial budget, personnel and timelines
- (c) Institutional Arrangements
 - 1. Executing Institutions (mechanics of node connections)
 - a. central node
 - b. regional sub-nodes / training institute, or center of excellence
 - i. developing countries: Mexico, Zanzibar, Philippines
 - ii. developed countries (co-funding): Australia, US, UK(?)
- (d) Specify Management Implications
 - 1. if hypothesis accepted, what is a manager going to do with the information/tool?
 - 2. if hypothesis rejected, what are management implications?
- (e) Policy Implications
 - 1. GEF Guidance for Operational Program
 - 2. WB Guidance for Country Assistance Strategies & Projects
 - 3. International Bodies (ICRI, IPCC, GPA, ICRAN)
- (f) How can the work be used in terms of capacity-building?
 - 1. capacity in scientific investigations (local to national)
 - i. for example, linking to other partners who focus on other aspects of capacity-building
 - 2. GEF Operations

