ESCAP initiatives on Digital and Resilient port in the Asia-Pacific

Mr. Gyu Serb Kim

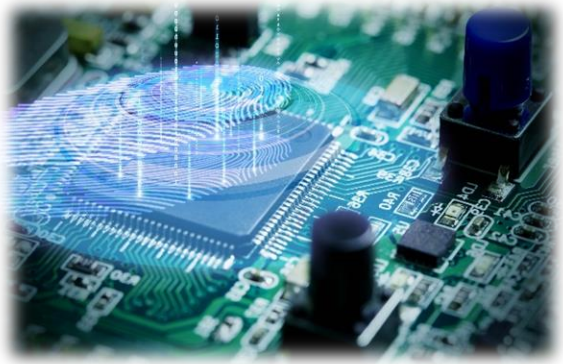
Expert on Port Infrastructure and Logistics

Transport Division

2024 Asia-Pacific Dialogue on Sustainable Maritime Connectivity

July 22

Contents



Background

1. Digital technology is the most important means of development in the Asia-Pacific region.

- Can be utilized as a means to quickly enhance port competitiveness at a low cost.

2. Port infrastructure is the facility most exposed to climate disaster risks.

- Efforts are needed to secure existing port infrastructure and to strengthen future port infrastructure.

2023 Smart Port Project

2023 Smart Port Project

Project Title	**Support the digitalization of ports including smart port reforms**
Project Period	2023 March ~ 2023 December
Project Background	The transition to smart ports with numerous challenges such as the digital gap, lack of professionals, and limited investment
	The necessity for a thorough understanding of the current status

2023 Smart Port Project

Objectives	To **understand the existing level and status** of port digitalization by **developing indicators to measure**
Target countries	Thailand (Bangkok port), Viet Nam (Danang port), and Cambodia (Sihanoukville Port)  
Activities	**Conducted research to** promote port digitalization and support the transition to smart ports. **Develop indicators** to measure the digitalization of ports **Applied the indicators to target ports** and reviewed the usefulness and applicability of them

2023 Smart Port Project

Major milestones

Kickoff meeting: virtual meeting (4 October 2023)

Capacity building workshop for the readiness assessment: virtual and off-line meeting (3 November 2023)

Field trip: Danang Port (Danang, 9-10 November 2023)

Final Capacity building workshop (Bangkok and online, 29-30 November 2023)

2023 Smart Port Project

The readiness assessment for smart ports:

- Through **three rounds of expert surveys (Delphi method)**
- **7 areas, 13 subjects and 49 indicators**

Area	Subjects	Indicators
Law	Law	Laws related to smart ports or port digitalization
	Regulation	Regulations related to smart ports or port digitalization
	Policy	Policies related to smart ports or port digitalization
Digital vision	Goals and action plans	Goals
		Action plans
	Strategy	Strategy
	Leadership	Leadership
		Governance
	Partnership	Finding Partner
		Open collaboration
Digital technology	ICT utilization	The ICT utilization within the organization
		The ICT utilization with external organizations
		The ICT utilization with customers
	Introduction of Digital technology	Introduction of digital technology
		Technology utilization
		Introduction of emerging technologies to port
		New technologies utilization of port operations
	Digital skills	The level of digital skills
	Informatization	e-Document
		Standard for e-Document
		Document digitalization
		Applying information system
		Utilizing information system
	Data	(structured/semi-structured/unstructured) Data processing
		(structured/semi-structured/unstructured) Data analysis
		Data sharing
	Infrastructure	Networks
		Information system required for smart ports
		System architecture
		The ratio of modernization and automation
		The ratio of usage of modernization and automation
		The ratio of usage of energy saving means
		Status of energy saving
	Cyber security	Security for assets

Area	Subjects	Indicators
Process	Planning	Service planning
		Standard and governance
		Open source
	Development and operations	Resource management
		Performance measurement
		Integrated service management
Propulsion system	Dedicated team/group	Dedicated team/group
	Work automation	Work automation
Evaluation	evaluation	evaluation
Capacity strengthens	R&D capacity	R&D capability
	Learning capacity	Maintain training course
		Continuously learning
	Human resource capacity	Capability of Human resource
		Interest of emerging technologies
	Recruiting	Recruiting

2023 Smart Port Project

Result of the readiness assessment

Area	Indicator	Port		
		Sihanoukville	Bangkok	Danang
Legal (10%)	Law, Regulation, Policy	D	B	C
Digital vision (15%)	Goals and action plans, Strategy Leadership, Partnership	D	B	C
Digital technology (40%)	ICT utilization, Introduction of digital technology Digital skills, Informatization, Data Infrastructure, Cyber security	D	B	C
Process (10%)	Planning, development and operations	C	C	C
Propulsion system (10%)	Dedicated team, Work automation	C	D	C
Capacity strengthens (10%)	R&D capacity, Learning capacity, Human resource capacity, Recruiting	D	C	C
Performance evaluation (5%)	Evaluation	C	D	D

2023 Smart Port Project

Analysis of the results

Port	Result of analysis
Sihanoukville	▪ They are interested in smart ports, but related laws do not exist (being prepared) ▪ A nation does not have plans to pursue smart ports but needs to proceed in the future. ▪ The target port uses the EDI system for port operations, but this EDI system does not cover the entire port operations
Bangkok	▪ Improvement of port infrastructure is being promoted based on their national policy. ▪ Although port operations are progressing using ICT, the utilization of e-documents may be somewhat low. ▪ From an interoperability perspective, the ratio of standard usage may be somewhat low.
Danang	▪ Efforts are being made to improve the port based on the national master plan. ▪ An information system is being built and utilized for port operations but does not cover the entire port operations. ▪ From an interoperability perspective, the ratio of standard usage may be somewhat low. ▪ They have recognized the need for smart ports, but the overall environment may be somewhat weak to progress it

2023 Smart Port Project

Maturity level of target ports

Port	Legal	Digital vision	Digital technology	Process	Propulsion system	Performance evaluation	Capacity strengthens	Maturity level
Sihanoukville	Ready	Ready	Ready	Ready	Introduce	Ready	Ready	Not started
Bangkok	Introduce	Introduce	Introduce	Ready	Ready	Ready	Ready	In progress
Danang	Ready	Introduce	Introduce	Ready	Ready	Ready	Ready	Beginner

2023 Smart Port Project

Recommendations for Sihanoukville port

Establishing a policy foundation for progressing towards smart ports

Review of existing laws, regulations, or policies for relevance and need for revision

If required, consider establishment of new laws, regulations, or policies for smart ports

Designate a leading organization

Establish and implement a progress plan for the smart port centered around the leading organization

Proposed implementation plan of smart ports

Time	Short-term		Mid-Term	Long-term
	Beginning - basis	**Design**	**Implementation Deploying**	**Expand the scope Globalization**
Plan	▪Establish national laws, policies, or regulations related to smart ports ▪Establish a master plan or roadmap regarding smart ports ▪Ensure the required budget to start smart ports ▪Capturing challenges, issues, and requirements	▪Develop national strategies to progress smart ports by a master plan or roadmap ▪Capacity building workshop ▪Selection of the leading organization, composed of community ▪Develop an implementation plan of information systems required for smart ports by national strategies	▪Design system architecture, network configuration, etc. required for smart ports ▪Introduce facilities, equipment, or advanced systems required for smart ports ▪Develop testing scenarios ▪Testing by scenario ▪Feedback ▪Pilot service -> launching real service	▪Information sharing with other government agencies ▪Expand the scope of smart ports ▪Link to other countries or other MSW (Maritime Single Window) ▪Consideration of how to adopt Emerging technology ▪Find out new requirements for running smart ports and go back "Design" stage to reflect new requirements

If needed, revise the related laws, policies, or regulations and ensure the required resources (budget, human, etc.)

2023 Smart Port Project

Recommendations for Bangkok port

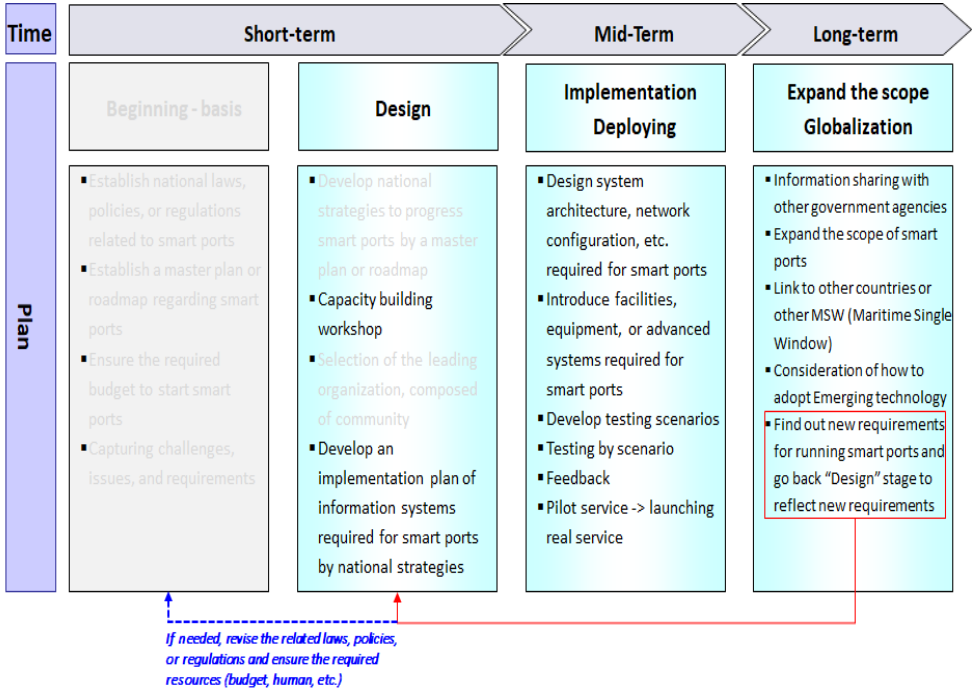
Establishing smart port vision and goals

Defining smart port strategy and action plans and the related tasks, establish implementation plan

Forming the dedicated team (or task-force team) and establishing an investment plan

Smart port infrastructure design development, introduction, and construction

Proposed implementation plan of smart ports



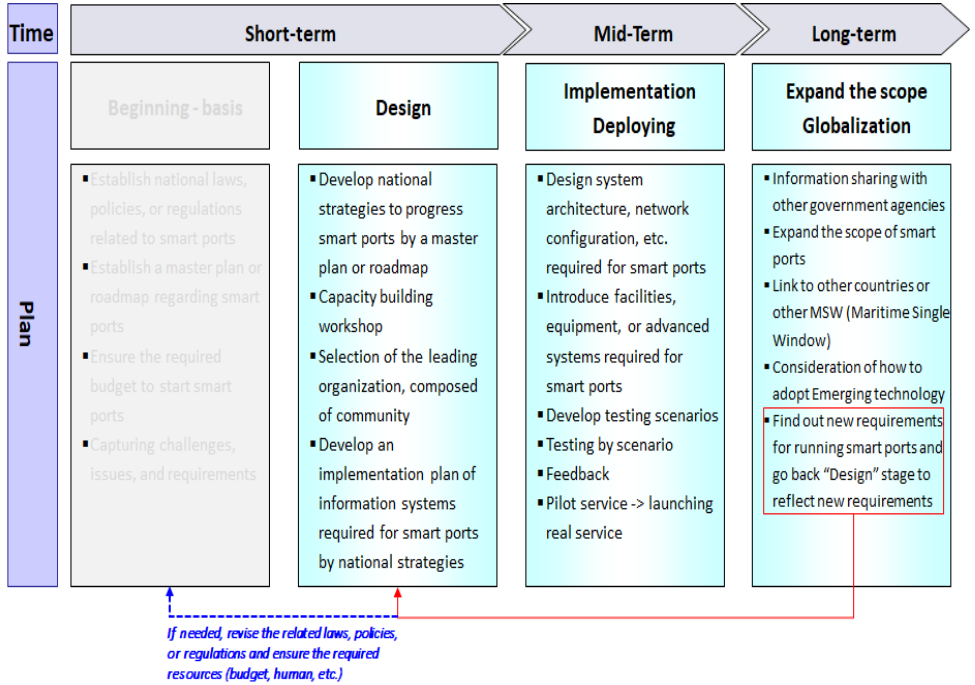
2023 Smart Port Project

Recommendations for Danang port

Check the current level of the target port through readiness assessment for Smart Ports (using the Maturity Model)

Develop the To-BE Model of the target port based on the result of the readiness assessment

Proposed implementation plan of smart ports



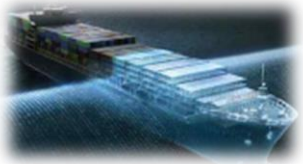
Autonomous Shipping Project (2022-2024)

Autonomous Shipping Technology Project

Project Title	Improving the safety of navigation and the sustainability of shipping through **the introduction of innovative autonomous shipping technologies** in the Asia-Pacific region
Project Period	**2022 July ~ 2024 June**
Project Objectives	**To support the introduction of innovative autonomous shipping technologies for the Asia-Pacific region**

Autonomous Shipping Technology Project

Target region	South-East Asian and South Asian countries including **Indonesia, Malaysia, Thailand, Vietnam and India**
Expected Outcome	**Target countries develop national plans** for the implementation of autonomous shipping technologies
	Strengthen capacity of the target countries for the introduction of innovative autonomous shipping technologies



Autonomous Shipping Technology Project

Major Activities

Combined National workshop for all target counties

(1-2 June 2023, Bangkok, Thailand, in a hybrid format)

- **To clarify and discuss the collected information and prepare national plans on advanced solutions, developments and applied approaches in the field of innovative autonomous shipping technologies**

National workshops for India, Indonesia, Malaysia and Thailand (online, September-October 2023)

International conference

(28-29 February 2024, Bangkok and online)

- **More than 160 participants from 22 countries and 18 organizations,**
- **Exchange on good practices and relevant global and regional initiatives**
- **Review the findings of the studies and expert discussions**

Expert group meeting

(17-18 June 2024, Pattaya, Thailand)

- **To assess opportunities for a regional approach**
- **To identify possible pilot joint project among ESCAP member States**
- **To develop the policy recommendations on regional cooperation**

Autonomous Shipping Technology Project

Major outcomes 1: Recommendations for the Development of National Action Plans

1. Establishing of policy and regulatory frameworks	Formulating national action plans to introduce the MASS Code to related national regulations through appropriate national mechanisms
2. Training and upskilling development	Providing training and upskilling programs for seafarers to adapt to new technologies and roles in autonomous shipping.
3. Universities' research and development	Funding and supporting by relevant research and development (R&D) support programs,
4. Public engagement and awareness	Including concrete measures to engage the public and build both industry and civil society support for these technologies
5. Investment in infrastructure and "sandboxes"	Investing in the development of infrastructure supporting autonomous shipping including investment in sandboxes (testbeds and trial projects)
6. Monitoring and evaluation	Establishing monitoring and evaluation frameworks to track progress and impact

Autonomous Shipping Technology Project

Major outcomes 2: Recommendations for Regional Cooperation

1.Establishing forums or platforms for knowledge exchange	Establishing forums or platforms and organizing training workshops and technical conferences
2.Joint research and training projects	Collaborative research initiatives, universities cooperation, and training programs
3.Participation in the development of legal frameworks for MASS	Participation in the development of legal frameworks for MASS at the platform of the International Maritime Organization (IMO)

Autonomous Shipping Technology Project

Major outcomes 3: Recommendations for Potential joint projects and Key technical solutions for their implementation

- Exchange of experience and support for the implementation of regulatory frameworks
- Joint training programs on autonomous shipping for seafarers
- Support for the implementation of trial projects (sandboxes) and the development of technological solutions
- **Key technical solutions to be in the focus of joint projects**: Autonomous navigation systems, Advanced sensors and sensor-fusion techniques, Connectivity solutions, Solutions for new segments of autonomous shipping , New simulators for training of personnel operating MASS

Autonomous Shipping Technology Project

Major outcomes 4: National Reports for five member States

Final Report 30/9/23

The State of Autonomous Shipping in Indonesia

Author: Hafida Fahmiasari

UNITED NATIONS ESCAP
Economic and Social Commission for Asia and the Pacific

The State of Autonomous Shipping Concept in Indonesia

Table of Contents

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)

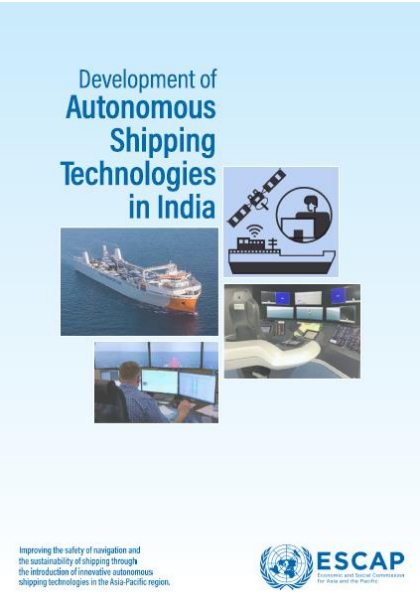
National Paper

Improving the Safety of Navigation and the Sustainability of Shipping through the Introduction of Innovative Autonomous Shipping Technology in the Asia-Pacific Region

Author: Cdr Ang Chin Hup (R)
National Consultant (Malaysia)

Table of Contents

1



New projects for 2024: Digitalization and Resilience

New projects for 2024: Digitalization and Resilience

Project Background:

Unprecedented Digital Technology Development in the field of Logistics

Increasing Wave Intensity and Frequency with Rising Sea Level

Renovating Port Infrastructure for Digital competitiveness and Climate-related resilience

Only for large and Medium-sized ports that have resources and capacities.

Widening digital and resilient gap in maritime connectivity between large ports and small ports

Affordable Digital and Disaster Resilient Technologies that make a difference.

New projects for 2024: Digitalization and Resilience

Title	**Bridging the digitalization and resilience gap in small ports in the Asia-Pacific region**
Project Period	**2024 May – 2025 December (20 months)**
Project Objective	**Narrow the gap in port digitalization and climate resilience** between member States' ports to promote sustainable and inclusive development in Asia and the Pacific Explore **technologies and policies for small ports** **Improving the policy capacity of these small ports.**

New projects for 2024: Digitalization and Resilience

Target Countries/Sub-Region(s)	**Small Island Developing States in the Pacific and Archipelagic countries in the South-East and South-West Asia**  
Activities	**Conduct research** on the current digital port technologies and disaster resilient port infrastructure technologies for small ports
	Prepare policy recommendations to promote port digitalization and secure climate-related disaster resilience of small ports
	Organize capacity building workshops

New projects for 2024: Digitalization and Resilience

Tentative Target Countries for the Project

	The South-East Asia	The South-West Asia	The Pacific Region	Total
Port Digitalization	Philippines	Sri Lanka	Solomon Island Kiribati	4
Disaster Resilience	Indonesia	Maldives	Papua New Guinea Fiji	4
Total	2	2	4	8

New projects for 2024: Digitalization and Resilience

Tentative Work Plan

	KEY ACTIVITIES	2024			2025			
	Quarter	2	3	4	1	2	3	4
	Output 1.1: Port Digitalization							
A1.1.1	Data collection and analysis							
A1.1.2	Organize capacity building workshops							
A1.1.3	Develop reports							
	Output 2.1: Disaster Resilient Port							
A2.2.1	Data collection and analysis							
A2.2.2	Organize capacity building workshops							
A2.2.3	Develop reports							

New projects for 2024: Digitalization and Resilience

Capacity Building Workshop

2024 December 8-9

Busan, the Republic of Korea

Inviting Representatives from target countries, international experts, consultants, and related organizations

Exchange of good practices and relevant global and regional initiatives on Digitalization and Disaster Resilience

New projects for 2024: Digitalization and Resilience

Request for Cooperation

- Selection of target port and designation of person in charge
- Provision of data related to port status
- Support for identifying needs on digitalization and disaster response
- Continuous communication through project implementation


thank you
danke
謝謝
ngiyabonga
teşekkür ederim
gracias
merci
obrigado
dziękuję
bedankt
спасибо
sukriya
kop khun krap
go raibh maith agat
mochchakkeram
terima kasih
감사합니다
ありがとう
arigatō
grazie
dakujem
мерси
dank je
tapadh leat
hvala
kiitos
takk
taiku
sagolun
рахмат
Баярлалаа
enkosi
хвала
mersi
blagodaram
faafetai lava
dhanyavadagalu
shukriya
trugarez
misaotra
matondo
paldies
grazzi
mamnun
asante
manana
tack
welalin
barka
spas
vinaka
mauruuru
dankie
dhanyavad
sobodi
děkuji
mèsi
najis tuke
tanemirt
rahmet
rahmat
diolch
xièxie
ευχαριστώ
chnorakaloutioun
gràcies
sulpáy
djiere dieuf
дякую
murakoze
tenki
obrigada