

Executive summary

The GIWA region 56 Sulu-Celebes (Sulawesi) Sea includes some of the land and sea areas of three nations; the Philippines, Indonesia (North Sulawesi and East Kalimantan) and Malaysia (Sabah), and forms part of the Philippine-Malay Archipelago, which lies at the centre of global biodiversity. The marine waters of the region form a Large Marine Ecosystem (LME), bounded on most of its western and northern extent by the islands of the Philippines and GIWA region 54 South China Sea, on its southern extent by the Islands of Borneo and Sulawesi and GIWA region 57 Indonesian Seas and eastern extent by GIWA region 62 Pacific Islands.

Severe environmental impacts to national and international waters are caused by deforestation and other forms of land clearing in many of the approximately 300 drainage basins, with estimated loss of some 1 billion m³ of sediment annually, and siltation rates among the highest on Earth. Approximately 80% of original vegetation cover has been lost or altered, including more than 60% of the mangrove resources in the Philippines. Destructive fishing, muro-ami, blast and poison fishing has damaged or destroyed more than 70% of coral reefs, while benthic trawling no longer produces significant by-catch or discards; rather, virtually all of the highly diminished catch is kept, including rare and endangered marine mammals and turtles. About 70% of coral reefs are heavily overfished, producing less than 5 tonnes/km²/year, with clear indications of trophic overfishing, in comparison with the remaining 30% of reefs that produce 15-20 tonnes/km²/year. There is steadily decreasing catch per unit effort, indicative of ecosystem overfishing, and population pressures are leading to Malthusian overfishing. Priority concerns for the future are the same as those for the present: Habitat and community modification, and Unsustainable exploitation of fish and other living resources. Environmental and socio-economic impacts of Pollution and Freshwater shortage are also expected to be severe by 2020. Freshwater shortage is a major food security issue impacting millions of people in the region.

The population of the region, some 34 million (approximately 25 million Filipinos, less than 2 million Malaysians in Sabah and 7 million Indonesians in East Kalimantan and North Sulawesi), is expected to increase at approximately 2.5% per year to 50 million in 2020, with a doubling by 2035. There is expected to be increasing urbanisation, industrialisation and reliance on extractive industries; mining, plantation agriculture and industrial fishing. Total pressures are likely to increase moderately over the next 20 years, being driven by the continued population growth, causing significant deterioration in the environment and socio-economy. The widespread overexploitation and use of inappropriate technologies raises serious concerns as to even the medium-term sustainability of the production systems, with additional limits to development likely to result from complex linkages between freshwater shortage, habitat loss, fisheries and global change.

The Causal chain analysis focused on Habitat loss and community modification, and considered the strong linkages with Pollution (suspended solids) and Unsustainable exploitation of fish and other living resources. The key root causes are population growth coupled with widespread poverty and international market trends. Population growth is impacting on migration, urbanisation, lack of employment and poverty, all of which, in turn, place greater pressure on services provided from the environment (e.g. fish resources) and contribute to increased pollution and damage to habitats. The near-total dependence of millions of poor people on natural resources for their subsistence is so strong that every available resource is being extracted at all cost. Economics and international market trends, including the insatiable international demand for seafood, also drive the unsustainable use of resources, and foster corruption and illegal practices. Coupled with the burgeoning population, poverty, and migration to coastal and urban areas, market trends create a dangerous mix of driving forces that do not augur well for the future. Most importantly, the resource owners themselves must be persuaded that long-term sustainability is a much

better option for the future than short-term gains presently being made at the expense of irreversible damage to the environment.

The Policy options analysis was predicated on the tri-lateral geo-politics of the Sulu-Celebes (Sulawesi) Seas, with the Philippines, Indonesia and Malaysia each having their own cultural, religious, socio-economic and political systems, goals and objectives. There are many transboundary issues, and actions by any one nation have the potential to impact on the jurisdictions of another. Yet, at both international and national levels there is generally sufficient legislation addressing resource management and protection, the three nations having ratified most of the relevant international treaties and conventions and with numerous national laws in place. However, there is little effective implementation, with serious inefficiencies relating to the transfer and application of international and national legislation at provincial and local levels, compounded by a lack of awareness and/or acceptance of most laws among local populations. National and provincial laws relevant to different sectors - fisheries, mining, forestry and environmental protection - are not fully integrated, causing uncertainty in application of legislative instruments, and confusion over which laws have priority, responsibilities for management, and the rights of stakeholders.

Key government departments are hampered by a lack of qualified and experienced staff, and also by funding shortfalls and cutbacks. Despite considerable recent progress, there is insufficient capacity for effective alleviation, in part related to currency depreciation and shifts in government spending. There are, however, many national, regional and international "players" actively pursuing sustainable development initiatives, and best use of this developing network should be made during future policy implementation. Improved integration among government departments, international donor agencies and NGOs, better allocation and use of government funds, as well as continuing international donor assistance are urgently required in the short-term. In particular, population and development policies require urgent review if growth over the next several decades is to be managed effectively and the present rapid rate of increase of impacts is to be curbed.

More extensive and intensive intervention should be focused through:

- Direct on-the-ground community-based conservation programmes, particularly focused on family planning and poverty alleviation, with alternative or supplemental income generation (AIG) for locals;
- Improved management of existing protected areas, in relation to both biodiversity conservation and fisheries restoration;
- Continued expansion and improved integration of the protected areas network, with assessment programmes for identification of additional critical areas;

- Improved integration of local, provincial, and national laws and regulations, and tri-lateral integration to maximise effectiveness of obligations under international conventions and treaties;
- Training programmes to build additional long-term capacity among government, NGOs, and communities.

Difficulties in establishing strong tri-lateral support for interventions, such as those being developed by the Global Environment Facility (GEF), WWF and partners in the Sulu-Sulawesi Marine Ecoregion Programme (SSME), and others are beginning to be overcome. The SSME provides a useful model for policy implementation, with a two-pronged approach: (i) conservation planning in the long-term; and (ii) implementation of immediate conservation actions in key sites, with interventions in five priority areas:

- Bio-physical and socio-economic research to provide the necessary information for sound management;
- Establishment of an effective integrated network of protected areas, to play dual key roles in biodiversity conservation and fisheries restoration;
- Development of sustainable livelihoods, e.g. AIG, to relieve pressure on natural resources;
- Information/education/communication to raise public awareness;
- Institution and capacity building, including establishment of inter-governmental mechanisms to best use limited funds.

Improved management and expansion of the protected areas network is the key recommended policy option arising from this analysis, in light of the strong linkages between habitat loss and overexploitation of fish, the ameliorative role of protected areas in both regards cannot be overemphasised. Specific policy recommendations for improving the management and coverage of the Protected Areas (PAs) network include:

- Review the current administrative frameworks and design strategies to resolve overlapping legal authority and jurisdiction in protected areas;
- Identify which protected areas are working, which are not and why, and document successful case histories of protected area management;
- Where necessary, design management plans that include identified source(s) of operational funding;
- Retain flexibility in management approach, recognising the value of small-scale local, community-based and co-management approaches and large-scale internationally-supported management initiatives;
- Design and foster implementation of a system whereby each municipality or village (e.g. Barangay in the Philippines) is

empowered to assist in management of (or manage) the local protected area;

- Conduct strategic assessment of human resource requirements, including day-to-day management, surveillance and enforcement on a case-by-case basis;
- Encourage government and private sector to carry out integrated coastal zone planning and management (including watersheds), and incorporate protection of critical land areas within the parks or as buffer zones;
- Set aside as much as practicable (at least 20%) of marine protected areas as 'no take' zones for biodiversity conservation and fisheries replenishment;
- Ensure Environmental Impact Assessments (EIAs) are conducted prior to any development in or adjacent to protected areas, and wherever practicable, minimise all future development of land within and adjacent to protected areas to maintain buffer zones;
- Establish/refine monitoring programmes and re-evaluate research priorities to best address bio-physical and socio-economic management concerns;
- Work through Association of South East Asian Nations (ASEAN) and other multi-lateral, international agencies and organisations to develop joint programmes, including innovative sources of ongoing funding.

In particular, it is crucial that the relevant government agencies in the Philippines, Indonesia and Malaysia provide:

- Clear written policy in support of site-specific co-management of National Parks and other protected areas. Such policy should delegate clear support and responsibility to all National Park directors to develop flexible co-management structures that reflect the site-specific opportunities and constraints of their National Park. Criteria for co-management include excellence in technical service delivery, professionalism and flexibility.
- Relevant conservation user fee policies assessed and revised in order to clearly support local self-financing for conservation

management. A national policy on protected areas conservation financing should ensure local collection and distribution of a majority of user fees, with only a minority going to the central government. All finances should be accounted for and booked at the national level. Transparent third party monitoring and evaluation on financial management as well as conservation management impact is essential.

- Clear guidelines and standard operating procedures are necessary for both joint patrol systems and participatory zonation processes.

The above recommended policy options should assist in the establishment of well-planned, well-funded, and well-implemented protected areas encompassing major habitats and serving as models (coastal and marine examples include Tubbutaha, Bunaken and Turtle Island) for future marine park development. These policy recommendations will impact the entire range of civil society, and place major responsibilities on governments, NGOs, educational institutions and the private sector, if the most problematical issues of habitat loss and overexploitation are to be ameliorated in the coming decades. The refinement of these policy options will emerge during continuing development of the SSME and GEF programmes.

Without doubt, Sulu-Celebes (Sulawesi) Sea must be a priority region for future GEF initiatives. The region is at the centre of the world's marine biodiversity with many species of global significance and it is surrounded by a rapidly growing population and rapidly deteriorating marine ecosystems. The very recent discovery of the Indonesian Coelacanth (*Latimera manadoensis*), demonstrates the need to improve marine ecosystem protection so that other yet undiscovered but potentially valuable species are not eliminated. The challenge of securing the necessary national and international, transboundary cooperation necessary for the sustainable development of this critical region is great, but not insurmountable.