APEC PORT SERVICES NETWORK

ANNEX 3 Guide to GPAS Port Self-Evaluation

This document aims to provide instructive guidance for applicants to fill out the **GPAS Port Self-Evaluation Form**. To complete the forms, the port needs to describe the efforts that they have made according to the GPAS indicators. As for a certain indicator, if any effort has been made, the port is expected to fill the column with concrete activities, including outcomes, the projects in progress, the upcoming events or any other activities. Any relevant documents including written proof or justification, which are considered helpful to demonstrate the port's efforts, are required to be attached in annex to the GPAS Port Self-Evaluation Form. If no effort is applicable to a certain criterion, the port is expected to provide explanations stating the reasons why the criterion is not applicable.

In addition, the following notes are important for ports to apply for the GPAS:

1) The required criteria should in no case affect the safety of the ship or her crew. If safety is compromised by the adoption of a new practice in a particular case, such practice should be automatically considered non-applicable. In no case may a new practice be contrary to the requirements of a regulatory authority.

2) For exceptional cases when a specific criterion cannot be fulfilled, the port may request an exemption, which should be accompanied with a written justification.

3) The instructive indicators on each item are only provided for the port's reference and are non-exhaustive. The port is encouraged to present any activities or practice further to these instructive indicators.

4) These practices are not a part of performance indicator to the port, and participating ports are therefore not required to link their performance with the evaluation result.

5) The increment of green practice compared to the previous testing period is highlighted in the GPAS.

A GPAS Port Self-Evaluation Example is also provided in the second half of this document as a reference to help the applicants to fill out the **GPAS Port Self-Evaluation Form**. However, it should be noted that all the data and facts listed in the example are only used as a reference and should not be regarded as a benchmark.

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GPAS Port Self-Evaluation Example

General Information of Applicant

APPLICANT	XXX		
PORT NAME	XXX	ECONOMY	XXX
ANNUAL THROUGHPUT	TOTAL	600 million	TON
	--CONTAINER	20 million	TEU
	--PASSENGER	None	PERSON-TIME
BRIEF DESCRIPTION OF THE APPLICANT (Location of your port/terminals number of terminals, cargo type, main type of the cargo, number of port calls, etc.)	Port XXX is the busiest port in the world in terms of cargo throughput. It is also one of the rapidly growing ports in XXX with a cargo throughput volume exceeding 100 million tons annually. It is one of the busiest deep-water transshipment ports in XXX, with an over 18.2 meters inbound channel depth and can provide a year-round navigation service. It enjoys its unique natural conditions with convenient traffic reaching in all directions. Port XXX is a modern multi-purpose deep water port, consisting of inland, estuary and coastal harbors. The green development has been included in the future strategy plan of our port. Now, port XXX has implemented program like encouraging truck driver to use LNG instead of the gasoline. In the future, the port could be the most likely potential ECA in Asia. It is well situated in the middle of XXX's coastline, at the T-shaped joining point of XXX's coastline and the XXX River. The large berths include the 250,000 tonnage crude oil terminal and the 200,000+ tonnage ore loading berth. There is also a purpose-built terminal for the 6th generation container vessel and the 50,000 tonnage berth dedicated for liquid chemical products. It is involved in economic trade with cargo shipment, raw materials and manufactured goods. It has trade with over 560 ports from more than 90 countries and regions in the world. Outwardly it links East Asia and the whole round-the-Pacific region. Inwardly it connects XXX's coastal ports and covers directly the whole East XXX and the economically developed XXX River Delta by river-sea through transport via the XXX River and the Grand Canal.		

1. Commitment and Willingness

1.1 Green Port Awareness and Willingness.

1) Green strategy or development plans

Description: (Your green strategy, public or internal, scope, implementation and etc.)

Sustainability and green concept were considered in the design of the new terminal in our port. While not formally accredited, the terminal's design achieves an equivalent 4.5 Green Star rating. Some of the environmental initiatives incorporated into the building's design include:

- Installation of a 50 kiloliter tank to harvest rain water for use in toilets and landscape irrigation.
- Use of efficient lighting for 95 per cent of the net let-table area, reducing lighting energy consumption. This lighting has been linked to daylight and/or occupancy sensors.
- Installation of a Building Management System for the early identification of water leaks and optimization of power usage including early detection of wastage and identification of supply problems.

2) Green support funding

Description: (Green funding types, usage, amount and etc.)

The appropriate green support funding is $0.5 million a year with a 2% annual average growth rate.

3) Green annual reports

Description: (Public or internal, scope, implementation, consistency with the green strategy/ development plans and etc.)

In 2013, our ports issued a review of the Green Port Guidelines, taking industry best practice into consideration. A new and updated set of guidelines is due to be launched in 2014. A Development Guideline to promote sustainable development in the precinct was also finalized.

4) Others

Description: (Other good activities/practice implemented relating to this indicator other than the above three items.)

Several industry experts are paid to evaluate and improve the annual report on green development of the port.

1.2 **Green Port Promotion**.
1) Green training programs Description: (Types of training programs, frequency, funding, number of participants and etc. For example, training programs which aim to increase the port staff's ability to implement green practices or use green technology.) The port organized green training regularly. The green promotion funds of 2013 were more than $10,000 with a 5% growth than that of 2012.
2) Green promotion campaigns Description: (Types of promotion campaigns that can raise the green awareness of port staff and port users, frequency, funding, number of participants and etc.) The port conducted two special green promotion workshops in the year of 2013, the information of the workshops is attached in Annex 1.
3) Others Description: (Other good activities/practice implemented relating to this indicator other than the above two items.) Several industry experts are paid to evaluate and improve the performance of the green training program in the port.

2. Action and Implementation

2.1 **Clean Energy**
1) Using renewable energy sources Description: (Types, usage scope/amount of renewable energy resources, facilities and equipment adopted relating to renewable energy, encouraging measures/policies and etc.) Solar cells and LED technology for bollard lighting are used in our port, the wind power generators is planned to introduce this year. The pictures of Solar and LED used in port are attached in Annex 1.
2) Using of LNG Description: (Usage scope/amount of LNG in port transportation and equipment (including the port's pilot and transshipment vessels), port facilities for ships to refill on LNG, adoption of measures/policies that encourage LNG usage and etc.) Infrastructure construction on introducing and using LNG is strengthened, LNG devices is purchased. The port has started a project to evaluate the feasibility of LNG-powered terminal equipment beginning with yard hostlers or tractors, and a test will be completed in 2014.
3) Using cold ironing (shore power) Description: (Infrastructure construction for cold ironing, usage scope, funding, encouraging measures/policies and etc.) For the electrical infrastructure for shore-side power (cold-ironing), the port initially launched a master plan for upgrading the port’s electrical infrastructure to accommodate cold-ironing throughout the port and the plan will be completed in 2014. A brief introduction of the plan is attached in Annex 1.
4) Others Description: (Other good activities/practice implemented relating to this indicator other than the above three items.) The Port has established an electric transportation system in the port. Relevant pictures are attached in Annex 1.

2.2 **Energy Saving**.

1) Using energy-saving devices & technology

Description: (Types, usage scope, funding, encouraging measures/policies and etc.)

For locomotives, the port committed $1 million to upgrade all the locomotives, use emulsified diesel and idling controls, and test diesel hybrid and liquefied natural gas locomotives.

In 2013, our port upgraded portions of its vehicle and marine fleets with newer, more fuel efficient models. Ten diesel utilities were replaced by more fuel efficient diesel utilities and vans while five additional utilities are on order to replace other larger diesel and petrol utilities. Other cars in the port's fleets are being replaced with hybrid vehicles to further improve fuel efficiency. Relevant pictures are attached in Annex 1.

With respect to the marine fleet, significant fuel savings have been achieved through the replacement of old pilot cutters with two new, purpose designed vessels and the replacement of three aging survey vessels with a single, multi-purpose survey vessel. Relevant pictures are attached in Annex 1.

2) Optimizing power supply system

Description: (Optimizing plan, solved issues by the optimization, funding and etc.)

A new electricity supply contract, begun on 1 July 2011, is providing regular usage data for our 10 largest sites for operational review, allowing our port to optimize its power usage and identify potential problems. Data gathered during the contract's first 12 months provide a baseline for changes in the operation and maintenance of electricity usage at key ports' sites.

3) Others

Description: (Other good activities/practice implemented relating to this indicator other than the above two items.)

For the marine vessels, the port initially dedicated as much as $2 million a year toward financial incentives to improve compliance with the vessels came to the port to have a speed limit on 100% of their trips.

2.3 **Environmental Protection.**

1) Air pollution prevention

Description: (Action and implementation relating to this item, such as air quality monitoring system installation, dust control measures, wind proof construction, low-sulfur fuel usage and etc. For example, ports may set up restrictions on atmospheric emissions of port users, adopt low-sulfur fuel for port vessels, establish dry-bulk handling and storage rules that reduce dust production, etc.)

The port has taken a rewarding and subsidizing policy for reduction of 10% docked charges to the ships incoming and outing the port to use low-sulfur fuel inside the sea area with a distance of 20 sea miles to the port. The information can be found in our homepage as XXX.

The port has installed and operated two air monitoring stations to sample and report via the port website on air quality, including concentrations of key pollutants.

The port has applied measures to improve the management of bulk cargo storage (ports, terminals), such as covering cargo that is stored in piles, reducing the height of such piles, moving piles to areas that are less exposed to wind, etc.

$20 million worth of new equipment and technology has been invested to reduce the proportion of petroleum coke dust.

Systematically cover dry bulk piles when they are likely to blow away by the wind or to leach out on the ground. Piles are covered with an impervious tarpaulin as soon as possible after unloading and adjusting the cover as material is removed. And also the followings:

- ☐Used enclosed conveyors or chutes and telescoping arm loaders or other similar equipment to reduce spillage and dust.
- ☐Used dust suppression, bag-house, screw conveyors, vacuum collecting equipment or other similar equipment in the handling of fine, granular or powdery material.

Relevant pictures are attached in Annex 1.

2) Noise control

Description: (Action and implementation relating to this item, such as noise-insulation installation of electrical motors, noise barriers construction and etc. For example, ports may reduce or not use sound-making equipment, or ports can mandate port users to function under certain noise levels.)

The port provided a telephone number to residents living close to the port so that they would report instances of noise. Once a complaint has been made to the port, the port moved swiftly in dispatching responsible personnel to the site and, to the extent possible, ensuring that corrective measures are taken.

3) Waste treatment (liquid and solid)

Description: (Wastewater collection and treatment system construction and usage, solid waste collection, disposal and recycling and etc. For example, evidence of ports prohibiting waste water discharge in certain areas, setting up a unit in charge of collecting vessel pollutants, classifying garbage into different categories such as toxic and normal waste, establishing requirements that prevent the washing of decks contaminated with pollutants, .)

All waste water produced by our port facilities and collected from vessels is treated by the waste water treatment plant of our port.

Several sustainable practices have been used by our port in terminal developments, including adopting “Leadership in Energy and Environmental Design” (LEED) certification for new construction, recycling of demolition debris, using of construction materials with recycled content and controlling types of fuel used in construction equipment.

4) Others

Description: (Other good activities/practice implemented relating to this indicator other than the above three items such as efforts to reduce cargo residues,)

There are several emergency spill kits available on site for dealing with minor fuel oil spilling, and trained employees to respond to small fuel oil spilling.

During the year, our ports continued to co-fund University of XXX research into new technologies for cleaning up contaminated sediments.

A project included expanding the existing shorebird habitat, planting sea grass and extending the salt marsh was launched, with the primary objectives of these environmental works to expand the existing shorebird habitat to attract increasing numbers of migratory birds, Create sea grass habitat, Expand the area of salt marsh habitat and Provide controlled public access and so minimize disturbance within the estuary.

In early 2013, our Port began a five-year, $1 million environmental program to monitor and control the Port entrance sediment & coastal erosion. Results completed so far are detailed in the Post Construction Monitoring Annual Report. Based on the results, no changes to any component of the monitoring program have been recommended. Erosion of the roosting habitat will be repaired to maximize the environmental outcomes of the project.

2.4 **Green Management**.

1) Green Environmental Management System

Description: (Type of EMS, certification and implementation of the system, personnel/organization dedicated to the system and etc.)

The Eco Management and Audit Scheme (EMAS) have been applied in our port.

2) Green performance assessment

Description: (Assessment plan, measures adopted based on the assessment results, personnel/organization dedicated to the assessment and etc.)

The energy auditing and efficiency rating were implemented in the port in 2014

3) Others

Description: (Other good activities/practice implemented relating to this indicator other than the above two items.)

The port has optimized dispatching and communication to reduce the waiting time of vessels, barges and container truck to reduce engine idling.

3. Efficiency and Effectiveness

3.1 **Energy Saving**

1) Energy consumption reduction

Description: (Energy consumption reduction resulted by the good activities/practice implemented relating to Clean Energy, Energy Saving, Green Management and etc. Quantitative evidence should be provided where appropriate, e.g. percentage of reduced energy consumption by which sectors of the port.)

The reduction of energy consumption per ton is 6% compared to the past year (from XXX to XXX), which is a result of a series of policy and strategy implemented in the past year including promoting the energy-saving equipment, upgrading of port machinery, equipment and vehicles, used the solar cells and LED technology for bollard lighting and so on.

2) Renewable energy increment

Description: (Renewable energy increment resulted by the good activities/practice implemented relating to Clean Energy, Green Management and etc. Quantitative measures should be used where appropriate, e.g. the percentage of increase in the port's use of renewable energy.)

The renewable energy increment of our port is shown in Table 1.

Table1 The port’s energy utilization structure.

	Coal (tons)			Petroleum (tons)			LNG (tons)	Electrical energy (Kwh)	Renewable energy resources(Kwh)		
	Low-sulfur	Other	In total	Low-sulfur	Other	In total			Sun	Wind	In total
2012	2,000	20,000	22,000	10,000	80,000	90,000	1,000	500,000	10,000	5,000	15000
2013	3,000	10,000	13,000	12,000	60,000	72,000	1,200	600,000	15,000	5,500	20,500
Increasing or reduction rate	50%	50%	40.9%	20%	25%	20%	20%	20%	50%	10%	36.7%

3) Others

Description: (Other good performance/effects relating to this indicator other than the above two items.)

The yearly increasing rate of LNG of our port is 20%

3.2 **Environmental Protection**

1) Air quality improvement

Description: (Air quality improvement resulted by the good activities/practice implemented relating to Clean Energy, Energy Saving, Environmental Protection, Green Management and etc. Quantitative measures should be included where appropriate to show the results of the green plans implemented, e.g. the percentage of fuel consumption devoted to the use of low-sulfur fuel, the percentage of reduced greenhouse gas emissions.)

The port's Air pollution reduction is listed as Table 2.

Table 2 Air pollution reduction by various categories.

	Marine Vessels upgrading			Introducing Cold-Ironing			Using low-sulfur fuel	
	NO_X	Diesel PM	Investment	NO_X	Diesel PM	Investment	SO_X	Investment
2012	250	6	5.2	22	0.8	4	150	10
2013	200	5	6	20	0.6	4.2	130	12
Increasing or reduction rate	20%	16.7%	15.4%	9.1%	25%	5%	13.3	20%
	Locomotives upgrading			Port Vehicles upgrading			Coke dust fallout	
	NOX	Diesel PM	Investment	NOX	Diesel PM	Investment	Proportion of petroleum coke dust	Investment
2012	185	4.5	5	15	50	3	10%	1
2013	180	5	5.5	13	30	3.2	8%	1.2

Increasing or reduction rate	2.7%	11.1 %	10%	13.3%	40%	6.7%	20%	20%
	Cargo-handling equipment Upgrading				Using LNG			
	NOX	Diese l PM	Investment	Cargo-handling amount (TEUs)	NOX	Diesel PM	SO_X	Investment
2012	35	150	4	6.2 million	5	4	4	4
2013	30	130	4.2	6.5 million	4.4	3.8	3.8	4.2
Increasing or reduction rate	14.3 %	13.3	5%	4.8%	12%	5%	5%	5%

Note: the unit of air pollutants is tons, and the unit of investment is million USD.

2) Noise control result

Description: (Noise reduction resulted by the good activities/practice implemented relating to Environmental Protection, Green Management and etc. Quantitative measures should be included where appropriate to show the results of the environmental protection plans implemented, e.g. the reduction in noise levels.)

Number of complain on noise in 2012 is 165, and No. of complain on noise in 2013 is 132 with a reduction rate of 20%.

3) Liquid & solid pollution control

Description: (The improvements of water quality, waste water and solid waste treatment resulted by the good activities/practice implemented relating to Environmental Protection, Green Management and etc. Quantitative measures should be included where appropriate to show the results of the green plans implemented. For example, the result of establishing discharging prohibitions, garbage regulations, etc.)

With respect to the hazardous materials abatement, the port has completed an assessment of asbestos in an old warehouse and initiated the abatement program. The port will remove hundreds of tons of asbestos and dispose them in a safe and environmentally sound manner (See Table 3).

Table 3 Efficiency and effectiveness on solid waste dumping management.

	Contaminated soils and sediments removed or treated (tons)	Hazardous materials abatement removed or treated (tons)	Investment(million USD)
2012	9,000	150	1
2013	10,000	200	1.5
Increasing rate	11.1%	33.3%	50%

The two key indicators and investment on liquid pollution control and water quality of the harbor water was listed in Table 4.

Table 4 Efficiency and effectiveness on liquid pollution control.

	Dissolved oxygen concentrations (mg/l)	Water clarity of harbor waters	Investment(million USD)
2012	3	Good	1
2013	4	Good	1.5
Changing rate	33.3%	-----	50%

4) Others

Description: (Other good performance/effects relating to this indicator other than the above three items.)

In the past year, the port, working closely with the regulatory agencies, has removed nearly 10,000 tons of contaminated soils and sediments from the environment and disposed of them in approved landfills and recycling facilities. Several million tons of soils and sediments have been treated on-site and isolated deep inside port lands, in accordance with corresponding standards to remove them from contact with air, water and people.