Trial Development and Proposal for Improvement on Port Statistics System in Cambodia

Tatsuyuki SHISHIDO^a, Eiji HASEBE^b, Minoru NAGATA^c, Takanobu SHINODA^d, Hiroyuki YOKOI^e

^{a, b} Overseas Coastal Area Development Institute of Japan, Tokyo 107-0052, Japan

- ^a shishido@ocdi.or.jp
- ^b hasebe@ocdi.or.jp
- ^c Yokohama City, Yokohama, 231-0017, Japan
- ^c mi00-nagata@city.yokohama.lg.jp
- ^d Japan International Cooperation Agency, Tokyo, 102-8012, Japan
- ^d Shinoda.Takanobu@jica.go.jp
- ^e Japan International Cooperation Agency, Phnom Penh, 613, Cambodia
- ^e Yokoi.Hiroyuki@jica.go.jp

Abstract

The Project for Establishment of National Port Policy and Administration System in Cambodia was conducted by the Japan International Cooperation Agency (hereinafter referred as JICA); it was completed in December 2011. As a part of the project, a trial port statistics survey during a six-month period was implemented as a pilot project. In the survey, problems were identified and points to be taken into consideration for the establishment of a port statistics system were made clear. This paper introduces the findings in the statistics survey.

Key words: Port Statistics, Statistics System, Cambodia, Technical Cooperation

1. BACKGROUND

1.1 Ports and Port Statistics in Cambodia

The ports of Phnom Penh and Sihanoukville are international ports serving as national gateways in Cambodia. These two ports are managed by Sihanoukvile Autonomous Port (hereinafter referred as PAS) and Phnom Penh Autonomous Port (hereinafter referred as PPAP) respectively which have been established under Sub Decrees promulgated in 1998. Other than these two ports, small ports are located along the coastal lines of the Siam Bay, the Mekong River and Tonle Sap Lake to accommodate ships which are engaged in domestic transportation or transportation from/to neighboring countries. In addition, there are several designated terminals where specified cargo is handled. These ports has been constructed and/or operated by provincial governments or private companies. The location of ports in Cambodia is shown in Figure-1.

Port activities in Cambodia have been growing in recent years corresponding to the steady economic growth of the Kingdom of Cambodia. However, there is no administrative framework which covers all ports in Cambodia. Regarding port statistics, each port collects several data on calling vessels and handling cargo based on its internal rules but only a limited amount of data is reported to the central government. Moreover, there are no unified forms for data collection and compilation and no administrative rules or a legal framework.

Port statistics, which provide information on the vessel, cargo and passenger traffic at ports, can be used as one of the principle tools for port administration and port management. In addition, it provides useful information to the private sector such as port users and investors etc. At present, PAS and PPAP collect several data on vessels and cargo for the purpose of better port management and operation of the port. However the current data management is not fully integrated and personnel who are in charge of such works lack experience and sufficient skill. In other ports, detailed information on ship and cargo for port statistics is not collected sufficiently. In addition, collected and compiled data by the ports are not released as port statistics.

Statistics Law of the Kingdom of Cambodia (NS/RC/050/015, 2005) stipulates that Ministries and institutions of the Royal Government shall collect sectoral data either independently or in cooperation with the National Institute of Statistics of the Ministry of Planning under Article 12. The Ministry of Public Works and Transport (hereinafter referred as MPWT) is responsible for managing port statistics of Cambodia.



source: prepared based on a material of Inland Waterway Department, MPWT Figure-1 Ports in Cambodia

1.2 Project for Establishment of Port Policy and Administration System

The Project for Establishment of National Port Policy and Administration System in

Cambodia was conducted from March 2009 to December 2011 under a joint work between MPWT and JICA. The goals of the project are to contribute to capacity development for Cambodian officials in planning the national port policy and administrative management. The aims of the project were to propose the draft national port policy, to develop the framework on collection of port statistics, and to prepare a draft of a port law and related regulations including a road map for enactment.

The overall goal of the project was to make it possible for port development and administration to be conducted according to national port policy and the project purpose was to develop planning capacity for national port policy and administrative management. In order to achieve the project purpose, three outputs were set up:

- 1. Draft National Port Policy and its Planning Process are established;
- 2. Framework on collection of port statistics required for National Port Policy Planning is developed; and
- 3. Roadmap and essential feature for enactment of port related laws & regulations are established.

Regarding output 2, Cambodian counterpart personnel and JICA experts carried out necessary activities to determine the type of port data required for National Port Policy Planning, made manuals for data survey method and processing, conducted pilot project on port statistic at pilot ports, analyzed the necessity of a legal framework of port statistics and developed a procedure for establishment of legal framework.

In this paper, implementation structure and the designed survey sheet are first introduced. Next, several examples of the outputs of the pilot project are shown. Finally, issues manifested through conducting the project and measures to be taken for establishment of a port statistics system are summarized.

2. PILOT PROJECT ON PORT STATISTICS

2.1 Implementation Method of the Pilot Project on Port Statistics

The pilot project targeted four ports: Sihanoukville Port and Phnom Penh Port (autonomous ports), Tomnob Rolok Port (a provincial port) and Oknha Mong Port (a private port). Data of calling vessels, import/export cargo and incoming/outgoing passengers through these four ports from October 1st in 2010 to March 31st in 2011 were collected and entered in the survey sheet.

In PAS and PPAP, the data collection and data entry into the unified form were conducted by the members of the sub working group which was set up at each port with support by a local consultant. In the case of PAS, data were provided in soft or hard copies entered into the survey sheet by sub working group member personnel who belong to related departments. In PPAP, sub working group member personnel collected documents which contained the necessary data and entered the data into the form. Regarding the other two ports, personnel of each port entered data into the form and the completed sheets were collected by a consultant every week.

2.2 Statistics Survey Sheet

A survey sheet was designed for one vessel on a vessel call basis and named Form-1. It is composed of four parts: heading, vessel information, import and export cargo information, and incoming and outgoing passenger information. The column for the following data items

for each part is prepared as shown in Figure-2. The sheet is prepared based on MS Excel software.

Heading

Port Name, Date of Port Call and Reporter (Dept./Section)

Vessel Information

Name of Vessel, Call Sign, International or Domestic, GT, DWT, Flag, Vessel Type, Last Port Name, Berthing Place, Berthing Time, Berthing Hours 8calculated automatically) and Next Port Name

Cargo Information

Cargo Name, HS Code, Cargo Type, Weight of Cargo (kg), First Loading Port Name/Final Destination Port Name and Transit Port Name (if applicable). In addition, Number of Container in TEU (laden and empty) by Size for Container Cargo

Passenger Information

International or Domestic, Number of Passengers and First Boarding Port Name/Last Destination Port Name

2.3 Monthly Statistics Tables

The data in the survey sheet were compiled into the prepared tables designed for monthly statistics. The implementation method of the statistics survey is shown in Figure 3.

Data in Form-1 were compiled into monthly tables such as monthly vessel table, monthly import cargo table, monthly export cargo table, monthly import container table, monthly export container table, monthly import container cargo table and monthly export container cargo table.

Monthly vessel table shows basic movement of calling vessels in a month and includes the name of vessel, international or domestic, gross tonnage, vessel type, last port name, berthing place, berthing hours and next port name. Volumes of import cargo and export cargo and numbers of incoming and outgoing passengers which are transported or on board in each vessel are also shown in this table. In the monthly import (export) cargo table, all cargo names which are imported (exported) in a month are listed with HS Code, cargo type, weight of cargo, first loaded port name (final destination port name) and transit port name (if applicable). Monthly import (export) container table shows numbers of laden/empty container boxes by size for each vessel with first loaded port name (final destination port name) and transit port name (if applicable). Total number of laden/empty containers in TEU base is calculated on MS Excel software automatically. Monthly import (export) container cargo table gives information on cargo names and weight of cargo imported (exported) in containers with the name of the first loaded port(final destination port name).

Port Statistics Survey Sheet By Vessel (One sheet per Vessel)

	Date of Port Call					1												
Rep	orter (Dept./Section)					1												
						-												
A. Ves	sel Data																	
Serial No.	Name of Vessel	Call Sign	International or Domestic	GT	D WT	Flag	Vessel Type	LastPortName	Berthing Place		Berthing Time		Departure Time		Berthing Hours		Next Port Name	
															0:	00		
B-1. In	nport Cargo Discharges	1																
						I		Transit Port	(Container Cargo only) Number of Containers by Size									
Cargo Name		HS Code	Cargo Type		Weight c	of Cargo (kg)	hist Loaded Port	Name (if	20	Feet	40 F	eet	451	eet	Othe	er Size	TE	U
			_				Name	applicable)	Laden	Empty	Laden	Empty	Laden	Empty	Laden	Empty	Laden	Empty
									1		1							
	Total					(0		0	0	0	0	0	0	0	0	0.00	0.00
B-2. E>	port Cargo Loaded																	
Cargo Name							Final Destination	Transit Port	ort (C lif 20 Feet		(Container Cargo only) Number of		mber of (Containe	rs by Size			
		HS Code	Cargo Type		Weight of Cargo (kg)			Name (if			40 Feet 45 Feet		Other Size		TEU			
								Applicable)	Laden	Empty	Laden	Empty	Laden	Empty	Laden	Empty	Laden	Empty
									-	-				-		-		
	lotal						J		0	0	0	0	0	0	0	0	0.00	0.00
									1.0	1 ///								
C-1. Ir	coming rassenger		()				7	Remarks, Notes a	ind Comr	nents (it c	any):							
International or Domestic		NUMber	or r assengers	FIRST	boaraing r o	in Name	-											
							-											
	Tedad						-											
	Total		0				1											
c.a.c	uta sina Bassana se																	
Loter	angoing russenger	Niurala ar	of Passon a or	Locks	Sectionation P	ort blans s	Т											
mier	national or Domestic	nomber	orrasenges	LOSIL	/estimation F	on nume	1											
							-											
-	Total		0				1											

Figure-2 Statistics Survey Sheet (Form-1)



Figure-3 Implementation Structure of the Pilot Project

3. IMPLEMENTATION OF STATISTICS SURVEY

3.1 Data Volume treated in the Statistics Survey

In the survey, a lot of data were collected and entered into the Form-1. The volume of treated data shows the magnitude of the workload required in the statistics surveys.

During the six months of the survey, 429 vessels called at Shihanoukville Port, 830 at Phnom Penh Port, 140 at Tomnob Rolok Port and 541 at Oknha Mong Port respectively. The total number of vessel calls at the four ports amounts to 1,940. The numbers of data items in Form-1 for one vessel are three for heading, thirteen for a vessel, fourteen for non-containerized cargo, six for non-containerized cargo and three for passengers respectively. Treated data in the survey amounts to 259,335. The total volume of treated data of PAS in six months is 168,467, that of PPAP is 78,133, that of Tomnob Rolok Port is 8,658 and that of Oknha Mong Port is 10,039.

3.2 Results of Data Analysis

In the pilot project, data obtained by the statistics survey were organized into vessel statistics, cargo statistics, container statistics and passenger statistics. In vessel statistics, monthly statistics on numbers, types and sizes of calling vessels were organized for each port. In cargo statistics, monthly statistics on cargo volume, cargo types, commodities (HS Code 22 Classification) and origin/destination country were organized for each port. In container statistics, monthly container throughput, container size and commodities of container cargo were organized for two autonomous ports. In passenger statistics, numbers of disembark/embark passengers were organized for two autonomous ports.

Analysis on data obtained in the survey provided interesting information on port activity which was not previously understood. For example, by using unified forms for the statistics survey, port activities of the ports of Sihanoukville and Phnom Penh could be compared and nationwide statistics of port activities could be grasped.

Port activities of target ports during the six month servey period

In order to grasp the overview of port activities, numbers of calling vessels, total gross tonnage, cargo volume (import/export), container throughput (import/export) and number of passengers (disembark/embark) have been compiled in a table. Port activities of four ports (from Oct 2010 to Mar 2011) are shown in Table-1.

Activities	Oct	Nov	Dec	Jan Feb		Mar	Total	
Number of Vessels	298	297	331	321	312	377	1936	
Total of Gross Tonnage (ton)	518,819	453,988	555,655	475,168	544,166	607,860	3,155,656	
Cargo Volume (ton)	334,079	337,652	407,121	357,862	336,123	439,065	2,211,902	
Import	280,039	298,847	335,232	308,443	298,071	390,106	1,910,738	
Export	54,039	38,805	71,889	49,419	38,052	48,959	301,163	
Container Throughput (TEU)	23,544	22,248	26,175	23,699	20,752	24,706	141,124	
Import	11,136	11,747	12,943	11,791	10,261	13,651	71,529	
Export	12,408	10,502	13,232	11,909	10,492	11,055	69,598	
Number of Passengers	3,015	1,336	1,957	2,596	4,861	4,636	18,401	
Disembark	1,504	666	1,003	1,311	2,372	2,451	9,307	
Embark	1,511	670	954	1,285	2,489	2,185	9,094	

Table-1 Port Activities of Pilot Project Ports (from Oct 2010 to Mar 2011)

Vessel Statistics

Figure-4 is one of the outputs of vessel statistics. Almost all ports including small river ports have data on calling vessels. Not only number of calling vessels by type can be grasped but also functions of each port in Cambodia may be inferred by organizing such statistics.



Figure 4 Type of Calling Vessel

Cargo Statistics

Figure-5 shows import cargo volume by commodity with HS code. Figure-6 shows volume of exported garment by destination country. MPWT, PAS and PPAP did not previously have such information. Information on commodities of handling cargo at each port which are classified in a unified format is necessary for preparing national port policy. Detailed information of handling cargo can provide valuable information for not only port administration but also operation and business of the private sector.



Figure 5 Import Cargo Volume by Commodity with HS code 22



Figure-6 Volume of Exported Garment by Destination Country

Container Statistics

Figure-7 is one of the outputs of container statistics. Though a certain volume of container boxes is transported by road, the movement of container boxes between two ports may be estimated by analyzing the number of container boxes by size which are handled at Phnom Penh Port and Shihanoukville Port.



Figure 7 Number of Import/Export Container Box by Size

4. FINDINGS AND ISSUES IN CONDUCTING PILOT PROJECT ON PORT STATISTICS

4.1 Data Entry

From a viewpoint of saving workload and time as well as avoiding repeated data handlings, actual statistics works were done on a personal computer as much as possible. Form-1 and monthly tables were installed in personal computers using MS Excel software. One work sheet of a file is used for Form-1 of one vessel call and subsequent sheets are used for Form-1s of following vessel calls. Tables were also designed in the same manner and the cells of sheets of Form-1 are linked to the corresponding cells of the other sheets for monthly tables. Data entered into Form-1 can be transferred to the tables automatically on MS Excel software. Each sheet in MS Excel file was named in order to grasp the information of the entered data. Sheet name identifies the berthing date and monthly vessel serial number as one sheet is prepared for data collection of one vessel.

Regarding PAS, data required for filling Form 1 were collected from the data base in the single window system (SWS) which has been developed for generating invoices by PAS. Some data items are not included in the system and such data were collected from original documents. Sources of data and departments which treat the data are Declaration of Ship Arrival (Harbour Master & Pilotage Department, Cargo Manifest (Container Department), Cargo Manifest (Harbor Master & Pilotage Department), Attachment List of Cargo Manifest (General Cargo Department) and Load List (Container Department) and Passenger Manifest Certificate (Habour Master & Pilotage Department). Regarding PPAP, data required for filling Form 1 are collected from the copies of the original documents submitted by a shipping agent etc. and documents which are prepared by the Harbor Master and Pilotage Office. Sources of data are documents of Declaration of Ship Arrival, Particulars of Vessels, Declaration of Departure, Cargo Manifest of Import Cargo and Cargo Manifest of Export Cargo. Tomnob Rolok Port and Oknha Mong Port entered data into Form-1 and submitted it weekly. However some data items were not entered.

Problems which were observed in data collection and entry are summarized in Table-2.

Data Items	Main Problems observed					
General						
General	delay of data entry, English mis-spelling/typing,					
	data entry to incorrect cells, duplicated data entry					
Heading						
Date of Port Call	some confusion					
Vessel data						
Serial No.	some confusion					
Call Sign	no data, collecting based on ship particulars					
International/Domestic	some confusion					
GT/DWT	no data, collecting based on ship particulars					
Flag	using country code					
Vessel Type	some confusion for bulk cargo vessel, tanker, tug					
	and barge					
Last/Next Port Name	no data for some vessels					
Berthing Place	some berths with no name					
Berthing/departure Time	several errors					
Cargo Data						
Cargo Name	Many/various names, different names for the same					
	cargo, uncertain name of cargo					
HS Code	difficulty of obtaining data					
Cargo Type	some confusion for bulk cargo					
Weight of Cargo	mistake on unit (ton/kg)					
First Loaded/Final Destination	n many mistakes					
Port						
Transit port name	difficulty of obtaining data					
Number of Containers	data of empty container into the cells of laden and					
	vice a versa					
Incoming/Outgoing Passenger						
International/Domestic	no data for domestic passengers					
Number of Passengers	missing data					

Table-2 Main Problems in Data Entry

4.2 Data Compilation

The data entered into Form-1 are compiled into monthly data tables automatically on MS Excel software. At the end of every month, a monthly vessel table, a monthly import cargo table, a monthly export cargo table, a monthly import container table, a monthly import container cargo table and a monthly container cargo table are prepared. However at this stage, the tables include several blank cells, incorrect data and nonsensical data.

Data cleaning was conducted at the step of compilation based on the monthly tables. Data entered into Form-1 are transferred to and compiled in monthly tables automatically and incorrect data can be found by comparing with data placed in neighboring cells. In that context, data cleaning and compilation are conducted at the same time. Incorrect data and missing data which are found or identified at this step are replaced by correct data in Form-1 accordingly; data in tables are also corrected automatically.

4.3 Primitive Error Check

Data which have been collected and entered may contain a lot of mistakes and also there may be some missing data in general. Data cleaning is an indispensable step in order to prepare reliable statistics. Mistakes are mostly caused by mis-entry, mistyping or can be traced to the original source including errors or misunderstanding of persons in charge of statistics survey etc.

Form-1which is generated on a vessel call basis is the most basic survey sheet. The number of Form-1s which are generated each day shall be equal to the number of calling vessels of the day and this needs to be confirmed. If there is a discrepancy, names of vessels need to be checked and Form-1 should be prepared for that vessel.

Mis-entry data, mistyped data, nonsensical/impossible data may be included in Form-1. Such data should be identified and replaced by correct ones. Data are sometimes entered incorrectly into the target cells or typed incorrectly into the cells in Form-1. Misspellings are also copied from the original source data. Some data are nonsensical or impossible. It can be seen by comparing the gap in the results of the previous months and the real situation of port activities.

Almost all primitive errors might be minimized once the person who enters the data improves his/her ability. Furthermore, Data Filter of MS Excel should also be used to assist with the checking and correction of nonsensical/impossible data. Filtering data in the sheet can provide an overview of data entry in each column, then check and correction of misspelling data can be made easier and quicker.

4.4 Identification of Ports

In the beginning of the survey, it was planned to use the port code to identify the ports such as last/next port and first loaded/final destination port etc. However, there were many cases of incorrect port codes being entered or missing port codes as well as entry of names of countries instead of the port code. Furthermore, incorrect names of countries were entered in some cases. To rectify this situation, the data in the column in which the port code should be entered was rechecked in the stage of compilation and corrected as necessary. However, there were many cases that the port could not be identified from collected documents even though the names of countries could be collected in almost all cases.

Therefore, the names of countries instead of the port code and the unified country name was used for data compilation. Port codes shall be entered when the name of port is collected.

4.5 Unification of Cargo Name and HS Code

Cargo name is one of the most basic data items of port statistics. According to the original documents of data, various names of cargo were entered into the Form-1 for the same type of cargo. In addition, misspelling and/or mistyping also resulted in name discrepancies. Therefore, cargo names were rechecked and replaced by unified name of cargo. At the same time, 4-digit HS Codes were given to each cargo item. Use of HS code is important in order to conform with Customs Statistics.

However, it often happened that HS Code was not entered properly due to lack of experience and knowledge of persons in charge of the statistics survey. In addition, there were many unidentifiable cargo names. Therefore, a lot of cells for HS code were filled in with incorrect codes or remained blank. In such cases, HS Code was rechecked in the stage of compilation and replaced by the correct 4-digit code based on the revised name with the unified cargo name.

Examples of unified cargo names and 4-digit HS Code numbers which were used in the data compilation are shown in Table-3.

Originally Entered Name of Import Cargo	Unified Name	HS Code	
Lexus, LEXUS L 570, LEXUS LX 570, TOYOTA,			
TOYOTA LEXUS, Toyota Vehicle, VEHICLE, Vehicle,	Vehicle	8703	
VEHICLES			
BRIDGESTONE BRABD TIRE, CAR TIRE, MICHELIN			
TYRES, New Tires, New Tires, RUBBER TYRES, TIRE,	Tire	4011	
TIRES, TYRE, TYRES, Tire			
Originally Entered Name of Export Cargo	Unified Name	HS Code	
Buffalo Hide, Buffalo Leather, COW LEATHER, Leather,	Cour Loothor	4104	
RAWHIDE	Cow Leather	4104	
BAGS RICE, Jasmine Rice, Long Grain White Rice, Rice,	Diag	1006	
White Rice	Rice	1000	
Cigarette, CIGARETTES, Cigarettes, FILTER	Cigaratta	2401	
CIGARETTES	Cigarette	2401	

Table-3 Samples of Unified Names of Cargo

HS Code consists of 98 categories (from 100s to 9800s) but as a middle classification 22 classifications of HS code were used in many cases. 22 classifications mean that the 98 HS Code is classified into 22 major categories. The 22-category system was introduced to analyze the statistics data.

5 TOWARDS ESTABLISHMENT OF PORT STATISTICS SYSTEM

MPWT is responsible for management of port statistics. Corresponding to expansion of port activities in Cambodia, establishment of port statistics system will be strongly required. Through implementation of the statistics survey in the pilot project, points to be taken into consideration from technical viewpoints for establishing port statistics system in Cambodia emerged.

Avoiding errors in data entry

Some data is mistyped, entered incorrectly or requires clarification from the original source. Data cleaning is an essential part of a statistics survey. In order to reduce such work

load, it would be helpful if personnel in charge of statistics works identify those mistakes which happen frequently.

Utilization of the existing data base

PAS has developed and operates its own system in its business and departments of PPAP compile several data items into tables. Data which are required in port statistics are saved in the system and compiled in the tables. Effective utilization of such data in the system and tables is necessary for establishing sustainable statistics.

Application of unified names and HS Code

HS code for cargo and port code needs to be entered in Form-1. However some data gaps and incorrect codes were found. In addition, various words and terms are used as cargo names. In order to identify cargo and port/country easily, measures for unification of naming and coding shall be taken.

Necessity of supplementary survey

Some data items such as transshipment ports cannot be obtained from the existing documents. For acquiring such kinds of data, supplementary survey should be implemented.

Computer Proficiency

In order to establish a sustainable statistics system, saving of work, time and cost is essential. Use of PC is one solution. A program for data compiling should be prepared and personnel responsible for statistics compilation should familiarize themselves with the use of a PC.

Data platform which covers all ports in Cambodia

For establishment of national port statistics, it is necessary for the statistics system to cover all ports in Cambodia. A national port statistics system including the establishment of a port related data platform which everyone can access should be developed.

Capacity Development

Through the pilot project, personnel of MPWT, PAS and PPAP have advanced their skill on port statistics. For realizing sustainable port statistics system, on-the-job training on port statistics through daily statistics survey is required.

Legal Framework

In order to establish sustainable statistics system and provide reliable statistics, legal framework on port statistics is indispensable.

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REFFERENCE

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of the Pilot Project for Port Statistics (The Project for Establishment of National Port Policy and Administration System)

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