

Towards a Holistic Approach for Small Island Tourism Analysis: The case of Camiguin, Philippines.

REYES, EDGAR JR. M.^{1*}

¹Faculty, Department of Community and Environmental Resource Planning, College of Human Ecology, University of the Philippines Los Banos/ PhD Landscape Ecology and Landscape Planning, Faculty of Spatial Planning, Dortmund University of Technology.

*corresponding author:

e-mail:edgar.reyes@tu-dortmund.de

Abstract. Tropical small islands are perceived paradise destinations for most tourists, however, small islands are critical biosystems with finite, fragile and vulnerable yet unique set of resources. These features are not highlighted as a defining character that captures small islands spatial challenges and context. Using the DPSIR (Driver-Pressure-State-Impact-Response) framework as an approach to analyze the small island tourism context, a more robust and integrated problem diagnosis was derived from the small island province of Camiguin. The problematic context of tourism activities is centered to the aspect of island sustainability geared towards the understanding of its different sectoral concerns including the socio-cultural, economic, environmental, infrastructural and institutional. Through the DPSIR framework direct and indirect concerns were linked on the problematic context or existing state of tourism activities with insightful relationships to recurring island problems on waste management, marginalization of local communities, food insecurity, unsustainable economic activities, threats in the biodiversity, etc. These problematic conditions were provided with targeted solutions involving a wide-spectrum of activities involving community empowerment and local conservation actions and larger municipal- and provincial-wide policy recommendation encompassing direct and indirect sustainable recommendations all obtained from the careful island tourism analysis guided through the DPSIR framework.

Keywords: DPSIR Framework, Island tourism, sustainability, island analysis

1. Introduction

Small tropical islands are unique biosystems considering the land unit area it occupies compared to larger land masses on Earth. Given the fact that the dynamism of competition for scarce resources and increasing human population pressures to the island environment are very much felt, small islands are tagged as vulnerable and fragile ecosystems. With this, the impacts that small islands had to deal involve both addressing its local fragility and resources use context and global scale challenges (Deschenes & Chertow, 2004) and consequent interaction of small islands to the larger island units and other islands systems.

Small island analysis, therefore, entails a holistic approach that seeks to integrate the varying ecosystems in contained in it. The likes of ecosystem-based management approaches, which were formulated as early as 1950s still, are not well integrated to the context of small islands in the attempt to properly analyze it (Kirkfeldt, 2019). There has been some success in the analysis of small islands, however, it has been limited to aspects of developing sustainable indicators for a single economic unit in small islands (Bunce 2009, Boonchai and Beeton 2015, Banos-Gonzalez et al. 2016, Blancas et al. 2016, Pizzitutti et al, 2017). Hence, island tourism, could be well established however, concerns on the multifaceted environmental concerns of small islands must be directly highlighted.

The DPSIR (Driver-Pressure-State- Impact- Response) is an approach showing the causal framework for describing the interactions between society and the environment (EEA, 2006). It provides a holistic understanding of the local situation explained through observed conditions and backed up with quantitative information. It can be a good way to make people understand better the complexity of the resource use in small islands. Also, through this framework, the interconnectedness of human-induced issues along with the ecosystems contained within the small islands can be properly understood.

Fitting to the small island niche, its limited resources use issues, especially those related to tourism, can accrue to the grassroots problems of island natural resources and tourism subsector as among the primary economic drivers of small islands that can be directly referenced to the locals social and economic vulnerabilities. Here the integration of the social, economic and environmental concerns can be vividly discussed. Further, this paper attempts to comprehensively describe small islands and how it is distinctive from other landscape units or ecosystems in terms of providing for its sustainable tourism option.

2. Methodology

A variety or a combination of economic indicators can be applied in analyzing small tropical island tourism perspectives. DPSIR framework uniquely differs for its attempt to provide qualitative relational causal analysis of a system, which fits to the needs of the unique island character (Reyes, 2020). Although this tool has its

disadvantages, especially in relation to quantitative analysis, still, qualitative linkages of the problems felt in the socio-economic environment and the natural ecosystem can be highlighted and provided with sound solutions as shown in the general approach for the DPSIR as used by Smeets and Weterings (1999) showing how the framework works as an analytical at solution-focused guide to researchers (Figure 1).

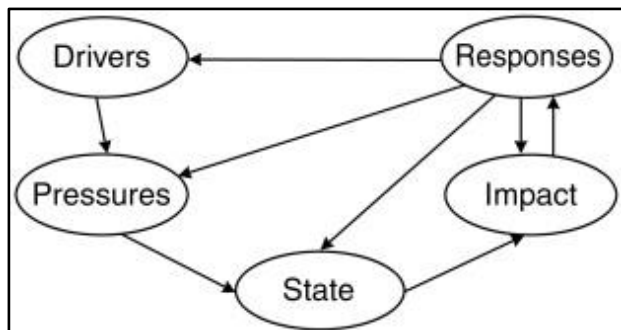


Figure 1. The DPSIR Framework

This approach creates the picture of how small islands should be considered given the multifaceted and complex interrelations of problematic issues present in small islands, especially related to sustainable tourism. This is also revealed by University of Siena (2011) wherein the DPSIR framework is used in several studies to represent the conceptual procedures for understanding, modelling and managing the decision issues associated with water resource management. This has been found useful especially for planners and decision makers, and policy makers, alike, as DPSIR approach allows the easier understanding of environmental problems (Maxim, Spangenberg, & O'Connor, 2009).

3. Results and Discussion

3.1. The State of Small Island Tourism in Camiguin Philippines

Agriculture as the backbone of Philippine economy and tourism as a service-oriented economy similarly exist in islands. In the recent decade, tourism of small islands, started to catch up as an alternative to subsistence agriculture, although informal in many cases, the impacts of tourism activities in small tropical islands are evident.

Situated in the south-central part of the Philippines, Camiguin is a small island province off the northern coast of mainland Mindanao. It has a total land area of 238.63 km² and a population of 88,478 in the 2015 census (PSA, 2020). Camiguin is the second smallest island province in the Philippines having five municipalities.

In the last decade, the tourism industry in the Philippines sky-rocketed; a small tropical island like Camiguin is no exemption. Camiguin boasts its unique natural landscape that has been a traditional tourism adventure escapade even without the tourism boom (Table 1).

Evidently, the concern on the cascading problems with the misuse of natural resources induced by tourism has

been identified as well in Table 1. These issues overwhelmed the small island as influx of local and international tourists has been observed in the last 10 years.

Table 1. The Unique Natural Features of Camiguin Island and its potentials for Tourism development.

Camiguin Island Comparative Advantage	Challenges	Threats to the Natural Island Ecosystem
<ul style="list-style-type: none"> Island Adventures (Mantigue and White Island) Waterfalls and hot springs Giant Clam sanctuary, Dive sites Lanzones/ Langsat (<i>Lansium domesticum</i>) and Lanzones Festival Mountain Trekking Underwater cemetery 	<ul style="list-style-type: none"> Tourism promotions should be improved No carrying capacity studies on the intake of tourists Local involvement on tourism activities Improve the tourism facilities 	<ul style="list-style-type: none"> Waste management Destruction of dive sites Alteration of natural ecosystem processes Weak integration of tourism activities to the spatial development plans

3.2 The Drivers and Pressures on Camiguin Small Island Tourism

Several persistent problems and concerns have been very visible making sustainable tourism in the small islands not easy to fully realize. Relational evidences can be seen through the DPSIR framework for the tourism industry of Camiguin (Table 2 and Figure 2) showed this dilemma.

Critical among driving forces are the general national development strategy gearing towards tourism, the increasing population, infrastructure development and urbanization (Table 2). These driving forces directly and indirectly put pressure on the general island activities favouring tourism and overwhelmingly stress the natural island ecosystems explained as “states” in the DPSIR.

The national government mandate on tourism is clear for local tourism effort be complemented with infrastructure and development related activities. This has lead to unprecedented growth of tourism activities in the small islands like Camiguin. However, its consequent impacts and spill-over/ backwash effects were later felt, especially by the locals. These combined driving forces enhance and put pressure to the small island tourism activities.

Much like other small islands having a population growth usually lower than that of the larger regional environment (Bass and Dalal-Clayton, 1995), Camiguin demographically follows with 1.01% population growth rate, which is less than that of the region (1.92%) and the Philippines (1.72%), respectively.

However, influx of local and foreign tourists increasing the usual island demands for goods and services and creating bottlenecks in the normal capacities of the natural environment to replenish and renew its own system (Table 2) in terms of nutrient recycling and consequent production of goods.

Table 2. DPSIR Framework for Island Tourism Development in Camiguin

Driving Forces	Pressures	Perceived State	Impacts	Response
<ul style="list-style-type: none"> Population growth and globalization Influx of tourists (growth of 7% based on a 5-year compound average growth) Urbanization and infrastructure development (allocation of regional and national infrastructure investments; regular air, with 11.56% growth, added to the existing daily water transport) National development strategy on tourism (Tourism as Philippine flagship program; Rehabilitation of Boracay Island, Camiguin is packaged as one alternative destination) 	<ul style="list-style-type: none"> Increased demand for raw material goods (Food and Construction) Local Government Push to increase income from tourism activities Mass production of non-indigent goods Regional Spatial Strategy on the role of Camiguin in tourism development 	<ul style="list-style-type: none"> Island Tourism Development (General local economic growth; 95% of local employment generated; island accessibility; availability of urban services for tourism) 	<ul style="list-style-type: none"> Waste management issues Ecosystem services disruption Introduction of foreign species/ varieties of crops Land conversion for modernization Encroachment of protected areas Local food production shortfall Increased importation of goods to meet the increasing local demand 	<ul style="list-style-type: none"> Integrating the tourism development plan to the provincial development plan Inter-agency coordination on tourism, environment and local government Carrying capacity studies Endogenous development

Also, the island province of Camiguin has been recognized at the regional administrative environment to really push forward tourism as an engine for their economic development. Camiguin is identified together with Gingoog City in the Northern Mindanao region to lead in the tourism adventure loop of the region (RPFPP, 2013). This directly translates to regional tourism packages involving the island of Camiguin that initially shocks the island province.

Further analyzing the tourism industry through the DPSIR framework (Table 2) shows that many related

indirect activities aggravate the situation of small island ecosystem. As such, socio-cultural (peace and order, indigenous cultures, etc), economic (job creation, livelihood, financial flows, etc), environmental (waste management, resources depletion, mismanaged natural resources, etc) and institutional (land conversion, services provision, etc) concerns are manifesting significantly.

Among the prevalent problems organized into DPSIR framework are shown in Figure 2. These problems and challenges are directly coming from the local community members and as emphasized by local authorities.

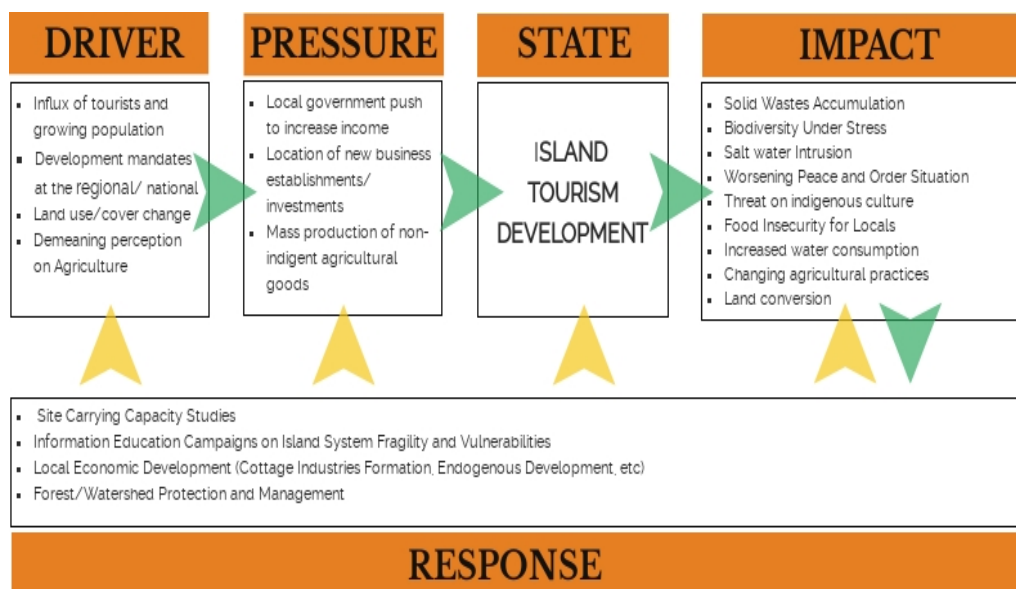


Figure 2. The DPSIR Framework for Small Island Tourism in the Philippines. (Reyes, 2020).

3.3 Island Analysis towards Sustainable Tourism Solutions

Proper explanation of the contextual conditions existent in small islands provides sufficient hints on how to achieve small island sustainability. Indeed, small islands are unique ecosystems that merit well defined and carefully laid development strategies for its development.

The DPSIR framework shows the character of the island development in Camiguin. The general spread effect in the cumulative causation theory of Gunnar Myrdal (Ho, 2004) is evident as island employment quickly pick up at the onset of tourism in Camiguin. Also, contributing to

the favorable state of island tourism includes the infrastructure development linking and creating more access for the island to fulfill its tourism mandate in the region (Figure 2).

Further, the value of the DPSIR framework enables the implementers to see the holistic picture of the problem or issue persistent in the area and at the same time enabling them to provide multi-fold and cross-cutting solutions (Figure 2) that will solve not only the perceived state or condition but also the driving forces and pressures continuously creating a conducive environment for the problem or existing perceived condition to persist.

4. Summary and Conclusion

The DPSIR framework provided a critical interrelated problem-based and solution focused analysis for the small island province of Camiguin. These interrelated analyses formed the building blocks of the seemingly stable status of the general tourism developments for Camiguin as per the local income generation and job creation in the island province.

However, looking at the bigger picture, the long term sustainability of these activities especially related to tourism looks not appealing especially with regards to the ecosystem carrying capacity and the local socio-cultural decay. Nonetheless, vertical and horizontal complementation of the identified responses or recommendatory activities targeting several aspects of the problematic issues in the DPSIR framework (Figure 2) shows a guiding light that small island tourism In Camiguin can still forge forward into a more sustainable approach to tourism development.

References

- Bass, S. and Dalal-Clayton, B. (1995). *Small island states and sustainable development: strategic issues and experience*. Environmental Planning Issues no. 8 International Institute for Environment and Development, London.
- Deschenes, P. J., & Chertow, M. (2004). An island approach to industrial ecology: Towards sustainability in the island context. *Journal of Environmental Planning and Management*, 47(2), 201–217. <https://doi.org/10.1080/0964056042000209102>
- Ho, P. S. (2004). Myrdal's Backwash and Spread Effects in Classical Economics: Implications for Multilateral Trade Negotiations. *Journal of Economic Issues*, 38(2), 537-544. Retrieved April 23, 2021, from <http://www.jstor.org/stable/4228041>
- Kirkfeldt, T. S. (2019). An ocean of concepts: Why choosing between ecosystem-based management, ecosystem-based approach and ecosystem approach makes a difference. *Marine Policy*, 106, 103541.
- Maxim, L., Spangenberg, J. H., & O'Connor, M. (2009). An analysis of risks for biodiversity under the DPSIR framework. *Ecological Economics*, 69(1), 12–23. <https://doi.org/10.1016/j.ecolecon.2009.03.017>
- National Economic Development Authority (Region X). (2013). *Regional Physical Framework Plan for Northern Mindanao 2013-2033*.
- Philippine Statistical Authority (2020). 2015 Camiguin Census Report.
- Reyes, EM. Jr. (2020). *Development of spatial strategies for small island landscapes in the Philippines*. Dissertation. El Dorado Repository of TU Dortmund. DOI: <http://dx.doi.org/10.17877/DE290R-21684>
- Smeets, E., & Weterings, R. (1999). Environmental indicators: Typology and overview. European Environmental Agency (Vol. 25). <https://doi.org/10.1016/j.jtbi.2013.04.018>
- University of Siena. (2011). *The DPSIR framework*. University of Siena Press.