

Distr.
GENERAL

UNCTAD/SDTE/TLB/2007/1
14 March 2007

ENGLISH ONLY

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

MARITIME SECURITY:
ISPS CODE IMPLEMENTATION, COSTS AND RELATED FINANCING

Report by the UNCTAD secretariat

TABLE OF CONTENTS

	<u>Paragraphs</u>
EXECUTIVE SUMMARY	
INTRODUCTION	1-7
A. PORTS' RESPONSES TO UNCTAD'S QUESTIONNAIRE	8-79
I. Profile of Respondents	12-14
II. Implementation of the ISPS Code and Supplementary Measures.....	15-20
III. The Cost of Compliance with the ISPS Code	21-45
1. Initial and Annual Costs	23-39
a. Average Costs per ISPS Port Facility	27
b. Average Costs as a Percentage of Operating Revenues	28-30
c. Average Costs per TEU Handled	31-32
d. Average Costs per Tonne of all Cargo Handled	33-34
e. Average Costs per Ship Call	35-36
f. Summary and Discussion	37-39
2. Cost Factor Distribution	40-41
3. Estimated Global Costs	42-45
IV. Financing the ISPS Code-related Costs	46-57
1. Market-driven Solutions: Cost-Recovery by Charging Port Users	46-53
2. Public Intervention: Funding and Assistance	54-56
3. Summary	57
V. Other ISPS Code-related Impacts	58-67
1. Impact on Various Port Performance Measures	58-65
2. Ports' Perception of the ISPS Code Overall Impact	66-67
VI. Ports' Questionnaire: Summary of Key Findings	68-79
B. GOVERNMENTS' RESPONSES TO UNCTAD'S QUESTIONNAIRE	80-125
I. Implementation Process and Compliance	86-97
1. State Membership in the SOLAS Convention, Delegation of Authority to RSOs and Response to Industry Requests for Guidance	87-88
2. Transposition of the ISPS Code into National Law and Regulations	89-90
3. Mandatory Application and Challenges Related to Implementation	91-93
4. Security Measures Supplementary to the Mandatory Provisions of the ISPS Code	94-97

	<u>Paragraphs</u>
II. Implementation and Compliance Costs.....	98-99
1. Initial Costs	100
2. Annual Costs	101
III. Financing Governments' ISPS Code-related Expenditures	102-112
1. Recovery of Costs Through User Fees and Security Charges	103-108
2. Financial and Other Assistance Received by Governments.....	109-112
IV. Financial Assistance Provided by Governments to their National Ports	113-114
V. Governments' Perception of the ISPS Code Overall Impact	115-116
VI. Governments' Questionnaire: Summary of Key Findings	117-125
C. FINAL REMARKS	126-129

	<u>Pages</u>
LIST OF FIGURES	
Figure 1: Security Measures Supplementary to the Mandatory Provisions of the ISPS Code (% of respondent ports)	12
Figure 2: ISPS Code-related Average Unit Costs (US\$ per ISPS port facility)	14
Figure 3: ISPS Code-related Average Initial Costs Over 5 Years (% of ports' annual revenue).....	14
Figure 4: ISPS Code-related Average Annual Unit Costs (% of ports' annual revenue).....	15
Figure 5: ISPS Code-related Average Initial Costs Over 5 Years (US\$ per TEU throughput)	15
Figure 6: ISPS Code-related Average Annual Unit Costs (US\$ per TEU throughput)	16
Figure 7: ISPS Code-related Average Initial Costs Over 5 Years (US\$ per tonne of all cargo throughput)	16
Figure 8: ISPS Code-related Average Annual Unit Costs (US\$ per tonne of all cargo throughput)	17
Figure 9: ISPS Code-related Average Initial Costs Over 5 Years (US\$ per ship call)	17
Figure 10: ISPS Code-related Average Annual Unit Costs (US\$ per ship call).....	18
Figure 11: ISPS Code-related Initial Costs of Ports: Cost Factor Distribution	19
Figure 12: ISPS Code-related Annual Costs of Ports: Cost Factor Distribution	20
Figure 13: ISPS Code-related Cost-Recovery Schemes as Reported by Respondent Ports.....	22
Figure 14: ISPS Code-related Financing Schemes as Indicated by Respondent Ports.....	24

	<u>Pages</u>
Figure 15: Indirect Impact of the ISPS Code as Reported by Respondent Ports.....	25
Figure 16: Assessment of the Overall Impact of the ISPS Code by Respondent Ports	26
Figure 17: Security Measures Supplementary to the Mandatory Provisions of the ISPS Code (% of respondent governments).....	33
Figure 18: Forms of Assistance Received or Expected as Indicated by Respondent Governments	36
Figure 19: Assessment of the Overall Impact of the ISPS Code by Respondent Governments	38

LIST OF TABLES

Table 1: ISPS Code-related Average Costs of Respondent Ports (Percentages and US\$)	18
Table 2: Effect of Economies of Scale (Example)	19
Table 3: Estimated Global Initial and Annual Costs (billion US\$).....	20
Table 4: ISPS Code-related Unit Costs and Selected Security Charges	23

LIST OF ANNEXES

Annex I: Abbreviations

Annex II: UNCTAD Survey Questionnaires

EXECUTIVE SUMMARY

On 1 July 2004, the 2002 amendments to the 1974 *International Convention for the Safety of Life at Sea* (SOLAS) and the new *International Ship and Port Facility Security Code* (ISPS Code), entered into force and became mandatory for all SOLAS Member States. The SOLAS amendments and the ISPS Code (hereinafter the ISPS Code) impose wide-ranging obligations on governments, shipping companies, and port facilities. Implementing these obligations entails costs and potential economic implications.

Against this background, UNCTAD conducted a global study based on a set of questionnaires designed to obtain first hand information from all affected parties. The main objective was to establish the range and order of magnitude of the ISPS Code-related expenditures made from 2003 through 2005 and to gain insight into the financing mechanisms adopted or envisaged. In addition the study sought to clarify matters relating to the implementation process, level of compliance and other less easily quantifiable impacts. Due to limited responses received from the shipping sector the report presents responses received from ports and governments only.

A. Ports' Questionnaire

A total of 55 completed questionnaires were received from respondent ports spread over all regions, the majority of which in developed countries. Together respondent ports that provided information on cargo throughput handle about 16% of the global port cargo throughput (tonne), based on 2004 world seaborne trade figures, and approximately 24% of the global container port throughput (TEU).¹

Implementation, Supplementary Measures and Level of Compliance

Full compliance seems to have been achieved with no major difficulties. The mandatory requirements in Part A of the ISPS Code are largely fulfilled on the basis of the guidance contained in Part B of the Code. In many cases additional measures, either government or industry-driven, have been adopted.

Cost of Compliance

Reported initial cost figures for respondent ports range between a low of US\$ 3,000 and a high of US\$ 35,500,000, while reported annual costs range between US\$ 1,000 and US\$ 19,000,000. Unit costs and averages have been assessed on the basis of a number of parameters. These include respondent ports' annual revenues, cargo throughput (tonnes and TEUs), ship calls and number of ISPS port facilities. The unit cost analysis revealed the presence of important cost differentials between respondent ports, especially between larger and smaller ports. In other words, relative costs appear to be substantially higher for smaller respondent ports.

As to the manner in which costs are distributed among various cost headings, responses received suggest that, on average, expenditures on equipment absorb the largest share of the *initial costs* followed by expenditures on infrastructure and to a lesser extent other cost headings. With respect to the *annual costs*, on average, personnel and staff time represent, by far, the largest share of the ISPS Code-related costs. Other cost headings take up a smaller share of the annual costs.

¹ See pages 8 and 77 of UNCTAD's *Review of Maritime Transport, 2006* (www.unctad.org/rmt2006) for data on global container port throughput and seaborne trade.

Global initial and annual costs were also estimated on the basis of data on costs provided, as well as reported cargo throughput (tonnes and TEUs) and number of ISPS port facilities. The share of relevant respondent ports of world seaborne trade measured in tonnes is estimated to about 13%, while their share of global container port throughput and total number of declared ISPS port facilities is estimated to approximately 16% and 6%, respectively.² Bearing in mind the limitations that may characterize such calculations, the estimated global port-related costs of the ISPS Code range between approximately **US\$ 1.1 billion and US\$ 2.3 billion initially** and approximately **US\$ 0.4 billion and US\$ 0.9 billion annually thereafter**. These costs are equivalent to increases in international maritime freight payments of **about 1%** with respect to the initial expenditure and **0.5%** with respect to the annual expenditure.³

Financing the ISPS Code-related Costs

A number of respondent ports have implemented or plan to implement cost-recovery schemes. Where applicable, ports seem to favour levying security charges on several port users, but particularly cargo and containerized traffic. In general, less than full recovery of both initial and annual costs is expected. As to security charges applied, responses received did not shed much light on the criteria used for setting the basis and the levels of the charges.

The survey also revealed that some ports had received public funding and assistance. Where applicable, assistance included governmental grants and cost-sharing agreements, mainly for respondent ports located in developed regions. Respondent ports in developing countries appear to have benefited mainly from technical assistance and capacity building provided by international organizations.

Ports' Perception of Other Effects

Ports seem to have accepted the ISPS Code objectives as legitimate and reported an overall positive impression of the new security regime, especially in terms of increasing awareness, streamlining processes, standardizing risk assessment and improving business practices. Respondent ports that emphasized the negative impact associated with the Code appeared particularly concerned about operational interferences, as well as cost implications and related funding requirements. In this respect, some respondent ports have called for assistance.

As to the Code's impact on various port performance measures, such as efficiency, use of information and communication technologies (ICTs) and throughput growth, respondent ports' perceptions appeared rather positive. Some respondent ports, however, reported experiencing increased delays and few noted a decrease in competitiveness, while many said the ISPS Code had no impact at all.

B. Governments' Questionnaire

A total of 45 responses were received from governments located in countries representing about 24% of the United Nations membership. Responses received span all regions with the exception of North America and Oceania.

² 2004 data on global container port throughput and seaborne trade have been used (see UNCTAD's *Review of Maritime Transport, 2006*). According to the IMO secretariat, as of October 2006, the total number of the declared ISPS port facilities amounted to 10,652.

³ See UNCTAD's *Review of Maritime Transport, 2006* (www.unctad.org) for 2004 data on global freight costs. The 2004 data on international maritime freight costs have been estimated by the UNCTAD secretariat to amount to about 67% of global freight costs.

Implementation Process and Compliance

All respondent governments are Contracting States to the SOLAS Convention and most have delegated certain security duties to Recognized Security Organizations (RSOs). Most respondent governments reported that they had relied on dedicated legislative and regulatory instruments to ensure national implementation of the Code, including the monitoring of initial and subsequent compliance.

With few exceptions, including in relation to resource limitations, governments reported that compliance with the ISPS Code by their respective national ports and shipping sectors had been achieved with no major difficulties. Compliance with the mandatory provisions of Part A of the Code has mainly been achieved on the basis of the guidance provided in Part B of the Code. The majority of respondent governments indicated that additional measures affecting their respective national ports and the shipping sectors had been adopted to supplement the ISPS Code requirements.

Implementation and Compliance Costs

Reported initial cost figures range between US\$ 13,500 and US\$ 50 million per respondent government, while annual costs range between US\$ 1,500 and US\$ 27 million. This provides an indication of the range of ISPS Code-related expenditures on the part of governments. However, the limitations that characterize data on costs obtained require that these be considered as broadly indicative only.

Financing Governments' ISPS Code-related Costs

There are various approaches and degrees of external support to SOLAS Contracting Governments since not all respondent governments have benefited or expect to benefit from assistance. Assistance received by governments took mainly the form of capacity-building, technical assistance and grants. As to cost-recovery, for the majority of respondent governments costs appear not to be recovered through user fees or charges. That being said, where applicable, the favoured approach for governments appears to be the application of fees for the issuance and renewal of certificates as well as for audits.

Governments' Financial Assistance to their National Ports

Some respondent governments have assisted or plan to provide assistance to their respective national ports. Grants and cost-sharing arrangements appear to be the most common type of assistance provided by governments to their respective national ports. Some governments have also provided technical assistance to their ports.

Governments' Perception of the ISPS Code Overall Impact

Summarizing the overall impact of the ISPS Code on their respective countries, a significant majority of respondent governments highlighted the positive impact of the new IMO security regime. Some argued, however, that it was expensive to implement and that additional guidance was required. Others had a negative perception of the Code due to their resource limitations. In this respect, a number of respondent governments, especially from countries of developing Africa stressed the need for international assistance and cooperation.

INTRODUCTION

1. An important development in the field of transport security was the entry into force, on 1 July 2004, of the amendments to the *International Convention for the Safety of Life at Sea* (SOLAS) and the new *International Ship and Port Facility Security Code* (ISPS Code).⁴ The ISPS Code, adopted as part of the new Chapter XI-2⁵ and other amendments to SOLAS had been agreed in December 2002 under the auspices of the International Maritime Organization (IMO). Part (A) of the Code establishes a list of mandatory requirements, and Part (B) provides recommendations on how to fulfil each of the requirements set out in Part (A).

2. The 2002 SOLAS amendments and the ISPS Code (hereinafter the ISPS Code) introduce wide-ranging maritime security obligations on SOLAS Contracting Governments, shipowning and/or operating companies and port facilities.⁶ Implementing these obligations entails costs and potential economic implications. Although insightful, existing preliminary cost estimates were made prior to the coming into effect of the ISPS Code and based on broad modelling assumptions rather than empirical data.⁷ To date, no global assessment of the actual costs incurred or expected is available.

3. Against this background, UNCTAD conducted a global study on the ISPS Code implementation. The Code lends itself to a cost assessment exercise given its entry into force on 1 July 2004.⁸ The cut-off date for mandatory application of its provisions implies that governments, ports and the shipping sector must have taken necessary action to ensure compliance. Thus, affected parties are expected to have gained clearer insight into the actual costs associated with the ISPS Code implementation.

4. The study is based on a set of questionnaires designed to obtain first hand information from Contracting Governments, shipowning and/or operating companies and port facilities. The main objective was to establish the range and order of magnitude of the ISPS Code-related expenditures made from 2003 through 2005 and to provide some insight into the financing mechanisms adopted or envisaged. In addition the study sought to clarify matters relating to the implementation process, level of compliance and other less easily quantifiable impacts that could be described as indirect effects in that they are not directly related to the main objective that the ISPS Code was set to achieve. Thus, information gathered may be considered as a first step towards a better understanding of the potential economic implications of the ISPS Code.

5. While the survey questionnaires targeted all parties directly affected by the Code, the present report presents the views and experiences of ports and governments only. Limited responses received from the shipping sector did not allow for a meaningful analysis.

⁴ For the complete text of the ISPS Code, see SOLAS/CONF.5/34, Annex 1. See also *The International Ship and Port Facility Security Code*, 2003 Edition, ISBN 92-801-5149-5. For further information, see the IMO website (www.imo.org).

⁵ Chapter XI-2 on "Special measures to enhance maritime security".

⁶ For a better overview of these obligations, with appropriate references to the respective provisions of the Code, see "Container Security: Major Initiatives and Related International Developments", UNCTAD/SDTE/TLB/2004/1, paragraphs 80-86 (www.unctad.org).

⁷ See, for example, estimates put forward by the Organization for Economic Cooperation and Development (OECD) in its July 2003 report "Security in Maritime Transport: Risk Factors and Economic Impact" or other attempts to estimate global costs made by national administrations such as in Australia, the United Kingdom and the United States.

⁸ Although equally important, other transport security-related initiatives including supply chain security currently being developed or already adopted at the national and international levels fall outside the scope of the present study.

6. Part B of the report briefly revisits the main port-related ISPS Code obligations and discusses responses received from the port industry. Part C presents and discusses responses received from SOLAS Contracting Governments, while Part D concludes and highlights issues that may require further consideration.

7. Unless otherwise specified, percentages are expressed as a proportion of responses received to a given question. When questions can accommodate more than one response, percentages do not add up to 100%. Throughout the report, reference to averages means “unweighted” averages while "tonne" means a "metric ton" and includes all cargo. The expressions "costs" and "expenditures" are used interchangeably. "Initial" or "one-off" costs refer to expenditures required to set up and implement the ISPS Code regime while "annual", "recurring" or "running" costs mean expenditures required to operate the security regime and to maintain compliance. For ease of reference, copies of UNCTAD’s survey questionnaires are attached in Annex 2 to this report.

A. PORTS' RESPONSES TO UNCTAD'S QUESTIONNAIRE

8. The ISPS Code applies to port facilities serving ships engaged on international voyages.⁹ Therefore, any individual port may encompass more than one port facility to which the ISPS Code applies. Contracting Governments decide the extent to which the Code may be applied to port facilities within their territory, which are required, occasionally, to serve ships involved in international traffic.

9. The main obligations of the port facilities involve, among others, undertaking *Port Facility Security Assessments (PFSA)*, developing *Port Facility Security Plans (PFSP)*, designating *Port Facility Security Officers (PFSO)* and ensuring that training and drills take place regularly. The designated PFSO is responsible for developing, implementing and maintaining the PFSP. Other responsibilities and requirements include regular security inspections of the port facility, adequate training of port facility security personnel, reporting to the relevant authorities and ensuring that security equipment is properly operated, tested and maintained.

10. Part I of UNCTAD's port survey questionnaire sought to establish the profile of the responding ports and the level of compliance achieved. Part II aimed to determine the range and order of magnitude of the ISPS Code-related costs. It also investigated other less easily quantifiable impacts that could be described as indirect effects in that they are not directly related to the main objective that the ISPS Code was set to achieve. Part III focused on financing mechanisms adopted or envisaged to finance and/or recover the ISPS Code-related costs.

11. To ensure wide distribution, UNCTAD's port survey questionnaire was disseminated through the main international port industry organizations, as well as regional port industry associations. However, the exact population of entities who received the questionnaire is not known.

I. Profile of Respondents

12. A total of 55 completed questionnaires were received from respondents (ports and organizations managing ports, hereinafter "respondent ports") located in 28 countries, the majority of which (62%) in developed regions. Geographically, all regions were represented with a significant majority of respondent ports (82%) being located in Asia and Europe. Almost all respondent ports (92%) are multipurpose facilities, which handle various types of traffic including bulk, break-bulk, containers, and passengers. The overwhelming majority of all respondent ports (91%) are publicly owned, but, irrespective of the ownership structure, the majority (55%) are said to be operated by private entities.

13. Data on cargo throughput and number of ISPS port facilities was provided by 86% of respondent ports. Based on the reported cargo throughput data (tonnes) and relying on an existing tentative benchmark used to categorize ports by size,¹⁰ there is an almost equal split between

⁹ Under the Code, the term "port facility" is not defined. However, the preamble (at para. 5) makes it clear that "the provisions relating to port facilities should relate solely to the ship/port interface". The wider issue of port security was dealt with under the further joint work between the International Maritime Organization (IMO) and the International Labour Organization (ILO), which resulted in the adoption of the IMO/ILO Code of Practice on Security in Ports. For a list of declared port facilities, see reference in note 12, below.

¹⁰ See Patrick Fourgeau, *"Measuring Port Performance"*, World Bank, November 2000. A tentative benchmark for landlord ports is proposed whereby a small port authority handles few million tonnes, an average sized authority handles between 10 and 20 million tonnes and larger ports handle over 20 million tonnes. It should be noted that this breakdown by size is not comparable with the breakdown used for the purposes of unit cost calculations in other parts of this paper.

respondent ports that are considered "large" (46%) and "small" (43%). Respondent ports identified as "average sized" represent a smaller share (11%). "Large" respondent ports, most of which located in developed regions, include some that feature among the 2004 top 50 world busiest ports by cargo tonnage. Most of the respondent ports located in developing regions are considered "small" or "average" sized.

14. While the number of completed questionnaires may appear relatively small compared with the world port population,¹¹ it is important to note that they reflect respondents, which together, are responsible for a sizeable share of global port cargo throughput, as well as a large number of ISPS port facilities. Respondent ports that provided data on cargo throughput and number of port facilities cover about 800 ISPS port facilities or approximately 7% of the total number of the declared ISPS port facilities.¹² Together they handle about 16% of the global port cargo throughput (tonnes), based on 2004 world seaborne trade data, and approximately 24% of the global container port throughput (TEUs).¹³ As concerns information on costs and financing, relevant data, in a format suitable for analysis, was obtained from respondent ports, which together handle about 13% of global port cargo throughput (tonnes), estimated on the basis of world seaborne trade data for 2004.

II. Implementation of the ISPS Code and Supplementary Measures

15. Ports were asked to report on the level of compliance achieved and to clarify their approaches to compliance, including whether Part B of the Code had been adopted and if other measures had been taken to supplement the mandatory provisions under Part A. Respondent ports were also asked, if applicable, to relate any relevant information about the main factors that may have led to less than full compliance (Questions 1 to 4).

16. The overwhelming majority of respondent ports (93%) reported **full compliance** with the ISPS Code requirements. The few (7%) that reported less than 100% compliance cited the fact that the certification process for some facilities was still underway. In one particular case, the respondent explained that its large size and operations resulted in a continuous change in the number of the ISPS Code port facilities. This was because terminal lay-outs were continuously changing and/or new terminals were being added to the list after 1 July 2004. Hence, responses received suggest that compliance was overall achieved by the prescribed deadline with limited exceptions of a temporary nature.

17. As to the **methods** used to ensure compliance with **the mandatory provisions** of the Code, an important majority of respondent ports (78%), spread over all regions indicated that they adhered to the recommendations and guidance of Part B in order to implement the requirements of Part A. In this context, it should be noted that pursuant to Regulation (EC)

¹¹ Estimates of the world port population vary considerably, depending on the criteria and classifications adopted. The term "port" may refer to terminals, port managing companies or port authorities, or, in some cases, to a single berth. Compare, for instance World Bank Ports and Logistics Overview (www.worldbank.org), which states that "there are more than 2000 ports around the world" and the online Port and Terminal Guide of Lloyd's Register – Fairplay (www.portguide.com) which covers over 9,400 ports and terminals worldwide.

¹² For a list of the declared port facilities, see the IMO Global Integrated Shipping Information System (GISIS). The database can be accessed on <http://www2.imo.org/ISPSCode/ISPSInformation.aspx>. According to the IMO Secretariat, as of October 2006, the total number of declared ISPS port facilities amounted to 10,652.

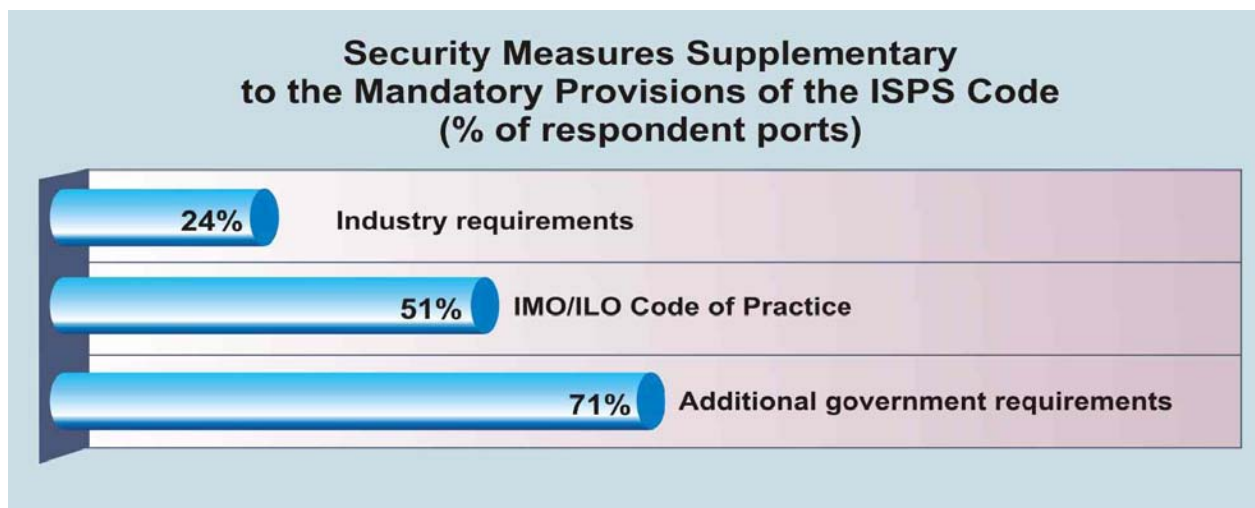
¹³ See pages 8 and 77 of UNCTAD's *Review of Maritime Transport, 2006* (www.unctad.org) for data on global container port throughput and seaborne trade.

No. 725/2004 on *Enhancing Ship and Port Facility Security*,¹⁴ elements of Part B of the ISPS Code are made mandatory in all EU member states.

18. With respect to **measures supplementary** to the mandatory provisions of the Code, an important majority of respondent ports (75%) indicated that they had implemented or envisaged introducing such measures. In some cases this is achieved on the basis of a national legislation or regulation. For example, EU Member States are required, under Article 3.3 of Regulation EC No. 725/2004, to "... *decide the extent to which they will apply, by 1 July 2007, the provisions of this Regulation to different categories of ships operating domestic services other than those referred to in paragraph 2, their companies and the port facilities serving them. The overall level of security should not be compromised by such a decision*".

19. As illustrated by Figure 1 below, supplementary measures identified include additional requirements by governments (71%) as well as by industry (24%). These requirements may range from an extension of the ISPS Code provisions to the entire port area (66%) to the application of the IMO/ILO Code of Practice (51%). It is not in all cases clear, however, which of these particular measures are led by governments as opposed to industry and whether the additional requirements include measures other than extending the Code to the entire port area and adopting the IMO/ILO Code of Practice.

Figure 1



20. The fact that, in many cases, port security measures that extend beyond the ISPS Code appear to be in place suggests that the ISPS Code requirements might be perceived as a minimum threshold.

III. The Cost of Compliance with the ISPS Code

21. There has been much speculation about security costs over the past few years, including the ISPS Code-related costs. As mentioned in the introductory part of this report, existing preliminary estimates helped shed some light on the potential cost implications of the ISPS Code. Nevertheless, there remains a need to establish the range and order of magnitude of the **actual** costs following the first year of mandatory application of the Code.

¹⁴ Regulation (EC) No. 725/2004 of the European Parliament and of the Council of 31 March 2004 on Enhancing Ship and Port Facility Security (OJ L129, 20.4.2004, p.6), <http://europa.eu.int/eur-lex>.

22. The port industry was asked to estimate the direct initial "one-off" and the annual "recurring" expenditures required to comply with the requirements of the ISPS Code. The questionnaire also asked about the cost distribution among a list of cost items or factors. To obtain a broader perspective of the ISPS Code's economic implications, respondent ports were asked to relate, if applicable, the effect of the ISPS Code on various performance measures such as efficiency, competitiveness, throughput, the use of information and communication technologies (ICTs) as well reduced delays, theft and other criminal incidents (Questions 5 to 8).

1. Initial and Annual Costs

23. Expressed in absolute terms, the reported initial cost figures for respondent ports range between a low of US\$ 3,000 and a high of US\$ 35,500,000. As to the annual costs, reported figures range between US\$ 1,000 and US\$ 19,000,000. The lower end of the cost range was reported by a small Asian port whereas the higher was reported by a large European port featuring among the top 15 global container ports.

24. In order to allow for some comparisons to be made and to put reported cost figures in perspective, unit costs and averages have been assessed on the basis of a number of reference points after filtering out for extreme values. Reference points used include respondent ports' annual revenues, cargo throughput (tonnes and TEUs), ship calls and number of ISPS port facilities. The size of the respective samples used to estimate unit costs and averages varies, depending on the data provided in respect of each parameter.¹⁵ Respondent ports in these samples have been divided into larger (upper half or top 50%) and smaller ports (bottom half).¹⁶ The dividing figure between larger and smaller respondent ports in the case of all cargo throughput is 15 million tonnes. With respect to respondent ports' container throughput, ship calls and number of ISPS port facilities, the cut-off points are, in the same order, 500,000 TEUs, 3,000 ship calls and 10 ISPS port facilities.

25. In those cases where initial costs are expressed in relation to annual performance data, reported initial costs have been annualised using the straight-line depreciation method.¹⁷ As responses received with respect to the structure of the initial costs suggest that, on average, over one-third of the initial costs are attributed to expenditures on equipment (see Figure 11), the average useful economic life of the ISPS Code-related initial investments or the average depreciation period is set to 5 years.¹⁸

26. Expressing reported costs as a proportion of respondent ports' annual performance measures aims to provide an order of magnitude of the ISPS Code-related costs and to ascertain whether there are differences between "larger" and "smaller" ports. Thus, the main objective is not to compare initial and annual costs or establish the exact depreciation. Therefore, the selected depreciation period and resulting annualized initial costs are indicative only.

¹⁵ See paragraph 14 above for the relevant sample that provided data on costs and financing. Size of respective samples expressed as a percentage of global cargo throughput in tonnes, is indicated, as appropriate, in Figures 2 to 10 of this report.

¹⁶ For the purposes of the average unit cost calculations, the breakdown between smaller and larger respondent ports is not comparable with that referred to in fn. 10 of this report.

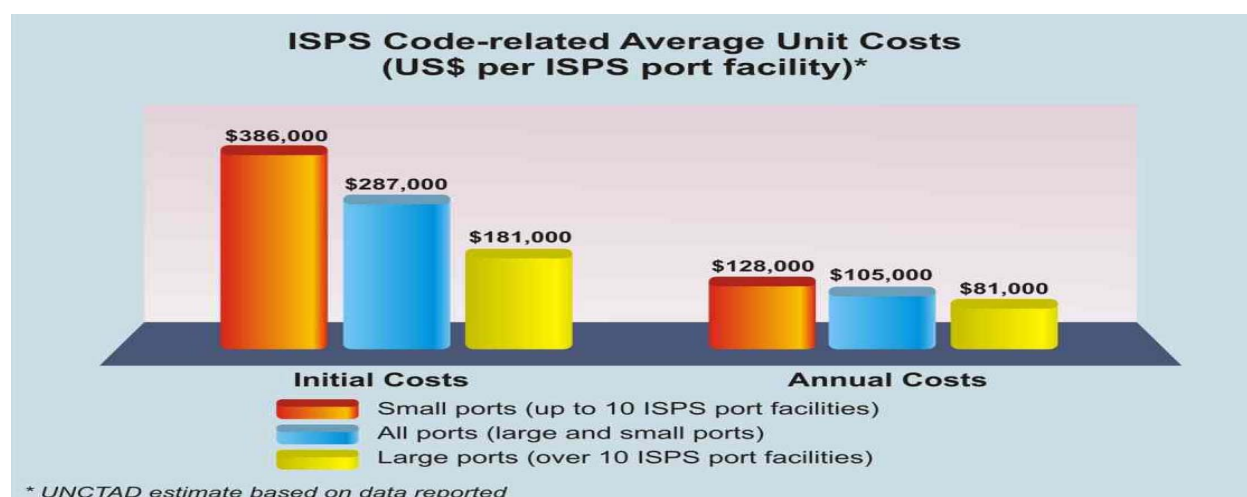
¹⁷ Assumes that the value of an asset or capital investment drops in equal, constant yearly increments over the depreciation period.

¹⁸ Ports might have different cost depreciation structures and the exact relevant lifespan to allocate to the initial ISPS Code-related investments is difficult to establish. For example, equipment has a shorter lifespan than infrastructure.

a. Average Costs per ISPS Port Facility

27. Figure 2 below highlights the unit cost differentials that prevail between respondent ports depending on the number of ISPS port facilities with no further information on the type of traffic handled. The average initial cost per ISPS port facility for smaller respondent ports amounts to US\$ 386,000 which is more than double the cost for larger respondent ports (US\$ 181,000). The average initial cost per facility for all respondent ports, irrespective of the number of the ISPS port facilities, amounts to US\$ 287,000. As to the annual costs, the average cost per facility for smaller respondent ports continues to be higher (US\$ 128,000) as compared with the cost of larger respondent ports (US\$ 81,000). The average annual cost per ISPS port facility for all respondent ports, irrespective of their size, amounts to US\$ 105,000.

Figure 2

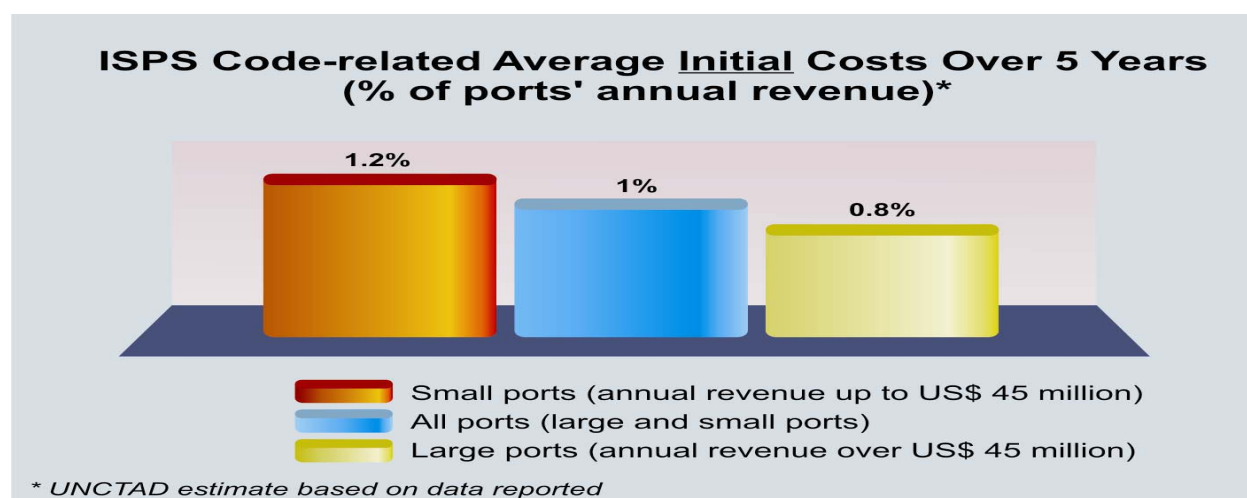


The relevant sample represents respondent ports handling about 7% of the global port cargo throughput (tonnes).

b. Average Costs as a Percentage of Operating Revenues

28. On average, the ISPS Code-related initial costs account for about 1% of respondent ports' annual revenues (Figure 3). A breakdown of respondent ports by size indicates that smaller respondent ports allocate a larger share of their operating revenues to financing the ISPS Code (1.2%) as compared with the share allocated by larger respondent ports (0.8%).

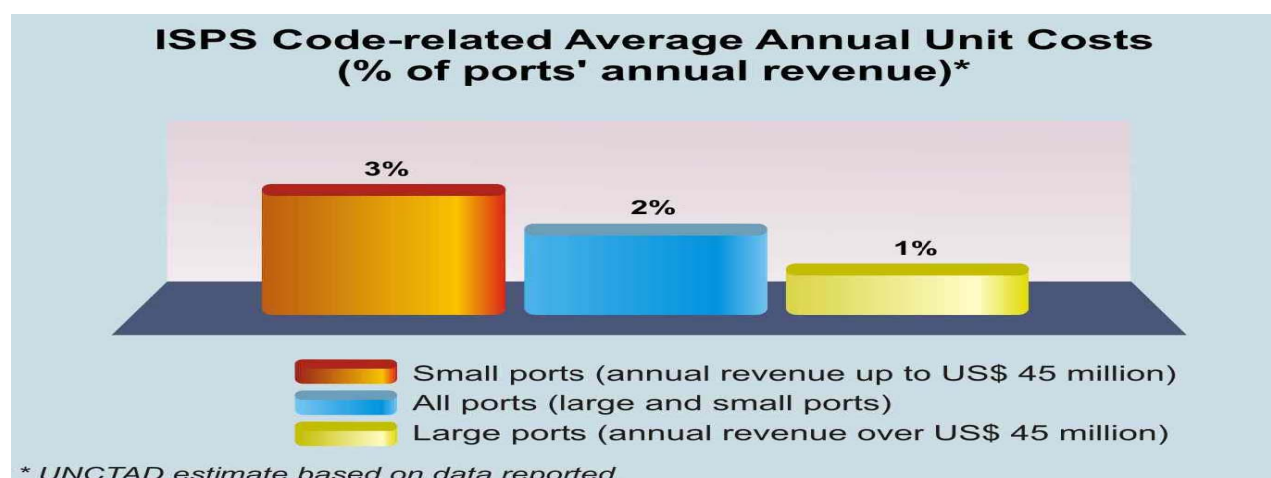
Figure 3



The relevant sample represents respondent ports handling about 8% of the global port cargo throughput (tonnes).

29. As to the ISPS Code-related annual running costs, on average, respondent ports allocate about 2% of their revenue to financing the ISPS Code-related expenditures (Figure 4). Smaller respondent ports allocate a larger share of their revenue (3%) to financing such costs as compared with larger respondent ports (1%).

Figure 4



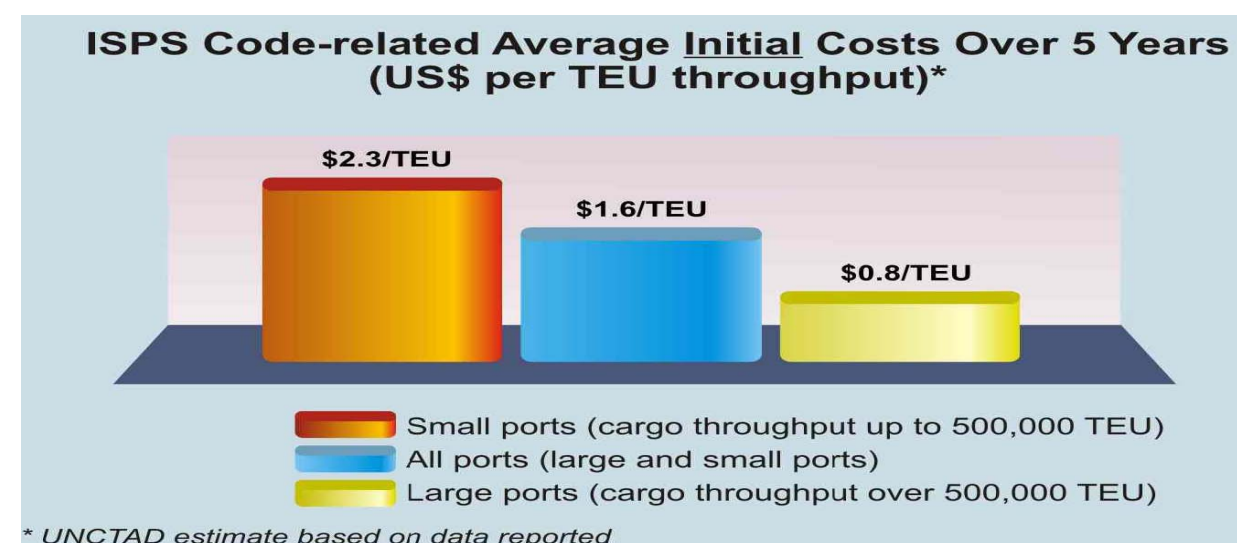
The relevant sample represents respondent ports handling about 7% of the global port cargo throughput (tonnes).

30. The above results suggest that the ISPS Code-related financial impact is more pronounced in the case of smaller ports. Taking the analysis one stage further and accounting for other relevant parameters such as cargo throughput and ship calls, the following sections confirm the above findings and support the argument that cost differentials among respondent ports depend on size.

c. Average Costs per TEU Handled

31. Taking into account the volume of container throughput handled, with no particular assumptions made with respect to the distribution of such traffic between respondent ports, the average cost per TEU for relevant respondent ports amounts to about US\$ 1.6 (Figure 5). The average initial cost per TEU for smaller respondent ports amounts to US\$ 2.3 — about three times (US\$ 0.8) the cost for larger respondent ports.

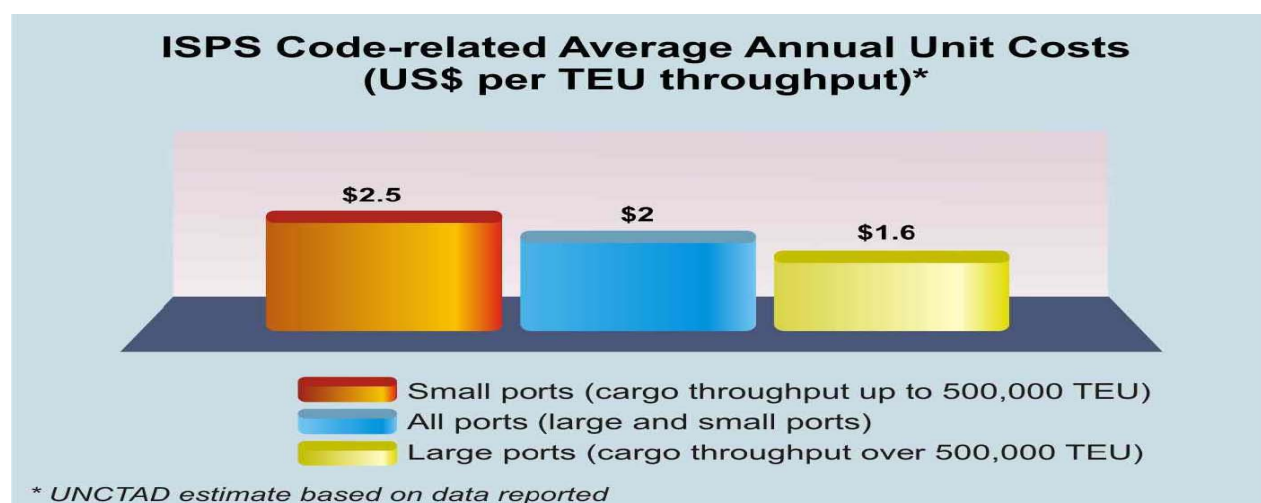
Figure 5



The relevant sample represents respondent ports handling about 10% of the global port cargo throughput (tonnes).

32. A similar picture emerges when considering reported annual costs (Figure 6). The average annual cost per TEU handled for smaller respondent ports amounts to US\$ 2.5, while the cost for larger respondent ports amounts to US\$ 1.6. On average, the annual cost per TEU for respondent ports, irrespective of their size, amounts to US\$ 2.

Figure 6

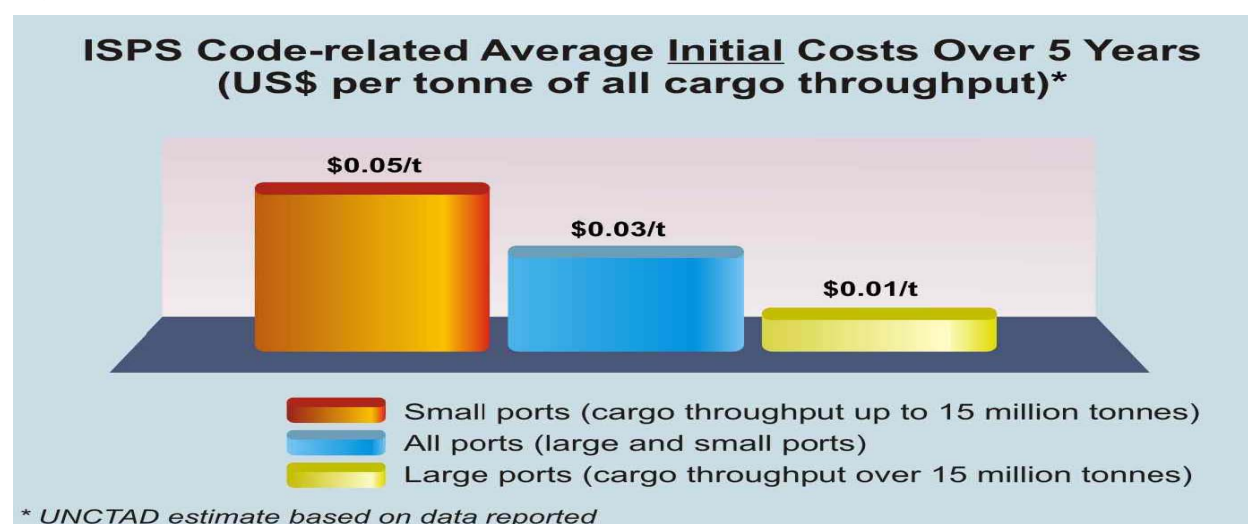


The relevant sample represents respondent ports handling about 8% of the global port cargo throughput (tonnes).

d. Average Costs per Tonne of all Cargo Handled

33. Using a different reference point — tonnes of cargo throughput — the average initial and annual unit costs have been assessed. The average initial cost per tonne (Figure 7) for larger respondent ports amounts to approximately US\$ 0.01, while that of smaller respondent ports is about US\$ 0.05 or five times the average unit cost of larger respondent ports. The average initial cost for respondent ports irrespective of size amounts to US\$ 0.03 per tonne.

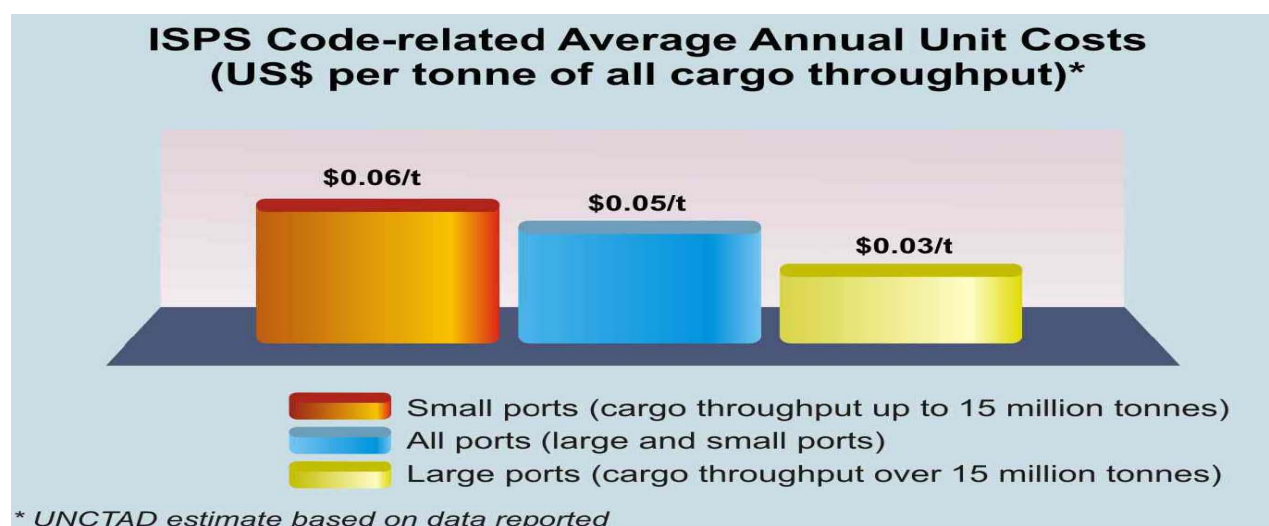
Figure 7



The relevant sample represents respondent ports handling about 9% of the global port cargo throughput (tonnes).

34. This result is replicated when considering annual costs (Figure 8). The average cost per tonne for smaller respondent ports amounts to US\$ 0.06 or double the average unit cost of larger respondent ports (US\$ 0.03). The average annual cost per tonne of cargo handled amounts to US\$ 0.05 for all respondent ports irrespective of size.

Figure 8

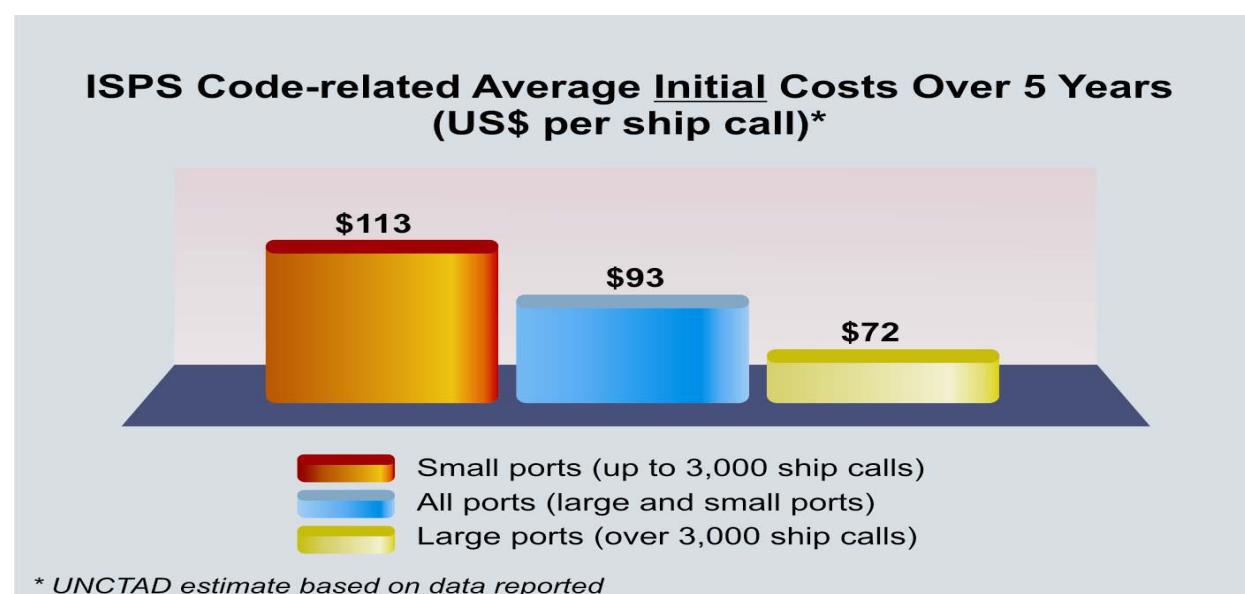


The relevant sample represents respondent ports handling about 9% of the global port cargo throughput (tonnes).

e. Average Costs per Ship Call

35. Figure 9 presents the results of an assessment of average unit costs based on the reported number of annual ship calls with no further information with respect to ship size, type and berthing time. Again, smaller respondent ports have an initial cost per ship that is higher (US\$ 113 per ship call) than the cost of larger respondent ports (US\$ 72 per ship call). The average cost for relevant respondent ports, irrespective of the number of ship calls per year, amounts to US\$ 93 per ship call.

Figure 9



The relevant sample represents respondent ports handling about 13% of the global port cargo throughput (tonnes).

36. The average annual unit cost continues to be larger for smaller respondent ports (Figure 10) and amounts to US\$ 244 per ship. The average cost per ship call for larger respondent ports and for all respondent ports irrespective of size amount to US\$ 132 and US\$ 190, respectively.

Figure 10



The relevant sample represents respondent ports handling about 9% of the global port cargo throughput (tonnes).

f. Summary and Discussion

37. Table 1 below summarizes the estimated average costs and highlights the cost differentials between larger and smaller respondent ports. As a general trend, estimated average costs appear to be higher for smaller respondent ports as compared with larger respondent ports. Economies of scale, the type and structure of cargo throughput handled and prevailing security environment prior to the implementation of the ISPS Code may play an important role in this respect.

Table 1: ISPS Code-related Average Costs of Respondent Ports (Percentages and US\$)

	As % of Annual Revenue		Per Tonne of Cargo Throughput		Per TEU Throughput		Per ISPS Port Facility		Per Ship Call	
	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller
Initial	0.8%	1.2%	\$0.01	\$0.05	\$0.8	\$2.3	\$181,000	\$386,000	\$72	\$113
Annual	1%	3%	\$0.03	\$0.06	\$1.6	\$2.5	\$81,000	\$128,000	\$132	\$244

Smaller ports represent the lower half or bottom 50% of relevant respondent ports, while larger ports represent the upper half or top 50% of relevant respondent ports. Except for the average costs per ISPS port facility, average initial costs are annualized throughout a 5-year depreciation period.

Economies of Scale and Structure of Traffic

38. The fixed costs element, together with an insufficient level of throughput necessary to spread the costs, may explain the higher unit costs of smaller respondent ports. The effect of economies of scale is illustrated in Table 2 below, which presents annual cost figures reported by two European respondent ports. Clearly, higher cargo volumes result in lower unit costs despite larger total reported annual costs. In addition, the type of cargo handled can have a bearing on costs since bulk trades, for example, may require fewer security-related investments and hence result in lower costs.

Table 2: Effect of Economies of Scale (Example)

	Annual Costs	Annual Cargo Throughput (tonnes)	Unit Cost (US \$)
Port 1	296,000	1,400,000	\$0.21
Port 2	19,000,000	152,000,000	\$0.13

Security Environment Pre-ISPS Code

39. The state of the security set up prior to the application of the ISPS Code could also help explain the divide between larger and smaller respondent ports. Smaller ports may have a wider gap to bridge in terms of security in contrast to larger ports that have probably in the past invested more in securing the premises and access to the port. Depending on their specific activities and type of traffic handled, some types of facilities such as major transit areas have probably already acquired equipment and implemented measures which can be used for security purposes although initially intended to respond to existing safety requirements or to counter theft.

2. Cost Factor Distribution

40. As to the manner in which costs are distributed among various cost headings (Figure 11), responses received suggest that, on average, expenditures on equipment absorb the largest share of the initial costs (35%) followed by expenditures on infrastructure (26%). Other cost factors include expenditures related to personnel and staff time requirements (14%), training, drills and exercises (8%), ICT use (7%), administrative (6%), operations and procedures (2%) and upgrades¹⁹ of security to levels 2 and 3 (2%).

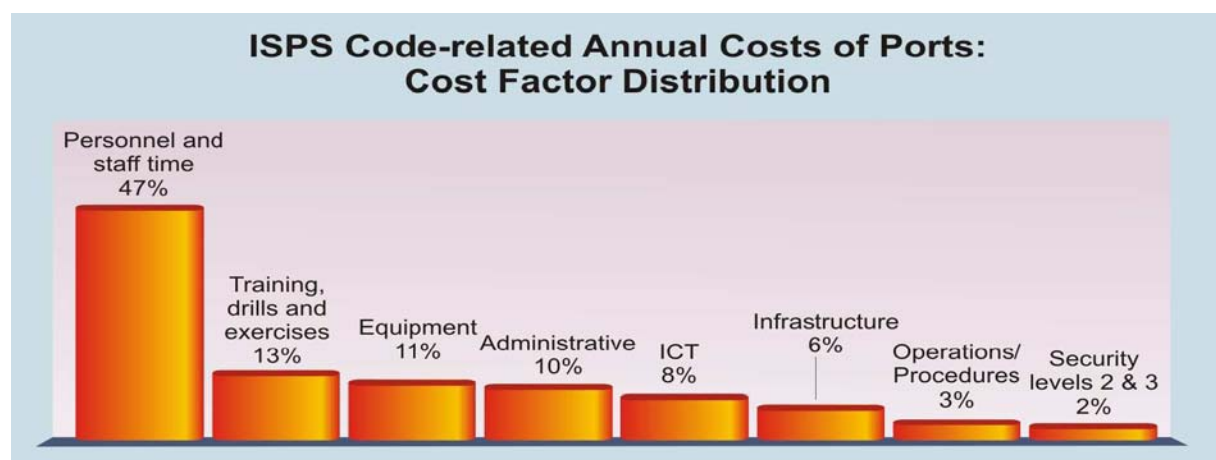
Figure 11

41. According to Figure 12 below, responses received suggest that, on average, expenditures on personnel and staff time (47%) represent, by far, the largest share of the ISPS Code-related costs followed by expenditures on training, drills and exercises (13%) and equipment (11%). Expenditures associated with administrative functions and ICT-related requirements amount respectively to about 10% and 8% of these costs. Infrastructure-related expenses absorb a smaller

¹⁹ Under the ISPS Code, Contracting Governments are responsible for setting the security levels. Security Level 2 means the level for which appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of security incident. Security Level 3 means the level for which further specific protective measures shall be maintained for a limited period of time when a security incident is probable or imminent, although it may not be possible to identify the specific target.

portion of the costs (6%) followed by expenditures associated with operational requirements (3%) and security upgrades to levels 2 and 3 (2%).

Figure 12



3. Estimated Global Costs

42. In order to obtain a better understanding of overall cost implications of the ISPS Code, global initial and annual costs have also been estimated using cost data reported and three reference points, namely relevant respondent ports' share of (a) world's seaborne trade measured in tonnes, (b) global container port throughput, and (c) total number of declared ISPS port facilities. The share of relevant respondent ports of world seaborne trade (tonnes) is estimated to about 13%, while their share in terms of global container port throughput and total number of declared ISPS port facilities is estimated to approximately 16% and 6%, respectively.²⁰

43. Table 3 below summarizes the estimated port-related global costs of the ISPS Code implementation. Bearing in mind the limitations that may characterize such calculations, the port-related estimated **global** costs of the ISPS Code range between approximately **US\$ 1.1 billion** and **US\$ 2.3 billion initially** and **between US\$ 0.4 billion** and approximately **US\$ 0.9 billion annually thereafter**.

Table 3: Estimated Global Initial and Annual Costs (billion US\$)*

	Initial (billion US\$)		Annual (billion US\$)
ISPS Port Facilities	2.3	ISPS Port Facilities	0.9
Tonnes	1.3	Tonnes	0.4
TEU	1.1	TEU	0.4

*UNCTAD estimate based on cost data provided and the relevant respondent ports' share of the world's seaborne trade (tonnes) approximately (13%), global container port throughput (16%), as well as the total declared ISPS port facilities (6%)

44. To put these results in perspective, the above estimates are assessed against the global international maritime freight costs. Estimated global freight costs amounted to

²⁰ 2004 data on global container port throughput and seaborne trade have been used (see UNCTAD's *Review of Maritime Transport*, 2006). According to the IMO secretariat, as of October 2006, the total number of the declared ISPS port facilities amounted to 10,652.

US\$ 270.8 billions in 2004, of which about two-thirds related to maritime transport.²¹ Based on these parameters, the **estimated global initial costs** range from about **0.6%** to **1.3%** of the global international maritime freight costs while the **estimated global annual costs** range between **0.2%** and **0.5%** of maritime freight. Thus, the estimated global port-related costs associated with the ISPS Code are equivalent to **increases in international maritime freight payments of about 1%** with respect to the **initial expenditure** and **0.5%** with respect to the **annual expenditure**.

45. It should be borne in mind that the estimated global costs are based on reported data relating to the implementation of the ISPS Code only and do not reflect (a) the costs associated with other security measures and initiatives which may require additional investments and expenditures or (b) indirect costs which may arise, for instance, in the context of security-related delays or congestion.

IV. Financing the ISPS Code-related Costs

1. Market-driven Solutions: Cost-Recovery by Charging Port Users

46. The questionnaire asked about the sources used by ports to finance their initial and annual recurring expenditures and whether they had introduced or envisaged to implement any cost-recovery schemes. In addition, respondent ports were asked to identify the party responsible for implementing the resulting pricing strategy and to clarify the basis for the levies or the charges applied or planned. Finally, the questionnaire inquired about the proportion of the initial and annual expenditures expected to be recovered by way of the cost-recovery schemes (Questions 9 to 12).

47. The majority of respondent ports have **no cost-recovery** schemes in place. However, 37% — mainly from developed regions — have indicated the presence or the intention to introduce cost-recovery schemes. Others (6%) indicated that they had introduced or planned to introduce cost-recovery schemes in addition to receiving public funding. The limited use of cost-recovery schemes by respondent ports located in developing regions suggests that charging port users might be more difficult for ports in some regions. It might also be the case that some port and terminal operators are bound by the terms of the leasing contract or concession agreement.²²

48. As Figure 13 shows, recovery schemes adopted or envisaged by relevant respondent ports include fees or charges applied to **cargo** (48%) and **passengers** (17%). Others involve imposing security charges on the basis of **ship calls, tariffs or dues** (35%) or increasing **facility rent** (9%). Clearly, respondent ports appear to favour an approach that targets **several port users**, with a preference for cargo. Approaches to cargo-based recovery schemes vary with relevant respondent ports indicating that charges are levied on a variety of cargo movements. Relevant respondent ports indicated that charges are being levied either on 1) imported, exported and transhipped full and empty containers as well as imported, exported and transhipped tonnes of cargo, 2) imported, exported and transhipped full containers, 3) imported and exported full containers, 4) imported and exported tonnes of cargo, 5) imported full containers, and 6) imported and exported empty

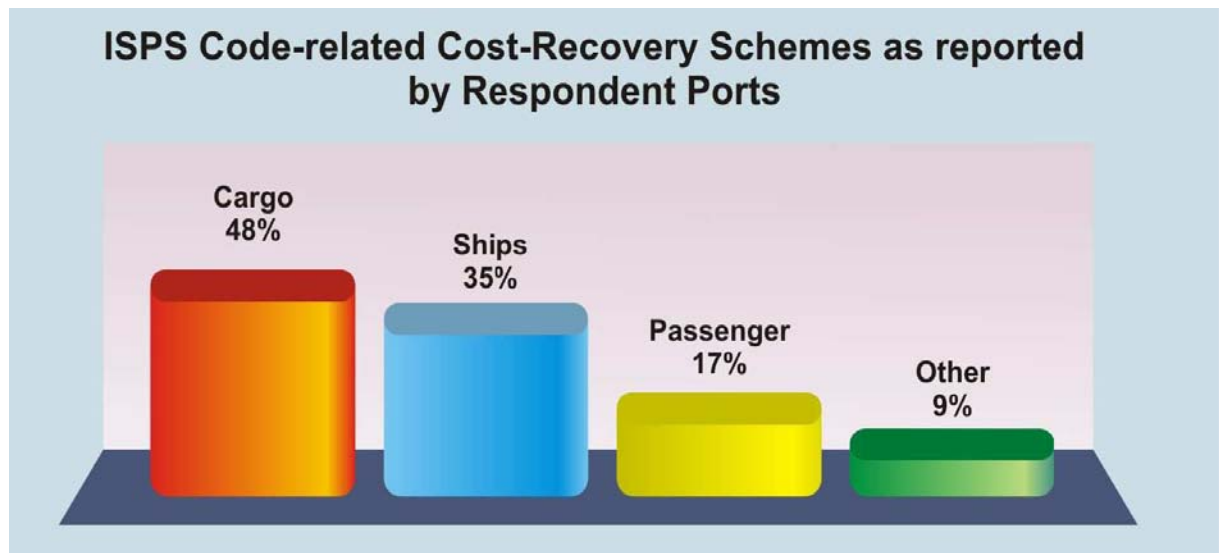
²¹ See page 77 of UNCTAD's *Review of Maritime Transport, 2006*. The share of international maritime freight costs of global freight costs for 2004 has been estimated to amount to about 67% by the UNCTAD secretariat.

²² In the context of port privatization, clauses of leasehold license and concession contracts delineate the rights and obligations of the lessee and the concessionaire, including responsibilities for setting prices and collecting revenues from port users. For further information about ports' privatization, see UNCTAD's report "*Guidelines for Port Authorities and Governments on the Privatization of Port Facilities*", UNCTAD/SDTE/TLB/1, 23 September 1998.

containers as well as imported and exported tonnes of cargo. There are no reports about cost-recovery schemes that apply to transshipments only.

49. It is interesting to note that cargo throughput measured in tonnes and TEUs are positively correlated with the reported costs.²³ This might partly explain the reasoning behind cargo-based recovery schemes. Statistical analysis of the relationship between costs and various measures of port sizes including tonnes, TEUs, ship calls, passengers and ISPS port facilities could contribute to informing the debate on the criteria to be used when developing ports' cost-recovery schemes with a view to internalizing costs.

Figure 13



50. The majority of relevant respondent ports (61%) indicated that they **do not** expect to recover directly from users **more than half** of their ISPS Code-related initial costs. The **remaining** respondent ports (31%) expect to recover **over 50%** and **up to 80%** of their costs and **only few** (8%) anticipate **full or almost full recovery**. As to the annual costs, the majority (54%) expect to recover **more than half** of their annual costs but not necessarily the full amount. An important minority (46%), however, **does not** expect to recover **more than 50%** of their annual costs.

51. These results suggest that, although higher with respect to annual costs, the expected recovery rate is, in most cases, not more than 50%. It is not clear, however, irrespective of the expected recovery levels, how recovered amounts will be distributed among the various port stakeholders.

52. A fundamental issue raised in relation to cost-recovery schemes is whether levies charged in ports are proportionate to the cost of security and are based on clear objective grounds. The maritime industry and its users, whether shipping lines or shippers, argue that the manner in which security charges are being set requires further transparency; also that, substantiation is required that these charges are commensurate to services rendered and expenditures incurred as a result of the enhanced maritime security.²⁴ One respondent port commented that "...Ship and

²³ The estimated coefficients of correlation between reported annual costs on one hand, and tonnes and TEU throughput on the other, amount to 0.59 and 0.53, respectively. The corresponding coefficients for ship calls, annual revenues and ISPS port facilities amount to 0.26, 0.54 and 0.81, respectively.

²⁴ For an overview, see R. Asariotis, "Implementation of the ISPS Code: an overview of recent developments", *Journal of International Maritime Law*, July-August 2005, pp. 266-287, text to fns 135-145.

cargo owners believe costs should be absorbed by ports and have put up a strong resistance to contributing”.

53. Only few respondent ports indicated the amounts of security charges applied; these are consistent with the level of security fees published in some industry reports and compilations. Selected security surcharges as published elsewhere²⁵ are presented in Table 4 below, together with the estimated average costs per cargo throughput derived on the basis of responses received to UNCTAD's questionnaire. A comparison between costs per unit of cargo throughput and the security surcharges levied by ports should, however, be handled with care since the criteria used for setting the level of security fees remains unclear. In addition, levied amounts might aim to recover expenditures resulting from security measures other than the ISPS Code.

Table 4: ISPS Code-related Unit Costs and Selected Security Charges

Unit Costs	Respondent Ports			Published Security Charges ²⁶	
	All	Larger	Smaller	Levy per tonne	
Initial cost per tonne	US\$ 0.03	US\$ 0.01	US\$ 0.05	Liquid Bulk	US\$ 0.02
Annual cost per tonne	US\$ 0.05	US\$ 0.03	US\$ 0.06	Dry Bulk	US\$ 0.02
				Breakbulk	US\$ 0.10
Initial cost per TEU	US\$ 1.6	US\$ 0.8	US\$ 2.3	Average Container Security Fee/Container:	
Annual cost per TEU	US\$ 2.0	US\$ 1.6	US\$ 2.5		
				Australia (5 ports)	~ US\$ 4
				Brazil (3 ports)	~ US\$ 9
				Canada (2 ports)	~ US\$ 2.8
				China (2 ports)	~ US\$ 2.6
				Europe (42 ports)	~ US\$ 9
				Hong Kong	~ US\$ 2.6
				New Zealand	~ US\$ 13.5
				USA (14 ports)	~ US\$ 3.8

2. Public Intervention: Funding and Assistance

54. To gain further insight into the manner in which the port industry managed to finance ISPS Code-related expenditures, the questionnaire asked whether public funding had been received or was expected. Additional questions sought to clarify the sources, the types and the amount of these funds (Questions 13 to 15).

55. A minority of respondent ports (26%), mainly from developed countries and none from Africa and Oceania, indicated that they had received or expected to receive public **funding**. Another share (6%) indicated that they had not only received or expected to receive public funding, but had also implemented or envisaged introducing cost-recovery schemes.

56. All respondent ports that have received or expect to receive financial assistance appear to be publicly owned (100%). **Grants** constitute the main form of assistance, followed by

²⁵ See the January 2007 compilation of carrier and container terminal security charges by Hapag Lloyd (<http://www.hapag-lloyd.com/en/index.html>) and the June 2006 Summary of Port Security Fees by the American Association of Port Authorities (AAPA), <http://www.aapa-ports.org/home.cfm>.

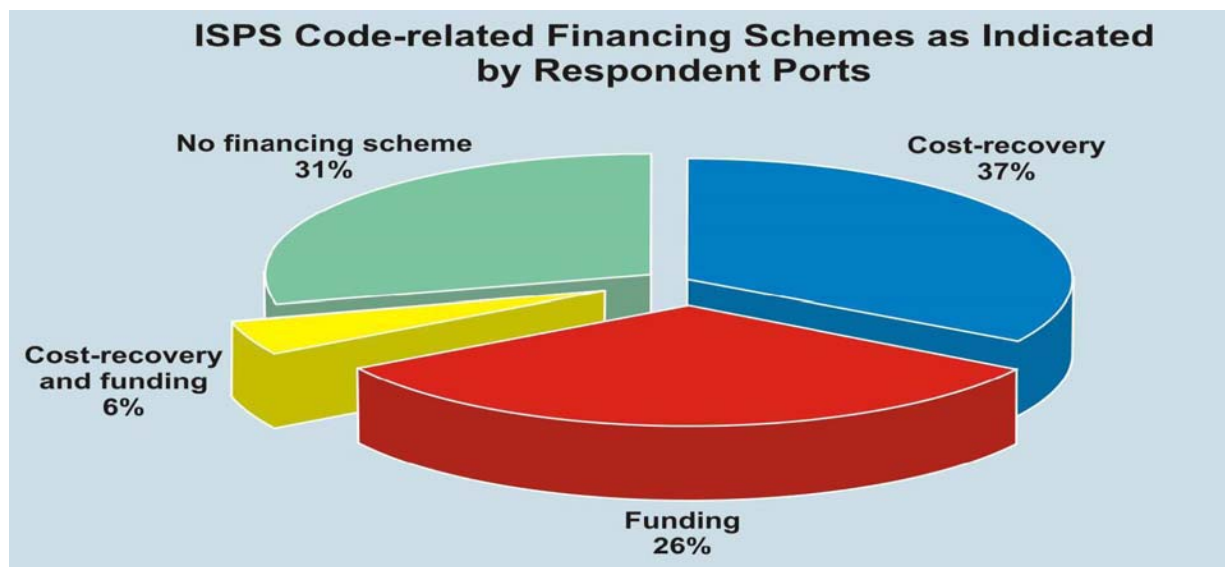
²⁶ The examples of security fees per tonne presented in Table 4 relate to the Florida Ports Conference and the Gulf Seaports Marine Terminal Conference. These rates are minimum fees which member ports can increase if justifiable. The average container security fees are calculated on the basis of the compilation of container terminal security charges by Hapag Lloyd (<http://www.hapag-lloyd.com/en/index.html>).

governmental **cost-sharing agreements**,²⁷ interest free loans, subsidies and tax credits. In terms of **sources of funding**, for a significant majority of relevant respondent ports (82%), the local or national government remains the main source of funding. Other sources include inter-country funding and regional organizations. **Other types** of assistance received or expected include **technical assistance** and **capacity building** provided by international organizations, such as the IMO, to some respondent ports located in developing regions.

3. Summary

57. The overall picture that emerges is one whereby not all respondent ports have financing schemes (i.e. cost-recovery and/or public funding and assistance) to offset the ISPS-Code related costs (Figure 14). Those that do, have either implemented cost-recovery schemes by charging port users (37%), benefited from public funding and assistance (26%), or relied on both (6%). An important minority (31%) have no existing or planned financing schemes. Clearly, the port industry appears to rely on various approaches to financing its ISPS Code-related costs. These range from cases where costs are financed in full by ports with no cost-recovery schemes and funding in place, to instances where ports, governments and port users together share the costs of the new port security regime.

Figure 14



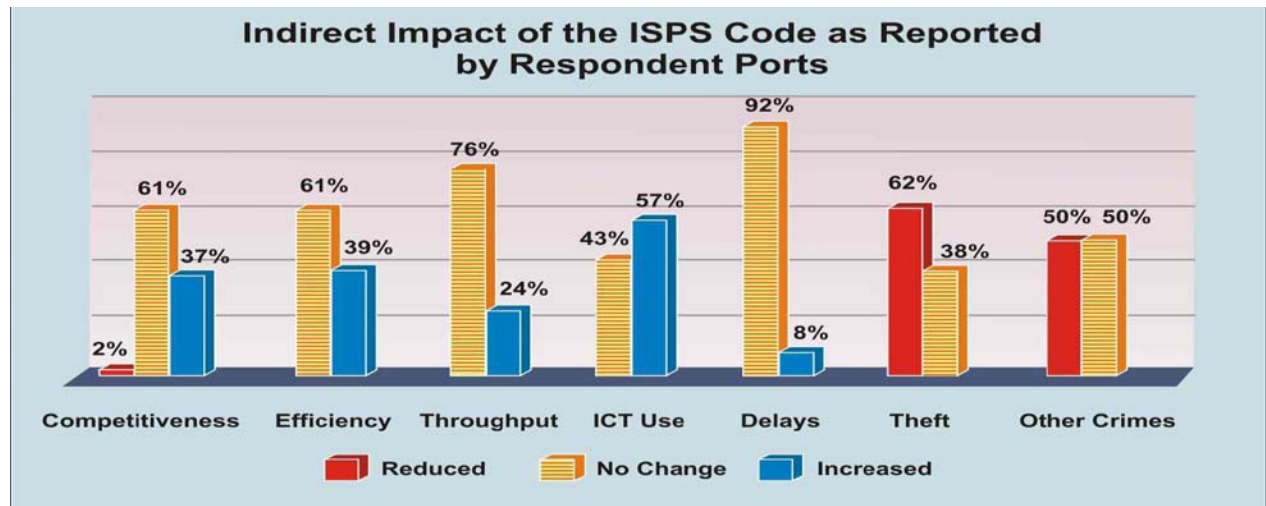
V. Other ISPS Code-related Impacts

1. Impact on Various Port Performance Measures

58. A fair assessment of the ISPS Code implementation and compliance costs requires an examination of the indirect effects, whether positive or negative, that may have resulted (Question 8). Figure 15 below summarizes responses received with respect to the ISPS Code-related impact on various port performance measures. With limited exceptions, indicated in text below, responses received did not differ according to respondent ports' size or level of development of their location.

²⁷ Such as, for instance, the Canadian Marine Facility Security Contribution Program which is a 3-year, C\$115 million commitment to assist ports and port facilities with implementing security measures contained in their approved security plans. The funding is being provided on a 75-25 cost share basis for eligible projects (www.tc.gc.ca).

Figure 15



59. An important minority of respondent ports (37%) reported an increase in **competitiveness** while few small respondent ports from developed regions (2%) noted a decrease. Meanwhile, for the majority (61%) the Code had no impact on their competitiveness. On the positive side, one large respondent port commented that *"while it was difficult to gauge, the ISPS compliance enhanced [our] market standing, increased truck turnaround and shipowners' confidence"*. One small respondent port from a developing region added that *"non-compliance would have had more serious consequences both for shipowners and ports since [the ISPS Code] ensures that more ships are calling at the port"*. For two other small respondent ports, competitiveness is said to have either increased by 5% or resulted in both local and international investors showing interest in doing business with their organization after being briefed about ISPS Code implementation.

60. **Efficiency** seems to have either increased (39%) or remained unchanged (61%). Some respondent ports have noted that factors such as additional security personnel, new access control measures at gates, screening measures, the introduction of port worker passes, better planning of container yards and ships and better internal organization contributed to increasing efficiency. One small respondent from a developing region noted that *"although security measures are demanding and result in transport cost increases, compliance involves major efficiency implications which attract clients that are increasingly requesting that full security be provided"*.

61. As to **throughput**, an important majority of respondent ports (76%) noted no change in throughput handled, while some (24%), mainly small ports from developing regions, reported an increase. It is not clear, however, in the case of increased throughput, whether this may be directly and solely attributed to the implementation of the ISPS Code.

62. The majority of respondent ports (57%) noted an increase in the use of **information and communication technologies (ICTs)** while others (43%) experienced no change. The increase in ICT use relates, among other things, to the implementation of certain programs in order to monitor vessel traffic and the phasing-out of conventional security in favour of technology-based security or integrated security. Examples of ICT solutions used include Vessel Tracking Systems (VTS), cameras, radios, automatic identification systems (AIS), electronic mails, electronic data and identity cards.

63. For an overwhelming majority (92%) the ISPS Code had no impact in terms of **delays** although some respondent ports (8%), half of which were large or average sized ports from

developing regions, experienced increased waiting times. One average sized respondent port from a developed region, noted in particular that delays tend to occur at gate terminals created by access control protocols.

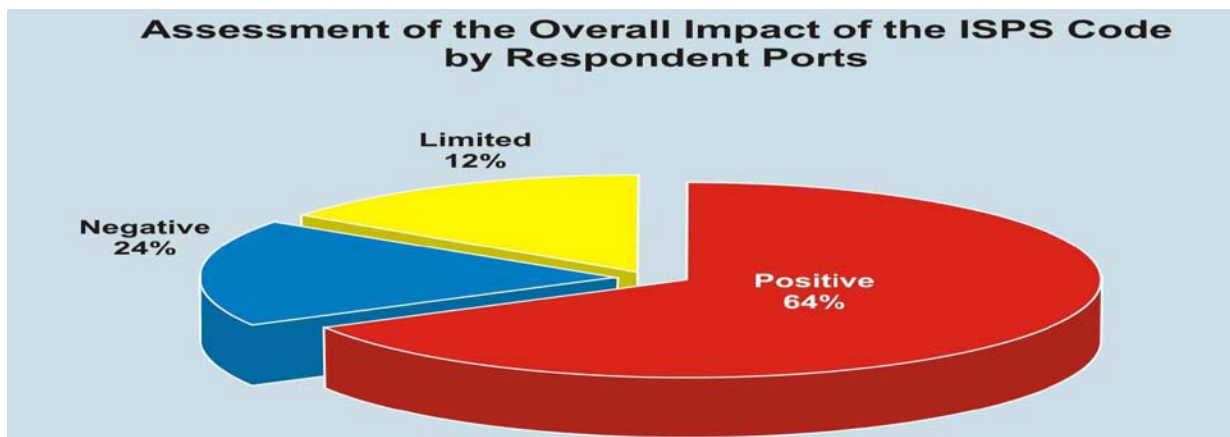
64. For the majority of respondent ports (62%), the ISPS Code lead to fewer incidents of **theft** while for half (50%) it contributed to reducing **other criminal activity** such as fraud and drug trafficking. Some noted that no statistical data was available to substantiate their statement since no survey had been carried out prior to and after the implementation of the ISPS Code. Nevertheless, they stated that reports from local police offices confirmed their views. Others were able to quantify the reduction in criminal activity and cited reduction rates ranging from 50% to 95%, resulting mainly from tighter access control and CCTV monitoring.

65. The combined effect on various performance indicators reported by respondent ports and highlighted above suggest that, overall, the ISPS Code had either **no impact** or had a **positive** effect as it achieved strategic objectives other than enhancing security. Respondent ports noted that incidents of theft and other crimes have been reduced, greater efficiency and integration of ICTs have been achieved and no reduction in throughput has been observed. For some respondent ports, however, delays have increased and competitiveness has been reduced.

2. Ports' Perception of the ISPS Code Overall Impact

66. Figure 16 summarizes respondent ports overall assessment of the ISPS Code impact (Question 16). A majority (64%) indicated that the ISPS Code had had an overall positive impact as it provided a mechanism to standardize security at all facilities under ports' jurisdiction. For some respondent ports (24%), the ISPS Code is perceived as having negative implications. These include being "costly", "burdensome" and causing a "huge disruption to normal business". Others (12%) expressed the view that the Code had a limited impact because of investments made prior to the ISPS Code in order to prevent theft and other criminal activities.

Figure 16



67. The following selected comments made by some respondent ports illustrate these views:

- *"Provided a means to standardize security at all facilities under [the] port's jurisdiction".*
- *"ISPS has introduced a structural change in security management in ports. It can be said without doubt that the average level of security in the port of [] has been raised as a direct result of ISPS. Port facilities have been faced with extra costs, both initial and structural. In most cases, these costs are not compensated for by recovery measures. Never are they compensated by funding. Port security should not be a means of competition between ports."*

It is of the utmost importance that supra-national bodies like the EU and IMO perform compliance audits. ISPS is only the first step in securing maritime transport and logistics. [...] In all concepts trade facilitation is seen as the main incentive instead of international legislation".

- *"There has been a reluctance to change, but gradually the situation has improved and nearly all port users are security conscious. The rate of crime and other offences has been reduced considerably, thus making [] a more secure port".*
- *"The port [] was already equipped against theft before the implementation of the ISPS Code such as cameras, agents controlling access, patrols, fences, etc. Thus, at the moment, the impact of the ISPS Code is limited".*
- *"The enforcement of the ISPS Code had no negative impact on ship operations but has complicated the everyday life, with positive effects on the safety and security of the goods and a reinforced feeling of security for passengers. Throughout the various terminals the staff feel much more involved in security and safety issues".*
- *"The ISPS Code has imposed obligations on a port authority which are rightfully the responsibility of the national authority. Seaport security should be dealt with on a national basis in the same manner as land security. However, the port now has this serious responsibility and must ensure that each facility remains compliant in order that the port can continue to operate without restrictions. There has been a significant increase in administration together with increased capital and operating costs. Additional personnel have to be recruited to oversee the implementation of the Code and to organize training and exercises. On the positive side, there is increased security awareness throughout the port community. On the negative side, the support from national authorities has not been evident. Their view is that it is the responsibility of the port to comply with the Code in accordance with their interpretation. This is despite the fact that the ports are government owned".*
- *"As a small port, we are definitely burdened both physically and financially by the introduction of the ISPS Code with the new security measures additional personnel and equipment had to be employed in order to be compliant. We also find the annual drills, exercises and audits to be tedious and strenuous on our limited resources".*
- *"The challenge is to secure continuous budget for the maintenance of security compliance".*
- *"Huge disruption to normal business".*

VI. Ports' Questionnaire: Summary of Key Findings

68. A **good response rate was achieved** with respondent ports handling a sizeable share of the global port cargo throughput (tonnes). Although the majority of respondent ports are located in developed regions, responses received also reflect the views and experiences of an important proportion of respondent ports from developing countries. The limited number of responses from ports that handle one single type of traffic did not allow for any conclusions to be drawn with respect to potential differences with the position of multipurpose ports.

69. Responses received indicate that the port sector achieved **full compliance** with limited or no major difficulties. Implementation of the mandatory provisions of the Code was largely fulfilled by applying guidance contained in Part B. Furthermore, an important majority of respondent ports indicated that a number of measures that supplement the ISPS Code were in place. This might suggest that the Code may be seen as minimum level of security. Additional measures are either government or industry-driven. It is not always clear, however, which of the particular measures — extending the Code requirements to the entire port area or applying the IMO/ILO Code of practice — is initiated by governments as opposed to industry.

70. Figures reported in absolute numerical terms and the estimated average costs highlight **cost differentials between respondent ports**. Costs differ from port to port and from facility to facility depending on a variety of factors, in particular size. The ratio of costs to annual revenues, cargo throughput, ISPS port facilities and ship calls is lower for larger respondent ports as compared with smaller ones.

71. Responses received, depending on the reference point adopted, suggest **an annualized average initial cost burden** for relevant respondent ports equal to around: 1% of the annual revenue; US\$ 0.03 per tonne of cargo; US\$ 1.6 per TEU; US\$ 93 per ship call. The initial average cost per ISPS port facility amounts to US\$ 287,000. **The average annual cost burden** for relevant respondent ports amounts to approximately 2% of the annual revenue; US\$ 0.05 per tonne of cargo; US\$ 2 per TEU; US\$ 190 per ship call; and, US\$ 105,000 per ISPS port facility.

72. Estimated **global port-related costs** range between approximately **US\$ 1.1 billion** and **US\$ 2.3 billion** for the initial implementation and between approximately **US\$ 0.4 billion** and **US\$ 0.9 billion** for the annual maintenance and operation of the security regime. Expressed as a proportion of the international maritime freight costs, estimated global costs are equivalent to increases in international maritime freight payments of **about 1%** with respect to the initial expenditure and **0.5%** with respect to the annual expenditure.

73. Responses received suggest that the **initial implementation** of the ISPS Code requires more investments in **equipment and infrastructure** to put in place the conditions necessary to performing the new security duties. **Personnel and staff time** requirements generate most of the costs associated with the **annual maintenance of compliance** with the ISPS Code. Maintaining and operating the new security regime would normally require hiring more personnel or extended working hours for existing staff. Other important cost factors, yet of lesser magnitude than personnel and staff time, are training, drills and exercises; equipment, administrative and ICT-related expenses. The ISPS Code requires that regular training and drills be conducted; hence, the importance of any associated costs may be expected. Costs driven by operational and procedural requirements or by security upgrades continue to be negligible in proportion to the remaining cost items.

74. To finance these costs, a significant proportion of respondent ports resort to market-driven solutions whereby security surcharges are levied directly on port users. Such **cost-recovery** schemes are more or less widespread and seem to be concentrated in **developed regions**. **Cargo**, especially **containerized traffic**, including **various movements** (imports, exports, transshipments as well as empties) seems to be the most common basis for the application of security surcharges although other users (ships, port operators, passengers) are, to some extent, also affected. These cost recovery schemes **do not necessarily result in full recovery** since the majority of relevant respondent ports expect to recoup no more than half of their respective initial costs. As to their annual costs, a majority expect to recover more than half of their costs with only a **minority** expecting to achieve **full recovery**.

75. The results of the survey questionnaire did not provide much insight with respect to the basis upon which applicable cost-recovery schemes are devised, including the relevant levels of security charges. It also remains unclear how revenues generated are being allocated. Thus, achieving greater transparency with respect to criteria used to set security charges remains a challenge.

76. A minority of respondent ports have received or expect to receive **public funding and assistance**. These are mainly located in developed regions and assistance received or expected includes governmental grants and cost-sharing agreements as well as technical assistance and capacity building. Technical assistance and capacity building initiatives are mainly deployed by international organisations such as the IMO and directed at respondent ports located in developing countries.

77. Few respondent ports have implemented or envisage introducing cost-recovery schemes as well as benefiting from public funding. An **important minority** financed the ISPS Code-related costs entirely from their general revenue funds since **no cost-recovery schemes and no public funding or assistance** were in place or expected.

78. In terms of indirect effects on various performance measures, respondent ports appeared rather positive. Nevertheless, some ports reported experiencing delays and few noted a decrease in their competitiveness, while others said it had no impact at all.

79. A majority of respondent ports expressed the view that the ISPS Code has had an **overall positive impact**, especially in terms of increasing security awareness, streamlining processes, standardizing risk assessment methods and improving business practices. Respondent ports who emphasized the **negative** impact of the Code and appeared particularly **concerned** about the operational interferences of the Code as well as the cost implications and associated funding requirements. For others the Code had limited impact.

B. GOVERNMENTS' RESPONSES TO UNCTAD'S QUESTIONNAIRE

80. The responsibilities of Contracting Governments are set out in SOLAS chapter XI-2 and Part A of the ISPS Code. One of their main obligations is to establish the three security levels applying to port facilities and ships (i.e. normal, heightened and imminent risks). Other specific obligations falling upon SOLAS Contracting Governments include:

- Approving *Ship Security Plans (SSP)*
- Issuing *International Ship Security Certificates (ISSC)* after verification
- Ensuring completion of and approval of *Port Facility Security Assessments (PFSA)*
- Approving *Port Facility Security Plans (PFSP)*
- Establishing which port facilities need to designate *Port Facility Security Officers (PFSO)*
- Exercising control and compliance
- Communicating certain information to the IMO

81. To fulfil these requirements, the Code allows governments to designate authorities to undertake their security-related responsibilities as well as to delegate certain duties to designated Recognized Security Organizations (RSOs).

82. Taking into account these requirements, the UNCTAD secretariat designed a questionnaire to solicit governments' views on their respective experiences with the ISPS Code implementation, including with respect to their ability to assist their national port and shipping industries throughout the implementation process.

83. Part I of the questionnaire aimed to establish the profile of responding governments and ascertain their approaches to implementation. Part II sought to obtain an estimate of the expenditures required by governments in order to achieve initial implementation of the ISPS Code and maintenance of compliance. Part III examined the role of governments in assisting their respective national port and shipping industries and aimed to identify mechanisms used to finance governments' ISPS Code-related expenditures.

84. Unlike the port industry survey, the governments' questionnaire emphasized the issue of governmental assistance and funding, rather than costs implications. The aim was to ascertain whether governments, especially in developing countries, have been able to comply with their respective ISPS Code obligations and, if appropriate, support their national port and shipping industries. It is hoped that responses received may contribute to any discussion on potential assistance and cooperation mechanisms, especially for developing countries.

85. Overall, a good response rate was achieved with a total of 45 responses received from governments located in countries representing about 24% of the United Nations membership and spanning the following regions: Europe (31%), Africa (29%), Asia (20%) and Latin America (20%). Responses received are particularly representative of developing countries' experiences since an important majority (73%) of respondent governments are from countries located in developing regions, including in least developed countries (LDCs).

I. Implementation Process and Compliance

86. A starting point for any assessment of the ISPS Code implementation and associated costs is a better understanding of actions taken to implement the new requirements. Therefore, the questionnaire asked governments to specify whether they were Contracting States to the SOLAS Convention and to describe measures taken to implement the ISPS Code requirements. The

survey also sought to establish approaches used by governments to incorporate the ISPS Code into the national legal and regulatory frameworks and to document initial and subsequent compliance. Governments were asked to indicate whether they were aware of any difficulties encountered by their national port and shipping industries during the ISPS Code implementation process. Finally, the questionnaire inquired whether measures affecting national ports and shipping industries had been adopted by governments to supplement the mandatory requirements of the Code (Questions 1 to 8).

1. State Membership in the SOLAS Convention, Delegation of Authority to RSOs and Response to Industry Requests for Guidance

87. All respondent governments are **Contracting States to the SOLAS Convention**. Of these, an important majority (73%) have **delegated** some security-related duties to "Recognized Security Organizations" (RSOs). Duties delegated include reviewing and approving ship security plans and preparing port security plans. Examples of RSOs mentioned include international classification societies as well as local or national authorities and companies. Responses received do not reveal whether, in respect of RSOs, respondent governments placed any reliance on the additional guidance provided by the IMO in the form of *Interim Guidelines for the authorization of RSOs* (MSC/Circ. 1074).

88. An important majority of respondent governments (78%) had been **asked for guidance** by their industry in order to implement the ISPS Code. These governments appear to have been able to respond by providing, for example, guidelines for carrying out and preparing ship security assessments and plans as well as offering samples of such assessments and plans. It should be recalled that guidance has been provided by the IMO in the form of circulars, resolutions, model courses and other material to facilitate implementation of the ISPS Code by both governments and industry.²⁸

2. Transposition of the ISPS Code into National Law and Regulations

89. A significant majority of respondent governments (82%) have developed legislative and/or regulatory frameworks to ensure implementation of the ISPS Code at the national level. Examples of instruments adopted in this respect include ministerial decrees and resolutions, standing orders, government ordinances, regulations and legislation. The following statement by one respondent government serves to illustrate the variety of legal instruments employed: *"Three legal instruments were enacted: 1) supreme decree designating the national port authority for applying the Code in the ports, 2) ministerial resolutions applicable to port facilities, and 3) directorate decisions applicable to ships"*.

90. In terms of the **methods used to monitor initial and subsequent compliance**, a significant majority of respondent governments (82%) have adopted specific processes. This is illustrated by the following selected comments:

- *"We have databases of ships that have received international certificates and of persons that have received training as CSO and SSO"*.
- *"A system of ISPS compliance audits and documentation has been implemented whereby port facilities' ISPS Code compliance is verified and facilities are recommended for extended or re-certification. A part of the function of the National Accreditation Committee was to*

²⁸ For a list of instruments provided as guidance for effective implementation of the ISPS Code see the Annex to MSC Circular, *"Effective Implementation of SOLAS Chapter XI-2 and the ISPS Code"*, MSC.1/Circ.1194, 30 May 2006. A copy of the circular is available on www.imo.org.

document and achieve confidentially all documentation pertaining to the compliance and implementation of the ISPS Code. For the national registered vessels it is required that all relevant certificates and names and contact details of the Company Security Officer(s) and the rank of the Ship Security Officers be submitted to the administration. For subsequent compliance, a Port Certification Maintenance Program is being implemented which will capture and achieve all related documentation".

3. Mandatory Application and Challenges Related to Implementation

91. In the lead up to the 1 July 2004 implementation deadline, various press reports drew attention to the challenging task facing the global maritime industry and raised doubts about its ability to implement the ISPS Code requirements in such limited timeframe.²⁹ In an effort to verify these reports, governments were asked to indicate the main sources of difficulty that may have either delayed or hindered their maritime industry's compliance with the Code. Particular attention was placed on the question of whether sufficient resources and guidance had been made available to industry.

92. Consistent with responses received from ports, a majority (64%) of respondent governments noted that their national ports had encountered no difficulties implementing the ISPS Code. Those that reported **challenges faced by their national ports** cited various sources of concern. Typical difficulties mentioned include lack of resources (80%), failure of ports to submit timely/acceptable plans (20%), complexity and vagueness of the ISPS Code (20%), lack of guidance (13%) as well as other sources of difficulty (53%). Relevant comments in this respect include the following:

- *"The cost of equipment necessary to comply with the Code is high. In this regard, financial assistance from external partners is warranted".*
- *"Although specific, the Code seemed unclear and complex. For many security agents training was necessary".*
- *"Language problems in translating instructions and procedures, lack of experience of the teams and of general awareness".*
- *"Although the Code has been implemented, difficulties remain with respect to monetary limitations that prevent the acquisition of the necessary equipment that would ensure an efficient implementation and strict compliance with the Code".*
- *"Difficulties relate to ports considered secondary which have not received their ISPS compliance certificate".*
- *"We have identified particular difficulties in applying the ISPS Code in little harbours due to the unbalanced relationship between costs and effectiveness".*

93. Only few respondent governments (9%) reported **challenges faced by ships** flying their national flags during the ISPS Code implementation process. The main difficulty cited relates to resource constraints affecting the shipping sector (50%). Other challenges mentioned were the limited guidance received, the complexity of the ISPS Code, the failure of shipping companies to submit timely and/or acceptable plans and, finally, other considerations such as the need to generate a culture of maritime security on board ships and in companies ashore as well as complaints from seafarers about limitations affecting shore leave. One respondent government commented that: *"there were a lot of complaints on behalf of the seafarers regarding the*

²⁹ For examples of concerns raised by the maritime industry and governments, see "Container Security: Major Initiatives and Related International Developments", UNCTAD/SDTE/TLB/2004/1, UNCTAD, 26 February 2004, p. 33-34.

national authorities' behaviour towards them when they wanted to leave the ship for a short time".

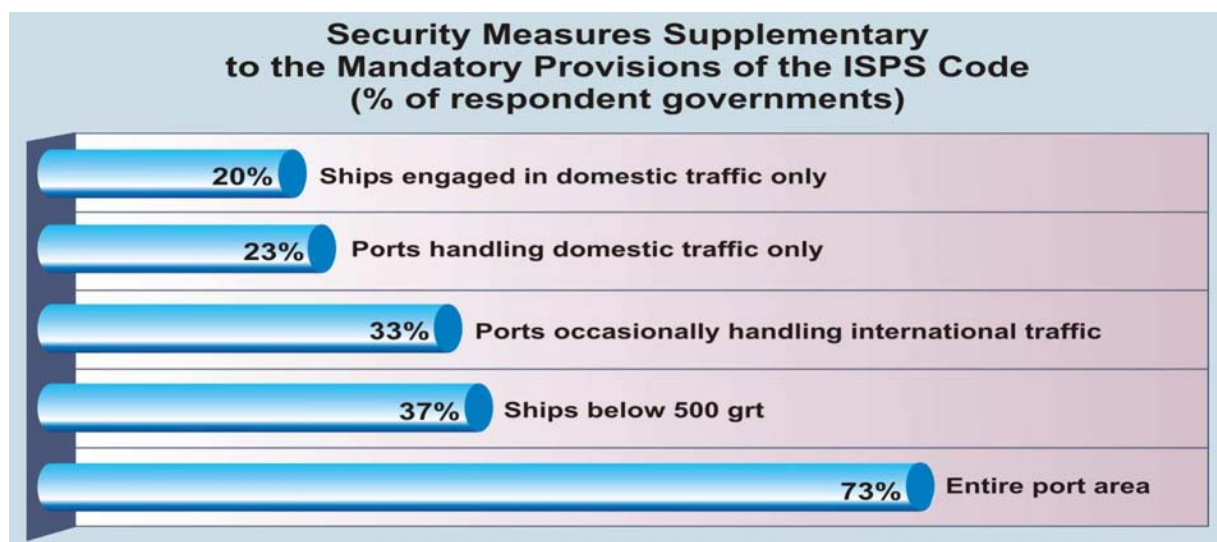
4. Security Measures Supplementary to the Mandatory Provisions of the ISPS Code

94. The questionnaire sought to establish governments' approaches to compliance by asking whether the recommendations and guidance in Part B of the Code was applied in part or in whole. In addition, it sought to ascertain the extent to which other measures had been taken to supplement and widen the scope of application of the ISPS Code to areas and parties not initially subject to the Code.

95. A significant majority (80%) of respondent governments from both developed and developing countries noted that compliance with the mandatory provisions of the ISPS Code had been achieved on the basis of the recommendations set out in Part B. In some cases, these recommendations or parts of them are made mandatory and binding,³⁰ while in others, instructions contained in Part B were used as guidance only.

96. A majority of respondent governments (68%) indicated that additional measures beyond the mandatory requirements of the ISPS Code had been implemented widening the scope of coverage of the ISPS Code to areas or parties not initially subject to its requirements. Figure 17 below illustrates the emerging pattern regarding supplementary security measures. Additional requirements include extending the application of the ISPS Code to the entire port area (73%), to national port facilities that handle international traffic on occasional basis (33%) as well as to port facilities that handle domestic traffic only (23%). Supplementary measures also involve applying the ISPS Code to ships below 500 grt (37%) and to those engaged in domestic traffic only (20%).

Figure 17



97. The mandatory requirements of the ISPS Code may be perceived as a starting point in a longer process towards effective enhancement of maritime security. It is also possible that some

³⁰ See for example, the EU approach which is based on Regulation (EC) No. 725/2004 of the European Parliament and of the Council of 31 March 2004 on Enhancing Ship and Port Security referred to in footnote 14. Article 3.4 stipulates that "When implementing the provisions required pursuant to paragraphs 1, 2 and 3, Member States shall take fully into account the guidelines contained in Part B of the ISPS Code".

governments may feel compelled to adopt additional requirements to ensure the competitiveness of their national maritime industries and maintain credibility among their trading partners.

II. Implementation and Compliance Costs

98. Governments were asked to provide an estimate of the total initial "one-off" and annual "recurring" expenditures made to comply with their obligations under the ISPS Code (Questions 9 and 10). However, it should be emphasized that the main purpose of the survey was not to estimate the implementation and compliance costs on the part of governments. Rather, information on governments' costs was intended to provide some insight into assistance and funding pertaining to the ISPS Code implementation and compliance as well as to complement information received from ports and shipping sectors.³¹

99. Assessing costs from a governmental perspective can prove difficult. Therefore, figures reported should be seen as indicative only of the broad range of expenditures associated with the ISPS Code compliance. The difficulty relates to the fact that accounting systems of national administrations are usually not designed to distinguish specific security-related expenditures such as the ISPS Code from other governmental cost headings. Furthermore, governments' cost structures may not necessarily be comparable since some respondent ports may have reported figures pertaining to the costs of national administrations only, while others may have included expenditures made by industry or resulting from other comprehensive security measures not falling under the remit of the ISPS Code. Finally, it should be noted that cost figures reported by respondent governments refer mainly to governments' own expenditures or those specific to ports. No information was obtained from governments with respect to expenditures relating to the shipping sector.

1. Initial Costs

100. Around 62% of governments responded to the question on initial costs and provided some indication of the wide range of costs associated with the implementation of the ISPS Code. Reported costs figures range from as low as US\$ 13,500 to as high as US\$ 15 million with half (50%) of the relevant respondent governments reporting initial costs below US\$ 500,000. Some respondent governments (21%) reported initial costs ranging from US\$ 500,000 to US\$ 5 million, while others (25%) reported costs that range from US\$ 5 million to US\$ 15 million. In one particular case, a respondent reported initial costs of over US\$ 50 million.

2. Annual Costs

101. Not all respondent governments³² (53%) provided input pertaining to their respective annual costs. Some governments commented that estimating recurring costs was difficult, while others noted that it was not applicable. Reported cost figures range from as low as US\$ 1,500 to as high as US\$ 27 million. The majority of relevant respondent governments (57%) estimated their annual costs to range from a low of US\$ 1,500 to a high of US\$ 500,000. Some (29%) indicated costs ranging from US\$ 700,000 to US\$ 7 million. Others (14%) reported annual costs falling between US\$ 12 million and US\$ 27 million.

³¹ The present report, however, focuses only on responses received from ports and governments given the limited responses received from the shipping sector. It should also be noted that ports that have responded are not always located in the same countries for which governments' responses were received.

³² Respondent governments may have reported figures either on initial costs or annual costs only.

III. Financing Governments' ISPS Code-related Expenditures

102. To establish how governments managed to finance their respective ISPS Code-related expenditures, the questionnaire asked whether governments were recovering their own costs through some pricing mechanism i.e. cost-recovery or market-driven solutions. In addition, they were asked to provide, as applicable, details about relevant cost-recovery schemes including the party responsible for its implementation and the amounts expected to be recovered. At the same time, governments were asked to indicate whether they had benefited or expected to receive financial and/or technical assistance from various external sources, including from international organizations. Finally, the questionnaire asked that, if applicable, the sources, the types and the value of assistance received be specified (Questions 11 to 16).

1. Recovery of Costs Through User Fees and Security Charges

103. The majority of respondent governments (58%) indicated that they had no cost-recovery mechanisms in place and hence did not charge users for the ISPS Code-related costs. In cases where schemes had been put in place or were envisaged (42%), a majority of respondent governments (56%) noted that such schemes were intended to recover governments' own costs and that implementing such schemes was the responsibility of governments. The remaining share of respondent governments (44%) reported about the cost-recovery schemes introduced or planned by their respective port sectors.

104. Approaches to recovery of governments' own costs involve levying an administrative fee for the issuance, renewal and endorsement of certificates, including for audits. For example, in one country, fees charged by the respondent government amount to US\$ 250 per certificate issued or renewed. It should be noted that cost-recovery on the part of governments by way of charging for certification is not a new concept and is consistent with the user fee principle and national governments' policy when rendering some services to the general public.

105. Comments made by some respondent governments with respect to the **recovery of governments' own costs** which entails charging users, include the following:

- *"At present the port department is considering charging for security-related services such as a fee for the issuance of the certificate of compliance and for the annual endorsement audit. The supporting legislation is presently being drafted".*
- *"The [] maritime administration plans to introduce a financing mechanism to recover operational expenses, purchase equipment and pay for training".*
- *"Amendments to the maritime Code to provide for a security tax are underway".*
- *"A regulation to charge ships and port facilities for the certification is underway".*
- *"Upon approval of the Maritime Transportation Security Program, maritime transportation security regulations will be issued to spell out the implementation of the program, including the collection/imposition of certain fees".*
- *"A charge of USD 250 is applied for the issuance and renewal of certificates".*

106. When asked how much governments expected to recover, the majority (54%) of relevant respondent governments indicated that they expected to recoup **more than half of their initial and annual costs but not necessarily the full amount**. The remaining governments expect to recover no more than 50% of both costs. Thus, full recovery of ISPS Code-related costs is not necessarily anticipated.

107. Some of the respondent governments that provided information on financing mechanisms adopted or planned **by their national ports** (44%) commented as follows with respect to the cost-recovery schemes applied or envisaged by their respective ports:

- *"The government has recommended that the ports claim compensation from the port users in order to recover their costs".*
- *"The [] port facilities are considering a project of cost-recovery scheme in order to recoup annually the expenditures which were spent to establish the security system".*
- *"The [] ports authority is yet to finalize cost-recovery from shipping agents and other port users".*

108. Respondent governments noted that charges were being applied **by the port sector** to cargo, ships, passengers as well as port users without necessarily specifying who these users might be. That being said, according to respondent governments, port **cargo-based** cost-recovery schemes appear to be more common than those, for example, applying to ships.

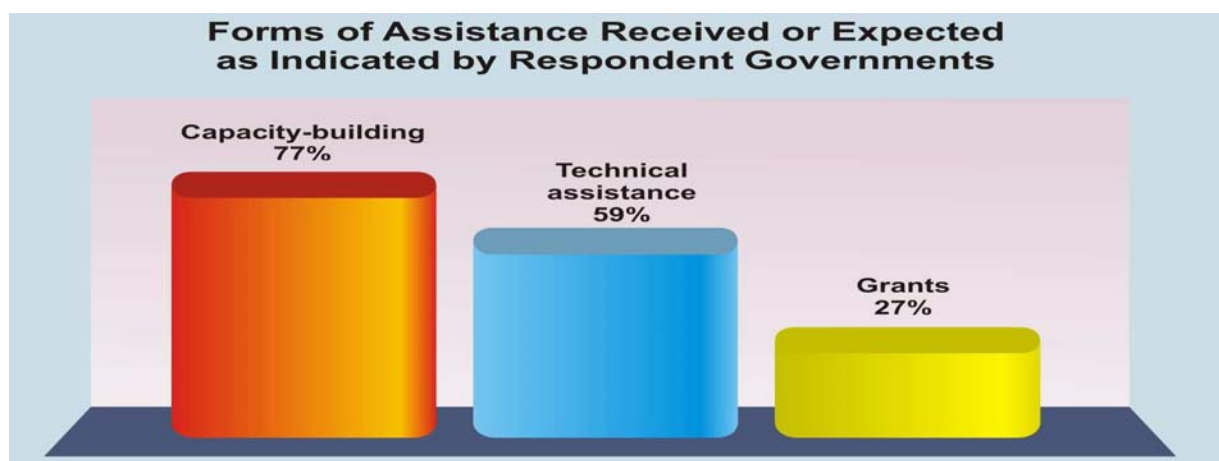
2. Financial and Other Assistance Received by Governments

109. A majority of respondent governments (56%) confirmed that they had received or expected to **receive financial and/or other assistance** from external sources to ensure effective national implementation of the ISPS Code. Respondent governments from Africa appear to be the main recipients of such assistance followed closely by other developing regions. For governments that indicated not having received any assistance, compliance with the ISPS Code appears to be financed entirely through national budgets, subject, in some cases, to direct cost-recovery schemes in place or under development.

110. In terms of **sources** of assistance, for a significant majority (87%) of respondent governments that benefited or expect to benefit from assistance, the main providers of assistance were the international organizations such as the IMO and the World Bank. For many respondent governments (39%) assistance was provided by other countries. For some (22%), regional mechanisms constitute the main source or potential source of assistance.

111. As to the **type** of assistance received or expected (Figure 18), an important majority (77%) of relevant respondent governments identified capacity building initiatives as the main form of assistance, while others (59%) said the assistance received or expected was of a technical nature. Some respondent governments (27%) have either received or are expecting to obtain financial assistance in the form of grants.

Figure 18



112. Summarizing the importance of assistance, some African governments commented as follows:

- *"Demand for improvement of technical assistance to perform the duties related to the Code [and there is a] need to increase the general knowledge about the Code in all levels".*
- *"The ISPS had an impact on security and financial aspect. Better control of port access, but heavy expenses were made with no assistance from the government or other entities, short deadline for compliance and financial and material difficulties remain. Bilateral and multilateral assistance through technical assistance, training, capacity building is needed. There are also difficulties relating to the adaptation of the Code to the national legal framework. Learning about experience of other States would be desirable".*
- *"Equipment required to ensure ports are compliant with the ISPS Code are costly. The IMO, UNCTAD and the World Bank should examine ways in which developing countries, including [] could obtain financial assistance".*
- *"UNCTAD should initiate work to help developing countries like [] which invested heavily to comply with the Code in order to maintain the ISPS standards since maintaining this standard is the most difficult part. Such action, include technical assistance programs, subsidies, training and capacity building. UNCTAD should include in the course "port management" a course on safety/security".*

IV. Financial Assistance Provided by Governments to their National Ports

113. The study sought to clarify the role of governments in ensuring that their respective port and shipping industries are compliant with the ISPS Code. In this respect, the role of governments may entail contributing funds to support their national maritime industries to be able to fully comply with the ISPS Code. Therefore, the questionnaire aimed to provide some indication as to whether and to which extent port and shipping industries in the relevant countries have access to public funding (Questions 17 to 20).

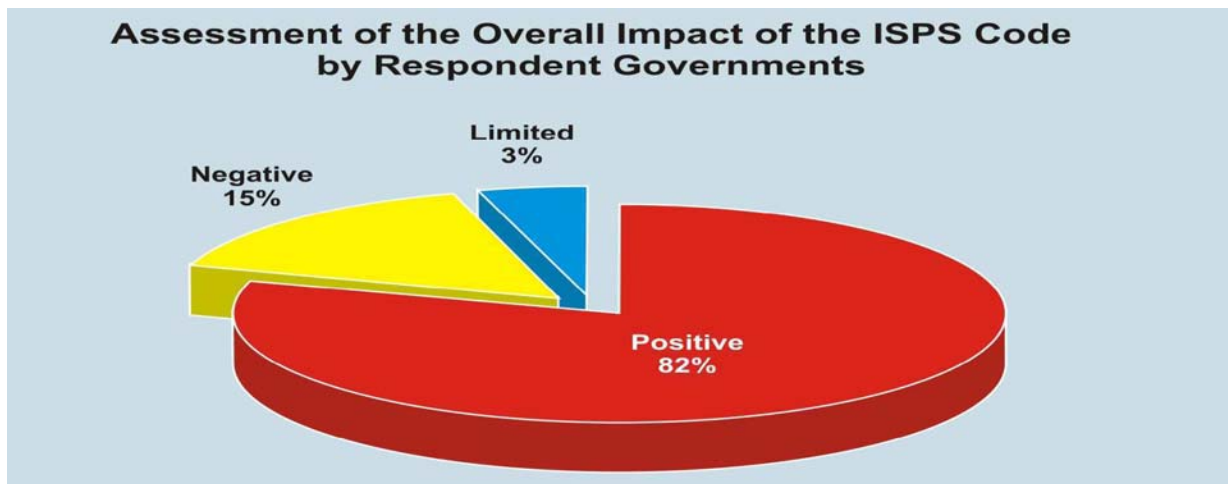
114. Responses received suggest that not all respondent governments (31%) have assisted their respective national ports. In terms of the **type** of assistance provided or expected to be made available to national ports, grants constituted the main arrangement (55%) followed by cost-sharing agreements (27%). Some respondent governments deployed technical assistance to help their national ports implement and comply with the ISPS Code requirements (18%). The following comments illustrate the way financial assistance to national ports was provided by some respondent governments:

- *"Grants are for two government-owned and operated port facilities".*
- *"The government initially entered into Cost-Sharing Agreements to provide up to 10% of the total funding required for the implementation of the ISPS Code at the []s major commercial ports. Post-implementation costs however, are completely covered by the Security Fees generated by Ports. Funds are then expended by these ports, according to the needs of each facility. All other port facilities were/are required to cover the cost of implementation and maintenance of their own".*
- *"The [] Government will not contribute funds, but instead provide technical expertise and assistance to port facilities in complying with the ISPS Code".*

V. Governments' Perception of the ISPS Code Overall Impact

115. Summarizing the overall impact of the ISPS Code on the country (Figure 19), a significant majority of respondent governments (82%) expressed the view that the new IMO security regime had had a positive impact. Of these, many, however, noted that the ISPS Code was, nonetheless, expensive to implement and that additional guidance was required. Others stated that the impact of the ISPS Code was either negative, due to the drain on the limited resources (15%), or that it was limited (3%).

Figure 19



116. Examples of overall assessments put forward by some respondent governments include the following:

- *"These amendments assisted us in developing and improving our present security system applied on ships and port facilities in accordance with the international security-related measures. Also they contributed to increasing the regional and international coordination in the field of security matters".*
- *"Some degree of security already existed in our ports but the ISPS compliance has made a marked difference. CCTV, scanners, raised walls and patrolling has enhanced visible security on our ports".*
- *"In view of the fact that [] practiced a very strict security regime, the introduction of the ISPS Code required relatively limited resources and/or organizational changes. However, the issue of screening of containers requires a very substantial funding and can be achieved over a period of several years".*
- *"For an effective implementation, [] has ratified the amendments to the SOLAS Convention only in 2004. This is due to the lack of financial resources and of assistance from the IMO. With the exception of help from [] relating to training security officials, the courses have been paid for by the participants".*
- *"Important human and financial resources required".*

VI. Governments' Questionnaire: Summary of Key Findings

117. Responses received are more reflective of the situation of developing countries since a significant majority of respondents are governments located in developing countries. Overall, these respondents recognized the **positive impact of the ISPS Code** in terms of enhancing maritime national security, but are concerned over the drawback caused by the limited resources available for effective implementation of the ISPS Code. Some have reported that their **national ports and shipping sectors** complained about the complexity of the Code and the associated lack of guidance.

118. Most respondent governments have **delegated** certain security-related duties to RSOs outside Government and relied on **dedicated legislative and regulatory instruments** to ensure the national implementation of the Code. Governments adopted various approaches to implementation and documentation of compliance, including through the adoption of security measures that extend beyond the initial scope of the ISPS Code. This might result in a lack of uniformity with respect to the application of the Code, whereby different tiers of security prevail at the global level.

119. In this context it should be noted that, the Secretary-General of the IMO expressed concerns over the lack of uniformity in the interpretation and application of the ISPS Code.³³ In the same vein, a recent academic report³⁴ highlighted some inconsistencies in the global application of the ISPS Code and noted that *"while the language of ISPS is uniform in each port and each country, it was as if [we] were seeing several different codes. Not only has ISPS been implemented in different ways and with varying levels of success, but overall opinions of ISPS among shippers, port workers and government officials fluctuate as well"*.

120. Reported cost figures provide **some insight into the range of expenditures** associated with governments' implementation and compliance with their respective ISPS Code obligations. However, given the limitations that characterize the available set of data on expenditures obtained, it should be emphasized that costs as reported by governments should be considered as broadly indicative only.

121. That being said, responses received highlight the fact that when measuring the cost of security, governments need to take into account two sets of costs. Account should be taken not only of the expenditures made directly by national administrations and relevant ministries or authorities in order to fulfil their respective obligations and expenditures, but also of the expenses made by governments in support of their respective national port and shipping sectors, including through subsidies, grants, cost-sharing arrangements, capacity-building and technical assistance.

122. The **majority** of respondent governments indicated that costs were **not being recovered** through user fees or charges; governments that are levying fees or charges do not expect to recover the full amount of costs incurred or budgeted. Responses received also highlight the lack of uniformity in terms of assistance provided to governments since **not all respondent governments reported benefiting or expecting to benefit** from public assistance. For those governments that did, international organizations constitute the main providers of assistance, especially when technical in nature or in relation to capacity building. Bilateral assistance and regional cooperation mechanisms appear to be also increasingly emerging.

³³ "Mitropoulos voices fears over ISPS Code inconsistencies", Lloyd's List (30 November 2006).

³⁴ Lyndon B. Johnson of Public Affairs, "Port and Supply Chain Initiatives in the United States and Abroad", Policy Research Project, 2006, p. 16.

123. In addition to information on whether and to which extent governments may be recovering their costs through user fees or external assistance, the questionnaire results also provide some insight into the **role of governments in assisting their national ports**. Responses received suggest that **not all governments assisted their ports** in the implementation of relevant ISPS Code requirements. In terms of the forms of assistance rendered, grants and cost-sharing arrangements appear to be the most common type.

124. Responses received suggest that there appears to be a **lack of uniformity** in terms of **governments' approaches to public assistance rendered to national ports**. In some countries national maritime sectors might have to bear the entire costs of implementing the ISPS Code. Although lack of assistance affects both developed and developing countries, impact on developing countries would normally be more perceptible given the limited capacity of these countries to absorb additional costs. The ability to absorb costs and effectively implement the ISPS Code may vary among governments depending on the availability of assistance, its type and magnitude.

125. The call by some respondent ports and governments for assistance suggest that international organizations, including UNCTAD may have a role to play in facilitating global implementation of the ISPS Code, including through technical assistance and capacity building initiatives. In this respect, responses received reiterate the message that emerged from a recent survey of the port industry by the *International Association of Ports and Harbors* (IAPH). A number of IAPH members called for assistance or support including for personnel training and installation of advanced security equipment and drew special attention to the particular needs of ports in developing countries.³⁵

³⁵ IAPH Report regarding the IAPH surveys on ISPS Code Implementation since 1 July 2004, 10 October 2006.

C. FINAL REMARKS

126. Overall, responses received provide a useful overview of the ISPS Code implementation process as experienced by governments and ports in both developed and developing regions. An informative pool of data on the ISPS Code compliance costs, indirect effects and financing mechanisms has been generated. These results, it is hoped, will contribute to informing the debate on the implications of transport-related security measures. That being said, the information that has been generated could potentially be analyzed further than has been feasible within the constraints of this study. Also, it should be stressed that the results of the study provide only a limited basis for any assessment of the economic implications of maritime security measures in general. The potential impact of other far-reaching unilateral and multilateral security initiatives and programmes was beyond the scope of this study, as was consideration of indirect security-related costs such as those that may rise in relation to delays and congestion. Therefore, further research in this field may be required.

127. As concerns the ISPS Code, the results of the survey suggest that respondent ports and governments appear to have accepted the ISPS Code objectives as legitimate and have an overall positive impression of the new maritime security regime. In this context, the reported positive impact on various ports' performance measures such as efficiency, ICT usage and crime reduction should be noted. Nevertheless, further clarification on provisions of the ISPS Code provisions appears to be desirable, in particular to facilitate internationally uniform interpretation and application of the security regime.

128. At the same time, the results of the survey suggest that there are variations in the impact of the ISPS Code among ports, especially between larger and smaller respondent ports. There are also various approaches to ports' and governments' financing mechanisms. Cost levels and differentials, as well as diverging financing approaches, together with calls for assistance by some respondent ports and governments highlight the need to address challenges posed by the ISPS Code and to capitalize on the potential associated benefits.

129. To this end, partnership and cooperation initiatives should be reinforced at all levels. Such arrangements may include exchanging information, and providing capacity building, technical assistance as well as financial support. Clearly IMO's International Maritime Security Trust Fund (IMSTF)³⁶ and Integrated Technical Co-operation Programme³⁷ are some of the key instruments in this respect. Assistance to developing countries through bilateral and regional arrangements may also be important in any effort to further advance the ISPS Code objectives.

³⁶ The IMSTF was established in June 2003 to enable IMO to respond to requests for technical assistance on maritime security issues. Contributors to the Fund include, among others, Governments of Denmark, Egypt, Germany, Republic of Korea, the Russian Federation, Sweden, United Kingdom and the United States.

³⁷ The programme aims to *"help developing countries improve their ability to comply with international rules and standards relating to maritime safety and the prevention and control of maritime pollution, giving priority to technical assistance programmes that focus on human resources development and institutional capacity-building"*. Further information about this programme and specific maritime security-related initiatives are available on the IMO website www.imo.org.

ANNEX I

ABBREVIATIONS

AAPA	American Association of Port Authorities
AIS	Automatic Identification System
APEC	Asia-Pacific Economic Cooperation
CCTV	Closed-Circuit Television
CSO	Company Security Officer
EU	European Union
GRT	Gross Registered Tonnage
IAPH	International Association of Ports and Harbors
ICT	Information and Communication Technologies
ILO	International Labour Organization
IMO	International Maritime Organization
IMSTF	International Maritime Security Trust Fund
ISPS Code	International Ship and Port Facility Security Code
SSO	Ship Security Officer
ISSC	International Ship Security Certificate
LDCs	Least Developing Countries
MSC	Maritime Safety Committee
OECD	Organisation for Economic Cooperation and Development
PFSA	Port Facility Security Assessment
PFSO	Port Facility Security Officer
PFSP	Port Facility Security Plan
RSO	Recognized Security Organization
SSP	Ship Security Plans
SOLAS	Safety of Life at Sea Convention
TEU	Twenty-Foot Equivalent Unit
UNCTAD	United Nations Conference for Trade and Development
VTs	Vessel Tracking Systems

ANNEX II

UNCTAD SURVEY QUESTIONNAIRES

UNCTAD PORT INDUSTRY SURVEY QUESTIONNAIRE

International Ship and Port Facility Security Code (ISPS Code)

Information provided will be treated confidentially and will be published in an aggregated format only.

Part I General information

1. Please provide a profile of your port or your organization.

Please indicate which of the following most accurately describes your organization.

A port ☐

An organization managing ports ☐

Other, please specify: ☐

.....

If applicable, please specify the number of ports managed by your organization:

Your port or ports managed by your organization are:

Publicly owned and operated ☐

Publicly owned and privately operated ☐

Privately owned and operated ☐

Other, please specify:.....

Annual revenues for year: were/are..... USD (\$) ☐

were/are..... EURO (€) ☐

were/are Other ☐ Please specify:

Annual throughput for year: was/is..... Ships ☐

was/is..... Tonne ☐

was/is..... TEU ☐

was/is..... Passenger ☐

Number of port facilities subject to the ISPS Code (ISPS Code port facilities):

2. Please specify the proportion of **ISPS Code port facilities** located within your port or ports managed by your organization that hold **approved Port Facility Security Plans**.

0% ☐

Up to 50% ☐

Up to 99% ☐

100% ☐

3. If the proportion of ISPS Code port facilities holding an approved Port Facility Security Plan is less than 100%, please specify the main reason or reasons.

Lack of resources ☐

Lack of guidance ☐

ISPS Code requirements too complex/vague ☐

Other, please specify:

Further comments, if any:.....

4. Please indicate whether your port or organization has already introduced or is planning to introduce security-related measures to supplement the mandatory provisions of the ISPS Code.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

If yes, please check all that applies:

Apply in part or in whole Part B of the ISPS Code ☐

Apply the ISPS Code requirements to the entire port area or corporation ☐

Apply the IMO/ILO Code of Practice ☐

Apply additional national governments' requirements ☐

Apply additional industry associations' requirements ☐

Other, please specify:.....

Please answer Parts II and III as applicable and, to the extent possible, express figures reported in United States dollars (USD/\$), EURO (€) or your national currency.

Part II Compliance costs

In order to take into account expenditures made in the period leading up to 1 July 2004 deadline, for the purposes of the present questionnaire, the period of analysis is 2003 to present.

5. Please estimate the **total initial "one-off"** expenditures required by your port or ports managed by your organization in order to comply with the requirements of the ISPS Code. Please specify the currency used.

Total expenditures:

6. Please estimate the **total annual "recurring"** expenditures required by your port or ports managed by your organization in order to operate and maintain the security regime established by the ISPS Code. Please specify the currency used.

Total annual expenditures:

7. Please specify, to the extent possible, the distribution and proportion of total initial and annual expenditures identified above.

	% of initial "one-off"	% of annual "recurring"
Infrastructure
Equipment
Information technology
Personnel and staff time
Training, exercises and drills
Administrative/Procedural
Port operations
Upgrade security to levels 2 and 3
Other, please specify:.....		
Further comments, if any:		

8. Please indicate whether your port or ports managed by your organization have, since the implementation of the ISPS Code, experienced any of the following:

	Yes	No	If yes, please explain and, if possible, quantify:
Reduced theft	<input type="checkbox"/>	<input type="checkbox"/>
Reduced criminal activity	<input type="checkbox"/>	<input type="checkbox"/>
Increased efficiency	<input type="checkbox"/>	<input type="checkbox"/>
Increased throughput	<input type="checkbox"/>	<input type="checkbox"/>
Increased competitiveness	<input type="checkbox"/>	<input type="checkbox"/>
Increased use of information and communications technology	<input type="checkbox"/>	<input type="checkbox"/>
Delays	<input type="checkbox"/>	<input type="checkbox"/>
Reduced competitiveness	<input type="checkbox"/>	<input type="checkbox"/>
Other, please specify:			
Further comments, if any:			

Part III Funding and cost-recovery

9. Please indicate whether your port or organization has introduced or plans to introduce a cost-recovery scheme and/or has reviewed or plans to review its pricing strategy in order to recoup expenditures made or budgeted.

Yes ☐ No ☐

10. If yes, please specify the agency or body implementing the cost-recovery scheme.

Government ministry or department	<input type="checkbox"/>	Port operator	<input type="checkbox"/>
Terminal operator	<input type="checkbox"/>	Port authority	<input type="checkbox"/>
Other, please specify:	<input type="checkbox"/>		

11. Please indicate how the cost-recovery scheme and/or revised pricing strategy is or will be applied. Please specify the currency used.

<u>Applies to ships:</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Dues <input type="checkbox"/>	Amount:
			Tariffs <input type="checkbox"/>	Amount:

<u>Applies to cargo:</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>			
			Import	Export	Transshipment
Full TEU	<input type="checkbox"/>		Amount.....	<input type="checkbox"/>	Amount.....
Empty TEU	<input type="checkbox"/>		Amount.....	<input type="checkbox"/>	Amount.....
Tonne	<input type="checkbox"/>		Amount.....	<input type="checkbox"/>	Amount.....
Value	<input type="checkbox"/>		Amount.....	<input type="checkbox"/>	Amount.....

<u>Applies to passengers:</u>	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Amount:
-------------------------------	------------------------------	-----------------------------	---------------

Other, please specify:.....

12. Please specify the proportion of total initial and annual expenditures expected to be recovered annually by way of the cost-recovery scheme.

Initial expenditures:	Up to 50% <input type="checkbox"/>	Between 50% and 80% <input type="checkbox"/>	Over 80% <input type="checkbox"/>
Annual expenditures:	Up to 50% <input type="checkbox"/>	Between 50% and 80% <input type="checkbox"/>	Over 80% <input type="checkbox"/>

Further comments, if any:.....

13. Please indicate whether you have received or expect to receive funds in order to assist your port or ports managed by your organization in complying with the ISPS Code.

Yes ☐ No ☐

14. If yes, please specify the sources, types and amount of funds received or expected. Please indicate the currency used.

Sources:

Private	<input type="checkbox"/>
National/local governments	<input type="checkbox"/>
International organizations	<input type="checkbox"/>
Regional organizations	<input type="checkbox"/>

Other, please specify:

Types and amount:

Grants	<input type="checkbox"/>	Amount:
Cost-sharing agreement	<input type="checkbox"/>	Amount:

Other, please specify:.....

15. If applicable, please indicate the manner in which initial and annual expenditures are or will be funded.

	Yes	No	% of initial expenditures	% of annual expenditures
a) General port's revenue fund	<input type="checkbox"/>	<input type="checkbox"/>
b) Direct government funding	<input type="checkbox"/>	<input type="checkbox"/>
c) Specific cost recovery scheme	<input type="checkbox"/>	<input type="checkbox"/>

Other, please specify:

.....

16. Finally, please summarize the overall impact of the ISPS Code on your port or ports managed by your organization.

.....

17. Please provide any additional comments that may assist the secretariat in completing the study (Please attach additional sheets if necessary):

.....

UNCTAD GOVERNMENT SURVEY QUESTIONNAIRE

International Ship and Port Facility Security Code (ISPS Code) and SOLAS Amendments 2002

Information submitted via this questionnaire will be treated confidentially and published without attribution.

Part I General information

1. Please provide some information about your country.

Country:

Contracting Party to the 1974 SOLAS Convention:

Yes No
☐ ☐

2. Please indicate whether any security-related duties have been delegated to recognized security organizations.

Yes No
☐ ☐

If yes, please specify further:.....

3. Please indicate whether industry solicited your government's assistance in order to implement the 2002 SOLAS amendments and the ISPS Code.

Yes No
☐ ☐

If yes, please specify whether your government has been able to provide relevant guidance and instructions:

.....

4. Please indicate whether a national legislative and/or regulatory framework was developed in order to implement the requirements of the 2002 SOLAS amendments and the ISPS Code.

Yes No
☐ ☐

If yes, please specify further:.....

5. Please indicate whether specific processes were put in place to document initial and subsequent compliance with the requirements of the 2002 SOLAS amendments and the ISPS Code.

Yes No
☐ ☐

If yes, please specify further:.....

6. Please specify whether the **ISPS Code port facilities** located within the territory of your country had or continue to have difficulties to meet the requirements of the ISPS Code.

Yes ☐ No ☐

If yes, please specify the type of difficulties encountered:

Lack of resources ☐

Lack of guidance ☐

ISPS Code too complex/vague ☐

Ports failed to submit timely and/or acceptable plans ☐

Other, please specify:

7. Please specify whether the **SOLAS ships entitled to fly the flag of your country** had or continue to have difficulties to meet the requirements of the 2002 SOLAS amendments and the ISPS Code.

Yes ☐ No ☐

If yes, please specify the type of difficulties encountered:

Lack of resources ☐

Lack of guidance ☐

ISPS Code too complex/vague ☐

Shipping companies failed to submit timely and/or acceptable plans ☐

Other, please specify:

8. Please indicate whether security-related measures affecting **ports located within the territory of your country** and **ships entitled to fly the flag of your country** have been adopted or will be adopted to supplement the mandatory provisions of the 2002 SOLAS amendments and the ISPS Code.

Yes ☐ No ☐

If yes, please check all that applies:

Apply in part or in whole Part B of the ISPS Code ☐

Apply the ISPS Code to the entire port area or corporation ☐

Apply the ISPS Code to port facilities handling only domestic traffic ☐

Apply the ISPS Code to ships engaged only in domestic voyages ☐

Apply the ISPC Code to occasional use port facilities ☐

Apply the ISPS Code to ships below 500 GRT ☐

Other, please specify:.....

Further comments, if any:.....

Please answer Parts II and III as applicable and, to the extent possible, express figures reported in United States dollars (USD/\$), EURO (€) or your national currency.

Part II Compliance costs

In order to take into account expenditures made in the period leading up to 1 July 2004 deadline, for the purposes of the present questionnaire, the period of analysis is 2003 to present.

9. Please indicate the **total initial "one-off"** expenditures incurred or budgeted by your government in order to set up the security regime established by the 2002 SOLAS amendments and the ISPS Code.

Total initial expenditures:

10. Please indicate the **total annual "recurring"** expenditures incurred or budgeted by your government in order to operate and maintain the security regime established by the 2002 SOLAS amendments and the ISPS Code.

Total annual expenditures:

Part III Funding and cost-recovery

11. Please indicate whether your government has already introduced or is planning to introduce a cost-recovery scheme applying to users or stakeholders in order to recoup expenditures made or budgeted.

Yes No
☐ ☐

Further comments, if any:.....

12. If yes, please indicate the department, ministry or agency implementing the cost-recovery scheme.

.....

13. Please indicate how the cost-recovery scheme is or will be applied and the parties affected or likely to be affected by the scheme.

.....

14. Please specify the proportion of expenditures expected to be recovered annually by way of the cost-recovery scheme.

Up to 50% ☐ Between 50% and 80% ☐ Over 80% ☐

15. Please indicate whether your government has already received or expects to receive financial and/or technical assistance in order to comply with the requirements of the 2002 SOLAS amendments and the ISPS Code.

Yes No
☐ ☐

16. If yes, please specify the source and type of assistance received or expected.

Sources:

International organizations/agencies	<input type="checkbox"/>
Individual country or countries	<input type="checkbox"/>
Regional organizations	<input type="checkbox"/>

Other, please specify:.....

Types:

Grants	<input type="checkbox"/>	Please quantify:
Technical assistance	<input type="checkbox"/>	Please quantify:
Capacity building/training	<input type="checkbox"/>	Please quantify:

Other, please specify:.....

17. Please indicate whether your government has contributed or plans to contribute funds to assist **ISPS Code port facilities located within the territory of your country** to comply with the ISPS Code.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

18. If yes, please indicate the type of funding arrangements adopted.

Types:

Grants	<input type="checkbox"/>	Please quantify:
Cost-sharing agreement	<input type="checkbox"/>	Please quantify:

Other, please specify:.....

19. Please indicate whether your government has contributed or plans to contribute funds to assist **SOLAS ships entitled to fly the flag of your country** to comply with the 2002 SOLAS amendments and the ISPS Code.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

20. If yes, please indicate the type of funding arrangements adopted.

Types:

Grants	<input type="checkbox"/>	Please quantify:
Cost-sharing agreement	<input type="checkbox"/>	Please quantify:

Other, please specify:.....

21. Finally, please summarize the overall impact of the 2002 SOLAS amendments and the ISPS Code on your country.

.....

22. Please provide any additional comments that may assist the secretariat in completing the study (Please attach additional sheets if necessary):

.....

.....