



AD HOC COUNCIL WORKING GROUP ON  
THE ORGANIZATION'S STRATEGIC  
PLAN  
8th session  
Agenda item 5

CWGSP 8/5  
13 August 2008  
ENGLISH ONLY

## ANALYSIS OF DATA MEASURED AGAINST THE PERFORMANCE INDICATORS

### Note by the Secretariat

#### SUMMARY

<b>Executive summary:</b>	This document updates the information submitted to the <i>Ad Hoc</i> Council Working Group on the Organization's Strategic Plan, in document CWGSP 7/5 and Corr.1, on the Organization's performance as measured against the performance indicators contained in the Strategic Plan. It also provides an analysis of such information, taking into account the recommendations of CWGSP 7, and commentary on the overall structure of the performance indicators
<b>Strategic direction:</b>	1 to 13
<b>High-level action:</b>	4.2.1 and 4.3.1
<b>Planned output:</b>	4.3.1.1
<b>Action to be taken:</b>	Paragraph 5
<b>Related documents:</b>	Resolutions A.989(35) and A.990(25); C/ES.24/D (paragraph 3(a).2(i)); C/ES.24/3(a) (annex, paragraphs 21 to 24); C 98/3(a) (annex, paragraphs 23 to 30 and sections D and E of appendix 2); CWGSP 7/5 and Corr.1

1 At its sixth and seventh sessions (March and September 2007, respectively), the *Ad Hoc* Council Working Group on the Organization's Strategic Plan (hereinafter the Working Group) considered documents C 97/3(a) and CWGSP 7/5 and Corr.1 – providing data collected and collated by the Secretariat during 2006 and 2007 against the performance indicators (PIs) identified in resolution A.970(24). The Working Group made recommendations thereon, as set out in its reports (see, respectively, documents C 98/3(a) (annex, paragraphs 23 to 30 and sections D and E of appendix 2) and C/ES.24/3(a) (annex, paragraphs 21 to 24)), which were subsequently approved by the Council.

2 This document therefore updates the information previously submitted to the Working Group, taking into account the aforementioned recommendations and presents:

- .1 at annex 1, an initial commentary on the overall arrangement of the PIs, together with updated information on each PI defined in resolution A.989(24);

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- .2 at annex 2, an analysis of such data, together with commentary on individual PIs; and
- .3 at annex 3, further comments on and examples of methods to measure performance.

3 In this regard, the data and analyses provided in the annexes should be read in conjunction with the report on the status of the current biennium's planned outputs, as set out in the annex to document CWGSP 8/4, with specific reference to resolution A.990(25) and subsequent developments in the Committees.

4 The Working Group may wish to view the data and analyses provided in the annexes as work in progress in the sense that, at this stage, the purpose of this document is to generate consideration of and discussion on the overall arrangement of the PIs, how effective they are in measuring performance against the Strategic Directions, and what measures should/can be put in place to improve such measurement. The Working Group may, therefore, wish to guide the Secretariat in this respect by identifying, at its present and subsequent sessions, particular areas of focus during the current biennium which might lead to improved systems in the next (see, for example, paragraphs 6, 11, 12 and 19 of annex 1 and any alternative representations of PI data provided therein; paragraphs 12, 14, 15, 20 and 34 of annex 2; and paragraphs 6, 14 and 15 of annex 3, among other issues that the Working Group itself may identify).

#### **Action requested of the Working Group**

5 The Working Group is invited to consider the information provided in the annexes to this document and decide as appropriate.

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Note: this document has been produced in font size 11, in order to reduce the number of pages, in line with related issued being considered by the Correspondence Group on the development of guidelines for the application of IMO's Strategic and High-level Action Plans.

## ANNEX 1

## PERFORMANCE MEASURED AGAINST INDICATORS

## SECTION 1 – INTRODUCTION

1 This annex provides, in the first instance, general observations relating to the overall structure, number, complexity and classification of the Performance Indicators (PIs), providing commentary on their further development, related data sources and the current status of population of data. This is followed by the presentation of updated information, as at the end of 2007, on the current PIs.

## SECTION 2 – GENERAL OBSERVATIONS ON PERFORMANCE INDICATORS

## Number of PIs and their complexity

2 One immediate observation is that, although resolution A.989(25) lists 20 PIs, when account is taken of the definitions ascribed to each one, the result is that there are, in fact, no less than 41 individual measurements, or 42 taking considering that, in previous years, a further measurement (here called PI 1(b)) has been used for the percentage comparison of accessions to conventions and protocols. The full extent of this observation is represented below.

Table 1

<i>Sequential number of PIs</i>	<i>PIs</i>	<i>Definitions</i>
1	1(a)	<i>Percentage of IMO Member States that have ratified each IMO convention and protocol</i>
2	1(b) (optional)	<i>Percentage comparison of accession to conventions and protocols</i>
3	2	<i>Percentage and number of conventions adopted but which have not entered into force</i>
4	3(a)	<i>Number and percentage of Member States that have volunteered for audit</i>
5	3(b)	<i>Number and percentage of Member States that have been audited</i>
6	3(c)	<i>Number and percentage of Member States that have nominated auditors</i>
7	3(d)	<i>Number and percentage of nominated auditors that have carried out audits</i>
8	3(e)	<i>Number of technical assistance activities carried out following audits</i>
9	4(a)	<i>Number of lives lost (seafarers and passengers) due to safety-related accidents and incidents on ships subject to IMO conventions and other instruments</i>
10	4(b)	<i>Ratio of lives lost (seafarers and passengers) due to safety-related accidents and incidents on ships subject to IMO conventions and other instruments, to total number of lives at risk</i>
11	5(a)	<i>Number of ships subject to IMO conventions lost for any safety-related reason other than those declared constructive total losses for insurance purposes</i>
12	5(b)	<i>Ratio of ships subject to IMO conventions lost for any safety-related reason, other than those declared constructive total losses for insurance purposes, to total number of ships subject to IMO conventions</i>
13	6	<i>Number of ships and lives lost due to security failures and number of terrorist incidents on ships subject to SOLAS chapter XI-2</i>
14	7	<i>Number of ships and lives lost due to piracy and armed robbery and number of such incidents against ships engaged on international voyages</i>
15	8(a)	<i>Tonnes of harmful substances discharged into the sea operationally or accidentally from ships subject to IMO instruments</i>
16	8(b)	<i>Number of spills occurring from ships subject to IMO instruments</i>
17	8(c)	<i>Ratio of oil (cargo and bunkers) discharged into the sea, to total quantities carried by sea</i>
18	9(a)	<i>3-year rolling average of the sulphur content of fuel oil delivered to ships</i>
19	9(b)	<i>Tonnes of NO<sub>x</sub>, SO<sub>x</sub> and CO<sub>2</sub> released from ships subject to IMO instruments</i>

<i>Sequential number of PIs</i>	<i>PIs</i>	<i>Definitions</i>
20	9(c)	Ratio of estimated tonnage of SO <sub>x</sub> , NO <sub>x</sub> and CO <sub>2</sub> released annually per tonne-mile of cargo carried by sea
21	10(a)	Mobilization by IMO of donor funds for environmental programmes
22	10(b)	Number of projects sponsored, initiated and funded by IMO
23	10(c)	Number of collaborative agreements with regional groups responding to marine pollution such as: REMPEC, ROCRAM, Barcelona Convention
24	11	Port State control detention rates as analysed by the various bodies of the Organization on the basis of data submitted by Member States
25	12	Port State control non-compliance rates as analysed by the various bodies of the Organization on the basis of data submitted by Member States
26	13	Number of fraudulent certificates and endorsements of any type reported to IMO
27	14(a)	Percentage of planned activities delivered
28	14(b)	Activities delivered: planned and unplanned percentages
29	14(c)	Number of partnerships with Governments, organizations and industry
30	14(d)	Number of trainees in IMO institutions and IMO-sponsored workshops
31	15	Proportion of funding from donor sources and internal sources
32	16	Time taken to develop IMO conventions and other instruments compared to planned time
33	17(a)	Size of IMO membership compared to UN membership
34	17(b)	Level of participation of IGOs and approved NGOs at IMO meetings
35	18	Progress towards development of the goal-based standards concept
36	19(a)	Incorporation of specific policy input provided by IMO organs within the policy and programme decisions of other UN bodies (i.e. in their treaty instruments, codes, resolutions, guidelines, etc., work programmes and technical assistance activities)
37	19(b)	Number of joint working groups established
38	19(c)	Number of partnerships (MoUs or other agreements) established
39	19(d)	Number of joint technical co-operation programmes
40	20(a)	Number and percentage of Member States that are party to the FAL Convention
41	20(b)	Number and percentage of Contracting Governments to the FAL Convention that have registered differences between their practices and the standards of the FAL Convention
42	20(c)	Number and percentage of Contracting Governments to the FAL Convention that have notified that their practices are in accord with the recommended practices of the FAL Convention

3 A further immediate observation is the large number of individual PI definitions ascribed to each SD, and this is shown in Table 2. As has been recognized from previous Secretariat reports on the PIs, however, their ability to measure how well the SDs are being met is often limited. Furthermore, the overall complexity of the PIs is low, from a statistical point of view, and no interaction effects are currently taken into consideration.

**Table 2: Number of Performance Indicators per Strategic Direction**

		<b>No. of PIs for each SD</b>
SD 1	IMO's role	<b>15</b>
SD 2	Foster global compliance	<b>12</b>
SD 3	Strengthen capacity building programmes	<b>7</b>
SD 4	Internal governance and management	<b>1</b>
SD 5	Enhance safety of human life at sea	<b>12</b>
SD 6	Enhance security of the maritime transport network	<b>5</b>
SD 7	Reduce/eliminate adverse impact of shipping on the environment	<b>11</b>
SD 8	Efficiency of shipping – facilitation	<b>11</b>
SD 9	Address special needs of SIDS and LDCs	<b>4</b>
SD 10	Establish goal-based standards	<b>1</b>
SD 11	Raise the profile of shipping	<b>16</b>
SD 12	Enhance quality culture	<b>7</b>
SD 13	Enhance environmental conscience	<b>5</b>

## Classification of PIs into internal and external

4 The report of CWGSP 7 (see document C/ES.24/3(a)) identified issues concerning difficulties in relation to data sources for some PIs; the possible need to differentiate between internal and external indicators; the need to develop target performance levels to facilitate the measurement of internal organizational performance; and the identification of the role of IMO in relation to external developments. Each of these issues is addressed below.

5 If the PIs are categorized into external or internal ones, as recognized by CWGSP 7, the two proposed categories may be defined as follows:

- .1 *Internal or direct PIs*: this is the category of PIs related to the “outcome” of the Organization itself, that is, performance in terms of a more or less direct result of efforts undertaken by IMO as a whole (Member States and organs); and
- .2 *External or indirect PIs*: this is the category of PIs related to the “end-outcome” of IMO’s work, but that are heavily dependent on the performance of *others*, in particular on implementation and enforcement by Member States (as parties to Conventions) and on compliance by the subjects or “addressees” of the regulations. External or indirect PIs can further be divided into indicators where IMO has *indirect* influence and indicators which are *beyond* the control of IMO.

By applying such a categorization concept to the current PIs, the following three groups can be identified.

**Table 3: Classification of PIs reflecting level of control over measurement variable**

Classification per control type	Indicator group	Indicator	Total
<b>Direct</b>	Environmental conscience	10(a) to 10(c)	3
	Delivery of technical assistance	14(a) to 14(d)	4
	Cycle Time	16	1
	Goal-based standards	18	1
	Work of other UN bodies	19(a) to 19(d)	4
<b>Total indicators in this group</b>			<b>13</b>
<b>Indirect (indirect IMO influence)</b>	Accession to conventions	1(a) to 1(b)	2
	Entry into force	2	1
	Implementation and compliance	3(a) to 3(e)	5
	Sustainability of ITCP	15	1
	IMO’s role	17(a) to 17(b)	2
	Efficiency of shipping - facilitation	20(a) to 20(c)	3
<b>Total indicators in this group</b>			<b>14</b>
<b>Indirect (beyond IMO control)</b>	Lives lost	4(a) to 4(b)	2
	Ships lost	5(a) to 5(b)	2
	Security failures	6	1
	Piracy and armed robbery	7	1
	Ship generated water pollution	8(a) to 8(c)	3
	Ship generated air pollution and CO <sub>2</sub>	9(a) to 9(c)	3
	PSC detention	11	1
	PSC non compliance	12	1
	Fraudulent certificates	13	1
<b>Total indicators in this group</b>			<b>15</b>
<b>Total indicators</b>			<b>42</b>

6 Table 3 clearly indicates that only 13 (31%) out of the total of 42 PIs are under IMO’s direct control, as compared to the two other categories (69%) over which IMO has some indirect influence or no control at all. The Working Group may therefore wish to consider how the issues identified by CWGSP 7 (see paragraph 5 above) can be addressed in the light of this categorization and in effort to measure the performance of the Organization as a whole in achieving its SDs.

7 While the general analysis presented in this annex is not specifically based on this categorization, the concept of direct (internal) or indirect (external) indicators and their variations will, however, be taken into consideration particularly in relation to data sources for their further development.

### **Analysis of data sources relevant to the PIs**

8 The PIs cover a wide variety of data of which only some is available internally (e.g., data on Member State audits) while other data is currently only available externally or not available at all (lives lost, ships lost, etc.). To a great extent, this may be due to the fact that a large proportion of information about the population of interest is not known owing, in part, to non-compliance with mandatory reporting requirements. The ideal situation would be to have the data generated solely within IMO, based on the reporting requirements of conventions, circulars and other instruments.

9 In this respect, Table 4 provides a list of the PIs with their corresponding SDs; their classification into areas of internal/external control; the data types required to produce statistics; the data sources that are currently available to the Secretariat; and the preferred data source on which statistics should be based. It may be seen from the table that, presently, very little data is available directly to, or generated solely by, the Secretariat, and it may also be noted that some of the Secretariat's data systems are manual and therefore not yet adequately structured as raw data feeds. The table further provides an indication of what kind of data is used more frequently for the purposes of the PIs, with the most frequent indicators being PI 11 (PSC detention) followed by PI 12 (PSC non-compliance rate), PI 3 (audit information) and PI 1 (ratification of conventions), all of which are either in indirect or beyond the control of IMO. All other indicators are used only three times or less, when measuring performance against the SDs, and 15 indicators are only used once.

10 Based on the SDs, the areas of interest to IMO are listed in Table 5 with the relevant data sources, the available data management processes and the status of data available to IMO at this stage. The table is not exhaustive and also lists new areas of interest where regulatory work is currently under development or not within the IMO legislative framework (e.g., ILO). That table also indicates the lack of raw data sources available to IMO for statistical analysis and for the further development of the PIs.

11 Given the information presented in Tables 2, 3, 4 and 5, which shows the high number of PIs for each SD, the low number of PIs under IMO's direct control and the availability of limited raw data to the Secretariat, all of which restricts the combination of data sources, it may be prudent to consider a methodology that, while decreasing the number of indicators, would increase the ability to measure effectively how well the strategic directions are being achieved. In this respect, the Working Group may wish to consider what level of control IMO should have for the measurement of the SDs, given that only some 31% of the indicators are currently under the Organization's direct control.

12 Irrespective of the control level, however, the indicators should, wherever possible, be based on raw data submitted directly to the Global Integrated Shipping Information System (GISIS), which, if submitted, should be seen as the Organization's main data portal and provider. The continued development of GISIS for that purpose is therefore of some importance and the Working Group may wish to encourage the membership to enhance its provision of data to GISIS, thereby committing itself to the system's further development and allowing for the centralized management of relevant data.

13 This would help overcome the current status of limited data provision by Member States, of limited GISIS data being available for the PIs and of discrepancies being found when comparing the available GISIS data with external data sources. In this respect, the quality of data for statistical analysis is crucial and given the importance of the use of the PIs to identify weaknesses that the Organization should then address, the best possible data sources on hand should be used in order to provide the most accurate estimate. And until data population within GISIS is at an appropriate level, interim data sources should be used.

**Table 4: Link of Strategic Directions with PI, Data Types and data sources**

	Indicator	Indicator Name	SD 1	SD 2	SD 3	SD 4	SD 5	SD 6	SD 7	SD 8	SD 9	SD 10	SD 11	SD 12	SD 13	Total	Data type of interest	Data source at present	Preferred data source	Current data sources for Secretariat	PI control category
1	1(a)	Accessions to conventions	1	1	1					1						4	Conventions ratified	Ext	Secretariat	GISIS/LRF	indirect
2	1(b)	Accessions to conventions	1	1	1					1						4	Conventions ratified	Ext	Secretariat	GISIS/LRF	indirect
3	2	Entry into force	1	1						1						3	Conventions in force	Ext	Secretariat	GISIS/LRF	indirect
4	3(a)	Implementation and compliance	1	1			1			1				1		5	Audit volunteers	Int	Secretariat	Secretariat	indirect
5	3(b)	Implementation and compliance	1	1			1			1				1		5	Audit performance	Int	Secretariat	Secretariat	indirect
6	3(c)	Implementation and compliance	1	1			1			1				1		5	Auditors nominated	Int	Secretariat	Secretariat	indirect
7	3(d)	Implementation and compliance	1	1			1			1				1		5	Audit performance	Int	Secretariat	Secretariat	indirect
8	3(e)	Implementation and compliance	1	1			1			1				1		5	Technical assistance	Int	Secretariat	Secretariat	indirect
9	4(a)	Lives lost					1									1	Lives lost	Ext	MS to GISIS	LRF	beyond
10	4(b)	Lives lost					1						1			2	Lives transported	Ext	Ext. feed	Shippax	beyond
11	5(a)	Ships lost					1									1	Ships lost	Ext	MS to GISIS	LRF	beyond
12	5(b)	Ships lost					1						1			2	Ratio ships lost/Total ships	Int / Ext	MS/LRF	LRF	beyond
13	6	Security failures						1					1			2	SOLAS/ISPS violations	Ext	MS to GISIS	No events	beyond
14	7	Piracy and armed robbery						1					1			2	Piracy & robbery	Ext	MS to GISIS	GISIS	beyond
15	8(a)	Ship-generated water pollution							1				1			2	Harmful substances	Ext	MS to GISIS	No data as yet	beyond
16	8(b)	Ship-generated water pollution							1				1			2	Oil pollution	Ext	MS to GISIS	ITOPF	beyond
17	8(c)	Ship-generated water pollution							1				1			2	Ratio oil discharged/total	Int / Ext	MS/ext. feed	ITOPF/ Fearnleys	beyond
18	9(a)	Ship-generated air pollution and CO <sub>2</sub>							1							1	Sulphur content	Ext	Secretariat	Secretariat	beyond
19	9(b)	Ship-generated air pollution and CO <sub>2</sub>							1							1	Air pollution	Ext	MS to GISIS	Under dev.	beyond
20	9(c)	Ship-generated air pollution and CO <sub>2</sub>							1							1	Air pollution/tonne miles	Ext	MS/ext. feed	Under dev.	beyond
21	10(a)	Environmental conscience							1				1		1	3	Funds expended	Int	Feed to GISIS	SAP	direct
22	10(b)	Environmental conscience							1				1		1	3	Projects initiated	Int	Feed to GISIS	Secretariat	direct
23	10(c)	Environmental conscience							1				1		1	3	Agreements	Int	Feed to GISIS	Secretariat	direct
24	11	PSC detention rate					1	1	1				1	1	1	6	PSC detention	Ext	MS/PSC regimes to GISIS	PSC regimes	beyond
25	12	PSC non-compliance rate					1	1	1					1	1	5	PSC non-compliance	Ext	MS/PSC regimes to GISIS	PSC regimes	beyond

	Indicator	Indicator Name	SD 1	SD 2	SD 3	SD 4	SD 5	SD 6	SD 7	SD 8	SD 9	SD 10	SD 11	SD 12	SD 13	Total	Data type of interest	Data source at present	Preferred data source	Current data sources for Secretariat	PI control category
26	13	Fraudulent certificates					1									1	Fraudulent certificates	Ext	MS to GISIS	Secretariat	beyond
27	14(a)	Delivery of technical assistance		1	1						1		1			4	Funds expended	Int	Feed to GISIS	SAP	direct
28	14(b)	Delivery of technical assistance		1	1						1		1			4	Activities delivered	Int	Feed to GISIS	SAP	direct
29	14(c)	Delivery of technical assistance		1	1						1		1			4	Partnerships	Int	Feed to GISIS	Secretariat	direct
30	14(d)	Delivery of technical assistance		1	1						1		1			4	Trainees	Int	Feed to GISIS	Secretariat	direct
31	15	Sustainability of ITCP			1			1								2	Ratio internal/external funds	Int	Feed to GISIS	SAP	indirect
32	16	Cycle time	1			1										2	Cycle time	Int	Secretariat	Secretariat	direct
33	17(a)	IMO's role	1													1	IMO membership	Int	Secretariat	UN/Secretariat	indirect
34	17(b)	IMO's role	1										1			2	Participation of IGOs and NGOs	Int	Feed to GISIS	Secretariat	indirect
35	18	Goal-based standards										1				1	Goal-based standard	No data	Secretariat	Secretariat	direct
36	19(a)	Work of other UN bodies	1													1	Policy input	Int	Feed to GISIS	Secretariat	direct
37	19(b)	Work of other UN bodies	1													1	Joint working groups	Int	Feed to GISIS	Secretariat	direct
38	19(c)	Work of other UN bodies	1													1	Partnerships	Int	Feed to GISIS	Secretariat	direct
39	19(d)	Work of other UN bodies	1													1	Technical assistance	Int	Feed to GISIS	Secretariat	direct
40	20(a)	Efficiency of shipping – facilitation								1						1	Convention ratified	Ext	MS to GISIS	GISIS	indirect
41	20(b)	Efficiency of shipping – facilitation								1						1	Facilitation	No data	MS to GISIS	No data as yet	indirect
42	20(c)	Efficiency of shipping – facilitation								1						1	Facilitation	No data	MS to GISIS	No data as yet	indirect
		<b>Total</b>	<b>15</b>	<b>12</b>	<b>7</b>	<b>1</b>	<b>12</b>	<b>5</b>	<b>11</b>	<b>11</b>	<b>4</b>	<b>1</b>	<b>16</b>	<b>7</b>	<b>5</b>						

Source: IMO Secretariat. MS = Member States. Int = internal. Ext = external



**Table 5: Areas of interest for the development of PIs to measure progress towards the SDs**

Areas of interest	Data type	Possible data source	Current data management	Data availability to IMO
General information	Ratifications	MS	GISIS module (ST)	Data populated
	Reporting requirements	Secretariat	GISIS module in dev.	No data populated
	Ship particulars	LRF	GISIS module (SHIP)	Limited data populated
	Companies (DoC, owner)	LRF	GISIS module in dev.	No data populated
	Requirements of RO's	MS	GISIS module (RO)	Data populated
	Pre-audit questionnaire	MS	Word documents	No data populated
	SAF questionnaires	MS	GISIS module in dev.	Limited data populated
	Security Information (ISPS)	MS	GISIS module (ISPS)	Data populated
	Port Reception Facilities	MS	GISIS module (PRF)	Limited data populated
	Pollution Prevention Equipm.	MS	GISIS module (PPE)	Data populated
	SOPEP Contact Points	MS	GISIS module (CP)	Data populated
	Simulators	MS	GISIS module (SIM)	Data populated
	Radio COMSAR	MS	GISIS module in dev.	No data populated
LRIT contact info	MS	GISIS module in dev.	No data populated	
Maritime safety	Inspections, Deficiencies, Detentions, FS comments	MS via MoU's	GISIS module (PSC)	No data populated
	Incidents (casualties)	MS-Sitrep, LRF, LMIU, IUMI	GISIS module (MCI)	Limited data populated No data feeds
	Audit information	Auditors	Separate database	Limited data from audit summary reports
	Fraudulent certificates	MS	Word documents	Limited data populated
Maritime security	Inspections, Deficiencies, Detentions, FS comments	MS via MoU's	GISIS module (PSC)	No data populated
	Piracy & Armed Robbery Incidents	MS, LRF, LMIU	GISIS module (PAR)	Data populated
	ISPS Security Incidents	MS/Coastal State	No system	No data populated
	Stowaways & Illegal Imm. Drugs and Illegal Traf.	MS/Coastal State MS/Coastal State	GISIS module in dev. Word documents	Limited data populated Limited data populated
Marine pollution	Inspections, Deficiencies, Detentions, FS comments	MS via MoU's	GISIS module (PSC)	No data populated
	Incident data, Water pollution data	MS, LRF, LMIU, IUMI, Sitrep, ENSEAD, ITOPF	GISIS module (MCI)	Limited data populated No data feeds
	Air Pollution Emission data	Scientific Group on Experts on MARPOL Annex VI, LRF, other	No GISIS module	Data is available
	Information for operational CO <sub>2</sub> emission index	MS	GISIS module (GHG) under development	Data partly populated
	Air Pollution Emission design index	Calculated based on ship particular info	Index still under development	n/a
	CAS information	MS	GISIS module (CAS)	Limited data populated
Environmental profiles of cargos	IMO secretariat	GISIS module (BC)	Data populated	
	Audit information	Auditors	Separate database	No access given
Facilitation	Trade data, Economic data	UNCTAD, Clarksons, SSY	No GISIS module	No data feed
	Dangerous goods (FAL reporting on difficulties)	MS	GISIS module (DGCD)	Data populated
Technical assistance	Financial data	IMO Secretariat	SAP	SAP
	ITCP Assessment data	MS, IMO	No online system	No data populated
	Maritime Capacity checklist	MS	No online system	No data populated
	Martecaïd (technical assistance)	IMO Secretariat	Access database	Data populated
	CMTI (info on maritime facilities)	MS	Access database	Data populated
<b>Other</b>				
ILO data	Violations of standards	MS of ILO	No interface	No data available
	Industry data	CDI, RightShip, OCIMF, ITF, IACS	No interface	No data available
Manpower data	Number of seafarers	MS of ILO, University of Newcastle, BIMCO	No interface	No data available
Fishing data	Illegal fishing, safety	MS, FAO	No interface	No data available
	Ship recycling	MS, LRF, LMIU, Clarksons	No GISIS module	No data populated
Vessel traffic	LRIT data on vessel movements	IMSO	LRIT is in development	n/a

Source: IMO Secretariat

14 For the interim period until GISIS is fully developed and the data is populated, external sources should continue to be used which can provide the best possible estimates and enhance the development of the PIs in measuring performance against the SDs. The recommended data types could be as follows, although not exhaustive, where some data will come directly from GISIS in the future, while other data might be obtained through co-operative agreements with various providers:

- .1 incident data<sup>1</sup> of vessels from external sources such as LRF or LMIU, Sitrep (Situation Report), IUMI;
- .2 ship-generated pollution data from external sources such as ITOPF or ENSEAD. Some pollution data can also be obtained in raw data format via casualty data from LRF and LMIU;
- .3 world fleet data from LRF. The same datasets if used from LRF or LMIU, can also include information on ship recycling, in particular the location of recycling, death rates and ship recycling prices;
- .4 ship emission model data from sources such as LRF<sup>2</sup> and the National Technical University of Athens<sup>3</sup>;
- .5 ship economic data and trade data from UNCTAD, Clarkson's (SIN<sup>4</sup>) or SSY<sup>5</sup>;
- .6 fisheries data from FAO and Regional Fishery Management Organizations;
- .7 ILO related data from ILO or other industry sources if not available from ILO (e.g., manpower estimates from the University of Newcastle in conjunction with BIMCO); and
- .8 vessel traffic data from LMIU or LRF

### **The importance of harmonized coding for the population of data in GISIS**

15 In view of the recommended development of GISIS as IMO's principal data provider, it will be necessary to ensure and develop a common coding system to allow the combination of data within GISIS for the development of the PIs. In this respect, an important development is the future harmonized PSC coding system, based on a joint working group of the Paris and Tokyo MoUs, in which IMO is also participating. These codes include all areas such as: flag State administrations; signatories to IMO conventions; recognized organizations; PSC deficiency codes (linked to the relevant conventions and certificates); actions taken codes; ship types; certificates; etc. Various modules of GISIS will feed from this coding and should therefore be harmonized (e.g., PSC deficiencies with IMO Member State audits and casualty module). This will enable proper links to be established and to maintain a single standardized coding system which can then be used for the production of statistics.

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<sup>1</sup> Incident data includes casualties as per IMO definition.

<sup>2</sup> LRF offers ship emissions models on a commercial basis.

<sup>3</sup> The National Technical University of Athens developed a ship emission model for the Hellenic Chamber of Shipping.

<sup>4</sup> Shipping Intelligence Network.

<sup>5</sup> Simpson Spence and Young Shipbrokers.

### SECTION 3 – UPDATED INFORMATION ON THE PERFORMANCE INDICATORS

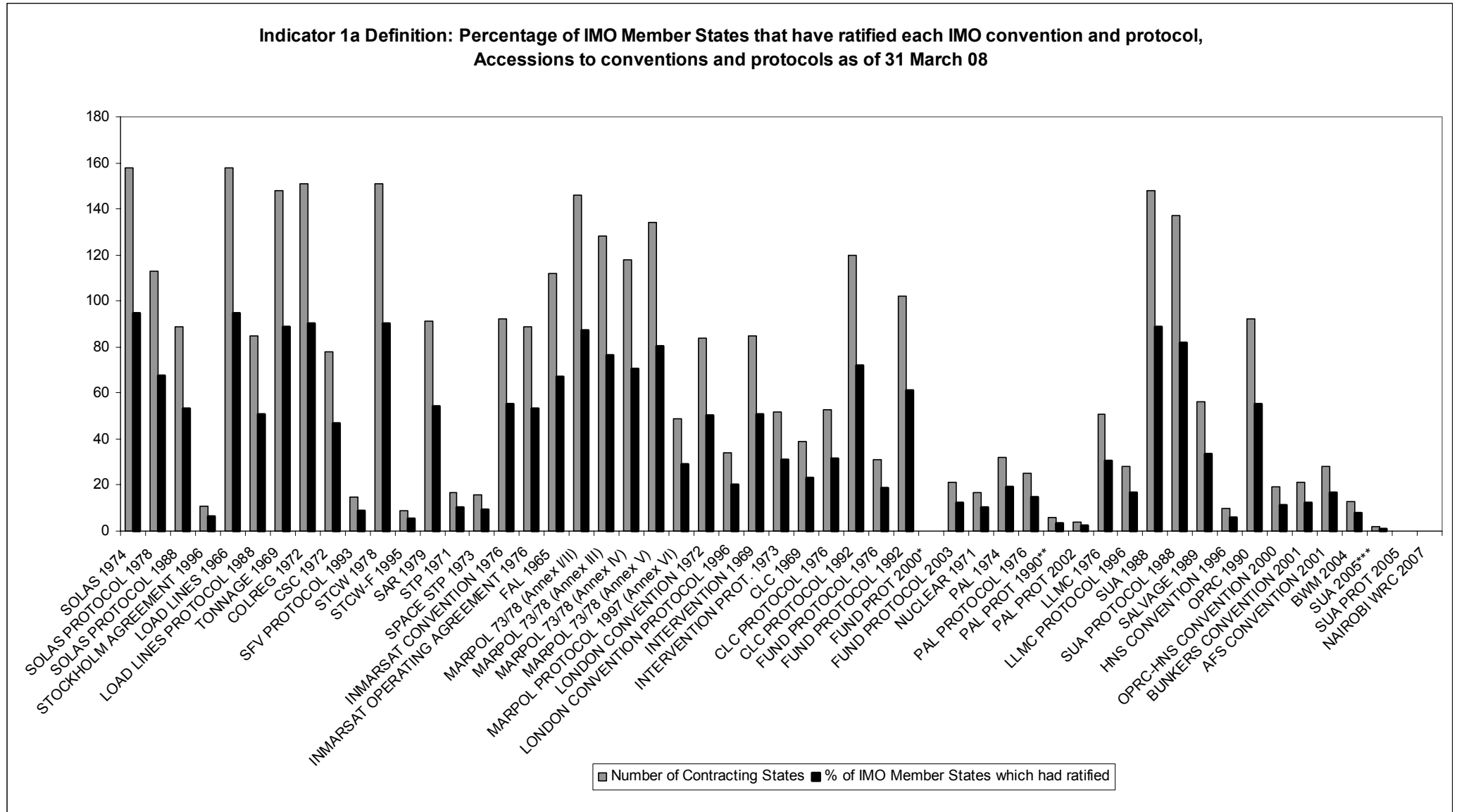
16 This Section updates, to the end of 2007, the information submitted previously to the Working Group in document CWGSP 7/5 (note that, depending on the indicator concerned, updated figures for 2008 may also be presented), and further provides some commentary on individual PIs.

#### **Indicator 1: Accession to Conventions**

*Definition: Percentage of IMO Member States that have ratified each IMO convention and protocol*

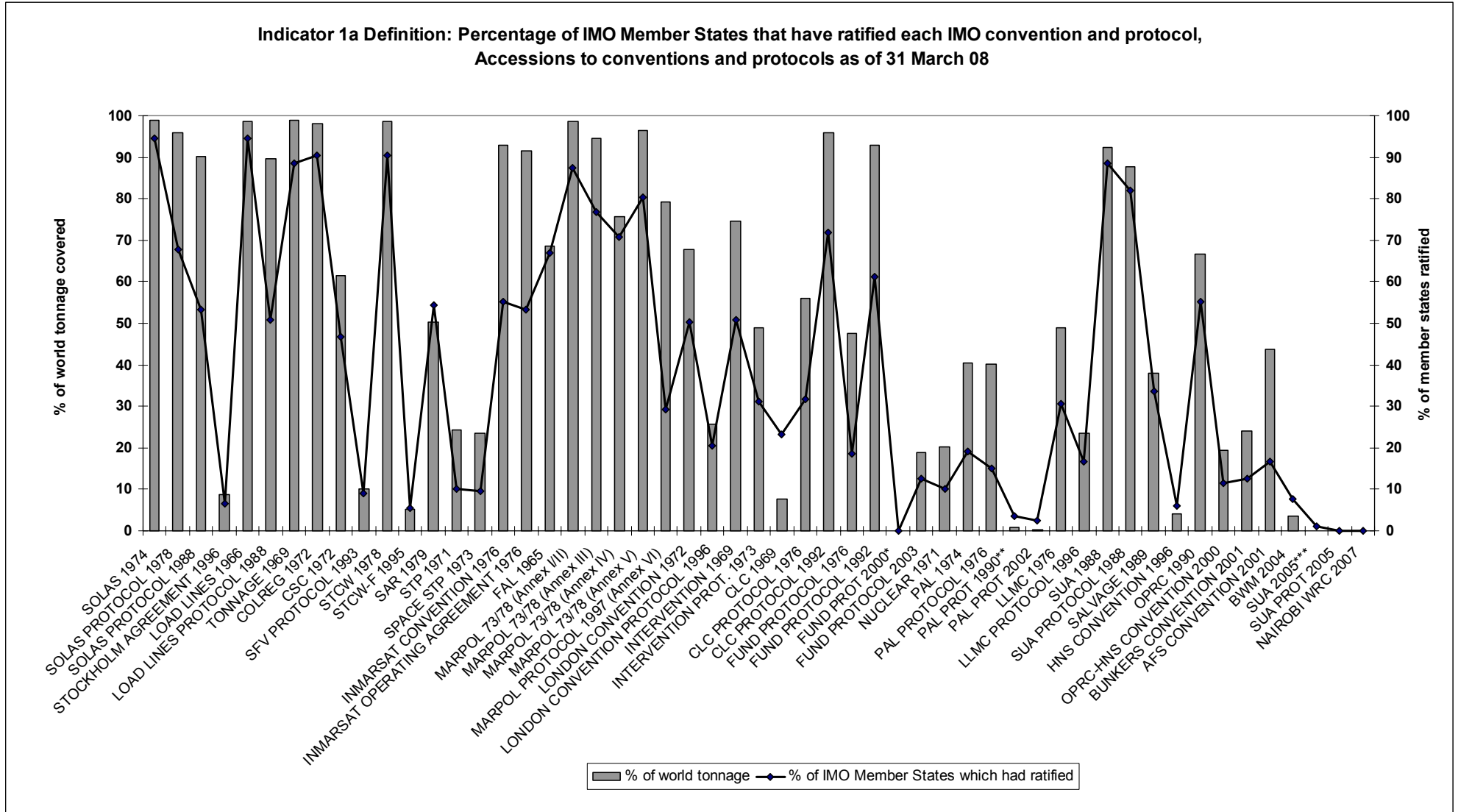
17 While only one definition has been agreed for this PI, the Secretariat has, as indicated in paragraph 2, traditionally presented two charts of information, in effect constituting two definitions, with the second one providing a *percentage comparison of accession to conventions and protocols*. This document therefore takes both definitions into account and treats these as PIs 1(a) and 1(b), respectively, thereby facilitating subsequent distinction between the two types of statistics.

18 Additionally, an alternative representation is also provided in relation to PI 1(a), for the Working Group's consideration.



Source: GISIS

Alternative representation for PI 1(a)



Source: GISIS



**Performance Indicator 2: Entry into force**

*Definition: Percentage and number of conventions adopted but which have not entered into force.*

	As at July 2007	As at December 2008
Total IMO conventions	50	50
In force	39	41
Not yet in force	11	9
% not in force	22.0%	18.0%
Conventions not yet in force	PAL Protocol 1990 SFV Protocol 1993 STCW-F 1995 HNS 1996 AFS 2001* Bunkers 2001* PAL Protocol 2002 BWM 2004 SUA 2005 SUA Protocol 2005 Nairobi WRC 2007	PAL Protocol 1990 SFV Protocol 1993 STCW-F 1995 HNS 1996 PAL Protocol 2002 BWM 2004 SUA 2005 SUA Protocol 2005 Nairobi WRC 2007

*Source: IMO Secretariat. \* As the AFS and Bunkers Conventions will enter into force on 17/09/08 and 21/11/08, respectively, the Indicator is also presented as at the end of 2008*

**Comment on PIs 1 and 2**

19 For PIs 1 and 2, an alternative representation that might be considered is the application of IMO conventions to world tonnage versus the number of Member States that are party to those instruments, which would facilitate a determination of how the regulatory framework applies to tonnage and States over time. In some cases, the effects of a certain instrument can be measured ahead of its entry into force (e.g., if requirements are related to construction) and therefore, the date of entry into force is not the only relevant factor, for example, in measuring compliance.

**Performance Indicator 3: Implementation and compliance**

*Definition: (a) Number and percentage of Member States that have volunteered for audit.*

*Definition: (b) Number and percentage of Member States that have been audited.*

*Definition: (c) Number and percentage of Member States that have nominated auditors.*

*Definition: (d) Number and percentage of nominated auditors that have carried out audits.*

*Definition: (e) Number of technical assistance activities carried out following audits.*

	Indicators 3(a) to 3(e)	As at Dec 06	%	As at Dec 07	%	% change
		Nr.		Nr.		
	Total IMO Member States (MS)	167		167		
	Total auditors which have been nominated	93		106		
	Total auditors which have been used	16		43		
3(a)	No. and % of MS that have volunteered for audit	33	19.8%	37	22.2%	2.4%
3(b)	No. and % of volunteering MS that have been audited	4	12.1%	18	48.6%	36.5%
3(c)	No. and % of MS that have nominated auditors	37	22.2%	40	24.0%	1.8%
3(d)	No. and % of nominated auditors that have carried out audits	16	17.2%	43	40.6%	23.4%
3(e)	No. and % of technical assistance activities carried out following audits	nil		nil		

*Source: IMO Secretariat*

### Comment on PI 3

20 PI 3, of itself does not yet measure implementation of, and compliance with, IMO standards (it measures implementation of the IMO Audit Scheme), which would be useful to assess with a view, *inter alia*, to determining work programme priorities and the assignment of resources to areas which may need attention or improvement. In this respect, the Working Group will be considering a related recommendation of the Joint Inspection Unit (JIU) and may, in due course, wish to examine how best to integrate, within the PIs, the findings of Member State audits. In this respect also, it may be recalled that the FSI Sub-Committee is currently examining how best to utilize the outcomes of audits, as reflected in periodic audit summary reports, for the same purposes – i.e. to provide input into the identification of effectiveness and potential weaknesses of the legislative framework and IMO’s role in promoting its global and uniform implementation and enforcement.

21 Such assessments could combine various other data sources such as PSC information (including deficiencies), accident and incident data in order to develop PIs for the performance of Administrations. In order to make the necessary links, raw data on a ship level or State level (for example, from the audit reports) would be desirable. Due to the voluntary nature of the IMO Audit Scheme, the findings of audit reports are confidential, so their integration with other data is not yet possible. That being said, however, consideration might be given to making available for the purposes of the PIs, the information contained in the pre-audit questionnaires which are designed to collect information of relevance to the audit (e.g., size of administration, fleet, ports, offices, surveys performed, delegation to RO’s, etc.). In this respect, the questionnaire could be re-designed electronically to provide, rather than qualitative information, quantitative data on such factors, thereby facilitating the build-up of maritime profiles. A separate GISIS module on this might be developed with an appropriate coding system similar to the ones used by PSC regimes or based on the annex to resolution A.996(25) – Code for the implementation of mandatory IMO instruments, 2007 – which lists all auditable areas and links to relevant conventions and protocols. Thus, a global, combined dataset on PSC inspections, casualty data and audit information could be used to measure compliance with the requirements of conventions. In this respect, the revision of all coding, in particular the deficiency codes for PSC, is of significant importance and conversion tables would need to be established between audit information and the PSC deficiency codes. The new coding system being developed provides a proper link to conventions and certificates which will facilitate a clearer picture on compliance and the possible need for changes to the regulatory regime. In this regard, some alternative statistics are presented under PIs 11 and 12.

#### Performance Indicator 4: Lives lost

*Definition: (a) Number of lives lost (seafarers, fishers and passengers) due to safety-related\* accidents and incidents on ships subject to IMO conventions and other instruments.*

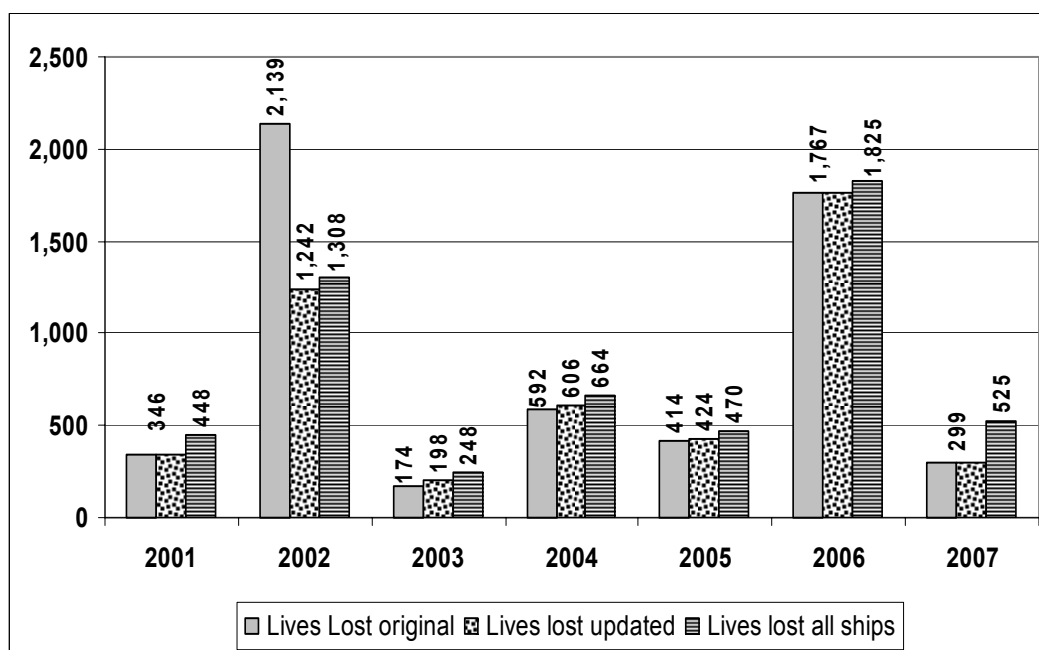
	2001	2002	2003	2004	2005	2006	2007	2008
LRF original	346	2,139	174	592	414	1,767	299	
LRF 2007 updated	346	1,242	198	606	424	1,767	299	
LRF all ships	448	1,308	248	664	470	1,825	525	125

*Figures for 2008 are up to May*

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\* i.e. **not** accidents and incidents which are due to security failures, acts of piracy and armed robbery or whose prevention is addressed by other international Conventions.





Source: IMO Secretariat, Lloyd's Register Fairplay World Casualty Statistics<sup>6</sup> and LRF data extract (courtesy of LRF). Note: no data on fishers has yet been obtained.

Definition: (b) Ratio of lives lost (seafarers, fishers and passengers) due to safety-related accidents and incidents on ships subject to IMO conventions and other instruments, to total number of lives at risk.

	2001	2002	2003	2004	2005	2006	2007
<b>LRF lives lost all ships</b>	<b>448</b>	<b>1,308</b>	<b>248</b>	<b>664</b>	<b>470</b>	<b>1,825</b>	<b>525</b>
Estimated amount of seafarers*					1,187,000	1,232,000	1,277,000
Estimated total number of ferry passengers	843,401,608	1,076,699,937	1,074,634,356	1,321,228,835	1,395,306,149	1,629,573,558	0
Estimated total number of cruise passengers	12,267,234	12,906,667	13,971,648	15,402,793	16,719,322	16,881,532	0
Estimated total number of passengers	855,668,842	1,089,606,604	1,088,606,004	1,336,631,628	1,412,025,471	1,646,455,090	1,884,449,039
<b>Total amount of passengers and crew</b>					<b>1,413,212,471</b>	<b>1,647,687,090</b>	<b>1,885,726,039</b>
<b>Ratio best estimate</b>	<b>0.0000004</b>	<b>0.0000011</b>	<b>0.0000002</b>	<b>0.0000005</b>	<b>0.0000003</b>	<b>0.0000011</b>	<b>0.0000003</b>

Source: IMO Secretariat, Lloyd's Register Fairplay World Casualty Statistics Shippax (Statistics & Outlook 2006, Market: 2007 Statistics) and \*BIMCO/ISF Manpower 2005 Update (which combines officers and ratings, with the annual increase in demand being estimated at 25,000 for officers and 20,000 for ratings). Note: no data on fishers has yet been obtained.

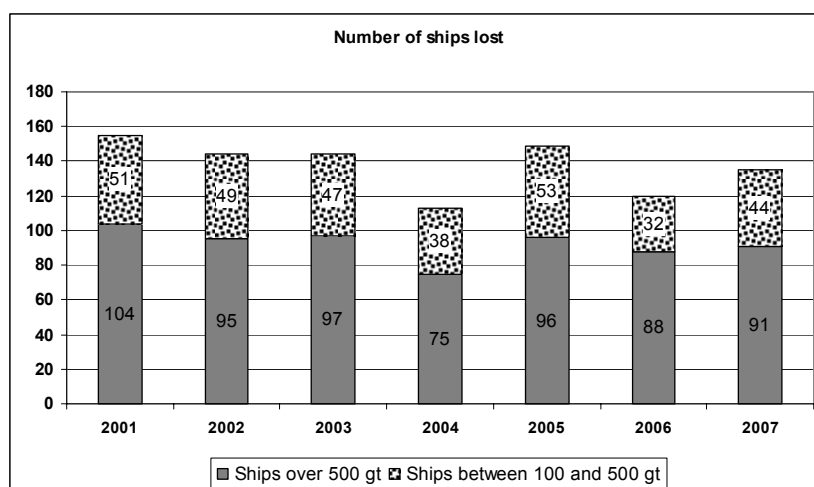
<sup>6</sup> The higher incidence of lives lost in 2002 and 2006 may be ascribed to three casualties (incidents), namely: the passenger ferries **Le Joola** and **Salahuddin-2**, which sank off the Gambia and Bangladesh with over 1,500 lives lost between them; and the passenger ferry **Al-Salaam Boccaccio 98**, which sank in the Red Sea with close to 1,000 lives lost.

**Performance Indicator 5: Ships lost**

*Definition: (a) Number of ships subject to IMO conventions lost for any safety-related<sup>7</sup> reason other than those declared constructive total losses for insurance purposes.*

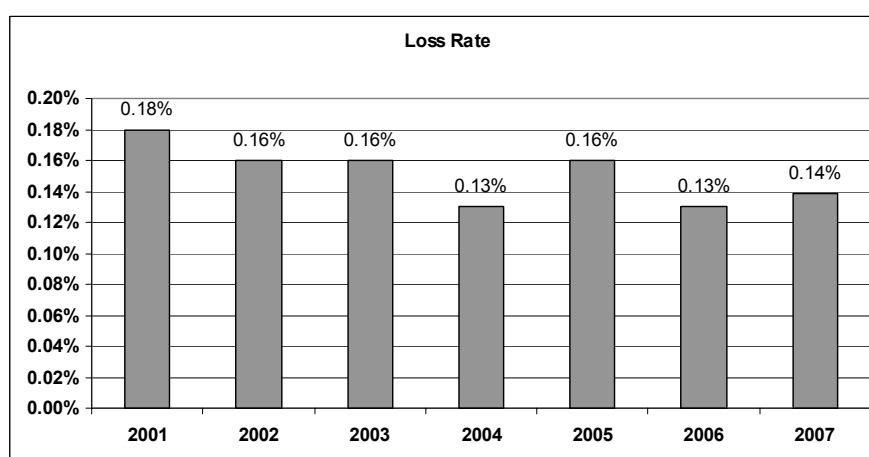
	2001	2002	2003	2004	2005	2006	2007
Ships over 500 GT	104	95	97	75	96	88	91
Ships between 100 and 500 GT	51	49	47	38	53	32	44
Total LRF	155	144	144	113	149	120	135
LRF Loss rate (all ship types)	0.21%	0.17%	0.18%	0.15%	0.17%	0.14%	0.14%
LRF Loss rate (cargo ships)	0.17%	0.19%	0.25%	0.19%	0.21%	0.18%	0.17%
Calculated loss rate	0.18%	0.16%	0.16%	0.13%	0.16%	0.13%	0.14%

Source: Lloyd's Register Fairplay World Casualty Statistics



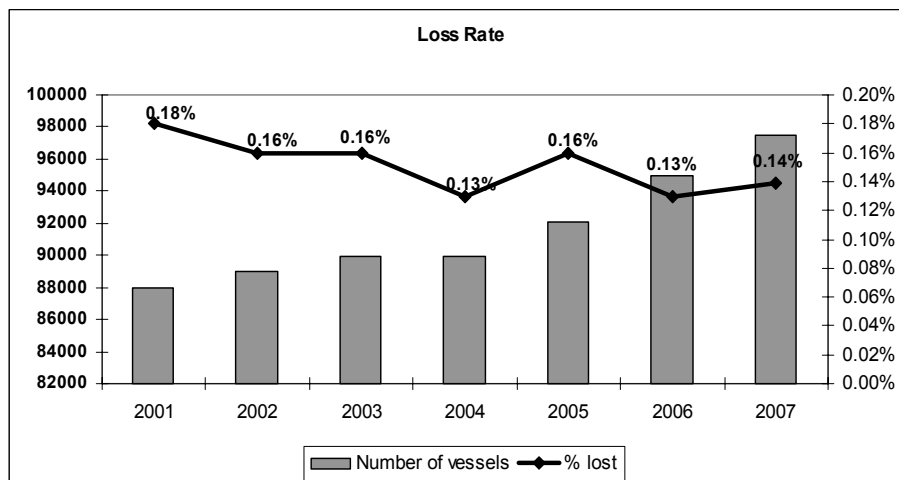
Source: Lloyd's Register Fairplay World Fleet Statistics

*Definition: (b) Ratio of ships subject to IMO conventions lost for any safety-related reason, other than those declared constructive total losses for insurance purposes, to total number of ships subject to IMO conventions.*



<sup>7</sup> i.e., **not** accidents and incidents which are due to security failures, acts of piracy and armed robbery or whose prevention is addressed by other international Conventions.

**Alternative representation of ratio of ships lost against the total world fleet (LRF data extracts)**



Source: Lloyd's Register Fairplay World Fleet and World Casualty Statistics

**Comment on PIs 4 and 5**

22 The Working Group may note that the original figures for PI 4(a) (denoted LRF original), as extracted from LRF World Casualty Statistics 2006, are shown in comparison to updated figures published by LRF in 2007 (denoted LRF updated). These figures, however, being based on lives lost only on ships that are total losses do not reflect the most accurate data, as they do not account for lives lost on ships that are not total losses. A data extract was therefore obtained, courtesy of LRF (denoted LRF all ships), and is presented in the table to provide a best possible estimate of all lives lost at sea.

23 In order to produce the figures required by PI 4(a), an extract needs to be made based on raw data from the best possible data sources, and a methodology can be developed to filter out safety-related accidents and incidents subject to IMO conventions and other instruments. In this context, the GISIS accident and incident module, when fully developed, may provide the figures which could then be further divided into the following categories: lost crew, passenger, other; missing crew, passenger, other; and seriously injured crew, passenger and others.

24 Data for PI 5(a) has traditionally been obtained from LRF World Fleet Casualty statistics, and this is now broken down into loss ratios for all ships and for cargo carrying ships, and then compared to loss ratios calculated based on data extracts. It may be noted that if the loss ratio is taken from the LRF casualty publication, a different result is obtained as against the loss ratio calculated on the basis of LRF data extracts. This is primarily due to the criteria defined for the composition of the world fleet and, in this respect, the alternative representation for PI 5(b) shows the total number of ships in the world fleet versus the loss ratio calculated on LRF data extracts.

25 Assuming that reporting by Member States will increase, GISIS should be able to replace other data sources in the future and connecting its PSC module with that on casualty data can provide a better insight into relationships that define risk, given a set of variables, including the incorporation of safety inspections into the equation to determine the probability of a casualty<sup>8</sup> and the probability of survival based on ship life cycles<sup>9</sup>.

<sup>8</sup> Knapp S, Franses PH, Econometric analysis to differentiate effects of various ship safety inspections, Marine Policy 2007: Vol 32/4 pp 653-662.

<sup>9</sup> Bijwaard G, Knapp S, Analysis of Ship Life Cycles –The Impact of Economic Cycles and Ship Inspections, Marine Policy, 2008, forthcoming.

**Performance Indicator 6: Security failures**

*Definition: Number of ships and lives lost due to security failures and number of terrorist incidents on ships subject to SOLAS chapter XI-2.*

26 No incident has occurred to date on ships subject to SOLAS chapter XI-2, which was adopted on 12 December 2002 and entered into force on 1 July 2004. The incident involving the **MV Limburg** occurred in October 2002.

**Comment on PI 6**

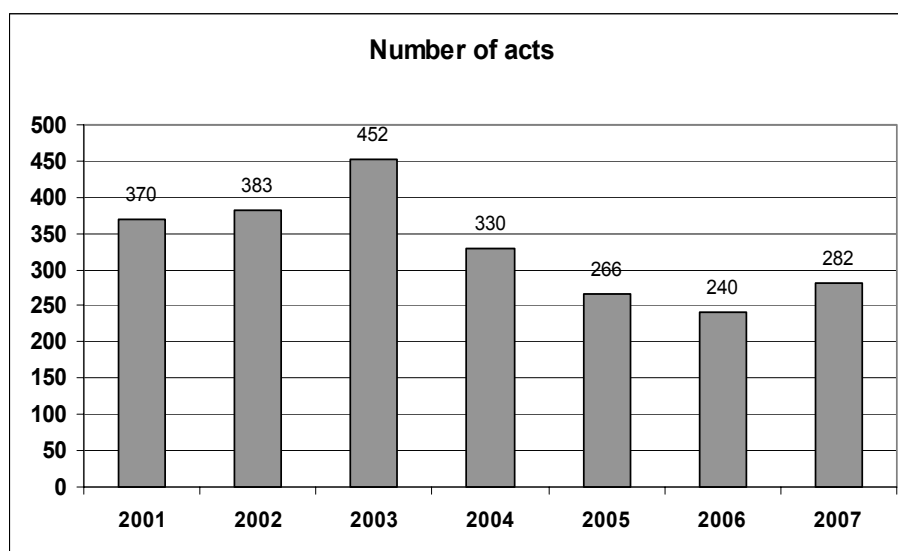
27 Another way of looking at security failures is to analyse statistics on security-related deficiencies resulting from control and compliance actions undertaken by States under SOLAS chapter XI-2. These could give an indication of the application of IMO security standards but, so far, no related statistics have been developed by IMO as the raw data is not available to the Organization and data from PSC regimes is not normally disaggregated so as to discriminate between safety, security and environmental control actions. In addition, while information on stowaways, illegal immigrants and even illicit drug trafficking is not subject to mandatory reporting requirements, related data could also be taken into account as such incidents may all point to security breaches.

**Performance Indicator 7: Piracy and armed robbery against ships**

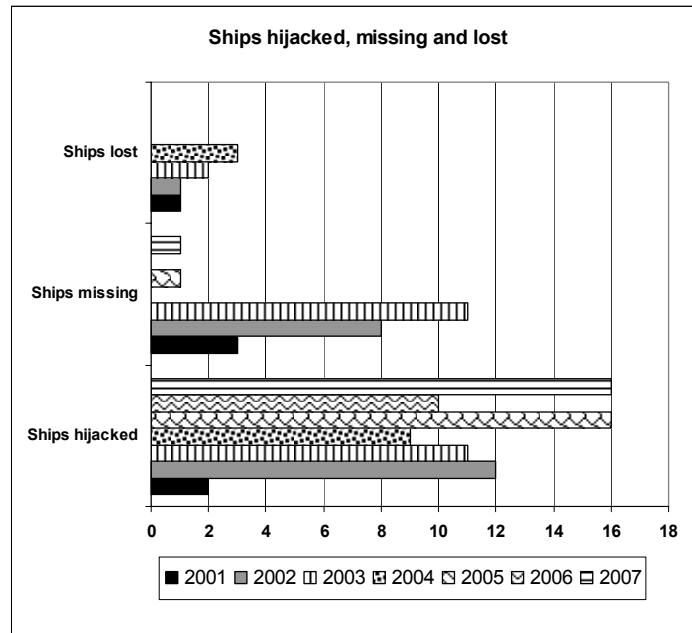
*Definition: Number of ships and lives lost due to piracy and armed robbery and number of such incidents against ships engaged on international voyages.*

	No. of acts	Ships lost	Ships missing	Ships hijacked	Crew hostage/kidnapped	Missing crew	Wounded crew	Lives lost
2001	370	1	3	2	n/a	5	42	17
2002	383	1	8	12	n/a	5	50	6
2003	452	2	11	11	n/a	54	45	13
2004	330	3	0	9	n/a	43	87	30
2005	266	0	1	16	652	11	152	0
2006	240	0	0	10	180	37	112	13
2007	282	0	1	16	194	3	153	20

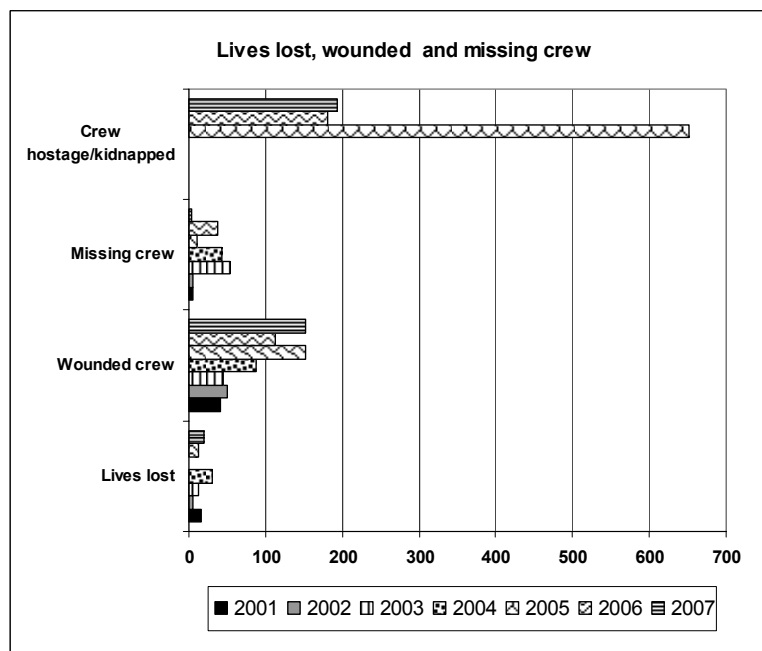
Source: GISIS



Source: GISIS



Source: GISIS



Source: GISIS

**Comment on PI 7**

28 At present, only the number of acts of piracy and armed robbery and some immediate consequences thereof are presented under this PI. Geographical representations of such incidents, like those presented in relevant MSC.4 circulars, could be advantageous so that more detailed information is available can be shown on such incidents. Additionally, as mentioned in paragraph 27, it may be helpful to consider having a single set of indicators dealing with all security related issues.

**Performance Indicator 8: Ship-generated water pollution**

*Definition: (a) Tonnes of harmful substances discharged into the sea operationally or accidentally from ships subject to IMO instruments.*

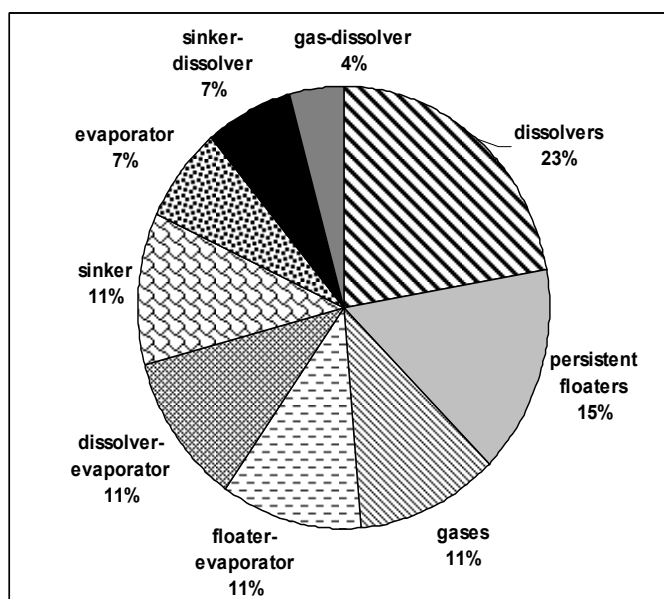
29 Reliable, worldwide and comprehensive data for this indicator is not yet available. CWGSP 6 recommended that the Secretariat should examine regional sources of data that have relevant measurements for PIs 8(a), 9(b) and 9(c) and identify/compare any possible trends. However, CWGSP 7, noting that the very limited regional data identified was not helpful owing to different figures being used for similar elements, requested the Marine Environment Protection Committee (MEPC) to assist in the identification of possible sources of data for the monitoring of performance indicators 8 and 9 and, as appropriate, to define methodologies for the calculation of such data. It is expected that MEPC 58 (October 2008) will examine this further.

30 Meanwhile, the MEPC’s technical group on OPRC-HNS discussed a method to present statistics with respect to Hazardous and Noxious Substances, and document MEPC/OPRC-HNS/TG 7/INF.1 provides the following summary for the years 2006 to 2007:

**Summary of incidents involving HNS carried in bulk, by behaviour category**

Behaviour category	% of incidents involving HNS carried in bulk
Dissolvers	22
Persistent floaters	15
Gases	11
Floater-evaporator	11
Dissolver-evaporator	11
Sinker	11
Evaporator	7
Sinker-dissolver	7
Gas-dissolver	4

*Source: MEPC/OPRC-HNS/TG 7/INF.1*

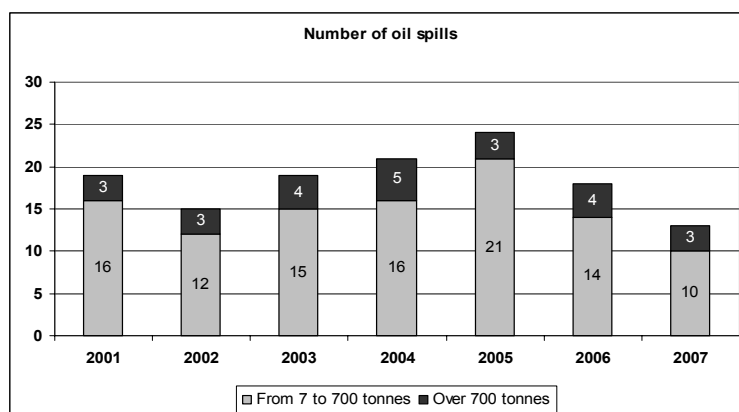


*Source: MEPC/OPRC-HNS/TG 7/INF.1*

Definition: (b) Number of spills occurring from ships subject to IMO instruments.

	2001	2002	2003	2004	2005	2006	2007
No. of oil spills over 7 tonnes but less than 700 tonnes	16	12	15	16	21	14	10
No. of oil spills over 700 tonnes	3	3	4	5	3	4	3
Total	19	15	19	21	24	18	13

Source: ITOPF Annual Statistics

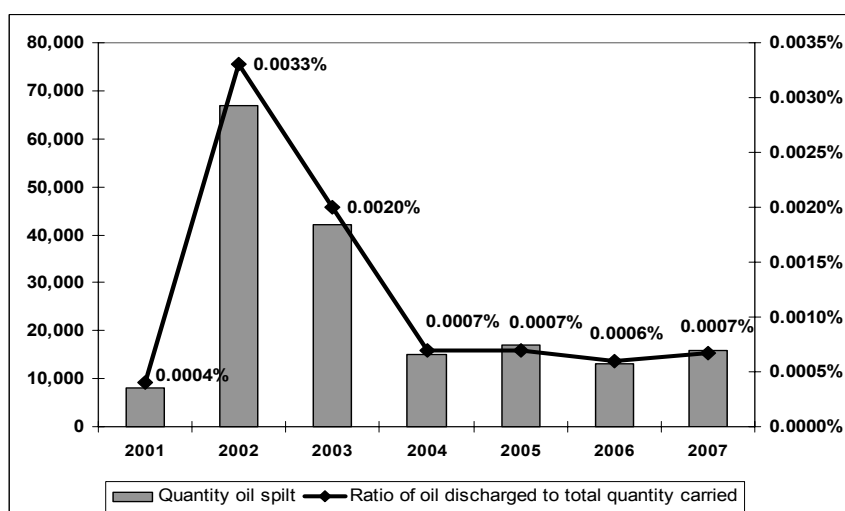


Source: ITOPF Annual Statistics

Definition: (c) Ratio of oil (cargo and bunkers) discharged into the sea, to total quantities carried by sea.

	2001	2002	2003	2004	2005	2006	2007
Annual quantity of oil spilt (tonnes)	8,000	67,000	42,000	15,000	17,000	13,000	16,000
Annual quantity of oil carried by sea (million tonnes)	1,997	2,000	2,135	2,215	2,279	2,331	2,398
Ratio	0.0004%	0.0033%	0.0020%	0.0007%	0.0007%	0.0006%	0.0007%

Source: ITOPF Annual Statistics<sup>10</sup> and Fearnley's annual reports



Source: ITOPF Annual Statistics and Fearnley's annual reports

<sup>10</sup> Note: the higher incidence of oil spilt in 2002 may be ascribed to one casualty, namely, the oil tanker **Prestige**, which sank off Spain spilling 63,000 tonnes.

**Comment on PI 8**

31 In its definition, PI 8(a) does not itself define the term “harmful substances”, which is the subject of the indicator. Because several definitions of the term exist, it would be useful to have clarification on the matter. In this regard, MARPOL, the OPRC-HNS Protocol and the HNS Convention all define it differently, although the most comprehensive definition can be found in the latter instrument. Consequently, that definition may be used for the purposes of the PIs, thereby covering the following substances: oils carried in bulk; noxious liquid substances carried in bulk; dangerous liquid substances carried in bulk; dangerous, hazardous and harmful substances, materials and articles carried in packaged form; liquefied gases; liquid substances carried in bulk with a flashpoint not exceeding 60°C; solid bulk materials possessing chemical hazards; and residues left by the previous carriage in bulk of the above substances. Since the PI definition requires that operational and accidental discharges of such substances should be covered, a method needs to be developed which can distinguish between discharge data on the various types of substances and link them to environmental profiles determining their hazardousness (note that the classification of substances is a module in GISIS).

32 With reference to PI 8(b) (number of spills), the statistics presented to date deal only with oil spills, with the source being ITOPF. The latter shows that the annual average of oil spilt for the period 2001-2007 was 25,429 tonnes – although this figure is affected by the **Prestige** casualty. In comparison, other sources<sup>11</sup> put the annual estimated quantity of oil spilled by ships at some 370,000 tonnes/year (based on data from 1990 to 1999). According to GESAMP<sup>12</sup>, the annual estimate of yearly average input of oil entering the marine environment from ships is 457,000 tonnes per year (based on data from 1988 to 1997) which is broken down to operational discharges (205,650 tonnes), spills (159,950) and sludge (91,400). That being said, in order to make comparisons of how many tonnes were spilled, the same time periods have been compared with the ITOPF data and the results are shown below.

**Comparison of oil spilled (tonnes) for various time periods excluding operational discharges**

1988-97	1988-1997	1990-1999	1990-1999
GESAMP 159,950	ITOPF 146,000	NRC 100,000	ITOPF 113,800

33 It may be noted that the ITOPF figures above do not include operational discharges, whereas those of GESAMP and the National Research Council (NRC) do, providing a broader picture if the PI definition is intended to cover both accidental and operational spills. Even so, the addition of operational discharges (based on estimates) raises the ratio of oil discharged into sea, when compared to the total quantity that is carried, by a minimal 0.0173%, as shown below.

**Comparison of oil spilled (tonnes) and operational discharges (2001-2007)**

	ITOPF	NRC
Average accidental spills	25,429	406,000
Average operational discharges	2,194	2,194
	Ratio	Ratio
	0.0012%	0.0185%

34 Notwithstanding the data issues highlighted above, the indicator does not, in itself, measure environmental impact, which would be helpful in identifying and addressing adverse impacts, as stated in the related Strategic Direction 7. In this respect, one would have to distinguish between various types of substances, as well as the inclusion of areas where the pollution occurs, and once data on the quantities spilled is collected, GESAMP profiles could then be applied to estimate environmental impact and

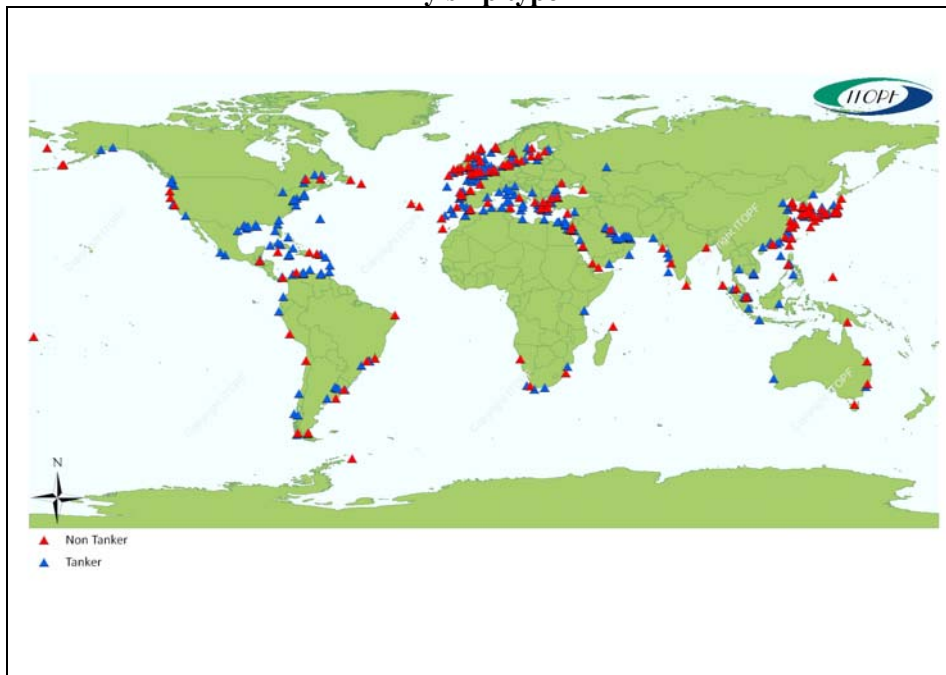
<sup>11</sup> Burgherr, P (2007), In-depth analysis of accidental oil spills from tankers in the context of global spill trends from all sources, Journal of Hazardous Material 140 (2007) 245-256.

<sup>12</sup> Source: GESAMP – Estimates of oil entering the marine environment from sea-based activities, London, 2007.



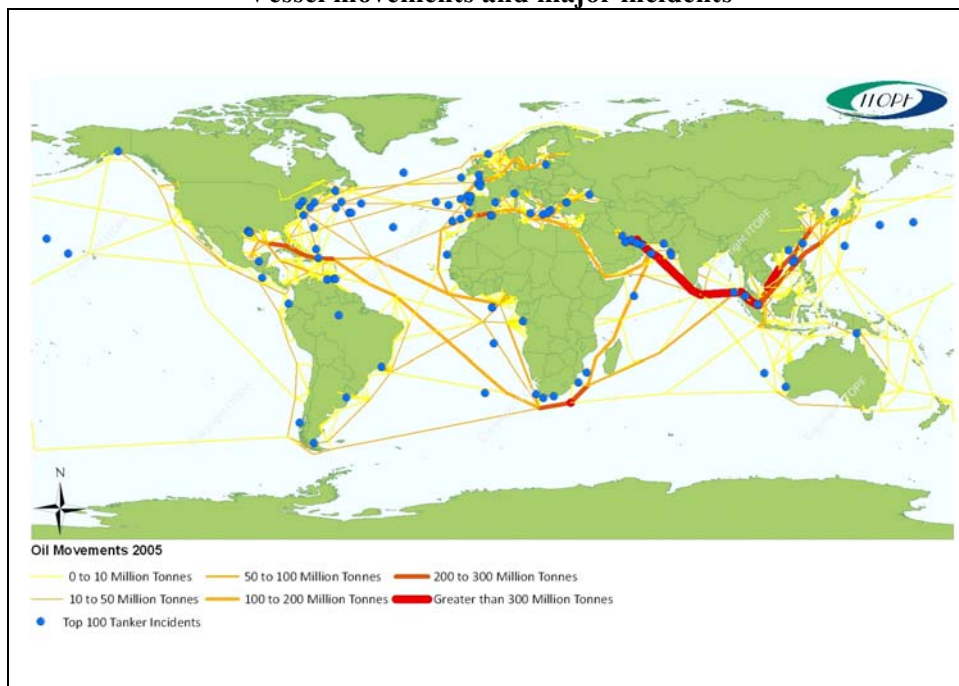
alternative representations of the data could include geographical areas of the world. A few examples of graphs are given below based on a system developed by ITOPF which distinguishes between vessel movements and substances spilled and plots them in the areas where they were spilled. The sample graphs are based on ITOPF's database on accidental oil spills since 1970. The first graph shows spills by vessel type and area. The second one combines vessel movements with the top 100 tanker accidents (note that the time frame is not the same and it would be recommended to only use graphs with the same time frame). The graph gives an indication of the areas of high traffic in comparing tanker accidents and the relation of spills from tankers versus non-tankers.

### By ship type



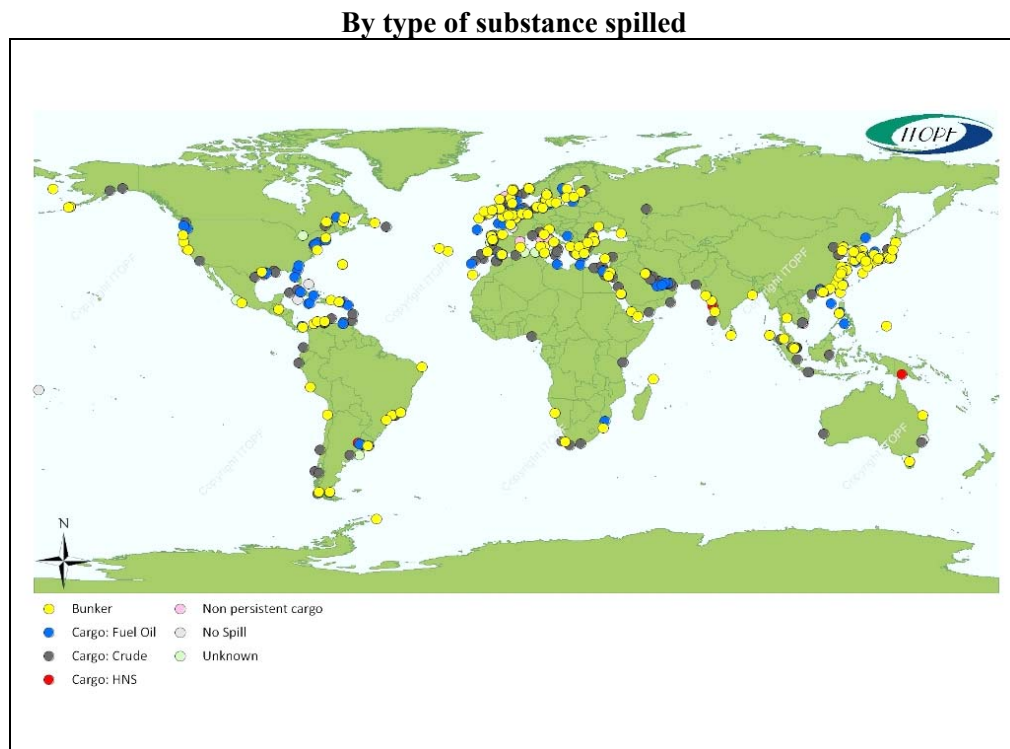
Source: Courtesy of ITOPF based on oil spill data from 1970 to 2007

### Vessel movements and major incidents

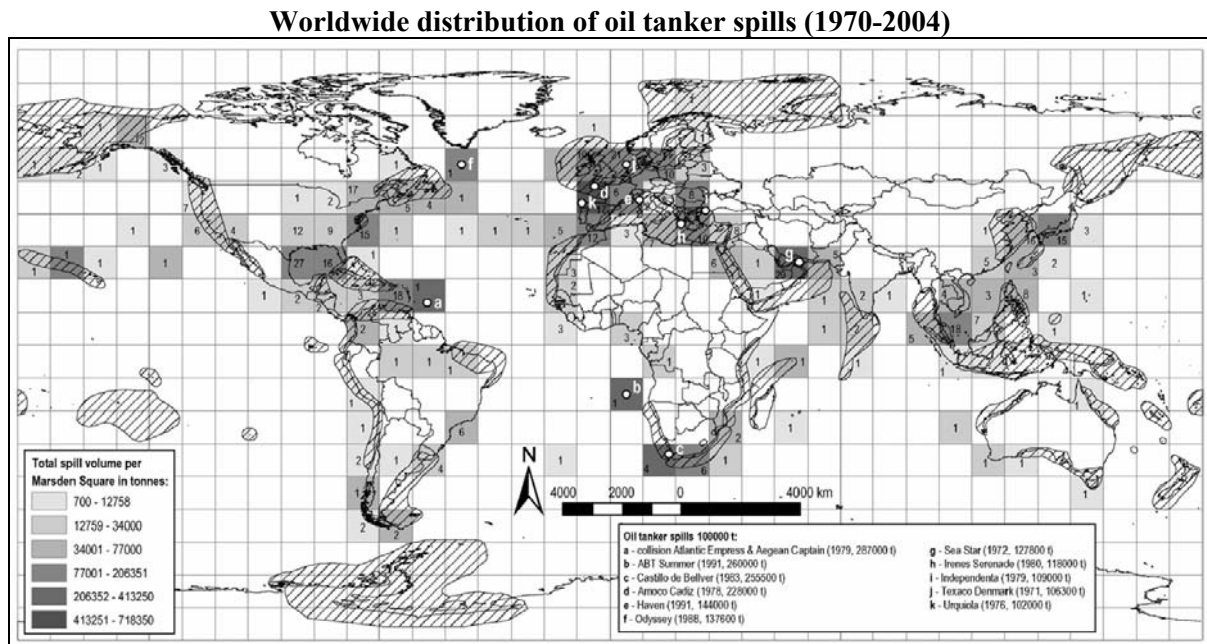


Source: Courtesy of ITOPF based on oil spill data from 1970 to 2007

35 The third graph is of particular interest to IMO since it divides spills into the types of substances spilled such as bunkers; cargo fuel oil; cargo crude oil; HNS cargo; non-persistent cargo; no spill; and unknown.



36 While the above graph does not represent very well the quantity spilled in each area, in order to identify hot spots, a further example is given below<sup>13</sup> regarding oil tanker spills during 1970-2004.



<sup>13</sup> Burgherr, P (2007), In-depth analysis of accidental oil spills from tankers in the context of global spill trends from all sources, Journal of Hazardous Material 140 (2007) 245-256.

37 One can easily see from the above Marsden Grid how much oil was spilled in which geographical areas. The graph gives the worldwide distribution of oil tanker spills of at least 700 tonnes, while small numbers of spills are indicated in particular cell grids.

38 In view of these alternative representations, it may be useful to generate, through relevant GISIS modules, similar graphs and data on ship-generated water pollution. An alternative would be to seek co-operation with ITOPF or the Energy Related Severe Accident Database (ENSAD) to develop a data extract service for IMO. ENSAD was established at the Paul Scherrer Institute (PSI) in the mid 1990s and contains the most comprehensive database on energy related accidents, using the sources below:

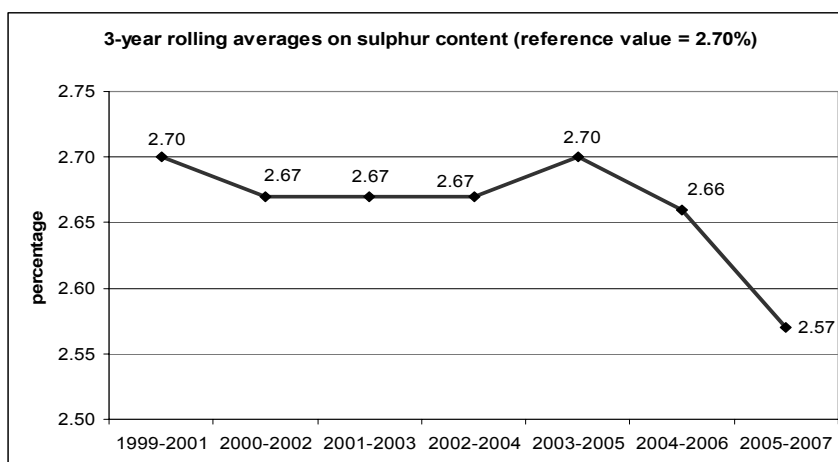
Acronym	Organisation
ETC	Environmental Technology Centre, Environment Canada
FACTS	Failure and Accidents Technical Information System, TNO Netherlands
MHIDAS	Major Hazard Incident Data Service, AEA Technology Inc. on behalf of the UK Health and Safety Executive
CTX	Center for Tankship Excellence
ITOPF	International Tanker Owners Pollution Federation
USCG	United States Coast Guard
NOAA	National Oceanic and Atmospheric Administration (e.g., Historical Incidents Database and Oil Spill Case Histories)
IMO	International Maritime Organisation
OECD	Organisation for Economic Co-operation and Development, Environmental Data
Sigma	Swiss Re Company
CEDRE	Centre of documentation, research and experimentation on accidental water pollution
ERC	Environmental Research Consulting (formerly the Oil Spill Intelligence Report database (OSIR), which was acquired by Cutter Publications, and then by Aspen Publishing, then by ERC)
US OTA	United States Office of Technical Assistance
Mariner Group	The Mariner Group, North Sea Mariner AS, Norway
IOPC Funds	International Oil Pollution Compensation Funds
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea

Source: Burgherr, P. (2007)(see footnote 13)

### Performance Indicator 9: Ship-generated air pollution

Definition: (a) 3-year rolling average of the sulphur content of fuel oil delivered to ships.

Average sulphur content	1999-2001	2000-2002	2001-2003	2002-2004	2003-2005	2004-2006	2005-2007
Based on counts	2.70	2.67	2.67	2.67	2.70	2.66	2.57
Based on weight (DNV PS)							2.75



Source: MEPC documents (following the approved methodology in resolution MEPC.82(43) – Guidelines for monitoring the world-wide average sulphur content of residual fuel oils supplied for use on board ships)

*Definition:* (b) Tonnes of NO<sub>x</sub>, SO<sub>x</sub> and CO<sub>2</sub> released from ships subject to IMO instruments.

*Definition:* (c) Ratio of estimated tonnage of SO<sub>x</sub>, NO<sub>x</sub> and CO<sub>2</sub> released annually per tonne-mile of cargo carried by sea.

39 As with PI 8(a), reliable, worldwide and comprehensive data for indicators 9(b) and 9(c) is not yet available although, as indicated in paragraph 29 above, the advice of the MEPC is being sought in this regard.

#### Comment on PI 9

40 PI 9(a) is based on a requirement in MARPOL Annex VI to monitor the world-wide average sulphur content of residual fuel oils supplied for use onboard ships, taking into account the guidelines contained in resolution MEPC.82(43). The sulphur data is currently supplied to IMO, under a contract valid to 2010, by DNV Petroleum Services, ABS Oil Testing Services and Lloyd's Register EMEA (FOBAS). The data received contains information on the number of samples, the average sulphur content (based on count and weight) and the estimated and average quantity of residual fuel oil bunkered. It may be noted that the average sulphur content based on counts decreased, compared to the reference year, while the average based on weight shows a higher result (2.75% for the last 3-year period, according to DNV). It may therefore be desirable to monitor both averages and to request the other data providers to also provide average sulphur content figures based on both counts and weight, although this would require an amendment to the methodology contained in the MEPC guidelines.

41 Regarding PIs 9(b) and (c), as stated in paragraph 29 above, it is expected that MEPC 58 will consider the Working Group's earlier request for advice from the Committee on both data sources and, as appropriate, calculation methodologies for the related performance measurements. In this regard, and with specific reference to CO<sub>2</sub> emissions from ships, the Working Group will recall that the MEPC has embarked on the updating of the 2000 IMO study on greenhouse gas (GHG) emissions from ships, the outcomes of which, together with the finalization by the MEPC of operational and design indexes relating to such emissions, will no doubt also serve in the future for the purposes of this particular PI.

#### Performance Indicator 10: Environmental conscience

*Definition:* (a) Mobilization by IMO of donor funds for environmental programmes

ITCP expenditure on environmental programmes			
Year	Funding from all external and internal sources (US\$)	As a percentage of total ITCP expenditure	Total Expenditure
2001	5,310,035	55.0%	
2002	6,008,728	48.8%	
2003	6,749,439	51.0%	
2004	7,162,403	51.1%	
2005	5,938,329	45.4%	
2006	5,667,080	47.2%	12,002,069
2007	7,418,246	54.8%	13,531,596
<b>Average</b>	<b>6,322,037</b>	<b>50.5%</b>	

*Source: IMO Secretariat (interim and biennial reports on the ITCP)*

*Definition:* (b) Number of projects sponsored, initiated and funded by IMO

42 Over the last year, two scientific projects have been initiated by IMO, with funding from Member States and concerned organizations. The first such project was the Informal Cross Government/Industry Scientific Group of Experts set up in July 2007 to review the impact on the environment, on human health and on the shipping and petroleum industries, of applying any of the fuel options then under consideration

by the MEPC to reduce SO<sub>x</sub> and particulate matter generated by shipping, as well as the consequential impact such fuel options could have on other emissions, including CO<sub>2</sub> emissions from ships and refineries. The Group's report was presented to BLG 12 and MEPC 57, thereby supporting the final development of amendments to MARPOL Annex VI, which regulates the emission of atmospheric pollutants in ships' exhausts. The amendments were duly approved at that session of the Committee and are expected to be formally adopted by MEPC 58, with entry into force scheduled for 16 months thereafter.

43 In a similar manner, and as foreshadowed in paragraph 41 above, the MEPC decided to update the 2000 IMO study on GHG emissions from ships, to support its work, in accordance with an action plan and timetable agreed at MEPC 55, on the development of a global regulatory regime for the reduction or limitation of GHG emissions from ships. This updating work is currently ongoing, through a consortium of research institutions guided by a Steering Committee, with elements thereof having been accelerated for presentation to MEPC 58.

*Definition: (c) Number of collaborative agreements with regional groups responding to marine pollution such as REMPEC, ROCRAM, Barcelona Convention.*

#### Memoranda of Understanding (MoUs) or Letters of Agreement (LoAs)

Acronym	Definition	As at 2006	As at 2007
ASEAN	Association of Southeast Asian Nations	1	1
COCATRAM	Central American Maritime Transport Commission	1	1
NOWPAP MERRAC MoU	Northwest Pacific Action Plan, Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP), Marine Environmental Emergency Preparedness and Response Regional Activity Centre (MERRAC)	1	1
PERSGA	Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)	1	1
PMAESA	Port Management Association for East and Southern Africa	1	1
PMAWCA	Port Management Association of West and central Africa	1	1
REMPEC	Regional Marine Pollution Emergency Centre for the Mediterranean Sea (joint IMO/UNEP project)	1	1
REMPEITC-Carib	Regional Marine Pollution Emergency Information and Training Centre, Wider Caribbean	1	1
ROCRAM	Operational network for Regional Cooperation Maritime Authority, Regional operative network of co-operation among Maritime Authorities of South America, Mexico and Panama	1	1
ROPME/MEMAC	Regional Organization for the Protection of the Marine Environment, Bahrain (ROPME), Marine Emergency Mutual Aid Centre (MEMAC)	1	1
SACEP	South Asia Co-operative Environment Programme	1	1
SPREP	South Pacific Regional Environment Programme	1	1
UNIDO-IGCC	Interim Guinea Current Commission – Established under the UNIDO-implemented Guinea Current Large Marine Ecosystem Project	1	1
UNOPS	United Nations Office for Project Services	1	1
	<b>Total</b>	<b>14</b>	<b>14</b>

*Source: IMO Secretariat*

#### Comment on PI 10

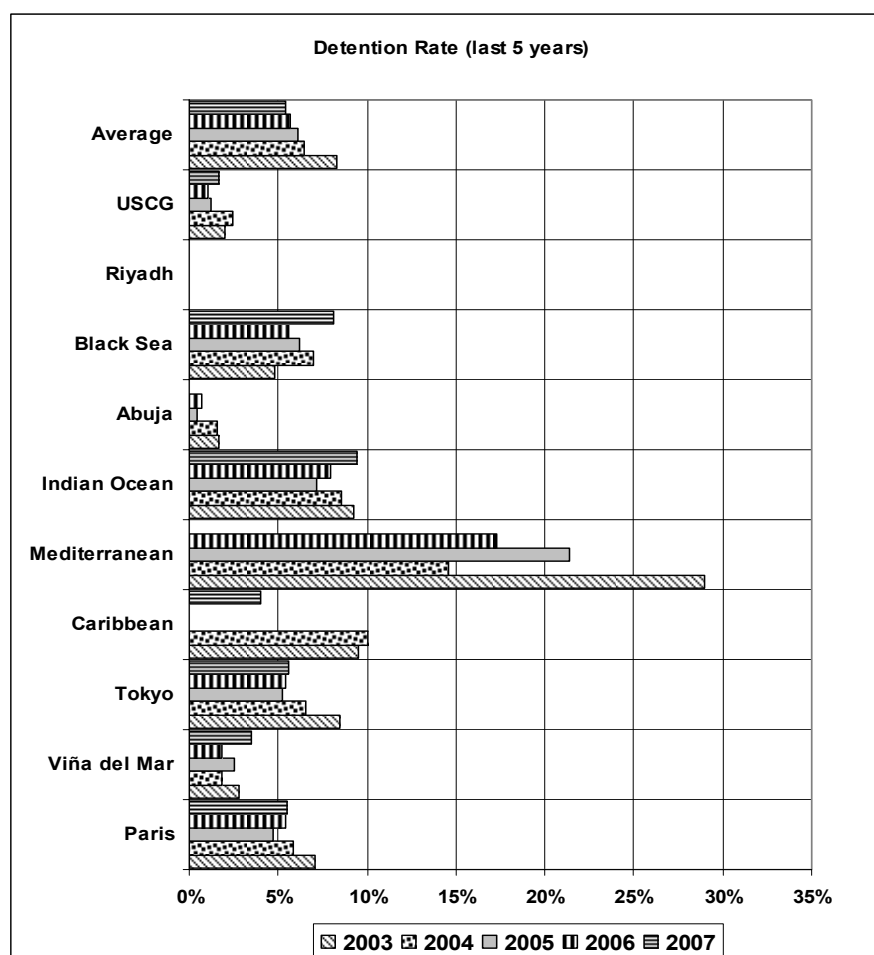
44 This PI concentrates on the actions of IMO – through technical assistance, scientific research projects and collaborative agreements – to address environmental challenges and thereby raise consciousness over issues that require regulatory action and implementation support. In this regard, it may be useful in the future to also take into account information on similar actions carried out by States and the shipping community (where available), as well as the number of IMO environmental conventions ratified by Member States.

**Performance Indicator 11: PSC detention rate**

*Definition: Port State control detention rates as analysed by the various bodies of the Organization on the basis of data submitted by Member States.*

Detention%	Paris	Viña del Mar	Tokyo	Caribbean	Med. MoU	Indian Ocean	Abuja	Black Sea	Riyadh	USCG	Average
2001	9.09%	3.52%	7.76%		9.25%	5.27%				2.19%	6.18%
2002	7.98%	3.33%	6.67%		28.90%	5.61%		6.28%		2.50%	8.75%
2003	7.05%	2.78%	8.49%	9.49%	28.99%	9.27%	1.65%	4.76%		1.99%	8.27%
2004	5.84%	1.87%	6.51%	10.05%	14.54%	8.59%	1.54%	6.95%		2.43%	6.48%
2005	4.67%	2.57%	5.21%		21.41%	7.18%	0.45%	6.23%		1.22%	6.12%
2006	5.44%	1.80%	5.40%		17.26%	7.92%	0.71%	5.56%		1.08%	5.65%
2007	5.48%	3.48%	5.62%	3.99%		9.42%		8.16%		1.67%	5.40%

Source: Annual reports of regional PSC MoUs/Agreement and United States Coast Guard<sup>14</sup>



Source: Annual reports of regional PSC MoUs/Agreement and United States Coast Guard

<sup>14</sup> United States Coast Guard data incorporates separate safety and security inspections. Figures for the Paris MoU, USCG, Viña del Mar Agreement and Caribbean MoU are preliminary figures for 2007 subject to final approval by their respective PSCC.

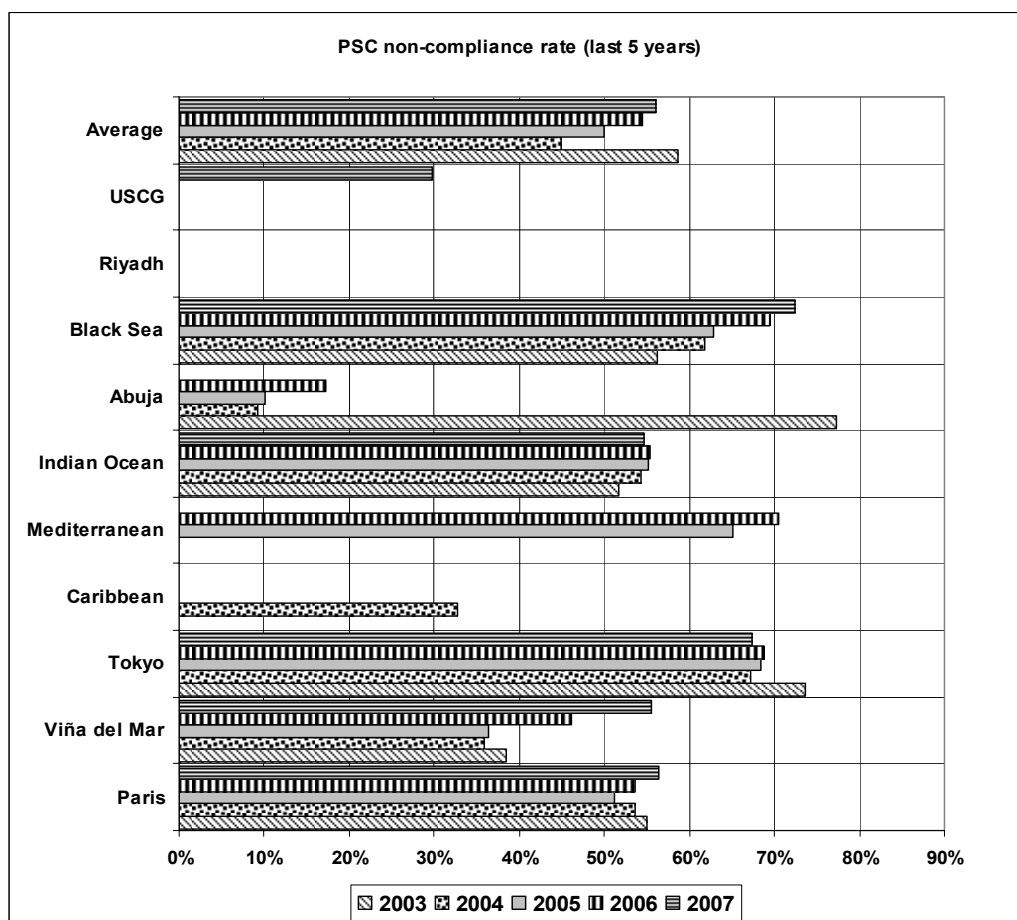
**Performance Indicator 12: PSC non-compliance rate**

*Definition: Port State control non-compliance rates as analysed by the various bodies of the Organization on the basis of data submitted by Member States.*

$$\text{Non-compliance rate} = \frac{\text{No. of inspection with deficiencies}}{\text{total number of inspection}} \times \%$$

	Paris	Viña del Mar	Tokyo	Caribbean	Mediterranean	Indian Ocean	Abuja	Black Sea	Riyadh	USCG	Average
2001	57.59%	41.44%	69.33%			51.85%					55.05%
2002	57.20%	35.50%	70.25%			48.92%		54.79%			53.33%
2003	55.00%	38.50%	73.62%			51.78%	77.28%	56.22%			58.73%
2004	53.59%	35.80%	67.27%	32.66%		54.25%	9.24%	61.88%			44.96%
2005	51.25%	36.39%	68.48%		65.13%	55.16%	10.03%	62.93%			49.91%
2006	53.55%	46.20%	68.78%		70.52%	55.35%	17.29%	69.39%			54.44%
2007	56.43%	55.53%	67.44%			54.68%		72.41%		29.73%	56.04%

*Source: Annual reports of regional PSC MoUs/Agreement and United States Coast Guard. Figures for the Paris MoU, USCG, Viña del Mar Agreement and Caribbean MoU are preliminary figures for 2007, subject to final approval*

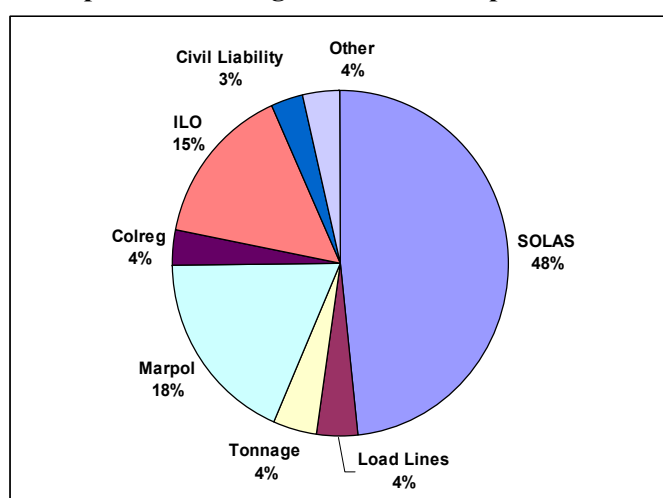


*Source: Annual reports of regional PSC MoUs/Agreement and United States Coast Guard. Figures for the Paris MoU, USCG, Viña del Mar Agreement and Caribbean MoU are preliminary figures for 2007, subject to final approval*

### Comment on PIs 11 and 12

45 Data for these two PIs is based on aggregated data of PSC inspections that does not provide details of deficiencies found. Since PSC is one of the best sources of data with which to measure non-compliance, the development of the GISIS module on PSC will enable raw data on PSC deficiencies to be analysed and help in identifying areas of non-compliance against specific IMO instruments. The emerging new PSC coding system will provide that, thus facilitating direct feedback into the legislative process. By way of example, some descriptive statistics are provided below, based on fake data for the purpose of demonstrating what might be achieved once the new coding system is applied and once data is available in the GISIS module. Ideally, this type of data could then be combined with casualty data to measure the effect of certain regulatory measures other than non-compliance, since the latter gives an indication of the problem of enforcing a regulation, while casualty/incident data can represent the failure of enforcement, or the failure of the regulatory regime itself.

**Example 1: Percentage of deficiencies per convention**



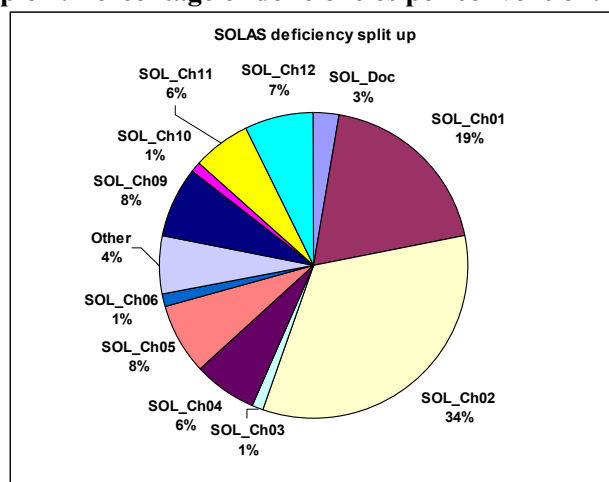
*The same graph can be produced for certificates*

46 Example 1 presents a simple split of the percentage of deficiencies found per convention as a result of PSC inspections, while example 2 further splits it by relevant chapter. With the implementation of the new coding system, this could then be produced for each IMO instrument. In addition, once this is linked to relevant certificates, similar statistics could be shown based on certificates versus conventions. Example 3 then relates the number of deficiencies found for each area of a convention to different States, thereby facilitating the measurement of compliance by Administrations and the identification of any weaknesses in the regulatory regime. While such an attempt was made in a recent study<sup>15</sup>, interpretation of the results proved difficult owing to the linking of deficiencies to casualty types.

<sup>15</sup> Knapp S, Franses PH, Econometric Analysis on the Effectiveness across Port State Control Regimes – What are the areas of improvement for inspections?, Ocean Economics Review of China 2007, Volume 1, Issue 1, pages 26-54.



**Example 2: Percentage of deficiencies per convention: SOLAS**



*The same graph can be produced for certificates*

**Example 3: Number of deficiencies per SOLAS chapter per State**

Administration	SOL_Documents	SOL_Ch01	SOL_Ch02	SOL_Ch03	SOL_Ch04	SOL_Ch05	SOL_Ch06	SOL_Ch07	SOL_Ch09	SOL_Ch10	SOL_Ch11	SOL_Ch12
State 1	12	71	102	2	26	58	7	26	61	3	21	74
State 2	11	81	101	5	42	55	6	55	49	3	39	51
State 3	148	1036	2217	56	175	213	65	177	233	49	187	252
State 4	24	144	248	14	22	23	33	10	28	6	10	19
State 5	1	8	47	0	5	13	0	4	12	1	1	5
State 6	6	24	54	0	106	51	3	54	31	6	26	40
State 7	149	984	1651	47	264	375	76	315	417	66	357	437
State 8	7	109	166	1	18	32	1	17	31	0	13	26
State 9	1	10	8	0	0	0	0	0	0	0	0	0
Etc.												

**Performance Indicator 13: Fraudulent certificates**

*Definition: Number of fraudulent certificates and endorsements of any type reported to IMO.*

Year	2001	2002	2003	2004	2005	2006	2007
No. of certificates	1359	16	36	3	47	23	41

*Source: IMO Secretariat*

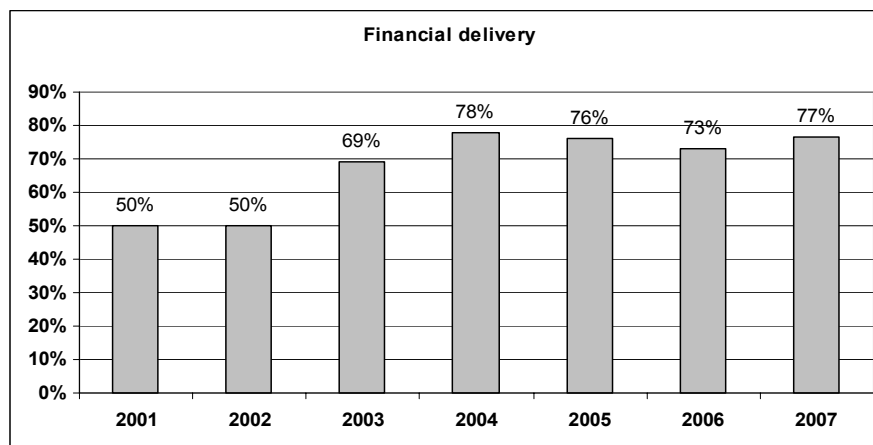
**Comment on PI 13**

47 At present, data on fraudulent certificates is collated by IMO through a manual system which does not allow for its aggregation. One possible solution to this would be to develop a GISIS module enabling the reporting of such certificates online, thereby facilitating the collection of more detailed data for this PI. This could, for instance, provide a breakdown on the flags of ships, the types of fraudulent certificates found, the kind of actions taken by flag States to prevent the recurrence of such incidents, and a section for flag State comments (similar to the PSC detention reporting).

**Performance Indicator 14: Delivery of technical assistance**

*Definition: (a) Percentage of planned activities delivered.*

	2001	2002	2003	2004	2005	2006	2007
Activities delivered	50%	50%	69%	78%	76%	73%	77%

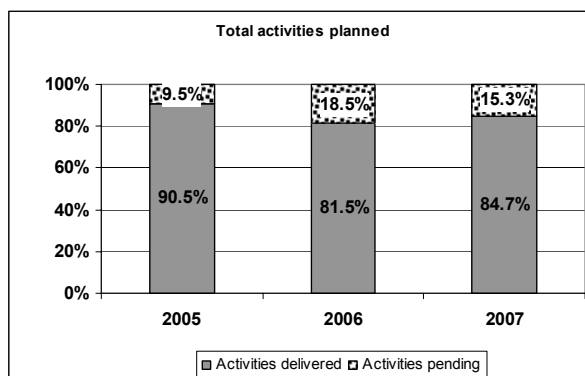
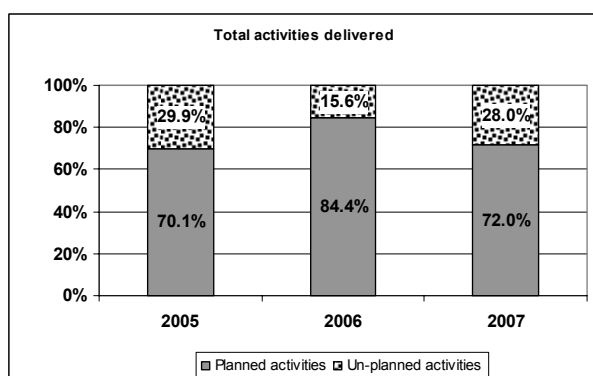


Source: IMO Secretariat

*Definition: (b) Activities delivered: planned and unplanned percentages.*

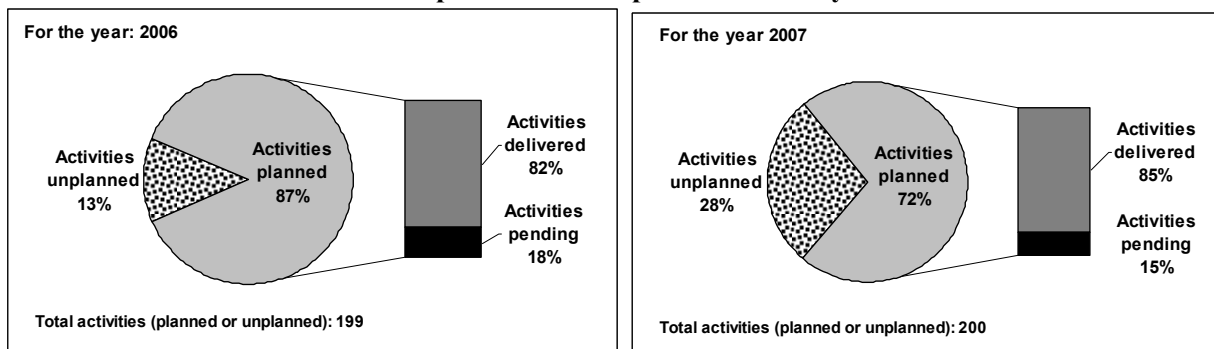
	2005	2006	2007	2005	2006	2007
<b>Total activities planned, of which:</b>						
<b>Activities delivered</b>	124	141	122	90.5%	81.5%	84.7%
<b>Activities pending</b>	13	32	22	9.5%	18.5%	15.3%
<b>Total activities delivered, of which:</b>						
<b>Planned activities</b>	124	141	144	70.1%	84.4%	72.0%
<b>Un-planned activities</b>	53	26	56	29.9%	15.6%	28.0%

Source: IMO Secretariat

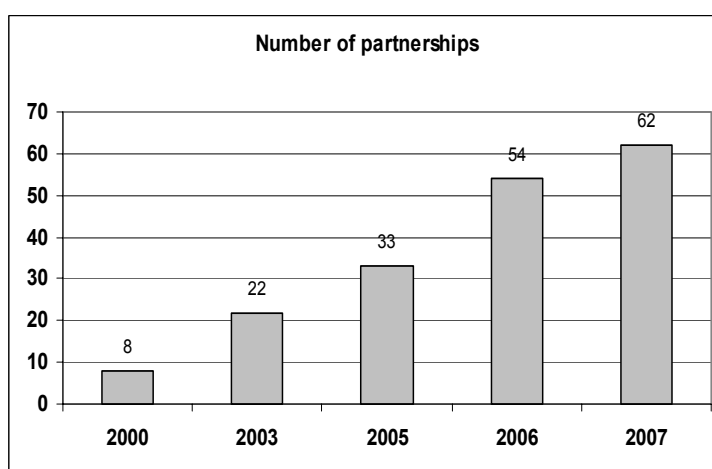


Source: IMO Secretariat

**Alternative representation for Indicator 14(b) combining activities that were delivered with activities which were planned and unplanned for the years 2006 and 2007**

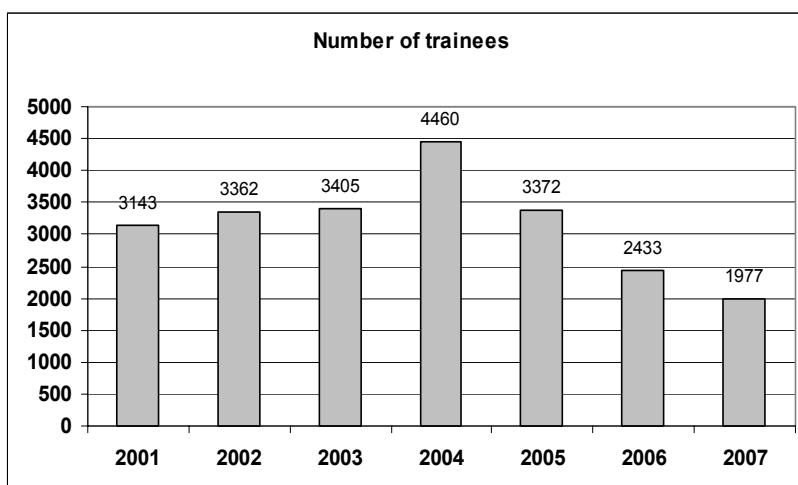


*Definition: (c) Number of partnerships with Governments, Organizations and industry.*



Source: IMO Secretariat

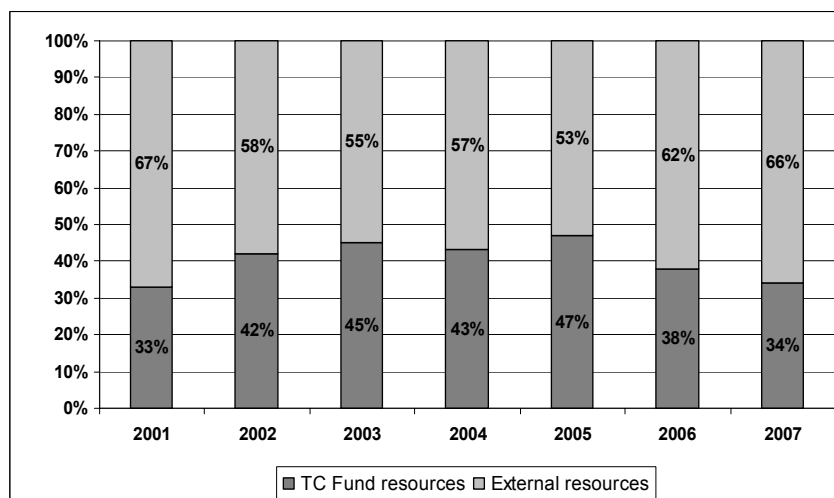
*Definition: (d) Number of trainees in IMO institutions and IMO-sponsored workshops.*



Source: IMO Secretariat

**Performance Indicator 15: Sustainability of ITCP**

*Definition: Proportion of funding from donor sources and internal sources.*



Source: IMO Secretariat

**Performance Indicator 16: Cycle time**

*Definition: Time taken to develop IMO conventions and other instruments compared to planned time.*

Instrument	Initial authorization or start of work	Planned cycle time (years)	Adopted	Actual cycle time (years)
OPRC/HNS Protocol	Resolution 10 of the OPRR Conference (November 1990); work began at MEPC 37 (March 1994)	Not specified	March 2000	6
Bunkers Convention 2001	Work began at LEG 75 (October 1996)	Not specified	March 2001	4.5
AFS Convention 2001	Resolution A.895(21) (November 1999)	Not specified (“as a matter of urgency”)	October 2001	2
Athens (PAL) Protocol 2002	Work began at LEG 76 (October 1997)	Not specified	November 2002	5
Fund Protocol 2003	Work began at the IOPC Funds in 2001	Not specified	May 2003	2.5
BWM Convention 2004	Resolution A.868(20) (November 1997)	3 (for “consideration and adoption in the year 2000”)	February 2004	6.5
SUA Convention Protocols 2005	Resolution A.924(22) (November 2001); work began at LEG 84 (April 2002)	Not specified (“on a high priority basis”)	October 2005	3.5
Average cycle time				4.5

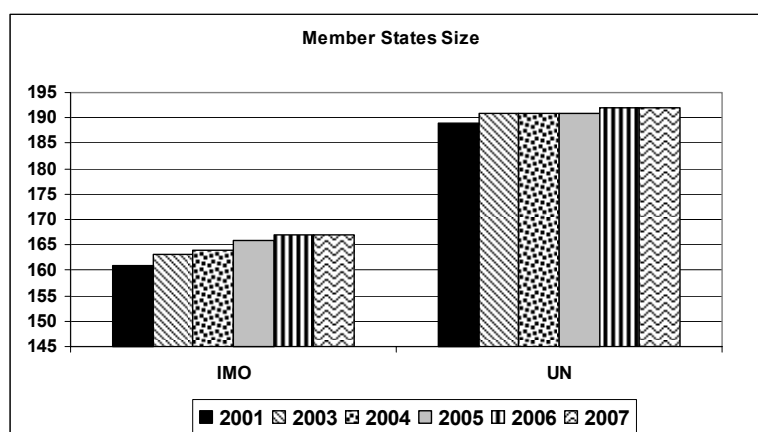
Source: IMO Secretariat

48 The table above does not include the Nairobi International Convention on the Removal of Wrecks, 2007, the development of which spanned a period of some 35 years (including considerable periods of time during which consideration of the subject was repeatedly postponed). Therefore, adding that instrument to the table would unduly distort the average cycle time.

49 As requested previously by the Working Group, the Secretariat is in ongoing consultation with relevant UN bodies on how best to benchmark the average cycle time to develop new IMO instruments against that of similar regulatory agencies in the UN System. In this respect, PI 16 measures only the time taken to develop and adopt a treaty instrument, but does not take into account the time lapse between adoption and entry into force. The Working Group may wish to know that one study has calculated this to be an average of 2.9 years for all IMO conventions<sup>16</sup>, which would mean that the total average timeframe from the authorization or start of work to entry into force is some 7.5 years.

**Performance Indicator 17: IMO's role**

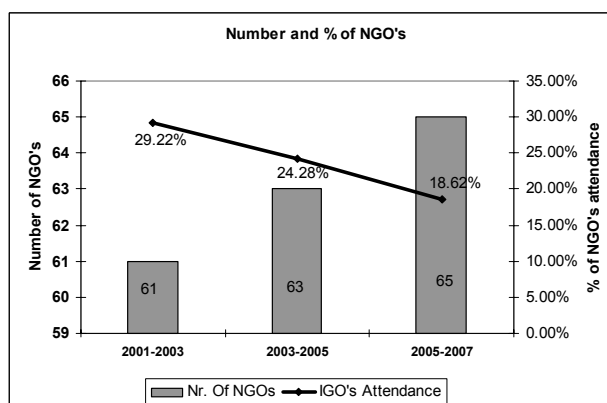
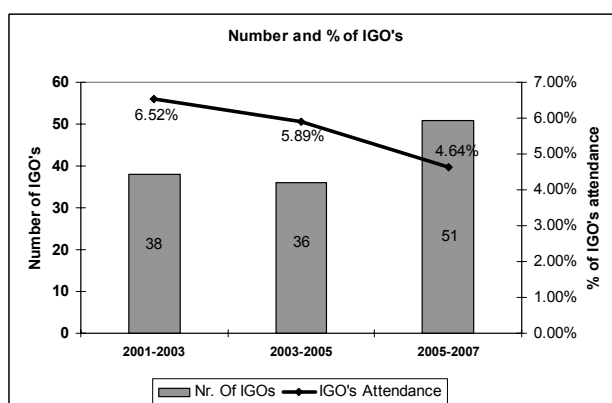
*Definition: (a) Size of IMO membership compared to UN membership.*



Source: UN and IMO Secretariats

*Definition: (b) Level of participation of IGOs and approved NGOs at IMO meetings.*

	No. of IGOs	Attendance	No. of NGOs	Attendance
2001-2003	38	6.52%	61	29.22%
2003-2005	36	5.89%	63	24.28%
2005-2007	51	4.64%	65	18.62%



Source: IMO Secretariat<sup>17</sup>

<sup>16</sup> Knapp S. and Franses PH, Methods to measure effectiveness of conventions (not yet published).

<sup>17</sup> Data on IGO and NGO participation in IMO meetings is at present collated on a biennial basis only.

**Performance Indicator 18: Goal-based standards**

*Definition: Progress towards development of the goal-based standards concept.*

50 Further progress was made by MSC 83 (October 2007) and MSC 84 (May 2008) towards the development of goal-based standards (GBS) for hull construction of bulk carriers and oil tankers and the further development of the safety level approach.

51 Regarding GBS for bulk carriers and oil tankers, the MSC further refined its five-tier structure: goals (Tier I); functional requirements (Tier II); verification of compliance (Tier III); IMO requirements, classification rules and relevant national requirements (Tier IV); and industry standards and practices (Tier V), with IMO's work on the matter consisting of developing Tiers I, II and III.

52 While Tiers I and II have been agreed in principle, current efforts are concentrated on the finalization of Tier III. To this end, MSC 83 re-established the Pilot Panel to conduct a second trial application of the Guidelines for the verification of compliance with GBS, using the IACS Common Structural Rules (CSR) for oil tankers, in order to finalize the draft Guidelines for consideration at MSC 85.

53 MSC 83 also considered draft SOLAS amendments to make the GBS for bulk carriers and oil tankers mandatory and draft international goal-based new ship construction standards for bulk carriers and oil tankers, and agreed to further consider them, with a view to approval, at MSC 85, taking into account the results of the work of the Pilot Panel. The draft SOLAS amendments also include provisions for a Ship Construction File (SCF).

54 MSC 84 agreed to key principles of generic guidelines for developing GBS and instructed a correspondence group to finalize them for consideration at MSC 86. A long-term work plan for the continued development of GBS, including medium- and long-term objectives was also agreed.

**Comment on PI 18**

55 In spite of its broad definition, this PI is currently restricted to ongoing work relating to ship construction standards. If the intention is that the GBS concept should be applied to other regulatory areas, the PI could eventually be divided into sub-indicators to cover the existing focus and any new areas to which GBS may ultimately apply.

**Performance Indicator 19: Work of other UN bodies**

*Definition: (a) Incorporation of specific policy input provided by IMO organs within the policy and programme decisions of other UN bodies (i.e. in their treaty instruments, codes, resolutions, guidelines, etc., work programmes and technical assistance activities.)*

56 Resolution A.990(25) (High-level Action Plan) provides for IMO to submit policy input to other UN bodies (see, in particular, the outputs related to High-level Action 1.1.2, and document CWGSP 8/4 for their current status). Such other UN bodies include those listed hereunder.

<b>Organization (UN related)</b>	<b>Area of policy input</b>	<b>As at July 08</b>	<b>Status</b>
FAO	IUU fishing and related matters	1	ongoing
GESAMP	Evaluation of bulk chemicals by GESAMP-EHS Working Group	1	ongoing
UNECE	Policy input to the Global Harmonized System for classification of chemical substances	1	ongoing
IAEA	Emergency arrangements for response to nuclear/radiological emergencies from ships	1	ongoing
ICAO	GNSS and SAR issues	1	ongoing

Organization (UN related)	Area of policy input	As at July 08	Status
ILO	Seafarer issues	1	ongoing
ILO/Basel Convention	Ship recycling	1	ongoing
ITU-R	Study Group 2 on use of cellular phones in SAR services	2	ongoing
	WP.8B on DSC complexity; assignment and use of maritime mobile service identities; satellite detection of AIS messages; developments in maritime radio communications systems and technology and implications of methods to satisfy Resolution 315 (WRC-03) and preliminary draft performance standards for survival crafts' AIS SAR transmitter (AIS-SART)		
UN	Input to the UN Sub-Committee on Dangerous Goods for the harmonization of intermodal transport of dangerous goods	4	ongoing
	Conceptual linkage between the Millennium Development Goals and ITCP		
	Advice provided to other UN bodies within CTITF (UN General Assembly resolution 60/288 on the UN Global Counter Terrorism Strategy)		
	Advice provided to UN Security Council 1371 and 1640 Committees on maritime security		
UNECE/UNEFACT	Facilitation of maritime traffic and matters related to electronic transmission of information	1	ongoing
UNHCR	Development of Guidance leaflet on "Rescue at Sea"	1	completed
UNODC/WCO	Prevention and control of illicit drug trafficking	1	ongoing
WCO	Clearance of ships, persons and cargoes	1	ongoing
WHO/ILO	MSC 82 approved a liaison statement to WHO and ILO on matters concerning ships' compulsory medical supplies	1	completed
WMO	Meteorological matters	1	ongoing
	<b>Total areas of policy input</b>	<b>19</b>	

Source: IMO Secretariat

Definition: (b) Number of joint working groups established.

Group composition	Topics	As at July 2007	As at July 2008
GESAMP ((IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNEP/UNIDO)	Scientific aspects of marine environmental protection	1	1
GESAMP-BWWG	Use of active substances for ballast water management	1	1
GESAMP-EHS	Evaluation of hazards of chemical substances carried by ships	1	1
IMO/FAO	IUU fishing and related matters, including marine litter/garbage issue (MARPOL Annex V)	1	1
IMO/ICAO	Harmonization of aeronautical and maritime SAR	1	1
IMO/ILO	Fair treatment of seafarers in the event of an accident	1	1
IMO/ILO	Liability and compensation regarding claims for death, personal injury and abandonment of seafarers	1	1
IMO/ILO/Basel Convention	Ship scrapping	1	1
IMO/ITU	Maritime radio communications	1	1
	<b>Total joint working groups</b>	<b>9</b>	<b>9</b>

Source: IMO Secretariat

*Definition: (c) Number of partnerships (MoUs or other agreements) established.*

Name of partner	Description of Partner within IMO	As at July 2007	As at July 2008
FAO	Regulatory co-operation	1	1
GEF	Technical assistance	1	1
IAEA	Regulatory co-operation	1	1
ILO	Regulatory co-operation	1	1
UN	Institutional co-operation	1	1
UNDP	Technical assistance	1	1
UNEP	Regulatory co-operation and technical assistance	1	1
UNEP (CAR-RCU)	Technical assistance	1	1
UNEP (NOWPAP-MERRAC)	Technical assistance	1	1
UNEP-OCHA	Technical assistance	1	1
UNIDO	Technical assistance	1	1
UNOPS	Technical assistance	1	1
UNWTO	Regulatory co-operation	1	1
UN Atlas of the Oceans (CBD, FAO, IAEA, ISA, UN, UNEP, UNESCO-IOC, UNF, WMO)	Institutional co-operation	1	1
World Bank	Technical assistance	1	1
<b>Total number of partnerships established</b>		<b>15</b>	<b>15</b>

*Source: IMO Secretariat*

*Definition: (d) Number of joint technical co-operation programmes.*

Partner	Description of activity	Programmes		Activities
		As at Dec. 2006	As at Dec. 2007	As at Dec. 2007
GEF	Partnership in environmental management for the seas of East Asia (PEMSEA)	1	1	1
	PEMSEA Project development and management office (PDMO)	1	1	1
	MEH Project development facility	1	1	1
	GloBallast project development for Phase II	1	1	4
UNEP	Partnerships and resource mobilization	1	1	1
	Promotion of London Convention and Protocol	1	1	1
	Regional marine pollution emergency response centre (REMPEC), Mediterranean	1	1	2
UNIDO	Support to maritime administrations, Africa	1	1	4
UNOPS	Caspian Sea ballast water management	1	1	1
World Bank	Marine Electronic Highway (MEH) demonstration project	1	1	2
<b>Total programmes and activities</b>		<b>10</b>	<b>10</b>	<b>18</b>

*Source: IMO Secretariat*



**Performance Indicator 20: Facilitation of international maritime traffic – Efficiency of shipping**

*Definition: (a) Number and percentage of Member States that are party to the FAL Convention*

	<b>Number</b>	<b>Percentage (of 167 Members)</b>
as of July 2007	111	66.50%
as of July 2008	112	67.07%

*Source: IMO Secretariat*

*Definition: (b) Number and percentage of Contracting Governments to the FAL Convention that have registered differences between their practices and the standards of the FAL Convention*

*Definition: (c) Number and percentage of Contracting Governments to the FAL Convention that have notified that their practices are in accord with the recommended practices of the FAL Convention*

57 FAL 34/19 (March 2007) noted that the information provided by Contracting Governments pursuant to article VIII of the FAL Convention, is out of date and, in some cases, appears to refer to provisions that no longer exist. As a result, and as part of the work on the review of those Standards to which differences have been registered and of Recommended Practices that are not followed, the FAL Committee invited Contracting Governments to submit accurate and up-to-date information. To that end, FAL.3/Circ.187 contains a questionnaire to be completed by Contracting Governments and to be returned to IMO. Only four responses have been received to date and an update will be provided at FAL 35 (January 2009).

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## ANNEX 2

### ANALYSIS OF PERFORMANCE DATA

#### SECTION 1 – INTRODUCTION

1 This annex provides an analysis of the data collected and collated by the Secretariat on performance against the Organization's Strategic Directions (SDs), as set out in Section 3 of annex 1.

#### SECTION 2 – BROAD CATEGORY: ENHANCING THE STATUS AND EFFECTIVENESS OF IMO

##### Strategic Direction 1

IMO is the primary international forum for technical matters of all kinds affecting international shipping and legal matters. An inclusive and comprehensive approach to such matters will be a hallmark of IMO. In order to maintain that primacy, it will:

- .1 further develop its role in maritime affairs *vis-à-vis* other intergovernmental organizations, so as to be able to deal effectively and comprehensively with complex cross-agency issues;
- .2 actively engage the various stakeholders – new and existing – in the shipping arena, including non-governmental organizations, industry and the public in general, to ensure a more inclusive approach to decision-making; and
- .3 actively seek to reap synergies and avoid duplication of efforts made by other UN agencies in shipping matters.

**The related performance indicators are: 1, 2, 3, 16, 17 and 19**  
**Total indicator definitions for this SD = 15**

2 Under this SD, 15 different PIs are used to demonstrate IMO's mandate and its primary role within the shipping industry. Based on the indicators, IMO currently has 167<sup>18</sup> Member States, compared to 192 at the UN (PI 17); however, size alone does not necessarily reflect the importance of the Organization to the international community, particularly in terms of world trade and sustainable development. Its mandate is spread across all technical areas related to shipping, based on 50 conventions, 41 of which are currently in force<sup>19</sup> (PI 2) and 30% of which now cover more than 90% of world tonnage. The average development cycle for such instruments is 4.5 years (PI 16) from the time the initial work starts to their<sup>20</sup>. While the number of Member States which have ratified a convention can vary considerably, the average increase in the ratification of IMO instruments is about 4% since December 2004. In terms of tonnage, however, for some 30% of the conventions, more than 90% of world tonnage is now covered (as of July 2008).

3 During the period under review, significant amendments to existing conventions continued to be developed or were agreed, in particular, amendments to MARPOL Annex VI on air pollution. Similarly, important steps have been taken to promote the entry into force of other instruments, including the adoption of resolution A.1005(25) on the BWM Convention; work being undertaken by the MSC and SLF Sub-Committee on the Torremolinos Protocol; and Secretariat efforts in relation to all environmental instruments not yet in force, as part of its action plan to celebrate the 2007 World Maritime Day theme of "IMO's response to current environmental challenges".

4 Data for the Voluntary IMO Member State Audit Scheme shows the firm consolidation of the Scheme, both in terms of the number of Members volunteering and nominating auditors and the carrying out of audits by the Secretariat with nominated auditors. While there is still no instance of technical assistance being delivered to a Member State specifically as a result of its audit, support has been provided throughout the world for the training of auditors and, in some cases, for audit preparations.

<sup>18</sup> By the time of CWGSP 7, Cook Islands is expected to have become an IMO Member State.

<sup>19</sup> By the end of 2008, this will have increased to 43.

<sup>20</sup> If entry into force is also taken into account, an additional average 2.9 years may be added for a total of 7.5 years.

5 A further indication of the importance of the Organization within industry and civil society is the number of organizations obtaining IGO or NGO status (PI 17), which has steadily increased even though the level of their participation in IMO meetings has decreased by 1.88% and 10.6%, respectively. With respect to IMO's policy input to the work of other UN bodies (PI 19), a total of 19 policy areas have been identified, involving growing collaboration with a wide variety of institutions, including with the UN Security Council and Secretary-General, on the issue of piracy and armed robbery against ships in waters off the coast of Somalia, which has resulted in the Security Council adopting resolution 1816 (2008) in line with earlier requests of the IMO Council.

**Strategic Direction 2**

IMO will foster global compliance with its instruments governing international shipping and will promote their uniform implementation by Member States.

**The related performance indicators are: 1, 2, 3 and 14**  
**Total indicator definitions for this SD = 12**

6 As already noted, PIs 1 and 2, on increased accessions to conventions and entry into force, demonstrate the enhanced status and effectiveness of IMO's regulatory work. Together with the improved data on the IMO Audit Scheme (PI 3) and on continuing positive trends in technical assistance (PI 14), this continues to indicate that IMO is able to foster and uniform implementation of, and global compliance with, its standards – this being the very purpose of the Strategic and High-level Action Plans and the mission statement of the ITCP (resolution A.901(21)).

7 That being said, SD2 deals only with IMO's "promotional" role and does not measure the actual level of compliance or implementation. To measure the success of that role, 12 different indicators are used, where only PI 14 is actually in the Organization's direct control. In this respect, the Working Group may wish to reflect on whether and how IMO should, through the PIs, measure implementation and compliance, taking into account the recommendation of the JIU on integrating the outcomes of IMO audits into the regulatory/implementation process, and the FSI Sub-Committee's related work.

8 In the absence of such a system, the best possible estimate for the level of compliance with IMO standards can be arrived at through an examination of PSC data, casualty data and audit performance information. Based on PSC data only, the indicators show an average detention rate of 5.4% (a decrease of 0.78% since 2001) and an average non-compliance rate of 56.04% (an increase of 0.98% since 2001). The PIs for the total loss rate stands at 0.14% for the year 2007 (based on LRF data) with an overall tendency of decrease since 2001 (0.18%), although this has varied over the years. The exact percentage is actually unknown and the same applies for the total number of lives lost, with the best possible estimate for 2007 lying at 525 lives (based on an LRF data extract for all ships above 100 GT) which is a minute fraction when compared to the total number of crew and passengers (figures for fishers being currently unavailable). Regarding the IMO Audit Scheme, it may be observed that there has been an increase (+2.4%) in the number of Member States volunteering for audit and which have been audited (+36.5%) as well as in the number of nominated auditors – factor that, in themselves, point to a willingness by Member States to have implementation and compliance duly assessed. Therefore, if more comprehensive PIs are to be developed in the future for this purpose, a combined dataset might be used which could provide a more accurate way of measuring the compliance level, corrected by other factors, and this could cover flag, port and coastal State responsibilities.

**Strategic Direction 3**

IMO will strengthen its capacity-building programmes and will focus on:

- .1 developing capacity-building partnerships with governments, organizations and industry;
- .2 ensuring the long-term sustainability of the ITCP;
- .3 contributing to the achievement of the MDGs;
- .4 meeting the needs of its developing Member States; and
- .5 improving the delivery, utilization and effectiveness of its technical co-operation programmes.

**The related performance indicators are: 1, 14 and 15**  
**Total indicator definitions for this SD = 7**

9 SD 3 deals with IMO's ability to strengthen its capacity building programmes (i.e. the ITCP), as well as its contribution to the achievement of the MDG's. Financial delivery of the ITCP stands at 77% in 2007 compared to 73% in 2006 and 50% in 2001. The number of partnerships with governments and organizations and industry increased to 62 in 2007 (+14.8% compared to 2006) while the number of trainees in IMO institutions and IMO sponsored workshops decreased to 1,977 (-18.7% compared to 2006). With respect to the proportion of funding from donor sources versus internal sources, the former increased to 66% (from 62% in 2006).

10 Information on the kind of assistance that is delivered, to whom it is delivered, and what kind of impact the assistance has in improving implementation and compliance is also relevant in this regard, and this is shown in the periodic reports on the ITCP and in the reports of impact assessment exercises (IAEs) carried out every four years, all of which are submitted to the TCC. In this respect, the most recent ITCP and IAE reports were taken into account in the preparation of this document and the main conclusion of the latter (see document TC58/4) is that the assistance delivered by IMO on matters related to MARPOL, OPRC, maritime security and the strengthening of national maritime Administrations was found beneficial to achieving IMO's mission. The report, however, does not contain statistical data that can be used to supplement the PIs and this is primarily due to the way the corresponding IAE questionnaires were designed. A suggestion for the next IAE is to design questionnaires which allow for data collection in electronic format for the purposes of statistical analysis in measuring how well the relevant programme goals are being achieved.

11 Regarding the linkage of the MDG's with IMO's work, in particular with the ITCP, the following may be noted. In adopting the MDGs<sup>21</sup>, the UN also adopted specific targets for each goal, with associated performance indicators (the latter have recently been revised and updated). In turn, IMO – through the Assembly, the TCC and its TC-ISWG – has established that there is a linkage between the ITCP and the MDGs (resolution A.1006(25)) and that improvement in maritime capacity, supported by the work of IMO and the ITCP, has a major and direct impact on five MDGs (1, 3, 6, 7 and 8). To that end, associated targets and performance indicators have also been developed by IMO, along the UN lines. However, most of the targets and performance indicators established by both the UN and the TC-ISWG relate, not to the actions of the Organization itself (i.e. its regulatory and TC work), but to the actions that Member States should take individually at national level. Nevertheless, IMO – through the Strategic and High-level Action Plans and the ITCP – has established SDs, High-level Actions, planned outputs and technical assistance programmes, all of which support, in some measure, the achievement of the five identified MDGs and, more importantly, these elements relate solely to the regulatory and TC work of the Organization, rather than to the actions of individual Member States. On that basis, the measurement of IMO's success in supporting the achievement of the five MDGs related directly to the Organization's work is carried out through a three-way process of monitoring and regular reporting on:

<sup>21</sup> The MDGs are: 1 Eradicate extreme poverty and hunger; 2 Achieve universal primary education; 3 promote gender equality and empower women; 4 Reduce child mortality; 5 Improve maternal health; 6 Combat HIV/AIDS, malaria and other diseases; 7 Ensure environmental sustainability; and 8 Develop a global partnership for development.

- .1 the PIs, which address, on one hand, IMO's regulatory *and* TC work on environmental sustainability (respectively, MDG 7 and PIs 8, 9, 10, 14, 15) and, on the other, its TC work on poverty/hunger; gender; HIV/AIDS; and partnerships for development, which also covers SIDS/LDCs (respectively, MDGs 1, 3, 6, 8 and PIs 14, 15);
- .2 the production of related planned outputs under the High-level Action Plan, within agreed timelines; and
- .3 the execution/production of specific activities/outputs under related TC programmes, also within agreed timelines (currently, these programmes cover HIV/AIDS in three selected ports and maritime sectors of Africa; the integration of women in the maritime sector; partnerships and ITCP resource mobilization; and support to SIDS and LDCs to address their shipping needs).

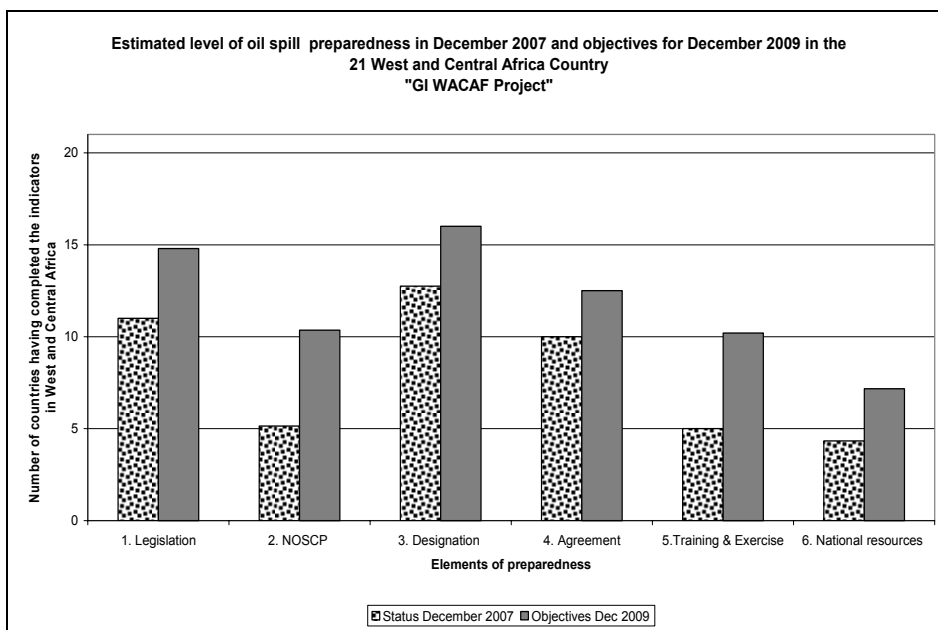
12 The Secretariat is nevertheless developing ways of tracking its specific performance against relevant MDGs, taking into account related ITCP activities/expenditure (the table below provides an example of activities on gender issues) and, where available, the results submitted to it by Member States that have completed the maritime capacity checklist attached to resolution A.1006(25) providing information enabling the measurement of overall maritime capacity in terms of institutions, security, human resources, economic data, environmental protection and safety. In this respect, the questionnaire could also be made available online, thereby facilitating a higher rate of response which could be subsequently analysed.

**ITCP activities to promote the Integration of Women in the Maritime Sector in 2007**

ITCP activities	No. of activities	Remarks
Fellowships	9	9 recipient countries
Establishment of regional links	3	Sub-regional associations in Africa and the Pacific
Workshops	2	80 participants from 22 countries
Conferences	1	80 participants
Seminars	1	50 participants

*Source: IMO Secretariat*

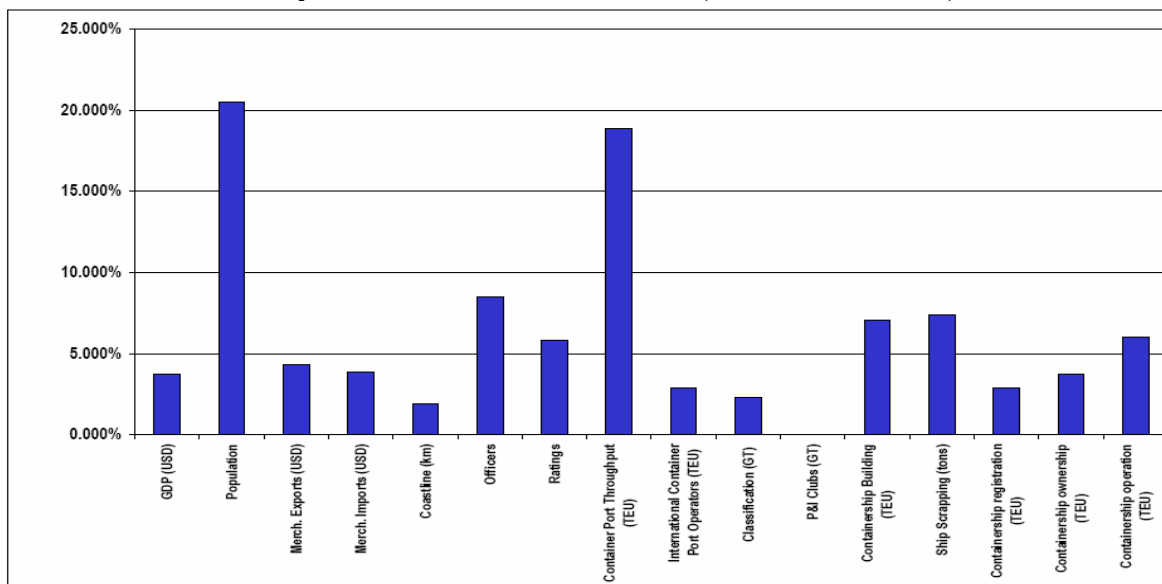
13 All IMO's TC projects provide some useful benchmarks for the measurement of capacity-building, since their very structure includes development and immediate objectives, together with the production of related outputs within scheduled timelines, all of which can therefore be tracked over the project's life. An example of such benchmarking is given below for the IMO/Global Initiative project for West and Central Africa which seeks to strengthen national oil spill response structures and capability and encourage the ratification and implementation of the OPRC, CLC and FUND Conventions. In order to measure how effectively the project has delivered, elements of national oil spill preparedness are measured against specific actions (e.g., ratification, in the case of legislation) which can be further refined into detailed actions (e.g., which instrument was ratified). The combined result provides, over time, an indication of how the level of preparedness has changed as a result of the project's support. The example below compares the project's status as at December 2007 in relation to its targets for December 2009.



Source: IMO Secretariat

14 Another way in which to obtain measurable evidence of capacity-building is the creation of maritime profiles, such as those initiated by the then office of the IMO Regional Coordinator for Latin America, which were subsequently taken over first by ECLAC and later UNCTAD (see the national and regional examples below dating back to 2004). Each profile provides an overview of capacity in areas related to the shipping industry and an indication of specialization. By taking a wide range of data, including economic, demographic, geographic and shipping information, which is then compared to world totals, the profiles can give indications of the build up of maritime capacity. If they are updated every 5 years, say, trends can be monitored to show how countries/regions change.

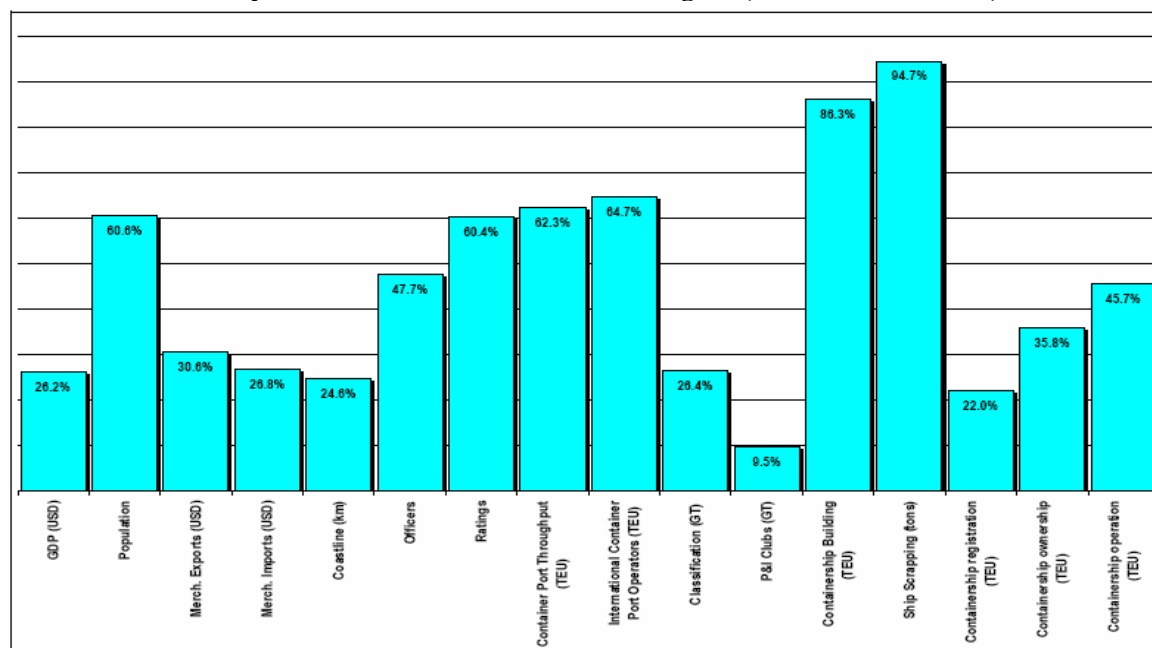
**Example 1 – Maritime Profile: China (as % of world total)**



Source: Source: Hoffmann, J. (2004)<sup>22</sup>

<sup>22</sup> Hoffmann, J. (2004), Asian countries' specialization in different maritime businesses: Challenges and opportunities arising from the process of concentration in shipping, speech presented at Karachi, May 2004.

**Example 2 – Maritime Profile: Asian Region (as % of world total)**



Source: Hoffmann, J. (2004)

#### Strategic Direction 4

Internally, IMO should be able to respond effectively and efficiently to emerging trends, developments, and challenges. It will strive for excellence in governance and management. Besides the Strategic Plan, it will put in place and maintain a risk management framework. The Council will provide visionary leadership, Committees will be optimally structured and will be supported by an effective and efficient Secretariat. The Secretariat will be endowed with sufficient resources and expertise to realize the Organization's work plans within approved biennial appropriations, and the Organization will make effective use of information and communication technology in management and administration.

**The related performance indicator is: 16**  
**Total indicator definitions for this SD = 1**

15 This SD deals with the Organization's internal governance, management and structure but, as recognized at CWGSP 7, the related PI (data on the entry into force of conventions) does not provide any measurement of how well the SD is being met. Accordingly, the Working Group agreed that information should be provided on IMO's budgetary performance and on the production of the Organization's outputs. In this regard, the financial accounts for the last biennium were approved by the Assembly through resolution A.992(25), following unqualified reports from the External Auditor. Regarding the production of planned outputs, document C 100/3(a) shows that, of 263 entries representing the status of activities in support of the last biennium's planned outputs (resolution A.971(24)), 116 (44%) were categorized as completed (i.e. the outputs were duly finalized); 84 (32%) as being in progress (i.e. interim outputs were produced, with finalization thereof expected principally during 2008); 59 (22%) as ongoing (i.e. representing permanent or continuous tasks); and 4 (2%) as postponed (i.e. production of outputs was deferred to another time, for example, until the receipt of corresponding submissions by Member States). Overall, therefore, these elements provide a positive reflection on institutional governance and management, including financial performance within approved appropriations, and of progress made against the Strategic and High-level Action Plans, during the last biennium.

16 Regarding the effective use of information and communication technology, progress in continuously being made in relation to the introduction of appropriate management and administration tools, the continuing development of GISIS and improvements made to both the various internal and external IMO websites. Nevertheless, as will be seen from annex 1 to this document, providing general



observations on the PIs, there are limited data sources available to the Secretariat for the measurement of performance against the SDs, which could be further improved through compliance with reporting requirements and greater use of questionnaires designed to populate data in electronic format for the production and analysis of statistical information.

**SECTION 3 – BROAD CATEGORY: DEVELOPING AND MAINTAINING A COMPREHENSIVE FRAMEWORK FOR SAFE, SECURE, EFFICIENT AND ENVIRONMENTALLY SOUND SHIPPING**

**Strategic Direction 5**

IMO's highest priority will be the safety of human life at sea. In particular, greater emphasis will be accorded to:

- .1 ensuring that all systems related to enhancing the safety of human life at sea are adequate, including those concerned with large concentrations of people;
- .2 enhancing technical, operational and safety management standards;
- .3 eliminating shipping that fails to meet and maintain these standards on a continuous basis; and
- .4 increasing the emphasis on the role of the human element in safe shipping.

**The related performance indicators are: 3, 4, 5, 11, 12 and 13**  
**Total indicator definitions for this SD = 11**

17 This SD deals with how the legislative framework enhances safety of human lives at sea. As indicated previously with respect to SD 2, while the IMO Audit Scheme (PI 3) shows that the number of States volunteering and being audited is increasing, providing an indication that Members are ready to demonstrate publicly the adequacy and robustness of the safety management systems they have put in place to ensure the effective implementation of IMO's global standards, the analysis of the actual outcomes of IMO audits will also help to measure how effectively the legislative regime is addressing this SD, with any related findings and recommendations being fed back progressively into the regulatory/implementation process.

18 Regarding lives and ships lost (PIs 4 and 5), the data collected confirms the downward trend of earlier years (2006 being an exception, in terms of lives lost, owing to the **al-Salam Boccaccio 98** casualty). In this respect, while no definitive data on lives and ships lost is available, the best estimate indicates that the ratio of lives lost at sea to lives that are transported is minimal, as is the ratio of ships lost to the total number of vessels in the world fleet. In this respect, the amount of cargo transported by sea is growing substantially – UNCTAD estimates this at 7.4 billion tons for 2006 (an annual growth rate of 4.3%) and, in terms of demand, world seaborne trade was estimated to be 30,686 billion ton-miles in 2006 (+5.5%)<sup>23</sup>. In this context, one study has demonstrated<sup>24</sup> that, overall, the hazard rate in the shipping industry is relatively low taking into account the volumes transported by sea.

19 While the general downward trends (despite the occasional spikes) suggest that the comprehensive framework aimed at safety of life at sea is keeping pace with developments in technology and practice, and that the measures in place and their adaptation to changing needs are assisting the Organization to meet this strategic direction, continued efforts need to be made, particularly on the enhancing the safety of non-convention vessels, a matter that is currently the focus of an IMO/Interferry project and of Secretariat action to produce a global model of primary legislation and regulations specifically for such vessels. Additionally, IMO should continue to work closely with industry initiatives addressing the safety of container ships (this is now under discussion within the MSC) and the causes of recent increases in accidents such as collisions, stranding or contact – which have resulted in no significant loss of life, pollution or damage – that may be due to insufficient experience or training or “technology fatigue” on the part of crews, or factors as yet unidentified, so as to ensure any appropriate and expeditious IMO response should improvements be required in the existing safety, human element or training regimes.

<sup>23</sup> UNCTAD, Review of Maritime Transport, 2007.

<sup>24</sup> Bijwaard and Knapp, 2008.

20 In this regard, the indicators dealing with PSC data (PIs 11 and 12) do not include deficiency information which, if linked with relevant casualty data, could assist in identifying any weaknesses in the regulatory safety framework and in its effective compliance. The present indicators demonstrate that while the average PSC detention rate decreased compared to 2006, non-compliance increased. It is unclear, however, what causes a decrease in detentions with an increase in non-compliance if other factors which can influence safety, such as shipping economic cycles or industry inspections, are not taken into account also. A method may need to be considered which can filter out these effects and a more holistic approach for longer time periods might be developed. That said, the data, as presented, indicates that IMO's objective of eliminating shipping that fails to meet and maintain standards does not yet seem to have been achieved, that more effort needs to be made by flag States on both implementation and maintenance of standards and that the need for rigorous, uniform and widespread PSC action continues. In this respect, the FSI Sub-Committee's work on the harmonization of PSC activities will help to establish global PSC benchmarks and practices (including reporting ones) and inter-organizational support. In relation to the increased non-compliance rate, it should be noted that, without deficiency details, areas of non-compliance with specific IMO instruments cannot be determined, and that the mere percentage of non-compliance does not inevitably mean that actual non-compliance has increased. It could be that a greater number of deficiencies were found due to more efficient inspections.

21 Finally, the measure on fraudulent certificates (PI No.13) is inconclusive due to the wide disparity between the 2001 and 2007 figures, showing an average reporting rate over the period of 218 fraudulent certificates per annum, with this average falling to 28 when data for 2001 is excluded.

#### **Strategic Direction 6**

IMO will seek to enhance the security of the maritime transport network, including vital shipping lanes, and to reduce piracy and armed robbery against ships, as well as the frequency of stowaway incidents, by:

- .1 promoting a comprehensive and co-operative approach, both among Member States within the Organization and between IMO and other intergovernmental and non-governmental organization;
- .2 raising awareness of IMO security measures and promoting their effective implementation; and
- .3 increasing the emphasis on the role of the human element and safeguarding the human rights of seafarers in secure shipping.

**The related performance indicators are: 6, 7, 11, 12 and 15**  
**Total indicator definitions for this SD = 5**

22 Based on PI 6, no incidents of security failure occurred during 2007 on ships subject to SOLAS chapter XI-2, indicating IMO's success in raising awareness of its maritime and port facility security measures and promoting their effective implementation through the ITCP. In this context, it should be noted that PI 15 measures only the ratio of external to internal funding, rather than the effectiveness of the support provided by IMO on security matters, which is the subject of periodic ITCP and IAE reports.

23 The supporting data on PSC (PIs 11 and 12) does not disaggregate maritime security control and compliance actions from the traditional safety/environmental ones (with the exception of the data provided by the UN Coast Guard) and, therefore, trends in this regard cannot be adequately measured, although this could be facilitated with appropriate data being fed into the related GISIS module, thus providing additional variables for statistical analysis. Additionally, information on incidents of stowaway cases, illegal migration, and illicit drug trafficking might also be provided so that all security related areas are covered.

24 The number of acts of piracy and armed robbery (PI 7) decreased during the year (282) compared to a baseline of 2001 (370), the data shows an increase since 2006, including in the numbers of lives lost and wounded crew. In this regard, work carried out by IMO to address this includes the conclusion of its collaborative efforts with the littoral States of the Straits of Malacca and Singapore (which is, nevertheless, continuing through technical assistance activities), its collaboration with WFP on the protection of vessels chartered by that UN body to carry humanitarian aid to Somalia, and the adoption of UN Security Council resolution 1816 in June 2008.

**Strategic Direction 7**

IMO will focus on reducing and eliminating any adverse impact by shipping on the environment by:

- .1 identifying and addressing possible adverse impacts;
- .2 developing effective measures for mitigating and responding to the impact on the environment caused by shipping incidents and operational pollution from ships;
- .3 contributing to international efforts to reduce atmospheric pollution and address global warming; and
- .4 increasing the emphasis on the role of the human element in environmentally sound shipping.

**The related performance indicators are: 8, 9, 10, 11 and 12**  
**Total indicator definitions for this SD = 11**

25 This SD covers all areas of pollution that may be caused by ships and, owing to lack of comprehensive data with which to measure performance against this SD (particularly in relation to PIs 8 and 9) the Working Group has previously requested the MEPC to assist in the identification of possible sources of data for the monitoring of those PIs and, as appropriate, to define methodologies for the calculation of such data. It is hoped that this, together with improved compliance with mandatory reporting requirements (as called for by CWGSP 7) will facilitate adequate performance measurements. In this regard, the FSI Sub-Committee has concluded that the rate of reporting is very low – only 24.6% of MARPOL Parties reported in 2006 through MEPC/Circ.318 (a modest increase of 2% from 2004) and has also recommended that reporting be made available in electronic format through GISIS. Other relevant data such as the types of violations (illegal discharges, oil record book, IOPP certificate) and the number and sizes of fines could be used to measure compliance in the future and, although the PSC data reported to IMO (PIs 11 and 12) does not disaggregate specific environmental non-compliance rates (as is the case for maritime security also), such deficiencies could eventually be extracted from the GISIS module on PSC.

26 At present, no accurate data is available to measure the actual environmental impact of ship-generated pollution (i.e. damage to ecosystems, livelihoods, economies, etc.), but the available data for PI 8 shows that the number of both smaller and larger oil spills decreased in 2007, while the best estimate indicates that the ratio of oil entering the sea to the quantity of oil that is carried by sea is minimal (0.007%). This is so even if a best estimate of operational discharges is added – the ratio lying at some 0.0185%, when these are included. With respect to pollution incidents involving HNS, very little data is available but, based on the data presented for the first time in annex 1, dissolvers represent 22% followed by persistent floaters with 15%. In this context, overall discharges from shipping activities into the sea is minimal, when compared to other sources such as natural oil seeps (estimated at 47% of total input). While the foregoing factors indicate that IMO's pollution prevention and other measures can be considered to be largely effective, there is still scope for improvement towards a goal of zero water pollution.

27 As previously agreed by the Working Group, ITCP support to the marine environmental protection needs of developing countries is now monitored by the expanded PI 10(a), which covers expenditure on the Organization's interventions in this field. The data collated shows fairly steady access to required funding (some US\$6.3 million per annum, an increase from 2006), still representing an annual average of some 50% of total ITCP expenditure. This continues to demonstrate the significance of marine environment protection as a discipline for IMO's technical assistance activities, which is further augmented by the support received through partnership arrangements with other entities (PI 10(c)).

28 With regard to air pollution, the 3-year rolling average of the sulphur content of fuel oil delivered to ships (PI 9) decreased to 2.57% for the period 2005-2007 (compared to 2.66% for the period 2004-2006) and the Organization's efforts to reduce emissions of air pollutants from ships has resulted in amendments to MARPOL Annex VI being developed and approved earlier in 2008 with the support of a related scientific study initiated by IMO (PI 10(b)). Meanwhile, work on the reduction or limitation of GHGs is continuing and the outcome of these efforts, in particular any indexes agreed, could also assist, through appropriate input of variables to GISIS, in measuring the Organization's performance against this SD. For example, once the operational fuel efficiency index has been developed and sufficient

data has been populated in GISIS, a sample could be taken and compared to the design index, which should also be part of a GISIS module dealing with basic ship particulars, thus enabling comparisons on a shipboard level. In the absence of such reporting to IMO, co-operation with organizations which do have data may be considered (for example ITOPI and ENSAD) and such possibilities are commented on in the section of this annex related to specific PIs.

29 A further consideration in measuring IMO's environmental performance is to examine other topics not specifically included in the PIs such as antifouling, biofouling or ballast water issues, as well as some environmental impact factors (although not this is strictly within IMO's mandate). In this regard, it is estimated that around 3-5 billion tonnes of ballast water are carried around the world by ships each year, posing a serious environmental threat since there are some 4,500 to possibly more than 10,000 different species of marine microbes, plants and animals that may be carried in ballast water daily. The initial GloBallast Programme (now succeeded by GloBallast Partnerships for the period 2007-2012) has estimated the global economic impact of invasive marine species in the order of tens of billions of US dollars per year.

30 In this context, the Terminal Evaluation Report of the GloBallast Programme shows this to have been a successful IMO intervention with the following outcomes:

**GloBallast Project results and level of achievements**

<i>Expected Result</i>	<i>Achievement</i>
Strong and continuing presence of a ballast water management capacity in 6 pilot countries supported by the IMO through absorption of the PCU activities	<i>Achieved</i>
A dramatic increase in the knowledge of the dangers of unmanaged ballast water discharges and remedies based on local port, country and regional settings that are consistent with IMO Guidelines	<i>Achieved/ Positive Steps</i>
Increased public awareness and support for ballast water management approaches	<i>Achieved</i>
A global resource information centre located in the offices of the IMO with the capacity to undertake systematic and ongoing distribution of the latest and most effective approaches to ballast water management. The centre would maintain existing and increase high quality, reliable data and information on ballast water related issues and approaches	<i>Achieved</i>
Availability of project developed and tested education and training programmes to increase knowledge of the ballast water issue and impart the knowledge, skills and attitudes required	<i>Achieved</i>
IMO Coordination of a global network of the research efforts and experience of monitoring centres in relation to ballast water transfer	<i>Achieved</i>
Increased levels of protection and conservation of habitats and species of global significance	<i>Positive steps</i>
Protection of aquaculture resources in and around coastal areas where ballast water exchange takes place	<i>Positive steps</i>
Protection of commercial fishery and shellfish enterprises in and around coastal areas where ballast water exchange takes place	<i>Positive steps</i>
Adoption of common regional approaches based upon the GEF/UNDP/IMO Project experience and approaches that are consistent with IMO Guidelines	<i>Positive steps</i>
Minimization of the loss of coastal biodiversity and degradation of coastal environments	<i>Positive steps</i>
Informed and effective developing country participation in the ongoing global deliberations on the ballast water management issue	<i>Achieved</i>

*Source: Global Ballast Water Management Program, Terminal Evaluation Report, 2005*

**Strategic Direction 8**

IMO will seek to ensure that measures to promote safe, secure and environmentally sound shipping do not unduly affect the efficiency of shipping. It will also constantly review such measures to ensure their adequacy, effectiveness and relevance, using the best available tools.

**The related performance indicators are: 1, 2, 3 and 20**  
**Total indicator definitions for this SD = 11**

31 This SD is related to IMO's work in the efficiency of shipping or the facilitation of international maritime traffic. No less than 11 indicator definitions are envisaged to measure performance against this SD and, in this context, it may be noted that PIs 1, 2 and 3 (eight definitions related to accessions to conventions, entry into force and implementation and compliance, respectively) may not be appropriate since accession specifically to the FAL 1965, which is already in force, is covered by PI 20(a), while the IMO Audit Scheme (PI 3) does not yet extend to that Convention.

32 The number of IMO Member States that are Contracting Governments to FAL 1965 stands at 112, as of July 2008, or 67% of the membership – a small increase from 2007, to which may be added the successful outcome of many years of effort to ensure the formal institutionalization of the FAL Committee, which will take effect later in 2008. With respect to PIs 20(b) and (c), and for the reasons set out in annex 1 of this document, no data is yet available on differences registered by Contracting Governments with the Convention's requirements. However, in order to facilitate reporting, the related questionnaire to Contracting Governments could be turned into an online version and re-designed so that appropriate statistical analysis may be performed, and the same concept could eventually be applied to other reporting requirements under FAL 1965, for which no GISIS module is currently in place. In this context, based on Assembly resolution A.984(24) and relevant decisions of the FAL Committee, IMO has already established a GISIS module dealing with difficulties associated with the transportation of class 7 radioactive material. So far, 35 reports have been received and the system is open to receive other reports of shipments of dangerous goods. Once enough data has been populated, it could be used to assess how such difficulties might in future be further addressed by the relevant IMO bodies.

**Strategic Direction 9**

IMO will pay special attention to the shipping needs of small island developing States (SIDS) and the least developed countries (LDCs).

**The related performance indicator is: 14**  
**Total indicator definitions for this SD = 4**

33 While the TCC agreed with the Working Group that no specific PI was required to measure performance against this SD, resolution A.989(25) nevertheless relates it to PI 14 (delivery of technical assistance). The PI's four definitions do not, however, provide disaggregated information on IMO's support to SIDS and LDCs, which, instead, is found in the periodic ITPC reports. In this regard, the ITPC now includes a specific global programme to address the shipping needs of these two groups of countries during 2008-2009, in line with MDG 8, and subsequent iterations of this document will carry observations on results achieved.

**Strategic Direction 10**

IMO will establish goal-based standards for the design and construction of new ships.

**The related performance indicator is: 18**  
**Total indicator definitions for this SD = 1**

34 Annex 1 to this document sets out the status of progress made towards this SD (see PI 18) through the ongoing work of the MSC. As this SD is in principle finite, the time taken to adopt related SOLAS amendments may eventually be compared to cycle time (PI 16), as an indication of the Organization's performance in developing, not a treaty instrument, but a discrete package of regulatory measures.

**SECTION 4 – BROAD CATEGORY: ENHANCING THE PROFILE OF SHIPPING, QUALITY CULTURE AND ENVIRONMENTAL CONSCIENCE**

**Strategic Direction 11**

IMO, in partnership with other stakeholders, will seek to raise the profile of the safety, security and environmental records of shipping in the eyes of civil society by:

- .1 actively publicizing the vital importance of shipping as a safe, secure and environmentally sound mode of transport for goods and people, and underlining the role of the Organization in that regard; and
- .2 actively developing its community relations programmes.

**The related performance indicators are: 4(b), 5(b), 6, 7, 8, 10, 11, 14 and 17(b)  
Total indicator definitions for this SD = 16**

35 As previously recognized, the 16 PI definitions linked to this SD do not directly measure the Organization's performance in enhancing the profile of the safety, security and environmental records of shipping in the eyes of civil society but do, however, monitor some of the underlying factors that might adversely affect it. On that basis, the performance data on lives and ships lost (PIs 4 and 5), piracy and armed robbery (PI 7) and pollution-related incidents (PI 8) – particularly when there are spikes within the data range leading to adverse publicity – does impact negatively on the shipping's record, notwithstanding considerable IMO and industry efforts to counteract such impact, including factors such as zero security failures (PI 6); the high percentage of ITCP expenditure on environmental projects, the instigation of scientific studies to support regulatory environmental developments and the number of collaborative agreements in this field (PI 10); declining detention rates (PI 11); improved delivery of technical assistance (PI 14); and increased numbers of IGOs and NGOs (PI 17), all of which provide a positive indication of IMO working in partnership with others to enhance the underlying factors that affect the profile of shipping.

36 In this respect, the campaign to raise that profile has been maintained by IMO and the industry through a wide variety of media, including press articles, internet sites, speeches and participation in events such as ICP 9 at the United Nations, which concentrated this year on the theme of maritime security and safety, giving opportunity for IMO and the industry to showcase shipping's positive contribution to sustainable development and its good record. Such opportunities have also arisen with respect to the World Maritime Day themes of 2005 (International shipping: Carrier of world trade), 2006 (Technical co-operation: IMO's response to the 2005 World Summit), 2007 (IMO's response to current environmental challenges) and 2008 (IMO: 60 years in the service of shipping). The principal purpose of these has been to highlight the fact that the international shipping industry has taken on board its corporate social responsibilities and is the vehicle that carries over 90% of world trade safely, securely, efficiently and at a fraction of the environmental impact and cost of any other mode of bulk transportation.

37 This message has also formed the cornerstone of the many celebrations carried out by Member States and organizations in support of World Maritime Day, which is now celebrated by the Organization in a variety of ways. In London, the Secretariat now implements an action plan throughout the year addressing the agreed theme, which culminates in the Secretary-General's traditional reception for the diplomatic, maritime and wider community. In 2008, the highlight of the various activities planned were the celebrations marking the anniversaries of the adoption and entry into force of the IMO Convention, the 100 sessions of the Council, the anniversaries of the World Maritime University and the IMO International Maritime Law Institute and Organization's return to its Headquarters building – all of which attracted highly positive media coverage throughout the world.

38 Since the launch of the Secretariat's annual action plans in 2007, special promotional materials have been produced such events and also for the now well-established Parallel Events, which have been successfully held in Portugal, Singapore and Brazil during 2005-2007 with similar events now planned for Greece, USA and Argentina during 2008-2010. Over those same years, information was received from several countries on over 60 national World Maritime Day celebrations, and over 70 congratulatory messages were received by the Secretariat from States, organizations and individuals.

39 A further contributory aspect in raising the profile of shipping is the IMO Award for Exceptional Bravery at Sea, which was successfully introduced in 2007, with the initial winners being seafarers from Croatia and India, while the 2008 recipient is a seafarer from Brazil.

**Strategic Direction 12**

IMO will take the lead in enhancing the quality of shipping by:

- .1 encouraging the utilization of the best available techniques not entailing excessive costs, in all aspects of shipping;
- .2 encouraging proper management of ships;
- .3 promoting and enhancing the availability of, and access to, information – including casualty information – relating to ship safety and security (i.e. transparency);
- .4 ensuring that all stakeholders understand and accept their responsibilities regarding safe, secure and environmentally sound shipping by developing a “chain of responsibility concept” among them; and
- .5 identifying, correlating and evaluating the factors, including human interaction on board ships, that influence safety and security culture, and developing practical and effective mechanisms to address them.

**The related performance indicators are: 3, 11 and 12  
Total indicator definitions for this SD = 7**

40 Seven PI definitions are used to measure performance against SD 12 which deals with quality in shipping. The indicators show an increase in the willingness of Member States to be audited (PI 3), with some reports of audits being made publicly available. As previously mentioned, the FSI Sub-Committee is examining how best to use the findings of audit summary reports in the regulatory/implementation process and this too may add to the measurement of quality and to promoting transparency. In this regard, while it remains unclear from the PSC data itself (PIs 11 and 12) how the Organization takes a lead in enhancing quality, the PSC data reflects a measure of compliance with international standards and, since it shows a declining PSC detention rate, it may be assumed that overall quality, as a measure of such compliance, is improving, notwithstanding the high PSC non-compliance rates. Furthermore, through the work of the MSC and MEPC, IMO continues to make active use of and maintain FSA techniques, risk-based tools and its human element work, including the ongoing revision of STCW 1978 and amendments to the ISM Code and its related guidelines, for the purposes of developing and enhancing the highest practicable standards and quality management in shipping. In this respect, it may be useful to consider, linkages with ILO on adequate working and living conditions for crews, as this may be seen as another aspect of the quality of service.

41 The further development and public use of online GISIS modules, together with collaborative arrangements for data exchange/sharing with other providers of maritime information (for example, Equasis and UNCTAD), also provides a measure of the Organization's commitment to and progress towards transparency. In this regard, the appointment of a Statistical Officer to the Secretariat is already helping to enhance data availability and analysis, as is the continuing development of a strategic vision for GISIS, in the context of a holistic organizational policy on knowledge management. Also that same end, the Working Group may note that, recently, some UN bodies (principally those in Vienna) held an informal workshop to consider strategic planning issues and the possible establishment of a UN Strategic Planning Network. The IMO Secretariat has already expressed interest in participating in such a forum and it is expected that experience gained elsewhere in the UN System, as well as IMO participation in UNdata (an internet-based data service allowing users to search and download a variety of statistical resources from the United Nations System), will prove constructive for the further development of the Organization's Strategic and High-level Action Plans and the PIs, and for increased transparency.

**Strategic Direction 13**

IMO will seek to enhance environmental conscience within the shipping community by:

- .1 strengthening awareness of the need for a continuous reduction of the adverse impact of shipping on the environment;
- .2 promoting and enhancing the availability of, and access to, information relating to environmental protection (i.e. transparency); and
- .3 encouraging the use in shipping of the best available environmental technology not entailing excessive costs, in line with the goal of sustainable development.

**The related performance indicators are: 10, 11 and 12  
Total indicator definitions for this SD = 5**

42 Through its regulatory, technical assistance and public outreach work, IMO is indeed enhancing awareness of the need to reduce shipping's impact on the environment and the work of the MEPC on air pollutants and GHGs, for example, illustrates a constructive, often proactive, approach based on consensus among all involved in the chain of responsibility. The three indicators specifically on environmental conscience (PI 10) provide positive indication of performance against this SD, particularly in terms of funding, studies and partnerships, as do the activities carried out to date in relation to the campaign to raise the profile of shipping (see under SD 11) and the further development of the environmental modules of GISIS which, nevertheless, would benefit considerably from compliance with reporting requirements. The data on PSC (PIs 11 and 12) is, again, inconclusive because it does not disaggregate control actions related to marine environment protection from which to determine the level of compliance with environmental standards and, thereby, gauge whether environmental conscience within the shipping community is being enhanced. However, data on related deficiencies could eventually be extracted from the GISIS module on PSC.

43 There is no doubt, however, that the Organization's work, through intergovernmental bodies engaged in developing global standards and capacity for safe, secure and efficient shipping on clean oceans, is, nowadays, very much focused on environmental challenges, not least its contribution to worldwide efforts to address the phenomena of climate change and global warming. At the same time, IMO's work continues to recognize the connections between safety and security, on one hand, and marine environment protection, on the other (i.e. improvements in maritime safety and security benefit the marine environment by reducing the risks of pollution), and between safety, security, environmental protection and facilitation, on one hand, and sustainable development and the achievement of the MDGs, on the other, as demonstrated by the confirmed linkage between the ITCP and the MDGs in resolution A.1006(25). As a result, all IMO organs contribute, through their respective mandates, to addressing and raising environmental issues and consciousness.

#### **SECTION 4 – CONCLUSIONS**

44 The Working Group has previously recognized that, for a more comprehensive measurement of the Organization's performance against the agreed SDs, data on the PIs should be viewed in conjunction with information on the delivery of its biennial planned outputs, as set out in document CWGSP 8/4, covering the various regulatory, managerial, technical assistance and promotional activities of IMO.

45 In this regard, following its consideration of such matters, CWGSP 7 agreed to advise the Council that greater emphasis needs to be given to ongoing efforts in the following areas:

- .1 addressing the safety of non-Convention ships;
- .2 monitoring and acting on, as may be necessary, the unexpected increase in accidents, particularly in the tanker sector, which arose in late 2006/early 2007;
- .3 in this regard, continually strengthening IMO's role with respect to the human element;



- .4 improving the PSC non-compliance rate by promoting greater efforts by all parties in the chain of responsibility;
- .5 addressing the safety of life and navigation in waters affected by acts of piracy and armed robbery; and
- .6 promoting and raising the profile, quality and environmental consciousness of shipping, and ensuring that these are permanent tasks of all concerned.

46 Taking into account the data and analyses presented in this document, it is submitted that the foregoing areas continue to be valid for the Organization at this stage in the present biennium, to which may be added the considerable IMO efforts already made to address effectively the reduction of air pollutants from ships, and those currently ongoing for the reduction or limitation of GHG emissions.

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## ANNEX 3

## COMMENTS ON AND EXAMPLES OF METHODS TO MEASURE PERFORMANCE

1 Annexes 1 and 2 provide data and commentary on how the Organization's Performance Indicators (PIs) act as measurers of performance against the 13 Strategic Directions (SDs) set out in resolution A.989(25), together with a tentative analysis of the status of such performance. In this respect, the SDs relate, in general, to actions to be undertaken by IMO within very carefully defined areas of its mandate (i.e. "enhance *its* capacity-building programmes"), rather than within the broader context of the development of the international maritime sector (e.g., "enhance capacity-building") – a context that may be found, not in the SDs themselves, but in the IMO mission statement and the trends and challenges identified in the Strategic Plan. As a consequence, the following question may be asked: while the PIs measure performance against the SDs, what measures performance against the mission statement and the identified trends and challenges?

2 This annex attempts to provide some comment on how such a measurement might be defined, together with some examples of methodology, all of which might, in due course, lead to a rationalization of the structure of the current PIs. In so doing, the comments and examples provided herein seek to address the following questions (which may not be exhaustive):

- .1 How well do the IMO standards achieve their desired effect?
- .2 How well is the need to create/adapt standards recognized and action taken accordingly?
- .3 How well do the IMO Member States implement, comply with and enforce the IMO standards regime?
- .4 How well does IMO assist its Member States to implement, comply with and enforce its standards?
- .5 How effective and efficient is the work carried out to meet IMO's Strategic Directions?
- .6 How well does IMO perform in terms of public outreach and its obligations to the public?

3 The analyses in annexes 1 and 2 present some limitations of the existing PIs in measuring progress towards the SDs and, by extension, towards addressing the mission statement, the identified trends and challenges and the six preceding questions. These limitations may be summarized as follows:

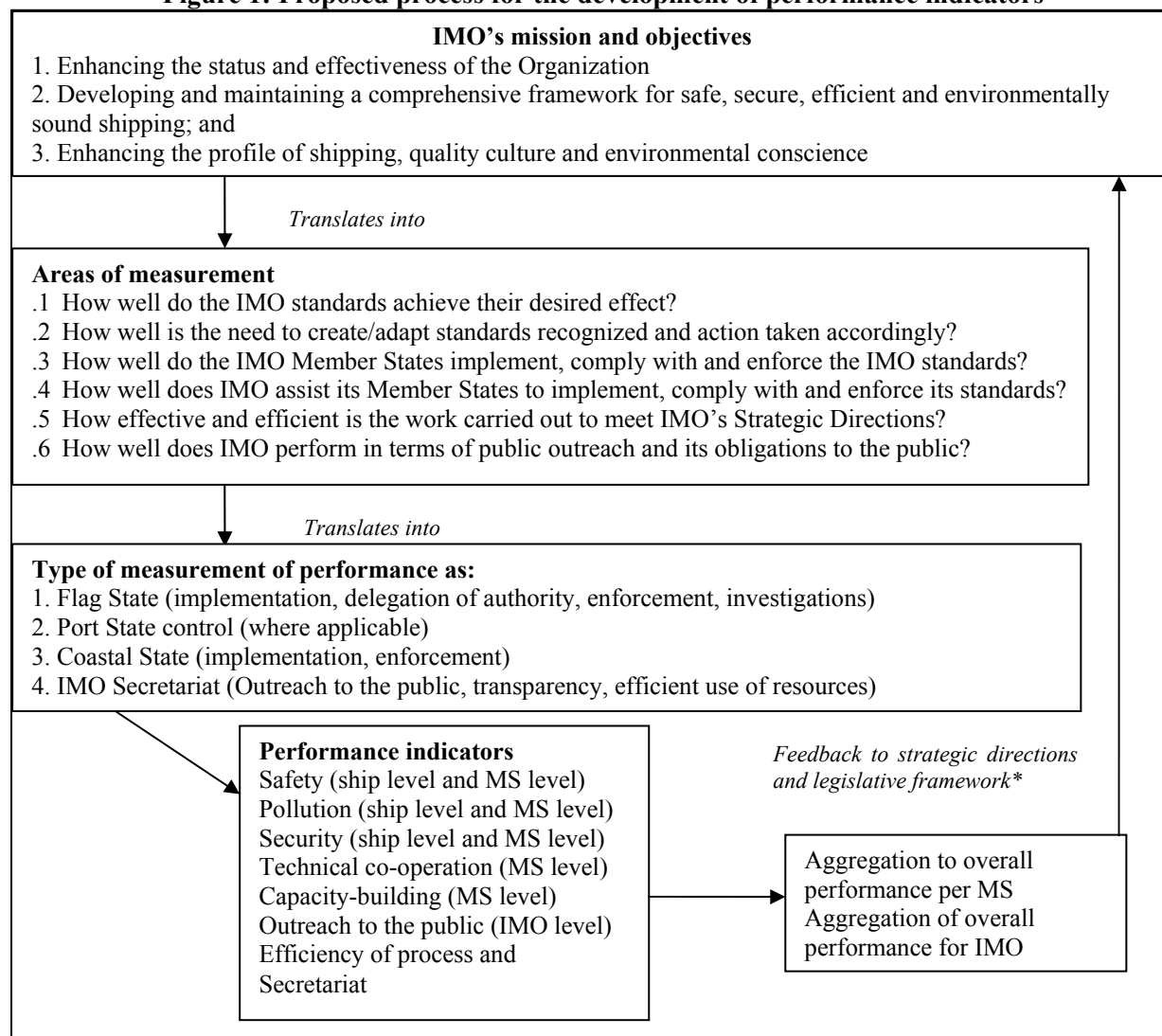
- .1 there is a need to engage more robustly with GISIS as the Organization's central data management system for the population of data and the consequently production and analysis of statistics;
- .2 only a low amount of raw data is available to IMO due, in part, to insufficient reporting by Member States, in particular on mandatory requirements;
- .3 there is a high number of PIs (42), which can only partly measure progress towards the SDs and only a few of which are used frequently;
- .4 only a low number of PIs is under the direct control of IMO (31%), which does not allow for an appropriate level of measurement of progress towards the SDs (as previously indicated, most of the PIs measure the performance of others, whereas the SDs are concerned very specifically with actions by IMO);
- .5 the statistics collated by IMO have a low level of complexity, which does not take interaction effects into account; and

.6 there is a need for a more holistic approach towards the development of the PIs, integrating them with relevant processes of the Organization such as its Risk Management Framework (RMF), or Formal Safety Assessment (FSA), in particular to identify acceptable levels of risk.

4 In this respect, Figure 1 below proposes a process which might be used to develop the PIs further. In so doing, IMO's overall mission is considered as the starting point, through the three broad categories under which the 13 SDs are currently grouped. The SD's are then translated into the six areas of measurement indicated in paragraph 2 above, and the consequential types of measurements that may be developed are then identified, leading also to the identification of potential PIs, depending on the types of measurements desired.

5 Due to the complexity of the subject at hand and the aforementioned limitations, the further examples that follow are based on only two out of the six proposed areas of measurement. In this regard, performance can be measured at several levels, including by type of ship and by Member State, where the ship type level can be aggregated to represent the whole fleet and then be brought into conjunction with the Member State level. The outcome could be presented in combined formats that give an overall assessment of performance.

**Figure 1: Proposed process for the development of performance indicators**



MS = Member State. \* Note: the feedback loop to identify where there are problems with respect to implementation, enforcement or regulations could also include aspects such as the RMF and FSA processes.

## Risk management and FSA

6 If under the above process the PIs identify weaknesses in the current regulatory regime that need corrective action or the creation of new standards, a system could be considered which compares the costs associated with the development of a regulation to the benefit thereof so as to “*maximize social welfare*”<sup>25</sup>. In this regard, and in the context of preventing accidents, for example, the “*optimum level of acceptable accidents*” should be determined – which is a function of risk assessment and management. Such a determination may be achieved by finding the minimum total cost associated with accidents, where the total is the sum of the costs related to the accident itself and of preventing the accident in the first place. While this concept is not taken into consideration in the examples that follow, the PIs could serve to determine this optimum quantity.

7 As the Working Group is aware, C 100 approved the Organization’s formal Risk Management Framework, which includes a risk management process currently applicable to “internal governance” activities, although the Council Risk Review, Management and Reporting Working Group (CWGRM) is to consider, during the next biennium, the desirability of applying the RMF across all elements of the Organization’s Strategic and High-level Action Plans, and the mechanism by which this might be achieved. In this context, the FSA Guidelines provide a rational and systematic process for assessing, proactively, risks relating to maritime safety and the protection of the marine environment and for evaluating the costs and benefits of options for reducing such risks. Accordingly, in considering further how risk management may be associated with the development of the Strategic and High-level Action Plans, in particular with respect to the identification of appropriate tolerances, the CWGRM and CWGSP will no doubt wish to consider jointly how the PIs may be used for that purpose.

## Examples for the development of performance indicators

8 Table 1 lists various methods which can be used to measure flag State compliance, providing a short description of the measurement variables as well as the level of complexity. The more sophisticated the method, the higher the level of accuracy that can be achieved. The list of methods is not exhaustive but should only demonstrate the various options that exist with the respective level of complexity, their benefits and drawbacks.

**Table 1: Example of methods to measure compliance**

Method	Measurement variable	Complexity	Benefits (B)/Drawbacks (D)
IMO PIs	Number of MS which are willing to undergo an audit	Low complexity	B: simple D: does not provide information on compliance
Excess Factor (EF)	Based on detentions and number of inspections	Low complexity	B: relatively simple D: problems with small sample sizes
Russian Method (RM)	Based on detentions, number of inspections, deficiencies, bans – introduces the concept of quality	Medium complexity	B: more accurate measurement of performance B: improved method over EF with respect to small sample sizes D: more complex statistical method
Probabilistic Method (PR) - probability of detention - probability of casualty - probability of survival	Combination of relevant variables such as inspection information, casualty information, economic variables, ship particular information	High complexity	B: most accurate measurement of performance by taking interaction effects into account B: does not need to be performed each year but only for time frames (3-5 year period) B: can be used in FSA D: requires raw data and large datasets

<sup>25</sup> Goulielmos AM and Giziakis K, 1998, Treatment of uncompensated cost of marine accidents in a model of welfare economics, Disaster Prevention and Management, Volume 7, Number 3, pp 183-187.

9 The current data sources used for the PIs do not always provide raw data and, because of such limitations, the indicators do not reflect the best possible method which can be used to filter out effects of interest. Most indicators are based on descriptive statistics (e.g., tables with numbers that change over a certain time period) and no interaction effects are taken into account. Given that the shipping industry is a global one and its legislative framework is complex, it may be useful to explore more sophisticated methods to filter out effects of interest which can be used to measure overall performance or particular areas of interest.

10 A simple example is given here to demonstrate this line of thinking. One of the current methods to measure compliance by flag State Administrations within the Paris and Tokyo MoUs is based on the number of inspections and the number of detentions, but no other variables or data obtained during an inspection is used. By only using these two parameters, one ignores the effect of other variables of interest, such as basic ship characteristics (e.g., ship type, age and GT), towards the probability of an incident<sup>26</sup>. Not incorporating other factors which can influence the safety quality of a vessel could distort the measurement of compliance by the flag State. A recent study<sup>27</sup> has published evidence of these effects, based on econometric analysis, showing that while the hazard rate increases for tanker, dry bulk, general cargo, container and passenger vessels, the baseline hazard first decreases until approximately age 15 when it starts to increase in large steps. Similar results with either positive or negative effect can be found for ship types, classification societies, class withdrawals, safety inspections and even previous accidents, while economic variables such as freight rates can also have an effect, where an increase in earnings for tanker, dry bulk and other vessels decreases the incidence rate but increases it for container vessels.

11 The foregoing example shows the complexity of interactions of variables, of which the effect of the flag State itself is but one. This can best be filtered out if data is obtained on a ship type level and if various data sources can be combined to develop the best possible measurement. The methods currently used for the PIs cannot filter out this particular effect since only aggregated data is used and ways should be explored to overcome such limitations to the benefit of the IMO Member States and the shipping industry.

12 Similar to the first example, Table 2 below provides a list of possible methods, their measurement variables and complexity for the measurement of the effectiveness of the regulatory framework. In terms of the IMO instruments, the PIs currently measure their cycle time (PI 16 – how long did it take to develop/adopt them), acceptance by Member States (PI 1 – how many are party) and entry into force (PI 2 – how many are now international law), which does not provide sufficient information to produce relevant measurement variables or correct for other factors that can influence the measurement of the effectiveness of regulations in achieving their aims.

13 For the last method shown in the table, an attempt is made to filter out the effect of a certain convention, corrected by all other factors such as industry's safety inspections, shipping economic cycles and changes to the world fleet over time. The results are based on the probability of survival<sup>28</sup> and are provided in the two graphs below, where the left hand graph shows the results of the probability of survival calculated on the basis of ship level data for approximately 52,000 vessels. The results are then aggregated based on two scenarios, namely, the average probability of survival of all vessels at the time a certain convention is in force, and the average probability of survival of all vessels when it was not yet in force. The two are then compared and the difference is shown in the right hand graph for selected conventions (MARPOL was not included in this example).

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<sup>26</sup> This was considered but not taken up by the two MoUs (see PSCC 37/7.2 by the Russian Federation dated 4 March 2004, Review of calculation method for Black, Grey and White Lists).

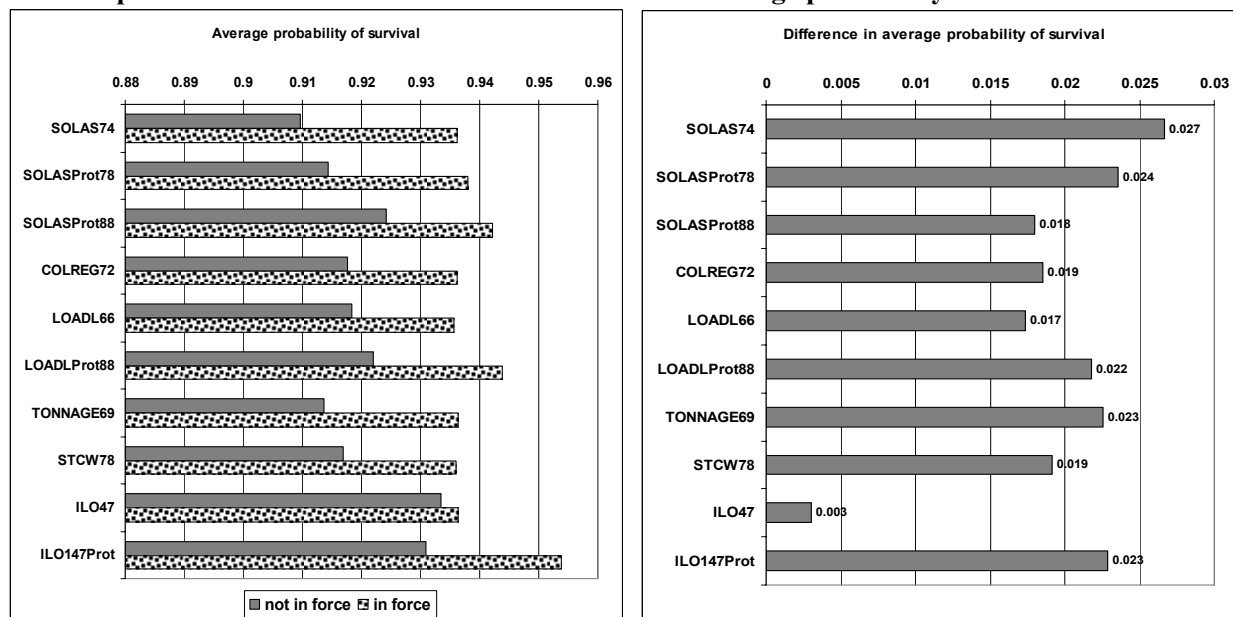
<sup>27</sup> Bijwaard G. and Knapp S. (2008), Econometric Analysis of Ship Life Cycles: Are ship safety inspections effective? Econometric Institute Working Paper 2008-Nr. 2: <http://hdl.handle.net/1765/11890>.

<sup>28</sup> Based on the formula provided by Bijwaard G. and Knapp (2008) for the hazard rate and applied to approximately 52,000 ships.

**Table 2: Example of methods to measure desired effects of conventions**

Method	Measurement variable	Complexity	Benefits (B) Drawbacks (D)
IMO PIs	Cycle time States party Non compliance	Low complexity	B: simple D: does not provide any information on the effectiveness of regulations
Descriptive Statistics	Number of deficiencies found per convention Number of casualties related to areas of conventions	Low complexity once new coding is developed and applied	B: simple if data is populated D: does not correct for other effects which can influence the measurement variable
Method which can measure the effectiveness of conventions	Combination of variables and data which can filter out desired effects – this could include ship information, casualties, costs of incidents	High complexity	B: can filter out the effect of regulations B: can be combined with costs to find optimum level of cost versus benefit B: does not need to be applied each year but in time frames D: requires large datasets

**Example to measure the effect of conventions on the average probability of survival of a vessel**



Source: based Bijwaard and Knapp (2008)

14 A method that could measure directly the effectiveness of regulations in achieving their aims would, nevertheless, be preferable. Ideally, conventions should be broken down into sets of regulations rather than being measured as a whole and distinctions between ship types should also be made. For the purposes of demonstrating the complexity of the subject at hand, the example set out above gives an overall indication of the indirect effect of certain conventions based on duration analysis, and shows how more sophisticated methods could be used to filter out effects of interest. That being said, applying such methods requires large datasets and can only be conducted in time intervals and not on a yearly basis.

### Future options

15 There are several options on how to proceed depending on the level of sophistication to be developed. These are:

- .1 *keep the current level of sophistication*: if the PIs are kept at the current level of sophistication, then no action is required; and
- .2 *improve the level of sophistication*: if a more sophisticated method of generating statistics which can measure performance is desirable, then one way forward is to first decide on the level of performance measurement to be exercised by IMO, and then concentrate on fewer indicators which can measure performance but use more sophisticated methods based on combined datasets over longer time frames (e.g., every 3 to 5 years instead of every year) and which can represent a more accurate state of the shipping industry and the effectiveness of IMO's legislative framework.

16 Assuming that the level of sophistication should be improved so as to maximize the effort put into the production and analysis of the PIs and ensure that they serve their intended purposes, then the data provided to IMO based on mandatory reporting requirements or other non-mandatory decisions of IMO bodies should represent the best possible data source in the future for the development of the PIs. Accordingly, reporting should be further encouraged through GISIS so that statistics can be produced based on raw data. When data is missing due to the lack of reporting to IMO, outside sources might be used to complement the database until an acceptable level of data is populated. The following steps may therefore be considered in the order to enhance development of the PIs so that performance can be measured and relevant feedback be made to improve the regulatory framework:

- .1 The further development of GISIS as the Organization's centralized data management system should be encouraged and supported, providing a comprehensive data platform based on a harmonized coding system, with relevant interfaces to other internal and external systems (e.g., other UN, Member State or industry systems).
- .2 Within GISIS, a separate module on the PIs could be developed.
- .3 The population of data by Member States to GISIS should be encouraged and, where necessary, data should be complemented by external sources.
- .4 Measurements of performance in the areas of safety, security, pollution, facilitation, human element and effectiveness/adaptability of the regulatory framework should be developed at the shipboard level and at the flag, port and coastal State level, with a view to capturing and analysing data on implementation and compliance.
- .5 Linkages with the Organization's Risk Management Framework and FSA Guidelines should be defined.

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