EXECUTIVE SUMMARY

A Policy Study on Enhancing the Operational Efficiency of Coastal Public Transportation

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1. Background and Purpose

1) Background

- Increasing Public Nature and Necessity of Coastal Passenger Ferries

- Coastal passenger ferries function as essential public transportation for island residents to maintain daily life activities including healthcare, education, and economic pursuits, thereby exhibiting strong characteristics of a public good.
- Given the vulnerable transportation accessibility of island regions, coastal passenger ferries serve as critical social infrastructure responsible for providing medical services, education, and daily necessities.
- However, public service quality is not adequately ensured due to aging vessels, insufficient terminal infrastructure, and low safety and punctuality.

- Furthermore, although coastal passenger ferries were included in public transportation through the 2020 amendment to the *Act on the Support and Promotion of Utilization of Public Transportation*, they remain marginalized in policy development and institutional protection.

▪ Intensifying Limitations of the Current Operational System and Structural Challenges

- The industry struggles to achieve independent growth due to a market structure centered on small-scale carriers with limited profit margins. Meanwhile, private operators experience worsening financial circumstances resulting from declining island populations, aging demographics, and rising operational costs.
- Public service quality of coastal public transportation is not sufficiently ensured due to aging vessels, insufficient terminal infrastructure, and low safety and punctuality.
- Despite financial support mechanisms such as the government-subsidized route system, deterioration in service quality and safety issues persist.
- Unlike land transportation, the absence of legal grounds for restructuring support impedes autonomous market reorganization, thereby perpetuating small-scale, fragmented business structures..

2) Purpose

- Diagnosing Operational Efficiency of Coastal Passenger Transportation Routes and Proposing Policy Directions

- This study analyzes the market structural and institutional limitations of the coastal passenger transportation industry. It systematically measures route-specific operational efficiency through quantitative methodologies including Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA).
- To enhance the efficiency of public fiscal investment, this study identifies inefficient routes to diagnose structural problems. It also establishes a policy foundation for comprehensively restructuring the industry ecosystem toward greater soundness.

- Establishing the Status of Coastal Public Transportation and Promoting Sustainable Development

- This study repositions coastal public transportation as an essential public service guaranteeing citizens' mobility rights. It develops measures to create a sustainable industry ecosystem through legal and institutional improvements (introduction of public operation systems, enactment and amendment of laws), user-friendly service improvements, and strategies to strengthen industry viability.

3) Relevant to National Projects

- Alignment with Transportation Innovation and Balanced Development Goals under National Goal 3 (Balanced Growth for Shared Prosperity) and National Goal 4 (A Society with Strong Fundamentals)
  - This study aligns with the policy directions of ‘Expansion of Transportation Innovation Infrastructure (National Agenda No. 57)’ and ‘Fisheries and Maritime Industry Innovation for Revitalizing Fishing Village and Coastal Economies (National Agenda No. 71),’ and contributes to guaranteeing mobility rights and improving settlement conditions in island and coastal regions."
  - This research is closely linked with 'Building a K-Maritime Powerhouse Leading the Arctic Route Era (National Agenda No. 56)' and 'Unwavering Maritime Sovereignty, Safe and Clean Korean Seas (National Agenda No. 76).' It contributes to maritime territorial protection and enhanced safety by improving the operational safety and reliability of coastal passenger ferries.

2. Methodology

1) Academic Methods

- Conducting Literature Analysis, Institutional Comparison, and Policy Case Studies

- This study identifies institutional imbalances through comparative analysis with land-based public transportation systems, including the semi-public bus operation system and urban rail.
- This study identifies policy needs through analysis of domestic and international coastal transportation support frameworks.

▪ Assessing Route Efficiency Evaluation (DEA, SFA) Based on Empirical Analysis

- Through DEA analysis, this study measures relative efficiency by comparing outputs (number of passengers, frequency of operation) against inputs (route distance, passenger capacity, subsidies) for each route and identifies inefficient routes.
- SFA analysis separates external environmental factors from technical inefficiency to estimate the absolute efficiency level of routes, thereby ensuring the reliability of the analysis.

2) Policy Formulation Methods

▪ Regular Consultations with Relevant Ministries and Ongoing Expert Advisory Services

- This study conducted policy consultation meetings and workshops with the Ministry of Oceans and Fisheries, ferry operators, and relevant institutions (including the Korea Maritime Transportation Safety Authority and the Korea Shipping Association) to identify on-site challenges and policy needs.
- By participating in National Assembly policy forums, this study sought to build social consensus on the necessity of introducing

a public operation system and legal-institutional reform, while validating the practical effectiveness of the proposed policies.

▪ Development of Issue-Specific Improvement Tasks and Establishment of a Phased Policy Support Roadmap

- This study developed comprehensive policy directions and phased implementation strategies for the sustainable development of the coastal passenger transportation industry.
- By examining the feasibility, effectiveness, and urgency of each policy alternative, this research established policy priorities and an implementation roadmap.

3. Result

1) Summary

▪ Current Status and Problems of the Coastal Passenger Transportation Market

- Most routes operate under monopolistic structures, and the business environment is highly vulnerable due to the small-scale nature of operators and high fixed-cost structures.
- Compared to land-based transportation, coastal passenger ferries are less competitive due to higher fares, limited accessibility, and inadequate transfer systems. Even government-subsidized routes lack incentives for service improvement, as support focuses primarily on cost reimbursement.

▪ Analysis of Relative and Absolute Efficiency of Coastal Passenger Routes

- While some routes maintain a stable demand base and relatively high productivity, the majority of routes continue to experience structural inefficiency due to weak demand and rising operating costs.

▪ Misalignment in the Institutional and Management Framework of Coastal Public Transportation Exacerbates Inefficiency

- Operating and management entities for coastal public transportation modes, including coastal passenger ferries and shuttle boats, are fragmented, limiting policy consistency.
- Different application scopes between the *Maritime Transport Act* and the *Act on the Support and Promotion of Utilization of Public Transportation* result in asymmetric support systems.

2) Policy Support Measures

▪ Strengthening the Legal and Institutional Foundation

- (Amendment to the *Act on the Support and Promotion of Utilization of Public Transportation*) Establish legal grounds for supporting coastal public transportation modes as public transit and introduce provisions for restructuring support comparable to those for land-based transportation.
- (Amendment to the *Maritime Transport Act*) Introduce provisions establishing the legal basis for a public operation system and implementing smart boarding management systems.

- (Enactment of the *Framework Act on Coastal Public Transportation*) Enact a *Framework Act on Coastal Public Transportation* as independent legislation that reflects the sector's unique characteristics and comprehensively regulates public service enhancement, financial support, and accommodations for transportation-vulnerable populations..

▪ Operational System Improvement and Service Innovation for Coastal Public Transportation

- (Phased Introduction of Public Operation System) Transition from the private-sector deficit compensation approach to a system where essential routes are operated under government responsibility.
- (Unification of Coastal Public Transportation Management Systems) Integrate the currently divided management system where passenger vessels (Ministry of Oceans and Fisheries) and shuttle ferries (Ministry of the Interior and Safety) are managed separately, bringing them under unified oversight by the Ministry of Oceans and Fisheries.
- (Enhancement of Coastal Public Transportation Services) Support measures should be developed including user-friendly infrastructure, AI-based smart boarding and disembarkation systems, and integrated transfer systems linking land-based transportation through Mobility as a Service (MaaS).

▪ Ensuring Sustainability by Strengthening the Self-Reliance of the Coastal Passenger Transportation Industry

- Create new business models through revenue diversification

(such as integrated tourism-logistics services), establishing restructuring support systems, and pursuing economies of scale through alliances among ferry operators.

4. Policy Recommendations

▪ Establishing Coastal Public Transportation as National Core Transportation Infrastructure

- Coastal public transportation should be designated as a core pillar of the national transportation network, and a national-level management foundation should be secured through legal and institutional reforms, including amendments to the *Act on the Support and Promotion of Utilization of Public Transportation* and the *Maritime Transport Act*, as well as the enactment of a framework act.
- Policy efficiency should be enhanced through integration of fragmented operational and supervisory functions into a unified management system.

▪ Transition to a Sustainable Industry Structure

- A win-win restructuring support system should be established to fundamentally improve the structural health of the industry.
- Institutional support should be provided for inter-operator alliances to achieve economies of scale through joint purchasing, shared maintenance, labor pool sharing, and substitute vessel deployment.

▪ Establishing a Foundation for a Self-Reliant Industry Ecosystem

- Coastal public transportation should transform from simple transportation operations into an integrated model combining tourism, culture, commerce, and services to develop diverse revenue sources.
- Industry self-reliance should be strengthened through revenue model diversification.

▪ Citizen-Oriented Service Innovation and Infrastructure Development

- The introduction of a public operation system should prevent the risk of route discontinuation and substantively realize island residents' constitutionally guaranteed rights to mobility and equality.
- User-centered service innovation should be pursued through infrastructure improvements, establishment of transfer systems, and introduction of demand-responsive transportation modes.

5. Expected Outcomes

1) Academic Effects

▪ Enhancing the Efficiency and Implementation Capacity of Coastal Public Transportation Policy

- Clear legal foundations will enable stable financing and efficient budget execution.

- The introduction of a public operation system and the unification of the coastal public transportation management framework will eliminate administrative inefficiencies and enhance policy credibility.

2) Social and Economic Effects

▪ Guaranteeing Fundamental Rights and Promoting Balanced Regional Development

- Ensuring stable guarantees of island residents' transportation rights and livelihood will improve quality of life and enhance settlement conditions.
- Improved accessibility to island regions will contribute to balanced national development through tourism revitalization, regional economic recovery, and population inflow.

▪ Ensuring Sustainability of the Coastal Passenger Transportation Industry

- The industry ecosystem will be strengthened through increased management stability for ferry operators and the creation of new services.