



ICRI Discussions on Environmental Management, Livelihoods And Post Tsunami Reconstruction

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Background

1. On 26 December, a massive earthquake off the coast of Sumatra triggered a tsunami that claimed the lives of more than 200,000 people in 11 Indian Ocean countries and left up to five million others in need of basic services. Whole towns, thousand of houses and fishing boats, coastal infrastructure and factories were smashed to pieces having considerable socio-economic and environmental consequences. This has without a doubt changed the urgency and context of management for conservation and sustainability of marine resources, biodiversity and food security for many communities around the Indian Ocean.
2. The international efforts following the tsunami can be broadly categorised into:
 - (i) Humanitarian work and relief;
 - (ii) Establishment of an Early Warning System (EWS) for the Indian Ocean region.
As agreed at the Kobe Conference, IOC/UNESCO are charged with co-ordinating the scientific aspects of an EWS for future tsunamis and similar natural disasters.
 - (iii) Assessment of the socio-economic and environmental damages and effects, including assessments of the work to be carried out in the rehabilitation and reconstruction of the affected countries; a (non exhaustive) selection of such assessment reports is given at Annex 1.
 - (iv) Rehabilitation and reconstruction
Most of the rehabilitation and reconstruction assessments carried out by the World Bank and others will be completed by the time of the ICRI meeting. Countries have started (or are in the process of setting up) reconstruction work, and donors will be considering what is needed to finance this work properly.^{1,2}
3. There are many aspects to the post tsunami work which have environmental implications and in which environmental management issues have to be considered. The need to address the security of livelihood issues as part of environmental management (as opposed to simply seeing environment as add on regulatory approaches) is not always well understood. However, the current state of the post-tsunami work, in particular the emerging rehabilitation and reconstruction phases, provides an opportunity for more strategic planning, including the consideration and insertion of environmental issues which consider tropical marine ecosystems and natural resources. The strategic planning should focus on system resilience (both ecosystems and humans) rather than just restoration and reconstruction.

Objectives

- 4 The objective of this document is to facilitate the discussions of ICRI under Agenda Item 6 (Status of coral reefs and associated ecosystems in South Asia and summary of post-tsunami activities - presentations and discussion), in particular:

¹ The Australian Government has committed AUD 1 billion and the Asian Development Bank has approved USD300 million for Indonesian recovery following the tsunami. USD87.3 million of the ADB funding will be spent on livelihood restoration, including the rehabilitation of the agriculture and fisheries sectors and the revival of micro and small enterprises.

² The European Commission has made available €13.8 million under the EU Post-tsunami Programme for capacity building and partnership projects.

- a. to promote common purpose and co-operation among ICRI partners on post-tsunami work, based in particular on the following key themes:
 - responsiveness to country driven needs;
 - cooperation/coordination of effort, including between UN agencies, donors and NGOs;
 - the need for effective environmental (and human) impact assessments;
 - integration into the reconstruction process/disaster mitigation activities of environmental management policies, which promote 'livelihood security' and 'green reconstruction'; and
 - development of an early warning system for the Indian Ocean region under the auspices of IOC/UNESCO;
- b. to identify practical and timely actions and outcomes, and agree on particular ways, where ICRI (as a forum of the coral reef and related ecosystem community) and ICRI's operational networks can contribute effectively in the post-tsunami work; and
- c. to promote environmental management policies including undertaking more strategic efforts to reduce the vulnerability of coastal human populations so as to ensure that reconstruction does not undermine medium/longer term sustainability, including ecosystem integrity and resiliency.

5. Point 4 (c) above was the theme of an UNEP hosted meeting on Coastal Zone Rehabilitation and Management in Regions Affected by Tsunamis and Other Natural Disasters. This meeting was held in Cairo on 17 February 2005 and attended by over 50 participants from countries, agencies and regional seas organisations. The "Guiding Principles for Post-Tsunami Rehabilitation and Reconstruction" adopted at this meeting and the "Proposal for Implementation of the Action Plan to Operationalise the Guiding Principles on Coastal Reconstruction in the Tsunami Affected Countries" are given in the document ICRI GM (3)2005/6.0/6).

Considerations

6. In the ICRI discussions under Agenda Item 6, a number of points have to be considered, e.g.:
 - Countries, agencies and NGOs have been working very hard on various initiatives to assist the affected countries with the immediate priority being the humanitarian needs.
 - With international help, reconstruction and rehabilitation efforts are ongoing, including the rebuilding of livelihoods in conjunction with the establishment of sustainable economic pathways.
 - It is important and a matter of urgency that environmental issues are strategically integrated into reconstruction and disaster mitigation generally. This is central to achieving longer term sustainable development, and to sharing common goals. Mainstreaming environmental management and ecosystem resiliency into reconstruction requires the raising of awareness by building consensus and interest among governments, key agencies and NGOs on the ground.
 - Actions have to be responsive to the needs of the affected countries, so that environmental management contributes to the security of livelihoods in coastal communities. It is important that policies are strengthened, and if necessary established and introduced, which allow for better management of coastal ecosystems and are effective in reducing the vulnerability of coastal communities to natural disasters in the future.
 - There is a need to develop appropriate local and regional plans (and the capacity to implement them) to optimise social, economic and biophysical recovery recognising immediate needs but giving particular consideration to optimising medium and long term opportunities for maintenance of biodiversity, ecological services and verifiably sustainable economic opportunities;
 - There is a need to raise awareness and develop policies which reflect the fact that the sustainability of coastal ecosystems is liable to, and depends on, the extent to which people's livelihoods can be made less reliant on the unsustainable use of those ecosystems. Reducing coastal vulnerability includes:(i) realising the contribution of specific ecosystems, such as coral reefs, seagrasses and mangroves, and (ii) recognising the importance of addressing more wide-ranging environmental issues such as integrated coastal zone and watershed management.

- Environmental assessments have to reinforce the human (socioeconomic) dimension, and have to be designed so that they can be used quickly and effectively by countries and agencies.
- UNEP, working with others, through direct assessment work, has raised the profile of environmental issues, and the Cairo meeting (cf. ICRI GM (3)2005/6.0/6) delivered guiding principles for coastal rehabilitation and reconstruction for both immediate and longer term sustainability. The recent UNEP Governing Council also adopted a Decision on "Strengthening environmental emergency response and developing disaster prevention, preparedness, mitigation and early-warning systems in the aftermath of the Indian Ocean tsunami disaster" (cf. ICRI GM (3)2005/4.3/Inf.).
- There is a need to make progress quickly under the auspices of IOC/UNESCO (as co-ordinator of efforts by the UN system) to establish a tsunami Early Warning System for the Indian Ocean and South East Pacific. It will be important that the human (on the ground) aspects of warning systems, such as education and local alert procedures, are properly reflected in early warning system functionality.

What can ICRI, ICRI members and ICRI's operational networks do?

7. In the light of the current state of affairs, and taking into account the lessons learned so far, there appear various measures and ways, in which ICRI, ICRI members and ICRI's operational networks can support the post-tsunami work by drawing on the strength of the initiative as a whole and on individual partners/members, including:

Mainstreaming the "Guiding Principles for Post-Tsunami Rehabilitation and Reconstruction" (Cairo principles) and supporting the implementation of the Action Plan to operationalise these principles

8. In the light of the wishes and requests expressed by countries and governments (e.g. in the recent UNEP GC Decision), it will be important to provide sound environmental advice to support, guide and assist the reconstruction process and future disaster mitigation work. The Cairo principles may be used as a road map, embracing a variety and range of actions. Not all of these will be suitable or applicable in every instance, and many of them will have to be adapted to suit specific local challenges and circumstances. Nevertheless, they are helpful in general terms to insert sustainable coastal management into the reconstruction and rehabilitation efforts and indeed into future disaster limitation work – without reinventing the wheel.

9. ICRI (because of its range and reach of members/partners and networks) –is well positioned to support the Cairo principles and their implementation by helping to raise awareness and build a constituency of interest in environmentally responsible and sustainable coastal reconstruction, both in the short and long terms. The broad acceptance and adoption of a unified approach (i.e. the Cairo principles) will strongly influence and engage policy and decision makers, and will help to promote synergies among governments, agencies NGOs and other stakeholders.

10. It is fully appreciated that ICRI members and the partners in ICRI's operational networks will have their own particular mandates and views regarding reconstruction, and indeed their own priorities and particular interpretation of coastal principles.

Partial Up-date of the Status of Coral Reefs of the World: 2004 report

11. The 'Status of Coral Reefs of the World: 2004' report from the GCRMN was completed and launched in November/December 2004. Less than one month later the devastating tsunami affected the South Asian region.

12. Many agencies and organisations, inter alia, GCRMN, CORDIO and Reef Check, performed rapid surveys on affected reefs of the Indian Ocean and produced very valuable data. There have been more detailed assessments conducted since then, including more wide ranging environmental impact assessments by UN agencies, as well as discrete work by governments and NGOs (a non-exhaustive selection of such assessment reports is given at Annex 1).

13. From these assessments and reports, it appears that the extent of damage to reefs was highly variable, with considerable differences occurring at small scales and neighbouring locations. In addition, a number of reports stress (mostly on the basis of anecdotal observations) the role of coral reefs and mangroves in mitigating the impact of the tsunami.

14. It has been proposed by several ICRI members to produce a short, regionally focused status report (approximately 100 pages), under the GCRMN umbrella, drawing from all of the studies carried out to date on reefs and related ecosystems. This publication would also seek to identify gaps and document how the marine environment has responded to this event. Additionally, such an up-date would be able to assess the role of coral reefs in the mitigation of the tsunami effects, in consultation with IOC who have already undertaken oceanographic modeling related to the tsunami. This would provide the physical/factual basis against which the various coral reef assessments and observations could be evaluated.

15. If the ICRI General Meeting agrees for such an up-date to be carried out, ICRI will need to determine or advise, *inter alia*:

- (i) whether such a document would be a valuable product from the ICRI partnership;
- (ii) what it should contain, and how and when it should be released;
- (iii) how and when such a document should be produced; and
- (iii) the resources required and sources of funding.

'Engineering Solutions'

16. The effects of the tsunami and the reconstruction / rehabilitation efforts have heightened interest among some stakeholders to seek 'quick' solutions based on engineering principles to 'repair' the damage to coral reefs and to accelerate natural recovery processes.

17. A range of such 'engineering' techniques is being sold as reef reconstruction or rehabilitation techniques by various commercial and non-commercial organizations. These include:

- mechanisms using wire frames through which electricity is passed to accelerate calcium carbonate accretion and the growth of transplanted corals;
- installation of artificial reefs, including concrete structures; and
- mechanisms for re-cementing and re-gluing corals and other organisms to the substratum.

18. While ICRI should (and is) always open to new, innovative ideas which could help to reverse the degradation of coral reefs, ICRI members have pointed out (cf. separate documentation to the ICRI meeting) some of the shortfalls of such 'engineering solutions', e.g. that:

- they can be economically and successfully applied, if at all, only on a very small scale, covering very limited areas of some square metres;
- they do not reduce the main and chronic causes of coral reef degradation such as harmful human disturbances (e.g. sedimentation, pollution and over-fishing).
- With the exception of relatively rare circumstances where lack of solid (silt free) substrate is the inhibiting factor they do not facilitate natural recovery mechanisms nor do they aid in building resilience to disturbances, that will be effective in the long term and over large areas;
- those with management responsibilities for coral reefs may lack the capacity or expertise to evaluate the limitations and the scientific and costs - benefit relationships of the proposed coral reef rehabilitation techniques. If these techniques are applied without these considerations, they might not only be ineffective and unsustainable, they might even lead to an increase in the degradation of the reefs and/or nearby ecosystems.

19. In the light of this, ICRI might want to raise awareness of the potential problems of quick fix 'engineering' solutions by sending an appropriate message advising governments, international agencies, NGOs and other parties that they should carefully examine claims from commercial and non-commercial

groups selling or proposing 'engineering' solutions for coral reef rehabilitation, and that they should seek advice from various bodies prior to installing these. Such a message could usefully include generic duty-of-care questions to assist such examinations.

Lessons learned - a more pro-active role for ICRI?

20. The international activities following the tsunami raise the question as to whether ICRI (as the leading global initiative/partnership which brings together of the world's coral reef community) should be taking a more pro-active approach.

21. The tsunami and the work on building a constituency of interest in sustainable coastal reconstruction is an opportunity to promote ICRI's mandate as defined under the Call or Action and the Framework for Action, e.g. on marine protected areas, resilience building and reducing the causes of coral reef degradation. ICRI needs to make the coral reef policy link more clearly in various fora and within countries, informing and highlighting that policy tools such as MPAs have wider positive effects beyond the commonly perceived basic conservation benefits (e.g. increasing resilience and thereby reduce the vulnerability to future impacts of natural disasters). If this is the case, i.e. if the coral reef conservation and management following the tsunami is not a question of searching for and introducing new policy tools, then ICRI's role and that of the operational networks should be to facilitate more effective communication and partnership networking between all stakeholders. The implementation of the SIDS outcome on MPAs can hopefully address these issues.

22. In addition, the lessons learned in the international response to the tsunami and the way the post-tsunami efforts were carried out and coordinated at local, national and regional level raise the question as to whether ICRI and ICRI's operational networks are appropriately positioned to be seen as the 'coral reef voice' in the international community at times when competent coral reef information and assessments skills are needed quickly and urgently.

23. In order to strengthen the role and voice of ICRI and ICRI's operational networks in future, the establishment of response mechanism(s) to future natural disasters affecting coral reefs could be considered. A first step in this direction could be:

- (i) for the ICRI Secretariat to contact the governing bodies of the operational networks as soon as possible after the event with a view to discussing whether there is a need for concerted and coordinated action from ICRI or its operational networks;
and, if deemed necessary,
- (ii) the ICRI co-host countries to write an official communication to the relevant national and international organizations to inform them about -and offer- the coral reef expertise, lessons of experience, contacts and capacity available under ICRI and ICRI's operational networks, related websites and data bases./.

Annex 1

Tsunami Reports and Data Sources

Coral Reef Specific

- ReefBase Tsunami Maps (<http://reefgis.reefbase.org/mapper.asp>)
- UNEP-WCMC Tsunami Maps (<http://tsunami.unep-wcmc.org/imaps/tsunami/viewer.htm>)
- NARA Rapid Assessment of Tsunami Damage to Coral Reefs in Sri Lanka (<http://www.nara.ac.lk/RAP/>)
- CORDIO Assessment Reports (<http://www.cordio.org/news.asp>)
- ICRI Tsunami responses (<http://www.icriforum.org/router.cfm?show=secretariat/tsunami.html>)

Various Environmental Aspects

- UNEP Situation Reports (http://www.unep.org/tsunami/situation_rpt.asp), including the report "*After The Tsunami : Rapid Environmental Assessment*" published 22 February 2005.
- IUCN Tsunami Responses (<http://www.iucn.org/tsunami/>)
- Birdlife International Reports (http://www.birdlife.net/action/ground/asia_tsunami/index.html)
- Ramsar Assessment Report (http://www.wetlands.org/Tsunami/data/STRP12_Asian_Tsunami.doc)
- Wetland International Tsunami Reports (<http://www.wetlands.org/Tsunami/Tsunamidata.htm>)
- Preliminary assessment of tsunami impacts on Indian Ocean turtle projects and habitats: (<http://www.ioseaturtles.org/tsunami.html>)

Other

- FAO Reports (ftp://ftp.fao.org/FI/DOCUMENT/tsunamis_05/)
- WHO Emergency Preparedness and Response South-East Asia Earthquake and Tsunami Situation Reports on South-East Asia Earthquake and Tsunami: (http://w3.whosea.org/EN/Section23/Section1108/Section1835_8140.htm)
- Asian Development Reports (<http://www.adb.org/Tsunami/timeline/default.asp>)
- World Bank Reports: (<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EXTTSUNAMI/0,,menuPK:621043~pagePK:64168427~piPK:64168435~theSitePK:621037,00.html>)