



**East Asian Seas
Regional Co-ordinating Unit**

UNEP

United Nations Environment Programme

REPORT

**Regional Workshop on Identification of Pollution Hot
Spots in the East Asian Seas Region**

Hua Hin - Thailand

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Report of the Meeting

1 OPENING OF THE MEETING

1.1 Welcome address

1.1.1. The UNEP EAS/RCU Co-ordinator, Dr. Hugh Kirkman, opened the meeting on behalf of the UNEP East Asian Seas Regional Co-ordinating Unit. He welcomed participants to the Regional Workshop on Identification of Pollution Hot Spots in the EAS Region and noted the high priority accorded this activity by UNEP. He informed the meeting of the strong desire of UNEP EAS/RCU that the activity stimulates renewed interest in regional, co-operative management of information in the COBSEA member countries.

1.1.2. Dr. Kirkman noted further that, the activity was a milestone to update the information concerning major pollution sources in the EAS region. There were several studies available and some background information in the Transboundary Diagnostic Analysis for the South China Sea (background document EAS/RCU Technical Reports Series No. 14). He pointed out that this initial meeting is important in providing guidance to the country representatives regarding submission of data and to ensure that the data and information assembled at the national level are comparable and compatible between all participating countries.

1.1.3. He noted that this project would, where possible, complement other regional activities supported by UNEP, in particular those envisaged in the framework of the Global Programme of Action to Protect the Marine Environment from Land-based Activities (GPA/LBA).

1.2 Introduction of members

1.2.1. The nine participants representing Australia, Cambodia, China, Indonesia, Malaysia, Philippines, Singapore (2) and Thailand introduced themselves and provided the meeting with a brief outline of their expertise and experience and elaborated on their roles in the development of the meeting report. The list of participants is attached as Annex 1 to this report.

1.2.2. Each country representative provided the secretariat with a national report. Although Korea and Viet Nam were not able to attend, their national reports were expected by the secretariat. UNEP EAS/RCU will follow up communications with the COBSEA focal points of Korea and Viet Nam trying to get the reports after the closure of the meeting.

2 ORGANISATION OF THE MEETING

2.1 Designation of officers

2.1.1. In accordance with the provisional programme of work developed by UNEP EAS/RCU and proposed to the participants, the Workshop participants were invited to nominate a Chairperson and a Rapporteur for the meeting.

2.1.2. Mr. Foong, representative of Singapore nominated Ms. Ekawan, representative of Thailand, as Chairperson of the meeting. Ms. Ekawan was duly elected by acclamation.

2.1.3. Mr. Bott representative of Australia nominated Dr. Kirkman, representative of UNEP EAS/RCU as rapporteur of the meeting. Dr. Kirkman was duly elected by acclamation.

2.2 Organisation of work

2.1.1. The Co-ordinator of UNEP EAS/RCU introduced the document UNEP/EAS/GPA/HS.1.INF2, listing the discussion documents prepared by the Secretariat for the meeting together with additional information documents of relevance to the business. He noted that some amendments to the documents prepared for the meeting had been made and that these would be highlighted during the presentation of each document under the appropriate item of the provisional programme of work. The list of documents available to the meeting is attached as Annex 2 to this report.

2.1.2. He further noted that the meeting would be conducted in English and in plenary as far as possible, although sessional working groups might need to be formed, given the volume of business before the meeting. He proposed, and the meeting agreed that, the meeting would commence at 08:30 in the morning and continue at the discretion of the Chairperson and members until such time as an appropriate point in the agenda was reached.

2.1.3. Dr Kirkman presented the background paper of the meeting prepared by the Secretariat as document UNEP/EAS/GPA/HS.1/1, and invited discussion and proposals for any amendments or additions that members might wish to make. He also noted the potential collaboration with the UNEP/GEF Project "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand" hereafter known as the South China Sea Project.

2.1.4. He pointed out the Project entitled "Identification of Pollution Hot Spots in the EAS Region", is SOURCE-SPECIFIC aiming to control contaminants/pollutants at their sources while the land-based pollution component of the South China Sea Project focuses on the transboundary IMPACTS.

3 OVERALL GOALS AND OBJECTIVES OF THE WORKSHOP

3.1. The Chairperson invited Dr. Kirkman to brief the participants on the issues concerning the background, rationale, objectives and expected outputs of the meeting. A reference to the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA/LBA) and the Transboundary Diagnostic Analysis for the South China Sea was cited.

3.2. It was suggested that an executive summary be endorsed before the close of the meeting. This document should contain the agreements that the meeting arrived at. This was agreed upon by the participants.

3.3. It was suggested that a GIS type database be used to gather the information on major sources of pollution in the nominated catchments.

4 REPORT ON LAND-BASED SOURCES AND ACTIVITIES AFFECTING THE MARINE ENVIRONMENT IN THE EAS COUNTRIES

4.1. The Chairperson invited Dr. Kirkman to introduce document UNEP/EAS/GPA/HS.1/3 concerning the format of the national report from each country, in order to standardise the submission of information and data obtained. The format considered the following topics: 1) Overview; 2) Land-based sources of pollution, 3) Monitoring, 4) Existing levels of sanitation services, 5) Description of discharge standards (if any), 6) Distribution of pollution loads (boundaries), 7) Legal framework (existing legislation and level of enforcement), 8) Institutional arrangements.

4.2. Dr. Kirkman explained that the aim of this meeting was to discuss the information on the major sources of pollution encountered at national level, focussing on sewage, provided by the country representatives. It was suggested that this information be gathered by catchment areas and detailed within the national reports.

4.3. It was pointed out that the primary purpose of the meeting was to ensure that the information should be gathered, stored and managed as a database. This database was especially for the use of the participating agencies that can rename, add or update the stored information. Thus, a regional network was foreseen and needed to be discussed.

4.4. The meeting discussed the presentation and the contents of the background document and agreed that the responsibilities of the group in terms of reporting and the modalities for interaction at both the national and regional levels were clear.

5 SOURCES AND ACTIVITIES AFFECTING THE MARINE ENVIRONMENT IN THE EAST ASIAN SEAS. STATUS UPDATE

5.1. The Chairperson invited each of the participants to report on the national status of land-based sources and activities affecting the marine environment in the East Asian Seas. Participants were invited to comment on any difficulties likely to be encountered at national level.

5.2. The eight participants representing Australia, Cambodia, China, Indonesia, Malaysia, Philippines, Singapore and Thailand presented their national reports. The presented national reports are integral part of this meeting report, Annex 4.

5.3. It was noted that several reports were informative giving data on major pollution sources. Maps and tables comparing different provinces, districts, etc. were provided.

6 ASSESSMENT OF TOTAL POLLUTION LOADS DISCHARGED FROM VARIOUS LAND BASED SOURCES OF POLLUTION

6.1. The participants carefully considered the data supplied to the meeting and it was decided that the full expected outputs would not be achieved. The minutes of this agenda item do not reflect the title of this agenda item.

6.2. Lengthy discussion took place on the definition of hot spots, choice of catchment areas and what constituted a major pollution source. Because of the lack of information on criteria to select and prioritise hot spots the meeting decided to give information on the major sources of pollution within the nominated catchments.

6.3. Participants concluded that the information requested by UNEP EAS/RCU was not specific to the task of choosing potential major pollution sources for remediation and correction in the future and that more detail regarding sources should be applied to the nominated catchments.

6.4. It was discussed that the development of criteria to select and prioritise a hot spot were required. This process will take some time to be accomplished and was something that the meeting cannot achieve within a three day meeting. Thus, the participants decided to alter the direction expected and discuss the needs and questions to be answered by gathering the information on major sources of pollution within the nominated catchments and presenting it

in a regional database that would also be a GIS. The following sections were agreed upon as a useful direction for the project to continue.

6.5. It was noted that “hot spots” was a term to be avoided as there was a confusion as to the definition of this term. The countries agreed that the term “hot spots” be replaced by “major sources of pollution” and that this definition be associated with a specific area, land use or point source defined by latitude and longitude or eastings and northings.

7 DEVELOPMENT OF REGIONAL NETWORK ON LAND-BASED SOURCES OF POLLUTION AFFECTING THE MARINE ENVIRONMENT IN THE EAS REGION

7.1. The Chairperson requested the floor to discuss the GIS database and the requirements for suitable management.

7.2. Mr. Geoff Bott mentioned Leeuwin Centre in Perth for remote sensing but suggested that it is better to use a regional centre with experience in managing data for the EAS region.

7.3. The Chairperson suggested South East Asia START Regional Centre (SEA START RC) as a potential centre for such approach. The participants discussed the selection of this Regional Centre. Mr. Pak agreed that SEA START RC was a suitable choice and the meeting agreed that UNEP should approach START seeking the possibility of it hosting, storing and distributing the GIS-type information provided as raw data in the national reports by participating countries.

7.4. Dr. Kirkman suggested that UNEP will approach SEA START RC to get some advise on the information required to develop a GIS database within the nominated catchments and provide this information to participating countries. The participating countries agreed to submit information that UNEP may require in order to fulfil the GIS database needs. A format will be developed by UNEP and SEA START RC and submitted to the EAS countries to facilitate the collection and submission of the data.

7.5. This format will then be sent to the participants for timely data entry and return to EAS/RCU.

8 DESCRIPTION AND IDENTIFICATION OF CANDIDATE MAJOR SOURCES OF POLLUTION

8.1. The Chairperson invited the meeting to discuss the potential sources of pollution within the nominated catchments.

8.2. Dr. Kirkman explained what was required from the participants and how important it was that storage of available data was on a GIS database. The information requested in the national reports should have a geographical scope covering river catchments up to 200 km from the coastline and include the selection of two or three river catchments with potential threats on the marine environment as main focus of attention for data-gathering.

The attention of the Workshop was drawn to the TDA of the SCS Project and it was pointed out that the potential major sources of pollution sought by this meeting must not be big areas such as provinces or large water bodies.

Within the UNEP GEF Project “[Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand](#)” (South China Sea Project) there are efforts on collecting

existing data and information on the land-based pollution component. As discussed during the First Meeting of the Regional Working Group of the Land-based Pollution Component of the UNEP/GEF project, the information on impacts of land-based pollution is managed by the South China Sea Project while the requested national report requires data and information on the “**sources of pollution**” rather than the “impacts”. This distinction was provided to prevent any possible overlap of information assessment between this activity and the work of the Regional Working Group of the Land-based Pollution Component of the South China Sea Project.

8.3. The Chairperson drew attention to the possibility of reviewing more information and the possibility of having extra time to submit additional data was discussed.

8.4. There followed an extensive discussion on how to define the location of a major source of pollution. Large areas of multiple pollutants would not allow complete analysis nor rehabilitation and it was decided that it was more beneficial to have discrete sites.

8.5. The representative from Australia suggested that a useful set of qualifications to identify the catchments might include the following:

- ✓ A mix of land uses and industry;
- ✓ Not too large an area;
- ✓ Near the effects of the pollutants;
- ✓ A receptive community that was knowledgeable about the problem;
- ✓ Affinity with the stakeholders and;
- ✓ A recognition of the problem;

He noted that it could be useful to choose a small, discrete area that can be dealt with rather than choose an entire catchment, which would be almost impossible to deal with within a reasonable time frame.

8.6. The participants noted the importance of addressing population growth.

9 LIST OF NOMINATED CATCHMENTS

9.1. The Chairperson requested the participants to report on their nominated catchments and, where possible, designate a major pollution source within them.

9.2. The Australian representative described the Mossman-Daintree catchment as the one of major concern. The sources of pollution described were 70% sugar cane/grazing, 10% aquaculture and 20% wastewater. The receiving water is the seas of the Great Barrier Reef. Nutrients and sediments are considered to be the major sources of pollution. The estimated local population was 18,000 residents and the area is approx. 560 km².

9.3. The representative of Cambodia described Sihanoukville and Kampot as major areas of concern. The sources of pollution described were municipal waste, industry, agriculture and harbour waste. The receiving water is Sihanoukville Bay, Riem and Pak Kompong Bay. Estimated population 67,000 in Sihanoukville and 33,000 in Kampot.

9.4. The representative of China named the Pearl River Estuary (Guangdong), Daya Bay (Guangdong) approx. 500km² and the coastal zone of Beihai (Guanxi) as the major sources of pollution. The pollutants were domestic and industrial wastewater.

9.5. The Indonesian representative described the Batam River (Riau) and Ciliwung (Jakarta) as places with major sources of pollution. Riau province, approx. 94,500 km² and the population is 4.08 million and the growth is 3.3%. Jakarta, population is 9.34 million and population growth is 2.09% The pollutants described were domestic and industrial waste and harbour activities.

9.6. The representative of Malaysia mentioned that she required some consultations with her Government to decide on which catchments to nominate, as she had not realised that this meeting would not come up with criteria to define the term “hot spots” which during the meeting was referred to as “major sources of pollution”. As presented in the country report, most industrial activities and population in Malaysia are located in the west coast, which do not directly affect the South China Sea. Ms. Siti offered to provide this data within two weeks. The representative of Malaysia updated the information given and mentioned Miri River basin (Sarawak) and Galin River Basin (Pahang). The major sources of pollution were organics, oil and grease and sediments.

9.7. The Philippines representative named the Pasig and San Juan Rivers within Manila Bay catchment area as the ones of major concern. The sources of pollution described were: i) 65% domestic sewage, ii) 30% industrial waste; and iii) 5% run-off. The receiving water is Manila Bay.

9.8. As Singapore did not have any polluted catchments, it presented management measures that had been undertaken to control pollution in the island state.

9.9. The Thai representative named the Chao Phraya River and the Tha Chine River catchment areas as the ones of major concern. The sources of pollution described were: domestic sewage, industry waste and agriculture. The receiving water is the Gulf of Thailand. There were 9 million people in the Chao Phrya catchment and two million in the Tha Chine River.

Table 1. Nominated Catchment and Major Sources of Pollution and Pollutants

Country	Catchment	Sources	Major Pollutants
Australia	Mossman-Daintree, Queensland	70% sugar cane/grazing, 10% Aquaculture 20% wastewater	Nutrients and sediments
Cambodia	Sihanoukville Kampot	Municipal waste, industry, agriculture and harbour	Organics and nutrients
China	Pearl River Estuary (Guangdong), Daya Bay (Guangdong) Coastal zone of Beihai (Guangxi)	Domestic load and industrial waste	Organics, nutrients and oil
Indonesia	"Batam" River (Riau) Ciliwung (Jakarta)	Domestic load, industrial waste Agriculture run-off	Organics, nutrients and sediments and pesticides
Philippines	Pasig River (Manila Bay) San Juan River (Manila Bay)	65% domestic sewage 30% industrial waste 5% run-off	Organics, nutrients and sediments
Thailand	Chao Phraya River Tha Chine River (ref. Gulf of Thailand)	domestic sewage, industry waste and agriculture	Organics and nutrients

Table 2. Special Case for Singapore (see 9.8)

Country	Location	Management Measures
Singapore	Island State	<ul style="list-style-type: none"> comprehensive sewerage and solid waste management systems in place to prevent pollution of inland & coastal waters

10 FINAL DISCUSSION AND RECOMMENDATIONS

10.1. The Chairperson invited participants to review the DRAFT documents. The working group was invited to discuss and agree on the actions required to address these needs, and to adopt the following preliminary documents on:

- Executive Summary and list of agreements, Annex 3;
- Recommendations for the development and further implementation of a Regional Network and GIS on Land-based Sources of Pollution Affecting the Marine Environment in the EAS Region, Annex 5.

11 CLOSURE OF THE MEETING

11.1. The UNEP EAS/RCU Co-ordinator thanked the participants for their hard work, and constructive contributions to the business of the meeting and expressed the hope that the success of this meeting would lead to fruitful and productive collaboration over the next years.

11.2. The Chairperson thanked the participants for the hard work and the Secretariat for its efficient meeting preparations and support to the work of the meeting.

11.3. The meeting was formally closed at 16:15 hrs, 23 August 2002.

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ANNEX 2

LIST OF DOCUMENTS

Working documents

- UNEP/EAS/GPA/HS.1/1 Background Papers
- UNEP/EAS/GPA/HS.1/2 Descriptions of Activities
- UNEP/EAS/GPA/HS.1/3 Format of National Report
- UNEP/EAS/GPA/HS.1/4 Draft report of the meeting (to be prepared during the meeting)

Information documents

- UNEP/EAS/GPA/HS.1INF.1 Provisional list of documents (this document)
- UNEP/EAS/GPA/HS.1INF.2 Provisional list of participants

ANNEX 3

EXECUTIVE SUMMARY

The nine participants representing Australia, Cambodia, China, Indonesia, Malaysia Philippines, Singapore (2) and Thailand were welcomed by the UNEP EAS/RCU Co-ordinator to the Regional Workshop on “Identification of Pollution Hot Spots in the EAS Region”. He pointed out the high priority accorded this activity by UNEP.

He noted that the activity was a milestone to update the information concerning major pollution sources in the EAS region and that this Workshop will, where possible, complement other regional activities supported by UNEP, in particular those envisaged in the framework of the Global Programme of Action to Protect the Marine Environment from Land-based Activities (GPA/LBA).

The participants reported on the national status of land-based sources and activities affecting the marine environment in the East Asian Seas, based on a format previously provided. Several reports were very informative giving data on major pollution sources.

The participants carefully considered the data supplied to the meeting and it was decided that the full expected outputs would not be achieved.

The meeting decided to give information on the major sources of pollution within the nominated catchments.

The meeting agreed that UNEP should approach the South East Asia START Regional Centre (SEA START RC) seeking the possibility of it hosting, storing and distributing the GIS-type information provided as raw data in the national reports by participating countries;

The meeting discussed the potential sources of pollution within the nominated catchments;

It was noted that it could be useful to choose a small, discrete area that can be dealt with rather than choose an entire catchment, which would be almost impossible to deal with within a reasonable time frame.

The participants presented their nominated catchments and, where possible, designated major pollution sources within them.

AGREEMENTS

The participants agreed on a number of activities and definitions to enable the outcomes of the meeting to be achieved.

1. That a GIS database be used to store, compile and use the data to be provided by participating countries on major sources of pollution in the nominated catchments;
2. That UNEP should approach the South East Asia START Regional Centre (SEA START RC) seeking the possibility of it hosting, storing and distributing the GIS-type information provided as raw data in the national reports by participating countries;
3. That UNEP will approach SEA START RC and get some advise on the information required to develop a GIS database within the selected catchments and provide this information to participating countries.
4. That participating countries submit information that UNEP may require in order to fulfil the GIS database needs. A format will be developed by UNEP and submitted to the EAS countries to facilitate the collection and submission of the data. This format would then be sent to the participants for timely data entry and return to EAS/RCU.
5. That the development of criteria to select and prioritise a hot spot were required, and to alter the direction expected of the meeting and discuss the needs and questions to be answered by gathering the information on major sources of pollution within the nominated catchments.
6. That “hot spots” was a term to be avoided as it was noted that there was confusion as to the definition of this term. The countries agreed that the term “hot spots” be replaced by “major sources of pollution” and that this definition be associated with a specific area, land use or point source defined by latitude and longitude or eastings and northings.
7. That each participating country would identify at least two catchments and list the pollutants at each catchment. As Singapore did not have any polluted catchments, it presented management measures that had been undertaken to control pollution in the island state.
8. That this list of agreements be incorporated as an integral part of the meeting report.

ANNEX 4

GIS DATABASE REQUIREMENTS

The participants discussed the requirements and broad details of a regional GIS.

1. Expected outputs:
 - i. Use of modelling to predict pollution effects;
 - ii. Ability to compare data from different countries;
 - iii. Ability to calculate cost benefit;
 - iv. Estimates used for licensing, and monitoring;
 - v. Record and use for management actions;
 - vi. Time frames can be recorded and estimated;

2. The GIS should contain:
 - i. Catchment boundaries;
 - ii. Drainage system;
 - iii. Land use;
 - iv. Future loads e.g. projected population, density of industries, etc.;
 - v. Load monitoring rather than concentration of pollutant in receiving waters;
 - vi. Receiving waters delineation;
 - vii. Beneficial uses of receiving waters;
 - viii. Monitoring sites – existing and planned;
 - ix. Cost effectiveness to demonstrate reduction in pollutants;
 - x. Accurate location of the sources of pollutants and concentrations;
 - xi. Sizes and boundaries of major pollution sources;
 - xii. Discharge data from source points at nominated catchments;
 - xiii. Identification of main pollutants and their dynamics;
 - xiv. Identification of receiving waters, flow data;

3. Update of data e.g. changes, new monitoring: 6 months to 1 year

4. An important consideration for the GIS was the scale. The scale would be more detailed near points of major concerns.

5. The meeting decided that a Website was needed for the project. Each country should be able to access the full available data. To update data the countries will submit a hard copy to the Secretariat for passing on to the website administrator. The details of the data put in the GIS would be decided by the individual countries. It was pointed out that the more detailed data given, the more likely a particular major pollution source would be a candidate for demonstration purposes. The data would be shared through the website so that the approaches at the nominated catchments could be used as reference for other countries.

COUNTRY REPORTS