

Input For Compilation Document from the Working Group “Coastal Zones: 21st Century Challenges”

Context of the Document

This document represents the inputs provided by the authors in order to participate in the construction of the “focused political document” for the Rio+20 outcomes. As part of the effort to construct and achieve the Rio+20 goals, the authors' points of view are comprised of contributions from members of the following major groups: the Scientific and Technological Community, and NGO's Concerning the Sectoral Priority of Coastal Zones.

Coastal zones are the most productive regions in the world, both biologically and economically, but they are also the most populated. They face a harsh future due to greater challenges stemming from hunger, wars, and health related issues threatening populations and countries' economies. These challenges constitute the core of this document. Will nations work together to save these zones that buffer our world? They must be included in the next ten-year agenda before it is too late.

Following the recommendations provided by the “co-chairs' guidance note,” this document has been redacted in the form of focused inputs. The material the authors submitted was coded, synthesized, and condensed to create this document. While this document communicates the most significant concerns of the authors as a group, it is not a consensus document. This document enables us: (i) to establish our inputs to the Compilation Document by November 1st, (ii) to propose adapted material to the Rio+20 delegations from various governments through each country's correspondent, and (iii) to publish an extended reference document concerning the sectoral priority of Coastal Zones from the perspective of 21st Century Challenges.

115 authors from the working group “Coastal Zones: 21st Century Challenges” actively participated in the creation of this “Inputs for Compilation Document.” They are from 30 countries, and the following Institutions, Universities, Research Centers, and NGO's:

Aristotle University of Thessaloniki, ARUC, Aurecon, Australian National Centre for Ocean Resources and Security University of Wollongong, Australian Rivers Institute, Baltic Environmental Forum, Boskalis Offshore, Brock University, CALCH, CEAB/CSIC, Center of Researches in Material Sciences of Borj Cedria, Centre de Suivi Ecologique, Centro Desarrollo y Pesca Sustentable, CETMEF/DS, Chao Pescao, CNR-INSEAN, Coastal Protection and Restoration Authority - Louisiana, Cooper Ecological Monitoring, Inc., École des Hautes Études en Sciences Sociales, ESA PWA | Environmental Hydrology, European Commission, Joint Research Centre, Gaz-system, German Association of Aquaculture, Greenpeace, Hellenic Centre for Marine Research, Helzel, IFM-GEOMAR, Institut Universitaire Européen de la Mer, Jagiellonian University, Kyushu University, Laboratorio Nacional de Energia e Geologia, Latvijas Universitāte, LittOcean, Marine Sciences For Society, National Research Institute for Rural Engineering Water and Forestry, Nelson Mandela Metropolitan University, Norwegian Directorate of Fisheries , NUI Galway, OANNES, Oceanógrafos Sin Fronteras, OGS National Institute of Oceanography and Experimental Geophysics, Pepperdine University, Queen's University, Regional Ministry of Environment of Andalusia - Consejería de Medio Ambiente/Junta de Andalucía, Scripps Institution of Oceanography, Snowchange Cooperative, The Norwegian University of Life Sciences, The Pomeranian Maritime and Vistula River Basin Cluster Association, The Royal Marine Conservation Society of Jordan, UNESCO-IHE, Universidad Autónoma de Baja California Sur, Universidad de Cádiz, Universidad de La Laguna, Universidad de Las Palmas de Gran Canaria, Centro Interdisciplinario Manejo Costero Integrado, Universidad de la República-Uruguay, Universidad del Magdalena, Universidade do Algarve, Universidade Federal do Rio Grande, Universidad Nacional Autonoma de Mexico, Universidad Politécnica de Madrid, Universitat Autònoma de Barcelona, Universitat Politècnica de Catalunya, Université Bordeaux 1, Université de Moncton, Université de Picardie Jules Verne, Université du Québec à Rimouski, Université de Versailles Saint-Quentin-en-Yvelines, Université du Havre, Université du Québec à Rimouski, University of Bergen, University of Florence, University of Patras, University of Tartu,

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Introduction

20 years have passed since the Rio Earth Summit in 1992. 20 years of efforts to better understand, inform, and improve the relationships between our societies and our planet's coastal zones. These efforts have crystallized into tangible outcomes in the form of improvements in environmental culture and international agreements upheld by over 100 national and transnational coastal zone plans, protocols, and conventions.

While moving forward with these national and international efforts, we realize that the balance between development and stewardship is still broken, and many more efforts are needed to create a harmonious relationship between the use of knowledge in society and our planet's coastal zones. Through the active participation of 115 researchers from 30 countries, the following baseline document has been constructed to highlight the perspectives of academia regarding “Coastal Zones: 21st Century Challenges.” Please consider it our input for the RIO+20 compilation document.

(i) Input For Compilation Document

The majority of our planet's population is concentrated in coastal zones, narrow spaces that amplify the most urgent and emerging questions of sustainability and development. In coastal zones, we clearly see the fragility of the three elements that constitute sustainability: world population growth, economic tenuity, and the increase of environmental degradation. Coastal zones are key in illustrating **(a)** the challenges our societies face and **(b)** the potential solutions, priorities, and views regarding the implementation of practices and policies that build upon previous successes. These two points structure the document.

(a) The Challenges That Our Societies Face

Any initiative to truly help society progress sustainably must integrate the limits of the planet and be co-constructed with the affected communities. The consensus is that the challenges we face in coastal zones are mostly anthropogenic or amplified by human activities that clearly transgress ethical limits.

Due to human development on the shoreline and in river basins, along with off-shore industrial non-sustainable activities, our challenges are:

Red Flag Challenges Impacting Lives of Coastal Zone Residents:

- Malnutrition, hunger, freshwater availability
- Wars and other violent conflicts
- Lack of education
- Climate change and its consequences
- Over-exploitation of marine living resources
- Toxins in fish and shellfish, and pathogens such as cholera and hepatitis, are threats to human health
- Population growth
- Global economic crises

Challenges in Policy:

- Harmonize the interests of coastal environment users, including local community members, coastal municipalities, regional and/or inter-municipal planning, national, transnational, and international stakeholders, through the continuous improvement of economic-legislative instruments and the elaboration and implementation of coordinated strategies for the use of natural, social, cultural, and institutional resources
- Rethink economic growth and the flows of energy and materials
- Preserve 100% of the areas where the indigenous peoples of the coasts remain, including the Saami, Chukchi, Siberian Yupiaq and many others
- Integrate research and education into the decision making process
- Make information readily and easily accessible to facilitate informed decision-making
- Protect natural and cultural resources at all levels: local, regional, national, and international, while keeping coastal communities safe
- Monitor and control the coastal and littoral maritime traffic, industrial activity, and the related hazards of oil pollution, chemical transport, collision, GIS reduction, and technical failures
- Introduce policies that: make change trends mandatory, protect existing coastal habitats and ecological functions, recover the fishing stocks, and prevent illegal and habitat-destructive fishing
- Prevent over-population in developing regions and minimize damage in already over-populated areas
- Balance urban growth by using space more efficiently
- Plan sustainable spatial allocation and management for fisheries and aquaculture
- Plan sustainable spatial allocation and management for energy production and supply

Challenges from Pollution and Climate Change:

- Oceanic temperature warming and change in alkalinity
- Decreasing oxygen levels leading to dead zones, species extirpation, and noxious gas emissions
- Seawater intrusion in coastal aquifers
- Coastal and sea pollution caused by wastewaters and solid wastes that have been treated ineffectively or not at all
- Pollution by toxic waste, metals, nutrients, contaminants
- Floods, erosion, and rising sea-levels
- Illegal or little regulated extraction of natural resources to fill increasing demand
- Amplified vulnerability of coastal populations, particularly the economically disadvantaged
- Loss of habitat and loss of biodiversity
- Irreversible ecological destruction

- Toxic blooms due to pollution
- Coral reef bleaching
- Introduction of invasive species
- New diseases among organisms
- Dispel the assumption that the coast is “safe”

Challenges in Research:

- Generate an information baseline of coastal ecological and social processes that researchers can measure against
- Take into account the social and human dimensions of uncertainty
- Study in greater depth the interconnectedness of natural systems to better understand how to sustain coastal and oceanic health
- Conduct research in support of management on multiple spatial and temporal scales
- Develop and establish an integrated oceans monitoring network, and create inter-operable open-access databases that can provide reliable data on a user community's defined goal(s)
- Interdisciplinary approaches to solve any challenge
- Integrate all stakeholders in the research process
- Develop innovative techniques for the restoration of ecosystem functions
- Evaluate the success of the integrated coastal management political processes and practices on a local to global basis
- Identify and quantify the human-induced stressors acting on coastal ecosystems and populations

(b) Potential Solutions, Priorities, and Views Regarding the Implementation of Practices and Policies that Build Upon Successes

Economy and Development Models:

- The model of development based on infinite economic growth needs to be questioned: To what degree do activities on coastal areas facilitate general development and what manner of development is currently needed?
Can development be based on sustainability and how can the socio-economic structure respond to international competitiveness?
- A trade-off between the economy and the environment exists; destructive industries have to be challenged and held accountable for their social and environmental consequences
- G20 announced the preparation of a charter on “sustainable economics,” we must make explicit *how* such a charter should be implemented from a global governance perspective

Governance, global/local articulation:

- The efforts cannot only come from local governments and communities the challenges are global in nature
- UN Ocean should be supplemented by other trans-governmental and non-governmental networks as additional forms of governance
- Intergovernmental Panel on Maritime Basins (IPMB) should contribute to providing governance systems with common and reliable information and promote coherent responses from these systems
- Build strong connections between transboundary maritime basins related to large marine ecosystems and maritime regions of the world
- Apply a deliberative approach that concertates on managing emerging challenges and linking all spatial and temporal scales

Collaborative Policy Making:

- The instruments for the implementation of integrated coastal zone management are: an integrated approach to coastal land and marine spatial planning, cross-sectoral and multiregional agreements, public participation, effective cross-border consultation system, monitoring and assessment of socio-economical and ecological changes and trends, comprehensive analysis of sustainable development indicators, financial and legal mechanisms for ICZM implementation, and connected and collaborative decision-making between all administrative levels from global to local
- Move from the theoretical framework into realizing the necessary actions
- Improve the articulation between ICZM and adaptation measures
- Integrate local and traditional knowledge with policy making
- Learn from international experience and practices in integrated coastal management, and adjust lessons to other contexts
- Evaluate the success of the integrated coastal management political processes and practices on a global basis
- Participation of coastal communities is vital, not only to vindicate the legitimacy of strategies, but also to provide them with the opportunity to express their doubts, to rebuild their trust, to learn how to live in a changing environment, and to manage social conflict
- Create respectful partnerships with traditional societies on Earth, as they can provide crucial observations and knowledge regarding emerging challenges
- Make decisions that are compatible with the core values of affected coastal communities and coast-dependent peoples
- Increase interdisciplinary training and cross-collaborations among tertiary programs and teams
- Natural science data must be combined with social science understandings of the places where regulations are to be implemented
- Natural scientists, engineers, economists, lawyers, and social scientists must recognize their responsibility and role in the process and collaborate with each other to achieve common goals

Legislation and Regulation:

- Define coastal zones in both spatial and temporal dimensions, since coastal dynamics cast some legal uncertainty on how coastal zones are determined
- Improve and reinforce legal frameworks controlling coastal activities
- Make good practices mandatory for stakeholders; hold elected politicians accountable for their promises
- Coordinate states and various sectors

Information, Education, and Awareness:

- Improve the competence of and resources for local and regional coastal zone authorities
- Knowledge must be shared, promoted, and used in order to a) aid society in developing a critical approach, b) exercise pressure on policy makers, and c) develop realistic, sustainable, and feasible policies
- Promote public awareness of the socio-ecological values of the coastal resources and ecosystems

Research:

- Encourage the scientific development of new sustainable, useful technologies

- Improve treatment plant performance; increase general use of new biodegradable materials
- Long-term studies that identify past and present evolutionary trends of the coast
- Intelligent and sustainable use of marine resources to enable the development of new, sustainable medical and pharmaceutical products
- Develop and establish integrated monitoring networks and coherent forecasting systems that provide coastal managers and policymakers with critical coastal state indicators in order to ensure the safety of coastal communities while assuring the preservation of the natural coastal dynamics
- Bring together competence and synergy to develop an ecological sustainable aquaculture in order to protect the biodiversity and environment in the ocean, as well as provide a safe and sustainable source for human food
- Combine infrastructures like offshore wind energy facilities and aquaculture installations

Conclusion

A general comment to conclude our document is this: the challenges we face in coastal zones are mostly anthropogenic or amplified by human activities that clearly transgress reasonable limits. We insist on the fact that any initiative to truly help society progress sustainably must integrate the limits of the planet and be co-constructed with the affected communities.

Reminder

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