INTERNATIONAL WATERS RESULTS NOTES

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Coral Reef Targeted Research and Capacity Building for Management

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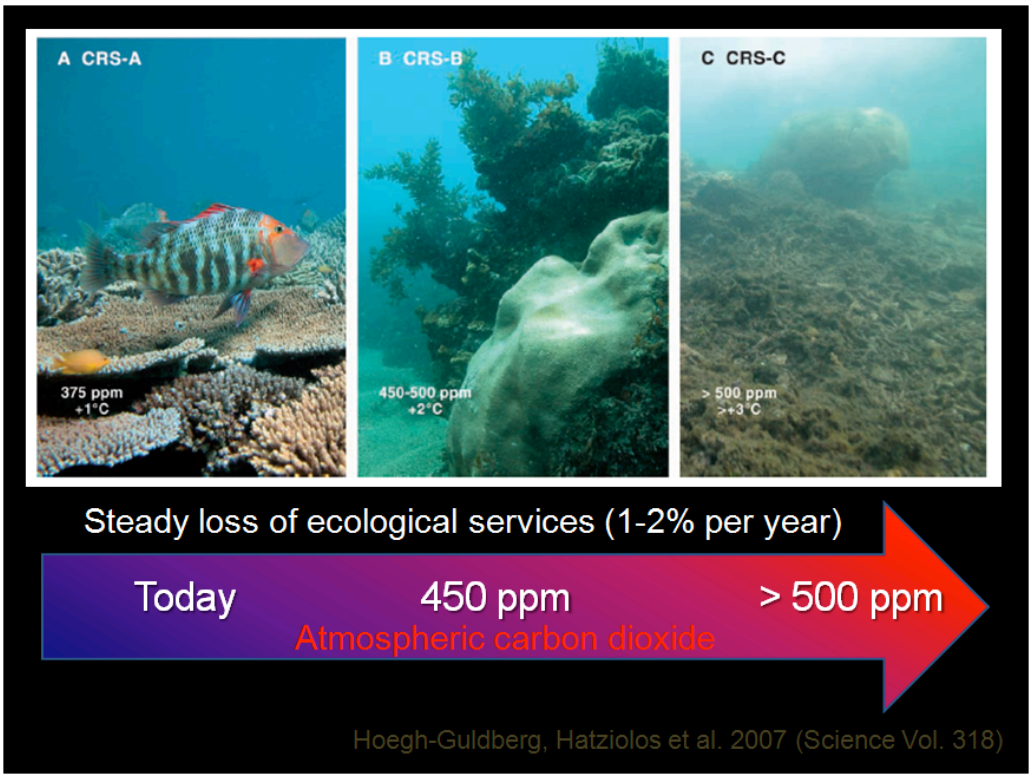

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1. Research carried out by the Project indicates that coral reefs, as we know them, will not likely survive the rapid increases in global temperatures and atmospheric CO_2 that are forecast this century, and coral reefs around the world are still in such serious decline that they put at risk the environmental and economic stability of many coastal nations. The results of the research were published in a 2007 paper in the journal Science; the paper was extremely influential in informing the international debate on ecological tipping points and safe targets for CO_2 concentrations surrounding negotiations for a UNFCCC post-Kyoto Protocol in Copenhagen and beyond. The paper was cited in the scientific literature over 400 times, and in the Bank's WDR 2010 on Climate Change and in UN reports as well as in calls for setting 350 ppm as the target for a safe limit to atmospheric CO_2 concentrations.

2. The Project has created a number of research breakthroughs with the information instrumental in improving management strategies for coral reefs to adapt to changes in the environment and developing management priorities that are most appropriate for their future. These include: (i) software for monitoring the health of coral reefs; (ii) methods to detect changes in coastal environments; (iii) application of remote sensing to the management of biodiversity; (iv) the creation of an Ocean Atlas and Global Atlas to manage coral bleaching and disease; (v) models and tools to predict the impact of coastal developments and climate change on coral reefs; (vi) results of reef restoration trials including valuable information on substrates to be used for outplanting, the value of natural versus artificial recruitment, the importance of water velocity, the survival of transplants on natural versus artificial coral, and obstacles to artificial rearing of corals (e.g. fish browsing), and; (vii) the establishment of an important baseline for exploring the major responses of corals to environmental pressures arising from climate change, for example background temperature, light conditions and water current.

3. Key policy or management changes have been made including:
(i) Under the Local Government Initiative, the Project engaged with approximately 13 local governments or municipal councils plus numerous government departments and local stakeholders over four regions. Examples of results include:

Philippines: working with mayors and LGUs in the Philippines to identify cost-effective business practices to relieve pressure on reefs and adopt MPA Enforcement Protocol Guidelines for law enforcement to help enforcers with LGUs discharge their duties and functions more effectively. The project involved six LGUs (Municipality of Bolinao, Municipality of Bani, Municipality of Agno, Municipality of Dasol, Municipality of Burgos and Municipality of Masinloc); three government agencies (Dept of Environment and Natural Resources (Pangasinan), Bureau of Fisheries and Aquatic Resources (Region 1) and Office of the Provincial Agriculturalist (Pangasinan); six local organisations; three media outlets and; four academic institutions. Agreement was made amongst the mayors to collaborate on coastal resource management issues with local executives, policy makers and key stakeholders apprising each other of developments in coastal resource management in their areas.

Mexico: Worked with municipal-level officials, urban development agencies, state urban development and environment agencies and federal agencies for tourism, the environment (with a focus on the national protected areas commission and the environmental enforcement agency, PROFEPA) to influence better decision making for sustainable development and resource use in the region. Developed a basic guidebook of the legal framework for the region and partnered with the Mexican Center for Environmental Law to finalize a general informative publication, and served as a liaison with enforcement agencies at each governance level. Additional tools included sharing information on the legal framework, specific laws and regulations and the on-going findings from the CRTR that could potentially inform regulations and legislative processes related to coral reef impact issues, marine turtle conservation, mangrove protection, and zoning criteria along the coast (i.e. potential impact from golf courses; habitat loss through mangrove destruction; water contamination due to inadequate waste water treatment systems, overuse of coral reefs from aquatic tourism).

(ii) In Mexico, engagement with municipal governments and the tourism industry on the damage to reefs from contaminated groundwater as a result of accelerated coastal development has informed public debate on the limits to tourism growth in the most tourism intensive area of Mexico, and temporarily canceled two-large scale development projects threatening the Puerto Morelos reefs, and;

(iii) in Belize, direct policy and management implications from the Project has provided a compelling report to the Government on the drastic decline of parrotfish and corresponding rise in macroalgae. This has led to a change in the law banning commercial exploitation of herbivores.

PROJECT OBJECTIVE

The Project Development Objective was to align, for the first time, the expertise and resources of the global reef community around key research questions related to the resilience and vulnerability of coral reef ecosystems, to integrate the results, and to disseminate them in formats readily accessible to managers and decision makers. A related objective was to build much-needed capacity for science-based management of coral reefs in developing countries, where the majority of reefs are found.

Component I. Addressing Knowledge and Technology Gaps;
Component II. Promoting Scientific Learning and Capacity Building
Component III. Linking Scientific Knowledge to Management and Policy

KNOWLEDGE MANAGEMENT & EXPERIENCE SHARING Indicators

[Indicator 1: Participation in IW events]
Target: Presentations with booth participation and hosting of staff/twinning

- **GEF 6th IWC**
- **12th ICRS (Management Mini-symposium and 100 presentations by CRTR members on CRTR research results)**
- **IW:LEARN events at ICRS and other fora**
- **Sponsored 62 Masters and Postdoctoral students, and Postdoctoral Fellows**
- **53 international research institutions were involved comprising 86 researchers partnered and collaborated during the phase**
- **Participated in 230 events within the regions e.g training workshops, technical meetings, conferences etc**

[Indicator 2: Project website]
Target: Website in line with IW:LEARN guidelines, regularly updated

- **Website rated in top 10 (#6) in 2009 of WB GPP websites for hits, return visits and downloads**
- **The estimated number of visits to the site from November 2008 to October 2009 was 22,353; with an estimated 15,500 unique visitors; 859,782 hits; 288,455 pages accessed; and 23.91 gigabytes of data downloaded. The highest number of visits in any one month was recorded in October (2684 visits) coinciding with the International Waters Conference. The website is still maintained and has a steady flow of visitors with information and products downloaded on a regular basis.**
- **Website regularly updated with current content, including research news, updates on publications (over 70 posted on website)**

Indicators 3: Knowledge products produced
Target: Results from targeted research are synthesized, interpreted and communicated to key audiences in appropriate formats. Uptake of information changes level of debate or business practices.

- **Over 70 KPs (manuals, brochures, policy briefs, technical guidance notes, compendia, research reviews, etc.) produced and posted. Products are being used in decision making e.g Reef Restoration Guidelines used to inform World Bank projects in Yemen and Jordan.**
- **Over 630 papers published in peer reviewed journals by CRTR members on research either funded by or influenced by CRTR project (from December 2004 to November 2009). During the five-year period, the CRTR published 176 articles in ISI-recognised journals with a total of 2326 citations. Journal articles on research fully-funded by the Project have an Impact Factor of 5.3 (an Impact Factor of 4.0 is considered extremely high).**