



Book review

Challenging Coasts: Transdisciplinary Excursions into Integrated Coastal Zone Development, Leontine Visser (Ed.). Amsterdam University Press (2004). 248 pp., € 32, 25, ISBN: 978 90 5356 682 4.

Challenging Coasts is an important collection of studies from the Centre for Maritime Research in the Netherlands stressing the urgency of transdisciplinary approaches in response to intensifying pressures on the world's marine environments. Visser's introductory chapters set out the unprecedented challenges facing policy-makers and the researchers upon whose results future management of marine environments must be based. Coastal zones are affected by three parallel and mutually reinforcing deleterious developments taking place on a global scale: a massive demographic shift to the coast due to population growth and the lifestyles of the burgeoning middle classes; the rising value of marine resources driven by increasing consumer demand and declining catches; and the looming impacts of sea level rise and extreme climatic events caused by changes in the biosphere.

Together these transforming processes pose challenges for governance from local to global scale never before faced. They also demand unprecedented levels of collaboration between the social and natural sciences. Visser argues that conventional approaches that previously bounded the subjects of study in the various specialised disciplines are no longer adequate to the task of confronting the ecological and social complexities now required for sustainable governance of coastal zones. Not only do we lack common vocabularies and theoretical frameworks needed for integrative research, but also find ourselves divided by conflicting priorities and 'regimes of truth' produced by the complexity of diverse ecosystems and the parallel complexity of social, political and economic aspects of human uses of those ecosystems. In both cases, mobility—of species and climatic patterns on the ecological side; of trade and population on the social science side—make conventional ecological and disciplinary boundaries a barrier to good management.

Hoeksema's chapter on threats to the management of coral reefs in Southeast Asia, part of the richest shallow water ecosystem in the world, is a litany of anthropogenic impacts on biodiversity. Technological developments have made it possible for fishers to reach virtually any depths, with the consequence that commercial species without regulation will be fished out, as happened to sea cucumbers in the Makassar area within 10 years of the introduction of Hooker compressors. Aside from overexploitation driven by expanding markets, the effects of destructive technologies, sedimentation and pollution from development in agriculture, mining and tourism sectors, as well as coral reef die off from rising sea temperatures and green house gases, contribute to a grim picture for coastal environments and the human populations dependent upon them. Hoeksema argues that

more sustainable use of marine ecosystems depends upon a combination of much more restrictive resource use measures, including tighter regulation of collecting methods, certification, and the expansion of protected areas, as well as public awareness and education programs.

The chapter by Worms, Ducrocq and Abdelkaer Saleck similarly charts the decline of fish populations in the largest marine protected area in Africa, the Banc d'Arguin in Mauritania. In this case, one of the disturbing findings was that even traditional technologies were readily adapted to intensify production, leading to over-exploitation under market pressure, with some species such as mullet proving extremely vulnerable to even moderate levels of exploitation because of unusual reproductive characteristics. Among the more hopeful of the case studies in this collection, the dramatic decline over the two decades since declaration of the park forced recognition by scientists and park managers of the need to shift focus and to give equal weight to the needs of local people who were dependent upon the park's resources. Subsequent efforts to find solutions to factors impacting upon sustainable use—market pressures, incursion by outsider fishing fleets, indebtedness to external traders, lack of value adding to local production—have led to promising collaborations. It will be some years before the effects of new park management approaches that now recognise the need to involve local groups through co-management and community development strategies can be measured, but the authors have become convinced that ecosystem protection is ultimately dependent upon accommodation of human/social dimensions.

Kulbicki, Labrosse and Ferraris tackle the difficult problem of ecosystem modelling in the interest of developing better coastal management tools in their chapter. Complex coastal ecosystems require mechanisms that provide relatively straightforward bases for decision making in order to balance productive use with protection through a better understanding of particular features that affect stability, resistance and resilience parameters. The authors attempt to draw together robust indicators from ecological and fisheries sciences that could be articulated with socio-economic data on resource uses to develop a management tool that deals with local ecosystem variations and ecosystem complexity, but is operable with limited data and accessible to the non-specialist. The approach proposed brings together a few highly indicative measures of diversity, which can be expressed as scenarios to predict ecosystem impacts under different conditions of use and would contribute to a better prospect for local community management and integration with regional management frameworks.

Using regulation of shipping and oil exploration under the International Law of the Sea Convention (LOSC) and the European Community's Bird and Habitat Directives as examples, Owen explores possible conflicts of obligation across scales. This chapter considers the potential for using a combination of legal mechanisms to support conservation, but finds the economic priorities of the LOSC, under which no special areas for conservation purposes have yet been established, have meant that the EC will be more readily able to control oil exploration under its special area (SPA and SAC) system under the two directives, than shipping, where other nations are able to use LOSC instrumentalities to protect their economic interests over environmental ones.

The two chapters by van Helden and van Duijn present a sobering picture of the extent of the challenge posed, in their accounts of almost allegoric proportions.

The most graphic example of the discrepancy between conservation theory and practical constraints is presented in van Helden's chapter 'Making Do: Integrating Ecological and

Societal Considerations for Marine Conservation in a Situation of Indigenous Resource Tenure'. Using a case study of conservation interventions involving several transnational environmental agencies (CI, UNDP and GEF) in the highly biodiverse marine environment of Milne Bay in Papua New Guinea, van Helden demonstrates the complex ways in which the practical, social and political dimensions of rapidly changing resource use in the Milne Bay area precluded or circumscribed most of the carefully documented and mapped strategies for biodiversity conservation. The conventional intervention pattern has been to draw up scientifically based marine protected zones and impose them on local people. The somewhat unusual feature of the PNG case is the national recognition of customary tenure rights, which places local people on a much more even playing field when it comes to negotiating any regulatory regime. None of the groups concerned with the protection of this relatively intact biosystem were prepared to tackle the serious impacts of foreign vessels and politically well-connected commercial fishing enterprises, which were impacting directly and indirectly on the prized biodiversity of Milne Bay. Yet better regulation of external interests is clearly the one quid pro quo that could be offered to local communities in return for negotiated rights and responsibilities for local protection regimes (a point also made in the chapter by Worms et al.). Another would be a serious commitment to alternative livelihood options. But scientists, transnational conservation agencies and even governments rarely have (or are prepared to commit) the skills, resources, or long-term involvement that would be required to overcome some of the governance and marketing difficulties that would be involved in such a strategy.

Van Duijn's chapter plots the demoralising endpoint of coastal resource depletion in an account of factors leading to the decline in the livelihoods of hand collectors of aquatic organisms in the Cat Hai island area of North Vietnam. This is a biodiversity hotspot area, inhabited by people who obtain a significant proportion of their protein from fish, in a nation striving for rapid economic development. As a largely subsistence and supplementary income occupation, the manual collection of once abundant aquatic organisms may be 'statistically invisible', but it is nevertheless an indicator of the rapid deterioration of coastal resources and the parallel decline in livelihood options for the poorest coastal dwellers. Driven by over-exploitation from new markets and technologies, a growing number of outside users, and habitat destruction as a result of mangrove clearing, chemical use, and damaging fishing techniques, this case is remarkable for the speed of deterioration in the Cat Hai island coastal ecosystem. Over a period of little more than a decade, all but one significant species collected in the rich coastal environment have experienced declines of between 40% and 100% (p. 232). As is invariably the case as competition for declining resources intensifies, the most severely affected have been the poorest, women, children and off-season salt producers, who are traditional hand collectors with little opportunity for diversification. But instructively also, half among those who had the resources to join the shrimp production boom were found to be operating at a loss, after clearing mangroves and enclosing coastal strips to exclude others.

Seixas and Berkes present a more promising scenario in their study of stakeholder conflicts and solutions in the Ibiraquera Lagoon, Brazil. They trace the collapse and revival of the Ibiraquera Lagoon and the evolution of adaptive co-management in the process. The major challenge there was the lack of coordination and participation of user groups in the initial conception of Brazil's integrated coastal zone management plan. The case study shows how failures of coordination intensified stakeholder conflicts and resource decline. Again, the familiar pattern of rapid socio-economic change, breakdown

of the local system and institutional instability at higher levels of governance led to serious decline in the lagoon ecosystem. As in every other case study presented in this book, increasingly productive technologies pushed resources to the brink. Diversification of uses as a result of the development of tourism only exacerbated the problem. In the face of the failure of a state-produced management plan, a dramatic shift in focus to process and user participation, according to the authors, is currently reversing the previously gloomy prognosis for the environment of the Ibraquera Lagoon. Critical to the ‘adaptive co-management’ necessary to institute resilience in the social and ecosystem equation, is the development of inclusive decision-making and implementation processes, legitimated by an accessible knowledge-base. Seixas and Berkes focus particularly on the importance of collaborative knowledge building between users and managers, through a similarly participatory paradigm of data gathering, monitoring and evaluation.

The negotiative and process oriented governance models stressed by the authors of these case studies will arguably cost heavily in terms of time and resource commitments to ensure that participation becomes more than a slogan; but these strategies are not nearly as costly as the point of no return that otherwise looms on the horizon if management strategies continue to fail to deal with the challenges of coastal environments.

None of the studies in this book suggest that a position of non-intervention is viable. Indeed, even a non-specialist reading these accounts of rapid decline in some of the most pristine and resource rich environments would be convinced of the pressing need for cross-scale communication and regulation, since the pressures of global markets and environmental changes leave virtually no important ecosystems untouched. But the power and economic imbalances that are the most serious impediments to the protection of the world’s fragile coastal zones are rarely directly confronted by interventions involving research scientists and transnational conservation agencies.

There is no simple formula for resolving the complex and locally specific impacts of these processes. But there is consensus that earlier models of research and management are inadequate, even counterproductive, and that new approaches focused on transdisciplinary research and participatory planning and decision-making processes represent critical new directions in integrated coastal management.

This first in the Centre for Maritime Research series contributes to the new agenda for transdisciplinary studies, which ‘recognises the disjuncture’ in methods and values of partner disciplines, and moves beyond the prevailing boundaries and biases that inhibit collaboration across knowledge systems. Practitioners and scholars interested in these issues will look forward to future publications in this series, including more pieces co-written by social and natural science researchers, and more voices contributing to a knowledge regime that puts livelihoods and conservation in a common analytic and policy framework appropriate to the intimate relationship they unquestionably share.

Carol Warren

Asia Research Centre, Murdoch University, Perth, Western Australia 6150, Australia
E-mail address: c.warren@murdoch.edu.au