Assessment of Global Marine Biodiversity Indicators for the Global Environment Facility Resource Allocation Framework (GEF RAF)

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What is the problem?

The Global Environment Facility (GEF) is the financial mechanism of the Convention on Biological Diversity (CBD). In 2002, the GEF Council requested the GEF Secretariat to "...establish a system for allocating scarce GEF resources within and among focal areas with a view towards maximizing the impact of these resources on global environmental improvements...". In 2005, this system was introduced as the Resource Allocation Framework (RAF) that calculates indicative financial allocations on a country-by-country basis. The RAF for the biodiversity focal area is based on a set of scientific biodiversity indicators (Fig. 1). This set is divided into two parts with uneven contributions to the whole RAF. Four indicators reflect biodiversity and threat to biodiversity for the terrestrial environment and are weighed by 80% while marine biodiversity is only represented by one indicator and weighed by 20%. This unequal weighting has been criticized at various GEF fora, especially by Small Island Developing States (SIDS), as an unjustifiable underestimation of the importance of marine biodiversity that discriminates against SIDS. Concerns were also raised that this issue contradicts the character of the guiding Convention.

What did the study aim to do?

The main objective of this study was to explore datasets that may serve as indicators of marine biodiversity and thus complement the terrestrial side of the RAF. Key questions were:

- explore and propose a new RAF with a more equitable recognition of marine and terrestrial biodiversity,
- compare advantages and disadvantages of the current RAF and the proposed RAF, and
- analyse the implications of the improved formula and provide the basis for some policy recommendations.

After discussing with the GEF Secretariat criteria that data would need to meet in order to best serve the current RAF, various institutions provided data for analyses. These data were processed and incorporated into a new proposed RAF with an equal weighting between terrestrial and marine biodiversity. This allowed the calculation of allocations for a representative sample of seventy-three countries and comparison with 'old' or existing allocations (current weighting, no new data) for the same sample. This enables direct comparison on the impact of new indicators and an equitable weighting.

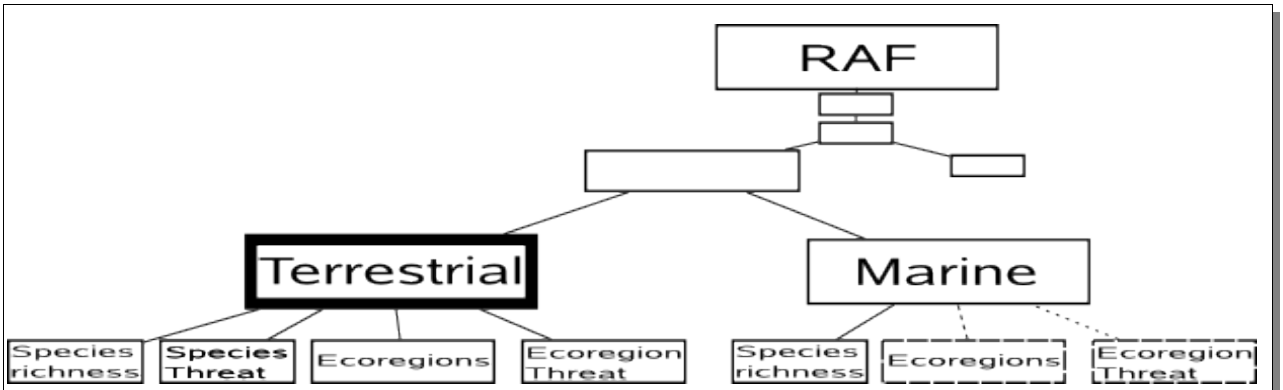

Fig. 1: Simplified structure of the RAF. The bottom is comprised by indicators of biodiversity which in turn add up to sub-indices of biodiversity. The stronger overall contribution of the terrestrial sub-index is indicated by a thicker frame. Dashed lines indicate additional marine biodiversity indicators identified by this study. For purposes of visibility other elements have been indicated only as empty boxes.

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What are the key findings?

No impediments exist to an equal recognition of marine and terrestrial biodiversity within the RAF.

a) Data are available: An equal weighting is warranted by the state of the art in global marine biodiversity research which provides sufficient data to increase marine RAF indicators from one to three.
b) Scientifically justified: An equal weighting aligns to scientific knowledge that marine biodiversity is most probably not less diverse or threatened than terrestrial biodiversity and conforms to the spirit of the CBD.

A. Data are available

This study has incorporated two additional marine indicators which are readily available on a global level and constitute essentially the exact counterpart to terrestrial indicators applied in the current RAF ('marine *ecoregions*' by Mark Spalding and 'marine *threatened ecoregions*' by Benjamin Halpern) (Fig. 1). Further datasets can be contributed by the Ocean Biogeographic Information System (OBIS) in combination with the KGSMapper (global species distribution maps) and by the Global Marine Species Assessment (GMSA) (distribution maps and threat of species).

Additional marine indicators combined with an equal weighting of biodiversity had a strong impact on RAF allocations. SIDS experienced an average increase of allocations of 20 percent (Fig. 2). These new allocations resulted in an approximately 24 percent decrease in allocations for land-locked countries and little average change for coastal states in general which did vary on a country by country basis.

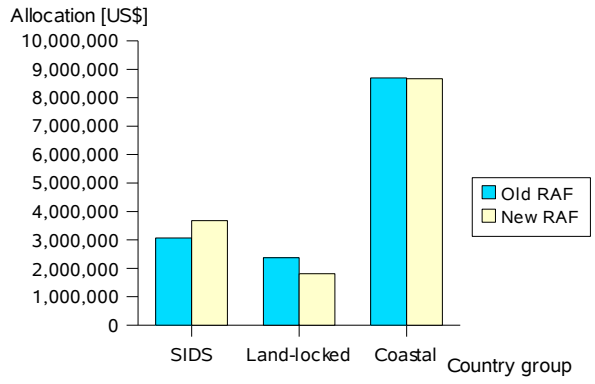

Fig. 2: Average RAF preliminary allocations for the 73 country sample for the current RAF (blue) and for the new RAF (yellow).

B. Scientific justification

The current weighting of the RAF implicitly assumes that terrestrial biodiversity is higher and more threatened than marine biodiversity. Ample scientific evidence exists suggesting that both environments might be equally diverse and threatened. Species richness, one of the main indicators for the RAF (Fig. 1), is currently hotly debated within the literature and extrapolations of marine species numbers from recent studies rival terrestrial numbers. Furthermore, the marine environment is far richer in many other measures of biodiversity, which are not included within the RAF. For example, it is generally acknowledged that marine genetic, phyletic (basic body plans), and functional (e.g. food web complexity) diversity exceeds terrestrial diversity. Also marine ecosystem diversity is expected to be found to be higher, since ocean systems are relatively unexplored to date. Similarly, marine biodiversity is just as threatened as terrestrial biodiversity. Marine systems may even be more sensitive to perturbations with cumulative and cascading effects that can lead to loss of more fundamental biodiversity. Due to the large heat capacity of the ocean, the marine environment is also more vulnerable to large scale, long-term threats such as climate change.

Additionally, the current uneven weighting can be interpreted as a lower importance attributed to marine biodiversity in general. This conflicts with the character of the CBD, the guiding convention of the GEF, which treats both kinds of biodiversity as equally important. Also, bias against marine biodiversity is not consistent with the precautionary principle, mentioned in the preamble of the CBD. An unequal weighting reduces overall funds available to many countries, especially SIDS, and thus also reduces measures to avoid threats to the marine environment. It is not clear though whether the marine or terrestrial environments are more threatened and therefore an equal weighting would recognize the scientific uncertainty that exists in both realms. The current RAF also results in a reduction of allocations for all countries with significant marine biodiversity which constitute one-fourth of all RAF-eligible countries, the majority being SIDS. In particular, SIDS are recognized within many multilateral agreements as being based on extraordinarily high, unique, and extremely fragile marine biodiversity. Therefore, they are frequently referred to within the CBD Conference of the Parties (COP), along with Least Developed Countries (LDC), as being those most in need of financial support. But the current RAF limits availability of funds to SIDS compared to the proposed RAF and hence does not align with COP decisions.

What are possible courses of political action?

This study has illustrated that the current RAF is unjustifiably biased towards terrestrial biodiversity and that an equal weighting of the RAF is legitimatised in the light of available data and scientific knowledge. These findings must be conveyed to the GEF by various means. Probably the most important key event which influences the future structure of the RAF is the mid-term review at the end of 2008/beginning of 2009. At the mid-term review resources are re-allocated using additional data for current indicators and the current RAF structure will be evaluated by the GEF Evaluation Office. The task of the Evaluation Office is to provide recommendations to the GEF Secretariat and Council to improve the

implementation of the current RAF. Data collection and stakeholder consultations for this purpose will be conducted in between December 2007 and July 2008.
Other entities should further exert pressure on the GEF in order to emphasise the need of an equitable RAF. It is proposed that the next CBD COP in May, 2008, takes on a proactive role, based on this and further studies on the RAF, and provides guidance for a) the incorporation of additional indicators on marine biodiversity and b) for an equal weighting of the RAF in order to avoid discrimination of global marine biodiversity and especially SIDS.
Since the current RAF is not only biased against SIDS but also against all countries which have a significant marine biodiversity within the RAF, this should provide the incentive at Council and Assembly meetings for GEF recipient as well as donor constituencies and member states to support SIDS in their endeavour to opt for an equally weighted, more equitable RAF.
Also the NGO sector should take a much more proactive role. In particular the World Wildlife Fund (WWF), being one of the main data providers within the proposed RAF should strive for an equal representation of their data within the RAF. Future GEF workshops that discuss the development of the RAF provide an ideal opportunity.

What gaps need to be filled?

One of the main tasks of the RAF for the biodiversity focal area is to reflect the degree of biodiversity within a particular country and to accordingly calculate allocations. It is the predominant opinion within the scientific literature that any number of biodiversity indicators can never capture the whole complexity of global biodiversity. Hence, a final version of the RAF is still far from complete if it is expected to become a comprehensive mirror of global biodiversity.
Although the RAF was created by the GEF Secretariat, it is a collective responsibility of all stakeholders to find ways for modification and improvement of the RAF.
Therefore, more independent scientific studies should be implemented in order to identify and incorporate additional indicators of marine and terrestrial biodiversity for the RAF (e.g. phyletic diversity).
Likewise, the RAF proposed in this study needs to be peer-reviewed and further improved in order increase the suitability for the GEF. This pertains mainly to the process of incorporation of marine datasets.
Finally, this proposal was tested only on a sample of countries, since data for all was not fully available during elaboration of this study. Thus, the proposed RAF needs to be rerun with a) full marine datasets on all RAF-eligible countries and b) with complete indicators of political aspects of the RAF. This will allow the impact of additional datasets and modified weightings to be inferred more accurately.

Reference

Fedder, G.D.B. 2007. Assessment of Global Marine Biodiversity Indicators for the Global Environment Facility Resource Allocations Framework (GEF RAF). M.Sc. Thesis in International Studies in Aquatic Tropical Ecology, University of Bremen. 105 pp. (available on request from the author)