INTERNATIONAL CORAL REEF INITIATIVE (ICRI)
General Meeting
Monaco, 12-15 January 2010

Member's report on activities to ICRI

Presented by Lauretta Burke
World Resources Institute (WRI)

Reporting period July 2008 – December 2009

Please note that the purpose of this report is to help you share information about your activities within the ICRI community to allow discussion at the next ICRI General Meeting. The reports will be made available on the ICRIForum prior to the meeting. The ICRI secretariat is well aware of your busy schedule, thus don't hesitate to submit an incomplete report.

1. General Information

Are you an ICRI Member?	Yes
Representation to ICRI (Country / Organization):	Organization – World Resources Institute
Focal Point 1:	
Name:	Lauretta Burke
Organization:	World Resources Institute
Email:	Lauretta@wri.org
Last meeting attended:	July 2008, Florida, USA
How do you circulate ICRI information within your country and/or organization?	By e-mail
Budget allocated for coral reef related activities (please mention for year/period):	Approx. US $425,000 for 2009.

2. Updates on your activities (new initiatives/programs/projects of your government /organization which will be of interest to the ICRI Members)

The World Resources Institute (WRI)'s coral reef-associated projects fall into two broad categories – a) mapping and modelling threats to coral reefs under the *Reefs at Risk* project series and b) economic valuation of coral reefs and mangroves. Our current threat analysis, *Reefs at Risk Revisited*, is global in scope. The economic valuation efforts are focused on five countries within the Caribbean. Both areas are described below.

a) Reefs at Risk Revisited.

Project Overview
WRI is leading a world-class collaboration to conduct a global, map-based analysis of threats to the world's coral reefs called *Reefs at Risk Revisited.* This update of our influential 1998 analysis, *Reefs at Risk – a Map-Based Indicator of Threats to the World's Coral Reefs*, will provide a detailed examination of human pressures on coral reefs, implications for reef condition, and projections of associated socioeconomic impacts in coastal communities.

Using the most recent high-resolution data, the analysis is being implemented at twenty times the level of detail of our 1998 analysis. It will include the same local and regional threats as previous *Reefs at Risk* analyses (coastal development, watershed-based threat, overexploitation, and marine pollution), but will also include two new and important components: an assessment of threats related to climate change (coral bleaching and ocean acidification), as well as an evaluation of the social and economic implications of reef degradation on the world's coastal populations.

The *Reefs at Risk Revisited* report will be concise and rich with maps and graphics. Many additional products will be available online, including maps, geographic information system (GIS) data sets, and a series of "reef stories" which will provide examples both of threatened reefs and signs of promise—where management interventions or natural conditions have promoted reef health.

Reefs at Risk Revisited will **raise awareness** about the location and severity of threats to coral reefs. It will **guide effective, targeted and informed action** by decision-makers to protect reefs and the broad range of benefits they provide to people. The project will educate policy-makers and the public at large on where to focus energy and resources to address critical threats.

Project Status

We launched the *Reefs at Risk Revisited* project at the International Coral Reef Symposium in Fort Lauderdale, FL in July 2008. Since the launch, we have made excellent progress in developing a project partnership, collecting data and implementing a global model of threats to coral reefs, designing a social vulnerability analysis and developing a communication and influence strategy for project results:

1) **Partnership –** *Reefs at Risk Revisited* (R@R-R) has a broad project partnership including over twenty organizations which are key sources of data; provide input on analysis methods and review results; and are central to outreach and dissemination of results. Page 4 of the attached project summary provides a list of current partners. The partnership is open to including additional members.

2) **Data integration in GIS** – The R@R-R project has assembled over 50 global data sets in a consistent format within a geographic information system (GIS) for use in the modelling of threats to coral reefs. Below are a few examples of new data sets that have been incorporated into the current R@R-R modelling, which were not available or included in the 1998 global analysis:

   - Map of coral reefs – The 1998 analysis used a crude, 4km resolution map of the world's reefs. The new R@R-R analysis will use a much-improved, 500m resolution map. The new map is a composite data set based largely on high resolution Millennium Coral Reef Mapping Project data, supplemented with other sources. This was developed by IMaRS/USF, IRD/UR, NASA, UNEP-WCMC and the WorldFish Center.
   - Climate change data – These data are new and important components of *Reefs at Risk Revisited*. Satellite data on past thermal stress provide a snapshot of existing reef condition, while models of future thermal stress and ocean acidification based on climate change projections provide an estimate of future reef health. These data were produced and provided by partners at NOAA, the University of British Columbia, and Stanford University.
   - Other new data sets include cruise ports and visitation intensity, global hotel location and size, and commercial shipping lanes and volume.

3) **Modeling threats to coral reefs –** Over the past year, the R@R-R project has refined our modeling approaches, finished modeling of local threats, and worked with partners to develop indicators of climate-related stress on coral reefs. Three R@R-R modeling workshops have been held under the project. These served as valuable opportunities to share modeling ideas; refine the modeling approach; and gain input on data sources, main messages for the report, product ideas, and a communication strategy. Workshops were held in October 2008 in Washington, DC; March 2009 in Suva, Fiji; and May 2009 in Fairfax, Virginia, USA, just before the International Marine Conservation Congress (IMCC).

4) **Social vulnerability analysis –** WRI is working with the WorldFish Center to conduct a spatial "social vulnerability" analysis of reef degradation. The analysis will assess human dependence upon reefs and the potential of reef-dependent communities to cope with or respond to the impacts of reef loss. This analysis will reveal where the loss or degradation of reefs is likely to have the most severe social and economic consequences for coastal

communities (e.g., villages that depend on reefs for food or protection from storm surges). This information is critical to help development agencies target effective initiatives for poverty alleviation and adaptation to climate change. Dr. Allison Perry leads this component.

5) **Dissemination and communication of results –** We have worked with core partners to design a communication and influence strategy for the two-year period following report publication and launch, to make sure that *Reefs at Risk Revisited* generates maximum impact. See attachment for additional details. WRI's project partners not only will be key users of the project's results, but also will provide avenues for worldwide dissemination. We will work closely with our partners to reach the general public through partners' media engagement, newsletters, websites and events.

Planned outreach activities will include:

- A global series of launches and webinars beginning in September 2010;
- Stories about *Reefs at Risk Revisited*, its findings, and recommendations in print and online media;
- *Reefs at Risk Revisited* maps and downloadable data on websites; and
- Translations of the key findings into other languages (French, Spanish, Bahasa Indonesia).
- Using **Google Earth** as a platform to disseminate *Reefs at Risk Revisited* results.

We have begun work on a **Policy Influence Strategy.** In order to influence national government policy-makers, we will:

- **Identify key coral-rich regions** where the strength of local partners and upcoming windows of opportunity create good opportunities for success. We will then develop region-specific policy briefs and supporting material that summarize the importance of coral reefs to the region's socio-economic well being, the threats reefs face, and policy recommendations – and use materials to engage policy-makers.
- **Engage bilateral and multilateral development institutions** to utilize their leverage with coral-rich, developing countries to encourage practices that lead to coral reef conservation or restoration. Target agencies include USAID, the Swedish International Development Agency (SIDA), the Dutch Ministry of Foreign Affairs, U.K. DFID, and the World Bank. The results of the social vulnerability analysis will be particularly helpful in influencing these agencies.
- **Engage international conventions** to increase national government commitments to taking steps to protect and conserve coral reefs. Target international agreements include the Convention on Biological Diversity and the U.N. Framework Convention on Climate Change (UNFCCC).

Between now and the summer of 2010, we will finalize the threat modeling and social vulnerability analysis, write the *Reefs at Risk Revisited* report, and develop accompanying products. The launch is planned for September 2010, with communication and influence activities to follow.

b) Economic Valuation of Coral Reefs

WRI conducted an economic valuation of coral reefs in the Caribbean region for the *Reefs at Risk in the Caribbean* analysis (WRI, 2004). This regional summary estimated the value of coral reef-associated fisheries, shoreline protection and dive tourism. We also estimated the loss in value that is likely to result from predicted degradation of coral reefs. Beginning in 2005, WRI and partners have implemented coral reef valuations in Tobago, St. Lucia, and Belize, and are currently working on valuations for the Dominican Republic and Jamaica. (Project descriptions and published results are available from http://www.wri.org/project/valuation-caribbean-reefs.)

1. **Tobago and St. Lucia** – Tobago and St. Lucia were our pilot sites for development of a standardized methodology for valuing coral reefs, focused on coral-reef associated tourism, fisheries and shoreline protection services. These results were released in June, 2008. The

methodology and results are available from our web site. In addition, a spreadsheet-based tool and manual for valuing fisheries and tourism is available. Key partners in these valuations included the Buccoo Reef Trust, Institute for Marine Affairs (IMA) in Trinidad, CANARI, Soufriere Marine Management Area (SMMA) and the government of St. Lucia.

2. **Belize –** Our coastal valuation in Belize included both mangroves and coral reefs, and covered the same three goods and services as the pilot sites. There was greater emphasis on MPA valuation in Belize, and a spreadsheet-based tool and manual were developed to guide MPA-level valuation. This tool was applied with co-management organisations for six MPAs in Belize. Results for Glover's Reef Atoll are presented in the technical report and summary brochure. All national-level results and summary information on MPAs is available from our web site. Key partners in these valuations included the World Wildlife Fund (WWF), the Wildlife Conservation Society (WCS), and the Fisheries Department, though many other NGOs and government departments in Belize contributed to this valuation.

3. **Dominican Republic –** The valuation in the Dominican Republic looks at the same three goods and services provided by coral reefs – tourism, fisheries and shoreline protection. Faced with a very different context from the pilot countries, this project used different methods and a mix of scales. It includes a national-level valuation of coral reef-associated fisheries (examining change in value over time), as well as several case studies on tourism. One study uses a hedonic pricing method to isolate the portion of hotel room price tourists are willing to pay for a wider beach in major tourist areas. Our results suggest that current rates of beach erosion could result in revenue losses to the resorts of US$52-100 million over the next 10 years. Another study examines the shoreline protection service provided by the DR's coral reefs; we model the increase in beach erosion that may result from continuing degradation of the country's reefs. All of the studies are currently being finalized and translated. They will be released in the DR this coming spring. Our primary partner in the DR is Reef Check DR.

4. **Jamaica –** We began work in Jamaica in February 2009. Jamaica has benefited from a wealth of scientific research and monitoring over many years, and is relatively rich with data on coral reef condition. Many economic valuation studies have been conducted on a variety of goods and services for a range of locations (mostly MPAs). It is our impression that few of these studies have resulted in changes in policy or development. We have compiled a summary of economic valuation studies in Jamaica and held a workshop which included discussion of this body of information and reasons for the lack of policy response. Possible solutions going forward include integrating economic valuation into key decision-making processes, such as EIAs, and moving away from academic exercises to more applied assessments that target particular audiences of decision-makers. WRI's economic valuation in Jamaica will again cover three important goods and services – coral reef associated fisheries, tourism and shoreline protection services.

    a. **Fisheries** - Much is known about change over time in Jamaican fisheries. We will be producing a straightforward assessment of reef-related fish catch and value.
    b. **Tourism** – Jamaica is a sun and sand destination, and not a dive mecca. As such, we are focusing on the role of coral reefs in providing a source of sand and protection of beaches. As in the DR, we hope to estimate the value of white sand beaches to tourists, and to couple these results with an estimate of potential losses in beach width due to degradation of coral reefs.
    c. **Shoreline protection** – We are collaborating with the University of the West Indies (UWI) Marine Geology Unit, UWI Mona Geoinfomatics Institute and Texas A&M University to implement a 3-D hydrodynamic model to look at the effects of coral reef degradation and on wave heights inside the reef and resulting coastal inundation.

    We plan to release valuation results for Jamaica in the summer of 2010. Our main local partners are the UWI Department of Geography and Geology and Mona Geoinfomatics Institute, as well as TNC and other experts at the University of the West Indies.