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SUSTAINABLE PORT DEVELOPMENT IN THE PHILIPPINES: A MIXED-METHOD ANALYSIS OF LGU-LED INITIATIVES IN SOUTHERN LEYTE

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Abstract

Ports connect island communities to markets and public services, and under the Local Government Code of 1991, Philippine local government units (LGUs) increasingly plan and operate them. Yet little is known about how LGUs pursue sustainability in port development where technical, fiscal, and environmental capacity is limited. This mixed-method study examines how LGU-led port initiatives in Southern Leyte pursue sustainability and what governance arrangements could strengthen them. It combines bibliometric mapping of Scopus and Web of Science records (2012–2025) with a multi-site case study of six LGUs (Saint Bernard, Sogod, San Ricardo, Maasin City, Liloan and Padre Burgos), drawing on 26 semi-structured interviews (August 2023–March 2024), planning documents and technical feasibility reports. The bibliometric map shows that research concentrates on large, authority-run ports. The cases show LGU ports improving local connectivity but constrained by fragmented mandates, limited technical and financial capacity, and weak integration of climate risk. The study proposes a multilevel collaborative governance model and four policy recommendations for sustainable, LGU-led port development.

Keywords: *port governance; decentralization; local government units; sustainable infrastructure; bibliometric analysis; Southern Leyte*

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INTRODUCTION

Background

In an archipelagic state, ports are basic infrastructure. They carry passengers, goods and public services between islands and tie peripheral municipalities to regional markets. Two institutions divide responsibility for Philippine ports. The Philippine Ports Authority (PPA) was reorganized under Presidential Decree No. 857 (1975) to carry out "an integrated program for the planning, development, financing, operation and maintenance of ports or port districts for the entire country." Local government units (LGUs) were given devolved responsibility for basic services and facilities, including locally funded public works, under Section 17 of the Local Government Code of 1991 (Republic Act No. 7160). The PPA's own port classification recognizes a "municipal port" as "a public port owned and maintained by the municipal government." As a result, many small ports are planned, financed, and operated by municipalities with limited technical and fiscal capacity.

Southern Leyte shows this dual system clearly. The province sits on the Surigao Strait and Sogod Bay. According to the PPA Port Management Office Surigao (reported by RPN Radio, 2023), "four (4) Southern Leyte ports now connect Mindanao to the rest of the country via the Eastern Nautical Highway" (Liloan, Padre Burgos, San Ricardo and Cabalian in San Juan), and RORO vehicle traffic through Surigao's Lipata terminal rose "from 153,275 vehicles (in 2020) to 314,640 in 2022." A November 2023 profile by the Consulate-General of the People's Republic of China in Cebu reports that the province "has a total of 11 seaports, two of which are declared as national ports, the Maasin and Liloan ports," of which five (Maasin, Liloan, Saint Bernard, San Juan and Sogod) are operational; that source's counts are internally inconsistent, and its classification of Maasin and Liloan as national ports should be reconciled with this study's framing of those sites as LGU-led. [AUTHOR: confirm with PPA records.] International work on green and resilient ports (Lam & Notteboom, 2014; Pelling & Uitto, 2001) has shown what sustainable port development requires: environmental management, climate-risk reduction, stakeholder engagement and institutional coordination. However, almost all of that work studies large gateway ports run by national or corporatized port authorities.

Research gap and objectives

We know little about how *municipal and city governments* pursue sustainable port development in decentralized, capacity-constrained settings. The study addresses three objectives:

1. to map the global research landscape on sustainable port development and port governance and locate where LGU-led ports sit in it;

2. to document and compare LGU-led port initiatives in six Southern Leyte LGUs; and

3. to propose a governance model and policy recommendations for sustainable, LGU-led port development.

Conceptual framework

Three bodies of work frame the study. **Decentralization theory** explains the authority and limits of Philippine LGUs under RA 7160, and the trust and integrity deficits that shape local governance (Brillantes & Fernandez, 2011). **Collaborative planning** (Healey, 2006) treats infrastructure decisions as negotiated among multiple stakeholders rather than handed down by technical agencies. **Sustainable and resilient port development** supplies the substantive criteria: environmental management tools (Lam & Notteboom, 2014), digital and sustainable business models at the ship–port interface (Del Giudice et al., 2022), and the particular vulnerability of small island settings to hazards (Pelling & Uitto, 2001). The framework aligns with four Sustainable Development Goals of the 2030 Agenda (United Nations, 2015), the same four that the case LGUs invoke in their planning (Table 1). SDG 9 (Industry, Innovation and Infrastructure) anchors port infrastructure as a driver of

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connectivity and appears in the Saint Bernard, Sogod and Maasin City cases. SDG 11 (Sustainable Cities and Communities) captures inclusive access and resilient communities and appears in the Saint Bernard, San Ricardo, Liloan, and Padre Burgos cases. SDG 13 (Climate Action) supplies the climate-adaptation criterion and appears in the Sogod case. SDG 8 (Decent Work and Economic Growth) covers the tourism and livelihood benefits of port development and appears in the Padre Burgos case.

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METHODS

Research design

The study uses a sequential mixed-method design. A bibliometric analysis maps the international literature and sets up sensitizing themes. A qualitative multi-site case study (Yin, 2018) then examines those themes in LGU practice.

Bibliometric analysis

Databases. Scopus and Web of Science Core Collection were used because together they give broad, curated coverage of peer-reviewed social-science and engineering literature (Falagas et al., 2008).

Search and inclusion criteria. Records published from 2012 to 2025 were retrieved with keyword strings on port development, port governance, sustainability, green ports, and local government. [AUTHOR: insert exact search strings, search date, document types (e.g., articles and reviews), language restriction, number of records retrieved per database, number after duplicate removal, and number included; a PRISMA-style flow diagram is recommended. Confirm that 2012–2025, not 2000–2025, was the window actually searched.]

Analysis. Records were merged and de-duplicated. Performance and science-mapping analyses were run in Bibliometrix (Aria & Cuccurullo, 2017), and keyword co-occurrence networks were built and visualized in VOSviewer (Van Eck & Waltman, 2014). [AUTHOR: state the minimum keyword-occurrence threshold, counting method (full/fractional) and clustering resolution.]

Multi-site case study

Site selection. We purposively selected six LGUs: five municipalities (Saint Bernard, Sogod, San Ricardo, Liloan, Padre Burgos) and one component city (Maasin City). The criteria were an active, planned or recently completed LGU-led port initiative and variation in geographic setting and project stage. [AUTHOR: confirm selection criteria.]

Data sources. Evidence came from (a) 26 semi-structured interviews conducted between August 2023 and March 2024; (b) LGU planning documents, such as comprehensive development and land-use plans and investment programs; and (c) technical feasibility reports. [AUTHOR: give the distribution of the 26 interviewees by LGU and role (e.g., local chief executives, planning officers, engineers, port users, national agency staff), interview length, language and recording/transcription procedure.]

Analysis. We coded transcripts and documents thematically, first within each case and then across cases.

Triangulation and trustworthiness. Findings were triangulated across interviews, documents, and technical reports, and across the six sites.

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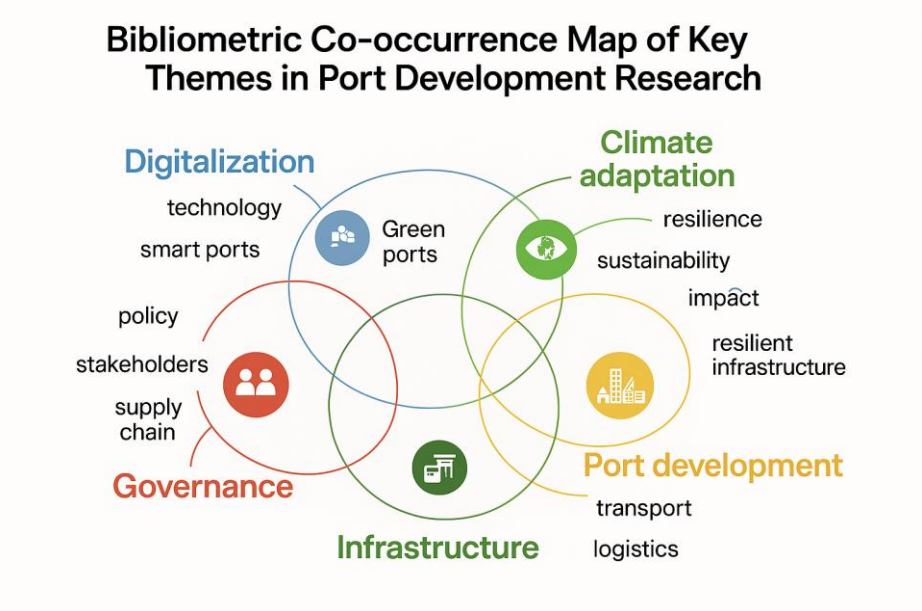
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RESULTS

Bibliometric findings

The co-occurrence network (Figure 1) groups the literature into thematic clusters built around port governance and management, environmental sustainability and green ports, and resilience and climate adaptation.

Figure 1. Bibliometric Co-occurrence Map



LGU port initiatives

Table 1 summarizes the six LGU initiatives. Statuses are reported as of the end of fieldwork (March 2024). Developments after fieldwork are given in a separate note.

Table 1. LGU Port Development Projects

Municipality	Project Status	Strategic Role	SDG Alignment	Planning Framework
Saint Bernard	Reopened (2025) Operational	Trade & connectivity	SDG 9, SDG 11	LGU Development Plan
Sogod	Expansion Ongoing	Agroindustrial corridor	SDG 9, SDG 13	SWOT & GOPP
San Ricardo	Operational	Local ferry link	SDG 11	LGU Investment Plan

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Municipality	Project Status	Strategic Role	SDG Alignment	Planning Framework
Maasin City	Operational Enhancement Phase	Regional transit node	SDG 9	City Infrastructure Plan
Liloan	Initial Planning	Rural access facilitator	SDG 11	Feasibility Study
Padre Burgos	Rehabilitation Expansion	Ecotourism support	SDG 8, SDG 11	LGU Tourism Strategy

Note: SDG 9 refers to Industry, Innovation, and Infrastructure; SDG 11 to Sustainable Cities and Communities; SDG 13 to Climate Action; and SDG 8 to Decent Work and Economic Growth.

Case findings by LGU

Saint Bernard. Saint Bernard's port, reopened in 2025 and now operational, serves a trade and connectivity role. It is aligned with SDG 9 and SDG 11 and anchored in the LGU Development Plan. The reopening is reported to have invigorated trade flow and inter-island connectivity, reaffirming the port's place in the province's transport corridor. [AUTHOR: the source attributes this to Martinez & Alfaro (2025), which could not be verified; replace with a verifiable source or your own data.] Saint Bernard showed high governance engagement, supported by structured local infrastructure planning.

Sogod. Sogod was the most planning-intensive case. Its port expansion, still ongoing, is framed as an agro-industrial corridor and guided by SWOT analysis and GOPP, with an emphasis on economic diversification. It is the only LGU in the sample that links its port to SDG 13 (alongside SDG 9), which the study reads as evidence of LGU autonomy and contextual responsiveness, and of adaptive planning under climate-sensitive conditions.

San Ricardo. San Ricardo's operational port functions as a local ferry link. It supports inter-island ferry services that provide basic mobility and rural access, particularly for geographically isolated coastal barangays. The LGU operationalizes SDG 11 through its Investment Plan, that is, through targeted investment planning.

Maasin City. Maasin City's port is operational and in an enhancement phase, acting as a regional transit node aligned with SDG 9 and guided by the City Infrastructure Plan. Like Saint Bernard, the city showed high governance engagement and serves as a transport anchor in the province's maritime corridor.

Liloan. Liloan's port project was at the initial planning stage, with a feasibility study as the main planning instrument and a rural access role tied to SDG 11. Governance engagement and planning maturity were more variable than in the trade-oriented cases. Consultation turnout in Liloan was lower than elsewhere, which the study attributes to scheduling overlaps, political sensitivities, and limited civic awareness of port planning.

Padre Burgos. Padre Burgos's port was under rehabilitation and expansion, positioned to support ecotourism through the LGU Tourism Strategy and linked to SDG 8 and SDG 11. As in Liloan, governance engagement and planning maturity were variable.

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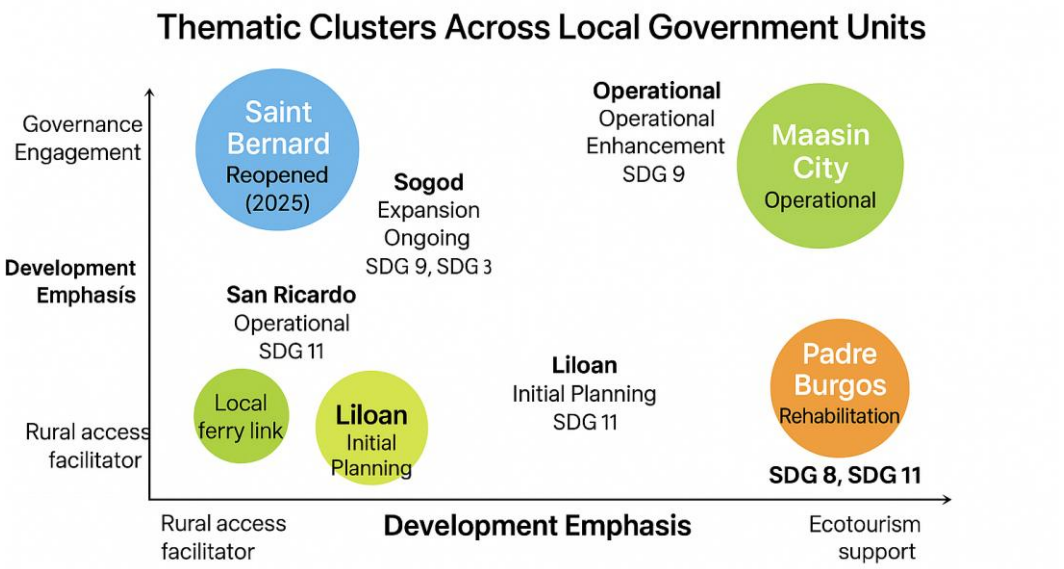
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Across the cases. A recurring tension runs between economic and environmental priorities. Cargo efficiency and regional trade integration shaped the agenda in Saint Bernard and Maasin City, while Padre Burgos and Liloan emphasized ecotourism and ecosystem management. The study reads these as differentiated but complementary development models. Multi-sectoral consultations, stakeholder mapping, and grassroots engagement platforms were important in legitimizing port projects. Access to up-to-date planning documents varied widely among LGUs, and some technical and investment records were unpublished or subject to bureaucratic clearance, which delayed triangulation.

Cross-case thematic clusters

The cross-case analysis identified recurring themes across the six LGUs (Figure 2): fragmented institutional mandates between LGUs and national agencies; constraints on technical and financial capacity; limited integration of environmental and climate-risk assessment; and the importance of stakeholder participation and political leadership.

Figure 2. Thematic clusters of LGU-led port development across six Southern Leyte LGUs



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DISCUSSION

Interpretation against the literature

The Southern Leyte cases fill a gap the bibliometric map exposes. International research is concentrated on large, authority-managed ports, while small LGU-run ports barely appear. The tools described for leading Asian and European ports (Lam & Notteboom, 2014), such as pricing, monitoring, market-access control and environmental standards, assume a dedicated port authority with regulatory and fiscal capacity. Most Southern Leyte LGUs lack that capacity. In their exposure to typhoons and sea-level rise they resemble the small-island settings described by Pelling and Uitto (2001) more than they resemble gateway ports. Indonesia's Sea Toll program, launched in 2015 and expanded from 3 to 39 routes between 2015 and 2024 to reach 109 ports ("Maritime Connectivity and Economic Inclusion: A Decade of Indonesia's Sea Toll Program," *Sinergi International Journal of Logistics*), and Vietnam's secondary-port planning are useful regional comparisons, because both show national governments trying to connect peripheral ports without leaving them to act alone.

Governance model

Figure 3 presents the proposed governance model as four overlapping dimensions, not a hierarchy of government layers. The model's core argument follows collaborative planning (Healey, 2006): sustainability in LGU-led ports depends less on any single actor's capacity than on structured coordination among LGUs, national port and transport agencies, and port users.

Figure 3. Proposed multilevel collaborative governance model for sustainable LGU-led port development, showing four overlapping dimensions



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Policy implications and recommendations

1. **Clarify LGU–PPA roles** for municipal ports through formal agreements under RA 7160 and PD 857.
2. **Build LGU technical and financial capacity** for port planning, feasibility study and operations, including access to national and provincial co-financing.
3. **Mainstream environmental and climate-risk assessment** into LGU port planning, consistent with SDG 13.
4. **Institutionalize multi-stakeholder port councils** at the provincial level to coordinate LGUs, national agencies, and port users.

Limitations

First, the six LGUs were selected purposively, so the findings generalize analytically, not statistically (Yin, 2018). Second, some financial and technical documents were incomplete or unavailable, which limits cost and performance comparisons. Third, the bibliometric analysis draws on two English-dominated databases that under-represent Philippine and other Southeast Asian grey literature. Fourth, the case statuses are fixed at March 2024 and may already have changed.

Future research

Future work should (a) compare LGU-led ports across provinces and island groups; (b) evaluate operational, fiscal and environmental performance after commissioning, using longitudinal data; and (c) test the governance model with national agencies and port users.

CONCLUSION

LGU-led ports in Southern Leyte show both the promise and the limits of Philippine decentralization. They extend connectivity to underserved coastal communities, but fragmented mandates, thin technical and financial capacity, and weak climate-risk integration threaten their sustainability. A collaborative, multilevel governance arrangement that aligns LGUs, the PPA, and other national agencies with port users offers the most realistic route to ports that serve SDGs 9, 11, and 13.

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