

# 審査の結果の要旨

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## 博士論文題目 **Title of Doctoral Dissertation:**

Indigenous Guna perspectives on sustainable development challenges: A transdisciplinary approach to identify impact interlinkages

The Gunas are one of the eight recognized indigenous group in Panama with settlements along the north-eastern region of the country. They represent the second largest indigenous group and account for 19% of the total indigenous people in Panamá and 2% of the total national population. Their livelihoods come mainly from tourism, agriculture and fishing (although the last two are mainly for subsistence). However, their ancestral homeland faces multiple sustainability challenges. The increased interaction with the outside world in the last 20 years has triggered rapid changes in the Gunas value system. The saglas of these indigenous communities are struggling to balance a development agenda and maintaining their traditional socio-ecological system (SES). While the Guna worldview puts their people under the role of caretakers of nature with a lifestyle that preserves their coastal and island ecosystems, the younger generation has started adopting new values that prioritize development over tradition and harmonious co-existence with nature.

Despite many indigenous communities worldwide experiencing similar changes that catalyse shifts in their traditional livelihoods, lifestyles, and social interactions, there is scarce literature studying these phenomena from the local viewpoint. While the inclusion of indigenous people's perspective has received ample attention in the current academic discourse and the processes of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), little progress has been made. There is still a lack of robust transdisciplinary research that effectively uses mix research methods to address the complex interlinkages between the social, economic, and environmental pillars of sustainable development in indigenous settings. There is a need to develop such studies in close partnership "with" indigenous groups, rather than studies "about" them.

This study aims to unravel the current sustainable development challenges in Gunayala from their point of view, how the different sustainability outcomes are interlinked (both positive and negative) and suggest pathways to achieve a sustainable development. Specific objectives are:

- (1) identify the current research state-of-the-art for indigenous coastal and marine social ecological systems through an extensive systematic review of the literature;
- (2) determine current sustainable development challenges in Gunayala from perspective of communities and stakeholders;
- (3) map a network of the key sustainable development challenges using a causal framework of driving forces, pressures, states, impacts and responses (DPSIR);
- (4) evaluate the DPSIR at community level and incorporate the outcomes through network centrality analysis;
- (5) develop research dissemination tools and recommendations that will help catalyze sustainable development in Gunayala.

The research reported in this thesis was conducted in close collaboration with Gunayala's regional and local authorities, as well as local partners from the University of Panama Indigenous People Office (OPINUP), following the Free, Prior and Informed Consent (FPIC) principle. The research followed a three-stage approach. During the first stage a systematic review identified the main types of research conducted in indigenous settings, as a means of informing the overall approach of this thesis. During the second stage 32 expert interviews were conducted with experts involved in Gunayala's development including international agencies, NGOs, national and local authorities, and community experts. The third stage sought to address objective (3) through ~270 household surveys that were designed drawing from the outcomes of the first and second

stages. The analysis of each stage followed a systemic approach novel for this type of studies using mix research methods. First, a systematic content analysis from the expert interviews helped to map a DPSIR network showcasing the sustainable development challenges in Gunayala. Second, two different survey tools (discreet choice experiment and Likert scale) were conducted at community level to cross-validate the outcomes and to feed the final network centrality analysis. Finally, dynamic web-based dashboards that can present the research outcomes based on different audience needs (NGOs, government, development agencies, local leaders, etc.) have been created as part of the study dissemination (objective 4).

For 1) the systematic review identifies two primary categories of research approaches to study indigenous communities in coastal and marine SES. The first category relies largely on qualitative techniques and contains studies that tend to achieve a comprehensive understanding of the drivers and pressures in indigenous coastal and marine SES, but albeit lack quantitative results to help prioritize relevant issues. The second category employs a more robust methodological portfolio of research methods, tools, and frameworks that allow the rather accurate measurement of specific phenomena but, however, mostly miss to provide multiple perspectives of the specific issues. These results showcase the need for the cross-fertilization between these types of studies and to promote approaches that actively seeks to conduct mix method research that can effectively integrate different knowledge and value systems.

For 2) expert interviews reveal four distinctive major types of development challenges in Gunayala. First, there are social issues including the steady loss of traditional practices, knowledge, and culture triggered by the increased interactions with latin societies through tourism, social media, and younger Gunas aspirations. Second, there are governance gaps where local institutions are lagging behind to the rapid changes in the region and are unable to effectively regulate emerging challenges. Moreover, there is a lack of capacity to coordinate community development with external partners. Third, relates to environmental issues from the degradation of ecosystem services and the overexploitation of marine resources.

For 3) the content analysis from the expert interviews produced 97 DPSIR networks covering all range of issues captured in objective (2). All 97 DPSIR networks were subsequently integrated into one comprehensive network that encompasses the main sustainable development challenges in Gunayala. The results show that the increased interaction with latin society has catalyse a paradigm shift at local level. The Gunas are shifting from subsistence-based livelihood system with a strong community cohesion to a lifestyle characterised by capital accumulation. This shift has led to positive outcomes providing communities with access to new food items, information, and overall higher living standard.

For 4) household surveys revealed the ongoing struggles of the Guna society. The results suggest a dichotomy between preserving Guna traditional values and reaping the benefits of development. On the one hand, tools used to rank development priorities without restriction highlight the loss of traditional values as the key priority. On the other hand, tools that ranked development priorities with preference restrictions showed that recovering traditional values is a much lower priority compared to improving healthcare, keeping tourism as a livelihood source, and developing new infrastructure projects.

For 5) considering the above results, institutional changes are needed to achieve sustainable development in Gunayala. At the regional level, there is a need for a clear long-term plan. Local community authorities rely on the regional leadership to guide their people to navigate the path between development and safeguarding their identity. However, up to now regional authorities have been reactive to such issues rather that proactively planning ahead the permissible tourism industry development and subsequent revenue allocation. At the international level, evidence shows that donors should be more flexible.

This committee unanimously agreed to award the degree of Doctor of Philosophy.

よって、本論文は博士（サステイナビリティ学）の学位請求論文として合格と認められる。