

Journal of Community Engagement and Scholarship

Volume 13
Issue 3 *Climate Change Knowledge Translation*

Article 16

March 2021

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Recommended Citation

Gauthier, Sam (2021) "Coastal Communities Under Climate Change," *Journal of Community Engagement and Scholarship*: Vol. 13 : Iss. 3 , Article 16.

Available at: <https://digitalcommons.northgeorgia.edu/jces/vol13/iss3/16>

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Coastal Communities Under Climate Change

**Reviewed by
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J. Baztan, O. Chouinard, B. Jorgensen, P. Tett, J.-P. Vanderlinden, and L. Vasseur (Eds.),
Coastal Zones: Solutions for the 21st Century, Elsevier, 2015, 376p. ISBN: 978-0-12-802748-6

Coastal Zones: Solutions for the 21st Century emphasizes a transdisciplinary lens with a global perspective approach. The main focus is on coastal communities and explains that while they are among the most productive ecosystems in the world, they are also one of the most threatened. Coastal zones are often heavily urbanized with high population density and agricultural areas. Increased land use, overexploitation of fish stocks and urbanization will put more stress on these communities than just climate change. Throughout the chapters, this book focuses on several case studies that draw from stakeholder knowledge and community engagement looking at them from diverse disciplines from both natural and social sciences. It demonstrates a collaborative work approach including over 200 coastal zone researchers from all continents of the world to come up with adaptation strategies and solutions.

This book bridges the gap between all scales and actors involved in communities where coastal zone challenges are faced daily. It focuses on a solution-oriented approach that covers issues of coastal zone management as well as responses to climate change. It provides ideas on how to face the challenges, develop solutions, and localize management of resources. It discusses many real-life situations in order to find adaptation strategies and solutions for coastal communities and how to engage them. It also discusses many key terms related to adaptation and contributes to the importance of all steps of the adaptation planning process with communities: initiating, research, planning, implementing, monitoring, and evaluation. A key characteristic emphasized in this book is the importance of flexibility when dealing with adaptation strategies. Many great examples are given throughout the book of how adaptation strategies should be adopted to individual situations. Several different case studies are used to demonstrate various adaptation strategies that can be used to battle climate change in coastal zones while also looking

at challenges and solutions for these problems.

The book discusses challenges and solutions to adaptation processes. Sometimes human management (such as hard infrastructure) can further complicate the relationship of land and sea within coastal zones and can often have many long-term side effects such as increased erosion. Therefore, more sustainable and efficient adaptation processes should be used, such as plant canopies or beach nourishment. The shift from reactive to intentional adaptation processes can enhance the well-being of the coastal communities. Making people in communities more knowledgeable can support informed decisions when it comes to adaptation strategies, and more sustainable choices can be made. It is important to understand that each solution may have consequences for some components of the system in the future or at different stages of the planning process.

There are also many policy and research challenges related to the adaptation process. This includes communities needing to plan strategically and beyond the traditional short-term top-down decision-making, and switch to a localized bottom-up approach. The book also discusses research challenges such as improving baseline information to ensure we can provide adequate adaptation strategies and gather appropriate background information relating to the communities. There is a need for research in data-poor communities where research is limited, and communities do not have enough capacity to deal with the challenges alone. Research is also needed to assist communities in developing protocols to deal with the preparation, emergency planning and decision analysis related to coastal environmental change.

The case studies used in the book show that there is always room for improvement when it comes to frameworks or protocols to engage with communities working on climate change and that constant evaluation is needed. To ensure climate change adaptation in coastal municipalities, certain communication procedures should

be established. There is strong importance for understanding, collaboration, and communication when dealing with adaptation strategies and the importance of place-based approaches. Other solutions include things like focusing on the sustainability of coastal communities, allowing for an improved understanding of the context and uniqueness of each community and its priorities for strategic management, developing local governance and decision making, promoting collaborative policymaking, renewing legislation and regulations, linking adaptation to education, and carrying out research in the challenge areas.

As learning is an important part of the adaptation process, social learning is believed to be an initial and essential step to negotiate and initiate changes that are necessary to adapt in communities. Communication is essential to develop a common language for these protocols to ensure comprehensive understanding about the key components of the issue at hand. This book explains how knowledge sharing among actors leads to greater feedback of solutions and strategies. Education is also a large contributor to the success of adaptation processes. This includes modifying curricula of school and postsecondary institutions to include courses that reflect the principles and concepts of marine ecology, for example.

One of the chapters (Chapter 4) seems out of place compared to the others as it discusses the need for ecosystem-based adaptation strategies across borders, not completely related to communities. This chapter approaches this idea through an anthropological and philosophical lens, using social borders as an explanation for how humans can cross many borders (such as gender, race, and nationality) to allow them to be a part of various different social standards. It

uses this example to explain that ecosystem-based adaptation can also be involved across different borders and boundaries. It discusses how sometimes it is difficult to categorize an individual into one social standard, which makes the chapter somewhat inappropriate in comparison with the others.

Overall this book was relatively easy to read and gives a good introduction to adaptation and coastal ecosystems. However, adaptation should be further defined for the readers to appreciate the book's content. This book also has many great diagrams and tables to help the readers understand the trends and results of the research. Some adjustments could be made to make the book easier to understand as some chapters had a lot of statistics while others had confusing figures or extensive terminology, resulting in less impactful contribution. A greater uniformity among the chapters could help improve the accessibility of this book through better communication to minimize disconnect among chapters.

This book emphasized the importance that developing sustainable solutions requires transdisciplinarity and respectful collaboration between all disciplines and among stakeholders, especially in communities. In order to be successful, it is critical that all parties are engaging in both learning and constant research in order to be knowledgeable on the ever-growing and flexible nature of adaptation strategies. This allows all stakeholders to think about social ecological systems while also considering temporal spatial political and personal scales of management in order to reach truly integrated yet flexible approaches. It also means working with stakeholders in accordance with community values to identify challenges, inform solutions, and implement them collaboratively.