

## BOOK REVIEWS

Dodds, Felix and Strauss, Michael (with Maurice F. Strong). 2012. *Only One Earth: The Long Road via Rio to Sustainable Development*. Routledge (Taylor & Francis Group), Abingdon, Oxon. xxiii+ 312 pages Hardbound, ISBN: 978-0-415-54025-4

Today, 'sustainable development' is both a buzzword and the cherished goal of the humankind. The politicians, policy makers, media, academic community, businesses, NGOs and the common people freely use the phrase in widely different contexts. Past few years have witnessed also the emergence of a new discipline, the Sustainability Science. It has taken some 50 years since the global nature of environmental problems was first highlighted by Rachel Carson's *Silent Spring*. Forty years ago, the United Nations Conference on Human Environment (Stockholm, 1972) brought the environmental issues and the environment vs development debate to the centre stage of political arena. A report titled "Only One Earth" by Barabara Ward and Rene Dubos, who were commissioned by the Secretary General of the Conference, Mr Maurice Strong, forcefully argued that the problems of environmental degradation arose both from development (as in the developed countries) and underdevelopment and poverty (as in the developing countries) and therefore, the development and environmental strategies needed to be integrated.

Now, another book with the same title traces the history, together with the achievements and failures, of the global environment action under the aegis of the United Nations and its agencies leading to Rio+20 – the United Nations Conference on Sustainable Development (Rio de Janeiro, 2012). Its authors have decades of experience with these developments, and are joined by Mr Maurice Strong, the Secretary General of the Stockholm Conference as well as the UNCED - the Earth Summit (1992) and the first Executive Director of UNEP. They provide an authoritative and critical analysis of the international efforts over the past 40 years of our journey on a bumpy road towards 'sustainable development'. The book is organized into two parts. Part one, 'The Journey from Stockholm' describes in details the events leading up to the organisation of the Stockholm Conference (1972), the establishment of the UN Environment Programme (UNEP) in Nairobi, the call by Canada for 'long-term strategies for achieving sustainable development' that led to the setting up of the World Commission on Environment and Development (WCED), chaired by Ms Gro Harlem Brundtland and the preparation of the well known Report, 'Our Common Future', and finally, to the organization of the first Earth Summit – the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (1992). The Earth Summit was followed by the establishment of the United Nations Commission on Sustainable Development (UNCSD) which continues to hold its annual meetings;

and the observance of a decade from the Earth Summit at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002. The authors describe the achievements made and outcomes of the numerous deliberations and discussions, the adoption of numerous multilateral environmental agreements (MEAs) and Conventions, the chronological developments at the meetings of the UNCSD, the shifting focus on different environmental issues, the difficulties in governance and implementation of the agreements, and also the political and economic difficulties on the path to progress. Towards the end of the last century, while preparing for the WSSD, the world leaders met in a Millennium Development Summit and declared 8 Millennium Development Goals (MDGs) with 21 specific targets. As we know now, these goals have not been met and are unlikely to be met by 2015, but clearly deflected attention from the goals of 'sustainable development'.

Part two of the book, 'The Challenges of the Future', provides a frank and constructive appraisal of the progress made during the past 40 years – what has been achieved and what could not be achieved and why. It starts with the governance gap and clearly points out that both the UNEP and the UNCSD, "for different reasons and in different ways- seem no longer capable of delivering what they had been expected to..". Next is a detailed analysis of the implementation of Agenda 21 adopted at the first Earth Summit (Rio 1992), and the Rio Principles. The analysis shows at best a patchy progress and that most of Agenda 21 outcomes were not realized. The next chapter discusses the role of non-government stakeholders (civil society groups). The stakeholder participation in decision making at every level is expected to result in better decisions, provide them a sense of ownership of the outcomes and partnership with the governments for implementation of policies. At the Earth Summit, nine major groups were recognized and a chapter was devoted to each of them in Agenda21. These are: the business, trade unions and farmers, indigenous people, women and youth, NGOs, local authorities and the scientific community. These groups are quite heterogeneous, often with divergent views. During the past 20 years, the experience shows, as discussed in detail in this chapter, the need for some 'useful reforms' towards developing 'stakeholder standards' and 'strategies of stakeholder democracy'. The next chapter deals with the issues and principles of green economy – a topic which still remains amorphous and has no accepted definition, and yet formed the core of discussions at the Rio+20. The final chapter recommends 21 actions that are required, according to the authors, to save the planet. Towards conclusion, referring to the actions likely to be taken at the Rio+20 Conference, the authors say, and rightly so, that the 'success or failure of sustainable development' will be determined by 'the sum total of all the actions of all the members of all countries for the next twenty years'.

Now, after the Rio+20, we know that over the past forty years, the journey has taken us so far only to agreeing upon the "Future We

Want” and a renewal of commitment of the nations to ensure ‘an economically, socially and environmentally sustainable future’

The book will be of interest to all those in the academic community, civil society organisations and business, who want to understand the history of global developments related to the concept and approaches to ‘sustainable development’, its achievements and failures.

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Arthington, Angela A. 2012. *Environmental Flows: Saving Rivers in the Third Millennium*. University of California Press, Berkeley, CA, USA. xii+406 pages. ISBN: 978-0-520-27369-6

Rivers with their floodplains have been the cradles of human civilization. Humans have exploited the rivers for several millennia - diverting water for agriculture, building settlements along their banks, and disposing off wastes into them. But the rivers kept flowing. Later, humans started constructing dams which arrested river flows into reservoirs and prevented the fish to migrate. The ecological and socio-economic impacts of dams have been a subject of intense debate over the past several decades. Ever-growing storage, abstraction and diversion of river flows have resulted in many drastic changes in river morphology, riverine habitats, land use, groundwater, water quality and aquatic biodiversity throughout the river basins. Further impacts have occurred on the livelihood and health of millions of people who depend on the rivers and their resources. The requirement of certain amounts of flow in the rivers has been discussed from the fisheries perspective for many decades. Better understanding of the ecosystem services of rivers in relation to their flow regimes has led to the emergence of the concept of Environmental Flows, i.e. the flow regimes that are essential to sustain the eco-logical integrity of the riverine ecosystems, and their ecosystem services together with the human livelihoods. During past two decades, various aspects of environmental flows have been discussed in numerous research papers, reviews and project reports from several countries. However, for the first time a comprehensive global synthesis of the subject has been presented in this book by one of the world’s leading experts.

The book introduces to the reader in a very simple and concise manner the vast area of hydrology, climatology, fluvial geomorphology and river ecology which are essential to the understanding and assessment of the environmental flows. It describes briefly the ecosystem services of the rivers, the diversity of river flow regimes in different climatic regions, the influence of catchment characteristics on the aquatic habitats along river courses, salient features of river ecosystems as four dimensional in nature, the river continuum concept, the flood pulse theory and the fluvial hydrosystem concept. It describes in detail the five facets of natural flow regime and their ecological significance, followed by the hydroecological principles concerning the relationship of flows with biodiversity, life history processes, hydrological connectivity and its role, biogeochemical cycles, and riparian zones. Human impacts on the rivers receive

detailed attention. Human activities in the catchments such as deforestation and agriculture, and creation of levees to channelize the rivers are covered in one chapter whereas next three chapters discuss in detail the effect of dams. Their influence on upstream habitats, their role as barriers to transport of materials and migration of organisms (fish and invertebrates), their effect on physical and chemical characteristics of water downstream and finally, the impacts on habitats and biodiversity are described with many examples. These impacts set the stage for a discussion of environmental flows. A brief account of historical developments and the major categories of methods of assessment is followed by some details of the hydraulic rating and habitat simulation methods (such as IFIM and PHABSIM) which focus primarily on a few species. The holistic methods that follow an ecosystem approach are discussed in the next two chapters where these are grouped into Protection Methods and Restoration Methods based upon the primary objective of protecting or restoring the ‘flow-related biophysical components and ecological processes’ of rivers and associated aquatic ecosystems. All these methods involve, to a great extent, risk assessment, professional judgement and expert opinion. The next chapter discusses the recent efforts towards more science-based, quantitative and predictive assessments leading to the development of an ELOHA (Ecological Limits of Hydrological Alteration) framework which is now being tested in several countries.

The book then introduces the linkages between groundwater and rivers, and the impacts of groundwater abstraction on riverine systems, and the water requirements of the wetlands, estuaries and other associated aquatic ecosystems. The next three chapters discuss how the environmental flows requirements can be integrated into planning of water resource development projects involving a wide range of stakeholders, how the E-Flows can be implemented and monitored, and the legal and policy dimensions of providing E-Flows. It is interesting to see many countries taking the policy and legislative measures to protect their rivers, including international rivers (such as Mekong). The final chapter is a useful reminder of the climate change, its implications for the riverine ecosystems and the need for adaptation strategies. The book ends with an exhaustive, upto-date list of references (over 50 pages) and a detailed, useful index.

This is the first book of its kind and will serve both as a textbook and a reference work on environmental flows. It is not intended to be a book of recipe for environmental flows assessment for which the methods will have to be chosen depending upon the local situations and objectives. The water resource managers, project developers and policy-makers and other stakeholders will find the book useful in understanding why they need to account for E-Flows in their work and what options are available to them for their assessment.

We applaud the efforts and congratulate Professor Arthington for her very timely and valuable nook.

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