



# GESAMP

Group of Experts on the  
Scientific Aspects of Marine  
Environmental Protection

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## REPORT OF THE ADMINISTRATIVE SECRETARY OF GESAMP

### Activities and Achievements of Sponsoring Organizations of GESAMP since the 38<sup>th</sup> session

#### INTRODUCTION

##### Executive Committee

1 Since the 38<sup>th</sup> session of GESAMP, the Executive Committee has not been as active as in recent years, partly due to the current and ongoing personnel changes within the GESAMP Office and the Administrative Secretariat<sup>1</sup> and lack of resources. The Executive Committee has not met in the intersessional period, but occasional e-mail communication took place with individual members of the Executive Committee, including the Chairman and Vice-Chairmen of GESAMP.

2 GESAMP 39 will be informed of the outcomes of the next session of ExCom which will be held on Sunday, 15 April 2012.

##### Institutional arrangements for GESAMP

###### *Memorandum of Understanding (MoU) on GESAMP*

3 In 2011, it was noted that in light of the changes in the GESAMP secretariat at IMO, the incoming 'GESAMP team' at IMO would look again at all options for an agreement, drawing on: (1) existing draft materials; (2) the current GESAMP MoU in place since 1993; and (3) the current practice of bilateral agreements between UN Sponsoring Organizations to transfer funds for GESAMP activities. Some options will be presented to ExCom reflecting current thinking with regard to a flexible and practical MoU.

###### *GESAMP Office*

4 The GESAMP Office, established at IMO as a co-sponsoring arrangement between the current sponsors of GESAMP, has not been fully staffed since the support arrangement with Swedish Agency for Development Cooperation (Sida) expired on 31 December 2010. IMO has since advertised the position as an Associated Professional Officer assigned to the GESAMP Office<sup>2</sup>.

5 Since May 2011, the main activities of the GESAMP Office have been the following:

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1 Mr. René Coenen retired from IMO and as Administrative Secretary of GESAMP on 31 July 2011. Mr. Stefan Micallef assumed the Administrative Secretary position on 1 January 2012 from Mr. Jo Espinoza-Ferrey, who was transferred internally within IMO.

2 IMO provides the time of the Administrative Secretary and Technical Secretary (extended support to the Office, in addition to the normal duties of the Technical Secretary) and a General Service Staff member as an in-kind contribution. Furthermore, IMO provides office space and equipment, storage, publication support etc. as well as financial and legal advice and support.

- .1 supporting IAEA in the aftermath of the GESAMP 38 session in 2011;
- .2 supporting the activities of the existing Working Groups of GESAMP, including the various peer review activities;
- .3 assisting in the establishment of the new Working Group 40 on Microplastics and preparing the legal and financial framework for the terms of agreement between PlasticsEurope, the American Chemistry Council and GESAMP;
- .4 implementation of the GESAMP Funding Strategy, in co-ordination with the Chairman of GESAMP;
- .5 assisting in the publication of four GESAMP publications;
- .6 training on and maintenance of the GESAMP Website and communication with its users, as and when required;
- .7 supporting the vetting process of new candidates for the GESAMP Pool of Experts in co-ordination with the Chairman of GESAMP; and
- .8 preparation of the current session of GESAMP and the side-event on Hypoxia.

## **ACTIVITIES AND ACHIEVEMENTS OF THE SPONSORING ORGANIZATIONS OF GESAMP**

6 The Administrative Secretary of GESAMP, traditionally, reports on the activities and achievements of the Sponsoring Organizations of GESAMP with the aim to provide GESAMP with an account of their involvement in protection of the marine environment and interest in the activities GESAMP undertakes. This document provides a summary of the Organizations' achievements since GESAMP 38 (April 2011) from IAEA, IMO, IOC/UNESCO, UN/DOALOS, UNEP, and UNIDO. FAO has not been able to submit a contribution this time.

### **IAEA**

#### **Report on activities of the IAEA Environment Laboratories in relation to the marine environment for the year 2011**

##### **Fukushima Daiichi Nuclear Power Station Accident on 11 March 2011**

7 For the IAEA the year 2011 was marked by the major nuclear accident at the nuclear power stations Fukushima Daiichi in Japan after a major earthquake of the magnitude of 9.0 and the effect of the subsequent tsunami on 11 March 2011. About 40 minutes after the Fukushima Daiichi reactors were shut down, several massive tsunami waves crashed over the six-Unit plant's protective wall, forcing seawater deep into the plant. Emergency generators and some of the associated electrical equipment were flooded and only one emergency generator survived the onslaught, providing power to Units five and six. The combined effects of the earthquake and tsunami devastated the coastal area, exacting a dreadful toll: almost 16 000 lives were lost, over 8 000 people remain missing, and more than 679 000 homes were destroyed or damaged and about 160 000 people had to be evacuated from their homes due to the high deposition of radioactive contamination on land. However, it needs to be emphasised that up to now nobody died from radiation after this accident.

##### *IAEA Emergency Response*

8 In Vienna, Austria, the IAEA's International Seismic Safety Centre (ISSC) received a notification from a US Geological Survey system that an earthquake in Japan had occurred. The emergency response staff at the IAEA's Incident and Emergency Centre (IEC) was alerted and went into "full response mode" and offered the Japanese Government assistance on behalf of the IAEA. Experts in nuclear safety and radiation protection from throughout the Agency converged to support the IEC response. Member States offered technical support, which the IEC coordinated. From the early hours of the accident, the Agency also delivered briefings and updates to IAEA Member States, international organizations, the media and the public. The Terrestrial Environment Laboratory (TEL) in Seibersdorf of the IAEA received hundreds of samples (snow, soil, plants, food, water) from Japan for analysis to assist Japanese authorities in assessing the radiological consequences for the population.

### *Marine Survey*

9 As a consequent of the accident, significant amounts of radioactively contaminated cooling water escaped from the Fukushima Daiichi reactor buildings through cracks caused by the earthquake into the sea, raising concern about the radioactivity's harmful effects on marine life and on seafood destined for human and animal consumption. Japan initiated an intense programme to monitor both coastal and off-shore levels of seawater contamination at the discharge area, as well as at distances 10 and 30 kilometres from the reactors. At Japan's request, an IAEA expert in marine monitoring programs joined the Japanese team aboard the R/V MIRAI for advice. Experts of the IAEA Laboratories in Monaco were involved in the briefings to the Member States by reviewing the measurements and monitoring results of Japanese authorities for the consequences for the marine environment.

### *Studying Marine Contamination*

10 Since the accident, the Japanese authorities monitored the marine radioactivity near the Plant site. Countries in the Asia and Pacific region requested the IAEA's support for monitoring radioactivity. In June 2011, the IAEA Board of Governors approved an IAEA Regional Cooperation project to support countries in the Asia and Pacific region. Twenty-four countries are participating in the multi-year project "Marine Benchmark Study on the Possible Impact of the Fukushima Radioactive Releases in the Asia-Pacific Region". The project started 1 July 2011 and is supported by extra-budgetary contributions from the USA, Australia, New Zealand and Japan and is planned to be completed by end of 2014.

11 The project has the aim to harmonize the determination of various radioisotopes in marine waters, marine plants and animal life, sediments and suspended matter, to ensure a comparable and verifiable assessment across the Pacific Ocean. Quality assurance namely by proficiency tests and interlaboratory exercises will be applied to obtain high standard results. A first training on this issue was organised in November 2011 in the premises of the IAEA in Monaco.

12 The IAEA received water samples from a cruise organised by the Woods Hole Oceanographic Institution in June 2011 in order to study the dispersion and levels of radionuclides mainly in the Kuroshio Current. As expected, transport of water masses and dilution has decreased the extremely high levels at the discharge points of the Fukushima Daiichi reactors already to concentrations which are below any alarming levels, even at the area about 600 km off-shore, where the highest concentrations were detected. It is expected that this contamination will be transported by the Kuroshio Current in the Pacific Ocean and can be used to trace the labelled water masses for the coming years.

### *Modelling activities of the Fukushima releases*

13 The Environment Laboratories in Monaco were also in contact with a number of centres to set up models in order to simulate the dispersion of the discharges. The centre SIROCCO of the University of Toulouse was chosen, because this centre was able to set up rapidly an oceanographic hydro-dynamic model for the Pacific. The necessary bathymetric data of the Japanese coast were provided by the International Hydrographic Bureau in Monaco (BHI – IHB) to the IAEA and forwarded to the SIROCCO group. The simulation both of the aerial deposition and from the discharge and the propagation of the contamination plume in the Pacific is available in the Internet by their Fukushima Forecast Bulletin: (<http://sirocco.omp.obs-mip.fr/outils/Symphonie/Produits/Japan/SymphoniePreviJapan.htm>).

### **Harmful Algal Blooms**

14 Within the IAEA Coordinated Research Project (CPR) "Applications of Radiotracer and Radioassay Technologies to Seafood Safety Assessment" a framework of collective dataset was prepared of quality-assured measurements of contaminants in selected seafood of value to developing countries. These data were used in the recent Cd risk assessment for CODEX ALMENTARIUS. They contribute to the overall picture on occurrence which then feeds into the exposure assessment. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) and/or related expert committee assessments of seafood contaminants based on the CRP data

provided, are expected to lead to the potential establishment of Codex maximum levels in seafood, and the facilitation of greater export in seafood particularly from developing to developed countries (further information is available at [www-crp.iaea.org/html/rifa-search-crpbycrp.asp?](http://www-crp.iaea.org/html/rifa-search-crpbycrp.asp?) and [www-naweb.iaea.org/nafa/fep/public/fep-nl-12-2.pdf](http://www-naweb.iaea.org/nafa/fep/public/fep-nl-12-2.pdf)).

### **Ocean Acidification**

15 Conclusions and recommendations for decision makers were published from the outcomes of the 2010 workshop entitled “Bridging the Gap between Ocean Acidification Impacts and Economic Valuation” which was held at Oceanographic Museum in Monaco. The successes of the workshop included establishing a baseline of scientific and economic information, integrating the language and concepts of natural science and economics, and initiating collaborations among researchers in dissimilar but complimentary fields of study. The 2nd International Workshop on Environmental and Economic Impacts of Ocean Acidification has been scheduled for 11 to 13 November, 2012. Further information is available about the Monaco Environment and Economic Group and the ocean acidification workshop at [www.iaea.org/monaco/page.php?page=2251](http://www.iaea.org/monaco/page.php?page=2251).

16 A consultancy meeting of 15 scientific and economic experts from the IAEA, CSM, FAO, IOC, CIESM, the UBC Fisheries Centre, and the Kiel Institute for World Economy was held in Monaco from 10 to 14 October 2011 as a preparation for a planned Coordinated Research Project, and produced 17 recommendations for priority research in socio-economics of ocean acidification. The Coordinated Research Project has been approved by the IAEA, and an initial research coordination meeting is scheduled for 9 to 11 July, 2012. Three themes of ocean acidification will be investigated to address gaps in knowledge and enhance capacity in developing countries: (1) socio-economic vulnerability assessments (2) coupled regional bio-economic model scenarios (3) biological impact information analysis and development through multi-factorial, high CO<sub>2</sub> experiments with economically relevant species.

17 In parallel, IAEA-EL develops tools and studies in assessing biological effects of variable pCO<sub>2</sub> on the growth, survival and pollutants bioaccumulation in organisms of high ecological and economic interests.

### **Capacity Building and support to Member States on Quality Assurance Issues**

18 The IAEA Environment Laboratories support Member States for the development and improvement of their ecosystem monitoring programmes and research through application of basic metrological concepts (traceability, validation, uncertainty) as an integral part of the analytical work.

19 Trainings and Education Activities in 2011 include:

- Regional Training Course on “Impact of Oil Spill on Marine Environment”, IAEA (Ref: C7-RAS-7.020-001). The primary target of this training course was to establish a networking for oil-fingerprinting identification with of the ARASIA countries.
- Within the TC-project INT/7/018 Inter-regional Technical Co-operation Project for Supporting Capacity Building in Marine Environmental Protection an “Interregional Advanced Training Course on Marine Radioactivity: Analytical Techniques and Quality Management” was held at the Karlsruhe Institute of Technology (KIT) attended by 22 participants from 15 countries.
- Within the TC-Project RCA 07/021 “Marine Benchmark Study on the Possible Impact of the Fukushima Radioactive Releases in the Asia-Pacific Region” training on Quality Management and Assurance and data Management was held in Monaco.
- Workshop on “Marine Environmental Radioactivity Data Reporting” with participants from the OSPAR laboratories in February 2011. The IAEA Marine Data Base MARiS is the data base for OSPAR of concentration of radioactive substances.

- Joint EC/IAEA Training course on nuclear Science with Nucleonica in Monaco in November 2011.
- Technical Visit on "Measurement of natural radionuclides in environmental samples, NORMS and TENORMs<sup>3</sup> by gamma spectrometry: experimental challenges and methodologies"

#### **ALMERA<sup>4</sup>**

20 Methods for the measurement and assessment of marine radioactivity were introduced to the network by representatives of the regional networks of marine radioactivity monitoring laboratories on the occasion of the 8th ALMERA coordination meeting held in Vienna, 5-7 September 2012

#### **Provision of reference products for the marine environment and laboratory performance support by Proficiency Tests and Interlaboratory Comparison Exercises**

21 Several certified Reference Materials from marine origin were produced in the last two years as well as proficiency tests. Those were mussel tissue, marine sediment and a seaweed sample. The Certification Committee ensures the high level standards of the analytical capabilities in the Member States. Information on RM can be obtained in the IAEA website: <http://www.iaea.org/programmes/aqcs/>.

#### **IMO**

##### **Implementation of the Anti-Fouling Systems**

22 The IMO Anti-Fouling Systems (AFS) Convention, which entered into force on 17 September 2008, prohibits the use of harmful organotin compounds in anti-fouling paints used on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. To date, the Convention has 59 Parties, representing 79.17% of the world's gross tonnage. Standardized adherence to the Convention's guidelines is required for its effective implementation and enforcement, however, in order to achieve this; all the interested stakeholders require a clear understanding of the process of inspection of ships. Therefore, in July 2011, MEPC 62 adopted the Guidelines for inspection of anti-fouling systems on ships (MEPC.208(62)).

##### **Implementation of the Ballast Water Management Convention**

23 The Ballast Water Management Convention was adopted in February 2004 and aims to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. The Convention will enter into force 12 months after the date on which not less than 30 States, the combined merchant fleet of which constitute not less than 35% of the world's gross tonnage, have ratified it. By end February 2012 a total of 33 states, representing 26.46% of the world merchant fleet tonnage, have ratified.

24 In July 2011, MEPC 62 adopted the Procedure for approving other methods of ballast water management in accordance with regulation B-3.7 of the BWM Convention (MEPC.206(62)). A new guidance document on Scaling of ballast water management systems was also approved by the meeting and has been disseminated as BWM circular BWM.2/Circ.33. MEPC 62 also agreed to grant final approval to two additional ballast water management systems.

25 In March 2012, MEPC 63. granted basic approval to three, and final approval to five ballast water management systems that make use of active substances, after considering the

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<sup>3</sup> NORM and TENORM: Natural Occurring Radionuclides Material and Technically Enhanced NORM

<sup>4</sup> ALMERA: Network of Analytical Laboratories for the Measurement of Environmental Radioactivity

reports of the 18th, 19th and 20th meetings of the Joint Group of Experts on the Scientific Aspects of Marine Environment Protection (GESAMP) Ballast Water Working Group, which took place 2011. MEPC noted that there were now 21 type-approved systems available. MEPC also adopted the revised Guidelines on design and construction to facilitate sediment control on ships (G12), one of the 14 sets of guidelines developed to assist in the implementation of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention). The revised Guidelines (G12) update the previous version adopted in 2006.

### **International measures to minimizing the transfer of invasive aquatic species through biofouling of ships**

26 In July 2011 MEPC 62 adopted resolution MEPC.207(62) Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species. In adopting the Guidelines Member States of the IMO made a clear commitment to minimizing the transfer of invasive aquatic species by shipping. Studies have shown that biofouling is a significant vector for the transfer of invasive aquatic species. Biofouling on ships entering the waters of States may result in the establishment of invasive aquatic species which may pose threats to human, animal and plant life, economic and cultural activities and the aquatic environment.

### **Ship recycling**

27 The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, 2009 (Hong Kong Convention) opened for signature until 31 August 2010. France, Italy, Netherlands, Turkey and Saint Kitts & Nevis signed the Convention, subject to ratification. In 2011 MEPC 62 amended the "2011 Guidelines for the Development of the Inventory of Hazardous Material" (resolution MEPC.197(62)) and adopted the "2011 Guidelines for the Development of the Ship Recycling Plan" by resolution MEPC.196(62).

28 In 2012 MEPC 63 adopted the 2012 Guidelines for Safe and Environmentally Sound Ship Recycling and the 2012 Guidelines for the Authorization of Ship Recycling Facilities. Work on two further documents: (1) Guidelines for Survey and Certification under the Hong Kong Convention", and (2) Guidelines for Inspection of Ships under the Hong Kong Convention is expected to be completed in October 2012 (MEPC 64) or by the summer of 2013 (MEPC 65).

### **Implementation of the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), and the Protocol on Preparedness Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol)**

#### *Manuals and guidance documents*

29 At MEPC 63, four manuals, developed to through the OPRC-HNS Technical Group to provide guidance to countries in improving their national and regional systems of pollution preparedness and response. These are the Guidance on sensitivity mapping for oil spill response, to be published as joint IMO/IPIECA publication, as part of the IMO/IPIECA Report Series; the Guideline for oil spill response in fast currents; an Operational guide on the use of sorbents for spill response; and Oil spill waste management decision support tool.

#### *Training*

30 Further to the development of two model courses for preparedness and response to HNS incident, the OPRC-HNS Technical Group has commenced work on the revision of the OPRC Model Courses, levels 1 to 3. These courses form the basis for training programmes for improved preparedness and response to oil pollution incidents around the world. The revision aims to update the information based on recent technological developments and modernize the course materials and audiovisual aids.

#### *Promoting R&D, technological development and international best practice*

31 IMO, as a regular contributor to the triennial conference series on management of marine pollution incidents, most recently co-sponsored Interspill 2012, which took place in

March 2012. The conference, which is one of the three triennial international oil spill conferences, brought together practitioners, technical experts, and regulators from around the world to share information on the state of the art in oil pollution preparedness and response. To this end, IMO, through its Integrated Technical Cooperation Programme, sponsored the participation of eight individuals from developing nations to attend, and organized a short course on response to HNS in the marine environment.

#### *Sharing of best practices and lessons learned*

32 The OPRC-HNS Technical Group has, as a regular part of its agenda, a review of recent cases of pollution incidents, with a view to sharing lessons learned and best practice in the response to pollution incidents. At its thirteenth session, the Group considered information on a series of cases, notably, the *Costa Concordia* incident and follow-up actions, the *MT Rena* incident, which occurred off the coast of New Zealand and resulted in a major oil spill and the loss of numerous containers, and the *Golden Trader* incident, that occurred off the coast of Denmark resulting in a spill that impacted the Swedish coastline.

#### **Major Projects**

##### *GEF-IBRD-IMO Marine Electronic Highway (MEH) Demonstration Project*

33 The Project has progressed significantly over the past several months with the establishment and operation of the MEH Data Centre IT System (MIS). At present, the MIS is undergoing testing on data feed and exchange linked to remote island stations for data on tides, wind and current. Registered users can access those data from [www.mehsomes.com](http://www.mehsomes.com). In terms of Environmental Marine Information Overlays, the MIS is currently being upgraded to enhance its technical functionalities, particularly to display maps and carry out basic mathematical and topological operations.

34 Sea trials using ships will be carried in late March 2012 for 4 weeks to test the usefulness of data being generated through MIS in the context of navigation as well as the access and remote Internet connectivity between ship to shore facilities. The sea trial will be completed by May to be followed in parallel by user survey and integration of oil spill and hydrodynamic models with the MIS. The Project will be technically closed by 30 June 2012.

##### *GEF-UNDP-IMO GloBallast Partnerships*

35 At the global level two new training packages were finalized. One package focuses on the compliance monitoring and enforcement (CME) aspects of the BWM Convention and was developed in cooperation with the World Maritime University (WMU) and the International Union for the Conservation of Nature (IUCN), with support from the ITPC, the Total Foundation and the Maritime and Port Authority of Singapore. In addition, an advanced training course on the operational aspects of BWM, funded by the GloBallast Partnerships Project, the Global Industry Alliance, and the IMO TC Programme, has been finalized and is currently being translated into Russian for its first delivery later this year, in the framework of the partnership between IMO and the European Bank for Reconstruction and Development (EBRD).

36 At the regional level, several training activities have been carried out, in most cases with a substantial support from the IMO TC Programme and in partnership with the Regional Coordinating Organizations. A regional training course on the legal implementation of the BWM Convention, with particular focus on CME, was delivered in the South Pacific region in cooperation with SPREP. The training was held in Fiji from 16 to 18 May 2011. The finalized training package on CME was delivered twice, from 13 to 14 September in Togo for the Guinea Current Large Marine Ecosystem (GCLME) sub-region (in cooperation with the Interim Guinea Current Commission) and from 14 to 15 November in Jamaica for the Wider Caribbean region (in cooperation with RAC/REMPEITC-Caribe and the Caribbean Environment Programme of UNEP).

37 The fourth IMO-GloBallast Research and Development (R&D) Forum was hosted by Turkey in Istanbul from 26 to 28 October 2011. The Forum, gathering around 150 experts, focused on the challenges of compliance monitoring and enforcement from an R&D perspective.

Back-to-back with this Forum, the second GloBallast-IMarEST Shipbuilders' Forum was convened, as well as the third meeting of the test facilities involved in testing of ballast water treatment technologies.

38 A further focus of the GloBallast Partnerships Project in 2011 was to make progress at the national level. By joining the fast-track of the Project, Panama became the fifteenth LPC of the Project and the fifth in the Wider Caribbean region. The LPCs have been given the financial support for a number of tasks, in order to facilitate the domestication and implementation of the BWM Convention. These activities include a national ballast water status assessment, an economic assessment of the implementation of the Convention, the development of a national BWM strategy, and a review and drafting of national BWM legislation. Most LPCs are on track to adopt their national strategies during late 2012.

#### **Amendments to MARPOL Annex I (Oil) - Development of a mandatory Polar Code**

39 Recognizing the increased interest in the polar regions with the projected growth in shipping traffic therein and the need to further promote the safety of navigation and prevention of pollution from ship operations, IMO has decided to develop a mandatory Code for ships operating in polar waters. The work is currently being undertaken by the DE Sub-Committee and is aimed to cover the full range of design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to ships operating in the inhospitable waters. MEPC 63 discussed various options of how best to make the Code mandatory in the legal framework of the Organization's conventions, which should be of great interest to all parties involved in this work.

#### **Amendments to MARPOL Annex IV (Sewage)**

40 MEPC 62 adopted amendments to MARPOL Annex IV by resolution MEPC.200(62), designating the Baltic Sea as a Special Area and prohibiting the discharge of sewage effluent from passenger ships within those areas, unless there is a sewage treatment plant in operation that is type approved by the Administration in accordance with standards and test methods to be developed by the Organization, implementing additional effluent standards to those applicable to other ships regarding the nitrogen and the phosphorus concentration. In view of these new requirements the revised Guidelines on Implementation of effluent Standards and Performance Tests for Sewage Treatment Plants (resolution MEPC.159(55)) needed updating and DE 55 established a correspondence group to accomplish this task. The correspondence group made good progress on the development of the guidelines and the amendments to the guidelines will most likely be finalized at DE 56, in which case they will be submitted to MEPC for approval and adoption at its 64th session.

#### **Review of MARPOL Annex V (Garbage)**

41 The revised MARPOL Annex V which was adopted by resolution MEPC.201(62), with an entry into force date of 1 January 2013, establishes a prohibition on the discharge of all types of garbage into the sea except in the cases explicitly permitted under the Annex. The 2012 Guidelines for the Implementation of MARPOL Annex V and the Guidelines for the Development of Garbage Management Plans were adopted at MEPC 63, following resolution of issues related to the loss of fishing gear, the discharge of animal carcasses, the management of cargo residues, and with regard to the question what constitutes harmful to the marine environment for cleaning agents and additives and cargo residues.

#### **MARPOL Annex VI (Prevention of air pollution from ships)**

42 MEPC 62 adopted amendments to MARPOL Annex VI to designate the coasts of the Commonwealth of Puerto Rico and the United States Virgin Islands as an Emission Control Area for NO<sub>x</sub> and SO<sub>x</sub> with expected entering into force on 1 January 2013.

43 Following consideration of various fuel oil quality issues, MEPC 62 noted that there remained concerns related to fuel oil sampling and agreed that the matter should be re-considered by the BLG Sub-Committee with 2012 as the target completion year. It also agreed a



work plan for the BLG Sub-Committee on the impact on the Arctic of emissions of Black Carbon from international shipping, in particular, to develop a definition and consider measurement as well as investigating the most appropriate abatement technologies with the aim of submitting a final report to MEPC 65 for action.

*Promotion of energy efficiency in international shipping*

44 MEPC 62 adopted amendments to MARPOL Annex VI Regulations for the prevention of air pollution from ships, added a new chapter 4 to Annex VI on Regulations on energy efficiency for ships to make mandatory the Energy Efficiency Design Index (EEDI), for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships. Other amendments to Annex VI add new definitions and the requirements for survey and certification, including the format for the new International Energy Efficiency Certificate. The EEDI is a non-prescriptive, performance-based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. As long as the required energy-efficiency level is attained, ship designers and builders would be free to use the most cost-efficient solutions for the ship to comply with the regulations. The SEEMP establishes a mechanism for operators to improve the energy efficiency of ships.

45 The new chapter 4 of MARPOL Annex VI represents the first ever mandatory global and legally binding energy efficiency standard for an international industry sector and was also the first global climate treaty to be adopted since the Kyoto Protocol in 1997. The new regulations apply to all merchant ships of 400 gross tonnage and above, regardless of the national flag they fly or the nationality of the owner, and are expected to enter into force globally on 1 January 2013. However, an Administration that considers that its industry needs more time to comply may waive the requirement for new ships to comply with the EEDI for up to four years.

46 The adoption of mandatory reduction measures for all new ships built from 2013 onwards will lead to significant emission reductions. By 2020, up to 150 million tonnes of CO<sub>2</sub> reductions are envisaged from the introduction of the EEDI for new ships, a figure that, by 2030, will increase to 330 million tonnes of CO<sub>2</sub> annually. In addition, a 20% improvement in energy efficiency by 2020, on a tonne mile basis, is envisaged from introduction of the operational measures (the SEEMP).

47 In 2012, MEPC 63 adopted four sets of guidelines intended to assist in the implementation of the mandatory Regulations on Energy Efficiency for Ships in MARPOL Annex VI:

- 2012 Guidelines on the method of calculation of the attained EEDI for new ships;
- 2012 Guidelines for the development of a SEEMP;
- 2012 Guidelines on survey and certification of the EEDI; and
- Guidelines for calculation of reference lines for use with the EEDI.

48 MEPC 63 also agreed an updated work plan for the development of further guidelines and the development of energy efficiency frameworks for those ships not covered by the current EEDI regulations. Linked to the implementation of energy efficiency measures was the draft MEPC resolution on the Promotion of technical co-operation and transfer of technology relating to the improvement of energy efficiency of ships, where it was agreed to further discuss the draft at the next session.

*Market based measure to reduce GHG emissions from ships*

49 Adoption of mandatory technical and operational measures is a very important step in ensuring that the global shipping industry has the necessary mechanisms to reduce its GHG emissions. However, the MEPC has, at several sessions, recognized that these measures would not be sufficient to satisfactorily reduce the amount of GHG emissions from international shipping in view of the growth projections of world trade. Therefore, market-based mechanisms (MBMs) are also being considered by the Committee in line with IMO [Assembly resolution A.963\(23\)](#) and its GHG work plan. A market-based mechanism would serve two main purposes:

- .1 providing an economic incentive for the maritime industry to invest in more fuel-efficient ships and technologies, and to operate ships in a more energy-efficient manner (in sector reductions); and
- .2 off-setting in other sectors of growing ship emissions (out of sector reduction).

50 MEPC 63 continued its intensive consideration of proposed market-based measures (MBMs), which would complement the technical and operational measures already adopted. Further debate will continue at the next session (MEPC 64, 1 to 5 October 2012). The MBM proposals under review range from a contribution or levy on all CO<sub>2</sub> emissions from international shipping or only from those ships not meeting the EEDI requirement, via emission trading systems, to schemes based on a ship's actual efficiency, both by design (EEDI) and operation (SEEMP).

### **London Convention and Protocol (LC/LP)**

#### **Progress to regulate ocean fertilization**

51 As reported to previous sessions of GESAMP, the governing bodies under the London Convention and Protocol started regulating ocean fertilization activities in 2008. In 2011 the governing bodies reviewed four remaining options to regulate ocean fertilization, as follows: an amendment to the Protocol to permit ocean fertilization as placement, with either a single or multiple new annexes; further implementation of, and gathering of experience from, the Ocean Fertilization Assessment Framework, under resolution LC LP.2(2010); and further development of an interpretative resolution. The Meetings also considered, without resolution, whether the proposed regulation of placement is intended to be restricted to placement activities that are a subset of dumping, or whether the intention is to broaden the scope of the Protocol with respect to other types of placement and whether and how to develop a potential generic placement assessment framework.

52 The governing bodies agreed that further work should be undertaken, intersessionally, (scheduled to be held from 3 to 6 July 2012 in Bonn, Germany), with the mandate to continue its work to "establish a global, transparent and effective control and regulatory mechanism for ocean fertilization activities and other activities that fall within the scope of LC and LP and have the potential to cause harm to the marine environment". The working group would report to the governing bodies in 2012.

#### **CO<sub>2</sub> sequestration in sub-seabed geological formations**

53 In 2011 the Meeting of Contracting Parties considered the results of intersessional work to review the "Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations" to take into account the 2009 amendment of Article 6 of the London Protocol allowing export of CO<sub>2</sub> waste streams and transboundary movement within reservoirs. The Meeting, having noted that a number of scientific issues needed to be resolved and also that a significant number of policy and legal matters existed that were much broader than transboundary issues, re-established the correspondence group, under the leadership of the Republic of Korea, to continue the review of the scientific and technical aspects of the Guidelines with a view to submit advice for consideration by the Meeting of Contracting Parties in 2012.

#### **Co-operation with UNEP-GPA**

54 The governing bodies, in reviewing progress on co-operation with UNEP-GPA regarding "Riverine and sub-sea disposal of tailings and associated wastes from mining operations", agreed to contract a consultant for collection and analysis of publicly available information on type and extent of this issue, with the aim of delivering a report to the next joint session of the governing bodies. The overall aim of this activity is the preparation for a policy decision at a future session and possibly for the development, from a regulatory perspective, of a general guidance document.

## IOC of UNESCO

### **The UN Regular Process for global reporting and assessment of the state of the marine environment, including socio-economic aspects<sup>5</sup>**

55 IOC has continued to support the UN Regular Process (RP) through technical and financial support. In June 2011, IOC and UNEP, in collaboration with Grid-Arendal presented a proposal to support the information and communication needs of the regular process. IOC has provided a contribution of 20,000USD to Grid-Arendal to initiate this work. The Ad Hoc Working Group welcomed the proposal and at the end of the biennium, Grid-Arendal started the development of the RP Clearing House mechanism which will:

- provide information to the public on the Regular Process, access to relevant documents and links to other existing web pages and support for drafting the first integrated assessment;
- establish a web-based editorial system to assist experts involved with drafting chapters for the RP Report, including support for editors to track the progress of chapters through the peer review process;
- produce of GIS map products to illustrate and synthesize spatial information relevant to the range of themes covered by the RP report; and
- expand and maintain the content management system for a range of data related to the Regular Process (including the already established GRAME database).

56 IOC also contributed to the RP Regional Workshop and participated in the Chile and China hosted workshop. Belgium has requested IOC to assist with the organisation of the Regional Workshop for Europe (NE Atlantic, Mediterranean and Black Sea) to be held in June 2012.

### **Transboundary Waters Assessment Programme (TWAP)**

57 From 2009 to 2011 the IOC in partnership with UNEP and several other organizations, executed a GEF-funded Medium-Size Project (MSP) as a precursor to a Transboundary Waters Assessment Programme (TWAP). The IOC coordinated the LMEs and Open Ocean components of TWAP, and established two Working Groups (WGs) consisting of experts and institutional partners for development of the assessment methodologies for these two water systems. The full report on the different methodologies was recently published and is available at: <http://twap.iwlearn.org/publications/databases/viewMethodologies> .

### **Joint action with ICES and IMO on Ballast and other Ship Vectors**

58 The ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV) has as a long- term task to critically reviews and reports on the status of shipping vector research with an emphasis on new developments in ballast water treatment technology, risk assessment, ballast water sampling devices, and selection of ballast water exchange zones to contribute to guidelines currently in preparation by IMO, and to address areas of specific interest, (e.g., chemical contaminants and microbiology in ballast water and sediment). WGBOSV met from 14 to 16 March 2011 in Nantes, France, and its report is available at: <http://www.ices.dk/workinggroups/ViewWorkingGroup.aspx?ID=16>

### **Ocean Fertilization**

59 In January 2011 the IOC jointly with the International Surface Ocean Lower Atmosphere Study Project (SOLAS), finalized a summary for policymakers on ocean fertilization. The summary was prepared in response to a request from the IOC Member States. The summary considers the practicalities, opportunities and threats associated with large-scale ocean fertilization. It summarizes activities and issues surrounding the use of ocean fertilization as deliberate interventions in the Earth's climate system that might moderate global warming.

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<sup>5</sup> The Assessment of Assessments (AoA) report and its Summary in six UN languages are available at <http://www.ungaregular-process.org>.

These activities are controversial, and have attracted scientific and public criticism. The Convention on Biological Diversity (CBD) decided in 2008 to ban all ocean fertilization activities in non-coastal waters until there was stronger scientific justification, assessed through a global regulatory mechanism. This overview of the current scientific understanding of Ocean Fertilization will assist the regulatory framework through the London Convention and London Protocol (LC/LP). The Summary Publication is available at <http://unesdoc.unesco.org/images/0019/001906/190674e.pdf> .

### **Nitrogen**

60 The IOC has adopted a work plan for an integrated focus on coastal research. The main activity was revised in 2011 under the title, “Nutrients and Coastal Impacts Research Program” (N-CIRP), aims to address the need for more quantitative analysis of impacts of nutrient loading and changing nutrient stoichiometry in coastal ecosystems. It will explore relationships between nutrient inputs, coastal chlorophyll, the occurrence of harmful algal blooms (HABs) and hypoxia, and related effects on coastal fish and fisheries, with the ultimate goal of developing novel datasets and innovative, predictive models, which will be shared with stakeholders.

61 N-CIRP is part of IOC’s input to the Global Partnership on Nutrient Management (GPNM). The GPNM which is coordinated by UNEP/GPA is a global partnership of scientists, policy makers, the private sector, NGOs and international organizations to address the growing problem of nutrient over-enrichment. N-CIRP is closely related to a GEF full scale project entitled “Global foundations for reducing nutrient enrichment and oxygen depletion from land-based pollution, in support of the Global Nutrient Cycle” which was launched 25 January 2012 during the 3rd Intergovernmental Review meeting of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA/IGR3) in Manila, Philippines.

### **Plastics and microplastics**

62 The inception meeting of the new GESAMP Working Group on ‘Sources, fate and effects of micro-plastics in the environment – a global assessment’ was held at IOC-UNESCO Headquarters in Paris, France, from 13 to 15 March 2012. The meeting was attended by experts covering a wide scope of aspects related with fate and effects of microplastics in the environment. Decisions were made on the content, timeline, expected products and audience. For the outcome of this first meeting, please see the separate report under agenda item 5.6 of this session.

### **UN-DOALOS<sup>6</sup>**

#### **United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea**

63 The 12<sup>th</sup> meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea took place from 20 to 24 June 2011 and focused its discussions on the topic entitled “Contributing to the assessment, in the context of the United Nations Conference on Sustainable Development, of progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development and addressing new and emerging challenges”. Discussions were facilitated by the report of the Secretary-general on oceans and the law of the sea (A/66/70/Add.1). The meeting also had before it submissions from the European Union (A/AC.259/20) and the Pacific small island developing States (A/AC.259/21). The report on the work of the Informal Consultative Process at its 12<sup>th</sup> meeting, contained in document A/66/186 and available at <http://ods.un.org/>, was

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6 The mandate of the Division for Ocean Affairs and the Law of the Sea (DOALOS), Office of Legal Affairs, United Nations, is to carry out the responsibilities entrusted to the Secretary-General upon the adoption and the entry into force of the 1982 United Nations Convention on the Law of the Sea (UNCLOS). DOALOS wishes to note that this year marks the 30<sup>th</sup> anniversary of UNCLOS. This section is intended to provide information on developments and initiatives which have occurred within the General Assembly in the field of ocean affairs and the law of the sea since March 2011.

welcomed by the General Assembly in resolution 66/231, Section XIV. At its 13<sup>th</sup> meeting, the Informal Consultative Process will focus its discussions on the topic entitled “Marine renewable energies”. Background documents of the meeting, including the reporting material of the Secretary-General, will be posted on the Division’s website at [http://www.un.org/Depts/los/consultative\\_process/consultative\\_process.htm](http://www.un.org/Depts/los/consultative_process/consultative_process.htm).

### **Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects**

64 The first meeting of the Ad Hoc Working Group of the Whole (AHWG) was held at United Nations Headquarters from 14 to 18 February 2011. It concluded with the adoption of recommendations to the sixty-fifth session of the General Assembly and agreed on a way forward to enable member States to continue discussing, as necessary, issues relating to options to achieve the deadline of 2014 for the completion of the first cycle of the Regular process (A/65/759). The recommendations of the AHWG were endorsed by the General Assembly in resolution 65/37 B. The second meeting of the AHWG was held at United Nations Headquarters on 27 and 28 June 2011. On the basis of its discussions, the AHWG adopted recommendations to be transmitted to the sixty-sixth session of the General Assembly. The AHWG agreed to establish a Bureau to put in practice the decisions and guidance of the AHWG during intersessional periods. It also recommended that workshops be organized at the earliest possible opportunity in order to inform the first cycle of the Regular Process (A/66/189). The recommendations of the second meeting of the AHWG were endorsed by the General Assembly in resolution 66/231. Workshops in support of the Regular Process were organized in Chile (12-15 September 2011) and China (21-23 February 2012). National experts are being appointed to the pool of experts to assist the Group of Experts in conducting the assessments, in accordance with the Criteria for the appointment of experts (available as Annex I to A/66/189 at <http://ods.un.org/>), and the Bureau of the Regular Process is being appointed as well. The third meeting of the AHWG will be held at United Nations Headquarters from 23 to 27 April 2012. Further information and documents related to the Regular Process can be found at [http://www.un.org/Depts/los/global\\_reporting/global\\_reporting.htm](http://www.un.org/Depts/los/global_reporting/global_reporting.htm).

### **Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction**

65 The fourth meeting of the Ad Hoc Open-ended Informal Working Group took place at United Nations Headquarters from 31 May to 3 June 2011 and provided recommendations to the sixty-sixth session of the General Assembly. The outcome of the meeting and the Co-Chairs’ summary of discussions are available as document A/66/119 at <http://ods.un.org/>. The General Assembly endorsed the recommendations of the Ad Hoc Open-ended Informal Working Group in resolution 66/231, Section X, which include a decision to initiate a process within the Working Group to ensure that the legal framework for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction were effectively addressed. To this end, the General Assembly requested the Working Group to identify gaps and ways forward which may include an implementation of existing instruments and the possible development of a multilateral agreement under UNCLOS. The Working Group may also work through the format of intersessional workshops. The fifth meeting of the Ad Hoc Open-ended Informal Working Group will take place from 7 to 11 May 2012 at United Nations Headquarters. Further information can be found on the Division’s website at <http://www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm>.

### **World Oceans Day**

66 To reflect the preparations of Rio+20, the theme of World Oceans Day for 2011 was “Our oceans: greening our future”. Further information on this event, including the Secretary-General’s message for 2011, is available at [http://www.un.org/Depts/los/reference\\_files/worldoceansday.htm](http://www.un.org/Depts/los/reference_files/worldoceansday.htm). In view of the 30<sup>th</sup> anniversary of UNCLOS, this year theme is: UNCLOS at 30! Information relevant to this commemoration will also be posted on the DOALOS website as it becomes available.

## UNDP

67 UNDP/GEF International Waters projects supported implementation of governance reforms and stress reduction measures to address depleted fisheries in the Caribbean Sea LME, Caspian Sea, Benguela Current LME and Sulu–Celebes Sea LME, and to reduce nutrient and toxics pollution to the Black Sea from the Dnipro River basin and to the Rio de la Plata/Maritime Front. Through PEMSEA, UNDP continued to apply and scale up integrated approaches to coastal area management, and through, the long term GloBallast Partnership with IMO, help to reduce risk of invasive species from ship ballast water.

68 Foundational ('enabling') UNDP/GEF International Waters projects in the Timor/Arafura Seas, Sulu-Celebes Sea LME, Guinea Current LME, Agulhas/Somali Current LMEs and Caribbean Sea LME reported progress in development and adoption of their Transboundary Diagnostic Analyses and/or Strategic Action Programs.

69 Several projects tested innovative financial, technical, policy, economic and other mechanisms to reduce nutrient pollution of the marine environment (Caribbean Contaminated Bays), and apply integrated approaches to watershed and coastal area management in Small Island Developing States (Caribbean SIDS IWCAM, Pacific SIDS IWRM).

70 Capacity development and knowledge management projects helped to identify and disseminate best practices in nutrient management (Living Water Exchange MSP), codified and transferred GEF and other experience and best practice in putting in place effective transboundary legal and institutional frameworks, and promoted GEF-wide portfolio learning in marine, coastal and island states.

71 Good progress was made in strengthening and/or operationalizing several existing and/or emerging shared marine waters institutions (commissions and Secretariats) including the PEMSEA Resource Facility, Caspian Convention Secretariat, Interim Guinea Current Commission, and the Benguela Current Commission.

72 Nearly half the active portfolio represents programming in Africa, followed by Asia/Pacific and LAC, with lesser amounts allocated to Arab States, Europe/CIS and global. Increasingly, climate change risks and building climate resilience are being incorporated into the development and implementation of GEF-supported SAPs in marine as well as freshwater systems. Experience with both the Benguela Current and Guinea Current LME Commissions underscored the value of establishing interim commissions and agreements to allow sufficient time for the often protracted negotiations required to deliver agreed permanent legal and institutional frameworks. Specifically, in the Benguela Current context, the ministerially adopted SAP was adopted as the interim agreement which substantially informed the drafting and final content of the Convention. The BCC also underscored the significant value added by including a data and information sharing agreement within the multi-country legal framework; while the importance of such frameworks have long been recognized and promoted in river basin negotiations, this may be the first established for a shared marine ecosystem.

73 An increasing proportion of the operational marine and coastal portfolio is now composed of projects at the SAP implementation stage with several already delivering stress reduction results. Knowledge management, with 3 projects, remains a key component of the portfolio and measurable progress was observed in building knowledge base and capacity building tools related to nutrient management, transboundary legal and institutional frameworks, and municipal wastewater management. The UNDP-GEF International Waters portfolio continues to be one of the principal global mechanisms fostering the creation, operationalization, strengthening and sustainability of marine as well as freshwater multi-country transboundary institutions, with 8 regional organizations currently receiving capacity building and other support. Inter-ministerial committees continue to provide a sound mechanism for promoting and ensuring

cross-sectoral participation in and commitment to transboundary governance planning processes.

74 UNDP co-produced and released several major publications (including inputs to Rio+20) related to oceans and coastal areas in 2011-2012 including:

- A Blueprint for Ocean and Coastal Sustainability (IOC/UNESCO, UNDP, FAO, IMO) [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/interagency\\_blue\\_paper\\_ocean\\_rioPlus20.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/interagency_blue_paper_ocean_rioPlus20.pdf)
- Green Economy in a Blue World – Synthesis Report (UNEP, UNDP, IMO, FAO, World Fish Center, GRID-Arendal, IUCN, DESA) [http://www.unep.org/pdf/green\\_economy\\_blue.pdf](http://www.unep.org/pdf/green_economy_blue.pdf)
- Sustainable Development of the World's Large Marine Ecosystems during Climate Change (UNDP, IUCN, Gordon & Betty Moore Foundation, US-NOAA) <http://data.iucn.org/dbtw-wpd/edocs/2010-079.pdf>
- Towards Recovery and Sustainability of the World's Large Marine Ecosystems during Climate Change (UNDP, IUCN, Gordon & Betty Moore Foundation, US-NOAA) [http://www.lme.noaa.gov/LMEWeb/Downloads/book\\_recovery\\_sustainability.pdf](http://www.lme.noaa.gov/LMEWeb/Downloads/book_recovery_sustainability.pdf)
- Oceans at Rio+20: Summary for Decision Makers (Global Ocean Forum, UNDP, GEF) <http://www.globaloceans.org/sites/udel.edu.globaloceans/files/Rio20SummaryReport.pdf>

## UNEP

### UNEP's Marine and Coastal Strategy<sup>7</sup>

75 The Marine and Coastal Strategy is being implemented under the Division of Environmental Policy Implementation (DEPI) of UNEP. Among the objectives of this strategy is the use of sound science to apply ecosystem management and to address factors causing decline of ecosystem services in marine and coastal areas. A key strength of the marine and coastal ecosystem programme is its ability to facilitate cooperation at global, regional and national levels through the Regional Seas Conventions and Action Plans and the Global Programme of action for the protection of marine environment from land-based activities (GPA).

76 The key areas of work include environmental aspects of fisheries, integrated management of marine protected areas, marine biodiversity and the economic valuation of marine and coastal ecosystem services, and impacts of climate change on the marine environment.

77 As the UNEP focal point for coral reefs (tropical and cold-water) DEPI supports concerted action to improve the conservation and sustainable use of coral reefs. This work is implemented through the International Coral Reef Initiative (ICRI), existing networks, and other relevant programmes. DEPI is also UNEP's focal point for Small Islands Developing States (SIDS). It coordinates UNEP's effort in assisting countries to implement the Mauritius Strategy for the further implementation of the programme of action for the sustainable development of SIDS.

78 UNEP is continuously providing technical support and capacity building on the integrated management of marine and coastal ecosystems within the framework of its Marine and coastal strategy; in particular support is given to member states through the platforms of the GPA and the Regional Seas Conventions and Action Plans; e.g. Barcelona Convention, Cartagena Convention, Nairobi Convention, Abidjan Convention, COBSEA and NOWPAP. Furthermore, UNEP collaborates extensively with UN Agencies such as UNESCO/IOC, UNDP, IMO, FAO, UN DOALOS, UN DESA and the World Bank, amongst others Activities related to Small Island Developing States are being followed closely in particular in the context of RIO +20. As we know, Small Island Developing States (SIDS) are particularly vulnerable to the degradation of

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7 <http://www.unep.org>

coastal and marine ecosystems. International cooperation towards strengthening their adaptive resilience to address such vulnerability is urgently needed. To address SIDS specifically, UNEP has developed a policy paper on Thematic Priority Areas for UNEP's support to the Sustainable Development of SIDS, aligned to the Bali Strategic Plan for Technology Support and Capacity-building, that mainstreams the Mauritius Strategy for the further implementation of the Programme of Action for the sustainable development of SIDS into UNEP's programme of work, and sets out priority outcomes to be achieved (For more information on the Mauritius Strategy visit: <http://www.un.org/en/ga/president/65/issues/sids.shtml0>). Furthermore, UNEP is leading a partnership on the Green Economy in SIDS. This area of work analyses what a green economy in the context of sustainable development would mean to SIDS, given their particular socio-economic and environmental settings.

79 Besides UNEP's continuing support and provision of technical advice to national authorities on the development of National Programmes of Action for the Protection of the Marine Environment from Land-based Activities (NPAs), several countries have benefited for projects on ecosystem-based management (EBM); e.g. in Southeast & Northeast Pacific and the Wider Caribbean; in West Africa and in COBSEA region. Other UNEP's activities developed with GEF support are related to Blue Carbon Initiative, Marine Litter, Partnership on Nutrient Management and Wastewater.

80 The 19 regional reports developed in partnership with the Regional Seas Conventions and Action Plans provided a perspective into the current state of marine biodiversity in the areas covered by the Regional Seas Conventions and Action Plans through a series of pressure, state and response indicators. This series of assessments emphasizes the need to support ongoing efforts at the UN Regular Process (for more information visit: <http://www.marinebiodiversityseries.org/reports/2-global-synthesis-report.html>); UNEP continues to support capacity building through its Regional Seas Conventions and Action Plans – See below para related the Regular Process.

### **Third Intergovernmental Review of the Global Programme of Action**

81 The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) was adopted by the international community in 1995. It has been one of UNEP's most visible marine and coastal initiatives for the past 16 years. The GPA requires governments to regularly review their own activities and the nature and extent of their multilateral cooperation, and also the "further development and adjustment" of the GPA itself, taking "into account regular assessments of the state of the marine environment." This is achieved through periodic intergovernmental reviews which adopts the work programme on a periodic basis.

82 Third Intergovernmental Review Meeting (IGR-3) on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) was held in Manila 25-26 January 2012. Preceding the IGR-3, a Global Conference on Land-Ocean Connections (GLOC) was organized 23-24 January to discuss emerging issues and science-policy interlinkages, feeding results into the IGR-3. The IGR-3 consisting of the representatives of 65 Governments and the European Commission, with the valued support and concurrence of representatives of international financial institutions, international and regional organizations, the private sector, non-governmental organizations, other stakeholders and major groups, adopted the Manila Declaration available at [http://www.gpa.depiweb.org/docman/cat\\_view/39-igr-3.html](http://www.gpa.depiweb.org/docman/cat_view/39-igr-3.html)

### **Regular Process**

83 In accordance with UNGA resolution 65/37 (section XII) UNEP was invited by the Secretary General in December 2010 to provide technical and scientific support to the Regular Process. UNEP has been supporting the process through its established programmes related to scientific assessments, communication and capacity building.



84 Through the platform of the Regional Seas Conventions and Action Plans, technical and financial support has been provided to member states for the organisation of Regional Capacity Building Workshops on the Regular Process. The first Regular Process Workshop hosted by the Government of Chile was held from 13-15 September in Santiago, Chile, facilitated by the Comisión Permanente del Pacífico Sur (CPPS), a Regional Seas Convention and Action Plan for the South Pacific. The second workshop was hosted by the Government of China in Sanya, China from 21 to 23 February 2012 for the Eastern and South Eastern Asian Seas under the auspices of the Coordinating Body on the Seas of East Asia (COBSEA) and North West Pacific Action Plan (NOWPAP). Two further capacity building workshops are planned for Q3 2012. Firstly, a workshop in August 2012 for the Western Indian Ocean, hosted by the Government of Mozambique, in Maputo, Mozambique, facilitated Nairobi Convention.. . Secondly, the Government of the United States of America will be hosting a workshop for the Wider Caribbean Region in July or August 2012, facilitated by the Cartagena Convention. The Government of Belgium and the European Union are planning to hold a workshop for the North Atlantic, the Baltic Sea and (probably) the Mediterranean and Black Sea in Brussels on 27 to 29 June 2012. The Government of Cote D'Ivoire has expressed the desire to host a workshop for the Abidjan Convention Countries in Abidjan this year.

85 UNEP has mobilized support for experts from developing countries through the Regular Process Trust Fund, administered by the Regular Process Secretariat (UNDOALOS).

86 In terms of communications, UNEP has provided support for GRID Arendal to set up a communications portal that includes a data platform to support the work of the Group of Experts (GoE) of the Regular Process (For more details see weblink: [http://www.un.org/Depts/los/global\\_reporting/global\\_reporting.htm](http://www.un.org/Depts/los/global_reporting/global_reporting.htm)).

#### **GEF Transboundary Waters Assessment Programme (TWAP)**

87 UNEP, under the auspices of the GEF, coordinated over a 2 years period from 2009 to 2011 the implementation of the Medium Size Project (MSP) entitled "Development of the Methodology and Arrangements for the GEF Transboundary Waters Assessment Programme (TWAP)". The main out puts of the project are Assessment methodologies for five water systems (groundwater, lakes/reservoirs, rivers, large marine ecosystems (LME) and open ocean areas) that extend across or lie beyond national boundaries. As well as a partnership among agencies and organizations established with institutional arrangements for conducting a full size project. The Full Size Project "TWAP: Aquifers, Lake/Reservoir Basins, River Basins, Large Marine Ecosystems, and Open Ocean to Catalyze Sound Environmental Management" has a concept approved by the GEF CEO and preparation of the full project document has been planned for 2012.

88 The results of the MSP are published in a six volume report. Volume one " Methodology for the Assessment of Transboundary Aquifers, Lake Basins, River Basins, Large Marine Ecosystems and the Open Ocean provides an introduction and summary of the detailed methodologies described in volumes 2 – 6) (available at <http://twap.iwlearn.org/>).

89 Within the framework of RIO+20 preparations, **the Green Economy in a Blue World Report** has been launched by UNEP during the GPA/IGR3 Conference held in Manila in Feb 2012. In order to preserve and mitigate the rapid degradation of the oceans, key sectors must begin a transition towards a green economy, ensuring a viable socio-economic dimension that creates jobs, eradicates poverty, adapts to climate change and embraces environmental management. Oceans should serve as a catalyst to consider the clear need to evolve our current economic model towards one that is more integrated by the acknowledgment of all forms of measurable capital. The economy of the oceans is one that depends on our understanding that truly sustainable economic growth is only achievable when the true wealth of our oceans is accounted for.

90 The Green Economy in a Blue World Report responds to this 'challenge' by presenting a case into how oceans and coasts would benefit from a transition towards a green economy in key sectors that depend and/or influence the state of marine and coastal environment. Furthermore, the report suggests innovative sectoral approaches that can foster social and economic integration within the context of sustainable development.

91 Lastly, in order to provide a framework to discuss potential governance implications in the blue world, the following institutions have lead specific chapters of the report:

- Fisheries (small-scale) and aquaculture – Food and Agriculture Organization (FAO) and World Fish Center
- Transport (maritime) – International Maritime Organization (IMO)
- Marine-based renewable energy –IUCN
- Ocean nutrient pollution – United Nations Development Programme (UNDP)
- Tourism (coastal) – Lund University
- Deep-sea minerals – GRID-Arendal

## UNIDO

### **Gulf of Mexico Large Marine Ecosystem Project:**

92 The project “Integrated Assessment and Management of the Gulf of Mexico Large Marine Ecosystem (GoM-LME)” is aimed at setting the foundations for a LME-wide ecosystem-based management approach to rehabilitate marine and coastal ecosystems, recover depleted fish stocks, and reduce nutrient overloading in the Gulf of Mexico. To date the Transboundary Diagnostic Analysis (TDA) has been completed; the TDA analyses the various transboundary environmental problems, major root causes, impacts and consequences in the Gulf. It was developed on the basis of a series of studies and consensus building activities, which in addition strengthened interactions between relevant stakeholders and helped to build synergies among ongoing activities in the region. These efforts have also led to a significant advance on the Strategic Action Plan (SAP) and National Action Plan (NAP), which are currently being developed.

93 There are three pilot projects within the scope of the project, all located in the Terminos Lagoon, Campeche, Mexico. The ongoing pilot projects are generating practical experience to address a complex situation characterized by overlapping policies and institutional responsibilities relating to the conservation of protected areas, social and economic development, and threats to terrestrial and coastal and marine biodiversity. The development of pilot projects in the same area constitute a cost efficient approach from different perspectives, some focusing on fisheries management and rational use of resources, others in habitat management and restoration, and yet another on building solid monitoring and evaluation tools. These projects have delivered quality information, guidance on the design of specific mechanisms to address problems, broad participation of social groups involved and in general have helped to build awareness of the participants and parties on the fact that specific joint actions can result in significant improvements. More on the GoM-LME project can be found at <http://gulfofmexicoproject.org/en/>.

### **Guinea Current Large Marine Ecosystem Project**

94 This project supports 16 West and Central African countries in ecosystem based cooperation on sustainable natural resource use. The overall development goals of this project are to 1) recover depleted fish stocks, 2) restore degraded habitat, 3) reduce land and ship-based pollution, and 4) create an ecosystem-wide assessment and management framework for sustainable use of living and non-living resources in the GCLME. Priority action areas rely heavily on regional capacity building. Sustainability is derived from this improved capacity, strengthening of national and regional institutions and improvements in policy/legislative frameworks.

95 In 2010 the National Demonstration Projects on Coastal Erosion (Cote d'Ivoire), Integrated Coastal Zone Management (Cameroon), Establishment of Marine Protected Areas (Benin) and the Conjunctive use of Nipa Palm and the restoration of autochthon mangroves (Nigeria) were completed and the results were disseminated for ecosystem wide up-scaling. National action plans for the implementation of the Strategic Action Plan were finalized and presented in a donor's conference. Negotiation meetings towards the transition of the Interim Guinea Current Commission (IGCC) towards a permanent Guinea Current Commission (GCC) were facilitated throughout the year. The third Meeting of the IGCC Committee of Ministers in which the Guinea Current Countries will be facilitated to agree on the institutional shape of the GCC will be held in May 2012.

#### **Collaborative Actions for Sustainable Tourism (COAST) Project:**

96 The UNIDO COAST project aims at reducing the impact of land-based tourism activities on coastal waters and operates in Cameroon, Gambia, Ghana, Kenya, Nigeria, Mozambique, Senegal, Seychelles and Tanzania. Achievements of the project since its inception in 2008 included capacity building at the local level on the UNWTO tool for sustainable tourism for the eradication of poverty, on Environmental Management Systems for tourism operators, on ecotourism and on Integrated Coastal Zone Management.. Although the project suffered delays due to the lost of interest from some partners, a new project strategy developed from the Mid-Term Evaluation has been developed to enable the project team to fully support the local partners.

#### **MED-TEST project**

97 The project "Transfer of Environmental Sound Technology in the South Mediterranean Region (MED TEST)" aims at demonstrating the economic and environmental benefits of resource efficiency which industries can achieve through the introduction of best practices and integrated management systems. The project is being implemented in Egypt, Morocco and Tunisia, and has covered a pool of 43 industries, mostly SMEs, across 7 industrial sectors. The project has completed training activities in the three countries, which have allowed for the implementation of the pilot projects on a company by company basis. The project is now in the final phase of dissemination of results, so that the experiences and know-how can be transferred to other industries in the participating countries, as well as throughout the region. Among the project's achievements is the identification of total annual water and energy savings of 9.6 million m<sup>3</sup> and 250,000 MWh, respectively. Also, noteworthy is the private sector investments in improved processes and cleaner technology, which amount to 15 M USD, and translates into total annual savings of approximately 16 M USD in energy, water, raw materials and increased productivity.

#### **WMO**

##### **WMO World Climate Research Programme**

98 The World Climate Research Programme (WCRP) supports a number of high priority scientific research activities with the aim of facilitating analysis and prediction of Earth's climate system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society.

##### **WCRP Open Science Conference (OSC)**

99 On 24-28 October 2011 WCRP held a major Open Science Conference (OSC) in Denver, Colorado, USA, under the theme "Climate Research in Service to Society". Through a community synthesis of research findings, the scientists at the conference assessed the current state of knowledge on climate variability and change and identified the most urgent scientific issues and research challenges addressing the existing gaps in this knowledge. Their list includes, among other topics, the need for bridging the physical climate system with biogeochemistry, the socioeconomic and humanity sciences; the increasing importance of establishing the predictability of polar climate, with possible opening of the Arctic and international policy for commercial shipping and extraction of natural resources; the challenges

of improved predictions of future sea-level change; and the need to train and empower the next generation of climate scientists. A major emerging theme is the need for actionable science that can guide decision makers. These new directions of climate research have a bearing on GESAMP.

#### **WCRP Coupled Model Intercomparison Project Phase 5 (CMIP5)**

100 More than 22 modelling groups from around the world are currently running the WCRP Coupled Model Intercomparison Project Phase 5 (CMIP5) experiments that represent the most ambitious multi-model inter-comparison and analysis project ever attempted. The CMIP5 consists of four major categories of experiments and analysis based on different model simulations including ones with Atmosphere-Ocean Global Climate Models (AOGCMs, with components of atmosphere, ocean, land and sea ice). Model data are openly available from the Earth System Grid Federation, an international distributed data archival and access system, and more information can be found on the Program for Climate Model Diagnosis and Intercomparison (PCMDI) web page (<http://cmip-pcmdi.llnl.gov/cmip5>). CMIP5 provides capabilities and new types of climate change information including carbon cycle feedbacks, quantifying sources and sinks of carbon for land versus ocean, allowable emissions for different levels of mitigation in the Representative Concentration Pathway scenarios, ocean acidification, etc. Ultimately, these results will be available through the peer-reviewed publications for use in the 5<sup>th</sup> IPCC Assessment Report (AR5). They may represent an interest for GESAMP as a source of forcing data for marine pollution studies. The WCRP CORDEX project complements these predictions regionally downscaled information helpful in assessing the impacts of climate change on human and natural systems and enabling the development of suitable adaptation and risk management strategies (please see the following URL for more details: [http://wcrp.ipsl.jussieu.fr/SF\\_RCD\\_CORDEX.html](http://wcrp.ipsl.jussieu.fr/SF_RCD_CORDEX.html)).

#### **4th International Conference on Reanalysis**

101 Diagnostic studies of marine pollution may benefit from the use of reanalysis data. WCRP continues to promote coordinated expansion of various types of reanalyses. The new webpage <http://reanalyses.org> provides researchers with detailed data descriptions, data access methods, analysis and plotting tools of reanalysis datasets created by different climate and weather organizations. WCRP is convening the 4th International Conference on Reanalysis in Silver Spring, USA, on 7-11 May 2012, with the objective of fostering communications between reanalysis development centers and the research community with a focus on an Earth System approach.

#### **CLIVAR and SOLAS**

102 More information on WCRP activities relevant to GESAMP can be found at the WCRP website <http://www.wcrp-climate.org>, at the website of the WCRP CLIVAR project (<http://www.clivar.org>) that is focusing on the role of oceans in climate, and at the website of the Surface Ocean Lower Atmosphere Study (<http://www.solas-int.org>), which is co-sponsored by WCRP together with IGBP, SCOR and iCACGP.

#### **WMO Marine Meteorology and Oceanography Programme (MMOP)**

103 Marine Meteorology and Oceanography Programme (MMOP) is established under the auspicious of the World Meteorological Organization (WMO) to regulate, co-ordinate and facilitate the sustained provision of global and regional coverage observational data, products and services to address the continued and expanding requirements of the maritime user community for met-ocean services and information, focusing on safety of life and property at sea, integrated coastal management and societal impacts. The overall technical guidance and governance for MMOP is provided by the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), jointly sponsored by WMO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO. In 2011 a number of MMOP events were organized:

### **Sixth Session of the JCOMM Ship Observations Team (SOT)**

104 The Session was held at the auditorium of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Division of Marine and Atmospheric Research (CMAR), Hobart, Australia, from 11 to 15 April 2011 at the kind invitation of the Government of Australia. The Session was co-sponsored by the Australian Bureau of Meteorology (BOM) and CSIRO.

105 The Team reviewed requirements for ship-based observations in support of climate applications as expressed by the WMO-IOC-UNEP-ICSU Global Climate Observing System (GCOS) and the Ocean Observing Panel for Climate (OOPC), as well as in support of non-climate applications (e.g. Numerical Weather Prediction, maritime safety). The Team agreed to review the SOT overarching implementation plan that was adopted at SOT-III, and to include in it an SOT strategy for addressing the full range of observational data requirements (drawn essentially from the RRR, and including those of WMO, OOPC, GCOS, operational oceanography and other applications) and gaps in terms of ship observations.

### **Fourth Session of the JCOMM Observations Coordination Group (OCG)**

106 The Session was held in Hobart, Australia, from 18 to 20 April 2011, at the kind invitation of the Government of Australia. The Session was sponsored by the Australian Bureau of Meteorology (BOM). The meeting focused on issues and actions that would help improve the 'systems' aspects of JCOMM and on collaboration that would appeal and help each individual component. The Group reviewed requirements, refined the implementation goals for the observing networks, and addressed common technical coordination through JCOMMOPS. It noted the need to raise for JCOMM and intergovernmental attention a number of issues relating to the requirements for satellite observations, the fragility of sustained funding for research-supported observing networks critical for weather/seasonal forecasting, the need for the support of navies for deployment in the northwest Indian Ocean, the need to improve high-frequency historical and real-time tide gauge data, and improving support for JCOMMOPS.

### **Third International Workshop on Advances in the Use of Historical Marine Climate Data**

107 The Workshop was held at the European Space Agency (ESA) Center for Earth Observation (ESRIN), in Frascati, Italy from 2 to 6 May 2011. This workshop follows international marine workshops in Canada (1999), USA (2002), Belgium (2003), UK (2005) and Poland (2008) where MARCDAT alternates with more formal JCOMM *Workshops on Advances in Marine Climatology* (CLIMAR). These workshops have brought together a wide spectrum of marine data users, and managers of marine data and products, and have included an underlying focus on the continuing evaluation, utilization, and improvement of the International Comprehensive Ocean-Atmosphere Data Set (ICODS). The workshop provided a showcase and did build on recent advances in marine climatology, including (i) evaluation, utilization and improvement of the over 300-year record of ICODS (e.g. using satellite data); (ii) development of multi-decadal, homogeneous gridded datasets for climate applications; and (iii) characterization of uncertainty and bias in marine observations and products. The objective of the workshop was to recommend a 10-year action plan for improved integration and accessibility of climatological observations.

### **WIGOS/JCOMM Training Workshop on Marine Instrumentation for the Asia Pacific Region**

108 The Workshop was held in Tianjin, China, from 11 to 13 July 2011 at the kind invitation of the State Oceanic Administration (SOA) and the National Centre of Ocean Standards and Metrology (NCOSM) of China. The workshop recalled the importance of ocean observations to achieve socio-economical benefits at the global, regional, national, and local (e.g. Tianjin city) levels by addressing the requirements of WMO and IOC Applications, including the Global Framework for Climate Services (GFCS), and working in the multi-disciplinary frameworks of the IOC-WMO-UNEP-ICSU Global Ocean Observing System (GOOS) and the WMO Integrated Global Observing System (WIGOS).

### **Workshop for a new Marine Climate Data System**

109 The workshop was held at the Deutscher Wetterdienst in Hamburg, Germany, from 28 November to 2 December 2011. The main goals of the meeting were to discuss the vision for a new MCDS in the next 10 years to better address the WMO-IOC-UNEP-ICSU Global Climate Observing System (GCOS), Global Framework for Climate Services (GFCS), and the WMO-IOC-UNEP-ICSU Global Ocean Observing System (GOOS) marine-meteorological and ocean data requirements for climate monitoring, forecasting, and services, and starting by (i) a modernized Voluntary Observing Ship (VOS) delayed-mode data-flow, (ii) the establishment of a network of WMO-IOC Centres for Marine-meteorological and Oceanographic Climate Data (CMOCs) on the model of the trusted ICOADS, and (iii) the integration of the Responsible National Oceanographic Data Centre (RNODC) for Drifting Buoys (RNODC/DB) and the Specialized Oceanographic Centre (SOC) for Drifting Buoys (SOC/DB) to avoid duplication.

### **GESAMP WG 38 activities**

110 GESAMP WG 38 (Atmospheric Input of Chemicals to the Ocean) finalized in 2011 the tasks based on the Terms of Reference: 1) Assess the need for the development of new model and measurement products for improving our understanding of the impacts of the atmospheric deposition of nitrogen species and dust (iron) to the ocean; 2) Review the present information on the atmospheric deposition of phosphorus species to both the marine and terrestrial environments, considering both natural and anthropogenic sources, and evaluate the impact of atmospheric phosphorus deposition on marine and terrestrial ecosystems. Consider whether such a review of any other substance would be useful. 3) Work with the WMO Sand and Dust Storm Warning and Assessment System (SDS-WAS) and with the WMO Precipitation Chemistry Data Synthesis and Community Project to evaluate the needs of the marine community and assist in clearly articulating them in the development of these WMO efforts. The results of the WG38 are published as the GESAMP Reports and Studies No. 84 ("The Atmospheric Input of Chemicals to the Ocean") (in press).

111 The activities of WG 38 were extended with the aim of bringing together the SDS- WAS and GESAMP scientific communities and, as a result of their joint effort, to evaluate the following 3 topics: **Topic 1** Improving the quantitative estimates of the geographical distribution of the transport and deposition of mineral matter and its content to the ocean; **Topic 2** Developing case-studies of dust/Fe/P input to the ocean and the resultant marine response utilizing SDSWAS transport modelling, remote-sensing, in-situ observations, and ocean biogeochemical modeling; and **Topic 3** Specifying test-bed regions for joint studies of the transport and deposition to the ocean of mineral matter. These topics were discussed in detail at the third meeting of the working group in Malta in March 2011. As a part of these WG 38 activities, WMO in collaboration with the WMO SDS-WAS organized the Workshop on Modelling and Observing the Impacts of Dust Transport/Deposition on Marine Productivity, Sliema, Malta, 7-9 March 2011, 50 pp, November 2011, refer to:

[http://www.wmo.int/pages/prog/arep/gaw/documents/FINAL\\_GAW\\_202\\_web.pdf](http://www.wmo.int/pages/prog/arep/gaw/documents/FINAL_GAW_202_web.pdf) .