

Final Report

**Tripartite Joint Research on
Environmental Management in Northeast Asia**

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The contents of the joint research should be understood as consent opinions of the authors of three institutes and does neither reflect those of PRCEE, IGES, and KEI, nor Ministry of Environmental Protection of China, Ministry of Environment of Japan, and Ministry of Environment of Republic of Korea.

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List of Abbreviations and Acronyms

| | |
|-----------------------|--|
| ADB | Asian Development Bank |
| ADORC | Acid Deposition and Oxidant Research Center (EANET) |
| CDM | Clean Development Mechanism (UNFCCC) |
| CLRTAP | Convention on Long-range Transboundary Air Pollution |
| DPRK | Democratic People's Republic of Korea |
| DSS | dust and sandstorms |
| DSS-RETA | Regional Technical Assistance on Dust and Sandstorm |
| EANET | Acid Deposition Monitoring Network in East Asia |
| FDI | foreign direct investment |
| GDP | gross domestic product |
| IG | Intergovernmental Meeting to Establish the Acid Deposition Monitoring Network in East Asia (EANET) |
| IGM | Intergovernmental Meeting (NOWPAP) |
| IGES | Institute for Global Environmental Strategies |
| JCSD | Japan Council for Sustainable Development |
| JPY | Japanese yen |
| KEI | Korea Environment Institute |
| LTP | Joint Research Project on Long-Range Transboundary Air Pollutants in Northeast Asia |
| MALITA | project on marine litter activity (NOWPAP) |
| MCED | Ministerial Conference on Environment and Development in Asia and the Pacific |
| NAEC | Northeast Asia Economic Conference |
| NCSD | National Councils for Sustainable Development |
| NEA | Northeast Asia |
| NEAC | Northeast Asian Conference on Environmental Cooperation |
| NEACEDT | North-East Asian Centre for Environmental Data and Training |
| NEAR | Association of North East Asia Regional Governments |
| NEASPEC | North-East Asia Sub-regional Programme for Environmental Cooperation |
| NGO | non-governmental organisation |
| NIER | National Institute of Environmental Research (Korea) |
| NOWPAP | Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region |
| NO₂ | nitrogen dioxide |
| NO_x | nitrogen oxides |
| OECD | Organisation for Economic Co-operation and Development |
| PCSD | Presidential Commission on Sustainable Development of Korea |
| PEMSEA | Partnerships in Environmental Management for the Seas of East Asia |
| POPs | persistent organic pollutants |
| PRCEE | Policy Research Center for Environment and Economy |
| RAC | Regional Activity Centre (NOWPAP) |

| | |
|-----------------------|--|
| RCU | Regional Coordination Unit (NOWPAP) |
| SEPA | State Environmental Protection Administration (China) |
| SO₂ | sulphur dioxide |
| SOM | senior officials meeting (NEASPEC) |
| SPM | suspended particulate matter |
| TDGM | Tripartite Director Generals Meeting (TEMM) |
| TEMM | Tripartite Environment Ministers Meeting |
| TPM | Tripartite Presidents Meeting (TEMM) |
| TPES | total primary energy supply |
| UNCCD | United Nations Convention to Combat Desertification |
| UNCED | United Nations Conference on Environment and Development |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNESCAP | United Nations Economic and Social Commission for Asia and the Pacific |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| USD | United States dollar(s) |
| WSSD | World Summit on Sustainable Development |
| YSLME | Yellow Sea Large Marine Ecosystem (Project) |

Chapter 1 Introduction

1.1. Background

In geographical terms, Northeast Asia (NEA) generally refers to the area consisting of the adjacent countries of China, the Democratic People's Republic of Korea (DPRK), Japan, Mongolia, the Republic of Korea (ROK) and the Russian Federation (Fig.1). In an era of globalisation, regionalisation and integration, nations have become increasingly interlinked and interdependent, and none can develop apart from the world. As an important region in Asia as well as in the world, NEA is working towards regional cooperation and development, including political, economic and environmental cooperation.

Factors such as close geographical proximity and rapid economic development make NEA countries interdependent in relation to environmental issues. Significant concern for environmental problems arose in NEA during its rapid industrial development and urbanisation, including the critical environmental issues of air pollution, marine pollution and others.



Figure 1: Map of Northeast Asia (Source: www.erina.or.jp/En/Asia/map.htm)

Regional environmental problems have incurred environmental management issues that straddle one or more borders, and may only be solved through cooperation between relevant countries. Although there exist radical differences in national institutional and economic circumstances, as well as technological capabilities, with which to respond to national and international environmental issues, countries in the region have put forth great effort on common regional issues, and these efforts have

born fruit. There are now in operation various regional environmental cooperation mechanisms (ECMs) and projects, such as the Tripartite Environment Ministers Meeting (TEMM), started in 1999 and held once a year. Others include the Northeast Asian Conference on Environmental Cooperation (NEAC), the North-East Asia Sub-regional Programme for Environment Cooperation (NEASPEC), and the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP).

The emergence of ECMs and projects to tackle environmental problems in the region is a positive sign that the region's countries have an active stance toward regional environmental cooperation. However, it has been frequently pointed out that unified coordination and management between cooperation mechanisms is lacking. This insufficiency has caused not only confusion among government officials, researchers, and the public, but also overlaps and repetition of efforts, low efficiency of investment, and irregularities among the mechanisms. Thus the overall effectiveness of cooperation mechanisms may be compromised and the process of environmental protection and sustainable development in this region may be slowed down. This point was also made by a relevant report (UNEP 2004):

...but the fact remains that the relationships between existing cooperation schemes are not necessarily clear...Furthermore, most of the environment cooperation schemes do not yet have sound financial mechanisms. This has weakened the implementation of activities proposed under the existing schemes. In order to avoid overlap and to ensure effective use of limited financial resources, closer coordination among different environmental schemes should, at the least, be called for. Since environmental problems are interrelated to each other—their root causes are in many cases closely related—an integrated and comprehensive approach is indeed essential.

There has been much discussion and research on various environmental issues and environmental cooperation regimes in the NEA region, but little touched upon the overall environmental management in the region, such as review and assessment of achievements, problems with existing mechanisms, and ways to unify and coordinate different mechanisms. This problem has been noted and addressed by TEMM in various Joint Communiqué:

“the Ministers...confirmed their will to discuss the state of environmental management of the region on a continuing basis and agreed to establish a working group which would work on this matter” (Joint Communiqué of TEMM 6);

“the Ministers acknowledged that the first working group was held on July 14-15, 2005 in Jeju Island in order to review the state of environmental management of the Northeast Asian region and to seek ways to improve the

role of TEMM in the region. The Ministers expressed their expectation for further activities of the working group on this issue” (Joint Communiqué of TEMM 7);

“the Ministers recognized the need for the promotion of collaborative research in NEA to help address regional environmental problems” (Joint Communiqué of TEMM 7).

These statements show that government officials are also beginning to consider regional environmental issues from a holistic perspective, and just in time. While environmental cooperation in this region had achieved some progress, it needs to be further promoted and improved without delay, especially considering rapid economic development and tremendous growth in trade activity between countries in the region. This research is a response to these issues and to TEMM’s call for action. It aims to contribute to dialogue on how to better improve overall environmental cooperation in the NEA region. Initiated in December 2005, this research was commissioned by the environmental ministries of China, Japan and Korea and jointly carried out by the Policy Research Center for Environment and Economy (PRCEE) of the Ministry of Environmental Protection of China, the Institute for Global Environmental Strategies (IGES) in Japan, and the Korea Environment Institute (KEI). These three institutes held the Tripartite Workshop on Environmental Management in NEA in Beijing, China on 22 December 2005, where the main framework of this joint research was formulated.

1.2. Objectives

The objective of this research is to ascertain potential and efficient ways to improve the overall efficacy of environmental cooperation endeavours in NEA. In so doing, a proposal for the strategic implementation of TEMM, which is considered the most effective and influential environmental cooperation mechanism in the region, is developed. Focus is put upon improvement of performance and better coordination between mechanisms. This research aims to promote coherent and coordinated measures for NEA, and to further contribute to the ultimate goal of sustainable development in the region through appropriate environmental governance.

1.3. Structure of Report

This report is divided into five parts. Chapter 1 is an introduction of research background and objectives. Chapter 2 provides a basis for reference of the following chapters. It first briefly introduces social and economic situations in NEA countries and regional trends, followed by brief descriptions of the major environmental issues in NEA, their major causes and present situations (section 2.2). Chapter 3 first reviews current environmental cooperation mechanisms (ECMs), their major achievements and challenges, and their strengths and weaknesses (section 3.2). Based

on this analysis, section 3.3 addresses areas for improvements and suggestions for future actions. Next, an overall evaluation of regional ECMs is outlined (section 3.4). Chapter 4 provides suggestions for future environmental cooperation in NEA, including coordination and harmonisation of ECMs, the future role of TEMM, and others. Finally, Chapter 5 outlines the conclusion of this research.

Chapter 2 Environmental Challenges for Northeast Asia

2.1. Socioeconomic Conditions

2.1.1. National Conditions

This section provides a brief introduction on the national circumstances of NEA countries as background information for environmental problems in the region. Detailed statistics are listed in the table at the end of this section, including population, gross domestic product (GDP), energy consumption, energy efficiency, and so forth.

China

The Chinese government has focused on social and economic development, promoting internal reform and opening to the world. China has made remarkable progress in social and economic development since the beginning of reforms and opening up in the late 1970s. In recent years, China's GDP has grown about nine percent a year on average. China has a population of 1.305 billion, much larger than the sum of the populations of the other five countries in the region. Therefore, in per capita terms, China is still poor in various regards. For example, the total amount of mineral resources in China accounts for about 12 percent of the world total and stands third in the world, but reexamined in per capita terms, China's mineral resources are the equivalent of only about 58 percent of the world average, standing at 53rd in the world. Even the per capita amount of the most abundant mineral, coal, is only about 79 percent of the world average. In addition, China remains plagued by imbalances in development, most notably between urban and rural areas, between regions, between sexes, and between different population groups. The Chinese government has been addressing and will continue to improve the situation on these issues.

Regarding imports and exports in NEA, China mainly imports electric, electronic and machine products from Japan, integrated circuits and micro-electronic components, organic chemicals, steel, plastic, TVs, wireless telecommunication accessories and components from Korea (ROK), and crude oil, steel and nonferrous metals from Russia. China's main exports to DPRK include crude oil, pork, oil products, maize and textiles, while its main exports to Mongolia include textiles, clothing, telecommunication equipment and accessories, and oil products.

Foreign direct investment (FDI) in China from NEA countries has also been growing. In 2004, FDI from Japan was 5451.57 million USD, 6247.86 million USD from Korea, 126.38 million USD from Russia, 2.73 million USD from DPRK, and 0.15 million USD from Mongolia.

The Democratic People's Republic of Korea (DPRK)

The Democratic People's Republic of Korea (DPRK) is a state with an independent national economy relying mainly on its own technologies and resources. Its major industrial structure encompasses electric power, iron and steel, metal, mining, processing, manufacturing and chemical industries that are mainly dependent on domestic resources. The primary energy resource is coal, which meets more than 80 percent of domestic energy demand. Coal is a major fuel and crude material, widely used in all areas of the national economy. In 1990, coal output amounted to 60 million tonnes, but decreased to 22.07 million tonnes in 1998 due to economic difficulties resulting in a shortage of coal. Major sources of water are rainfall, river and underground water. Among these, river water is considered an important source with regard to its potential for development. The DPRK has suffered years of food shortages due to lack of arable land, collective farming, weather-related problems, and chronic shortages of fertilizer and fuel. Massive international food aid deliveries since 1995 have allowed the regime to escape mass starvation, but the population still faces the problems of malnutrition and insufficient living conditions.

Japan

As one of the region's developed countries, with the highest GDP and per capita GDP in NEA, Japan is among the world's largest and most technologically advanced producers of motor vehicles, electronic equipment, machine tools, steel and nonferrous metals, ships, chemicals, textiles and processed foods. This has been achieved despite the country's poor natural resource endowment, especially oil and coal. Stimulated by domestic market demand and an increase in exports, Japan's economy has continued to develop, growing at a rate of 2.8 percent in 2005. Contribution of domestic demand and foreign trade to economic growth was respectively 2.6 percent and 0.2 percent. Japan's economy has stepped into a period of stable development. A member of the Organisation for Economic Co-operation and Development (OECD), Japan boasts the best energy efficiency in NEA in terms of total primary energy supply (TPES) per unit GDP. Its electricity consumption per capita and number of passenger cars per 1000 people are also the highest in NEA. In response to this high energy consumption, the Japanese government has been promoting public awareness on energy conservation and recycling of used materials and wastes in recent years.

As for foreign trade, Japan imports mainly machine equipment, textiles, coal, and electric and electronic products from China, integrated circuits and micro-electronics from Korea, and coal products from Russia. In 2004, FDI in Japan was 900 million Japanese yen (JPY) from China, and 24.7 billion JPY from Korea.

Mongolia

Mongolia has one of the lowest population densities in the world with 1.5 people per square kilometer. Its population of 2.3 million is spread over an area of 156.412 million hectares, although its population growth rate of 1.8 percent per year is one of the highest in East Asia. Urban population in Mongolia has increased to about 56.9 percent of the total population as of 2004, accompanied by a rapid growth in natural resource consumption. Mongolia's transition to a market economy has increased the risk of damage to the country's environmental resources. Natural conditions, such as droughts with a frequency of every two to three years, natural drying, deficit in soil moisture, very thin layer of fertile soil, specific mechanical composition of soils, strong winds in spring and autumn, and dust storms, have caused problems. More than 40 percent of Mongolia's territory is composed of arid and desert areas. The area covered by sand increased by 0.038 million hectares (8.7 percent) over the last 40 years of the 20th century. Livestock grazing is the primary human use of natural areas in Mongolia. Twenty-five million livestock graze 117 million hectares of pasture, approximately 75 percent of the nation's territory. Crop yield has decreased due to decline in farmland soil fertility by about 20 percent. For instance, wheat yield had declined to half the production of the 1980s at the end of 2000. From 1990 to 2000, the accumulated FDI in Mongolia was about 107 million USD from China, 48 million USD from Japan, 39 million USD from Korea, 17 million USD from Russia, and 559,000 USD from the DPRK.

Republic of Korea (ROK)

Since the early 1960s, The Republic of Korea has achieved an incredible record of growth and integration into the high-tech modern world economy, and, like Japan, its electronic products and automobiles are sold all over the world. Four decades ago Korea's per capita GDP was comparable to levels in the poorer countries of Africa and Asia. In 1995, for the first time, per capita GDP broke through the 10,000 USD mark. In 1996, Korea joined OECD. In 2004, it joined the trillion dollar club of world economies. Today its GDP per capita is equal to that of the smaller economies of the European Union. In 2004, the proportion of urban population in Korea reached 80.5 percent. Accompanying this economic growth, explosion of urban population and increase in automobiles, Korea's electricity consumption and TPES per capita has also reached a high level, similar with that of Japan and Russia. Korea's energy efficiency is relatively high, showing its strong technological capacity.

Korea imports mainly machinery and electronic products, iron and steel, fossil fuels and clothing from China, integrated circuits and micro-electronics from Japan, and coal products from Russia. From 1962 to 2000, the accumulated FDI in Korea was about 10.5 billion USD from Japan, 152 million USD from China, 11 million USD from Russia and 135,000 USD from Mongolia.

The Russian Federation

Russia has experienced years of growth since the financial crisis of 1998. Although high oil prices and a relatively cheap ruble are important drivers of this economic rebound, investment and consumer-driven demand have played a noticeably increasing role since 2000. Russia has also improved its international financial position since the 1998 crisis, with its foreign debt declining from 90 percent of GDP to around 28 percent, and now it is going to be zero. Strong oil export earnings have allowed Russia to increase its foreign reserves from a mere 12 billion USD to some 120 billion USD as of 2004. These achievements, along with a renewed government effort to advance structural reforms, have raised business and investor confidence in Russia's economic prospects. According to the Russian Statistical Commission's preliminary data, the GDP growth rate in Russia was about six percent in 2005. Although this rate fell slightly compared to the previous two years, continuous technological innovation and structural reform indicate that potential for economic growth will continue. Considering this trend and with citizens spending more and more on housing and automobiles, Russia's energy consumption is expected to continue to increase. Russia mainly imports machinery, electronic products, clothing and footwear from China, automobiles and vehicle components from Japan, automobiles, vehicle components, telecommunication products, and automatic data processing products from Korea, and agricultural and livestock products from Mongolia.

Table 1 Selected Development Indicators of NEA Countries

| | Population (in millions) (2005) | Urban Population (percent of total) (2004) | GDP (in million USD) (2005) | GNI per capita Atlas Method (current USD) (2005) | Electric Power Consumption (kWh per capita) (2004) | Electricity Generated by Coal (percent of total) (2003) | TPES (toe/capita) (2004) | Energy Efficiency (TPES/GDP) (toe/1000 \$) (2000 \$) (2004) | Passenger Cars (per 1,000 people) (2003) | Rank in HDI (2005) |
|-----------------|--|--|---|--|--|---|---------------------------------------|--|--|------------------------------------|
| China | 1,305 | 39.6 | 2,228,862 | 1,740 | 1,607 | 79.4 | 1.25 | 0.85 | 8 | 85 |
| Russia | 143 | 73.3 | 763,720 | 4,460 | 5,642 | 18.8 | 4.46 | 1.95 | 140 | 62 |
| Japan | 128 | 65.6 | 4,505,912 | 38,980 | 8,076 | 28.2 | 4.18 | 0.11 | 428 | 11 |
| Korea | 48 | 80.5 | 787,624 | 15,830 | 7,391 | 38.9 | 4.43 | 0.35 | 204 | 28 |
| DPRK | 22 | 61.4 | N/A | N/A | 827 | 39.4 | 0.91 | 1.94 | N/A | N/A |
| Mongolia | 3 | 56.9 | 1,880 | 690 | N/A | N/A | N/A | N/A | 26 | 114 |

Source: UNDP, Human Development Report 2005

World Bank, Little Green Data Book 2006

World Bank, World Development Report 2007

IEA, Key World Energy Statistics 2006

2.1.2. Regional Trends

Total population in the region is on the increase, despite the populations of Russia and Japan being relatively stable, or even showing decreasing trends. The average annual population growth rate between 2000 and 2005 was about 0.6 percent in China, 0.2 percent in Japan, 0.5 percent in Korea, 0.6 percent in DPRK, -0.4 percent in Russia, and 1.3 percent in Mongolia. As of 2005, the total population of the region had reached 1.65 billion, with the proportion of urban population increasing as well.

NEA countries are focusing efforts on social and economic development. Countries are working to reform their economies and market systems, toward the healthy and stable development. The region's economy has been growing at a relatively rapid rate in recent years. The average annual GDP growth rate between 2000 and 2005 was 9.6 percent in China, 1.3 percent in Japan, 4.6 percent in Korea, 6.2 percent in Russia, and 5.8 percent in Mongolia. Along with growth of population, economies and urbanisation in the region, energy use and electricity consumption are also increasing, with exception of a relatively stable or sometimes slightly decreasing trend in Japan.

These growing national economies are becoming more closely related as well. International trade has been growing continuously, and countries within the region have become more important trade partners to each other, especially China, Japan and Korea. As of 2005, China and Korea are Japan's top two export partners. Likewise, China and Japan are Korea's first and third ranking export partners, while Japan, Korea and Russia are China's fourth, sixth and eighth ranking export partners. Moreover, China and Korea are Mongolia's first and fifth ranking export partners, while Russia, China, Japan and Korea are its top four import partners.

Another important aspect of economic relations in the region is FDI. In recent years, various economic actors from NEA countries have been investing more and more within the region, which has strengthened the economic ties between NEA countries.

2.1.3. Summary

Countries in NEA are diverse in many respects, such as geography, territorial size, natural conditions, population, development level, and the like. Among the region's countries, China has the largest population, lowest percentage of urban population and highest GDP growth rate, while Japan has the largest GDP and highest gross national income per capita. Russia, Japan and the ROK have similar energy consumption levels in per capita terms, while those of China and the DPRK are far lower. Energy efficiency in terms of the TPES/GDP ratio also greatly differs among NEA countries, ranging from 0.11 tonnes of oil equivalent (toe) per 1000 USD to 1.95 toe per 1000 USD, as of 2004. Regarding electricity generation, coal generates almost 79.4 percent of electricity in China, compared to only 28.2 percent in Japan and about 39 percent in the ROK and the DPRK. Imports and exports differ as well among NEA countries.

Russia, Mongolia and China export mainly minerals, oil, raw materials, and other primary products, while Japan and the ROK export mainly automobiles, vehicle components, telecommunication products, and the like.

According to the Human Development Report of the United Nations Development Programme (UNDP 2005), Japan and the ROK are among 57 countries categorised as exhibiting “high human development” based on human development index data of 2003, ranked 11th and 28th respectively. Russia, China and Mongolia are ranked 62nd, 85th and 114th respectively, among 88 countries categorised as exhibiting “medium human development”.

With a few exceptions, NEA countries share a state of growing economy, population, and proportion of urban population, numbers of motor vehicles, and electricity and energy consumption. Internally, countries are reforming and improving their modes of social and economic development. Externally, they are opening up to each other and strengthening economic relations toward mutual benefits. Trade activity among NEA countries demonstrates material flow of diversified goods and products, including fossil fuels, wood, machines, steel, textiles, automobiles, and high-tech electric and electronic products. Further, the quantity of material flow is increasing due to expanding production and consumption in the region’s countries. While NEA countries are more and more linked to each other through international trade and direct investment, they are concurrently interlinked in terms of the region’s environmental problems. These problems may no longer be blamed on or be solved by only one or two countries, but require action from the region as a whole.

2.2. Major Environmental Issues in NEA

Countries in the region have made remarkable achievements in their socioeconomic development, such as poverty eradication, education, healthcare, and so on, but traditional development modes have been accompanied by depletion of natural resources and degradation of the environment. In addition, the large population of the region is also environmentally destructive, as a large population base leads to over-consumption of natural resources. Population growth and changes of lifestyle toward mass consumption are a major burden to the environment not only in this region, but also in other regions. These and other factors have caused environmental problems which cannot be solved easily, and cooperation among NEA countries is imperative to improve the quality of the shared regional environment.

For the purpose of this research, regional environmental issues refer to those that have impacts not only at national levels, but also at the regional level in NEA. These issues must be dealt with at the regional level, although some are being addressed at the global level as well. The following environmental problems are currently being addressed by existing cooperation mechanisms in the region, and represent areas of concern for NEA countries: land degradation and desertification, dust and sandstorms

(DSS), acid deposition and other long-range trans-boundary air pollutants, marine pollution (including marine litter, biodiversity loss, and water pollution), and waste issues. A survey conducted by questionnaire for this research, in China, Japan and Korea, found the current most significant environmental issues to be air pollution, followed by DSS, environment and energy, trans-boundary movement of waste and biodiversity loss (Fig.2). While the issues of air pollution (38 percent) and environment and energy (26 percent) rank as the top two most future environmental issues in NEA, views are scattered and the consensus level is low (Fig.3).

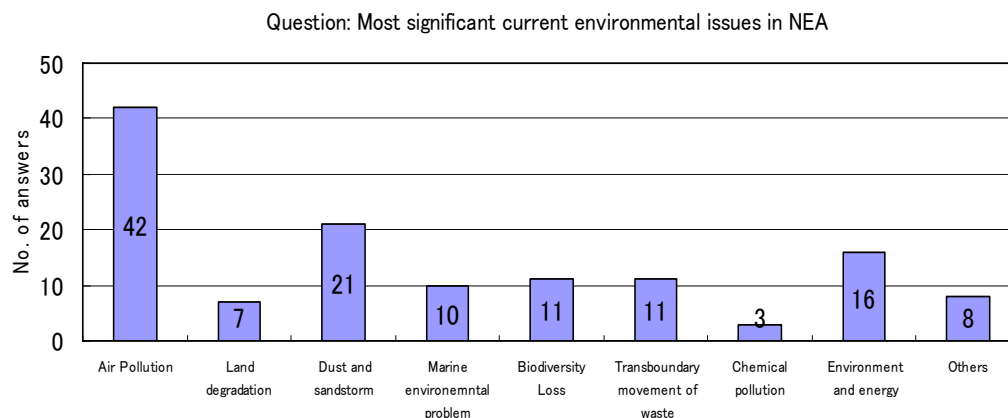


Figure 2: Most significant current environmental issues in NEA

Note: Result of 61 responses provided out of 68 respondents (two responses requested from each respondent).

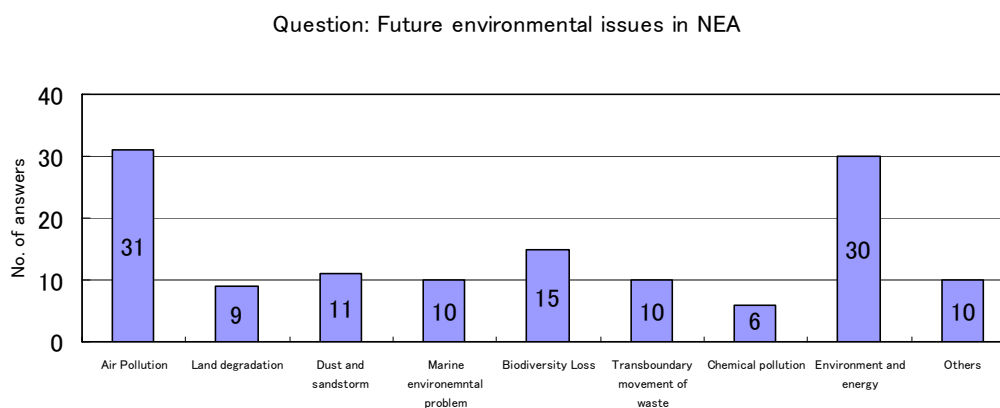


Figure 3: Future environmental issues in NEA

Note: Result of 61 responses provided out of 68 respondents (two responses requested from each respondent).

In order to provide a basis for the following chapters, this chapter gives brief descriptions of the current or recent situations of the major environmental problems of regional concern in NEA.

2.2.1. Air Pollution

Due to growth in population, urbanisation and energy consumption through the use of fossil fuels, emissions of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and particulate matter have been increasing in NEA countries. To date, the transport sector is one of the most troubling areas, with emissions associated with motor vehicle use predicted to significantly increase in major urban areas due to rapid rise in numbers of motor vehicles and population.

Relevant monitoring statistics in 2004 show high levels of particulate matter in northern regions of China during the spring, when both natural and anthropogenic sources contribute to particulate concentrations. Particulates are still the major pollutant affecting air quality in China. Statistics in 2006 showed that concentration of particulates in 62.8 percent of cities had met or exceeded a Grade II standard, up by 3.3 percentage points from the previous year. Meanwhile 5.3 percent of cities surpassed a Grade III standard, down by 0.2 percentage points. Compared with data of 2005, overall particulate pollution was alleviated to some extent. Compared with data from 2000, SO₂ emissions in China exhibited an increasing trend between 2002 and 2006. However, due to tough government pollution control measures, SO₂ emissions in 2007 dropped by 4.66 percent compared with 2006 (SEPA 2007).

In Japan, relatively high levels of particulates (PM₁₀) were observed in March and April at Rishiri and Oki. Further, achievement rates for environmental quality standards on photochemical oxidants were still extremely low as of 2004. Compared to 2003, the number of days for which photochemical oxidant warnings were issued had increased (NIER 2004).

In the DPRK, the major causes of atmospheric pollution have been associated with industrial boilers, kilns, motor vehicles and residential areas in and around Pyongyang. Since coal is the primary source of energy, SO₂, particulate matter and nitrogen dioxide (NO₂) emissions are mainly linked to coal combustion. In addition, population growth and industrial development is likely to lead to increased levels of pollution with serious implications for human health.

In the ROK, monitoring data of 2004 shows relatively high levels of SO₂ and NO_x concentrations in the Taean region, which also recorded high averaged PM₁₀ concentrations. Motor vehicle emissions are the biggest contributor to air quality degradation. In metropolitan regions only, 65 percent of PM₁₀ and 51 percent of NO_x emissions originate from motor vehicle exhaust. Seoul and its surrounding vicinity make up only 12 percent of total national land area, yet account for 46 percent of the total population and number of motor vehicles, making urban air quality management very difficult. Air pollution levels are 1.7 to 3.5 times higher than those of other major cities worldwide, and social costs inflicted by air pollution reach 10 trillion Korean won (8.7 billion USD) annually (MOEK 2005).

Air quality is also a significant environmental problem in urban areas of Mongolia, particularly in Ulaanbaatar. Major air pollutants include NO₂, SO₂ and suspended particulate matter (SPM). Corresponding to a rise in numbers of motor vehicles, concentration of NO₂ has been on the increase. SPM concentration reach its maximum concentrations in April in the presence of strong winds. Primary sources of air pollution in Ulaanbaatar are thermal power plants, small and medium-sized heating boilers, traditional dwellings (gers) and wooden houses, and automobiles. The burning of coal and wood in households in urban areas has been identified as a major source of air pollution (UNEP 2001).

With increasing SO₂ and NO_x emissions, acid deposition has become progressively serious in this region. For instance, during the period of 1983 to 2002, the average pH value of rain fell between 4.49 and 5.85 in Japan. Studies carried out at 23 observation sites between 2000 and 2002 revealed the pH value of about 5 percent of samples to be less than 4.0 (MOEJ 2004). In the ROK, pH values fell between 4.8 and 5.2 in 2005 (MOEK 2005). In China, the pH value of rainfall in some cities fell below 4.0, and the number of cities recording serious acid rain (pH value less than 4.5) was increasing (SEPA 2006). Compared with 2005 data, the number of cities in China subject to acid rain nationwide dropped by 3.1 percent in 2006, while the proportion of cities suffering from relatively heavy acid rain (pH value less than 5.0) rose slightly, and the proportion of cities experiencing heavy acid rain (pH value less than 4.5) somewhat decreased (SEPA 2007). As the situation worsens, countries are increasingly concerned about the ecological impacts of acid deposition, including its negative effect on soil, vegetation, forests and lakes in particular, as well as its potential to incur damage to human-made structures and affect human health.

2.2.2. Land Degradation

Land degradation, which includes desertification, is considered to be one of the major concerns in NEA, particularly in China and Mongolia. Land degradation has long-term repercussions—it is not easy to regenerate land that has been degraded. The United Nations Convention to Combat Desertification (UNCCD) defines desertification as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities. Human activities contributing to land degradation include unsuitable agricultural land use, poor soil and water management practices, deforestation, removal of natural vegetation, frequent use of heavy machinery, over-grazing, improper crop rotation, and poor irrigation practices.

The situation in China and Mongolia requires special attention, where the decreasing quality and quantity of arable land is resulting in reduced productivity and economic losses. China and Mongolia have been severely affected by land degradation and desertification. For instance, it was pointed out by official documents in 2006 that the total area affected by desertification in China was about 1,740,000 square kilometers,

accounting for approximately 18.1 percent of the country's total land area. The direct economic loss was estimated to be more than 50 billion Chinese Renminbi (CNY) every year (State Council of China 2006). In Mongolia, there are estimates that 90 percent of Mongolia's territory is vulnerable to desertification, and about 70 percent is already degraded to varying extents. Thirty percent of its grasslands have been damaged due to inadequate protection from human activities, such as clear-cutting of forests and over-grazing. Researchers estimate that only 13 percent of desertification is caused by natural factors, leaving anthropogenic factors responsible in 87 percent of all cases. It is reported that Mongolia's sandy areas have increased by 380,000 square kilometers over the past forty years. Compounded by inappropriate forest management and heavy demands on vulnerable forest resources, such as cutting trees for firewood, desertification is increasingly becoming a threat to the livelihoods of many Mongolians (UNEP 2001).

In the DPRK, where land suitable for cultivation is limited, appropriate land preservation is very important. More than 80 percent of land area consists of mountains, land of a degradable nature and areas with similar characteristics. Seasonal distribution of rainfall is uneven, with a pattern of periodic high rainfall. Severe degradation of land resources has been closely associated with persistent flooding and the incidence of drought in recent years. Along with these factors, forest degradation has had adverse effects encouraging land erosion. The convenience of chemical fertilizer use, together with an increase in crop yields, is giving rise to land acidification, which brings about a decline both in soil humus content and in crop output, with adverse impacts on sustainable development of land resources.

2.2.3. Dust and Sandstorms

Dust and sandstorms (DSS) are natural phenomena that have occurred for thousands of years in Northeast Asia. While they are partly due to such natural causes as the arid climate and frequent droughts and storms, they are also closely related with anthropogenic activities, such as desertification caused by over-grazing and improper farming. During the past 50 years, the frequency of DSS has increased, geographic coverage has expanded, and the severity of damage has escalated. Now, DSS are considered to be among the most serious environmental problems in the region. They cause considerable hardship and loss of income, disrupt communications, affect human health and, in extreme cases, lead to human death and death of livestock and crops over large areas. In the spring of 2006, a round of severe DSS hit Beijing, covering the city for five consecutive days in April. It was reported to be the most severe sandstorm since 2002, when two severe storms swept across Mongolia in March and April and hit 18 provinces in China, the Korean Peninsula, and a large area of Japan. Total suspended particulate levels recorded in affected areas were tens to hundreds of times higher than the national standards in these countries.

The prevention and control of DSS events have therefore become issues of great concern for these countries. Addressing this issue will not be an easy task, and must include the combined prevention of land degradation and desertification with DSS monitoring and forecasting. The governments of China and Mongolia have formulated comprehensive programs to combat land degradation and desertification respectively, which serve as their main efforts to alleviate DSS.

2.2.4. Marine Environmental Issues

Marine and coastal environmental pollution is another issue of concern in the region. China, the DPRK and the ROK border the Yellow Sea. China, Japan and the ROK border the East China Sea. Japan and Russia border the Sea of Okhotsk, and China and the DPRK border the Bohai Sea. These bodies of water are exposed to pollution from land-based sources, maritime transport and waste dumping. Marine pollution occurs in an area of overlapping and disputed maritime jurisdictions, hindering and complicating joint environmental management. Furthermore, the seas of NEA are semi-enclosed and therefore particularly subject to the effects of chemical pollutants including hydrocarbons, heavy metals, industrial and agricultural chemicals, sewage, heat wastes, and other materials. For instance, red and blue tides have been observed in many closed water bodies, harming fisheries and damaging swimming spots. Red tides have become a major concern in Japan, the ROK and China. Eutrophication has occurred in semi-enclosed ocean areas such as Tokyo Bay, Ise Bay, and the Seto Inland Sea, and marine litter is frequently observed on coasts throughout the region. For some countries of the region, major cities are concentrated along coasts and are focal points of fisheries, maritime transportation, and other activities. The DPRK, Japan, and the ROK, for example, have only narrow strips of flat land along their coasts. Due to concentration of activity in these areas and the fragility of coastal ecosystems, conflicts between protection and development often occur.

During the period 2001 to 2005, the quality of China's inshore marine water improved gradually, but marine pollution of some sea areas is still serious due to land-based sources, maritime transport and waste dumping. The water quality of the East China Sea was the worst in China, and main pollutants included phosphate and inorganic nitrogen. Red and blue tides in some sea areas are frequently observed.

In Japan, 425 cases of pollution caused by oil, waste, red and blue tides, and the like, were identified in 2004, a decrease of 146 cases from the 2003 total. Monitoring by sight of drifting marine debris indicated that most debris consisted of petrochemical products, such as foamed polystyrene and plastics, found in large quantities along the western coast of Kyushu.

Degradation of the marine environment and pollution and depletion of marine resources result from various factors, such as coastal development, outflow of pollutants through freshwater courses, eutrophication, over-fishing, and degradation of marine ecosystems. The disruption of coastal fishery resources by extensive land

reclamation projects, industrial water effluents, waste disposal, and oil spills has had significant negative effects on the sustainable development of coastal fisheries, and causes further coastal environmental degradation. Resultant ecological and economic damage includes commercial losses from fisheries, aquaculture, and tourism, as well as destruction of flora and fauna, increase in red tides, and so on.

2.2.5. Biodiversity Loss

Biodiversity, which contributes to important ecological functions as well as biological resources, is an essential basis for sustainable development. The NEA region is rich in biodiversity, but its biological resources are being increasingly exploited by a variety of human activities. These include direct harvesting and export of natural products including timber and fish, expansion of agriculture into primary forests, wetlands and grasslands, construction of dams, and the replacement of traditional native crops with high-yielding exotic species. Such activities are compounded by socioeconomic factors such as urbanisation, industrialisation, mining, tourism, illegal trade in endangered species, and lack of proper management.

In China, the number of threatened and vulnerable bird species dropped by approximately half in the 1990s (UNEP 2004). However, in the other four countries of the region, the percentage of threatened or vulnerable bird species increased. The ROK had the highest percentage of threatened or vulnerable birds in the mid-1990s.

In the DPRK, ecosystem degradation results from forest degradation, soil erosion, water deterioration, depletion of economically valuable natural resources, and natural disasters, including flooding. Over-exploitation beyond the reproductive capacity of biological resources is a main cause of biodiversity loss. According to 2003 statistics, for higher vegetation, there were ten critically endangered species, 42 endangered species, 76 rare species and 26 species of region-based populations, totaling 158 species and representing four percent of threatened higher vegetation species worldwide. In the case of vertebrates, there were nine critically endangered species, 29 endangered species and 119 rare species, accounting for around 11 percent of global vertebrate species under threat.

In Japan and Mongolia, the threat to biodiversity, in terms of threatened and vulnerable species, increased during the 1990s. According to official statistics in 2005, just over 20 percent of mammals, amphibians, brackish water and freshwater fishes, and vascular plants (tracheophytes) were facing extinction. Likewise, just less than 20 percent of reptiles, and just over ten percent of bird species inhabiting Japan were facing extinction. Currently in Japan, 73 species have been designated as national endangered species pursuant to the Law for the Conservation of Endangered Species of Wild Fauna and Flora, including four species of mammals and 39 species of birds (MOEJ 2005).

Mongolia's biodiversity resources are also facing substantial and increasing threats. Factors including a growing population, urbanisation, economic development, and an increasing per capita demand for natural resources, have resulted in expansion and intensification of land use by people and domestic animals, and in increasing pressure to develop and utilise natural resources. Other factors negatively influencing biodiversity include over-grazing, deforestation, poaching and illegal trade of endangered species, mineral exploitation, construction projects, and uncontrolled tourism.

As biological resources not only suffer impacts of economic activities within countries, but are also affected by international trade, particularly that of wood, agricultural and fishery products, it will be difficult for any one or two countries to protect biodiversity alone. Countries in the NEA region are all parties to the Convention on Biological Diversity and have taken various action under this Convention. As close neighbors and important trade partners to each other, NEA region countries should strengthen regional cooperation on biodiversity protection, including scientific research, information exchange, and joint measures to reduce the impacts of their economic activities and international trade on biological resources.

2.2.6. Wastes

Challenges in the area of waste management, particularly solid waste management, loom large in the region. Due to rapid growth in industrial production, waste generation in China in recent years has been quickly increasing. Waste generation in 2005 was 1.34 billion tonnes, a 12 percent increase from 2004. Thanks to measures on recycling and reuse, waste discharge amounts have been decreasing. For instance, the discharge amount of industrial solid waste in 2005 was 16.55 million tonnes, 6.1 percent lower than the previous year (SEPA 2006).

Since 1990, Japan has been generating municipal solid waste at an annual volume of approximately 50 million tonnes or more. The total volume of industrial waste generated in Japan has remained stable over the last several years. In 2002, the volume was approximately 393 million tonnes, a decrease of about 1.8 percent from the previous fiscal year. Approximately 40 million tonnes were discarded at final disposal sites, a decrease of about 2 million tonnes from the previous fiscal year. Nationally, an average of only 4.5 years of capacity in final disposal sites for industrial waste remained as of April 2003, presenting a serious situation for the country (MOEJ 2006).

The economy of the ROK has been expanding rapidly, leading to swift improvements in the standard of living over the past 40 years. As a result, waste generation has continued to increase in an environment with limited carrying capacity. From 1996 to 2003, daily waste generation in the ROK increased from 175,334 to 295,047 tonnes. The rate of recycling exceeded the rate of landfilling for the first time ever in 2002. Between 1996 and 2002, the recycling rate of municipal waste increased from 26.2

percent to 44.0 percent, while the rate of landfilling decreased from 68.3 percent to 41.5 percent (MOEK 2005).

Electronic waste or e-waste is growing exponentially in NEA countries. While some of the materials making up e-waste are recoverable, several others, including the heavy metals mercury and cadmium, are not. Vulnerable communities may be exposed to toxic metals whose health impacts include cancer and organ damage. With the growth of international material flow, production and consumption, wastes disposed in one country may be blamed on other countries to a certain extent. Moreover, trans-boundary movement of wastes in the name of trade, as well as illegal trans-boundary movement of wastes, pose a serious problem for the entire region because such activities render it more difficult to properly manage and handle wastes. With the amount of wastes growing in the region, the exchange of experiences and technologies on waste management, waste treatment and waste recycling within the region could be very useful. It is also necessary for countries to cooperate under the Basel Convention and take regional measures for coordinated regulations on the trans-boundary movement of waste, thus keeping the market of disposal and movement of wastes under control and preventing illegal activities.

2.2.7. Chemical Pollution

Chemicals have entered every corner of human life and play a very important role in social and economic development. At the same time, they have also been the cause of many pollution accidents, incurring various negative impacts on the human body and the environment, especially in the case of toxic chemicals. Chemical substances enter the environment through various ways, such as via direct use in the environment, discharge as solid waste, waste water or waste gas after industrial or civil use, or leaks resulting from improper use or accidents.

It is possible to prevent and control chemical pollution caused by chemical waste or leakage; however, it is very difficult to prevent the harm of chemicals when they are directly used in the environment or on the human body. This is particularly the case when chemical substances are contained in products for daily use and difficult to detect, such as in plastics, detergents, paint, or even food and beverages. With more and more chemicals being produced and used, prevention and control of chemical pollution has become an important issue in the world, as in NEA countries. Exchange of experience and technologies among NEA countries could be very useful to address this issue. At TEMM8 held in December of 2006, three ministers concurred in the Joint Communiqué that China, Japan and the ROK would cooperate to promote information exchange on policies and regulations on chemicals management. To this end, international meetings to begin information exchange at the working level were scheduled to be held in 2007.

2.2.8. Environment and Energy

Energy shortage and environmental problems caused by energy consumption are among the most serious global challenges. In NEA, a number of countries already exhibit high energy consumption, while high consumption in the region is expected to further increase as countries experience rapid growth and development (UNEP, 2004). In addition to energy shortages, severe environmental pollution is closely related to energy consumption due to dependence on fossil fuels. This trend is exacerbated in some countries owing to use of older technologies in industries, e.g. automobiles, power, and heating. Atmospheric pollution and climate change are considered to be the major consequences of energy consumption. Further, the emission of SO_x, NO_x, and other substances from energy consumption results in problems, including degradation of air quality and acid deposition. Under pressure of huge energy consumption increases in the future, clean energy and clean technology have become urgently needed in the region.

Aware of energy shortages and environmental problems caused by energy consumption, countries in NEA have already initiated action. In Japan, measures for introducing renewable energies, such as solar and wind power, are making some progress. China and the ROK are also exploring as many opportunities as possible to utilise clean energy as well as clean technologies. Considering that most countries in the region lack the necessary initial financing, technology and experience in the development and use of clean and renewable energy, it would be beneficial for countries to cooperate at the regional level to help each other through exchange of experiences, capacity-building, technology transfer, financial assistance, and so on.

Improvement of energy efficiency is another important way to reduce air pollution. Countries could also cooperate on the improvement of energy efficiency in various sectors, which still differs greatly from country to country in the region.

2.3. Summary

Countries in the NEA region exhibit great differences in their economic and political systems, development levels, and natural characteristics. Under different national circumstances, environmental problems may have different socioeconomic backgrounds and non-anthropogenic causes, and thus need to be dealt with in different ways. Nevertheless, differences in such aspects as environmental management capacities and levels, technology levels, and so forth, make a good case for regional cooperation between NEA countries. Therefore, under the common goal of sustainable development in the region, national differences can be the starting point for cooperation and must be taken into consideration to formulate and implement realistic and feasible solutions.

Economic development in NEA has been accompanied by various environmental problems, which must be taken into consideration by NEA countries in their environmental strategies or plans; however, it will be difficult to address all problems at the same time. A step-by-step approach needs to be taken, as it is more feasible to tackle major environmental problems first, and then others in the future. Further, major environmental problems are not easily solved and require more efforts. Therefore, when addressing major environmental issues of common concern in NEA, it may be better for regional cooperation to engage in easy and practical measures in the beginning stages, followed by gradual implementation of more profound and long-term solutions. According to survey research, 66 among 68 respondents (over 97 percent) agreed to the need for cooperation in addressing environmental problems in NEA (fig.4). This response shows that the three countries surveyed share a common understanding on the difficulty of addressing regional level environmental problems by a single country's effort alone. This consensus is the driving force behind the promotion of environmental cooperation in NEA.

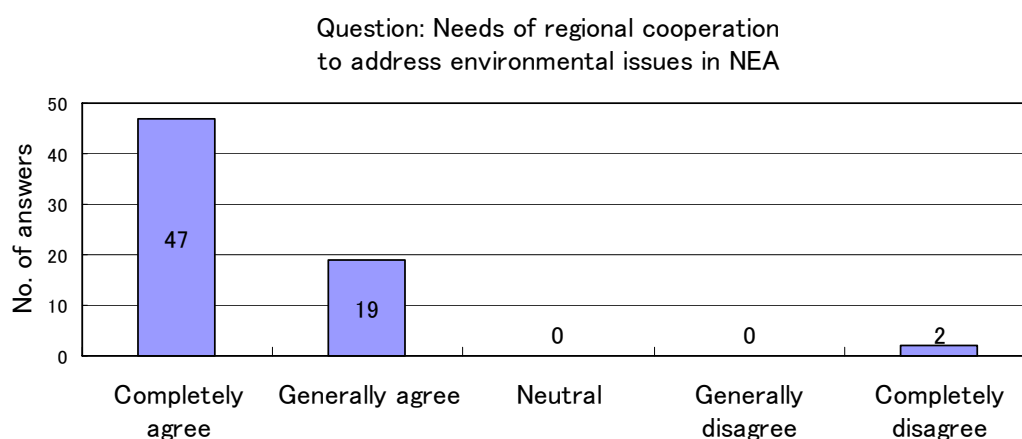


Figure 4: Need for regional cooperation to address environmental issues in NEA
Note: Result of 68 responses provided out of 68 respondents.

There are encouraging signs that NEA countries are taking environmental sustainability very seriously. Issues such as land degradation, desertification and DSS, acid deposition, marine pollution, nature conservation, and others are already being addressed by NEA countries through various environmental cooperation mechanisms, and relevant actions have been implemented at the regional level. Nevertheless, these efforts are at an early stage and, as the present environmental situation indicates, environmental problems are far from being solved. Further, the size and population of the region, coupled with its rapid economic growth, indicates that environmental pressures and problems may continue to exacerbate unless vigorous and effective actions are taken.

Apart from focused efforts on major pressing environmental issues, NEA countries should approach all environmental issues as a whole and consider them together with economic and social development. As repeatedly stated in many forums, action plans,

and reports, there exists an urgent need to implement integrated strategies for sustainable development at national and regional levels. Although many strategies and action plans have been developed in the region, attention has been focused mainly on sectoral environmental issues, such as atmospheric pollution and water pollution, rather than overarching issues, such as sustainable production and consumption integrated with other socioeconomic and environmental issues (UNEP 2004). As environmental problems are mainly the “by-products” of social and economic development, ways to deal with these problems should also be centered around the ultimate goal of sustainable development and based on adjustment and innovation of old development modes. Therefore, it is crucial to prevent environmental problems during the production and consumption process, instead of merely utilising end-of-pipe controls.

Since the United Nations Conference on Environment and Development (UNCED) was held in 1992, and particularly after the World Summit on Sustainable Development (WSSD) in 2002, NEA countries have been seriously rethinking and adjusting their development modes according to principles of sustainable development. For instance, Japan is promoting an initiative on the 3Rs (reduction, reuse, and recycling). Except for efforts on pollution control, China has also promoted a circular economy and begun to establish a resource-saving and environmentally-friendly society based on the concept of scientific development. The ROK is taking similar actions through promoting recycling and reuse of waste materials. Recently the Fifth Ministerial Conference on Environment and Development in Asia and the Pacific (MCED) was held in March of 2005 and highlighted the topic of environmentally sustainable economic growth. Environmentally sustainable economic growth was endorsed by 52 countries as the way for the future. The meeting issued a comprehensive Ministerial Declaration on Environment and Development, created a Regional Implementation Plan for Sustainable Development in Asia and the Pacific (2006-2010), and established the Seoul Initiative on Environmentally Sustainable Economic Growth (Green Growth). This initiative addresses emerging challenges highlighted in the Regional Implementation Plan with the goal of environmentally sustainable economic growth in Asia and the Pacific. The Kitakyushu Initiative for a Clean Environment, aimed at improvement of air and water quality and waste management, was also endorsed at the meeting (UNESCAP 2005). Nonetheless, NEA still lacks a practical sustainable development strategy or similar comprehensive plan for the region to coordinate and guide its cooperation, although individual countries may have their own national strategies or plans.

Therefore, as mentioned above, it is crucial to adjust development patterns with the aim of preventing environmental problems, instead of engaging in merely end-of-pipe controls. In order to do so, nations in the NEA region, with the exception of efforts on urgent environmental problems, should analyze the overarching situation of environment and development, and formulate practical policies, strategies and plans

to promote this transformation. More importantly, these policies, strategies and plans must have clear goals and be designed for feasible implementation. In addition, strong implementation mechanisms should be established for these plans, such as institutional setup, including decision-making and executive bodies, financial mechanisms, and the like.

Chapter 3 Review of Current Environmental Cooperation in Northeast Asia

The purpose of this chapter is to first clarify the status quo of regional environmental cooperation in NEA, and second to identify the major concerns facing environmental cooperation. As such, this chapter will (i) introduce an analytical framework (Section 3.1); (ii) evaluate the performance of selected ECMs in NEA based on five criteria (Section 3.2); and (iii) analyse gaps in the overall environmental cooperation system against goals for environmental protection in NEA (Section 3.3).

Six ECMs, considered to be the main ECMs addressing environmental issues in the NEA, were selected for the performance evaluation of the current environmental cooperation system in NEA. They are the Tripartite Environment Ministers Meeting (TEMM), the North-East Asia Sub-regional Programme for Environment Cooperation (NEASPEC), the Northeast Asian Conference on Environmental Cooperation (NEAC), the Acid Deposition Monitoring Network in East Asia (EANET), the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP), and the Regional Technical Assistance on Dust and Sandstorm (DSS-RETA). According to their different scopes and functions, the six ECMs are categorised into two broad types, namely generic ECMs and specific ECMs. Mechanisms in the former category deal with a broad range of environmental issues and have multiple functions, including provision of political dialogue on construction of a regional environmental cooperation framework, setting environmental priorities in the region, addressing issues cutting across regions and sectors, and facilitating regional efforts to solve specific urgent environmental issues. Those in the latter category, specific ECMs, focus on a specific environmental issue. In this study, TEMM, NEASPEC and NEAC are considered generic ECMs, while EANET, NOWPAP and DSS-RETA are considered specific ECMs. In addition to these six selected mechanisms, other activities related to environmental cooperation in the region are introduced in the latter part of this chapter, followed by a brief summary of overall environmental cooperation in the region.

In order to analyse the gaps in overall environmental cooperation in the region, the eight environmental issues identified in Chapter 2, were used as the issues of focus. The evaluation is divided into two parts, the first concentrating on the performance of generic ECMs, and the second on the performance of specific ECMs. Of the eight environmental issues, special focus was put on air pollution, marine environmental

problems, and DSS, issues for which relatively solid regional environmental mechanisms have been in operation. Current activities on other environmental issues are briefly summarised.

3.1. Analytical Framework

First, to evaluate the six ECMs and assess the status quo of current environmental cooperation in the NEA region, five evaluation criteria were utilised. These criteria were derived mainly from those used to evaluate official development assistance (ODA) projects by the Development Assistance Committee (DAC) and the Global Environment Facility (GEF). While there are a number of studies evaluating the effectiveness of international environmental regimes, considering the rather short history of environmental cooperation in NEA, criteria for project evaluation was considered more appropriate for this research. Specifically, the five following criteria were utilised: (i) *relevance*; (ii) *effectiveness*; (iii) *efficiency*; (iv) *stakeholder participation*; and (v) *sustainability*.

Relevance refers to the extent to which stated goals and objectives, as well as carried-out activities, are relevant to the problem(s) to be addressed. Three aspects were examined to determine *relevance*. The first aspect is the scope of issues addressed by the ECM compared to the eight regional priority issues identified in Chapter 2, namely, air pollution, land degradation, dust and sandstorms, marine environmental issues, biodiversity loss, wastes, chemical pollution, and environment and energy. The second aspect is the level of actions undertaken by the ECM. In this research, five levels are considered, namely information exchange, policy dialogue, action plans, pilot projects, and legal agreements. The third aspect examined is the functions of the ECM, including internal functions within the geographic scope of NEA and external functions beyond the geographic scope of NEA. Internal functions include (i) setting principles and rules for regional environmental cooperation; (ii) agenda setting; (iii) priority setting; (iv) coordination with other generic and specific ECMs in NEA; and (v) fostering the establishment of ECMs for emerging environmental issues in NEA. External functions include (i) cooperation with international regimes to deal with global environmental issues; and (ii) cooperation with ECMs in other regions.

Effectiveness exhibits to what extent the specified (or implicit) objectives of the ECM are met through its activities and how these activities influence activities and programmes elsewhere (the ripple effect). *Efficiency* refers to how available financial

and human resources have been allocated to produce outputs. *Stakeholder participation* indicates to what extent important actors and stakeholders are involved in the ECM and its related activities, and how well they interact with one another. *Sustainability* refers to institutional and financial stability of the development and maintenance of the ECM.

Second, for analyzing gaps in the overall environmental cooperation system of the region, five criteria were developed to identify gaps and analyse the causes responsible for them. The five criteria are (i) *level of action*; (ii) *issue area coverage*, (iii) *geographical coverage*, (iv) *resource availability*, and (v) *stakeholder participation*.

In assessing gaps in the environmental cooperation system in NEA, policy implementation toward the achievement of a certain level of environmental protection is examined. Policy implementation is defined as “those events and activities that occur after the issuing of authoritative public policy directives, which include the effort to administer and the substantive impacts on people and events” (Victor, Raustiala, and Skolnikoff, 1998). Through use of the five criteria, five aspects of policy implementation are examined, namely, the policy implementation process, activity areas, actors, resources to carry out activities, and physical coverage of targeted areas. In highlighting the gaps within these five criteria, the progress of the environmental cooperation system in NEA is evaluated related to achieved effects in behavioral changes of actors in environmental problems.

Two aspects of *level of action* are assessed, namely, policy-making processes and institutionalisation of mechanisms. The first aspect, policy-making processes, is assessed against the five levels of action to influence behavioral change of relevant actors, namely, information exchange, policy dialogue, action plans, pilot projects, and domestic implementation. The second aspect, institutionalisation, is assessed by two standards, namely, existence of agreements and organisational structure. For organisational structure, administrative and decision-making systems of the mechanisms are examined.

Issue area coverage is assessed differently for the gap analysis of generic and specific ECMs. For generic mechanisms, issue area coverage is assessed against the eight priority issue areas identified in Chapter 2. For specific mechanisms, gaps are assessed by activities related to science and policy linkage, referring to existing mechanisms in other regions, which have longer histories and thus more holistic frameworks to deal with specific issues.

Geographical coverage is assessed against the participation of the six countries in NEA, namely, China, Japan, Mongolia, the DPRK, the ROK, and the Russian Federation. *Resource availability* is assessed against the sufficiency and sustainability of financial mechanisms to operate and implement activities. *Stakeholder participation* is assessed against the presence of six critical stakeholders, i.e. international organisations, national governments, local governments, experts, corporations, and NGOs.

Secondary information such as literature reviews and reports on relevant ECMs are also used in this evaluation. To validate information and determine the views of different stakeholders on environmental cooperation in NEA, survey questionnaires and direct or telephone interviews were conducted by the three institutes (PRCEE, IGES and KEI) in China, Japan and the ROK, respectively, based on structured questions related to each of the six ECMs (Appendix I). Out of more than 100 persons contacted in total, 68 respondents, including governmental officials, staff persons of international organisations and other stakeholders, provided reliable answers. Selected statistical results of the questionnaire are incorporated into the evaluation, and results are included in the Appendix.

3.2. Evaluation of Individual Environmental Cooperation Mechanisms in NEA

3.2.1. Generic Mechanisms

The three generic mechanisms, TEMM, NEASPEC and NEAC, perform similar functions, such as to (i) exchange views on various environmental issues challenging member countries; (ii) identify common environmental concerns in the region; (iii) agree upon modalities to address common concerns; and (iv) implement projects to deliver effective improvements in the regional environment. In the following section, the status quo of the three generic ECMs is examined.

3.2.1.1. TEMM

Overview

Attended by three environment ministers from China, Japan and the ROK, the Tripartite Environment Ministers Meeting (TEMM) is the highest level of intergovernmental meeting on environment in NEA. TEMM was established in 1999 after the 6th meeting of the United Nations Commission on Sustainable Development (UNCSD) in April 1998, where the three ministers agreed to meet annually. Annual meetings are hosted by each of the three countries in rotation, with the environment ministry of the host country serving as the secretariat for that year. The first meeting was held on 13 January 1999 in Seoul, and the most recent meeting (TEMM 9) took place in Toyama, Japan on 4-6 December 2007. At meetings, the three ministers exchange information and views on the current state of the environment in their countries, as well as concerns for regional environmental issues. Agenda setting follows. Discussions and decisions are summarized in the form of Joint Communiqué, which are concluded at each meeting. Ministers also discuss potential measures to promote further environmental cooperation in the region, such as launching collaboration projects and joint research activities.

Relevance

The Joint Communiqué of TEMM 1 in 1999 stated that environmental cooperation in NEA was necessary in order to address increasing environmental degradation due to dynamic development of the region. The priority areas of cooperation were set as follows:

- (i) raising awareness that the three countries belong to the same environmental community;

- (ii) promoting information exchange;
- (iii) strengthening cooperation in environmental research;
- (iv) fostering cooperation in environment-related industries and transfer of environmental technologies;
- (v) exploring appropriate measures to prevent air pollution and to protect the marine environment; and
- (vi) strengthening cooperation to address global environmental issues, such as biodiversity and climate change.

In addition to priority issue areas mentioned in (v) and (vi) above, in recent meetings TEMM has expanded the scope of its focus to include the issues of waste management, chemical pollution, energy, water-related issues, as well as the overarching issue of reconstructing society upon sound material cycles and circular economies. Hence, TEMM has addressed all of the environmental issues identified as emerging and urgent in this research, and has gone even further to address issues of sustainable development.

To examine the level of actions undertaken, it is necessary to review the proceedings of TEMM meetings. Specifically, at each meeting of TEMM, countries exchange information regarding the current state of the environment, as well as each country's progress in environmental management. Then, policy dialogue is carried out regarding emerging environmental issues in the region, as well as international environmental regimes, and means of cooperation are discussed. Aside from meetings, various projects are initiated by Joint Communiqué and implemented under TEMM. Indeed, several cooperation mechanisms and activities have been developed to address emerging issues, including DSS-RETA (the details of which will be explained in later sections) and chemical management. It should be noted that when compared to the scale of environmental problems and the need for behavioral change to improve the environment in the region, projects implemented thus far have been generally small in scale and have not developed to include domestic follow-up. As for the last level of action, namely, legal agreement, TEMM has not yet developed any measures. Thus, regarding level of action, TEMM is operating at a level four stage, that is, project implementation.

As for the functions of TEMM, various efforts have been developed. Specifically, TEMM has discussed the current situation of various environmental cooperation systems in the region, including NEASPEC, NEAC, EANET, and NOWPAP. For issues related to DSS, TEMM has invited the Environmental Minister of Mongolia to

discuss possible modes of cooperation. TEMM conducts prioritisation of issues through listing emerging environmental issues in the region. In addition, by conducting activities related to (iii) and (iv) above, TEMM works to build relationships with other non-state actors. On the other hand, TEMM has not yet developed principles and rules for regional environmental cooperation, and has not set any specific agenda for action. Therefore, systematic rules for cooperation have not yet been established under this mechanism. Regarding external functions, TEMM has taken into consideration active collaboration with global environmental regimes, such as the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol (KP), the World Summit on Sustainable Development (WSSD), and the Stockholm Convention on Persistent Organic Pollutants. In recent years, TEMM has begun to consider ECMs in other regions, namely the EU, especially in respect to chemical pollution issues. Therefore, TEMM has played a significant role in promoting environmental cooperation both within and outside the region.

According to the questionnaire survey, 85 percent of respondents agreed that TEMM addresses priority environmental issues in NEA (Fig.6). This result indicates that TEMM indeed functions as a generic ECM to address regional environmental issues of common concern. It also shows the importance of TEMM as a high-level meeting in the region to deliver concrete outcomes for the promotion of environmental cooperation in NEA. These conclusions imply that TEMM should play a more important role as an umbrella mechanism to facilitate regional environmental cooperation.

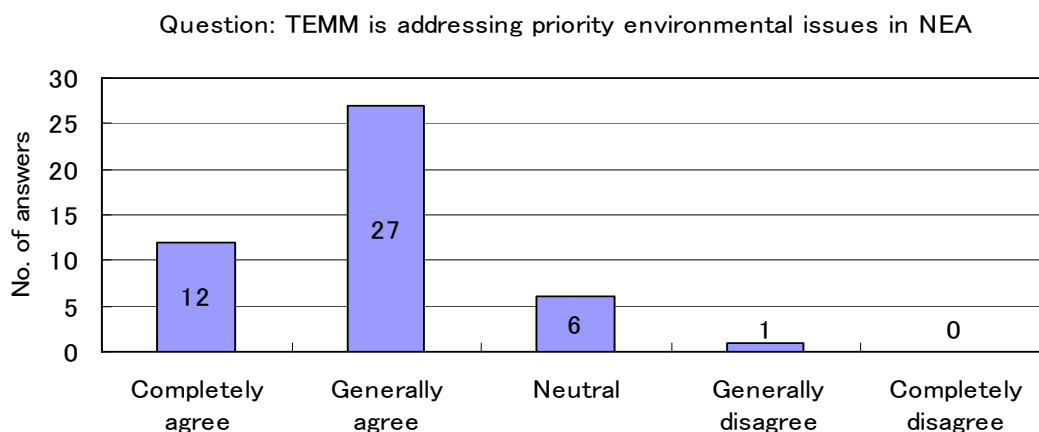


Figure 5: Relevance of TEMM and related activities

Note: Results of 46 responses provided out of 68 respondents.

According to survey results on the level of actions taken by TEMM, “policy dialogue” ranked as the most important function of TEMM, which serves as a political forum to

discuss and promote regional environmental cooperation (see Appendix I-2 for details). Covering major environmental issues in the region and owing to the high-level representation of the ministers, TEMM functions as a generic mechanism for regional environmental cooperation. Specific functions include reaching agreement upon common concerns for regional environmental issues, setting priority areas, implementing collaborative projects and joint research, fostering the creation of regional cooperation mechanisms addressed at specific issues (e.g. DSS-RETA and chemical management), and coordinating with international organisations and global environmental regimes (e.g. UNFCCC) to deal with environmental issues beyond the scope of NEA. Therefore from the perspective of this study's evaluation criteria, TEMM has a certain level of relevance to solve regional environmental issues.

On the other hand, not very many survey respondents considered TEMM to have improved environmental quality in NEA through its activities (see Appendix I-3 for details). This result may indicate that TEMM has not yet developed to a level of production of tangible outcomes.

Effectiveness

One of TEMM's mandates is the promotion of consultation and cooperation on environmental issues among the three member countries. To this end, TEMM has played an important role in facilitating a common understanding of urgent regional environmental issues, and in exchanging information on both regional activities and domestic environmental policies. For each Joint Communiqué, various projects have been identified in five priority areas and implemented under TEMM. The five priority areas include (i) raising the environmental consciousness of communities; (ii) prevention of fresh water (lake) contamination and prevention of land-based marine pollution; (iv) environmental industry cooperation; and (v) ecological conservation of Northwest China. Within these priority areas, six projects have been carried out (Table 2).

Activities listed in Table 2 represent TEMM's efforts to implement cooperation activities among the three member countries. All activities are in agreement with the stated objectives of TEMM. In addition, TEMM initiated the Tripartite Presidents Meeting (TPM) in 2004 to promote joint research activities in environmental sciences between the three countries. Considering the above efforts and initiatives of TEMM, it can be concluded that TEMM has progressed smoothly in its substantial efforts to realise stated goals and objectives.

Table 2: Projects under TEMM

| Project | Notes |
|---|--|
| Ecological Conservation in Northwest China | Expert workshops and seminars on ecological conservation and launching the Eco-Village Pilot Project in Inner Mongolia |
| Freshwater (Lake) Pollution Prevention | Joint field investigation on Xihu Lake in Hangzhou and Taihu Lake in Jiangsu Province, China |
| Environmental Industry Cooperation | Promoting information exchange and cooperation in environmental industry and technology development |
| Joint Environmental Training | Promoting personnel exchange of environmental officials and development of networks among them |
| Construction and Maintenance of TEMM website (www.temm.org) | Providing information including Joint Communiqués of TEMM and other documents and reports on the progress of projects under TEMM |
| Tripartite Environmental Education Network (TEEN) | Promoting information exchange through network of environmental education in three counties |

Source: TEMM website at <http://www.temm.org>

Survey results indicate that among the various positive outcomes produced by TEMM and its activities, the announcement of the Joint Communiqué for each meeting is regarded as the most prominent outcome (see Appendix I-4 for details). Other outcomes recognised by respondents are primarily related to projects implemented under TEMM. These results show considerable recognition of TEMM and its activities.

Efficiency

Member countries take turns acting as host country and making necessary preparations for the organisation of meetings. Thus the necessary budget and administration is set by each environment ministry. As TEMM is one of the top concerns of ministers, financial insufficiency to implement planned activities has not been reported. This may be partly due to the fact that officials manage the agenda and plan of activities based on resources available, and they need not cater to external demands and pressures.

In this rather simple manner, TEMM has continued to meet every year since 1999 despite the hectic schedules of ministers. The Joint Communiqué concluded at each meeting serve as the basis for relevant agencies to implement projects. Appendix II-1 details the overall results of TEMM's activities, in terms of output and outcomes.

Since information on financial management is not fully available for this mechanism, it is difficult to assess its efficiency from the perspective of financial and human resources. Yet considering the way in which this mechanism is operated, it can be

observed that most of its budget is spent directly on necessary activities, without excessive administrative cost, which shows the resource efficiency of this mechanism.

Regarding sufficiency of resources, survey respondents exhibited diverse opinions. Some answered that resources are sufficient, and others answered that they are not (see Appendix I-5 for details). This might imply that TEMM has sufficient resources for meetings and institutions, but needs more resources for implementation, e.g. project activities.

Regarding efficiency in resource utilisation, many respondents felt that resources are used properly, with only a few opposing opinions. Therefore, TEMM is regarded as using available resources properly and efficiently (see Appendix I-6 for details). However, considering the scope and level of actions that TEMM should have, it is difficult to conclude that resources are sufficient.

Stakeholder Participation

The strength of TEMM lies in the fact that it gathers the highest authorities in the environmental arena from three countries in NEA, with strong support from the heads of state. This is an indication of the strong political will shared by the three member countries to cooperate on matters related to the environment. With regard to participation of other stakeholders, TEMM has internal and external mechanisms for collaboration. TEMM has implemented several projects in collaboration with NGOs and the private sector, as listed in Table 2. Together with other issue-specific mechanisms, such as DSS-RETA and EANET, TEMM has kept in close contact with these stakeholders, provided overall policy guidance, and set priorities for competing issues. However, TEMM has not set up institutions to mobilise the participation of other stakeholders.

Accordingly, many survey respondents agreed to the suggestion to include other stakeholders in TEMM and its activities (see Appendix I-9 for details). Since only a few disagreed this suggestion, results support the reasoning that environmental cooperation in NEA should develop to involve not only government officials as major actors, but also other stakeholders who will play indispensable roles in the implementation of activities to solve regional environmental issues.

Sustainability

The institutional setup of TEMM is composed of the main ministerial meeting and pre-TEMM and post-TEMM meetings of working groups and related projects. The

host government acts as the secretariat on an annual rotating basis. Since TEMM has become an integral part of the portfolios of the environment ministries in the three countries, there has yet to be any consideration on establishing an independent secretariat. TEMM is one of the most stable mechanisms among the three countries. It has met nine times consecutively, irrespective of diplomatic downturns due to political acrimony among member countries. Similar mechanisms in non-environment areas do not necessarily meet regularly at the ministerial level. One comparable regional cooperation mechanism for the same three countries is the finance ministers meeting, which has met six times since 2000, with limited function as a forum to exchange views and information on economy-related issues. During the past nine years of TEMM, officials of the three countries have worked closely together and built mutual trust. These personal relationships are significant in contributing to the sustainability of TEMM. As long as TEMM can make swift political decisions on important regional matters related to the environment, it will remain an effective and influential mechanism for environmental management in NEA.

The significance of environmental cooperation among China, Japan, and the ROK was reiterated in the “Joint Declaration on the Promotion of Tripartite Cooperation among the People’s Republic of China, Japan, and the Republic of Korea,” signed in 2003 by the heads of the three countries during the ASEAN+3 Summit in Bali, Indonesia. The Declaration states, “In order to promote sustainable development, three countries will strengthen consultations and cooperation on major regional and global environmental issues”.¹ As China, Japan, and the ROK are considered important countries in the region², the endorsement of a common environmental agenda by the three ministers has significant impact on regional environmental policy-making and on the national environmental policy of the three countries.

In order to ensure the effectiveness of the mechanism, mandatory financial contribution of member countries is a topic of concern. In this regard, many survey respondents agreed that TEMM should establish a mandatory financial mechanism with contributions from member countries (see Appendix I-7 for details). By securing financial contributions from member states, TEMM can support more environmental projects in the region.

¹ <http://www.mofa.go.jp/region/asia-paci/asean/conference/asean3/joint0310.html>

² Paragraph 2 of the Joint Communiqué of TEMM 1 states, “The ministers recognized that, as China, Japan and Korea are playing important roles in economic and environmental cooperation in the Northeast Asian region, close cooperation among the three nations is indispensable to sustainable development in Northeast Asia”.

Similarly, an independent and permanent secretariat may help strengthen TEMM and its implementation. Around half of survey respondents thought that TEMM should have an independent, permanent secretariat (see Appendix I-8 for details). Establishing a mandatory financial mechanism and a permanent secretariat may help TEMM evolve to become a more formal regime with better institutional structures and a more effective financial mechanism.

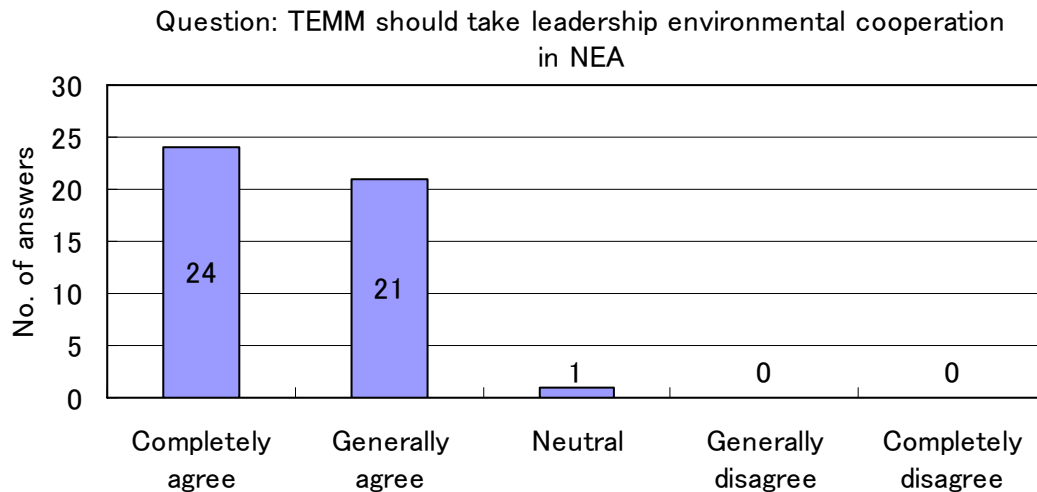


Figure 6: Expectation of Leadership by TEMM

Note: Results of 46 responses provided out of 68 respondents.

Survey results also indicate that most respondents agreed that TEMM was an appropriate generic mechanism, playing a leading role in environmental cooperation in NEA (Fig.6). Based on indicators such as (i) strong political will of the ministers and governments of countries to cooperate on environmental issues; (ii) sufficient administrative capacity to hold regular meetings; and (iii) limited but reliable human resources and stable financial support, TEMM is able to operate sustainably.

Summary

- TEMM has played important role in achieving common understanding on pressing environmental issues in NEA, and in serving as a forum for exchanging information on both regional activities and implementation of domestic environmental policies. TEMM has also evolved to initiate and implement cooperation projects within and beyond the scope of three countries.
- In order to meet its objectives, various activities on specific issues areas, awareness-building and participation of stakeholders have been carried out.
- TEMM has effectively implemented decisions made by its meetings.
- TEMM has not yet institutionalised to mobilise the participation of other

stakeholders.

- TEMM, in its tenth year, has enhanced trust-building among member countries and improved working and human relationships among ministers and senior officials.

3.2.1.2. NEASPEC

Overview

The North-East Asia Sub-regional Programme for Environment Cooperation (NEASPEC) was established in 1993 as a regional follow-up action to UNCED, under the initiative of the ROK government. NEASPEC aims to promote regional environmental cooperation and sustainable development guided by the Rio Declaration and Agenda 21. It is the only intergovernmental meeting gathering all six countries in the region, namely China, the DPRK, Japan, Mongolia, the ROK, and Russia. High-level officials, including ministers of some participating countries, gathered informally for the first time during MCED5, held in Seoul in 2005. As of March 2008, senior officials have met 13 times on almost annual basis. Meetings have identified three priority areas, namely energy and air pollution, ecosystem management with focus on deforestation and desertification, and capacity-building. Currently, UNESCAP is serving as the interim secretariat to the programme, with the idea of operating an independent secretariat in the future.

Relevance

The Framework adopted at the third senior officials meeting (SOM) specified the principal objectives of NEASPEC to be as follows:

- (i) to promote sub-regional environmental cooperation and sustainable development efforts for enhancement of the quality of life and the well-being of present and future generations in accordance with the spirit of UNCED; and
- (ii) to enhance the capacities of the participating parties in environmental management efforts through sub-regional cooperation and to facilitate the complete and effective participation of national institutions at all levels in sustainable development efforts aimed at strengthening their relevant technological and managerial capabilities.

Regarding the scope of issues addressed, NEASPEC activities are focused on energy and air pollution, ecosystem management, DSS, and eco-efficiency. Some but not all issues identified as regional priority issues in Chapter 2 are covered by this ECM.

In regards to level of action, as mentioned in objective (i) above, NEASPEC has provided an important channel for policy dialogue involving all countries in the NEA region to promote environmental cooperation. NEASPEC has facilitated a number of regional agreements, which include two negotiated texts of the “Framework for the North-East Asian Subregional Programme of Environmental Cooperation” (hereafter “the Framework”), and the “Vision Statement for Environmental Cooperation in North-East Asia” (hereafter “the Vision Statement”). Throughout the SOMs and in accordance with objective (ii) above, an action plan to realise environmental cooperation in this region has been developed as well. With respect to project implementation, NEASPEC has focused on capacity development, monitoring and data collection, and technology transfer related to air pollution. Other projects related to ecosystem conservation and eco-efficiency have also been conducted. The adoption of any legal agreement has not been mentioned in programme objectives, and no activities have been carried out. Hence, regarding level of action, NEASPEC is at level four stage, namely, project implementation.

As for its functions, NEASPEC has not performed any external functions. For internal functions, the Vision Statement sets the basic principles and rules, including coordination with other ECMs, such as NEAC, EANET, and NOWPAP. However, while such coordination in this region is mentioned in the Vision Statement, actual activities have not yet been reported. Concerning priority setting, NEASPEC’s activities focus on four topics on which shared activities among the six countries are deemed necessary.

According to the survey, 57 percent of respondents answered that NEASPEC is addressing priority environmental issues in NEA. Meanwhile, 36 percent answered neutral, and 1 percent generally disagreed (Fig.7). Compared to other mechanisms, this result shows the relatively low satisfaction of respondents for NEASPEC on this component.

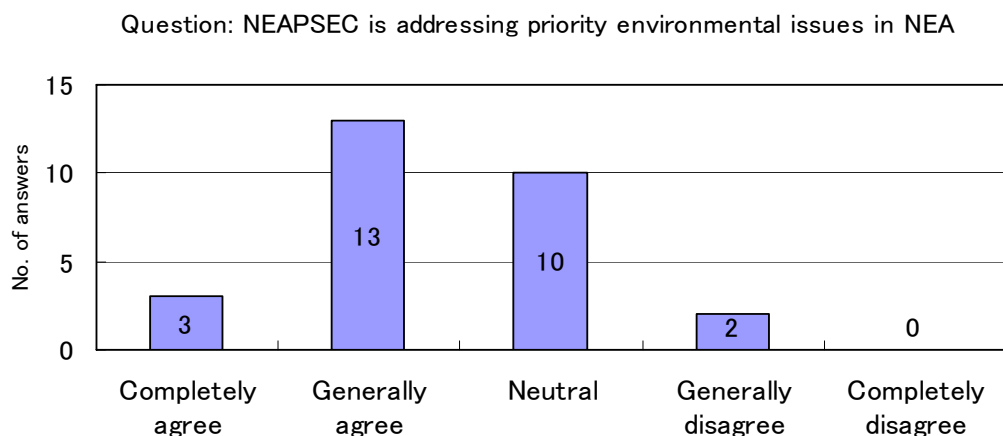


Figure 7: Relevance of NEASPEC and related activities

Note: Results of 28 responses provided out of 68 respondents.

As for the catalytic role played by NEASPEC, “pilot project implementation” was considered to be most needed, surpassing the more general framework-type cooperation (see Appendix I-12 for details). From these survey results, it can be said that in terms of the expectations of questionnaire respondents, NEASPEC’s function is viewed to be a project-oriented forum as a means to enhance regional cooperation.

Further, survey results showed that only a few respondents saw some improvement in environmental quality through NEASPEC activities (see Appendix I-13 for details). This results indicates that environmental cooperation in the region requires further efforts to achieve concrete forms of outcomes.

Effectiveness

NEASPEC has put emphasis on capacity-building and activities related to air pollution and ecosystem management, and its various projects have reflected such emphasis. Table 3 lists project activities conducted by NEASPEC.

Projects are mainly focused on two priority areas, which include energy and air pollution and nature conservation. NEASPEC activities include the establishment of the North-East Asian Centre for Environmental Data and Training (NEACEDT), created to train and educate engineers and experts in environmental pollution monitoring and to collect, compare, analyse, and share data on environmental pollution indexes of each country. The North-East Asian Training Centre for Pollution Reduction in Coal-fired Power Plants was also established to facilitate the training of managers and technical personnel of power plants via training activities and workshops. A project related to biodiversity has been discussed during SOMs since

1993, and relevant activities such as expert meetings, workshops, and trainings related to the conservation of endangered species have been initiated. Currently, NEASPEC is discussing follow-up activities for nature conservation projects, namely a project entitled, “Building Coordination Mechanisms for Nature Conservation in Transboundary Areas”. It is currently awaiting consensus and approval from participating countries on budgetary arrangements. On the issue of eco-efficiency, some preliminary reports and discussion have been carried out, and a report entitled “Eco-efficiency: A Practical Path to Sustainable Development” was published in 2007. Concerning the DSS issue, a proposal on monitoring, early warning, and mitigation was submitted by the government of Mongolia and is undergoing the process for approval. Thus, it is evident that NEASPEC has dedicated its efforts to meet stated objectives, especially the second one above, by conducting projects related to capacity-building, establishing training centres, and selecting relevant issues which require the collaborative efforts of all countries in NEA.

Table 3: NEASPEC Project Activities

| Period | Project Activity |
|-----------------------------|---|
| First Phase (1996-1998) | <ul style="list-style-type: none"> - Training for SO₂ reduction in coal-fired power plants - Demonstration of low-air pollution coal-fired power plant technology - Environmental pollution data collection, comparability and analysis |
| Second Phase (1999-2002) | <ul style="list-style-type: none"> - Regional training for reducing pollution from coal-fired power plants - Environmental monitoring, data collection, comparability and analysis - Action plans for improving efficiency of particulate abatement systems in existing power plants |
| Third Phase (2003-) | <p>Two projects on nature conservation:</p> <ul style="list-style-type: none"> - Conservation and recovery of large mammals and threatened species - Conservation, monitoring and cooperative research on important migratory species |

On the other hand, considering that NEASPEC’s primary objective is to promote overall environmental cooperation in the region, the programme’s focus on project implementation is somewhat different from its initial aim. This disparity is partly due to various barriers to environmental cooperation in this region, which will be discussed in the latter part of Chapter 3. With high-level regional cooperation, such as implementing legally binding agreements, considered to be relatively difficult, NEASPEC decided to take a “step-by-step approach” (UNESCAP 2007), which made the programme a project-oriented type of environmental cooperation.

In terms of significant outcomes of this mechanism, survey results show that NEASPEC's Framework and Vision Statement are considered to be its most significant outcomes (see Appendix I-14 for details). These results indicate that NEASPEC has a significant role to play as the sole generic ECM with full participation of the six NEA countries. In addition, some survey respondents named specific projects to be positive outcomes, including "technological cooperation", while "institutional and financial arrangements" were also seen as another good outcome. Thus, it is apparent that some concrete form of cooperation among countries in the NEA region is expected, and that NEASPEC is heading in the right direction.

Efficiency

The current activities of NEASPEC have been primarily conducted with the Core Fund, which was established in 2000. Prior to the Core Fund system, activities were supported by funds from ADB, other partner agencies, and donations from the Japanese and Korean governments. Table 4 shows the list of funding for NEASPEC activities. The Core Fund, supported by participating countries, is considered internal funding, and those provided by international donor agencies are considered as external funding. Internal funding is utilised for both administrative purposes, such as organisation of the SOMs and travel expenses for participants, as well as for implementation of specific projects. External funds are utilised for specific projects only, for which UNESCAP provides necessary support for the application of projects. Currently, secretariat support is provided by UNESCAP, and no direct administrative operation costs are covered by funding.

Table 4: List of funding for NEASPEC activities

| Type of Fund | Amount of Fund |
|---|----------------|
| Core Fund 2001-2007 | 149,985 USD |
| ADB Fund (Project number TA 5695-REG) Technical Assistance for Environmental Cooperation in North-East Asia | 495,000 USD |
| ADB Fund (Project number TA 5865 REG) Transboundary Environmental Cooperation in North-East Asia | 350,000 USD |
| (ADB, UNESCAP, China, and Mongolia) Mitigation of Transboundary Air Pollution from Coal-Fired Power Plants in North-East Asia | 1,200,000 USD |

NEASPEC conducted thirteen regular SOM meetings over a decade, established an interim secretariat under UNESCAP, and examined various proposals on the establishment of financial mechanisms, which were discussed in subsequent working groups. Appendix II-2 lists the overall results of NEASPEC's activities, in terms of output and outcomes.

Since NEASPEC does not have a permanent secretariat, the cost required to support the programme is relatively small (13 percent of total budget). As a result, from 2001-2004, NEASPEC was able to allocate more than 70 percent of its budget for its activities. Through the years, project proposals under NEASPEC have become more diverse, and some have materialised to actual projects. There is need for concern on the comparatively small scale of projects, and the fact that projects have not developed to include domestic follow-up activities. This situation may be partly due to the limited resources of project funds. Specifically, while the governments of China, Japan, and the ROK have made contributions to the trust fund, with UNESCAP providing secretariat support, recent NEASPEC projects rely solely on the support from the Asian Development Bank (ADB). Moreover, up until 2005, less than 20 percent of total funds (USD 578,000 total) were utilised for overall NEASPEC activities (ESCAP, 2005). This fact is partly due to difficulties faced in reaching consensus among participating countries during SOMs, which delayed final decisions on the actual implementation of activities. However, during the 12th SOM of NEASPEC in 2007, a decision was reached to allocate a larger portion of the budget for activities, such as publication of the NEA Environmental Outlook, and implementation of the Eco-efficiency Partnership, focusing on the 3Rs, energy efficiency, and cleaner production in NEA (UNESCAP, 2007).

In terms of sufficiency of human and financial resources, survey results indicated that a larger number of respondents view the availability of resources for NEASPEC to currently be unsatisfactory (see Appendix I-15 for details). Further, more than half of respondents gave neutral answers regarding efficiency in resource utilisation, with a few positive responses (see Appendix I-16 for details).

Stakeholder Participation

Backgrounds of participants at NEASPEC meetings vary per member state. Countries send delegations consisting of diverse representation, including persons from the energy sector, research institutes, and government, either from the ministry of foreign affairs or ministry of environment. Officers of international organisations and occasionally representatives of academia are also present at relevant meetings. Thus,

participants represent a wide range of sectors, which is fairly in accordance to the NEASPEC Vision Statement. However, as meetings are attended by a diverse group, reaching consensus or agreement has proven to be very challenging. Meanwhile participants may have no power to carry out or implement decisions at the domestic level. NGOs took part in the implementation of the natural conservation project, the only activity thus far to have this level of multi-stakeholder involvement. While the Vision Statement mentions the necessity of such involvement, SOMs have yet to institutionalise participation of non-state actors.

Survey results reveal that participation of relevant stakeholders is encouraged by many respondents, with only a few disagreements (see Appendix I-19 for details). This result indicates the importance given to multi-stakeholder participation in promoting region-wide cooperation among all nations in NEA.

Sustainability

Regarding institutional development, the Vision Statement adopted in 2000 agreed “to develop the present Framework into a comprehensive programme for environmental cooperation in North-East Asia”. However, during early stages of the programme, NEASPEC faced difficulties in program implementation, such as slow progress of activities and low commitment from some participating countries. This low commitment was symbolized by representation of the participants of the meetings such as participation itself as well as ranking of officials, lack of human resources within the interim secretariat, and the like (NEASPEC, 2007). In order to overcome these hurdles and to realise the goals of the Vision Statement, NEASPEC SOMs have discussed the establishment of an independent secretariat and financial mechanism. As of the 12th Meeting held in March 2007, the ROK government has made an offer to host the permanent secretariat of NEASPEC in the city of Incheon, including contribution of financial resources, human resources, as well as in-kind support from the national and local governments. However, due to differences in opinions of participating countries, consensus on this matter has not yet been reached, and the final decision has been postponed.

Regarding financial arrangements, in 2000, NEASPEC decided to establish a core fund from the voluntary contributions of member states. As of March 2007, China, Japan, and the ROK have made voluntary financial contributions to this fund, with an estimated 0.7 million USD in funds at the interim (NEASPEC, 2007). Since funds are still sourced from voluntary contributions, instability of funding sources has been raised as an issue.

In addition, the mix of participants differs among participating countries and still national governments do not necessarily send their “senior officials” to meetings. As a result, political will is judged to be weak. Without resolving the aforementioned difficulties, NEASPEC falls into a low sustainability situation.

As concerns the institutions of this mechanism, which has been a priority agenda for NEASPEC since 2000, survey results do not show very agreeable opinions. Specifically, regarding having a permanent secretariat outside the UN system, responses varied among respondents (see Appendix I-18 for details). Moreover, many respondents gave neutral answers to the survey item on mandatory financial contribution for the operation of NEASPEC activities (see Appendix I-17 for details). Indeed, while it is important to have a region-wide cooperation mechanism with the participation of all regional countries, mandatory financial contribution from some countries may not be realistic considering their domestic conditions. These survey results may be an indication of such difficulties.

In the same manner, opinions varied among respondents on the leadership role to be taken by NEASPEC. While the number of respondents strongly supporting such a role for NEASPEC is slightly larger than the number strongly opposing it, no clear consensus has emerged regarding the leadership role to be taken by NEASPEC (Fig.8).

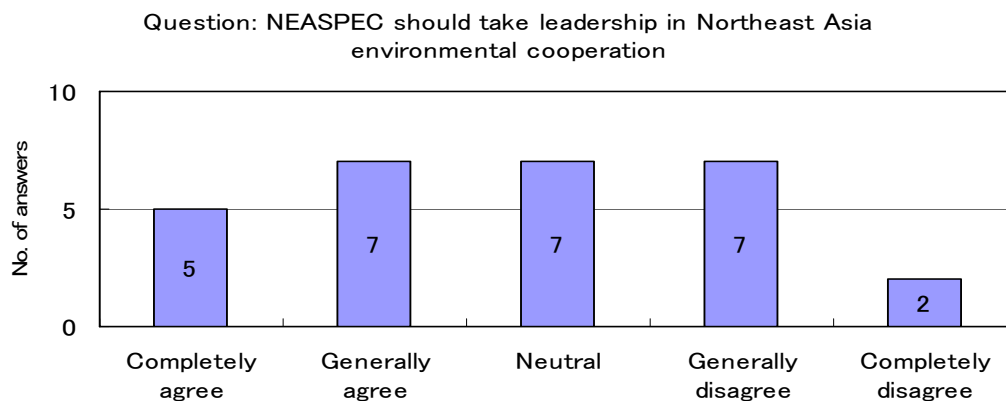


Figure 8: Expectation of leadership by NEASPEC

Note: Results of 28 responses provided out of 68 respondents.

Summary

- NEASPEC’s objectives need to be reviewed to reflect the changing needs of the region and to endow the mechanism with a stronger *raison d’être* and a clear focus to harness its full potential.
- A practical level of cooperation has been reached through the implementation of projects related to capacity–building. Projects have been small in scale

with short time frames, lacking domestic follow-up.

- Most of NEASPEC's funds have been allocated to project implementation, yet considering the seriousness of the environmental problems in this region, the scale of projects has been small. The implementation process for projects has often been slow, due to the diverse opinions of participating countries.
- Levels and backgrounds of meeting participants are different among member states. NEASPEC has not yet institutionalised stakeholder participation.
- While NEASPEC has the widest geographical coverage compared to other mechanisms, it has a lower level of political representation.

3.2.1.3. NEAC

Overview

The Northeast Asian Conference on Environmental Cooperation (NEAC) is another regional initiative which emerged following a series of environmental symposia between Japan and the ROK. Launched after UNCED in 1992, NEAC's participating countries include China, Japan, Mongolia, the ROK, and Russia. An annual meeting is organized jointly by central and local governments of these five member countries. Officials and experts from central and local governments, research institutions and NGOs in the region, as well as international organisations, gather for these meetings. Meetings aim to conduct the exchange of information, knowledge, views and experiences on regional environmental issues and local measures in respective member countries. As reiterated in the Chairperson's summary for each of its sessions, NEAC meetings do not make decisions. They can be characterized as a venue for different social stakeholders to initiate policy dialogue related to environmental cooperation in the spirit of UNCED.

Relevance

The objective of NEAC is to foster "exchange of information and policy dialogue among environmental experts in Northeast Asian countries to advance environmental conservation efforts in each country and the future of environmental cooperation in this area". Further, during the NEAC meeting in the year 2000, the framework of the mechanism was developed, which sets its objectives as follows:

- (i) As environmental degradation accelerates throughout the region, and as it becomes clear that lasting solutions require increased involvement from local governments, the private sector and the public, the main objective of NEAC should be to promote free discussion and policy exchange, and to enable access to useful, accurate information at all levels; and

- (ii) Through these activities, NEAC is aimed at contributing to effectively cope with domestic and regional and global environmental problems, such as air pollution, nature conservation, and water and waste management, and to ultimately lower pollution throughout Northeast Asia.

Regarding the scope of issues, along with the topics mentioned in the second objective above, various topics have been covered and experts invited from different sectors. Specifically, while all eight priority issues identified in Chapter 2 have been covered in NEAC meetings, NEAC has also been able to discuss other relevant topics such as clean production and water pollution, as well as issues related to environmental governance.

As to the level of action undertaken, as mentioned in its objective, NEAC focuses on exchange of information and policy dialogue among all stakeholders in society. No further actions such as development of action plans, pilot projects, or legal agreement have been taken within this ECM.

Internal functions of this ECM are mentioned in the Framework, including collaboration with TEMM and NEASPEC. NEAC regularly includes visions for environmental cooperation in NEA as a discussion topic, and recognizes the activities of specific ECMs, such as EANET. Yet, while the importance of coordination with other mechanisms is mentioned, actual collaboration activities have not been observed. As for external functions, while NEAC takes other international regimes, such as the UNFCCC, the Kyoto Protocol, and WSSD into consideration, it has not yet developed official linkages among these international regimes.

According to the survey, 70 percent of respondents agreed that NEAC is addressing priority environmental issues in NEA. Only a few respondents disagreed (Fig.9). This implies that NEAC is a relevant mechanism in promoting environmental cooperation in the region.

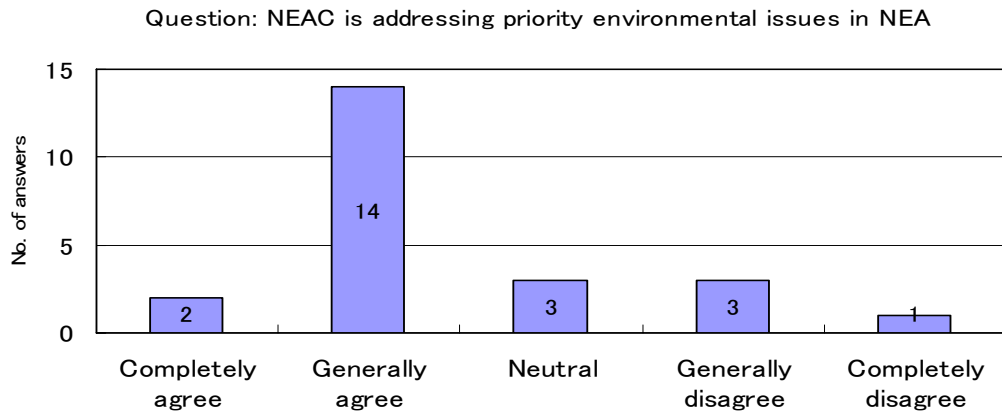


Figure 9: Relevance of NEAC and related activities

Note: Results of 23 responses provided out of 68 respondents.

Regarding the catalytic role that NEAC should play, the response with the most support was “exchange of scientific information” (see Appendix I-20 for details). This result parallels the main objective of NEAC, which is to facilitate policy dialogue among different stakeholders in the region. Regarding NEAC’s contribution to the improvement of environmental quality in NEA, survey results indicate dissatisfaction. That is, nearly half of respondents replied neutrally to the question, with a slightly margin for positive responses over negative (see Appendix I-21 for details).

Effectiveness

NEAC holds annual two-day meetings of experts from five countries. After each meeting, a non-binding Chairperson’s Summary is drafted on the current state of the regional environment, emerging issues and recommended actions to be undertaken by the region. To date, a total of 14 annual conferences have been held, the last of which was organized in February 2006. Each session is comprised of various presentations from country participants. In addition, public symposia focusing on relevant topics have been carried out. In this way, information, knowledge, views, and experiences are exchanged and shared. As the objective of this mechanism is to share information, it should function as a free and open policy forum with wider participation from various stakeholders. Thus, the aforementioned objectives, which point out the need for the participation of various social stakeholders, have been fairly met through NEAC activities.

According to the survey, the most distinguished activity of NEAC is “knowledge-sharing activities” (see Appendix I-22 for details). Survey results correlate considerably with the objective of NEAC, which is to exchange information and share knowledge on relevant environmental issues and measures. This generic

mechanism puts emphasis on participation of local governments and NGOs in its meetings, an attribute which has been recognised as one of the important features of NEAC. Therefore survey results show the effectiveness of this mechanism if assessed against meeting objectives.

Efficiency

NEAC is operated under the funding of each participating government. NEAC meetings are perceived as unique opportunities for various stakeholders in the region to participate, allowing information exchange among countries regardless of their economic situations. Thus, despite its very limited resources, NEAC has been able to reach out to a wider range of participants and sectors. Likewise, a less formal and more inclusive manner is possible when meetings are organised around or as side events to TEMM or NEASPEC meetings, reducing costs and optimising the benefits of stakeholder interaction. Avoidance of overlaps with other generic mechanisms will ensure the efficient use of resources.

Accordingly, survey results showed that regarding the sufficiency of this mechanism, about half of respondents replied neutrally (see Appendix I-23 for details). Similarly, regarding the question on sufficiency of resources, more than half of respondents were neutral as regards to efficiency of the mechanism (see Appendix I-24 for details). Since many of the respondents viewed that knowledge sharing and information exchange are the primary outcome of this mechanism, and

Stakeholder Participation

NEAC gathers experts from central governments, local governments, research institutions and international organisations from five countries in the region. Between 30 to 60 participants are present at each meeting. Over the past few years, delegations from China, Japan, and the ROK have been composed of government officials both from central and local governments, experts from academic institutions, as well as representatives from NGOs. Yet the majority of the delegates still come from government. To date, there have not been any participants from the private sector at the 15 meetings held. While there have been some experts from academic institutions present in Japanese delegations, most experts from China, Japan and the ROK represent national research institutions. NGO representatives have the lowest number of participants for all three countries. Participants from Russia and Mongolia come solely from central government sectors, with only one or two people per meeting. Considering these trends, the issue of balance in stakeholder distribution and level of influence in discussing regional environmental policies has emerged.

According to survey results, many respondents are of the opinion that NEAC should broaden participation to include other relevant stakeholders (see Appendix I-25 for details). While original targets of this mechanism aimed to include various stakeholders from governments, research institutions, and international organisations, actual participation in NEAC does not reflect these aims. Survey results suggest the need for the appropriate presence of relevant stakeholders.

Sustainability

The past 15 years saw NEAC serving as a forum for open policy dialogue to encourage environmental cooperation in NEA. However, due to lack of coordination with other regional environmental cooperation mechanisms, NEAC has faced difficulties in applying its outputs towards political decision-making or consensus-building. In addition, difficulty in budget coordination was reported from the government of Japan during the 14th session, held in Tokyo in February 2006. Indeed, during the 15th session, the future of NEAC was discussed, and the general tone was to integrate NEAC's mandate and function into another regional mechanism, such as TEMM.

Accordingly, survey results reveal that many respondents think NEAC should be a subsidiary body of another regional mechanism with a higher and more extensive level of cooperation, such as TEMM or NEASPEC (See Appendix I-26 for details). The need for more coordination between the various cooperation mechanisms in the region is indicated.

Summary

- NEAC is a unique forum for multi-stakeholder policy dialogue in the region.
- NEAC has addressed various environmental issues, as well as topics on environmental governance, throughout its meetings.
- While the participation of five NEA region countries has been secured through NEAC, its financial resources could be utilised more efficiently if NEAC were to be organised and its activities coordinated with other environmental cooperation mechanisms.
- While various stakeholders are present in NEAC, there is unbalanced participation among countries in terms of number and background of representatives.
- NEAC has fully served its original but seemingly short-term purpose and objective. After a thorough review, this scheme may be transformed into a subsidiary body of another regional mechanism. In so doing, the benefits of such a body may be optimised.

3.2.2. Specific Mechanisms

This section will review existing regional ECMs which address a specific environmental issue in Northeast Asia. As identified in Chapter 2, the three issue-specific ECMs to be addressed are EANET, NOWPAP, and DSS-RETA.

3.2.2.1. EANET

Overview

The Acid Deposition Monitoring Network in East Asia (EANET) was established in 1998 under the initiative of the Japanese government, which held serious concerns on the effects of acid rain deposition from trans-boundary air pollutants. EANET is a regional cooperative mechanism that aims to promote efforts to prevent atmospheric pollution, and thus to contribute to the protection of the ecosystem and human health. It was modeled after the regional cooperation experience in Europe, namely the Convention on Long-range Transboundary Air Pollution (CLRTAP).

EANET has steadily evolved over a decade. A series of expert meetings between 1993 and 1997 concluded that evaluation of the state of acid deposition in the region was difficult due to a lack of common monitoring methods and analytical techniques. The expert meeting deliberation culminated in an agreement that a regional collaborative monitoring network be established. Subsequently, the First Session of the Intergovernmental Meeting to establish the Acid Deposition Monitoring Network in East Asia (IGM1) was held in 1998 in Yokohama, Japan. The meeting adopted a document entitled, "Implementation of the Preparatory-Phase Activities". At the meeting, the government of Japan proposed to host the interim Secretariat and the interim network center, called the Acid Deposition and Oxidant Research Center (ADORC), and to provide financial support for operation on a voluntary basis. The outputs from IGM1 led to the commencement of preparatory phase activities in 1998, and achievements were duly examined and affirmed by IGM2. IGM2 issued the "Joint Announcement on the Implementation of EANET" (hereafter the "Joint Announcement"), which stipulated that participating countries would implement EANET activities on a regular basis based on a tentative design for the network. The meeting also adopted a decision to designate the United Nations Environment Programme (UNEP) Regional Resource Centre for Asia and the Pacific as the EANET Secretariat, and another to designate ADORC as the Network Center (Interim Secretariat of EANET, Environment Agency of Japan, 1998). Figure 10 shows the institutional framework of EANET.

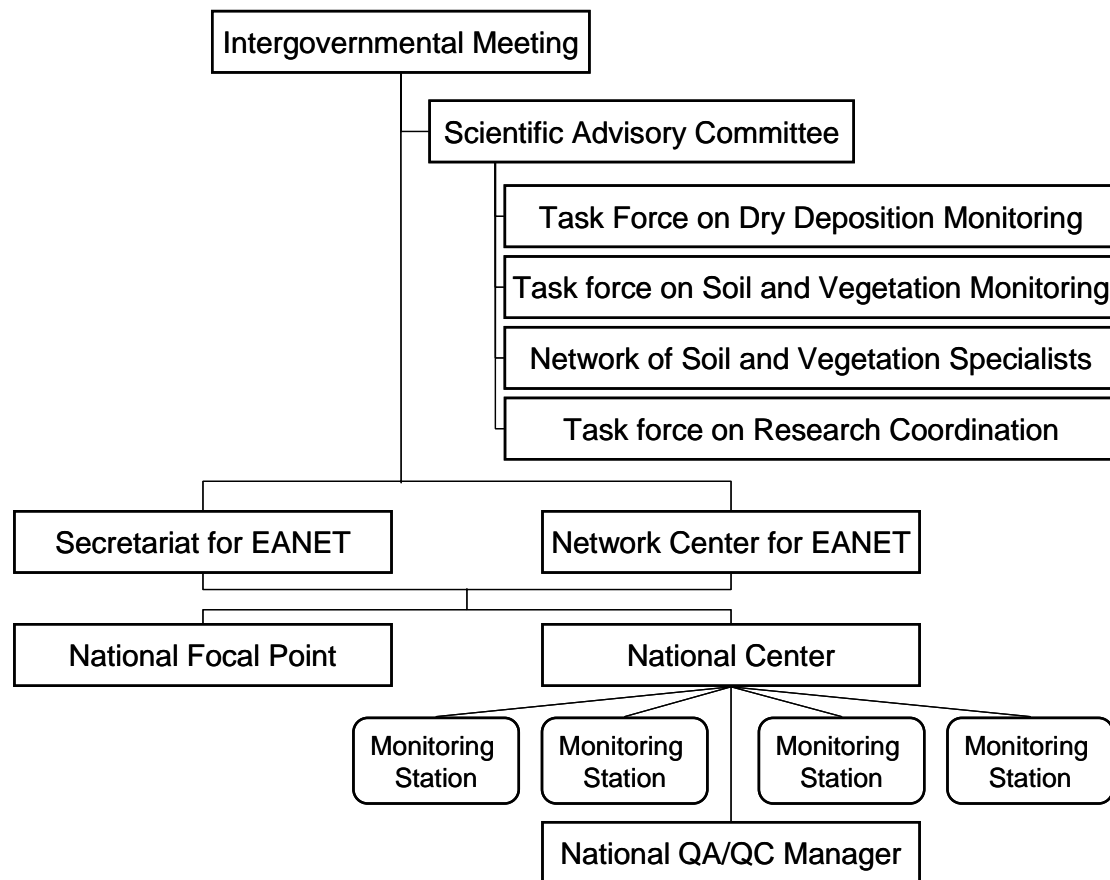


Figure 10: Institutional Framework of EANET

Relevance

The objectives of EANET specified in its Joint Announcement are as follows:

- (i) to create a common understanding of the state of acid deposition problems in East Asia;
- (ii) to provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on the environment caused by acid depositions; and
- (iii) to contribute to cooperation on issues related to acid deposition among the participating countries.

The above objectives clearly state the need for information sharing, scientific assessment, and utilisation of outputs for policy decisions, as well as other relevant activities to improve problems related to trans-boundary air pollution in the region. During intergovernmental meetings, held almost every year since 1998, decisions have been made on activity implementation. Following the decisions made by the IGMs, necessary activities related to assessment of scientific information have been

carried out. Thus, regarding the level of actions undertaken, EANET is in the fourth stage, namely, project implementation.

Survey results reveal that 74 percent of respondents agreed that EANET is addressing priority environmental issues in NEA. Therefore, EANET activities are considered to be very relevant to environmental issues in the region (Fig.12). The need for regional-level efforts to tackle environmental issues which are trans-boundary in nature, such as air pollution, is evident in these results.

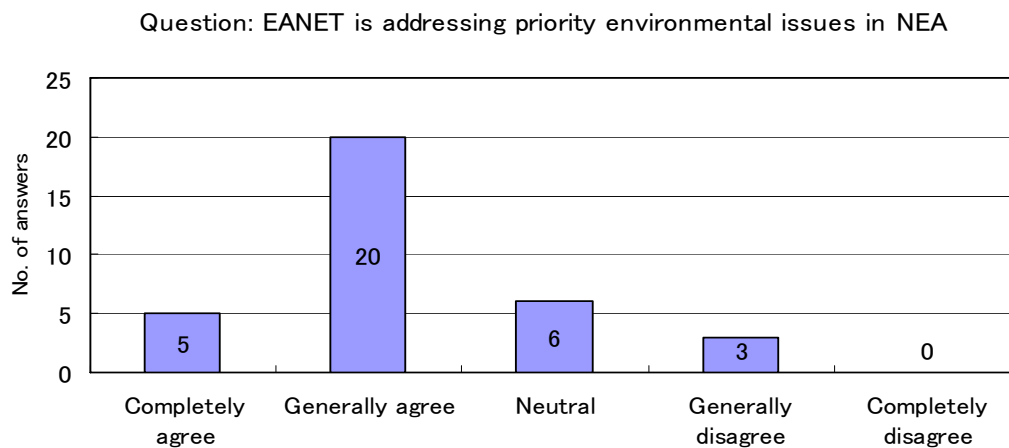


Figure 11: Relevance of EANET and related activities

Note: Results of 33 responses provided out of 68 respondents.

Survey respondents expected the catalytic role of EANET to include the “improvement of current monitoring network” and “exchange scientific information and data”. The perceived role of EANET is thus mostly related to assessment of scientific information, with a further expectation for capacity-building, as well as domestic-level follow-up. As “policy dialogue” scored lowest, respondents may be implying that more concrete forms of regional cooperation are expected from EANET (see Appendix I-28 for details).

Nevertheless, it is clear that EANET should ultimately result in the prevention of adverse impacts of acid deposition. Indeed, the linkage between scientific information and policy is one of the previously mentioned objectives of EANET, that is, “to provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on the environment caused by acid depositions”. Yet, EANET currently lacks a mandate and identified processes to implement policy developed on the basis of scientific data collected through EANET. Indeed, in the tentative design for EANET mentioned above, most of the activities

were designed to conduct scientific assessment, and no implication for policy application was mentioned (EANET, 2000). Further, approximately half of survey respondents answered neutrally regarding EANET's contribution to environmental quality improvement (see Appendix I-29 for details).

Effectiveness

The declared objectives of EANET focus mainly on high quality data collection and its use in decision-making processes. Specifically, the major activities of EANET include, (i) acid deposition monitoring, (ii) compilation, evaluation, storage, and provision of data, (iii) promotion of quality assurance and quality control activities, (iv) implementation of technical support and capacity-building activities, (v) promotion of research and studies related to acid deposition problems, (vi) promotion of public awareness activities, and (vii) cooperation and exchange of information and experiences with other regional and global networks and initiatives.

In addition, EANET has organized technical training workshops for engineers and scientists, as well as workshops and symposia for public awareness. Further, EANET has also contributed to capacity development, data collection and monitoring on ambient air quality, most notably in the local government departments where monitoring sites are located. This scientific capacity built by EANET has spill-over effects on good environmental management in local governments. Additionally, EANET has conducted training courses related to acid rain monitoring. Hence, to a large extent, the objectives of EANET have been met successfully by its activities.

According to survey results, "acid deposition monitoring" was considered to be the most prominent outcome of EANET activities (see Appendix I-30 for details). Survey results directly parallel EANET's objectives and relevant activities, which indicates the effectiveness of this mechanism.

Efficiency

The EANET ECM is currently composed of a permanent Secretariat, decision-making body and its subsidiary bodies, and the Network Center, along with 47 wet deposition monitoring sites. Table 5 shows the annual budgets of the Network Center and Secretariat. The budget for the Secretariat is primarily supported by the Ministry of the Environment in Japan, with additional contribution from China (15,000 USD annually since 2002), Thailand, and the ROK since 2005 (EANET Secretariat, Network Center, 2005). The budget for the Network Center is jointly funded by the Ministry of the Environment of Japan, the National Institute for Environmental

Studies, Environmental Restoration and Conservation Agency, Niigata Prefecture, and Niigata City. There was also some contribution of human resources from private companies. In addition, the Japan International Cooperation Agency (JICA) supports some of the costs of training programmes (EANET Secretariat, Network Center, 2001, 2002, 2003, 2004, 2005, 2006).

Table 5: Annual budgets of EANET Network Center and Secretariat

| Year | Budget (USD) | | |
|-------|----------------|-------------|------------|
| | Network Center | Secretariat | Total |
| 2001 | 1,500,000 | 392,000 | 1,892,000 |
| 2002 | 1,500,000 | 389,976 | 1,889,976 |
| 2003 | 1,500,000 | 414,298 | 1,914,298 |
| 2004 | 1,470,000 | 383,114 | 1,853,114 |
| 2005 | 1,299,000 | 290,850 | 1,589,850 |
| 2006 | 1,015,000 | 267,698 | 1,282,698 |
| 2007 | 1,382,000 | 329,814 | 1,711,814 |
| Total | 9,666,000 | 2,467,750 | 12,133,750 |

Except in 2002 when a large portion of the budget was spent for establishment of the Secretariat office, approximately 35 percent of the budget for the Secretariat was used for personnel costs, and 30 to 50 percent was used for meetings, e.g., the IGM, working groups on future development and future financial arrangements, scientific advisory committee meetings, senior technical managers meetings, and expert meetings. Between 2002 and 2005, about 12 to 15 percent of the total budget of the Network Center was utilised for administrative costs. The remainder of the budget was utilised for data acquisition activities, reporting, training, and public awareness campaigns.

EANET has a solid programme for the development and implementation of national monitoring plans for member countries, that submit various national reports containing scientific data adhering to a common standard. Many of the reports are open to the public and can be obtained from the EANET website. Most of the reports are in English, with some Japanese versions available. In addition, a number of educational activities have been conducted, including an e-learning program targeting school teachers and university students. National level follow-up has been conducted in participating countries, with financial assistance from the Japanese government. In November 2005, EANET published a report for policy-makers entitled, "Goals, Achievements and Way Forward", using available reports and scientific data from

EANET, supplemented with information obtained from various sources. As EANET focuses mainly on monitoring, this report aims to raise awareness among policy-makers on the need for appropriate policy planning at the regional level, rather than to inform them on policy options. Appendix II-3 lists the overall results of EANET activities, in terms of outputs and outcomes.

EANET has produced a substantial amount of monitoring data related to trans-boundary air pollution. In order to promote scientific activities in participating countries, obtained data sets are first made available to those from participating countries, and one year after completion, data sets are made available for all. To date, EANET has not kept track of scientific activity conducted utilising data from EANET.

Regarding sufficiency of resources, a large number of survey respondents replied neutrally. Respondents appear to hold the view that resources available to implement EANET activities are insufficient (See Appendix I-31 for details). Likewise, more than half of respondents were neutral on the question of efficient use of resources. However, compared to the survey item on sufficiency of resources, responses here were slightly more positive (See Appendix I-32 for details). From these two survey results, it is inferred that resource shortage is more serious than issues of resource use, yet both items require significant improvement.

Stakeholder Participation

Participants in EANET are mainly comprised of government offices at the national level (i.e. divisions of air quality, pollution control, and global environmental issues), and academic institutes. Experts from academia include representatives of national research institutes, as well as universities. Local governments are also present at workshops conducted by respective host countries. Engineers, as well as educators, participate in relevant training workshops. Along with officers from the Network Center, delegates from international organisations, e.g. UNEP, ADB, and UNECE, participate in this mechanism. China, Japan, and the ROK send the largest number of delegates to each meeting.

Meetings to discuss organisational matters of the mechanism are mainly attended by government officials, whereas meetings to discuss the activities of EANET are mainly attended by experts from academic institutions. Representatives from the private sector and civil society organisations are not present at meetings.

The survey results show that many respondents agree to the need to enhance stakeholder participation (see Appendix I-33 for details). Since governments and academia are already present in the current mechanism, the necessity of participation from civil society organisations, as well as private sector, may be indicated.

Sustainability

EANET employs a systematic institutional set up for the planning and implementation of its activities. Specifically, the IGM functions as the mechanism's decision-making body, which is composed of representatives of participating countries. Likewise, the scientific advisory committee is composed of scientists and technical experts nominated by participating countries. The Secretariat is established within the UNEP Bangkok office, which functions as the administrative management office to implement activities in coordination with participating countries. The Network Center functions to promote programmes on technical, advisory, research, and awareness issues. In addition, national focal points for implementation of activities, and national centers to collect data and conduct technical matters on the network activities, are set up respectively within the relevant ministries of each participating country. National quality assurance and quality control managers are also present either in relevant institutions or ministries in each participating country. The importance of EANET to tackle air pollution issues has been recognized by the Joint Communiqué of TEMM since its second meeting (TEMM, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007). Therefore, EANET is seen to have a fairly stable institutional set up.

As mentioned in the evaluation of EANET's efficiency above, most of EANET activities are supported by the government of Japan. As a result, apart from monitoring, EANET conducts only limited activities in other participating countries. Currently, EANET's financial arrangements are being discussed in a working group. Specifically, during the IGM5 of EANET in 2003, participating countries decided to make efforts to contribute to the budget, using the latest UN assessment scale-based burden sharing as the first step (EANET, 2003). However, only four countries, namely China, Japan, Thailand and the ROK, were obliged to contribute to the budget in 2006 (EANET, 2006), pointing to a limited and unstable financial resources structure for this ECM.

Summary

- The current activities of EANET are mainly focused on the assessment of scientific information on acid deposition.
- EANET has published a significant amount of scientific assessment reports

related to acid deposition, as well as carried out training activities.

- The Japanese government has contributed a lot to the budget for EANET activities.
- Participants in EANET activities are mainly limited to government officials and academic experts, particularly at various meetings. In capacity development and awareness-building activities, other stakeholders, such as NGOs and civil societies, are represented.
- More financial contributions from participating countries can further promote and enhance EANET activities.

3.2.2.2. NOWPAP

Overview

The Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP) is a part of the UNEP Regional Seas Program, initiated in 1994 to develop a region-based cooperation system to deal with marine pollution and management of marine and coastal resources (UNEP 1994). As one of 13 Regional Seas Programmes, each functioning under an Action Plan, NOWPAP covers the marine environment and coastal zones of the Northwest Pacific, between approximately 52 and 33 degrees North latitude, and approximately 121 and 143 degrees East longitude. Initiated by states surrounding the semi-enclosed seas of the Northwest Pacific, the Governing Council of UNEP approved the “preparation of new action plans for seas not yet covered by the regional seas programme” at its 15th session held in Nairobi, Kenya in 1989. During the 16th session of the same Council, held in Nairobi in 1989, the interest and intentions of governments of the Northwest Pacific region were confirmed. That same year, the first Consultative Meeting of Experts and National Focal Points was held in Vladivostok, Russia, to develop an action plan. In 1994, the ROK government hosted the first Intergovernmental Meeting (IGM) in Seoul, with the representation from the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission (UNESCO/IOC), the World Bank, and UNEP. The participating governments of China, Japan, the ROK, and Russia, adopted the Action Plan. Since then, IGMs have been held annually. The secretariat for NOWPAP was originally located in Nairobi, outside the NEA region. Then four Regional Activity Centres (RAC) were established between 2000 and 2002 in each of the participating countries to conduct specific activities. Likewise, in order for the mechanism to fully perform its responsibilities and increase commitments of participating countries, the Regional Coordinating Unit (RCU) of NOWPAP was inaugurated, and its two offices were set up in Toyama, Japan, and Busan, ROK.

NOWPAP is comprised of an Intergovernmental Meeting, two RCU offices, and the four RACs, namely, (i) the Data and Information Network RAC (DINRAC) located in Beijing, China, (ii) the Marine Environmental Emergency Preparedness and Response RAC (MERRAC) located in Daejeon, ROK, (iii) the Special Monitoring and Coastal Environmental Assessment RAC (CEARAC) located in Toyama, Japan, and (iv) the Pollution Monitoring RAC (POMRAC) located in Vladivostok, Russia. Figure 12 shows the institutional framework of NOWPAP.

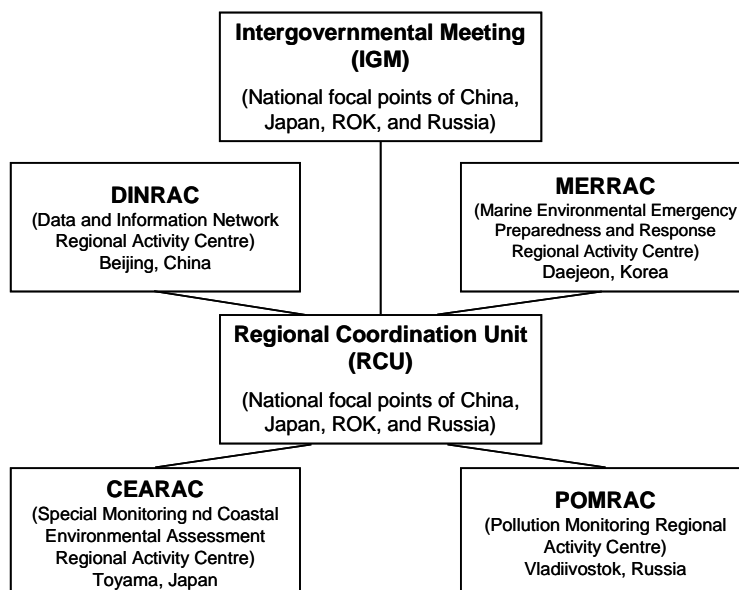


Figure 12: Institutional Framework of NOWPAP

Relevance

The overall goal of the Northwest Pacific Action Plan is “the wise use, development and management of the marine and coastal environment so as to obtain the utmost long-term benefits for the human populations of the region, while securing the region's sustainability for future generations”. This generic, comprehensive and long-term oriented goal enables the mechanism to address a wide variety of issues by responding to prioritised and emerging issues in the region. In the Northwest Pacific Action Plan, the specific objectives of NOWPAP are stated as follows:

- (i) to assess regional marine environmental conditions by coordinating and integrating monitoring and data-gathering systems on a regional basis;
- (ii) to collate and record environmental data and information to form a comprehensive database and information management system;
- (iii) to develop and adopt a harmonious approach towards coastal and marine environmental planning;

- (iv) to develop and adopt a harmonious approach towards the integrated management of the coastal and marine environment and its resources;
- (v) to develop and adopt effective measures for mutual support in emergencies, collaboration in the management of contiguous bodies of water, and cooperation in the protection of common resources as well as in the prevention of coastal and marine pollution.

The objectives mentioned above are comprehensive and adequate to address such issues as environmental assessment, environmental management, and environmental legislation for the protection of the marine and coastal environment in the region. NOWPAP countries have also endorsed and launched a series of activities in line with the objectives set out in the Action Plan. Most of the activities are related to assessment of scientific information, with one activity addressing a pollution source, namely, marine litter. Therefore, NOWPAP is considered to be performing at the fourth level of action, namely, project implementation. At present, while the last objective aims to produce tangible outputs for the improvement of the region's marine environment, legal measures have yet to be implemented. Therefore, to meet the more progressive objectives stated in (iv) and (v) above, there is need for further attention and collaborative efforts among member countries.

Question: NOWPAP is addressing priority environmental issues in NEA

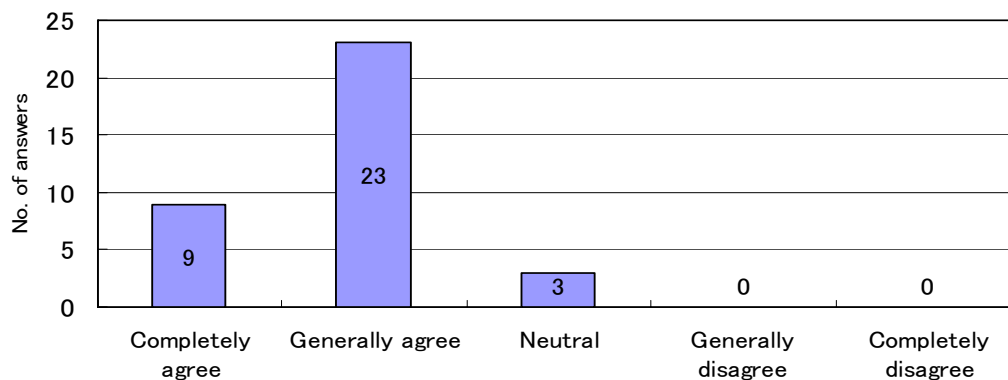


Figure 13: Relevance of NOWPAP and related activities

Note: Results of 35 responses provided out of 68 respondents.

More than 90 percent of survey respondents agreed that NOWPAP is addressing priority environmental issues in NEA (Fig.13). These results show that marine and coastal environment issues are considered to be urgent issues, which should be addressed through regional cooperation.

Moreover, according to the survey, the identified catalytic role played by NOWPAP is the “promotion of domestic efforts by participating countries” (see Appendix I-41 for details). Thus, it is evident that general acceptance of NOWPAP activities is high among member countries, and further cooperation among member states can be expected. In addition, a notable number of respondents remarked on the need for “capacity-building activities”, and “development and implementation of projects”. Hence, along with framework level cooperation, specific activities are considered necessary for NOWPAP. In addition, as “further elaboration of the current action plan” and “regional cooperation on pollution control technology” were also requested from some respondents, progress within the current action plan to include practical forms of cooperation to produce tangible outcomes, such as project implementation, is expected. Current NOWPAP activities, with emphasis on continuous and further collaboration, exhibit fairly high relevance in the region.

Opinion is divided on the effectiveness of NOWPAP activities, with about half in agreement and half in disagreement with the assertion that NOWPAP activities improved the environmental quality in NEA. This result implies that, in a similar fashion as other ECMs in the region, NOWPAP activities require further efforts to contribute to the improvement of the state of the environment in the region (see Appendix II-42 for details).

Effectiveness

In order to meet its stated objectives, NOWPAP has implemented various activities. Table 6 lists the specific activities conducted by NOWPAP.

Projects from NOWPAP/1 to NOWPAP/5 were endorsed at the IGM1 in 1994, while NOWPAP/6 and NOWPAP/7 were adopted at the IGM4 in 1999 and the IGM6 in 2000, respectively. An additional project on marine litter activity (MALITA) was approved at IGM10 in 2005.

Of the below mentioned projects, the first five are dedicated to the establishment of an institutional basis and network for the implementation of NOWPAP, through collection and exchange of information, and set up of regional activity centres. Part of NOWPAP/4 (oil spill preparedness and response), the last two projects and MALITA are action-oriented to address problems at hand.

Table 6: NOWPAP Activities

| Project number | Activity description |
|----------------|--|
| NOWPAP/1 | Establishment of a comprehensive database and information management system |
| NOWPAP/2 | Survey of national environmental legislation, objectives, strategies and policies |
| NOWPAP/3 | Establishment of a collaborative regional monitoring programme |
| NOWPAP/4 | Development of effective measures for regional cooperation in marine pollution preparedness and response |
| NOWPAP/5 | Commencement of the establishment of regional activity centres (RACs) ⁴ and network |
| NOWPAP/6 | Public awareness of the marine coastal, and associated freshwater, environment |
| NOWPAP/7 | Assessment and Management of Land-based activities |

Following completion of plans for the institutionalisation of NOWPAP, a series of discussions were initiated in 2005 and held to explore the “new direction of RCUs and RACs”. Along these lines, activities on marine litter, ballast waters, introduced species, integrated coastal management, state of environment reporting, and the like, were undertaken. In 2007, NOWPAP published its *State of the Marine Environment in the NOWPAP Region*, which includes an overview of NOWPAP activities, scientific information, explanation of related activities on marine issues, as well as policy recommendations. It can be therefore be stated that NOWPAP’s objectives, including institutional set up as well as implementation of projects, have reached a high level of achievement.

According to survey results, positive outcomes of NOWPAP activities include, “the establishment of regional activity centers, and their activities conducted” (see Appendix I-43 for details). Via the establishment of regional centres, organisation of various activities was possible including the database and monitoring network for relevant information assessment, as well as more project-based activities. Survey results indicates that most of NOWPAP’s primary objectives have been met, which shows the effectiveness of this mechanism.

⁴ Four RACs include the Special Monitoring and Coastal Environment Assessment Regional Activity Centre in Toyama, Japan; the Data and Information Network Regional Activity Centre in Beijing, China; the Marine Environmental Emergency Preparedness and Response Regional Activity Centre in Daejeon, the Republic of Korea; and the Pollution Monitoring Regional Activity Centre in Vladivostok, Russia.

Efficiency

In its initial stages, NOWPAP's activities were funded by direct financial support from UNEP and in-kind contributions from the United Nations and other bodies. Subsequently in the first IGM, a decision was reached on the establishment of a Trust Fund, consisting of contributions from the four participating countries for the operation of NOWPAP. Table 7 shows the yearly budgets of NOWPAP.

Table 7: Annual budgets of NOWPAP

| Year | Budget (USD) |
|-----------|--------------|
| 1994-1995 | 417,100 |
| 1997-1998 | 388,720 |
| 1999-2000 | 593,450 |
| 2000-2001 | 1,211,050 |
| 2002-2003 | 1,100,000 |
| 2004-2005 | 1,100,000 |
| 2006-2007 | 1,179,000 |
| 2008-2009 | 1,000,000 |

Prior to the establishment of the RCUs, the majority of the budget was utilised for NOWPAP activities outlined in Table 6 (NOWPAP, 1994, 1996, 1998, 1999, 2000). Due to the recent establishment of functional RCUs with permanent staff, NOWPAP has begun to focus on project implementation. After the inauguration of the RACs in 2000, the annual budget was nearly doubled compared to the previous years (NOWPAP, 2002, 2003, 2004, 2005, 2006, 2007). Prior to the establishment of the RACs and RCUs, administrative costs accounted for only 13 percent of the total budget. This figure increased to 35 percent after the establishments of the RACs and RCUs (NOWPAP 1994, 1996, 1998, 1999, 2000, 2002, 2003, 2004, 2005, 2006, 2007).

Appendix II-4 lists the overall results of NOWPAP activities, in terms of output and outcomes. From this list, it is evident that in its early stages, NOWPAP focused on infrastructural development to conduct activities, followed by emphasis on scientific assessment activities and publication of scientific reports. During recent years, NOWPAP has begun to implement on-the-ground activities, involving various stakeholders such as local governments, NGOs, and citizens. Indeed, although NOWPAP was adopted in 1994 and convened its IGM annually, launching of these essential activities had to await the establishment of the four RACs in 2002 and the inauguration of the co-hosted NOWPAP RCU offices in Toyama and Busan in 2004.

In other words, it took almost a decade for NOWPAP to establish the institutional framework that finally enabled it to engage in on-the-ground activities related to prioritised issues, such as land-based pollution sources and marine litter.

Considering the mandate of NOWPAP, there is financial insufficiency for implementing the currently identified eight activities, including providing financial support for the operation of the four RACs, and maintenance of two secretariat offices. Even though necessary resources and expenditures of RACs and RCUs are covered by each host country, NOWPAP activities have been implemented under limited financial resources.

The viewpoint of survey respondents on financial sufficiency revealed that numbers of disagreeing respondents were considerably higher than agreeing ones, with almost half of respondents giving a neutral answer (see Appendix I-44 for details). With permanent staff in the four RACs in each member state, as well as in the two RCUs in Japan and the ROK, potential insufficiency of budget for institutional operation as well as project implementation is indicated.

The efficiency of the NOWPAP activities, however, received a more positive review from respondents (see Appendix 45 for details). This could indicate the import attached to the RACs and RCUs at the initial stages of NOWPAP.

Stakeholder Participation

Currently, as an intergovernmental cooperation mechanism, membership in the IGM is limited to the representatives of each government. Other participants in the IGM include the representatives from the two RCUs, representatives of each RAC, and representatives of other relevant international organisations when appropriate. Likewise, participation in prioritised activities such as monitoring is secured for government nominated scientists and experts. In addition, for recently launched activities such as MALITA, the participation of local governments, NGOs and other relevant stakeholders is realised through joint marine litter surveys and stakeholder dialogues. Representation from the private sector is not present in the activities. The survey found generally positive agreement among respondents on the participation of non-governmental stakeholders (see Appendix I-39 for details).

Sustainability

NOWPAP is an intergovernmental cooperation mechanism which developed as part of the UNEP Regional Seas Programme. As shown in Figure 12, the IGM, as the highest

governing body of NOWPAP, functions as a decision-making and advisory body for policy development. The two RCUs function as the operational body of NOWPAP for the implementation of the Action Plan, in close cooperation with the four RACs. The four RACs have different functions. CEARAC conducts monitoring and assessment of harmful algal blooms and develops new monitoring tools using remote sensing and management of marine litter. DINRAC functions as the NOWPAP clearing house by developing databases to exchange information on the marine and coastal environment in the NOWPAP coverage area. MERRAC conducts activities on marine pollution preparedness and response, including marine litter, and is responsible for the implementation of NOWPAP's Regional Oil Spill Contingency Plan. POMRAC is responsible for developing cooperative measures on marine pollution issues. With independent organs outside the UN system, NOWPAP is one of the most institutionalised mechanisms in NEA.

NOWPAP has been confronted with challenges regarding financial sustainability from its outset. In its initial stage, an activity fund was provided by UNEP, but the budget for operations was dependent on interest rates from the accumulated savings of the Trust Fund, amounting to an estimated 230,000 USD annually. In addition, funds were secured from the 315,000 USD contributions of the four participating countries (UNEP 1996). In order to further expand its activities, NOWPAP hopes to increase the annual budget from the Trust Fund to 500,000 USD (NOWPAP 2007). Meanwhile, effective allocation of this limited Trust Fund, as well as introduction of additional funding, such as GEF grants, should be further pursued to enable enactment of on-the-ground project activities on prioritised and emerging issues.

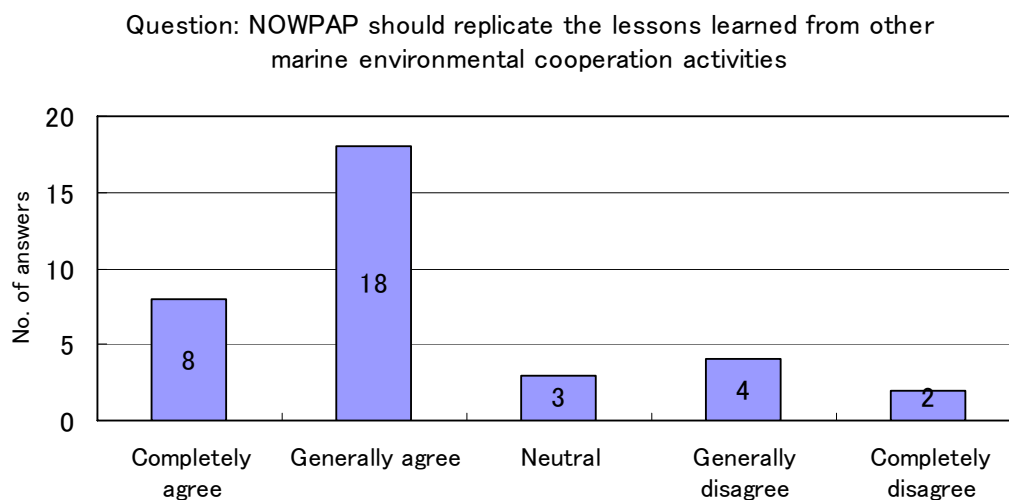


Figure 14: Future prospects of NOWPAP activities

Note: Results of 35 responses provided out of 68 respondents.

As to the future prospects for NOWPAP activities, 74 percent of respondents agreed that there are lessons to be learned from other marine environmental cooperation activities, e.g. YSLME (Fig.14). This result indicates that past marine and coastal management mechanisms in the region have been generally successful.

Summary

- NOWPAP provides appropriate geographical coverage and comprehensive objectives with flexibility, which enables member countries to address any urgent and/or emerging issues.
- So far, notable achievements of NOWPAP are confined to the establishment of institutional arrangements and a basis for information gathering and sharing, with some project implementation.
- NOWPAP has gained momentum through the recent establishment of RACs and the two RCU offices; however, issues of gaps and overlaps in the activities of RACs are yet to be resolved.
- NOWPAP should consider securing the participation of environmental agencies to ensure the effectiveness of the programme.
- NOWPAP provides a solid institutional arrangement as an intergovernmental cooperation mechanism as part of the UNEP Regional Seas Programme; however, issues of financial arrangement for maintaining and strengthening NOWPAP activities remain unresolved.

3.2.2.3. DSS-RETA

Overview

Per the joint request of four countries severely affected by dust and sandstorms (DSS), i.e., China, Japan, Mongolia and the ROK, under the initiative of TEMM, the ADB, UNEP and GEF approved a project known as the Regional Technical Assistance on Dust and Sandstorm (DSS-RETA)⁵. The project aims to establish a regional cooperation mechanism and framework to guide and coordinate measures to address DSS. Launched in 2003, a regional steering committee was set up as the coordination mechanism to guide regional cooperation on DSS, with the membership of four DSS-affected countries and four partner institutions, i.e. ADB, UNEP, UNESCAP and UNCCD. The Regional Master Plan for Prevention and Control of Dust and Sandstorms in Northeast Asia (hereafter “Master Plan”) was produced, which included a phased programme for establishing a regional DSS monitoring and early warning network, and an investment strategy to guide land rehabilitation and mitigation measures in DSS source areas.

⁵ RETA 6068 in ADB project numbering.

Although the project was concluded in February 2005⁶, China and Mongolia together with ADB, UNEP, UNESCAP and UNCCD have recently proposed and launched follow-up projects to build upon the successes of the original project. These follow-up projects include an ADB/GEF project entitled, “Asian Dust Monitoring and the Establishment of Early Warning Network”, which aims to establish the regional monitoring and early warning network proposed in the Master Plan.⁷

Relevance

The main objectives of DSS-RETA, as stated in the Master Plan are as follows:

- (i) to promote the establishment of a regional cooperation mechanism for the prevention and control of DSS in Northeast Asia; and
- (ii) to prepare a master plan to guide regional collaborative activities to alleviate DSS in the region.

The components of the regional master plan are:

- (i) a phased program to establish a regional monitoring and early warning network for DSS in Northeast Asia; and
- (ii) an investment strategy to strengthen mitigation measures to address root causes of DSS in source areas.

The objectives of DSS-RETA address both the framework for regional cooperation to tackle the DSS issue, and specific actions, which are described in Master Plan. The Master Plan likewise addresses both monitoring and early warning, as well as the root causes of DSS. Thus, this mechanism includes attention to preventive efforts. To realise the Master Plan, several monitoring sites in each participating country have been established. In addition, proposed sites for demonstration projects to disseminate best practices for DSS have been identified. Therefore, according to research evaluation criteria, this ECM operates in the advanced stages at the fourth level of action, namely, project implementation.

Accordingly, 83 percent of survey respondents answered that the DSS-RETA Master Plan is addressing priority environmental issues in NEA. The other 17 percent replied neutrally (Fig.15). The Master Plan clearly identifies cooperation projects, such as the establishment of a monitoring network, resulting in a high level of recognition by respondents on its relevance in the region.

⁶ URL <http://www.adb.org/Documents/TACRs/REG/36267-REG-TACR.pdf>

⁷ ADB project number 39389-01. URL <http://www.adb.org/Documents/PIDs/39369012.asp>

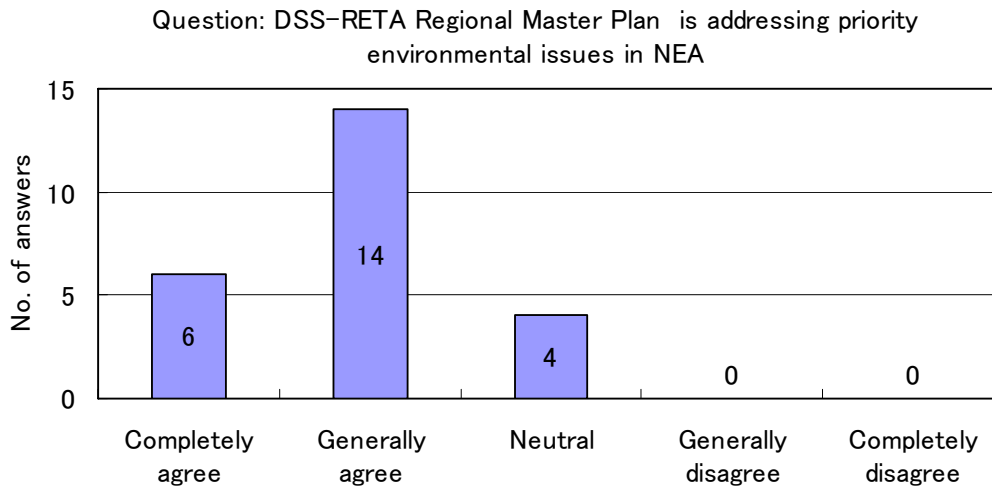


Figure 15: Relevance of DSS-RETA and related activities

Note: Results of 24 responses provided out of 68 respondents.

Regarding the expected functions of DSS-RETA, most survey responses concentrated on two specific roles, namely the “establishment and operation of a regional DSS monitoring and early warning network”, and the “development and implementation of pilot projects” (see Appendix I-48 for details). Survey results show that expectations for this specific mechanism lie at the practical level, such as project implementation with concrete outputs. One of the expected outputs, the establishment and operation of a regional DSS monitoring and early warning network, was met in the second phase of the programme. Meanwhile, the development and implementation of pilot projects, very much anticipated among respondents, has yet to be realised. Thus, survey results reveal that this specific ECM is expected to move into a more practical level of cooperation among participating countries.

Effectiveness

Along with the Master Plan, DSS-RETA has produced several tangible outcomes. Specifically, a regional steering committee comprised of officials and representatives from the four DSS affected countries (China, Japan, Mongolia and the ROK) and four international partner institutions (ADB, UNEP, UNESCAP, and UNCCD) has been established as a coordination mechanism to guide regional cooperation to combat DSS concerns in Northeast Asia. A total of 19 monitoring sites, 15 sites in China and 4 sites in Mongolia, have been established with financial support from the government of Japan and have been operative as of January 2006. It is also anticipated that nine pilot projects, addressing the origins of DSS identified in the Master Plan, will be carried out in due course when the necessary financial sources become available. Therefore, it can be concluded that DSS-RETA has achieved its

stated objectives through collaboration and participation of all the major DSS-related stakeholders in Northeast Asia.

Relevant survey results show that the “establishment of coordination mechanism for regional cooperation” was considered to be the most meaningful outcome of DSS-RETA. In addition, the “development and adaptation of regional master plan” was also recognized as a positive outcome (see Appendix I-49 for details). These two highly recognized outcomes were indeed the two primary objectives of this mechanism, and the other outcomes noted in survey results were the secondary objectives developed on follow-up projects. Yet due to budgetary limitations, the launching of pilot projects is yet to be realised. It can therefore safely be concluded that survey results parallel the development process of DSS-RETA, which has met its initial objectives for regional cooperation, showing its effectiveness.

Efficiency

Table 8 lists the amount of funding for DSS-RETA and produced output. Apart from those outputs listed, DSS-RETA has utilised existing regional coordination mechanisms of the international organisations of UNCCD, UNEP, and UNESCAP instead of establishing new ones. For example, the project secretariat was hosted by the Asian Regional Coordinating Unit of the Secretariat of UNCCD in Bangkok, and UNEP was designated to chair a technical committee on the development of a program to establish a regional monitoring and early warning network for DSS and the comprehensive assessment of scientific findings. Likewise, UNESCAP chaired a technical committee for developing an investment strategy. Therefore, overhead costs for running the project were suppressed, allowing most of the budget to be allocated to the actual preparation of the monitoring and early warning network, as well as the preparation of pilot projects.

A total amount of 704,658 USD, from the original budget of one million USD, with a total of 215,000 USD equivalent of in-kind contribution by the Chinese and Mongolian governments, and uncounted in-kind contributions from UNCCD, UNEP, UNESCAP, and Japanese and Korean governments, was mobilised for the establishment of this ECM, including preparation of the Master Plan (ADB, 2006). Approximately half was allocated for consulting services, which include contributions from international and domestic consultants, as well as those from UN agencies. Approximately 30 percent of the total budget was spent for conferences of the steering committee and technical committees, while the remainder (20 percent) was used for project implementation support. The Technical Assistant Complete Report

prepared by ADB concluded that the engagement of substantive inputs from domestic consultants and the involvement of national experts from Japan and ROK have proven to be cost-effective. Compounded with strict financial management, the project was able to achieve its goals with substantive savings (ADB, 2006).

Table 8: Financial resources and output of DSS-RETA

| Financial Resources (USD) | Output |
|--|--|
| 1,000,000 USD (500,000 USD from Japan Special Fund; 500,000 USD from Global Environment Facility) | Regional steering committee (representatives from China, Mongolia, Japan, ROK, and ADB, UNEP, UNESCAP, and UNCCD) |
| | Regional Master Plan for Prevention and Control of Dust and Sandstorms in NEA <ul style="list-style-type: none"> • Master plan for regional cooperation for the prevention and control of dust and sandstorms • Establishment of a regional monitoring and early warning network for dust and sandstorms in Northeast Asia • Investment strategy for dust and sandstorm prevention and control through demonstration projects |

Meanwhile, beyond the efficient mobilisation of limited resources described above, relevant countries have been expected to provide large amounts of both human and financial resources to implement the Master Plan. In this regard, difficulties in raising large financial resources from relevant countries, localities and international funding organisations for follow-up activities of DSS-RETA have been discovered. Therefore, it is necessary to establish a transparent and equitable financial contribution scheme, taking into consideration the different needs and situations of each country.

Survey results shows that regarding sufficiency of resources, while slightly more respondents were in agreement than neutral, there were some opinions on resource insufficiency (see Appendix I-50 for details). Survey results indicate that resource availability for this specific ECM has not yet reached a satisfactory level. As for the efficiency of resource use, opinions varied among respondents (see Appendix I-51 for details). While the current level of cooperation has been met through the development of the Master Plan, there exists high expectation for the utilisation of available resources on a more practical level, such as to increase the number of monitoring sites and expansion of the early warning network, as well as implementation of demonstration projects.

Stakeholder Participation

The project involved the governments of four countries, international organisations with core competence on technical and financial assistance, namely ADB, UNEP, UNESCAP, UNCCD, and the Global Environment Facility, as well as government nominated experts, and international and domestic consultants. Participants from resources and the industrial sector, private sector, academia, research institutes, NGOs, and citizens were not present in this ECM.

Considering the participation outlined above, this mechanism was found to have low social capacity to meet the aims of the master plan in area of DSS root causes. Explanations could include the fact that this ECM has currently conducted only monitoring activities. Therefore, when it comes to the implementation of the demonstration projects, more involvement is expected from social stakeholders who are not yet present in this ECM.

Sustainability

Regarding institutional sustainability for addressing regional challenges on the DSS issues, this ECM is not formalised but embedded in other regional collaboration programmes. For example, political fora for discussing DSS issues are ensured by special sessions of TEMM including Mongolia (TEMM+1) and relevant international organisations. Whether this mechanism will be formalised with necessary financial sources secured for both administrative and operational activities, is unknown at this point.

Indeed, the joint request for ADB Technical Assistance to address DSS issues was originally derived from ministerial level policy dialogues at TEMM, and DSS-RETA and its follow-up activities were developed in accordance with discussions at a series of TEMM. With such strong political support, the follow-up activities of DSS-RETA are likely to achieve their goals and lead to actual interventions on the sources of DSS. For instance, the establishment of the regional DSS monitoring and early warning network and the joint demonstration projects for preventing and controlling DSS, were endorsed at the ministerial level at TEMM7 convened in October 2005. Per the request of the four participating countries, follow-up regional technical assistance for establishing a DSS monitoring and early warning network is already underway, while financial arrangements for the implementation of nine pilot projects to address the origins of DSS in China and Mongolia are currently being sought. In order to ensure the implementation of DSS-related activities, TEMM has organised the Tripartite Director General Meetings on DSS since 2007. At these meetings, it was agreed to set

up the Steering Committee for Joint Research on DSS. DSS issues provide a model case, where the political will to address an emerging regional issue declared at the ministerial level was successfully translated into the preparation of a regional action plan and follow-up on-the-ground activities.

All survey respondents agreed on linkage among various bilateral level cooperation mechanisms for this issue (see Appendix I-52 for details). Survey results indicate the need and expectation for a stronger system for DSS monitoring and early warning network. Regarding utilisation of existing bilateral cooperation activities in the regional level cooperation mechanism, many respondents agreed on the application of lessons learned through bilateral cooperation. There were no disagreeing responses to this question (see Appendix I-53 for details). This result indicates the effectiveness of bilateral level cooperation, as well as expectation of the same sort of practices and outcomes for regional level cooperation.

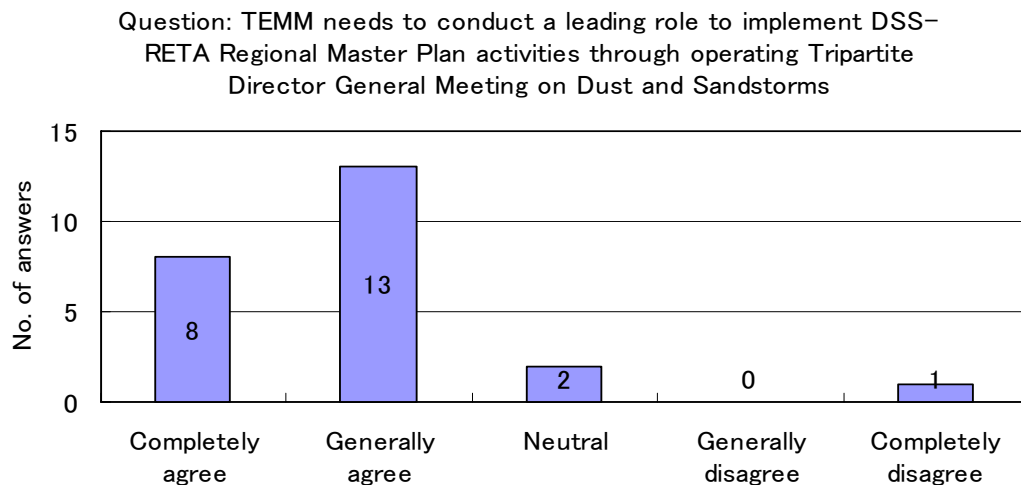


Figure 16: Future Position of DSS-RETA for regional cooperation

Note: Results of 24 responses provided out of 68 respondents.

Similarly, 88 percent of the respondents agreed that DSS-RETA should continue to operate the Tripartite Director General Meeting on Dust and Sandstorms. While there were a few neutral and disagreeing responses (8 percent and 4 percent respectively), positive opinions outweighed negative ones (Fig.16). This result indicates the need for higher-level and more recognized cooperation among participating countries.

Summary

- Focusing on monitoring and early warning, as well as root causes, DSS-RETA is promoting preventive efforts to address the DSS issue. Its influence is evident in the development and initiation of on-the-ground actions.

- DSS-RETA has achieved its stated objectives through the collaboration and participation of all major DSS-related stakeholders in Northeast Asia.
- DSS-RETA has made the best use of existing regional coordination mechanisms of international organisations, e.g. UNCCD, UNEP, and UNESCAP, instead of establishing new ones. However, difficulties have arisen in follow-up activities, namely problems in raising significantly larger financial resources from relevant countries, localities and international funding organisations.
- Stakeholders, both relevant national governments and international organisations, are adequately involved in processes. Further participation by local stakeholders will be necessary for follow-up activities.
- As DSS issues are a high priority of ministerial level policy dialogue in the region, high level decision-making can be translated into the development of regional action plans and necessary on-the-ground activities. There is currently no permanent secretariat body or regular annual budget for regional activities. Securing financial resources for the step-by-step implementation of the Master Plan is one of the most urgent and important tasks for DSS-RETA.

3.2.3. Other Mechanisms and Activities

Northeast Asia has developed various cooperation activities over the past years, initiated by actors other than the national government agencies responsible for environmental protection. Evaluation of these activities is problematic as the history of these activities is at times short, and the scale at times small. Therefore, this section will provide only brief information on these important activities.

Local governments

The Association of North East Asia Regional Governments (NEAR), initiated by the Republic of Korea and established in 1996, has 39 local government members from six countries including the DPRK. The Environment Subcommittee discusses regional environmental issues and has undertaken projects in the area of marine litter, youth awareness-raising and migratory birds.

The East Asia (Pan-Yellow Sea) City Conference involves ten cities around the Yellow Sea. It has established the Organization for the East Asia Economic Development, whose objectives include creation of a showcase of environmentally efficient cities. The forum is also renowned for its long experience in holding

workshops to promote environmental management cooperation and foster environmental industry. A working group on the environment established in 2004, conducts two projects on collection of environmental data and compilation of a database on environmental industries in member cities.

Local economic associations

The Northeast Asia Economic Conference (NAEC) is organized by a wide range of stakeholders based in Niigata, Japan⁸. It originated from a series of meetings held in the 1990s in Niigata Prefecture to discuss economic cooperation in Northeast Asia. Meetings have been regularly attended by national and local governments, researchers and business representatives of China, the DPRK, Japan, Mongolia, the Republic of Korea, and the Russian Federation. Each session of NAEC issues a political declaration and recommendations for action. From the beginning, NEAC meetings discussed the efficient use of natural resources and environmental management in the region. In recent years, NAEC has extensively discussed implementation of the Clean Development Mechanism (CDM) project under the auspices of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC).

Academia

The Academic Forum for Northeast Asia⁹, established in 1995 by the government of Kyoto Prefecture, Japan, promotes joint academic activities in the region through conferences, exchange of researchers and financial support for similar activities.

The Tripartite Presidents Meeting (TPM), established on the recommendation of TEMM, is a series of annual meetings of the heads of national environment research institutions, i.e. the Chinese Research Academy of Environmental Sciences, the National Institute for Environmental Studies of Japan, and the National Institute of Environmental Research (NIER) of the Republic of Korea¹⁰. The meeting is preceded by an international workshop on a priority environmental issue, which is chosen by a working level meeting of the three institutions. The second meeting agreed to explore the possibility of joint research projects in the following six areas: freshwater pollution, air pollution including vehicular sources, trans-boundary air pollution, yellow sandstorms, hazardous materials contamination (i.e. endocrine disrupting chemicals and POPs), and migratory birds and wetlands.

⁸ URL <http://naec.erina.or.jp>

⁹ URL http://www.joho-kyoto.or.jp/~acdf/for/index_en.html

¹⁰ URL <http://www.nier.go.kr:8181/deptdata/download.php?downpath=/upfile/libdata/002/&downfile=H20060519105214.doc>

Civil society

In response to Agenda 21 adopted at UNCED, national level environmental coordination mechanisms were set up in many countries. The Japan Council for Sustainable Development (JCSD) and the Presidential Commission on Sustainable Development of Korea (PCSD) were established in 1996 and 2000, respectively. On the occasion of WSSD in 2002, JCSD and PCSD jointly organized the first meeting of the Asia-Pacific National Councils for Sustainable Development (NCSA) in Johannesburg. The second meeting was held in 2005 in Seoul, hosted by PCSD in cooperation with JCSD. Participants from five countries in the Asia-Pacific region (i.e. China, Japan, the Republic of Korea, Mongolia and the Philippines) issued the joint statement “Seoul Statement of the 2nd East Asia NCSA Workshop”. This statement referred to the establishment of an annual working group meeting to discuss a common vision and action plan on sustainable development in East Asia. It also agreed to launch a website to share information and link the five participating countries. The Statement refers to the establishment of an “East Asia NCSA Fund” to support civil society initiatives for sustainable development (source).

The NCSA workshop refers to the following three projects of NGOs in the region: (i) the Yellow Sea Eco-region Planning Programme; (ii) the East Asia Environmental Education Workshop; and, (iii) EnviroAsia. EnviroAsia is supported by government funds--three environmental NGOs from China, Korea and Japan launched a website where up-to-date data and information can be accessed in three languages.

The Eco-Peace Network in Northeast Asia is supported by the Korean National Commission for UNESCO and gathers non-governmental environmental groups and scholars from five countries in the region to discuss possible measures to prevent environmental conflicts.

Undeniably, important regional environmental cooperation activities in the NEA region have already been undertaken at different levels, by local governments and different social actors. On the other hand, to enhance cooperation and improve coordination in the region, there exists a need to share information on what has been done by which sector or stakeholder.

3.2.4. Performance of Regional Environmental Cooperation

In the above evaluation of the six ECMs, the current situation of each selected ECM was highlighted. Subsequently, this section summarizes the characteristics of the six ECMs to further evaluate their overall performance in dealing with serious environmental issues in the region, according to the five criteria.

Regarding the *relevancy* of the three generic ECMs, i.e. TEMM, NEASPEC, and NEAC, three aspects have been examined. First, concerning the scope of issues addressed, out of the eight environmental issues listed in Chapter 2, TEMM has covered all issues, NEASPEC has covered three issues, and NEAC has covered seven issues. Pertaining to level of action, TEMM and NEASPEC are at the fourth level, namely, pilot project implementation, while NEAC is at the second stage, namely, policy dialogue. As to the function of ECMs, TEMM's functions include priority setting, coordination with other generic and specific mechanisms, and fostering the establishment of new mechanisms for emerging regional environmental issues. Likewise, NEASPEC's functions include setting principles and rules, priority setting, and coordination with other generic and specific ECMs. NEAC's function is coordination with other generic and specific ECMs.

Concerning the *effectiveness* of three generic ECMs, through examination of the progress and various efforts and activities on regional environmental issues, it was concluded that all ECMs have achieved a certain level of effectiveness in meeting stated objectives.

For *efficiency*, it was observed that sufficient resources exist for the operation of TEMM because it is a part of ministerial agendas for the three participating countries. Resources have been utilised efficiently by allocating budgets for various projects. For NEASPEC, some shortfalls were found in securing budgets for project implementation, partly due to differing levels of commitment and divergent interests of participating countries. Due to the long decision-making process for activities related to NEASPEC, a large portion of its budget has gone unused, and thus some doubts remain regarding the efficiency of NEASPEC activities. For NEAC, budget information was unknown, and therefore its efficiency is difficult to judge.

Pertaining to *stakeholder participation*, it was found that all decision-making processes were carried out by central government officials of each participating country for the three generic ECMs. During project implementation, participation

from different stakeholders, such as local governments, NGOs, and academia, was evident.

Regarding *sustainability*, it was concluded that TEMM has high sustainability considering its high level of political will. NEASPEC's sustainability is comparatively low, considering the differing levels of commitment and interest of countries, as well as the long period of discussion on the establishment of a permanent secretariat without results. For NEAC, at its last meeting agreement was reached on the merging of this mechanism into another larger generic ECM in the region.

Similar assessment was conducted for the three specific ECMs, i.e., EANET, NOWPAP, and DSS-RETA, utilising the set criteria. As for the *relevancy* of specific ECMs, level of action was observed. According to this analysis, all specific ECMs were operating at the fourth level, namely, project implementation.

Pertaining to the *effectiveness* of the three specific ECMs, it was found that all three have carried out relevant activities to meet objectives. Therefore, it is concluded that all three specific ECMs exhibit fairly high effectiveness.

Concerning *efficiency* of the specific ECMs, NOWPAP was observed to spend a considerable amount of its budget for operating the two secretariats and four regional activity centres, which has affected the implementation of actual projects needed for the improvement of the state of the marine environment in the region. Thus discussion on methods for improvement of efficiency are required. All three specific mechanisms have different levels of commitment from participating countries, including contributions of financial and human resources from different participating countries, which points to some instability in sufficiency of resources.

For *stakeholder participation*, decision-making processes for all three specific ECMs are carried out mainly by central government officials, with the participation of experts in relevant scientific steering committee meetings and activity implementation. The participation of other stakeholders, such as local governments, NGOs, and civil society organisations, was also realised for certain projects conducted by EANET and NOWPAP.

Regarding *sustainability*, while some concern exists on the unbalanced level of commitments from participating countries, the sustainability of EANET and NOWPAP, which have permanent secretariats, activity centers and national focal

points, is judged to be fairly high. For DSS-RETA, procurement of funding sources remains a major issue to be solved, along with the consent of governments of all relevant countries.

Discussion in previous sections on the performance of the various regional mechanisms, whether generic or issue-specific, indicate that most mechanisms have been found relevant for the promotion of collective efforts in the region. In addition, most mechanisms have been found to effectively perform their functions, although there is call for improved efficiency in performance. Furthermore, there is a greater call for more outcomes from these mechanisms, which concretely translate into projects in the region and wider participation from other stakeholders and sectors. Accordingly, the current participation of various stakeholders garnered a low rating, particularly regarding decision-making processes, with scores on sustainability being mainly low-to-medium, with the exception of TEMM, the highest-level cooperation mechanism involving China, Japan, and the ROK.

3.3. Gap Analysis for the NEA Regional Environmental Cooperation System

In Section 3.2, mechanisms were evaluated based on five criteria, namely, relevance, effectiveness, efficiency, stakeholder participation, and sustainability. Based on the results of this evaluation, succeeding sections evaluate the performance of the overall environmental cooperation system to address the priority environmental issues outlined in Chapter 2. The purpose of this evaluation is to identify major concerns for the promotion of environmental cooperation in the region and to analyse the reasons behind these concerns.

3.3.1. Generic Mechanisms

In this section, along with the three generic mechanisms, i.e. TEMM, NEASPEC, and NEAC, small-scale activities of a similar nature are included as information is available.

Level of Action

As shown in Table 9, most mechanisms have implemented some pilot projects, which serve as examples of practical level cooperation to produce tangible outcomes. However, the scale, duration, and number of participants of projects has been considerably small. Moreover, close linkage between activities and policy-making has not been observed. In addition, even though countries have made efforts to establish and operate cooperation mechanisms at the regional level, agreement on domestic implementation has not been achieved.

Table 9: Development Stage of Each Mechanism

| | Information Exchange | Policy Dialogue | Action Plan | Pilot Projects | Agreements for Implementation |
|---------|----------------------|-----------------|-------------|----------------|-------------------------------|
| TEMM | ————— | ————— | ————— | → | |
| NEASPEC | ————— | ————— | ————— | → | |
| NEAC | ————— | —————→ | | | |
| NEAR | ————— | —————→ | | √ | |
| TPM | √ | | | √ | |

Table 10 shows the institutionalisation of each mechanism in terms of agreement and organisational structure. The table shows that currently, there are no mechanisms with an agreement related to regional environmental management in the region. The two main environmental cooperation mechanisms in this region, namely, TEMM and

NEASPEC, do not have independent secretariats. For some of the smaller mechanisms, namely, NEAR and TPM, independent secretariats have been established under the initiative of certain countries. Regarding the decision-making mechanism of each ECM, TEMM, NEAR, and TPM have an independent decision-making authority within the mechanism. Participants in NEASPEC meetings do not have decision-making authority for the mechanisms, and therefore the implementation of activities tends to be a long, time-consuming process.

Table 10: Institutionalisation of Each Mechanism

| | Agreement | Organisational Structure | |
|----------------|-----------|---|---------------------------------|
| | | Secretariat | Decision-Making |
| TEMM | No | Ministries of three countries take turns | Ministers |
| NEASPEC | No | UNESCAP (interim) | High-level government officials |
| NEAC | No | Ministries of three countries take turns | Multi-stakeholders |
| NEAR | No | Independent secretariat in North Gyeongsang Province, Korea | Local government officials |
| TPM | No | Three research institutes take turns | Heads of research institutes |

The previous section on the status quo of selected ECMs in the region reported that while most of the mechanisms have implemented pilot projects, survey results indicated some doubt regarding the efficient use of available resources. Specifically, respondents indicated that a more significant portion of budgets should be allocated for project implementation. While a certain level of institutionalisation is certainly important for the proper function of the mechanism and management of its resources and activities, this issue may be better addressed in assessing the effectiveness of these environmental cooperation mechanisms.

It is judged that the identified gaps related to *level of action* for the generic mechanisms are lack of domestic implementation schemes, and lack of agreement on overall environmental cooperation in the region. In addition, despite the fact that these generic mechanisms were designed to address overall environmental issues in the region, it is observed that each mechanism has been operated separately, with different decision-making and secretariat systems. This symptom can be summarised as a lack of coordination among mechanisms.

Issue Area Coverage

Though generic mechanisms are not designed to address specific issues, they play an important role in setting regional agenda on environmental problems and concerns. The eight environmental issues considered for regional cooperation are air pollution, land degradation, dust and sandstorms, marine environmental problems, biodiversity loss, wastes, chemical pollution, and environment and energy. Table 11 shows the scope of issues covered by each generic mechanism.

Table 11: Issues Covered by Each Mechanism

| | Air Pollution | Land Degradation | Dust and Sandstorms | Marine Environmental Problems | Biodiversity Loss | Wastes | Chemical Pollution | Environment and Energy |
|---------|---------------|------------------|---------------------|-------------------------------|-------------------|--------|--------------------|------------------------|
| TEMM | √ | √ | √ | √ | √ | √ | √ | √ |
| NEASPEC | √ | | | | √ | | √ | |
| NEAC | √ | √ | | √ | √ | √ | √ | √ |
| NEAR | √ | | | √ | √ | | | |
| TPM | √ | | √ | | √ | | √ | |

Accordingly, air pollution and biodiversity were covered by all generic mechanisms, while land degradation, wastes and energy have not been adequately addressed by the generic mechanisms. For air pollution, marine environmental problems, and DSS, independent mechanisms exist to specifically address these issues. Indeed, waste and energy issues are both emerging environmental problems that require urgent action from all participating countries. In this regard, a gap was found in the scope of the issues in the lack of coverage of emerging environmental issues such as wastes and energy.

Gaps for the *issue area coverage* were found to be limited measures for emerging environmental issues in the region, such as wastes and energy. In addition, as traditional environmental issues, such as air pollution and biodiversity, are addressed by all generic mechanisms, there may be some overlapping of activities. Again, this symptom is due to the fact that all generic ECMs in this region are operated separately, without any coordination.

Geographical Coverage

The Northeast Asia region is composed of six countries, namely, China, the DPRK, Japan, Mongolia, the ROK, and the Russian Federation. Table 12 shows the geographic coverage of each mechanism.

Table 12: Geographic Coverage of Each Mechanism

| | China | DPRK | Japan | Mongolia | ROK | Russia |
|----------------|-------|------|-------|----------|-----|--------|
| TEMM | √ | | √ | | √ | |
| NEASPEC | √ | √ | √ | √ | √ | √ |
| NEAC | √ | | √ | √ | √ | √ |
| NEAR | √ | √ | √ | √ | √ | √ |
| TPM | √ | | √ | | √ | |

At present, among the generic mechanisms, only NEASPEC and NEAR have representation from all countries in NEA. China, Japan, and the ROK are the only three countries consistently participating in all of the mechanisms, which show each country's recognition of the importance of addressing environmental concerns through regional mechanisms. In this regard, it may be concluded that environmental cooperation in NEA has been initiated through the leadership of these three countries. Furthermore, although NEASPEC and NEAC include the Russian Federation and Mongolia, the mechanisms were initiated by the three leading countries, and most projects have been funded and initiated by China, Japan, and the ROK¹¹.

Here, the issue of the fluid operation of the decision-making mechanism juxtaposed with country participation is raised. Specifically, while the decision-making process of TEMM is comparatively smooth and decisions are often materialised in a timely manner, as mentioned in Section 3.2., NEASPEC's decision-making process is rather slow, due to differing opinions from participating countries and the lack of decision-making authority of country representatives. As such, while NEASPEC enjoys the widest representation of countries in the region, concern that some partners are not fully engaged in the process remains. In this regard, a balance between extension of geographic coverage and the ability to reach consensus among member states is another issue of concern. That is, while it is necessary to have participation from all nations of NEA, by extending geographic coverage the ability to achieve timely consensus among member states may be put at risk.

Meanwhile, although the membership and mandate of ministries could limit the scope of the TEMM agenda, meeting reports show that the three ministers have discussed regional issues not solely confined to trilateral matters. In the case of DSS, one of the most pressing environmental issues in Northeast Asia, the ministers invited their counterpart in Mongolia to hold an extraordinary TEMM+1 meeting. One may conclude that the three ministers are indeed the de facto leaders of regional environmental management. They discuss regional environmental issues with a

¹¹ The DPRK is party to NEASPEC and NEAR, but almost never attends relevant meetings and activities.

regional perspective and conscience. Once they see the importance of involving other countries in the region, they are flexible enough to extend an invitation to the relevant country.

Regarding the suggestion to expand the membership of TEMM, opinions varied among survey respondents (see Appendix I-10 for details). Likewise, on the survey item regarding limiting membership to current member nations, opinion was also varied according (see Appendix I-11 for details).

Regarding NEAC, many respondents agreed to collaboration with other countries at appropriate times and occasions. There were only a few disagreements with this item (see Appendix I-27 for details). Considering the primary objective of this mechanism, which is to share and exchange information on environmental issues and means of cooperation among participating countries, this result reinforces the trans-boundary nature of current environmental issues, as well as importance of cooperation efforts at the regional level.

In summary, the gap for the geographical coverage of generic mechanisms is different geographic coverage for different mechanisms. This symptom is due to the lack of coordination among mechanisms, despite the fact that countries in the region are interdependent regarding both economic and environmental protection activities. In addition, a low level of interest in committing to regional environmental cooperation was observed from some countries in the region.

Resource Availability

Information on financial mechanisms was available for TEMM and NEASPEC only. For TEMM, the environment ministries of the three participating countries store the budget for TEMM activities, including the organisation of the ministers meeting, hosted annually by rotation. NEASPEC's budget is operated through its Core Fund. China, Japan, and the ROK have made contributions to the Core Fund on a voluntary basis. For the specific project activities, UNESCAP, on behalf of NEASPEC, has applied for funds from ADB. Since NEASPEC is operated under voluntary funding from participating countries, its budgetary system is not very stable, and is affected by national situations and differing interest in the mechanism. Conversely, a mandatory financial contribution might act as a deterrent for some countries in the region to participate in this mechanism.

The gap related to resource availability of generic mechanisms is the instability of the financial mechanisms of the ECMs in this region. This instability is related to the differing levels of commitment of different countries.

Stakeholder Participation

The need to integrate and coordinate the participation of different stakeholders in regional cooperation mechanisms was pointed out by survey respondents. Table 13 presents stakeholder participation for each mechanism. Prior to the implementation of pilot projects, participation was limited to central government level representatives. In terms of participation from local governments, the private sector, and NGOs, the current mechanisms have garnered a low score.

Table 13: Stakeholder Participation

| | International Organisations | Government | | Private Sectors | | |
|----------------|-----------------------------|-------------------------------|-------|-----------------|--------------|------|
| | | Central | Local | Experts | Corporations | NGOs |
| TEMM | | Ministers | | | √ | √ |
| NEASPEC | √ | Senior level officials | | | | |
| NEAC | √ | √ | √ | √ | | |
| NEAR | | | √ | √ | √ | √ |
| TPM | | | | √ | | |

While participation of various stakeholders is not yet systematised in the regional cooperation mechanisms listed above, as mentioned in Section 3.2., actors other than national government agencies in the NEA region have initiated and developed various cooperation activities over the past years.

It is observed that the gap for *stakeholder participation* is limited participation from civil society organisations, private sectors, and local governments, especially in decision-making processes. Since environmental issues are best handled by the participation of all stakeholders, it is crucial that all ECMs in the region ensure the involvement of all stakeholders.

3.3.2. Air Pollution

Prior to the gap analysis related to air pollution, it is first necessary to briefly summarize other regional activities on air pollution. First of all, as mentioned in Section 3.2., NEASPEC has been conducting capacity-building activities related to air pollution. Another activity related to air pollution is the Joint Research Project on Long-Range Transboundary Air Pollutants in Northeast Asia, abbreviated as LTP. LTP conducts research under the auspices of TEMM on long-range trans-boundary air pollutants in Northeast Asia. This tripartite joint research, led by NIER, conducts monitoring and modeling in China, Japan, and the ROK, on long-range

trans-boundary air pollutants, e.g. SO₂, NO₂, O₃ and PM₁₀. The project seeks to minimise damage from these pollutants through cooperative and coordinated action by three countries, by improving understanding of the air pollutants and predicting amounts of transfer and deposition. Research activity was initiated in 1999 and continued until 2004. Five annual reports were produced during this so-called first step of joint research activities. The second step, launched in 2005 and running until 2007, initiated the introduction of science-based abatement strategies.

Level of Action

Table 14 depicts the developmental stages of EANET and LTP. Both mechanisms have been implementing activities according to their current objectives. Accordingly, projects implemented by EANET are mostly related to monitoring, and projects implemented by LTP are mainly related to modeling. Apart from the scope of activities, there have been no agreements for domestic implementation of activities.

Table 14: Development Stage of Each Mechanism

| | Information Exchange | Policy Dialogue | Action Plan | Pilot Projects | Agreements for Implementation |
|--------------|----------------------|-----------------|-------------|----------------|-------------------------------|
| EANET | _____ | _____ | _____ | → | |
| LTP | _____ | _____ | _____ | → | |

Table 15 shows the institutional infrastructure of each mechanism. For EANET, while UNEP serves as the secretariat, ADORC also functions as a coordinating body for various activities. For LTP, NIER in the ROK serves as the secretariat and decision-making body of the programme, which is conducted by government officials and experts. There are no legally-binding agreements for the mechanisms, for either EANET or LTP.

Table 15: Institutional Infrastructure of Each Mechanism

| | Legally binding agreement | Organisational Structure | |
|--------------|---------------------------|--------------------------|----------------------------------|
| | | Secretariat | Decision-Making |
| EANET | No | UNEP (interim) | Inter-governmental meeting |
| LTP | No | NIER (ROK) | Government officials and experts |

Regarding further development of EANET, 55.9 percent of survey respondents agreed that EANET should be equipped with a legal instrument to monitor acid deposition and trans-boundary air pollutants (See Appendix I-34 for details). Overall, the survey

showed that respondents express a much stronger opinion on establishment of a legal instrument for EANET than on expansion of its activities. This result reflects the strong support of Japanese respondents for a legal instrument. On the contrary, survey results on the Chinese side exhibit very passive opinions on the same concern.

On the other hand, 59 percent of respondents agreed that EANET should expand its scope of activities into research on long-range transfer mechanisms, impact assessment of emissions, and development of emission inventories, among others. (See Appendix I-35 for details). In addition, two thirds of respondents agreed that EANET should make additional investments in institutional development to support the expansion of the scope of its activities (See Appendix I-36 for details).

Based on these survey results, several points on the further development of EANET can be made. First, a positive opinion basis is in place for expansion of the scope of EANET activities, rather than establishment of a legal instrument. Also, respondents favor investing in the institutional development of EANET. Therefore, it can be concluded that the further development of EANET can be realised through expansion of its activities and establishment of relevant and necessary institutions.

Lastly, regarding role allocation between EANET and LTP, 62.5 percent of respondents agreed that EANET should assign an appropriate role to LTP to promote synergy in addressing trans-boundary air pollution problems (See Appendix I-39 for details). EANET could allocate some of its functions to LTP within the process of expansion of activity scope and establishment of relevant institutions.

To summarize, the gaps for level of action for air pollution issues are the lack of a domestic implementation scheme and lack of legally binding agreements. Similar to the generic mechanisms of the region, the two main mechanisms dealing with air pollution issues lack coordination between their respective activities, sacrificing synergistic effects, which would otherwise increase the effectiveness and efficiency of the mechanisms.

Issue Area Coverage

In analysing the gaps for *issue area coverage* related to trans-boundary air pollution, we have referred to the Convention on Long-range Transboundary Air Pollution (CLRTAP) developed in Europe in 1979. EANET was originally developed based on the Agenda 21 recommendation adopted by UNCED in 1992, which states, “the programs (in Europe and North America) need to be continued and enhanced, and their experience needs to be shared with other regions of the world”.

Specifically, special focus was given to the linkage between scientific assessment and policy development. For the scientific assessment, four levels are considered, namely, (i) monitoring and modeling, (ii) emission inventories and emission projections, (iii) integrated assessment and modeling, and (iv) studies on effects on ecosystems, agriculture, health and the like. For the policy development, again, four levels are considered, namely, (v) planning of scientific and technical activities, (vi) revisions to existing protocols and preparation of new ones, (vii) exchange of technology, and (viii) proposals for any strategic development under the convention.

Activities of EANET include the establishment and operation of a monitoring network in 13 participating countries, including monitoring, data collection, and analysis. Therefore, regarding scientific assessment, EANET covers the levels (i) and (ii) mentioned in the previous paragraph. Current activities of EANET and the data derived from them are not adequate to understand the real state of acid deposition problems in East Asia. Since LTP conducts modeling research, if EANET and LTP were combined, more levels could be covered. EANET and LTP could enjoy synergistic effects, especially in terms of establishing the crucial monitoring network, preparing emission inventories and developing simulation models, through exchange of experiences with each other. Yet, as indicated by the activities of CLRTAP, in order to fully utilise the monitoring results of EANET to formulate regional policy on trans-boundary air pollution, it is necessary to conduct all four levels of activities (i to iv) mentioned above.

As regard to the modeling activity conducted by LTP, while the European Monitoring and Evaluation Programme (EMEP) uses the consistent model for the transportation mechanism, namely RAINS, institutes of three participating countries in LTP have not used a common model in their scientific activities for assessing the origin, movement, and deposition of acid. This is major gap between LTP activities and necessary action for assessment of acid deposition in NEA.

To summarize, the gaps of issue area coverage for air pollution, were observed to lie in the scope of activities of both EANET and LTP, which are limited to the first level of scientific assessment. A gap is also evident in the lack of synergistic effects between EANET and LTP. In addition, some overlapping functions are observed between NEASPEC and EANET, which both deal with air pollution. Both mechanisms have conducted capacity-building activities and monitoring and data collection activities. This overlap is partly due to differing initiatives from different countries for this mechanism. Specifically, EANET was mainly initiated by the government of Japan, whereas NEASPEC and LTP were mainly initiated by the government of the ROK.

Geographical Coverage

Table 16 shows the geographic coverage of EANET and LTP. While both mechanisms address the same issue, acid deposition and trans-boundary air pollution, EANET and LTP have different geographical coverage. Currently, 13 countries participate in EANET, including all six countries in the NEA region, along with some countries in Southeast Asia. On the other hand, only three countries participate in LTP, namely, China, Japan, and the ROK.

Table 16: Geographic Coverage of Each Mechanism

| | China | DPRK | Japan | Mongolia | ROK | Russia |
|--------------|--------------|-------------|--------------|-----------------|------------|---------------|
| EANET | √ | √ | √ | √ | √ | √ |
| LTP | √ | | √ | | √ | |

Considering that Northeast Asia and Southeast Asia differ in the origins of acid deposition, the pollution source-receptor relationship, the long-range trans-boundary transfer mechanism, meteorological mechanisms, ecosystem interdependence, and the socioeconomic situations of countries, the geographical coverage of EANET is very broad. EANET may need to make adjustments in management in terms of participating countries, based on sub-regional ranges considering the relevant factors of acid deposition. Meanwhile, LTP may need to enlarge its geographical coverage beyond three countries. To promote synergistic effects between EANET and LTP, geographical coverage could be rearranged, including sub-regional ranges in future.

To summarize, the gap of *geographical coverage* for air pollution issues lies in the different geographical coverages of the different mechanisms, which do not necessarily coordinate with geographical scopes related to the acid deposition problem. Again, this is due to lack of coordination between mechanisms, caused by the differing initiatives of participating countries.

Resource Availability

Information on financial arrangements was available for EANET only. As mentioned in detail in Section 3.2., EANET's budget is composed of a trust fund from participating countries and supported by both national and local governments of Japan. There is no mandatory financial mechanism. In the fifth IGM in 2003, participating countries decided to increase effort to contribute to the budget, using the UN assessment scale-based burden sharing system as the first step to stabilise the budgetary arrangements. However, only four countries made contributions in 2006.

The gap of *resource availability* for air pollution issues is unbalanced financial contribution from participating countries. This unstable financial situation is related to differing levels of commitment and interest in the issue from different countries.

Stakeholder Participation

Table 17 depicts stakeholder participation in EANET and LTP. As mentioned in Section 3.2., private sectors and civil society organisations do not participate in decision-making on EANET activities.

Table 17: Stakeholder Participation

| | International Organisations | Government | | Private Sectors | | |
|--------------|-----------------------------|------------|-------|-----------------|--------------|------|
| | | Central | Local | Experts | Corporations | NGOs |
| EANET | √ | √ | √ | √ | √ | √ |
| LTP | | √ | | √ | | |

Meetings are held exclusively for selected officials. While civil society organisations are present for some activities related to awareness-building on the air pollution, there is little room for involvement of private sectors and civil society organisations in EANET and LTP monitoring and modeling activities.

The gap for *stakeholder participation* for air pollution issues arises from the limited participation from civil society organisations, private sectors, and local governments, especially in decision-making processes. This symptom should be addressed once mechanisms expand to include other activities, such as emission inventories and impact assessment, as well as emission reduction strategies.

3.3.3. Marine Environmental Issues

Prior to the gap analysis related to marine environmental issues, it is necessary to briefly summarise other regional activities addressing marine environmental issues. Two activities being carried out in the region are the Yellow Sea Large Marine Ecosystem Project (YSLME) and the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).

YSLME was launched in 2005, following a project development phase started in 1998, as a UNDP/GEF-funded project to create a mechanism for ecosystem-based, environmentally-sustainable management and use of the Yellow Sea and its watershed. Its participants are China, the ROK, UNDP, and GEF. Its objective is to protect, conserve and manage the Yellow Sea by reducing development stress and promoting

sustainable use of its resources. The project focuses on five specific issue components, namely, ecosystem, fisheries, pollution, biodiversity, and investment. YSLME functions as a vehicle to facilitate cooperation between the participating two countries on the development and implementation of a Strategic Action Programme (SAP) for the Yellow Sea, based on Transboundary Diagnostic Analysis (TDA). The YSLME is an example of an outcome oriented project. Focus in on identification of root causes of trans-boundary problems, development of the SAP to address identified root causes, and implementation of the SAP. Some pilot projects have been built in from the outset, ensuring that the project leads to on-the-ground actions.

PEMSEA originated as a project under UNEP and IMO, entitled “Prevention and Management of Marine Pollution in the East Asian Seas” and implemented between 1994 and 1998, and proceeded into a partnership-building project supported by GEF. PEMSEA covers six sub-regional seas, i.e. the Yellow Sea, East China Sea, South China Sea, Sulu-Sulawesi and Indonesian Sea, and the Gulf of Thailand. PEMSEA has focused on specific issue areas under the six governance components for sustainable coastal development, namely, (i) policy, strategies and action plans, (ii) institutional arrangements, (iii) legislation, (iv) public awareness and information management, (v) sustainable financing, and (vi) capacity development. Focus issue areas include (i) natural and human-made disaster prevention and response management, (ii) natural coastal habitat protection, restoration and management, (iii) water use and supply management, (iv) pollution and waste reduction management, and (v) food security and livelihood management. As the main objective of this project is to establish partnerships, it has implemented various partnership programmes in local areas with various stakeholders. As of 2007, projects have mobilised 1.3 million USD (PEMSEA 2007). They have issued more than 150 publications on relevant topics of governance and issue areas in various languages, in the form of policy briefs, study reports, project reports, assessment reports, manuals, proceedings and the like. The *State of the Coasts Reporting* is expected to be published in November 2009, containing information about the current status and conditions of marine and coastal resources and policy responses and management. Focusing on local partnerships, PEMSEA concentrates effort toward on-the-ground activities.

Level of Action

Table 18 shows the development stages of three mechanisms. Similar to other mechanisms, both generic and specific, some pilot projects have been implemented in accordance with mechanism objectives. There is no agreement for domestic implementation for any mechanisms.

Table 18: Development Stage of Each Mechanism

| | Information Exchange | Policy Dialogue | Action Plan | Pilot Projects | Agreements for Implementation |
|---------------|----------------------|-----------------|-------------|----------------|-------------------------------|
| NOWPAP | _____ | _____ | _____ | ➔ | |
| YSLME | _____ | _____ | _____ | ➔ | |
| PEMSEA | _____ | _____ | _____ | ➔ | |

All mechanisms are functioning at the project implementation stage. While they have been able to produce some tangible outputs, at this level, it is difficult to expect concrete outcomes for the improvement of the marine environment in the region. If NOWPAP is to implement activities such as the NOWPAP/7 project (assessment and management of land-based activities), it must establish a mechanism which requires a higher action level than the current one, as such activities are closely related to the sensitive and complicated domestic concern for reduction and control of land-based pollution.

Table 19 outlines the institutional structure of the three mechanisms. Since NOWPAP is under the framework of a larger international governance programme, based on intergovernmental agreement by participating countries on a voluntary basis. Thus, institutionalisation of NOWPAP is well established compared to the other ECMs focusing on marine pollution issues in the region, despite its non-binding format. There is no formal agreement for any of the mechanisms.

Table 19: Institutionalisation of Each Mechanism

| | Agreement | Organisational Structure | |
|---------------|-----------|---|---|
| | | Secretariat | Decision-Making |
| NOWPAP | No | 2 RCUs in ROK and Japan | Ministers |
| YSLME | No | Project Management Office in UNDP | High-level government officials and international organisations |
| PEMSEA | No | Resource Facility Secretariat Services (in the Philippines) | EAS Executive Committee, Ministerial Forum, EAS Congress |

From this analysis, it was summarised that the gap in *level of action* for marine environmental issues lies in the lack of domestic implementation and formal agreements. Although very limited, indeed these three mechanisms have developed some kind of partnership, under the initiative of PEMSEA and the East Asia Seas (EAS) partnership council.

Issue Area Coverage

The UNEP Regional Seas Programme is managed by UNEP headquarters, of which NOWPAP is one regional programme. Therefore, the 11 priority issues identified by the UNEP Regional Seas Programme were utilised for assessment of *issue area coverage* of marine environmental issues. They are (i) pollution from land-based activities, (ii) physical alteration and destruction of habitats, (iii) impact of climate change on oceans and coasts, (iv) marine and coastal biodiversity, (v) environmental aspects of fisheries, (vi) environmental aspects of high seas and seabed management and governance, (vii) vulnerability of islands, (viii) dumping at sea, (ix) marine litter, (x) chemicals and other hazardous substances, and (xi) oil spills¹².

According to the analysis conducted in Section 3.2., most of NOWPAP activities thus far have been related to the establishment of a basic infrastructure for designing and implementing crucial projects to address priority marine environmental problems. Hence, among issue areas mentioned above, NOWPAP has only addressed activities related to pollution from land-based activities and marine litter. As for YSLME, as described previously, it covers six of the above issues (i, ii, iv, viii, ix, and x). PEMSEA also covers six of above issues (i, ii, v, ix, x, and xi). None of the mechanisms address the impact of climate change, high seas and seabed management, vulnerability of islands, or sea dumping.

A suitable and cooperative role assignment among NOWPAP, YSLME, and PEMSEA to address marine environmental issues could result in synergistic effects for marine coastal environmental protection of the Northwest Pacific region. Joint activities and issue arrangement among NOWPAP, YSLME, and PEAMSEA still remain at the beginning stage. A closer relationship should be promoted to implement crucial cooperation activities among NOWPAP, YSLME, and PEAMSEA.

The gap in *Issue Area Coverage* for marine environmental issues stems from the fact that emerging and important problems are not yet addressed. In addition, limited partnerships between NOWPAP, YSLME, and PEMSEA were observed.

¹² UNEP 2007. Report on UNEP's Oceans and Coasts Brainstorming, 29-30 August 2007.

Geographical Coverage

Table 20 shows the geographical coverage of NOWPAP, YSLME and PEMSEA. NOWPAP covers the majority of coastal and marine areas of the Northwest Pacific Region, with participation from most NEA countries, excepting the DPRK. Only two countries bordering the Yellow Sea, China and the ROK, participate in YSLME.

Table 20: Geographic Coverage of Each Mechanism

| | China | DPRK | Japan | Mongolia | ROK | Russia |
|---------------|-------|------|-------|----------|-----|--------|
| NOWPAP | √ | | √ | | √ | √ |
| YSLME | √ | | | | √ | |
| PEMSEA | √ | √ | √ | | √ | |

Though the geographical coverage of NOWPAP and YSLME are aligned appropriately with objectives and activities, in the absence of the DPRK as an official member state, NOWPAP mandates and activities cannot cover the entire Northwest Pacific Region at present. Likewise, YSLME cannot cover the entire area of the Yellow Sea without DPRK participation. Considering the important influence of the DPRK on the state of the environment in the Northwest Pacific Region, NOWPAP should seek possible ways to involve the DPRK. On the other hand, the DPRK does participate in PEMSEA, including the implementation of a project demonstration site.

In this regard, survey results on NOWPAP reveal that most respondents take a positive stance on the participation of the DPRK (see Appendix I-40 for details). However, there was some strong disagreement on the inclusion of the DPRK as a member state.

The gap in *geographical coverage* for mechanisms and activities on marine and coastal environmental issues is the absence of coverage of the DPRK area by the two mechanisms. The involvement of the DPRK in environmental cooperation in the region, not only for marine environmental issues, but for the other environmental issues as well, is one priority topic of concern. However, difference in political systems and negative impressions due to historical incidence still exists among countries, which directly and indirectly affects environmental cooperation in the region.

Resource Availability

The activity of NOWPAP is operated under the Trust Fund, with voluntary contribution of participating countries. There is no mandatory financial contribution mechanism for this mechanism. YSLME and PEMSEA activities were operated with funding from UNDP and GEF.

The gap in *resource availability* is unstable financial mechanisms to address marine environmental issues. Ideally speaking, NOWPAP activities can apply for funding from different donor agencies, e.g. GEF, ADB, and World Bank. However, all application documents have to go through the governments of each country, where differences in prioritisation of issues may result in marine environmental issues not being selected. Also there may be some difficulties in applying for the funds due to different memberships among donor agencies and countries in NEA. Again the differing commitment levels and interests of participating countries in this region are relevant. Thus, the instability in financial mechanisms is related to these differing levels of commitment from different countries.

Stakeholder Participation

Table 21 shows the levels of participation of different stakeholders for NOWPAP, YSLME, and PEMSEA. Paralleling other mechanisms, international organisations and central governments are the main participants in decision-making activities. The participation of experts in scientific activities is also ensured. Local governments and NGOs participate in the implementation of some activities, especially those related to environmental awareness.

Table 21: Stakeholder Participation

| | International Organisations | Government | | Private Sectors | | |
|---------------|-----------------------------|------------|-------|-----------------|--------------|------|
| | | Central | Local | Experts | Corporations | NGOs |
| NOWPAP | √ | √ | √ | √ | | √ |
| YSLME | √ | √ | √ | √ | | √ |
| PEMSEA | √ | √ | √ | √ | | √ |

In this regard, the gap in *stakeholder participation* arises from limited participation of relevant stakeholders, especially at the domestic level. Reiteratively, especially in dealing with specific environmental issues, the involvement of local governments, private sectors, and civil society organisations is necessary to produce tangible outcomes.

3.3.4. Dust and Sandstorms

Level of Action

Table 22 shows the development stage of DSS-RETA. Indeed, DSS-RETA is still a temporary research project initiated and led by a group of international organisations and institutes. It is anticipated that the outputs of DSS-RETA will be succeeded by relevant countries in NEA, and a regular cooperation mechanism maintained under their ownerships and sovereignty.

Table 22: Development Stage of Mechanism

| | Information Exchange | Policy Dialogue | Action Plan | Pilot Projects | Agreements for Implementation |
|----------|----------------------|-----------------|-------------|----------------|-------------------------------|
| DSS-RETA | ————— | ————— | —————→ | | |

In relation to this issue, countries in the NEA region need to take real action, such as DSS monitoring data sharing in real time and development of a regional monitoring network through more formally agreed on mechanisms, to address DSS problems based on the DSS-RETA report.

Table 23: Institutionalisation of Mechanism

| | Agreement | Organisational Structure | |
|----------|-----------|--------------------------|-----------------|
| | | Secretariat | Decision-Making |
| DSS-RETA | No | ADB | N/A |

Since this mechanism is in the project development phase, there are no formally agreed mechanisms nor concrete organisational structures to implement activities. It is therefore hoped that through proper utilisation of the Master Plan, actual implementation will be realised.

The majority of survey respondents displayed strong supporting opinions on domestic level follow-up actions to meet the objectives of the Master Plan. Eighty-three percent of respondents agreed that countries in the NEA region should conduct actions to cope with DSS problems based on the DSS-RETA Regional Master Plan, with 17 percent giving neutral answers to the same question (See Appendix I-54 for details). This survey result indicates the eagerness to solve issues through both regional cooperation and domestic action.

The gap in *level of action* for mechanisms and activities addressing DSS issues arise from the lack of materialisation of projects. Thus, the environmental cooperation system for DSS is still in a very preliminary stage.

Issue Area Coverage

To determine appropriate criteria for *Issue Area Coverage* on dust and sandstorms, the DSS information sheet published by the Ministry of Environment of Japan was used as a reference. Accordingly, the following five areas were identified, (i) monitoring and data collection of particles, (ii) formation and transportation mechanism and

physical and chemical changes in the transportation process, (iii) impact of DSS to ecosystem, human health, and industries, (iv) DSS forecasting and early warning, and (v) prevention of and countermeasures for DSS.

In the Master Plan of DSS-RETA, monitoring and early warning network, land rehabilitation, and mitigation measures are addressed, which include part of (i), (iv), (v) above. On the other hand, assessment of the mechanisms and impacts of DSS mentioned in (ii) and (iii) above have yet to be conducted. Therefore, extensive follow-up activities in the form of both research activities as well as actual project implementation, is necessary for all activity areas mentioned above.

The gap in *issue area coverage* for DSS is the lack of impact assessment and elucidation of mechanisms, as well as lack of actual project implementation for all issue areas, especially prevention and mitigation measures.

Geographical Coverage

Table 24 outlines geographical coverage of DSS-RETA. The DSS-RETA research project and its potential follow-up activities appropriately cover relevant countries, namely, China, Japan, the ROK, and Mongolia. Again, this mechanism lacks participation of the DPRK.

Table 24: Geographic Coverage of the Mechanism

| | PRC | DPRK | Japan | Mongolia | ROK | Russia |
|-----------------|------------|-------------|--------------|-----------------|------------|---------------|
| DSS-RETA | √ | | √ | √ | √ | |

Meanwhile, although these four countries are jointly tackling DSS issues, they have some commonality and difference in interests. China and Mongolia are mainly concerned with desertification and sandstorms, while Japan and the ROK are concerned more about deposition.

Like marine and coastal environmental issues, the gap in *geographical coverage* of the mechanism and activity addressing DSS is the lack of coverage of the DPRK area. The participation of the DPRK needs to be further sought in proper time.

Resource Availability

As mentioned in Section 3.2, the first phase of DSS-RETA was funded by ADB and GEF. When this joint research was designed, DSS-RETA was expected to proceed to a second phase and be developed into a cooperation mechanism. However, due to difficulties in securing funding sources, the implementation of the second phase is pending. Thus, TEMM has developed a new plan for the DSS issue, which is the Director General meeting.

Therefore, the gap in *resource availability* for the mechanism is simply the lack of funding for implementing planned activities. Since there are some bilateral activities related to DSS taking place in the region, the need for more coordination from a holistic perspective is indicated, to fully utilise resources to produce tangible outcomes.

Stakeholder Participation

Table 25 shows stakeholder participation in the DSS issue. Since DSS-RETA is in the project development phase, there is no involvement of local governments, corporations, and NGOs.

Table 25: Stakeholder Participation

| | International Organisations | Government | | Private Sectors | | |
|-----------------|-----------------------------|------------|-------|-----------------|--------------|------|
| | | Central | Local | Experts | Corporations | NGOs |
| DSS-RETA | √ | √ | | √ | | |

The gap in *stakeholder participation* for DSS issues is the lack of participation from local governments, corporations, and civil society organisations. Especially when it comes to the actual implementation of DSS projects for the prevention and mitigation of DSS, the involvement of local stakeholders is crucial to produce tangible outcomes.

3.3.5. Other Priority Environmental Issues in NEA

Mechanisms and activities to address priority issues of biodiversity loss, environment and energy, land degradation and desertification, wastes and chemicals, still remain underdeveloped. This situation holds true with respect to research activities (monitoring and data collection and sharing, common understanding, agreement on standards, etc.), as well as with respect to actions to address the problems (development of policies, programmes and agreements, followed by implementation, compliance and enforcement). There is a large gap identified from comparison of currently conducted cooperation activities and the necessary level and amount of action required to address existing environmental issues. However, while environmental cooperation in these areas has not yet been systematised, some activities have been carried out, the brief explanations of which are outlined below.

Desertification, Land Degradation and Afforestation

In line with various actions led by UNCCD, China and Mongolia respectively developed and submitted National Action Programmes to Combat Desertification in 2000. UNCCD also encourages the preparation of action plan at a sub-regional level. Although desertification, land degradation and afforestation issues are important in Northeast Asia, there is no specialised international cooperation mechanism to deal with these issues at a sub-regional level. Reasons may include the likelihood of these issues to be handled domestically, rather than addressed regionally. The trans-boundary effects and benefits of these issues are not always obvious, except in some cases, such as DSS issues discussed earlier. However, considering the fact that both national and regional security rely considerably on the agricultural and timber production of China, further regional attention should be paid to these important issues, and regional cooperation mechanisms should be considered.

Some bilateral cooperation on these issues includes the follow-up activities of the Master Plan in Northeast Asia mentioned in the previous section. One of the pilot project sites identified in the Master Plan is Erinhot-Zamiin Uud, located on the Chinese and Mongolian border. A set of activities, e.g. rangeland and livestock management, revegetation and tree planting, and model forest planting with waste water irrigation, are planned as preventative and rehabilitative actions against desertification and land degradation. Other bilateral cooperation on afforestation can be also found between China and Japan, and China and the ROK, respectively.

Biodiversity

Currently there is no regional mechanism dealing specifically with biodiversity issues. There are, however, a couple of important activities in the region. Under the auspices of TEMM, a project on ecological conservation in Northwest China was initiated, and a joint seminar and study tours were organized in 2003 and 2004. The East Asian Biosphere Reserve Network covers six countries of the region, aiming at exchange of information and sharing of experiences in conserving and managing biosphere reserves.

Bilateral agreements for the protection of migratory birds and their habitats exist among China, Japan, the ROK, the DPRK and Russia. A multilateral agreement for the same purpose in the East Asian and Australasian flyway has been discussed for years without a final outcome. The Asia-Pacific Migratory Waterbirds Conservation Strategy is a collaborative regional framework to promote the conservation of migratory waterbirds and their habitats in the Asia-Pacific region. It was launched in 1996, and a range of activities were implemented by 2006.

In November 2006, the East Asian and Australasian Flyway Partnership, a WSSD Type II Initiative, was launched to further strengthen cooperation in the region. The Partnership complements existing bilateral agreements in the flyway.

With regard to sustainable use of natural resources in the region, illegal trade of timber and wildlife between Russia and other Northeast Asian countries has become part of the international agenda in recent years. The World Bank has initiated a process called Europe and Northern Asia Forest Law Enforcement and Governance, which held a Ministerial Meeting in St. Petersburg, Russia, in November 2005. The St. Petersburg Declaration, which China, Japan, Mongolia and Russia endorsed, calls for international cooperation on this issue (para 12-22, Forest Law Enforcement and Governance, 2005).

Wastes

There are emerging forums dealing with waste issues, but a regional environmental management mechanism has yet to be developed. There do exist a number of important regional activities toward the formation of one.

Under the auspices of TEMM, a joint seminar on the topics of sound material-cycle societies, circular economies, and 3R activities, was held in Tokyo in February 2006, to discuss locally-based 3R initiatives in China, Korea and Japan. A workshop on e-waste in East Asia was co-organized by the government of Japan and the Secretariat of the Basel Convention in November 2005, which produced a programme of action and recommendations for the implementation of projects on environmentally-sound management of e-waste in the Asia-Pacific region. The second workshop of the Asian Network for the Prevention of the Illegal Transboundary Movement of Hazardous Wastes was also held in November 2005, which discussed an alliance to approach to the issue.

Chemicals

The Joint Communiqué of TEMM 7 notes “the usefulness of information sharing on POPs under the framework of Stockholm Convention”. Beyond the Stockholm Convention, there exist a few joint activities to address the issue of chemicals in Northeast Asia. An international policy framework, entitled “Strategic Approach to International Chemicals Management” was adopted in February 2006 to address chemical hazards. UNEP organized a regional consultation in the Asia-Pacific region in April 2005, and the second one is now being scheduled.

Environment and Energy

Energy consumption from conventional fossil fuel sources often results in air pollution, which is partly reviewed in Section 3.2.2.1. Another important link is that increased energy consumption may accelerate climate change. On this linkage, UNFCCC offers a modality of international cooperation under the Kyoto Protocol. Since Japan is an Annex I country under the Convention, and China and Korea are non-Annex I countries, it is possible to make use of the clean development mechanism (CDM) between Japan and either China or Korea. Currently, Japan and China jointly promote CDM projects. In addition, reduction of greenhouse gases can be promoted through introduction and promotion of renewable energy, and cleaner production through harnessing of cleaner technologies. Activities promoting cleaner energy and transfer of cleaner technologies take place more often in the private sector. The public sector can favor “green” investment in these fields, and the Japan Bank for International Cooperation allocates considerable resources into these fields through its bilateral assistance. It remains to be seen how Northeast Asia will address the issue of cleaner energy and cleaner production. It may be possible to link these issues to the topic of sound material-cycle societies, circular economies, and 3R activities, as referred to in Section 3.2.2.6. on waste.

Considering the call for more practical outputs to improve environmental conditions in the region, development of specific mechanisms may be indicated for each of the eight identified environmental issues, in the same manner as EANET, NOWPAP, and DSS-RETA. In so doing, it is important to consider appropriate types of cooperation for each specific mechanism based on the needs of each environmental issue, such as technology, monitoring, legal agreements and so on.

3.3.6. Summary and Observation

Through the above analysis of the gaps faced by generic mechanisms and specific environmental issues, some common symptoms were found in the environmental cooperation system in the region. By summarizing the gaps for each criteria, reasons behind these gaps are analysed in this section.

Firstly, for *level of action*, neither domestic implementation schemes nor formally agreed frameworks were evident in the existing environmental cooperation system, both for generic and specific mechanisms. In addition, it was observed that each mechanism has been operated separately, with different decision-making systems, as well as different secretariat systems.

Second, for *issue area coverage*, some emerging environmental issues have yet to be addressed. In addition, for mechanisms that address specific issues, activities were limited to monitoring and data collection, resulting in insufficient linkage between scientific knowledge and policy-making processes. Meanwhile, some overlapping of activities among different mechanisms was found.

Third, for *geographical coverage*, many regional ECMs suffered from lack of participation of the DPRK, or low commitment from some participating countries. Meanwhile, it was found that China, Japan, and Korea are the three countries participating in most of the ECMs in the region. The differing participation of countries in different mechanisms is an issue of concern.

Fourth, for *resource availability*, it was found that financial mechanisms for most ECMs are operated unstably, or with an unbalanced contribution from one country. For some ECMs, lack of funding has resulted in limitation to the scale of activities, affecting the production of tangible outcomes.

Finally, for *stakeholder participation*, limited participation from civil society organisations, private sectors, and local governments, especially in decision-making processes, was observed. It is indicated that more involvement of local governments, private sectors, and civil society organisations is necessary to produce tangible outcomes for the actual implementation of activities.

The aforementioned symptoms can be summarized as lack of coordination among mechanisms, the result of which is a lack of synergistic effects on activities, and loss of effectiveness and efficiency of the mechanisms. Several reasons for these gaps and symptoms can be pointed out as follows. These causes also represent important challenges for environmental cooperation in NEA.

First of all, the region lacks a holistic regional agreement regarding the vision and direction of environmental cooperation. Indeed, TEMM and NEASPEC could serve as authoritative and comprehensive mechanisms to provide guidance on regional environmental management, while promoting each individual cooperation mechanism and activity. However, no generic mechanism has been recognized by countries and relevant actors and stakeholders to hold such authority. Further, consensus on the necessity, role and configuration of a comprehensive mechanism has yet to be built up among the regions' countries. Accordingly, none of the generic mechanisms have addressed the issue of a strategic regional action plan for environmental management

and protection, which would outline goals and basic principles for national policy guidance.

Second, the environmental cooperation system in this region has a relatively short history. Compared with some international other regional environmental regimes, which have developed over approximately the last 40 years, environmental cooperation in the NEA region has evolved for less than 20 years. Figure 17 shows the evolution of the regional environmental cooperation system. When environmental problems emerged that crossed national boundaries, bilateral cooperation began. Then, with the emergence of a regional environmental cooperation system, activities such as scientific cooperation, institutional arrangement, and technology transfer, were undertaken in the initial stage. Most environmental regimes take several years to move to collective actions.

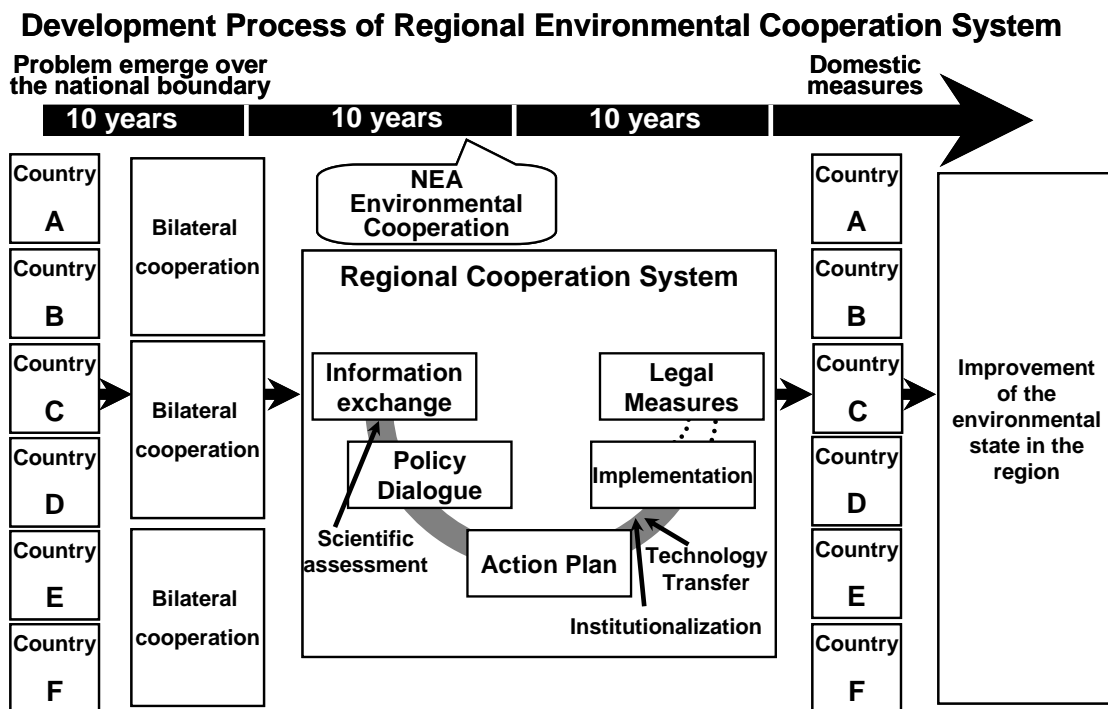


Figure 17: Development process of regional environmental cooperation system

Third, ECMs in other regions, e.g., the North American Agreement on Environmental Cooperation (NAAEC), were established on the basis of well-developed regional cooperation in other areas, including trade and security. ECMs could proceed making use of principles, norms, rules and mutual trust already in place for other areas of regional cooperation. However, no regional regimes in trade or other areas exist among the six countries of the NEA region, although bilateral activities among countries in NEA related to overseas development assistance do exist, specifically

between China-Japan, China-Korea, and Japan-Mongolia. Thus, it is impossible for ECMs in the NEA region to make use of economic incentives or trade measures to ensure enforcement and compliance.

Fourth, environmental cooperation in NEA lacks distinct leader nations. As a result, initiatives in specific areas of regional environmental cooperation arise from various countries are all weighted with equal importance, which has resulted in difficulty reaching consensus.

Fifth, NEA countries have different political stances influenced by historical bilateral relations. Remaining political tensions between countries affects the decision-making processes of environmental cooperation mechanisms. Indeed, historical and political disparities are reflected in the current weak consensus on identification of a clear regional scope and leading environmental issues. This situation certainly casts a shadow on coordination and cooperation among mechanisms.

Sixth, scientific evidence and assessment regarding sources of regional environmental problems in specific countries and the associated environmental impacts in other countries, are still weak. Many research projects have been conducted jointly by academic institutions in the region, however their results have yet to effectively influence the setting of political agenda to solve pressing environmental issues in the region.

Seventh, there are differing levels of commitment from participating countries for different ECMs. These disparities in commitment can be interpreted as “political competition” among countries. Competition in general terms implies some advantages in cost effectiveness as well as technology development, and so forth. Yet for the ECMs in this region, “political competition” has wielded negative influence, resulting in lack of coordination among ECMs, overlapping of activities, as well as slowing of progress for ECMs.

Finally, language barriers still exist. Specifically, since the scale of many environmental cooperation mechanisms is relatively small, meetings of these ECMs are often not facilitated with translation.

Chapter 4 Recommendations on Future Regional Environmental Cooperation in Northeast Asia

To improve the function and performance of the environmental cooperation mechanisms (ECMs) in the region, this section will provide a proposal for future environmental cooperation in NEA. Based on the assessment of six selected ECMs, five symptoms common to all ECMs are summarized as follows:

(i) Weak coordination on various activities within each ECM and among different ECMs. Although each ECM has made certain achievements when measured against objectives and targets, impacts in terms of affecting change in human behavior, resulting in improvement of the regional environment, have not yet been achieved.

(ii) The resources (in money or in kind) available to existing ECMs are significantly lower than what is needed to address regional environmental issues effectively by each ECM against its stated mandates. All ECMs have been struggling to secure even the minimum funds needed to maintain operation and support limited activities and projects. Even if all resources available to all existing ECMs were piled together, it is still obvious that the amount of available resources is not compatible with the scale and malignance of problems confronting the region.

(iii) There has been limited participation of stakeholders other than national governments in most existing ECMs. Since it has been considered that involvement of various stakeholders improves the effectiveness of transnational environmental cooperation, initiatives are necessary to involve other key stakeholders in all relevant stages of regional environmental cooperation, whenever possible.

(iv) There have been no shared goals, principles nor strategic action plans to implement systematic environmental cooperation in NEA. In other words, the ECMs in NEA lack a principal guideline to direct their activities and cooperation systems. This symptom is likely a reason for the weak coordination described above.

(v) Scientific evidence and assessment is too weak to accelerate the promotion of systematic environmental cooperation in the region. Unshared and undiscovered scientific knowledge indeed is responsible for the weak link between scientific knowledge and decision-making.

Taking into consideration these five symptoms of the current regional environmental

cooperation, the following sections provide a vision for future environmental cooperation in NEA, the need for future environmental cooperation, success factors for the improvement of ECMs in NEA, and proposals for a regional environmental management system, are outlined.

4.1. Goals and Principles

In developing regional policy measures, it is first necessary to develop a fundamental framework of cooperation. The cooperation framework may include various guidelines for legal matters, institutional matters, activities, and the like, along with the specific goals related to environmental protection. Considering the short history of environmental cooperation in NEA, and other concerns in promoting environmental cooperation in this region, further efforts and discussion are needed to develop a systematic framework of cooperation similar to that of international environmental regimes or environmental cooperation mechanisms in other regions, such as those of the EU or the North American Agreement on Environmental Cooperation (NAAEC). Therefore, in this section and the following section, some initial steps to overcome the status quo of the ECMs in this region are proposed.

The first step to promote ECMs in this region is to develop goals and principles as basic guidelines for all parties and stakeholders involved to share and follow the same vision. In other words, regional consensus is an important prerequisite for generic mechanisms. Development of consensus is necessary as it becomes a guide for environmental cooperation. Indeed, many of the existing mechanisms in this region are already based on this concept. In this regard, exchange of information and communication on environmental cooperation among countries in NEA are crucial, including sharing of each country's needs, priorities, and so on. Only when comprehensive and in depth consensus is reached will it be possible to carry out significant cooperation. While the development of specific content shall be left up to discussion processes among member states, some ideas are suggested as follows.

First of all, there are two types of goals. The first type is the environmental goal, which specifies aims for environmental protection. Environmental goals should include overall concerns for environmental protection and socioeconomic development, and concerns on specific issues, namely the eight priority environmental issues discussed in Chapter 2. The second type of goal is the institutional goal, related to institutional aspects of promotion of environmental cooperation in NEA. Goals can include both general goals and specific objectives. Some specific ideas include:

General Goals:

- Improvement of environmental quality under the context of sustainable development
- Protection of human health and quality of life from the negative impacts of environmental problems
- Protection of ecosystems through preservation of nature and biodiversity
- Efficient and sustainable use of natural resources and minimisation of waste generation through the 3Rs (reduce, reuse, recycle) towards the creation of a circular economy
- Promotion of energy efficiency and renewable energy sources to tackle climate change
- Preservation of indigenous culture, which is closely linked with the natural environment
- Securing the livelihoods of all people through promotion of sound socioeconomic growth while ensuring environmental protection
- Innovation and enrichment of the environmental cooperation system, enhancement of efficiency, and increase of level of cooperation
- Promotion of in-depth development of environmental cooperation in NEA to enhance its effects
- Solution of both priority and emerging environmental issues in the region via practical matters based on sound scientific assessments
- Development and deepening of external relations via cooperation with international environmental regimes, international organisations, and other regional environmental cooperation mechanisms
- Ensuring participation of all stakeholders and promotion of capacity development in the field of environmental protection

In order to realise the aforementioned general goals, it is first necessary to set specific objectives for each item. In-depth discussions on specific target setting for environmental goals and specific approaches to realise institutional goals should be conducted. Especially, in setting the specific targets for environmental goals, it is necessary to conduct scientific research in order to assess driving forces, impacts, pressures, conditions, and responses, the details of which will be discussed in later sections. To develop specific approaches to achieve institutional goals, certain principles shall be taken into consideration. Some specific ideas include:

Principles:

- **Mutual benefit:** The environmental cooperation in this region shall be promoted toward the mutual benefit of all countries and stakeholders. Here, mutual benefit means the improvement of environmental quality in the whole NEA region.
- **Need-based:** Countries in NEA are at different stages of development and have diverse national situations and different priorities. Therefore, the respective capabilities, objectives and needs of countries regarding environmental cooperation may also be different. Hence, environmental cooperation in Northeast Asia needs to explore the conjunct points of the various needs of different countries, to benefit all parties dealing with common environmental issues. Here, the concept of “willingness to pay” versus “willingness to accept” may apply to regional cooperation mechanisms. For example, an area A is affected by the pollution generated in area B. Area B has some financial difficulties, while Area A has financial advantages. Therefore, Area A and Area B will have to reach some agreement based on the balance between “willingness to pay” to cover the losses caused by Area B to Area A, and “willingness to accept the compensation” for Area B by Area A. This concept can be applied to balance benefits to all nations should be discussed within regional cooperation mechanisms.
- **Integration:** Environmental protection should be integrated into the implementation of other policy areas, including social and economic growth. As the economy of the NEA region is heavily dependent on regional trade, integration of environmental protection into other sectors is crucial to promote mutual reinforcement.
- **Subsidiary principle:** There should be different levels of responsibility for different stakeholders, namely, regional cooperation systems of governance, national and local governments, industry, and citizens. All stakeholders shall take active part in solutions of environmental problems.
- **Collaboration principle:** All stakeholders shall coordinate and participate in addressing environmental issues, both in policy-making and policy implementation.
- **Step-by-step:** Considering the variety of socio-economic situations and political interests of participating countries in the region, the development of conventional regulations at the regional level may take a considerable amount of time. Thus, the ECMs in this region may take a step-by-step approach, that is, starting from small-scale agreeable action towards

larger-scale policy implementation in the future.

- Selection and concentration: Considering the limited resources currently available for environmental cooperation in the region, ECMs may prioritise the environmental issues and focus on specific areas.
- Output-base: Considering the fact that ECMs in the region are still in the early stages of development, production of tangible outcomes is difficult. Thus, ECMs may consider the output-base approach prior to implementing activities aimed at effecting behavioral changes in the region.
- Different approaches for different issues: For dealing with regional environmental problems, this concept falls somewhere in between “common and differentiated responsibilities,” a concept utilised for global environmental issues, and the “polluter pays principle,” utilised for national environmental problems. As such, methods of cooperation for trans-boundary issues shall be discussed on a case by case basis. When dealing with regional environmental issues, it is important to discuss (i) what causes the environmental issues in question, (ii) what kind of financial, technical, and human capacities each country has to deal with the issue in question, and (iii) how (i) and (ii) can be effectively combined.

4.2. Design of an Effective Environmental Cooperation System

In order to promote effective ECMs in the region, a more coherent system of environmental cooperation is necessary to yield synergetic effects of ECMs currently operated in this region. In this section, necessary institutional development in terms of structure, operations, and key factors to promote environmental cooperation in the region are discussed, followed by more concrete suggestions in later sub-sections.

4.2.1. Proposed Structure for Regional Environmental Management System

In this sub-section, the structure for a regional environmental management system is proposed, in terms of actors and functions of regional environmental cooperation mechanisms in NEA.

A regional environmental regime (i.e. a combination of specific mechanisms) operates in a space where vertical coordination and horizontal coordination meet at the regional level. Many actors take part in the environmental cooperation system in NEA. They are, (i) the regional environmental governing body, (ii) regional environmental management bodies dealing with specific issues, (iii) nation states, (iv) international

and regional organisations, (v) business and industrial sectors, (vi) civil society organisations, (vii) international environmental management bodies dealing with specific issues, and (viii) environmental governing bodies in other regions. A brief explanation of the role of each actor is given below.

- (i) Regional environmental governing body: the principal organ for management and operation of the regional environmental cooperation system. The detailed function of which is explained in the following paragraph.
- (ii) Regional environmental management bodies dealing with specific issues: management organs to address specific environmental issues. Its governing system would be similar to that of the regional environmental governing body, yet would have more direct contact and involvement with local stakeholders. Operational functions would be developed individually according to the nature of the various environmental problems.
- (iii) Nation states: the six countries in NEA which share common interest in regional environmental protection. Within each nation state, national governments decide on position and policy on participation in the regional environmental cooperation system. Local governments take necessary actions both in planning and implementing relevant policies, especially to deal with specific environmental issues.
- (iv) International and regional governmental organisations: the main international organisations involved in environmental cooperation in the region, i.e. UNEP, UNDP, and the World Bank. Other international organisations such as UNESCO and OECD would also be involved in the system. The environmental cooperation system in the region would usually work with regional branches of international organisations. The main regional organisations involved in environmental cooperation in the region are ADB and UNESCAP. Owned and financed by member states within and outside the NEA, both international and regional organisations implement regional activities related to the enhancement of socioeconomic conditions of targeted regions. At times, they will serve as interim secretariats to manage the operation of regional environmental mechanisms as to meet the interests of participating countries.
- (v) Business and industrial sectors: businesses and industries provide goods and services to stimulate economic activities. Throughout this process, they implement new technologies and business approaches, which lead to progress in social infrastructure, including the promotion of efficient production processes, pollution preventive strategies and environmentally concerned products.

- (vi) Civil society organisations: the main civil society organisations involved in the environmental cooperation system are academic communities and NGOs. Academic communities, such as universities and research institutions, conduct research in both natural science and social science fields. Academic communities play a leading role in the dissemination of scientific findings and other relevant information at all levels to social stakeholders. Environmental NGOs conduct grass-roots, local, and specialised activities, as well as political lobbying for environmental protection.
- (vii) International environmental management bodies dealing with specific issues: various international environmental agreements exist to which many of the states in the region are parties (see Appendix II for details). Each regime has a secretariat as well as national focal points to implement necessary activities for regime compliance. There are many conventions addressing the priority environmental issues identified in Chapter 2. They can provide knowledge, resources, and some functions within the regional environmental cooperation system.
- (viii) Environmental governing bodies in other regions: various environmental mechanisms exist in other regions, such as (a) the North American Agreement on Environmental Cooperation (NAAEC), between the governments of Canada, Mexico, and the United States, (b) the Sub-regional Steering Committee on ASEAN consists of Brunei, Indonesia, Malaysia, Singapore and Thailand, (c) the Pacific Regional Environment Programme (SPREP) composed of 22 Pacific island countries and territories, and Australia, France, New Zealand, and the United States. In addition, the European Union has fully systematised its environmental protection strategies under the EC treaty, the Environmental Action Plans, and various forms of legislative orders.

According to Haas, Kanie, and Murphy (2004), functions of global environmental governance are issue linkage, agenda-setting, developing usable knowledge, monitoring, rule-making, norm development, policy verification, enforcement, capacity-building, promotion of vertical linkage, and financing. For the purpose of this study, these functions are divided into two kinds and adjusted to suit to the environmental management system in this region. The first kind of function is the “external function”, which includes various responsibilities that fall outside the mechanisms. External functions include (i) setting of goals, principles and basic rules for overall environmental cooperation mechanisms in the region, (ii) promotion of linkages with international institutions, and other international environmental regimes to jointly address global issues; (iii) cooperation with similar mechanisms in other

regions to facilitate cooperation between other sectors among regions; and (iv) close coordination with other sectors, such as trade, industry, energy, agriculture, fisheries, education and the like, with the aim of effective policy development, implementation, and outcomes. Then, the second kind of function is the “internal function”, which includes multiple tasks within the operation of regional mechanisms. Internal functions include (i) setting agendas on preparation of proper management systems; (ii) prioritisation of issues to be handled; (iii) coordination among specific mechanisms which have cross-cutting concerns toward maximum results and to avoid overlaps for the efficient use of available resources; (iv) setting up of framework for specific mechanisms to decide principles, rules, targets, and norms; (v) development of action plans for implementation toward the practical level of cooperation; (vi) financing for the operation of mechanisms and implementation of the activities; (vii) capacity-building, such as public education, technical training, technology transfer, and improvement of administrative systems of governing bodies at various levels; and (viii) monitoring and evaluation of mechanisms to ensure efficient and smooth operation. In addition, in order to achieve concrete outputs through the NEA environmental cooperation mechanisms, proper implementation of necessary actions for each of the member states should be enforced. Figure 18 shows a conceptual system of effective environmental cooperation system at the regional level.

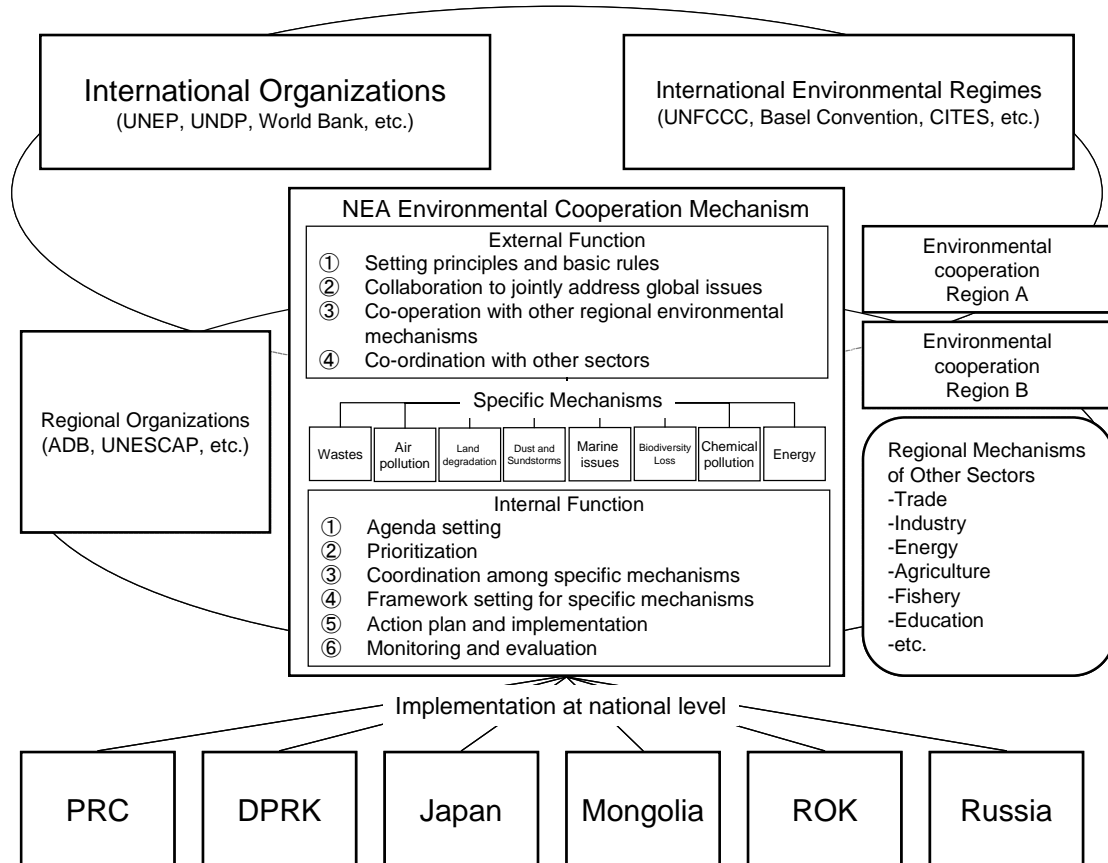


Figure 18: Image of an effective environmental cooperation system in NEA

4.2.2. Key Factors for the Improvement of ECMs in NEA

In this sub-section, key factors to overcoming the current problematic symptoms of the environmental cooperation in the region are proposed as follows.

Better Coordination

Coordination is a key concern for the effective operation of regional environmental mechanisms. There are various levels of coordination among both vertical and horizontal linkages of actors.

First, improved coordination among existing mechanisms, both generic and issue-specific, is necessary. Better coordination among these existing mechanisms will improve efficient use of resources and increase impacts for the improvement of the state of the regional environment. Detailed suggestions will be discussed in a later section on suggestions for generic mechanisms.

Second, coordination among participating countries is necessary to optimise impacts in the region and to effect improvement of environmental quality. Compared with international mechanisms, regional mechanisms have fewer memberships, thus achieving consensus should be less challenging. Considering the close geographic and socioeconomic relationships in the region, environmental cooperation should be carried out along with regional cooperation on other topics, such as economic cooperation, regional security and so forth.

Third, environmental cooperation in the region should also consider ways to coordinate with external international organisations, e.g. UNEP and ADB. This coordination could include two aspects: scope of issues to be addressed and resources.

Fourth, coordination with existing global environmental regimes is necessary for the efficient operation of mechanisms and to reduce overlap of activities and resources. While there has been strong consensus on the need for regional environmental cooperation in NEA, coordinating the functions of regional mechanisms with the functions of existing global environmental regimes is necessary to avoid duplication. Specifically, there may be sub-regional issues addressed within the international regime, within which the NEA environmental cooperation system may well function as a sub-committee. In addition, there may be barriers and benefits common to all countries in NEA, and so rather than working at the individual state level, the aggregate actions of NEA countries may help to implement global conventions more smoothly. Thus, prior to the development of any other specific mechanisms, the

possibility of establishing regional coordination branches for international agreements should be considered. The proper integration and coordination of international agreements and environmental cooperation mechanisms will lead to properly functioning practical actions with the possibility of development of legal instruments.

Fifth, coordination with environmental mechanisms in other regions should be considered as well. It is often the case that environmental standards are set under regional environmental mechanisms. These standards must be met by those in other regions in order to conduct economic activities with those in the regulated region. In addition to trade and environment related issues, the environmental cooperation mechanisms of other regions may have experiences to share from which the NEA could learn. Thus, keeping up good networking with environmental cooperation mechanisms in other regions would be beneficial to the NEA region as a whole.

Lastly, coordination with other sectors should be encouraged in order to ensure the smooth operation of environmental cooperation mechanisms. While it is mainly government-led mechanisms which facilitate environmental cooperation and develop action plans, coordination and cooperation with other sectors is necessary at the practical level of cooperation. All of the issue areas identified in the existing environmental cooperation mechanisms are related to multiple activities of different sectors. Through conducting activities in these sectors, putting burden on the environment is unavoidable. Yet, with smooth coordination between environmental mechanisms and other environmental sectors, implementation of action plans would be facilitated.

Improvement in Financial Strength

In order to effectively operate environmental cooperation mechanisms, resource availability is a priority topic of concern. Therefore, securing financial resources is absolutely necessary for the successful operation of environmental cooperation mechanisms. In so doing, relying not only on governmental budgets from each participating country, but including the involvement of funding agencies as well as private sectors would be an effective way to strengthen financial resources.

Possible funding agencies for regional cooperation in NEA include the World Bank, ADB, GEF and also the various foundations of corporations. The ECMs in this region should maintain close contact with these donor agencies. In this regard, holding meetings with these agencies after the meetings of the ECMs, would provide good opportunities to discuss potential cooperation on proposed action plans and projects implementation.

Increase of Stakeholder Participation

Although the environmental cooperation mechanisms are government-led, involvement of social stakeholders should be facilitated to achieve significant results. Involvement of social stakeholders such as corporations, civil society organisations, and academia from the planning stage of environmental cooperation mechanisms will allow them to reflect their opinions and ideas on policy formation, which will eventually lead to the smooth implementation of the mechanisms.

It is also important to facilitate the participation of local governments and communities. Actors in the community are indeed ones who effect environmental outcomes at the practical level. Thus, ensuring the participation of social stakeholders in the local communities will lead to realisation of environmental improvement in the region. While it may be difficult to include participation from various local stakeholders in the initial stages of the environmental cooperation mechanisms, not only minister-level and central government official-level meetings, but a system to enforce the participation of the social stakeholders should also be set up to reflect their opinions about environmental protection onto the mechanisms.

Improvement in Knowledge-Sharing

Sharing up-to-date knowledge among participating countries and among all stakeholders both within the region and outside the region, is one of the fundamental conditions for the successful operation of regional environmental cooperation mechanisms. Disseminating comprehensive knowledge on causes and effects of environmental issues, including scientific, economic, social, and legal knowledge, will increase awareness of stakeholders and facilitate the decision-making process with the wider range of participation.

In this regard, comprehensive research programs should be carried out in both natural scientific fields, such as monitoring, necessary data collection, development of inventories, and effects on natural ecosystems, as well as social scientific fields, such as socioeconomic impacts on human health and agricultural productivity, and the like. Joint research by member states free from national politics is preferred to produce purely scientific results unrelated to any political interests of specific countries. Research results should be disseminated in a timely manner through different forms of media. While the quality of the information should be kept at a certain level, it should be simple and easily understood.

4.3. Suggestions for Generic Mechanisms

As has been discussed in previous chapters, in order to improve the efficiency and effectiveness of environmental cooperation, increased coordination and harmonisation of the environmental cooperation mechanisms in NEA are necessary. In this section, an arrangement regarding existing mechanisms, as well as specific recommendations on improvement of operations, is proposed. In addition, considering TEMM's high potential, the last part of this section will present some specific proposals for the institutional and operational development of TEMM, as well as some suggested activities for the future.

4.3.1. Integration of Existing Generic Mechanisms

The ultimate objective of generic mechanisms is to provide coherent and synergetic environmental cooperation in NEA to address the eight environmental priority issues effectively and efficiently. To this end, it is best to examine the different generic mechanisms as a whole in order to consider improvements from a holistic perspective, and thus to enable the mechanisms to work toward a common goal. Based on this general method, current generic mechanisms may be improved in the following respects:

- NEAC's achievements in terms of information sharing and dissemination of good practices should be recognized. Since TEMM is considered a higher level and well-run regional cooperation mechanism, NEAC could be run as a side event of TEMM. To contribute to the work of TEMM, NEAC could continue to function on policy dialogue, charged with the tasks of consideration of proposals of TEMM working groups and submission of proposals to the ministerial meeting.
- Another option would be to combine NEASPEC and NEAC in the above-mentioned way, which has actually been discussed in NEASPEC and NEAC meetings.
- Coordination and harmonisation of TEMM and NEASPEC will be more difficult, considering that different domestic authorities are responsible for them, and that NEASPEC involves three more countries than TEMM. Political will is needed to achieve consensus of the different domestic authorities, and should be done gradually.

4.3.2. Ways to Improve the Generic Mechanisms

In this section, some specific suggestions for the operational functions of the generic mechanisms are discussed. Focus was put on coordination and resource mobilisation based on the assessment of the current ECMs in the region.

4.3.2.1. Improvement of Coordination

Generally, the overall improvement of generic mechanisms involves two aspects: improvement of the overall operational functions of generic mechanisms themselves, and improvement of their relationships with relevant issue specific mechanisms. Following are some suggestions for the improvement.

Coordination between Generic Mechanisms (TEMM and NEASPEC)

- **Strengthen Communication:** To initiate the coordination, the different domestic authorities in each country for the two mechanisms should increase communication. Discussion on each mechanism's respective objectives, activities, plans, as well as ways to avoid overlaps and facilitate cooperation, should be carried out. If communication and coordination between the different domestic authorities in each country proceed successfully, TEMM and NEASPEC should initiate internal discussions on the issue of coordination and harmonisation, including topics like the need to coordinate each other's work, the possibility of communication and consultation between the two secretariats or working groups, and ways to avoid overlaps.
- **Strengthen Consultation:** As the next step, the secretariats or working groups of the two mechanisms could initiate consultation on concrete measures of coordination, submitting proposals to TEMM and NEASPEC for discussion and decision. Then concrete coordination activities can be realised gradually through the development of an action plan. The action plan and agreements on its implementation may be two useful elements by which environmental cooperation can be made more systematic, and therefore more comprehensive and efficient. As such, the results of cooperation would more predictable and the potential for long-term effects would increase.
- **Long-term Perspective:** From a long-term perspective, as mentioned above, parallel operation of these two generic mechanisms is not the best option. However, despite difficulties, the current situation of these two mechanisms needs to be improved in the future.

Coordination with Issue Specific Mechanisms

At present, as pointed out in Chapter 3, the generic mechanisms have only very loose interaction with issue specific mechanisms. Thus it may be the case that the generic mechanisms are working in one direction, and issue specific mechanisms are working in another, regarding the same environmental issues. This leads not only to overlaps and waste of resources, but also chaos for environmental cooperation in the region. To avoid these problems, coordination between generic and specific mechanisms should be strengthened in the following ways:

Firstly, regular communication should take place. The aim of communication is to promote awareness among mechanisms on their various working plans and action areas, in order to avoid overlaps and seek ways to reinforce each other without compromising each mechanism's independence.

Secondly, harmonisation of guiding principles and objectives, based on the general principles and objectives suggested in Section 4.1., should take place. As discussed above, it is best to carry out regional environmental cooperation in a holistic manner, from a regional perspective. Harmonisation of guiding principles and objectives can contribute to realisation of such a holistic perspective. Different mechanisms could work toward common directions and enjoy larger combined strength through their separate activities.

Thirdly, activities and resources should be coordinated. This deeper level of coordination can only be achieved once conditions above are satisfied. Coordination of activities and resources could be conducted in several ways, including unified action plans, implementation of generic mechanism projects by issue specific mechanisms, and mutual utilisation of achievements and even human resources. This level of coordination will improve the efficiency of all mechanisms, and thus enable them to make a greater contribution to the environment in Northeast Asia.

For those mechanisms that cover geographical areas exceeding Northeast Asia, the coordination described above could be conducted at least among the NEA countries. In so doing, a regional position for participation in such mechanisms could be developed, contributing to improved coordination among the mechanisms to a certain extent.

Coordination with International Organizations

Coordination with international organisations should be focused on two perspectives, namely, scope of the issues to be addressed and resources. For example, while the NEA has its own priorities, UN organisations such as UNEP and UNESCAP also have their respective priorities, outlined in the draft mid-term global strategy, the Asia-pacific regional strategy, and sub-regional strategies for the Asia-pacific. Northeast Asia should determine the priorities that are shared with relevant UN agencies and possible ways to make use of UN resources for the region's work on those priority areas. Similar coordination should be carried out with ADB and the World Bank, who also have their own strategies and priorities. Active coordination with international organisations should be conducted through participation in relevant forums to speak out on NEA needs and seek assistance from these organisations. Considering the importance of the Northeast Asia region, international organisations are likely to take regional needs into consideration. In order to conduct this coordination effort, the generic mechanisms should procure a window or bridge from which to regularly communicate with international organisations. Further, communication and coordination with the NEA regional offices or country offices of international organisations would be most cost-effective.

4.3.2.2. Establishment of NEA Environmental Fund¹³

As discussed many times in this report, stable financial resources are crucial to guarantee the successful operation of the ECMs. Many of the ECMs in NEA are now facing the issue of unstable financial resources. In order to gradually solve financial problems for all ECMs in NEA, an NEA Environmental Fund could be set up by NEA countries. In so doing, potential contributions from international and regional organizations, e.g. the World Bank, UNEP, ADB, and UNESCAP, should also be considered. Further, current ECMs in the region, such as TEMM, should take a leading role in establishing the NEA Environmental Fund.

This fund would provide financial resources for all ECMs in an integrated way. On the basis of coordinated activities of all ECMs, financial resources could be utilised in a coordinated and efficient way. To set up the fund, the following main issues need to be considered. First, the objective of this fund must be agreed upon by NEA countries. Secondly, the financial needs of ECMs and available sources should be estimated and compared in order to decide on a reasonable scale for the fund. Thirdly, sources and rules of spending should be established.

¹³ Suggestion originally made by KEI

In addition, as mentioned above, good coordination among ECMs and their activities is prerequisite for the effective and efficient use of this fund. Only when all ECMs and their activities are coordinated or integrated, can it be possible to make an appropriate estimation of financial needs, and allocate funds in an efficient way. Finally, along with the design of this fund, it is also necessary to consider integration of the existing financial mechanisms of each ECM.

4.3.3. Future Development of TEMM

After nine years of development, TEMM has made great contributions to the environmental cooperation of the three participating countries and Northeast Asia as a whole. TEMM retains a lot of vitality and can continue to make contributions in the future. At this stage, it is appropriate to consider the future development of TEMM to enable it to make more contributions to environmental cooperation and the environment quality of Northeast Asia.

First, to enable TEMM to develop stably and function efficiently, basic principles and objectives, such as those mentioned in sub-section 4.1.1, are needed to guide its development. Secondly, and more concretely, the future development of TEMM mainly involves two types of issues, namely, institutional development and cooperation activities.

4.3.3.1. Institutional Development

TEMM Ministerial Meetings are its decision-making body and function for policy dialogue, while its Working Group acts as the secretariat and proposal-making body. The newly established Tripartite Director General Meeting takes the form of an ad hoc working group on the DSS issue. TEMM could continue to function as it has in the past with this current institutional setup. However, in the long-term perspective, if more plans, projects and activities are to be carried out by TEMM, the current institutional setup will face difficulty in accomplishing tasks, especially when more internal and external coordination work becomes necessary. To increase its capacity and efficiency, TEMM's institutions could be strengthened in the following respects:

- **Lay down the basic principles and objectives of TEMM.** These principles will guide the future development and concrete cooperation activities of TEMM. The principles and objectives mentioned in Section 4.1 and 4.2. could be used as a reference.
- **Continue the Ministerial Meeting as the decision-making body.** The Ministerial Meeting should continue to be the forum used to reach consensus among member states.

- **Consider a secretariat in the future¹⁴.** The current Working Group has been functioning well as a secretariat. Therefore, if TEMM is not going to implement major projects or significantly expand its activities in the future, allowing the Working Group to continue to act as secretariat is most cost effective. Considering that TEMM may develop into a larger and more comprehensive mechanism in the future, a secretariat may be necessary to oversee and keep record of the progress of plans and projects, arrange meetings, and function as a node for internal communication, as well as a bridge for external communication with other mechanisms, international organisations, etc.
- **Form a subsidiary body for proposal-making and implementation supervision.** A subsidiary body for proposal-making and supervision of implementation could function as a forum for officials, especially experts other than the ministers, to discuss concrete issues, reach preliminary consensus on issues, submit proposals to the Ministerial Meeting for final discussion and decision, and to supervise the implementation of actions plans and projects. The current Working Group and NEAC could be combined to form this body. If such a combination proves difficult, the Working Group and the Tripartite Director General Meeting on DSS could continue to perform their proposal-making and supervising functions at first. Subsequently, the other two members of NEAC could be invited to participate at a later stage, hopefully when they become members of the Ministerial Meeting.
- **Establish a financial mechanism.** Apart from stable financial resources for the regular function of the cooperation mechanism itself, there should also be adequate financial resources to carry out actions decided upon by the Ministerial Meeting. One options is for countries to agree on general ways to finance actions plans or projects under the cooperation mechanism, and to then finance every action plan or project according to those general ways. This option could be realised via the establishment of an NEA Environmental Fund for all regional environmental cooperation activities in NEA, including TEMM.
- **Coordinate Project Implementation.** The implementation of the projects could be carried out by external institutes with relevant expertise, in a like manner to projects that have been already been implemented under TEMM and other specific ECMs. The subsidiary body (currently the Working Group) would be responsible for the supervision and review of project

¹⁴ Suggestion originally made by PRCEE and KEI

implementation. Another option is to allow specific ECMs to organise and supervise project implementation, reporting to the subsidiary body of TEMM, which would review the project implementation.

- Enlarge the geographical coverage when necessary.** Although China, Japan and the ROK already represent a large part of Northeast Asia, Mongolia, the DPRK and the Russian Federation are also important partners in environmental cooperation in the region. Without their participation, some regional environmental issues may not be easily improved, e.g. DSS, trans-boundary movement of electronic wastes, and marine pollution. Therefore, as environmental issues require long-term joint efforts of all regional countries, inclusion of these countries as members of the Ministerial Meeting becomes a necessity. Further, when more specific and practical operations are begun, extension of official membership in TEMM to other countries in NEA should be considered.

Figure 19 presents a rough organisational chart of TEMM based on the above suggestions.

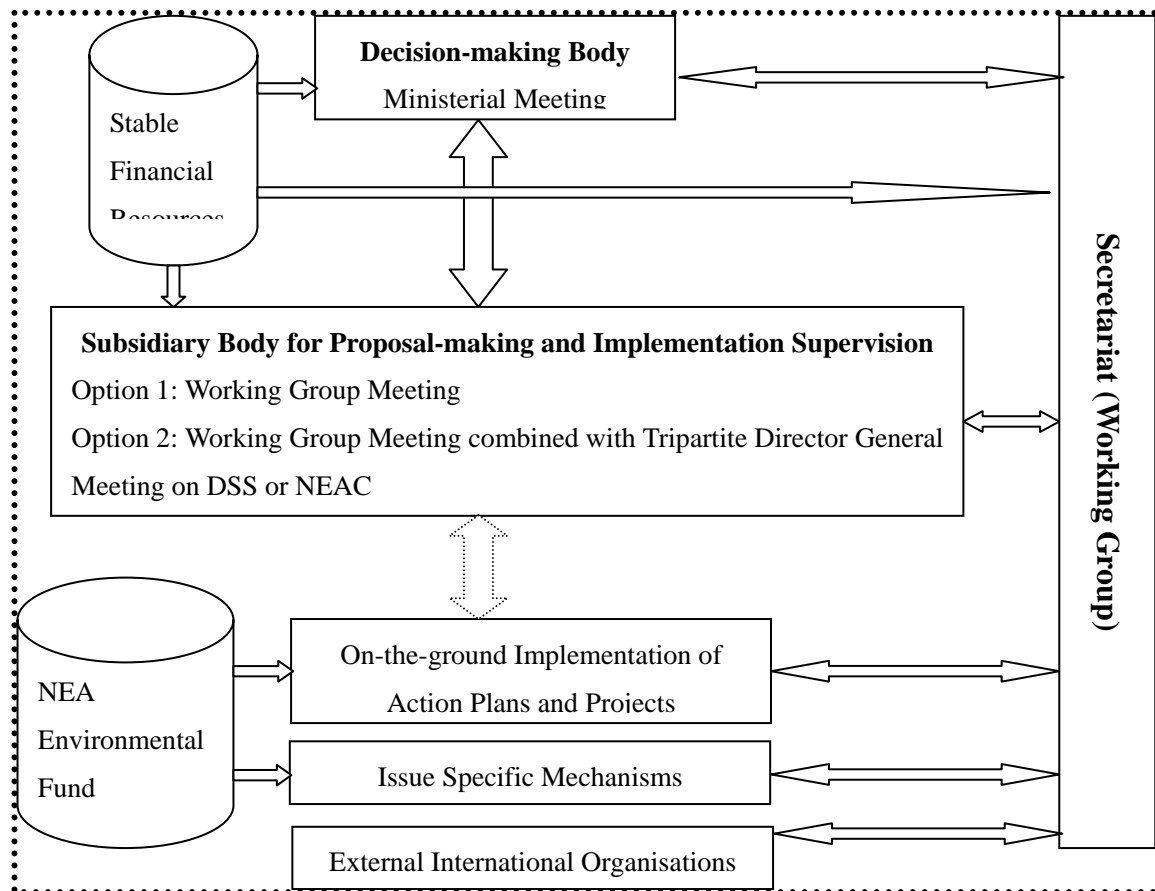


Figure19: Possible Organisational Chart of TEMM

4.3.3.2. Future Cooperation Areas

TEMM should be entitled to deal with any regional environmental issue in Northeast Asia. As discussed in Chapter 3, some new environmental issues have emerged in Northeast Asia that should be areas for cooperation, e.g. e-wastes and chemical issues. As these issues gradually gain the attention of relevant countries, and especially of TEMM, they must be addressed via the establishment of relevant projects or cooperation mechanisms.

Of course, the traditional areas for cooperation remain very important and require further efforts. These further efforts should exhibit better cooperation, such as a new level of cooperation through action plans, or through technological assistance in certain industrial sectors that may lead to mutual benefit on the part of all the countries.

4.3.3.3. New Activities for TEMM

The following are some concrete activities that TEMM may carry out in the near future:

NEA Environmental Outlook¹⁵

In order to address appropriate policy measures at the regional level, it is first necessary to assess the current state of the environment in a comprehensive way, in terms of a scientific basis, the status quo, as well as an examination of future trends. Assessment of the current state of the regional environment could follow the DPSIR model, including the factors Driving Forces, Pressures, States, Impacts, and Responses, to reveal the linkages between socioeconomic development and the environment. “Driving forces” refers to the latent causes of environmental problems (i.e. economic development, urbanisation, etc.). “Pressures” refers to the direct causes of environmental problems (i.e. emission of pollutants, generation of waste, etc.). “States” refers to the environmental quality affected by the environmental problems (i.e. air quality, number of species, etc.). “Impacts” refers to the effects of environmental problems to both human society and natural systems (i.e. human health, ecosystem change, socio-economic changes, etc.). Finally, “Responses” refers to the social efforts to deal with environmental issues (i.e. policy measures, planning actions, etc.). To summarize the relationships among these components, driving forces lead to pressures, which affect the state and wield impacts. Societies enact responses by

¹⁵ Suggestion originally made by IGES

taking specific actions to address the other components. ECMs in the NEA region are regarded as “Responses”.

Assessment of the current state of the regional environment could be shared in the form of the **NEA Environmental Outlook**, to be widely utilised by decision-makers, researchers, as well as other relevant stakeholders. Existing publications developed by international organisations, such as the *Global Environment Outlook*, *State of the Environment in Asia and the Pacific*, *World Resources*, and the like, do contain special sections related to the state of the environment in the NEA region. However, a more elaborated version, which specifically focuses on the region, may be useful.

Pragmatic Action Plan

In order to facilitate the smooth operation of ECMs in the region, an overall plan for cooperation in the region is necessary. In developing a plan, TEMM should consider the outcomes and outputs of mechanisms. Specifically, it should develop a plan which outlines the outputs required to realise designed outcomes, including specific action plans, projects to be implemented, and other relevant activities. The plan needs to assess the current situation of regional environmental cooperation, to analyse gaps against planned outputs. Then it should develop a plan for the necessary activities and a schedule to be delivered by ECMs to realise the expected outcomes.

NEA Environment Week¹⁶

In order to promote regional environmental cooperation at the practical level, it may be useful to initiate a “Northeast Asia Environment Week” to strengthen networking and cooperation among countries and relevant organisations, donor agencies, and stakeholders in NEA. Indeed, the Northeast Asia Environmental Week would provide a good opportunity to discuss concrete plans for the publication of the NEA Environmental Outlook, the framework for regional environmental cooperation, the action plan for implementation, as well as the arrangement of resources and measures to ensure implementation. In order to develop such a concrete form of agreement, all relevant officials involved in existing ECMs, including environmental ministers, senior officials, international organisations, and NGOs, should be present at the Northeast Asia Environmental Week activities. NEAC, for example, can be activated as one of the events in the week.

It is recommended that the NEA Environmental Week should be held in the host countries of TEMM. The host country of TEMM is responsible for preparing the NEA

¹⁶ Suggestion originally made by IGES

Environmental Week through discussing relevant concerns in Working Group Meeting of TEMM. The detail plans of the NEA Environmental Week including topics and activities will be set p through agreement among three countries.

By observing an intensive period of cooperation related to environmental issues in NEA, mechanisms will have opportunities to develop funding sources through meetings with different donor agencies. In addition, in gathering all relevant organisations involved in regional cooperation at once, coordination among each separate mechanism will be facilitated, which could lead to the effective utilisation of resources and active implementation of activities. In addition, an intensive week could facilitate further collaboration among various stakeholders. Public attention on the issues could be increased, which would further enhance public support for the development and implementation of necessary policies both at regional and domestic levels. Such a week would include high-level meetings, expert workshops, symposia, and exhibitions, ensuring the involvement of various stakeholders.

The development of a central website for sharing up-to-date information among participating countries, as well as all social stakeholders involved, should also be a part of implementation of this intensive activity period. The primary purpose of developing this information site would be to facilitate effective policy formation. Thus, the website should include interactive functions, contents on cooperative actions undertaken, content on projects and activities implemented, possible funding sources, contact persons (“who’s who”), and linkage with many relevant websites of institutions, scientific databases, and so forth. By developing the information website, not only officials involved in the mechanisms, but also other interested parties would be able to access information. Sharing of up-to-date information on mechanisms would facilitate better coordination among the different mechanisms. The information site could also be a tool to increase overall public awareness.

Indeed, there already exist websites for the individual mechanisms that have been evaluated in this study. Since basic content is already available, the further collaboration and integration of the each website could be a topic of discussion. In the above case, it should be ensured that the website incorporates effective functions and content, in terms of language, as well as the current state of relevant information among participating countries.

4.4. Recommendation on Specific Issues

Based on the assessment of current situations and gap analysis conducted in the previous chapter, this section will provide specific suggestions to improve the environmental cooperation system in NEA to address specific issues. Again, since the purpose of this joint research is to make recommendations to improve the institutional aspects of the environmental cooperation system in this region, focus is given to three environmental issues on which environmental cooperation mechanisms are already operated. They are air pollution, marine environmental issues, and DSS. In order to strengthen the environmental cooperation system, recommendations in terms of coordination, financial strength, participation, and knowledge sharing, for these three specific environmental issues are outlined as follows.

4.4.1. Air Pollution

The main ECM and activity related to air pollution in the region are EANET and LTP. While EANET has developed as a mechanism, LTP is an activity conducted among research communities in three countries. Therefore, suggestions for institutional development related to trans-boundary air pollution will focus mainly on EANET, including its cooperation with LTP and other relevant activities.

Better Coordination

In order to deal with trans-boundary air pollution issues in NEA, the cooperation mechanism should consider the systematic development of not only monitoring, but also modeling, emission inventories, emission projections, impact assessment, and necessary policy-making based on sound scientific assessment. In so doing, further commitments from all participating countries are necessary. Considering these needs, different kinds of coordination should be further strengthened, namely, (i) coordination with other mechanisms within the region, as well as relevant regimes outside region, (ii) coordination within participating countries, and (iii) coordination among ministries within each participating country.

First, EANET gives useful information about a scientific data and expert opinion for acid deposition. But, it lacks a mandate and identified processes to implement the policy developed by the use of scientific data collected through it. EANET need to expand its activity scopes and establish the legal instrument so that EANET develops into ECM like EMEP in the East Asia. First of all, As EANET stands for Acid Deposition Monitoring Network in EAST ASIA, more monitoring stations required to

resolve spatial behaviors of acid deposition and related chemical species concentration. And all the agreed mandate parameters should be monitored all the participating monitoring stations. And then, EANET need to expand its scope of activities into research on long-range transfer mechanism, impact assessment of emission, modeling, and emission inventory construction for ensuing to implement active measures against the adverse effects of acid deposition. In this regard, EANET need to strengthen the collaboration with other mechanisms such as LTP. The joint research activity between EANET and LTP would be recommended as one of the available options. To implement joint research activities through coordination with other mechanisms each other, close cooperation and further discussion would be required among relevant countries. Besides it is imperative that bilateral cooperation in installation of equipments and technology transfer to cope with the air pollution in the East Asia should be conducted.

Further, coordination with relevant mechanisms in the region, such as TEMM and NEASPEC, would further enable the activity to deal with trans-boundary air pollution problems. Since some participating countries may not necessarily benefit from the development of a strict mechanism, it may be necessary to consider the air pollution issue in the context of other environmental problems. In this regard, a generic mechanism such as TEMM, could make arrangements on issue-specific mechanisms to promote overall benefit for NEA. Likewise, since NEASPEC currently conducts capacity-building and technology transfer projects related to air pollution, the closer cooperation of EANET and NEASPEC could further strengthen their activities. In addition, since EANET was originally established to model the case of the European Convention on Long-range Trans-boundary Air Pollution (CLRTAP), EANET should promote closer cooperation with CLRTAP, to learn from its successful experiences.

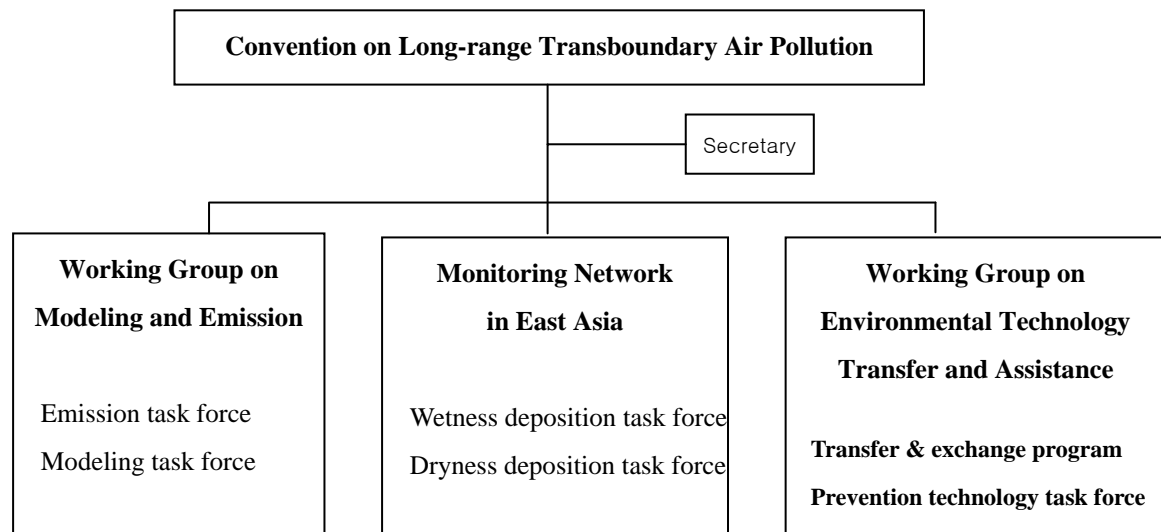
Organisation of a joint meeting of existing mechanisms and activities related to trans-boundary air pollution would be a first step to further enhancing their coordination. In this regard, EANET should consider organising its IGM, which is currently organised with exclusive participation, as an open meeting to all interested parties. If the meeting was successfully organised, mechanisms could begin consideration on the development of a joint action plan for trans-boundary air pollution.

Second, EANET has developed systematic institution such as permanent secretariat, intergovernmental meeting as decision-making body, its subsidiary bodies and network centers so on. But, EANET is a voluntary network whose operation is based

on Joint Announcement and Intergovernmental meeting report. A number of meetings are organized separately and coordination among relevant countries is weak. Enhancing coordination among participating countries is crucial for policy making and implementation of EANET. Agreement of regional convention on acid deposition and long-range transboundary pollutant among relevant countries like CLRTAP is required. It needs that UNEP would manage this convention.

This convention would be composed of Working Group on Modeling and Emission, Monitoring Network in East Asia, Working Group on Environmental Technology Transfer and Assistance (fig. 20). Working Group on Modeling and Emission needs to establish Emission task force and modeling task force. Monitoring Network in East Asia needs to give information about a scientific data and expert opinion for acid deposition. Working Group on Environmental Technology Transfer and Assistance needs to coordinate the activities of “North East Asian Center for Environmental Data and Training (NEACEDT)” of NEASPEC and education & training program of EANET implemented by JICA.

Figure 20: The structure of convention on Long-range Transboundary Air Pollution



Coordination among ministries within each participating country should be further strengthened. For instance, monitoring, emission inventories, and impact assessment, as well as necessary policy-making related to air pollution, are not necessarily conducted in the same section or ministry within each country. Therefore, when considering further development of institutional arrangements related to trans-boundary air pollution, close and tight cooperation is crucial. Organisation of joint meetings and sharing of information on the activities of each authority, are always helpful in this regard. Also, since national focal points are currently set

differently for each different mechanisms, each nation should consider the establishment of one focal point to deal with overall trans-boundary air pollution activities.

Through improved coordination and cooperation, a more close-knit mechanism could be formed. Indeed, EANET has organised a working group on the future arrangement of EANET since 2004. There, a certain form of more formal agreement, the content of which has not yet been discussed, was raised in the agenda. EANET should seriously consider such arrangements into a more concrete form of cooperation, to further develop the mechanism and realise the aforementioned improved coordination.

Improved Financial Strength

Currently, activities of EANET have been mainly funded by the Japanese government, with additional contributions from the ROK, China, and Thailand. At the 11th IGM, initiation of a system of financial contribution from all participating countries following the UN scale, was suggested. A legally binding mechanism could be helpful to realise this reform and ensure mandatory financial contribution from participating countries. Mandatory contribution will not only ensure the activities of EANET, but also increase commitment from all participating countries for necessary activities. Further, if EANET were to develop a formal financial mechanism, application for external funding from ADB, the World Bank, GEF, and others, would be become easier. For activities related to scientific research, EANET should consider applying to private foundations as well.

Participation

Since the current meetings of EANET are organised as closed meetings, attended only by government officials of participating countries and other government-nominated experts, stakeholder participation in decision-making processes is limited to government-related actors. In the near future, EANET should consider organisation of a meeting open to all those interested. In so doing, the activities of EANET could receive more attention from NGOs, the media, corporations, and citizens, while increasing the transparency of its activities. If the activities of EANET were reported on by other stakeholders, the awareness of social stakeholders on the issue could be raised, and a potential network for cooperation could develop.

In addition, the capacity-building and awareness-raising activities of EANET have been carried out by non-governmental stakeholders, and should be further strengthened. EANET should further consider possible cooperation with private

sectors as well, such as developing voluntary agreements or cooperation activities related to technology transfer.

Scientific Knowledge-Sharing

Collection of scientific evidence, as well as compilation of future trends and possible measures, are necessary to effectively deal with the trans-boundary air pollution issue. Ideally, there should be a holistic and systematic scientific assessment community with strong institutions, funding, and human resources. However, at present, ECMs related to trans-boundary air pollution have not yet developed systematic and holistic scientific assessment activities. Therefore, the first step should be to increase the availability of existing data, particularly monitoring data, towards better use. Using the monitoring data, existing scientific communities could conduct relevant research activities to strengthen scientific knowledge on trans-boundary air pollution. In this regard, it may be helpful to strengthen public relations activities to disseminate the activities of EANET and data availability to a wider public. Further, EANET should consider informing other regions of data availability, such as the EU and North America, where active scientific communities study trans-boundary air pollution. When disseminating its data, EANET should consider a system for users of the data to report back, in order to apprehend overall utilisation of data among scientific communities.

Further, information-sharing and knowledge dissemination should be continued for all social stakeholders. Public awareness and support are crucial for successful policy-making, as well as to increase the priority of the issue on political agendas, which would accelerate implementation of relevant measures. In this regard, regular symposia related to trans-boundary air pollution, as well as other mass-educational activities, should be continued. In addition, EANET should consider holding a short reporting session to TEMM, with appropriate timing to put the issue onto political agenda.

4.4.2. Marine Environmental Issues

The three ECMs dealing with marine environmental issues in this region are NOWPAP, YSLME, and PEMSEA. As areas covered by YSLME and PEMSEA are also covered by NOWPAP, suggestions will mainly focus on strengthening the institutional aspects of NOWPAP in cooperation with other mechanisms.

Better Coordination

Coordination capacity for NOWPAP has multiple functions, namely, (i) coordination with other mechanisms within the region, as well as relevant regimes outside the region; (ii) coordination among participating countries; (iii) coordination among RCUs, RACs, and IGM; and (iv) coordination among ministries in each participating country. Enhancement of these various types of coordination is very important to the effective operation NOWPAP activities toward production of tangible outcomes. Ways to enhance each type of coordination are explained herewith.

First, coordination among NOWPAP, YSLME, and PEMSEA should be further enhanced to increase the efficiency and effectiveness of activities related to marine environmental issues. Currently, the three mechanisms have an established partnership, particularly on awareness-building activities related to environmental conservation of the Yellow Sea and other seas in East Asia. Indeed, many NGOs participate in these activities under the partnership programme of YSLME. Using the existing network, this partnership programme could be extended to other areas of activities. Since NOWPAP is operated under an initiative of UNEP, and YSLME and PEMSEA are operated under UNDP, coordination between the two UN agencies would be necessary to do so. While the secretariat of PEMSEA is located in the Philippines, one of the RCUs of NOWPAP and the headquarters of YSLME are both located in the ROK. Holding joint meetings at regular intervals could be a first step to initiate this cooperation.

Second, although the membership of TEMM does not fully match that of NOWPAP, development of short regular reporting sessions at each TEMM, together with other sub-regional environmental cooperation mechanisms, would be useful. Regular reporting to TEMM, as well as regular guidance from TEMM, could further propel the current and future actions of NOWPAP on marine and coastal environmental management in NEA. In addition, it is recommended that NOWPAP should give closer consideration to similar activities held internationally, as well as in other regions. Recently, NOWPAP has been participating in various international conferences and meetings dealing with issues related to oceans, and this effort should be continued.

Third, enhancing coordination among participating countries is crucial both for policy-making and implementation of NOWPAP. Thus, further strengthening the commitment of each member country to development of proposals, participation in discussions, and implementation of joint actions, is required. In this regard, raising awareness on the importance of marine environmental issues, both of policy-makers

and the general public, may be necessary. Using various types of media, information on the current issues related to marine environmental problems, as well as the importance of regional efforts to tackle the issues, should be disseminated to a wider range of stakeholders.

Fourth, since the geographic region covered by NOWPAP and YSLME includes the DPRK, it is recommended that the current member countries of NOWPAP encourage the DPRK to participate to NOWPAP and its activities, when and where applicable, to extend the geographic coverage of the mechanism. Here, due to political problems, participation of the DPRK is not easy, since there are travel restrictions between the DPRK and some countries in NEA. In this regard, inviting representatives from the DPRK to meetings held in China and Russia, which have diplomatic relationships with the DPRK, could be a first step. Meanwhile, as the DPRK does participate in PEMSEA, further partnership between PEMSEA and the other two mechanisms would provide good opportunities to involve the DPRK in the mechanisms.

Fifth, improving coordination capacity among the IGM, RCUs, and RACs is necessary for more effective operation of NOWPAP in terms of (i) setting priorities, agenda, and framework for action; (ii) raising emerging issues into prioritized area of action; (iii) smooth implementation of projects related to problems-at-hand; and (iv) independent implementation of projects according to the needs of selected countries, for which consensus-building of all four member countries is difficult. In so doing, while the IGM, convened once a year, should remain the essential decision-making body for major directions of NOWPAP and its activities, increasing flexibility in decision-making processes, and sharing of authority for decision-making and responsibility among the IGM, RCUs, and RACs is considered to be necessary. This change from the current “top-down” type of decision-making and implementation system, reflects the fact that actual needs and problems can only be assessed at the local level. Therefore, NOWPAP should take advantage of the RCUs and RACs located in each country, which are able to have close contact with local stakeholders. When the real needs of local stakeholders are assessed, and issues are raised for discussion, proper action by RCUs or RACs would allow issues to be handled smoothly and promptly. If issues are addressed based on the real needs of stakeholders, more resources can likely be mobilised for project implementation, especially from national and local governments and other stakeholders of relevant countries. In this regard, since the IGM, the current decision-making body of NOWPAP, meets only once a year, faster processes for decision-making may be needed. Hence, entrusting a part of decision-making procedures to RCUs and RACs will facilitate projects implementation toward tangible outcomes.

Sixth, inter-ministerial coordination in each country needs to be further strengthened. Inter-ministerial coordination is particularly important for marine and coastal environment management, which involves multiple ministries and their agencies, such as ministries of the environment, foreign affairs, trade and commerce, and so on. At present, NOWPAP is operated by the environment ministries of participating countries China, Japan, and the ROK. PEMSEA is operated by the State Oceanic Administration (China), the Ministry of Land, Infrastructure, Transport and Tourism (Japan), and the Ministry of Maritime Affairs and Fisheries (ROK). Proper coordination between national ministries will increase the efficient operation and resource utilisation of the mechanisms. Indeed, the issue of inter-ministerial coordination is relevant to many environmental issues in the region. In this regard, having an inter-ministerial focal point in each specific ministry could be considered.

Improved Financial Strength

Programme operation, as well as implementation of projects, requires substantial amounts of financial resources. In this regard, NOWPAP's next step must be to ensure financial contributions from each participating country as promised. Although agreements have seemingly been reached and utmost efforts have been made by member countries, securing financial contribution from each member country to achieve the annual revenue target of 500,000 USD for the NOWPAP Trust Fund, is highly important. To this end, each member country is encouraged to take necessary actions as agreed and to report to the next IGM as appropriate.

In order to expect tangible outcomes from NOWPAP activities, and considering the current level of financial commitments agreed by each member country, it may be more realistic for NOWPAP to seek necessary financial and human resources externally rather than internally. To this end, it is recommended that NOWPAP utilise the network functions of RACs to mobilise existing domestic and international resources to implement on-the-ground activities.

Likewise, in order to allow NOWPAP to address a series of priority issues, limited NOWPAP resources should be utilised as "seed-money" for launching and developing sub-regional communities and actions on urgent needs. Beyond the biennium NOWPAP financial cycle, such communities and actions should establish their own financial sources to promote their own sustainability, as well as to extend the issue coverage and activities of NOWPAP.

As mentioned in IGM reports, NOWPAP is encouraged to seek external funds from international funding agencies, such as the World Bank, ADB and GEF, for the implementation of relatively large scale on-the-ground projects. Moreover, NOWPAP may seek funds from private foundations. For example, the Nippon Foundation, based in Tokyo, Japan, has funding programmes related to ocean policy research and activities on marine environmental protection, and makes financial contributions to PEMSEA's activities. NOWPAP should consider conducting joint activities with such private foundations, as well as YSLME and PEMSEA, which are both funded by GEF. Efforts to secure funding from these sources should be continued together with the aforementioned mobilisation of domestic and international resources through the coordination and networking activities of RACs.

Participation

To enable the aforementioned mobilisation of external resources, further commitment and support from each central and local government hosting RACs are essential. In addition, external resources may include relevant research institutes, universities, NGOs, local governments, local residences, and so on.

Indeed, the experience of MALITA, amongst others, shows that issues raised by RACs, utilising their confidence and capacity to implement practical actions, have resulted in visible success over the relatively short term. Reasons behind this success include the active involvement of local stakeholders, such as local governments, and networks of civil society organisations. This successful implementation of on-the-ground programmes shows the need for active participation of stakeholders.

Both YSLME and PEMSEA have encouraged the participation of local stakeholders, conducted pilot projects, and provided grants for community marine environmental protection activities. Closer cooperation with these two mechanisms will further enhance the participation of stakeholders in NOWPAP activities.

The ideal way to provide a formal channel for social stakeholder participation in the policy-making process and project implementation of NOWPAP activities is through developing partnerships and formal cooperation systems. As a first step, NOWPAP, along with YSLME and PEMSEA, should consider organising a public symposium related to various marine environmental issues, inviting stakeholder dialogue from participants.

Scientific Knowledge-Sharing

As mentioned in the gap analysis, one of the gaps to promotion of environmental cooperation in the region is the limited sharing of scientific evidence, as well as knowledge on causes and impacts of environmental issues, among social stakeholders. In the recommendations for generic mechanisms, the publication of the NEA Environmental Outlook was proposed, to provide comprehensive knowledge on priority and emerging environmental issues in the region and possible solutions. In the area of marine environmental issues, as mentioned previously, the *State of the Marine Environment in the NOWPAP Region* reports, which covers many of the priority and emerging issue areas and provides policy recommendations, was published by NOWPAP, and the *State of the Coast Reporting* will be published by PEMSEA in 2009. Indeed, various scientific reports are published by the three mechanisms, covering the issue areas of their targets. Therefore, these efforts should be compiled into one comprehensive assessment report, to be distributed to a wide range of social stakeholders, in various media formats.

All three mechanisms, in collaborative efforts, should develop their respective capacities to expand activities on priority issues in marine and coastal environmental management in the area of Northwest Pacific. Such priority issues may include those identified in the issue area coverage discussion in Chapter 3. Indeed, some countries in NEA which are surrounded by ocean, such as Japan, possess a quite rich community of ocean scientists and research institutions. By extending its networks via more active utilisation of its current databases, NOWPAP could further strengthening its scientific assessment capacity. In this regard, the top page of the NOWPAP website should be linked to a complete set of database sites, to facilitate more use of the site. Further, formal partnerships with research institutions and more active participation in international projects, may also enhance NOWPAP's network, and thus the capacity for scientific assessment of the regional mechanisms.

4.4.3. Dust and Sandstorms (DSS)

Joint efforts by relevant countries to deal with DSS issues have been carried out since the 2000, mainly initiated by TEMM. The main concerns for the cooperation mechanism is lack of funding and scientific knowledge to conduct appropriate activities. Stakeholder participation is especially important for the mitigation of DSS problems. The Master Plan developed by ADB/GEF, and Tripartite Director General Meeting on Dust and Sandstorm (TDGM on DSS), are the main regional cooperation basis and mechanisms. There also exist many bilateral projects on this issue, the activities of which should be more effectively correlated with multilateral regional activities.

Better Coordination

In order to deal with issues related to DSS, above and beyond current activities related to monitoring and early warning systems, regional cooperation mechanisms should focus on monitoring, early warning, impact assessment and elucidation of DSS mechanisms. In this regard, four types of coordination should be considered. They are (i) coordination among ministries in each participating country, (ii) coordination among participating countries, (iii) coordination with existing bilateral activities related to DSS, and (iv) coordination with international organizations.

First, coordination among relevant ministries and agencies of each participating country should be strengthened in order to establish proper national policy to deal with DSS issues, and to ensure common policy direction for domestic and regional policies. In this regard, establishment of an inter-ministerial working group and proper role assignment to deal with DSS should be considered. Also, it is requested to promote participation of relevant ministries and agencies in bilateral and multilateral cooperation activities and mechanisms on DSS for policy dialogue and information exchange.

Second, coordination among participating countries to develop joint proposals and implement projects should be strengthened. To do so, it is important to first raise the DSS issue to the level of national prioritised environmental policies, to ensure common direction among participating countries towards the issue. In this regard, exchange of knowledge about DSS mechanisms and impacts, through joint research and awareness-building among the general public, as well as policy-makers, is an appropriate first step. The proper role assignment among countries based on each country interest to deal with DSS need to discuss for developing and implementing cooperation activities more efficiently and effectively.

Third, coordination with existing bilateral activities should be emphasized. There are several bilateral (e.g. China-Japan, Japan-Mongolia, Japan-ROK, Mongolia-ROK, and China-ROK) DSS-related cooperation activities including afforestation activities in the desertification areas of China and Mongolia, related to DSS monitoring and early warning networks. Bilateral activities should be closely linked, and could possibly function as the basis for a regional cooperation system in the long-term. Organizing the joint meetings, or inviting personnel in charge of bilateral activities to the multilateral regional cooperation activities, such as TDGM and DSS-RETA, may help to facilitate cooperation among bilateral and multilateral regional activities. TDGM under TEMM should take charge of leading role in this regard through providing cooperation channel.

Fourth, coordination with international organizations, such as ADB and UNEP, to implement the second-phase of the DSS-RETA project is highly crucial to the actual implementation of the DSS-related activities. Coordination of the DSS-RETA project, which is focused on technological measures to deal with DSS, along with the newly-developed scientific research frameworks of the TDGM on DSS, will strengthen policy to deal with the DSS issue. Since ADB, UNEP and TDGM will follow along the national interests of relevant countries, coordination among domestic ministries and agencies, as well as participating countries, should be strengthened as mentioned previously. The existence of ADB and UNEP will help to neutralize the interests of participating countries, allowing them to focus on the DSS issues themselves. Coordination with other international organization such as WMO implementing Sand and Dust Storm Warning System (SDS WS) project is also highly crucial to the cooperation for establishing DSS monitoring and early warning system in NEA, and will follow along coordination among domestic ministries and agencies.

Improved Financial Strength

To realise the second phase of the DSS-RETA project, it is important to ensure the aforementioned coordination. Funds can only be provided upon the agreement of relevant countries. For the scientific research activities, relevant research institutions may look for funding from private corporations, as well as government grants to facilitate joint research activities. The government ministries and agencies and research institutions in each country should make efforts to make sure budget and to develop proposals and look for funding in this regard. In addition, several funds are available for mitigation activities, mainly conducted by NGOs, opportunities for which should be widely shared among the many relevant stakeholders.

Participation

Participation of relevant stakeholders, especially in the local areas where dust and sandstorms emerge, is important. Currently, many NGOs conduct activities related to DSS mitigation, such as afforestation projects and practice of sustainable agriculture. Initiated mainly by Japan and the ROK, several mitigation projects by governments on DSS have also been conducted. Manuals on mitigation measures, based on successful cases, have been developed and shared with relevant agencies for further dissemination. Such practices should be widely developed at the local government level, along with awareness-building activities to ensure the involvement of local stakeholders such as farmers, and so on.

Scientific Knowledge-Sharing

Sharing of necessary data, available resources on the monitoring sites, and results of research activities, is important in order to ensure that all stakeholders share information to handle the DSS problem. If difficulty arises in making data and research results readily available, a system whereby data can be obtained as necessary for appropriate reasons, should be developed. Data obtained should be shared at least by participating countries to facilitate scientific research activities. Scientific research activities on monitoring, impact assessment, and also the mechanisms of DSS, should be further strengthened, to develop relevant DSS policy. It is therefore important that the TDGM on DSS be successfully implemented. Publication of research findings in expert journals, as well as publication of summaries for policy-makers, will help raise awareness on the issues among decision-makers. In addition, an information platform on DSS should be developed to share DSS activities widely among social stakeholders. Even if data release is difficult, scientific findings based on the relevant data should be shared with a wide public audience.

Chapter 5 Conclusion

Affected by various political disputes in past history, the regional cooperation system in Northeast Asia has remained relatively loose in structure, and no concrete framework has been set. However, due to increasing economic inter-dependency, as well as other socioeconomic concerns within the region, the need for a closer cooperation system in the region has been raised. The need to develop a systematic environmental cooperation system is related to the fact that many current environmental problems have impacts across national borders. Thus solutions require the cooperation of all relevant nations in the region.

This joint research project was conducted by three institutes in China, Japan, and the Republic of Korea, reflecting the emerging needs of the ever closer regional cooperation activities in the NEA region. Several key points have been identified revealing to the need to further strengthen the environmental cooperation system in the region. Key points have been made from both from the perspective of the environmental issues themselves, as well as the existing environmental cooperation mechanisms in the region. Based on these key points, this report further elaborated on necessary actions to be taken, making recommendations for future regional environmental cooperation in Northeast Asia.

First, the major environmental issues facing the region were identified. Eight environmental issues were selected that have impacts not only at the national level, but also at the regional level as a whole, and thus require regional cooperation toward their solutions. They are air pollution, land degradation, dust and sandstorms, marine environmental issues, biodiversity loss, wastes, chemical pollution, and environment and energy. These environmental issues emerged as a result of remarkable socioeconomic changes in the region, such as rapid industrialisation, urbanisation, increase in population, and change in lifestyle over the past few decades.

Next, currently-operated environmental cooperation mechanisms were selected and assessed to understand the current situation of environmental cooperation in the region. It was found that most of the selected mechanisms have high relevance to address regional environmental issues through the promotion of the collective efforts of participating countries, and so far have been effectively performing their functions to meet their set objectives. On the other hand, it was also determined that environmental cooperation mechanisms in the region need to increase both the efficiency and sufficiency of their performance to produce tangible outcomes which

improve the state of the environment of the region. Some obstacles to operation of the environmental cooperation system in the region result from the fact that all existing cooperation mechanisms are operated separately without any coordination and with low resource allocation. This situation has resulted in difficulties in reaching action levels which produce actual improvements in environmental situations. To remedy this situation, certain improvements in terms of coordination, resource availability, stakeholder participation, and scientific knowledge-sharing have been deemed necessary.

Finally, recommendations are made for the improved performance of environmental cooperation mechanisms in the region. Specifically, the setting of shared goals and principles among all nations in Northeast Asia has been suggested, to provide a guideline for a proper environmental cooperation system. Some structural reform to increase the efficiency of existing cooperation mechanisms has also been suggested.

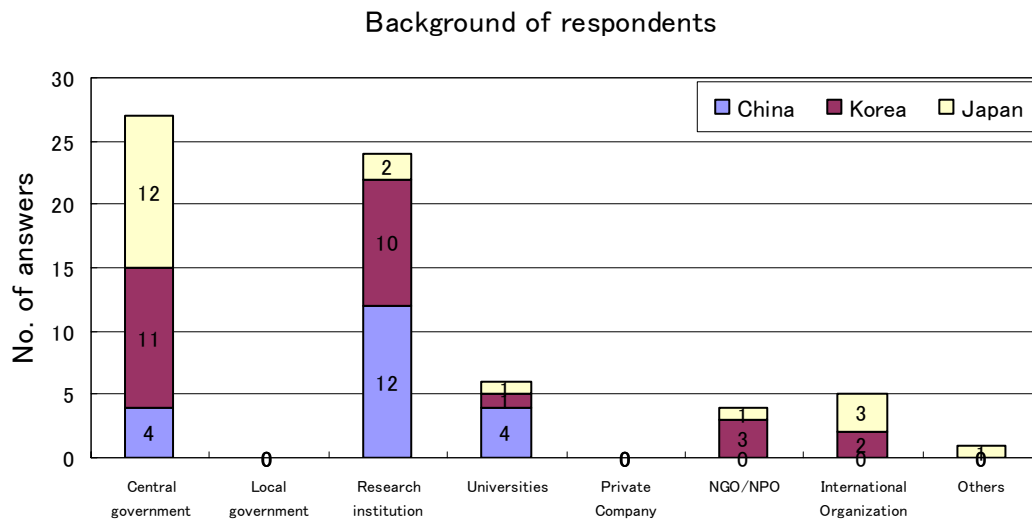
Through this joint research, it was found that China, Japan, and the Republic of Korea are the three countries participating actively in all existing mechanisms. In this regard, TEMM, attended by the highest level of the personnel directly in charge of the environmental issues in the region, should function as a core mechanism to lead the future of the Northeast Asia environmental cooperation system.

Through increasing the presence of the TEMM, there is high potential for the field of environmental cooperation in the region. The environmental cooperation system could possibly lead to a breakthrough in strengthening relationships among nations in the region. The environmental management system in Northeast Asia is on the verge of change towards closer cooperation. It is hoped that this joint research will be effectively utilised as a reference to further improve the performance of the environmental cooperation system in the region.

Appendix I

Questionnaire Survey

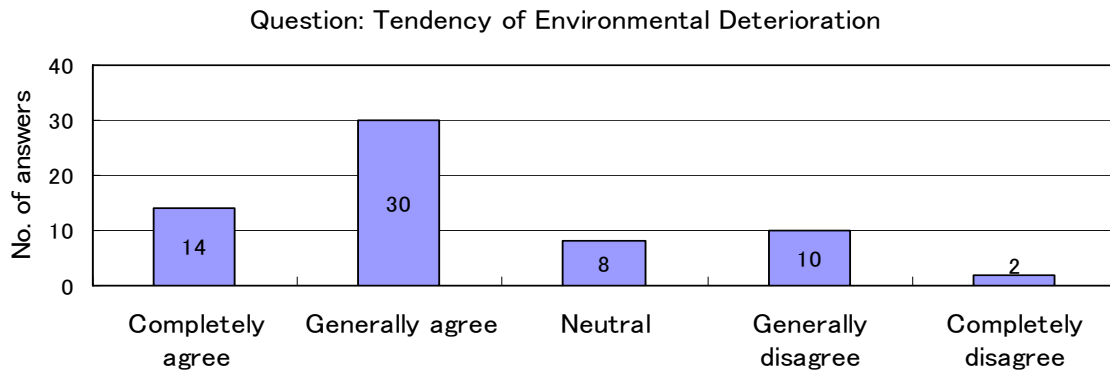
The questionnaire survey was conducted between August and November 2007. First, the questionnaire items and entries were developed collaboratively by PRCEE, IGES, and KEI. The questionnaire targets were selected from three countries, namely, China, Japan, and ROK based participant lists of relevant meetings and other relevant information sources. About 80 questions were developed, including questions regarding overall environmental issues in the region, the future vision of environmental cooperation, as well as ones specific to the six selected ECMs. The questionnaires were then distributed via e-mail to relevant personnel from central and local governments, research institutions, universities, private companies, NGOs/NPOs, international organisations, and the like. Out of around 110 questionnaires distributed, 68 respondents replied. When respondents were not familiar with certain ECMs, answers were left blank. Figure 69 shows the background information of the respondents.



Appendix I-1: Background of questionnaire respondents

Survey Results and Analysis

Appendix I-2: State of Environmental Deterioration

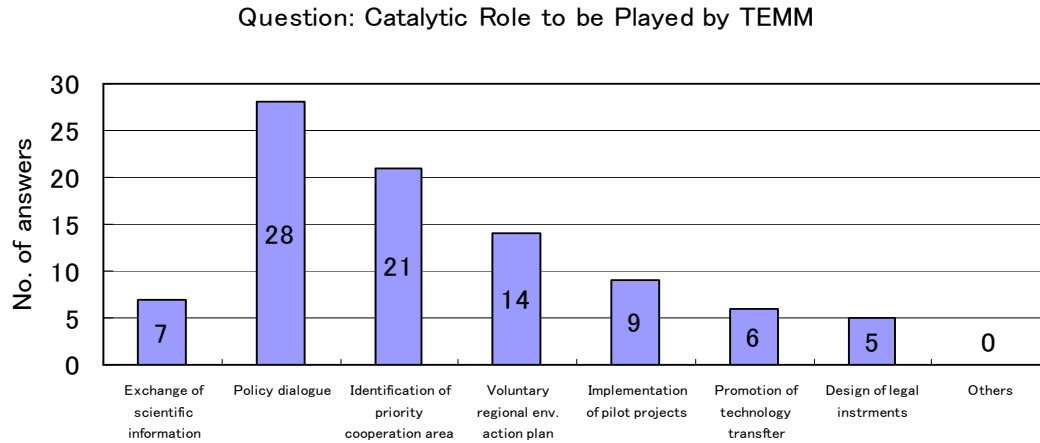


Note: Results of 64 answers provided by 68 respondents

Many respondents (68 percent) answered that environmental conditions in NEA will worsened if no measures are taken. About one fifth (19 percent) of respondents hold rather optimistic opinions on this issue, with 12 percent giving neutral answers.

Results Related to TEMM

Appendix I-2: Expected functions of TEMM

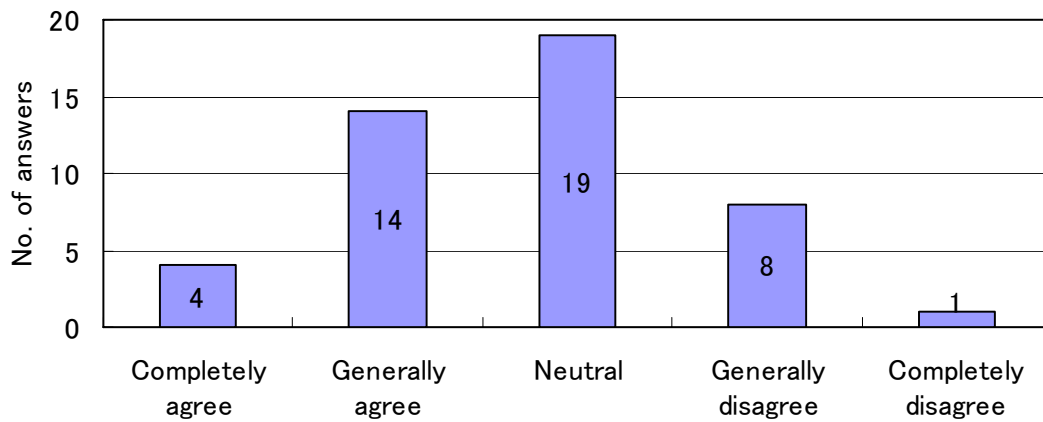


Note: Results of 45 answers provided by 68 respondents (two answers requested from each respondent).

“Policy dialogue” ranked as the most important function of TEMM, which serves as a political forum to discuss and promote regional environmental cooperation. The second most important function was found to be “priority setting”, followed by the “development of regional environmental action plan”. Other functions of TEMM acknowledged by respondents include, “development of pilot projects”, “exchange of scientific information”, “promotion of technology transfer”, and “design of legal instruments”.

Appendix I-3: Improvement in environmental quality in NEA through TEMM and related activities

Question: TEMM activities improved the environmental quality in NEA

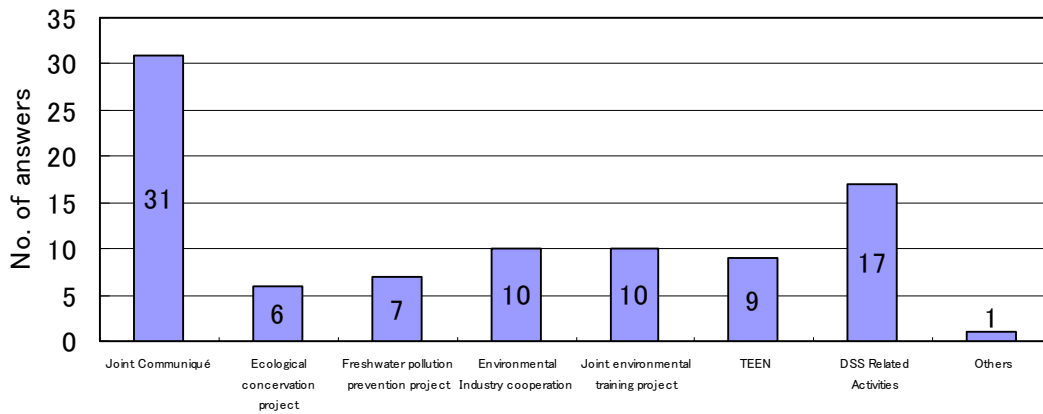


Note: Results of 46 answers provided by 68 respondents.

40 percent of respondents considered TEMM to have improved environmental quality in NEA through its activities. Likewise, 41 percent gave neutral replies, and about 20 percent did not view TEMM as having achieved outcomes toward the improvement in regional environmental quality.

Appendix I-4: Positive outcomes of TEMM and related activities

Question: Positive Outcomes from TEMM Activities



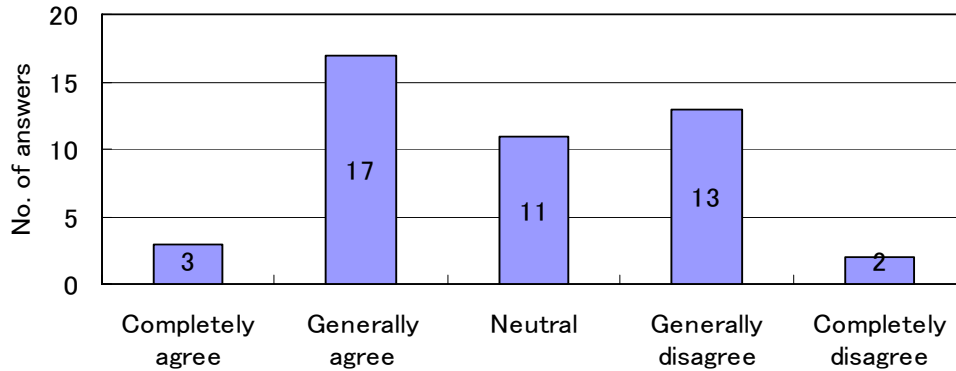
Note: Results of 46 answers provided by 68 respondents (two answers requested from each respondent).

Among the various positive outcomes produced by TEMM and its activities, the announcement of the “Joint Communiqué” for each meeting of TEMM was regarded as the most prominent outcome. Other significant outcomes included, “dust and sandstorm related activities (e.g. the Tripartite Director Generals Meeting on Dust and Sandstorms)”, “cooperation in environmental industry”, and “joint environmental

training projects”, among others. In addition, the “Tripartite Environmental Education Network (TEEN)”, “project on freshwater pollution prevention”, and “ecological conservation project” were also acknowledged as significant outcomes.

Appendix I-5: Sufficiency of TEMM’s human and financial resources

Question: TEMM has fully secured human and financial resources necessary for its activity.

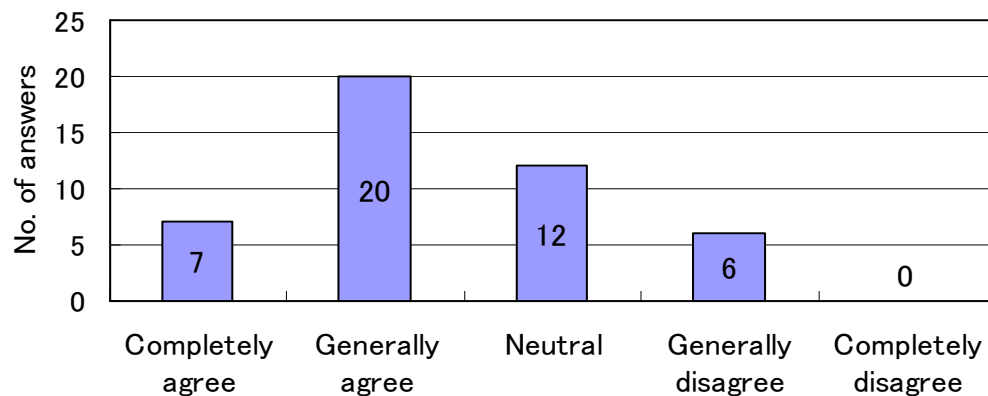


Note: Results of 46 answers provided from 68 respondents.

A total of 43 percent of respondents agreed that resources are sufficient for TEMM and its activities; however 33 percent disagreed, and the other 24 percent answered neutrally.

Appendix I-6: Efficiency of the utilisation of human and financial resources by TEMM

Question: TEMM utilized available human and financial resources in an effective manner.

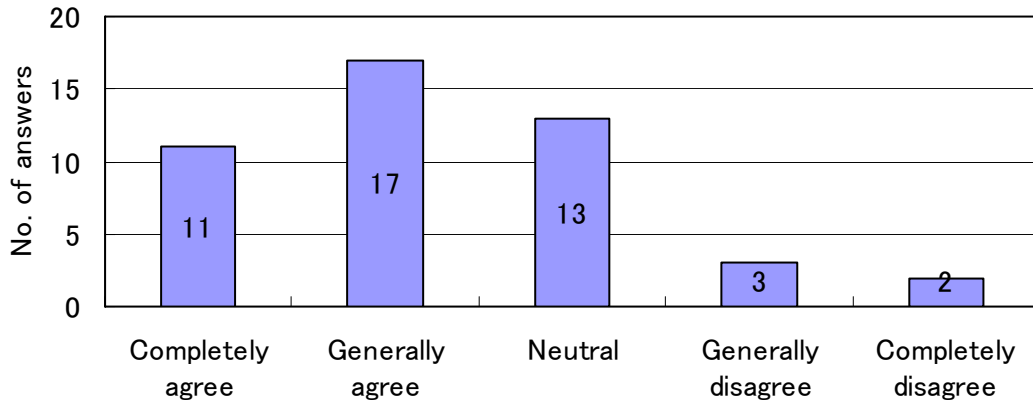


Note: Results of 46 answers provided by 68 respondents.

Results showed that 59 percent of respondents thought that resources are being used properly. Only a few opposing opinions were found, with 26 percent in neutral responses.

Appendix I-7: Expectations on establishing mandatory financial mechanism for TEMM

Question: TEMM should be equipped with a financial mechanism with mandatory contribution of member countries

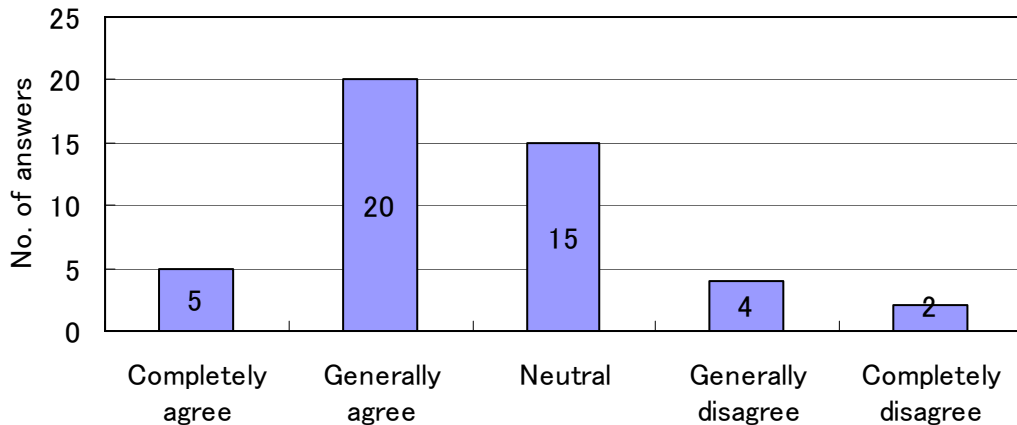


Note: Results of 46 answers provided by 68 respondents.

A majority (61 percent) agreed that TEMM should establish a mandatory financial mechanism for contributions from member countries. Only a few respondents disagreed, while 28 percent provided neutral responses.

Appendix I-8: Expectations on establishing an independent/permanent secretariat under TEMM

Question: TEMM should have an independent, permanent Secretariat

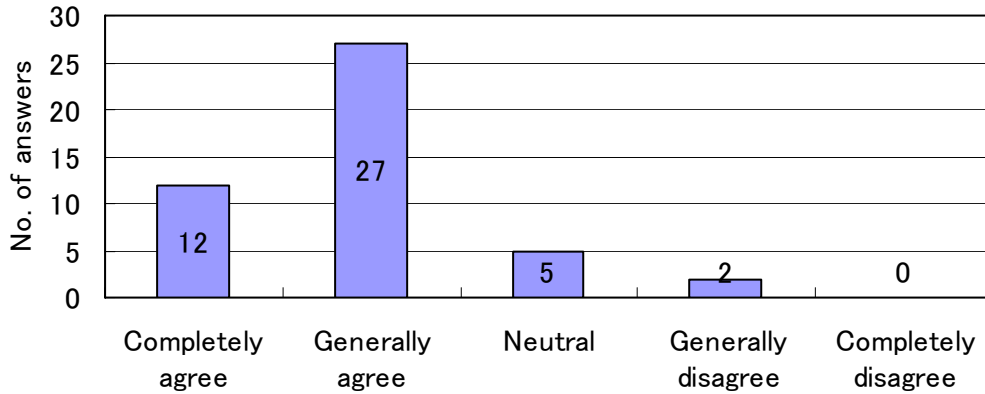


Note: Results of 46 answers provided by 68 respondents.

A total of 54 percent of respondents agreed on the establishment of an independent, permanent secretariat. There were 33 percent who provided neutral answers, and a few responses in disagreement.

Appendix I-9: Expectations for stakeholder participation in TEMM and its related activities

Question: TEMM should further enhance participation of relevant stakeholders and actors in its activity.

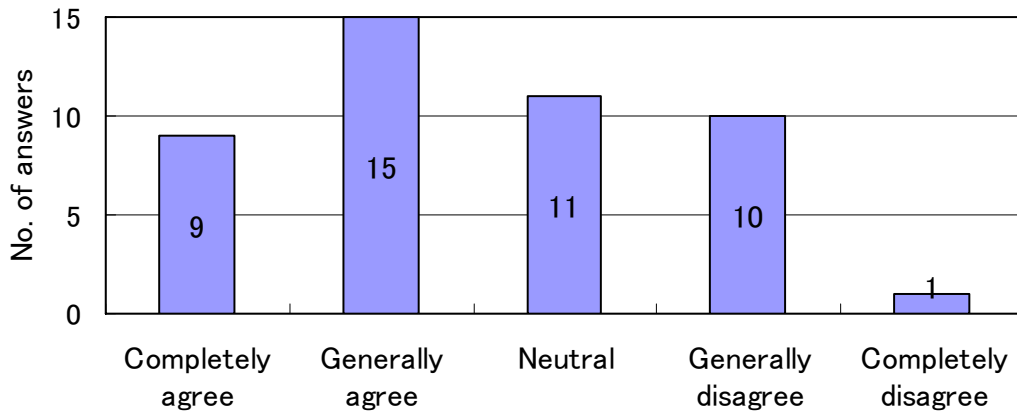


Note: Results of 46 answers provided by 68 respondents.

An overwhelming 85 percent agreed that other stakeholders should be included in TEMM and its activities, with 10 percent answering neutral, and 4 percent disagreeing on this item.

Appendix I-10: Extension of TEMM Membership

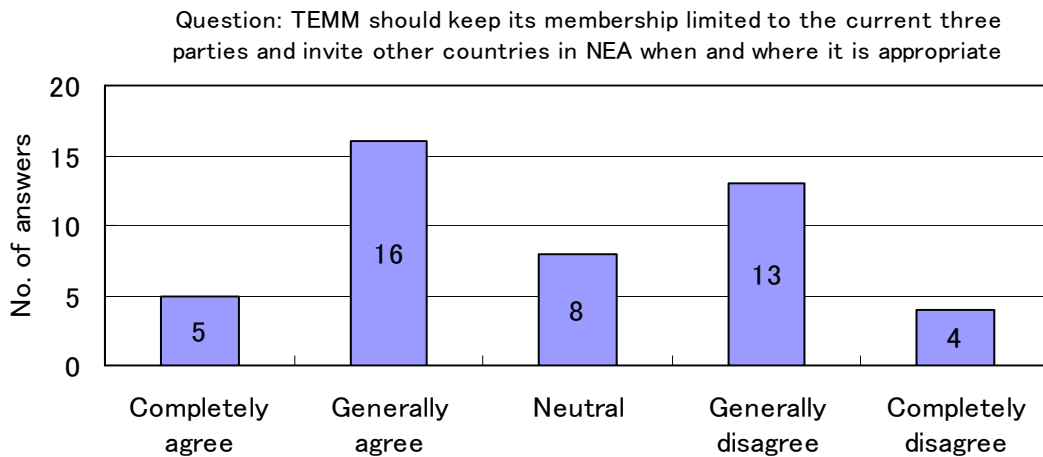
Question: TEMM should extend its country membership in a phased manner to evolve into "Northeast Asian Environmental Ministers Meeting"



Note: Results of 46 answers provided by 68 respondents

As regards the suggestion to extend the membership of TEMM, opinion was divided where 52 percent of respondents were in favor of extending membership towards the creation of a "Northeast Asian Environmental Ministers Meeting". Neutral responses were given by 24 percent of the respondents, and 11 percent disagreed.

Appendix I-11: Limitation of TEMM Membership

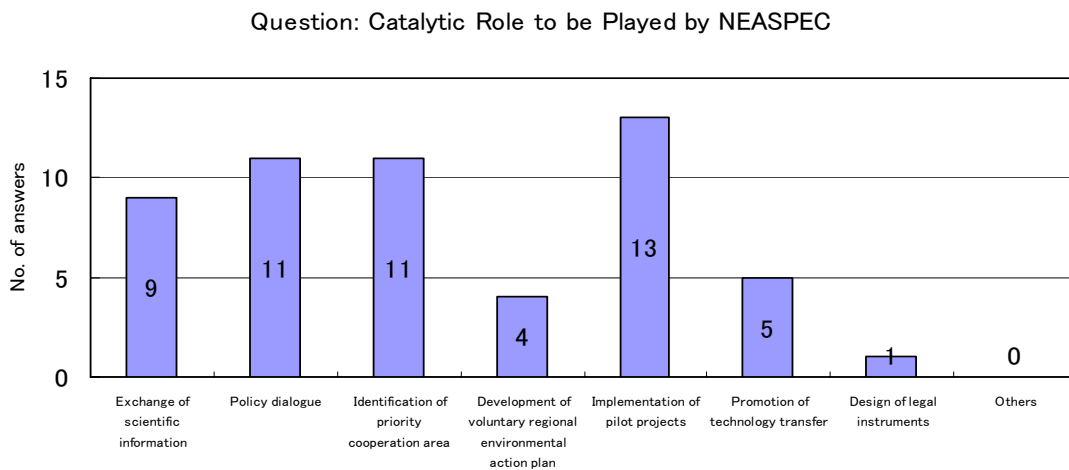


Note: Results of 46 answers provided by 68 respondents

On the item which addressed limiting the membership of TEMM to the current member nations, 46 percent of respondents concurred, with 17 percent neutral and 37 percent disagreeing.

Results Related to NEASPEC

Appendix I-12: Expected functions of NEASPEC

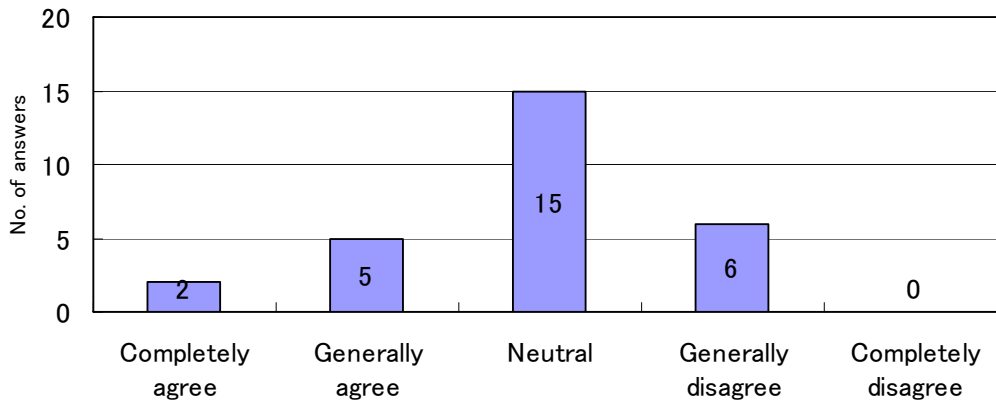


Note: Results of 27 answers provided by 68 respondents (two answers requested from each respondent).

Regarding NEASPEC’s appropriate role, “pilot projects implementation” was considered to be most needed, surpassing more general framework-type cooperation such as “policy dialogue” and “identification of cooperation area.” Other responses included “exchange of scientific information”, “promotion of technology transfer”, “voluntary regional action plan”, and “legal instruments.”

Appendix I-13: Improvement in effectiveness of environmental quality in NEA through NEASPEC and related activities

Question: NEASPEC activities improved the environmental quality in NEA

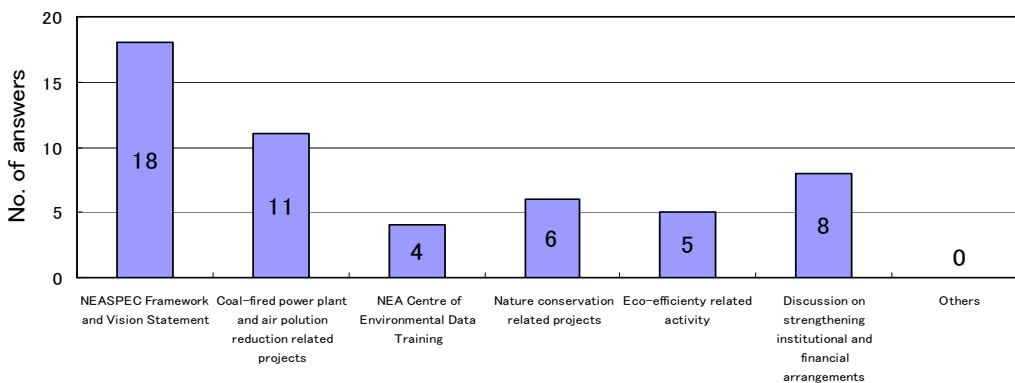


Note: Results of 28 answers provided by 68 respondents

Neutral responses were high (54 percent) regarding NEASPEC activities having improved environmental quality in NEA. Only 25 percent of respondents noted some improvement in environmental quality through NEASPEC, and 21 percent did not see improvement.

Appendix I-14: Positive outcomes of NEASPEC and related activities

Question: Positive Outcomes by NEASPEC Activities

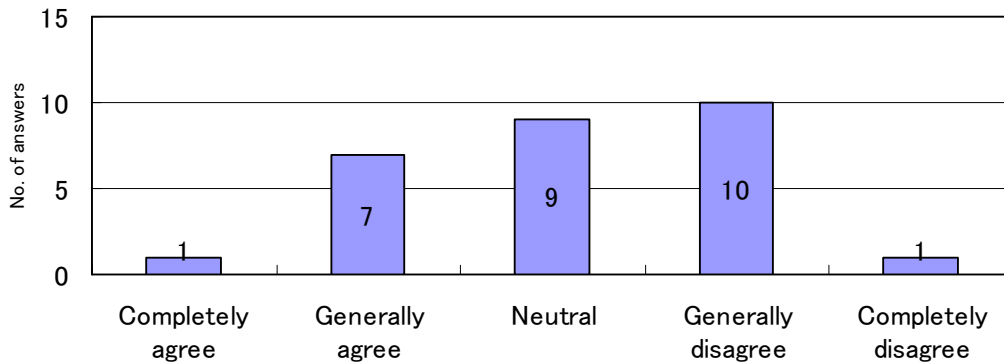


Note: Results of 27 answers provided by 68 respondents (two answers requested from each respondent).

The “NEASPEC Framework and Vision Statement” was considered NEASPEC’s most significant outcome. Other answers in descending order were “coal-fired power plant and air pollution reduction related projects”, “discussion on strengthening institutional and financial arrangements”, “nature conservation related projects”, “eco-efficiency related activities”, and “nature conservation related projects”.

Appendix I-15: Sufficiency of NEASPEC’s human and financial resources

Question: NEASPEC has fully secured human and financial resources necessary for its activities

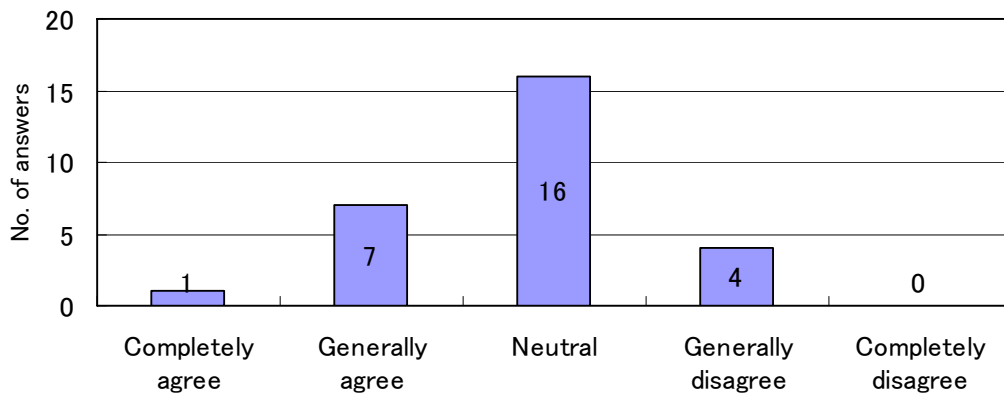


Note: Results of 28 answers provided by 68 respondents

In terms of sufficiency of human and financial resources, survey results indicated a larger number of respondents disagreeing (39 percent) on sufficiency than those in agreement (29 percent), with 32 percent neutral.

Appendix I-16: Efficiency of utilisation of human and financial resources by NEASPEC

Question: NEASPEC utilizes available human and financial resources in an efficient manner

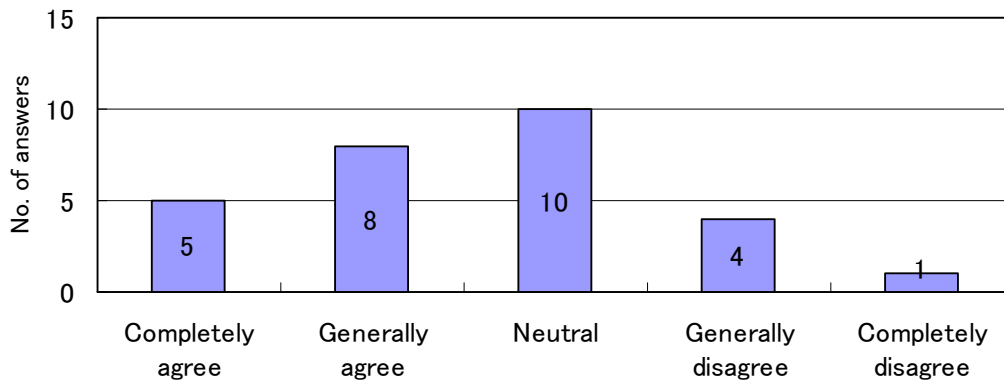


Note: Results of 28 answers provided by 68 respondents

Regarding efficient utilisation of resources, 57 percent of respondents answered neutrally, 29 percent agreed, and 14 percent disagreed.

Appendix I-17: Expectations on establishing mandatory financial mechanism for NEASPEC

Question: NEASPEC should be equipped with a financial mechanism with mandatory contribution of member countries

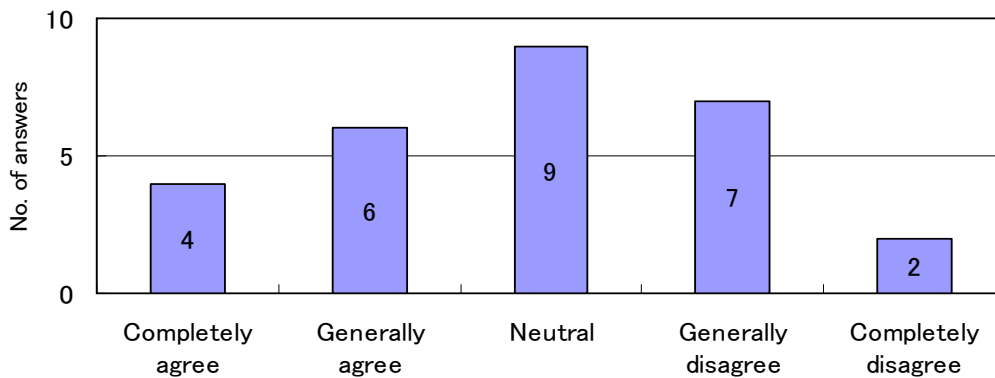


Note: Results of 28 answers provided by 68 respondents

The institutionalisation of NEASPEC has been one of its priority agendas since 2000. On the question of a mandatory financial mechanism, while the number of responses in agreement was larger than those in disagreement (46 percent and 14 percent, respectively), 36 percent of respondents answered neutrally to the item.

Appendix I-18: Expectations on establishing an independent/permanent secretariat under NEASPEC

Question: NEASPEC should have a permanent Secretariat outside the United Nations system

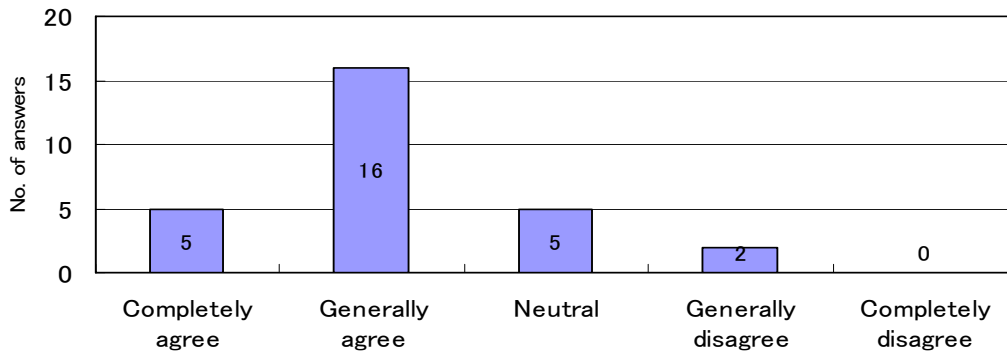


Note: Results of 28 answers provided by 68 respondents

On creating a permanent secretariat outside the UN system, while agreement was slightly higher (36 percent) than disagreement (32 percent), 32 percent of respondents answered neutrally.

Appendix I-19: Expectations for stakeholder participation in NEASPEC and its related activities

Question: NEASPEC should further enhance participation of relevant stakeholders and actors in its activities



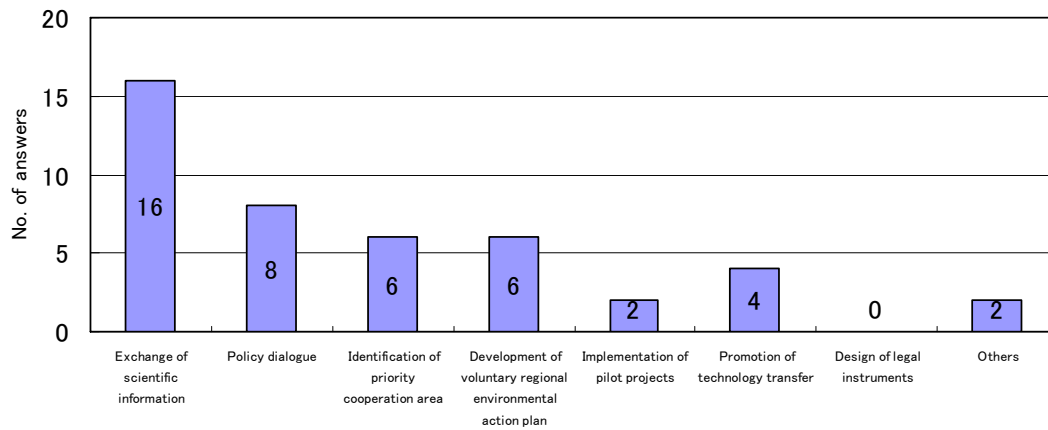
Note: Results of 28 answers provided by 68 respondents

Participation of relevant stakeholders was encouraged by 75 percent of the respondents, with 1 percent disagreeing.

Results Related to NEAC

Appendix I-20: Expected functions of NEAC

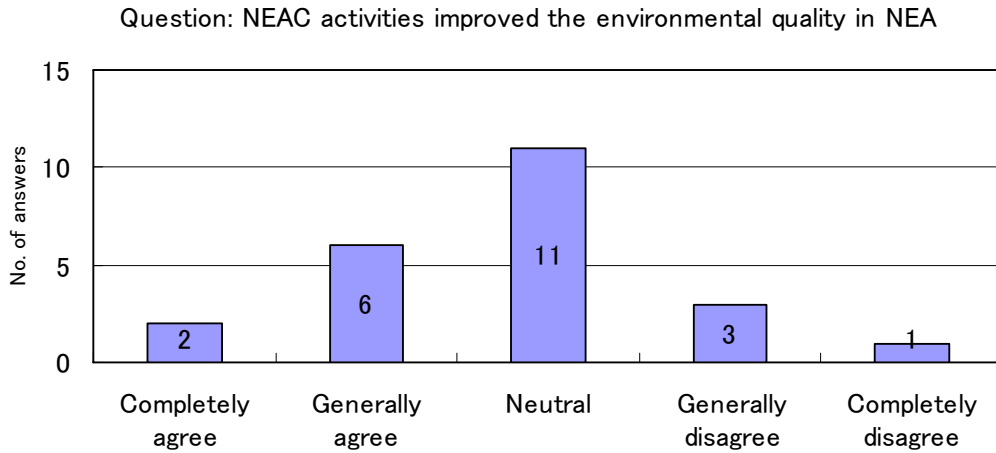
Question: Catalytic Role to be Played by NEAC



Note: Results of 22 answers provided by 68 respondents (two answers requested from each respondent).

The largest number of respondents answered that “exchange of scientific information” was the catalytic role that NEAC should play. Other answers given were mainly related to framework-type cooperation, such as “policy dialogue”, “identification of priority cooperation area”, and “development of voluntary regional environmental action plan”, characteristic functions given by survey respondents for the generic mechanisms. A few respondents answered that “promotion of technology transfer” and “implementation of pilot projects” were catalytic roles to be played by NEAC.

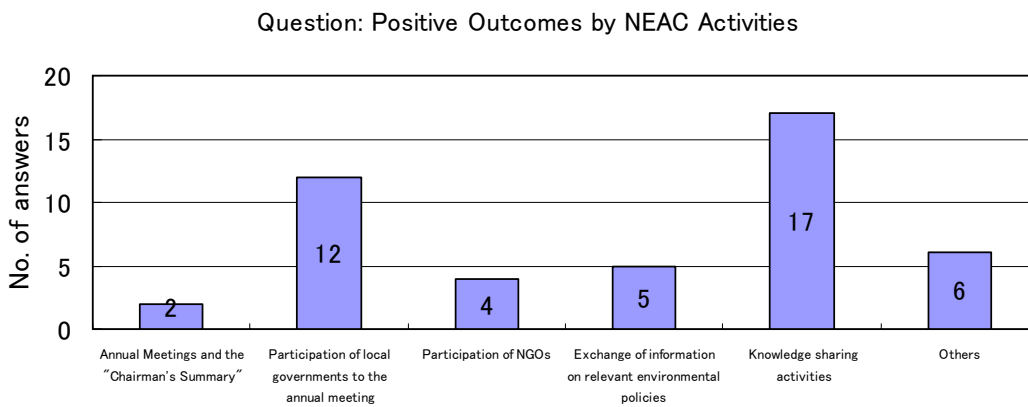
Appendix I-21: Improvement in environmental quality in NEA through NEAC and related activities



Note: Results of 23 answers provided by 68 respondents

Regarding the effectiveness of the mechanism when assessed against improvement of environmental quality in NEA, survey results indicated dissatisfaction. Neutral answers were given by 48 percent of respondents, but there was a slight margin for positive responses (35 percent) over negative (17 percent).

Appendix I-22: Positive Outcomes of NEAC and related activities

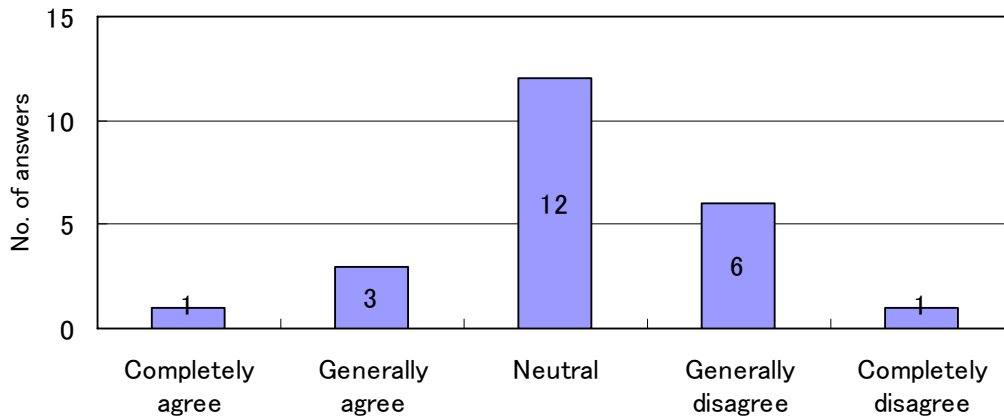


Note: Results of 23 answers provided by 68 respondents (two answers requested from each respondent).

“Knowledge-sharing activities” was considered the most distinguished activity of NEAC. Other notable activities included “participation of local governments to the annual meeting”, “annual meeting and the ‘chairman’s summary’”, “exchange of information on relevant environmental policies”, and “participation of NGOs”.

Appendix I-23: Sufficiency of NEAC’s human and financial resources

Question: NEAC has fully secured human and financial resources necessary for its activities

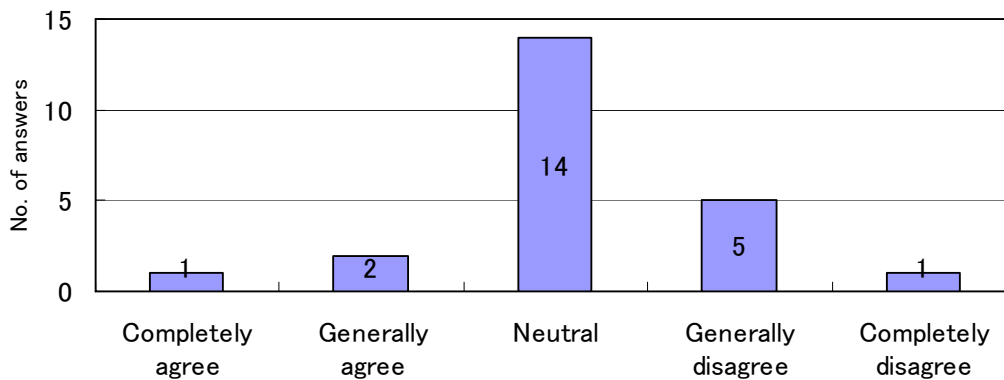


Note: Results of 23 answers provided by 68 respondents

Regarding sufficiency of resources for the mechanism, 52 percent of respondents answered neutrally. Negative answers surpassed positive ones by 13 percent (30 percent disagreed and 17 percent agreed).

Appendix I-24: Efficiency of NEAC’s Human and Financial Resource Utilisation

Question: NEAC utilizes available human and financial resources in an efficient manner

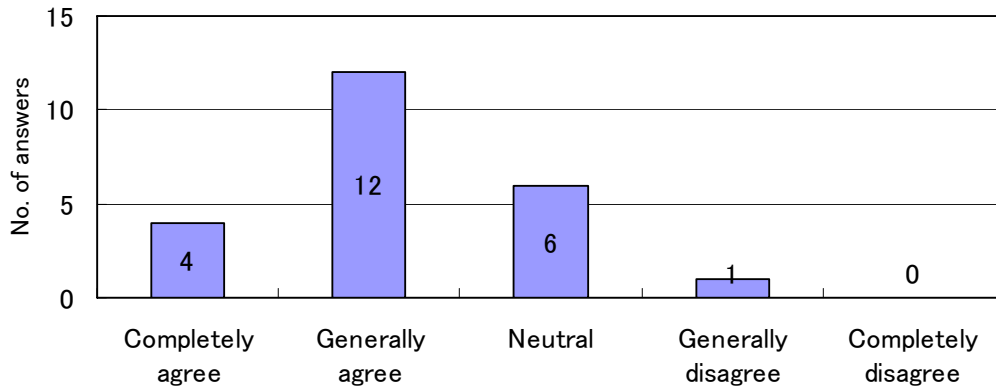


Note: Results of 23 answers provided by 68 respondents

Neutral answers were given by 61 percent of respondents regarding efficient use of resources for NEAC. Negative opinions outweighed positive, with 26 percent in doubt on the mechanism’s efficiency, with only 13 percent agreeing.

Appendix I-25: Expectations for stakeholder participation in NEAC and related activities

Question: NEAC should further enhance participation of relevant stakeholders and actors in its activities

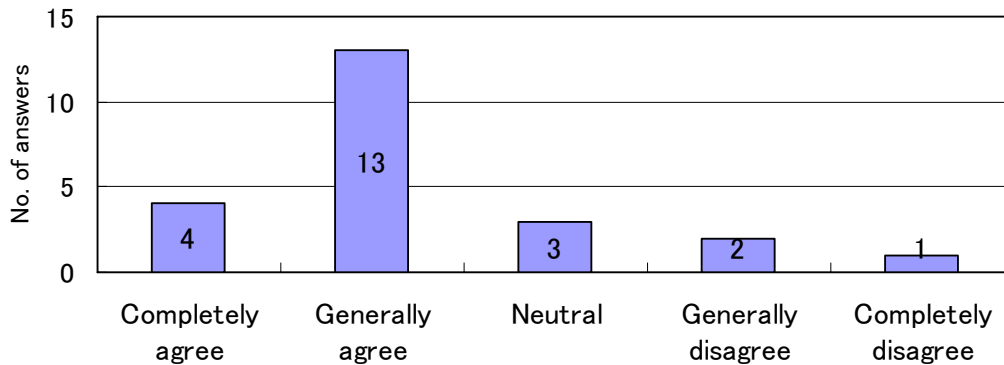


Note: Results of 23 answers provided by 68 respondents

A total of 70 percent of respondents were of the opinion that NEAC should widen the extent of its participation to include relevant stakeholders.

Appendix I-26: Expected position of NEAC in regional cooperation mechanism

Question: NEAC should become a subsidiary body of another regional cooperation mechanism such as TEMM and NEASPEC

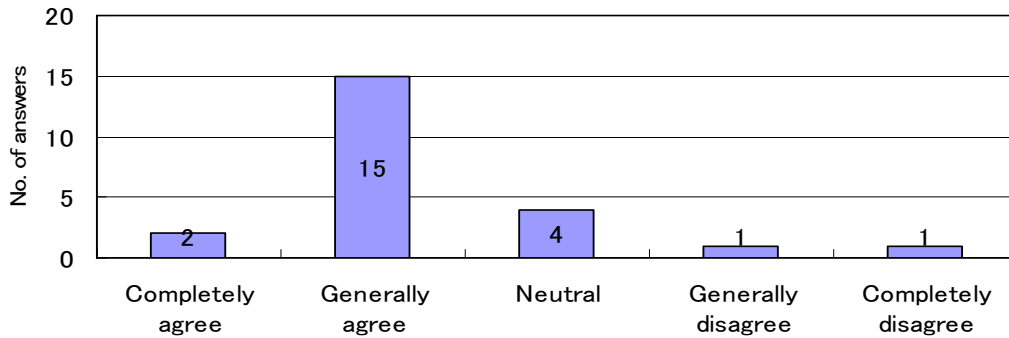


Note: Results of 23 answers provided by 68 respondents

An overwhelming 74 percent of respondents thought that NEAC should be a subsidiary body of another regional mechanism with a higher or more extensive level of cooperation, such as TEMM or NEASPEC. There were only a few disagreements on this item, with 13 percent of answers in the neutral.

Appendix I-27: Collaboration with other countries for NEAC activities

Question: NEAC should seek ways to collaborate with other countries when and where it is appropriate



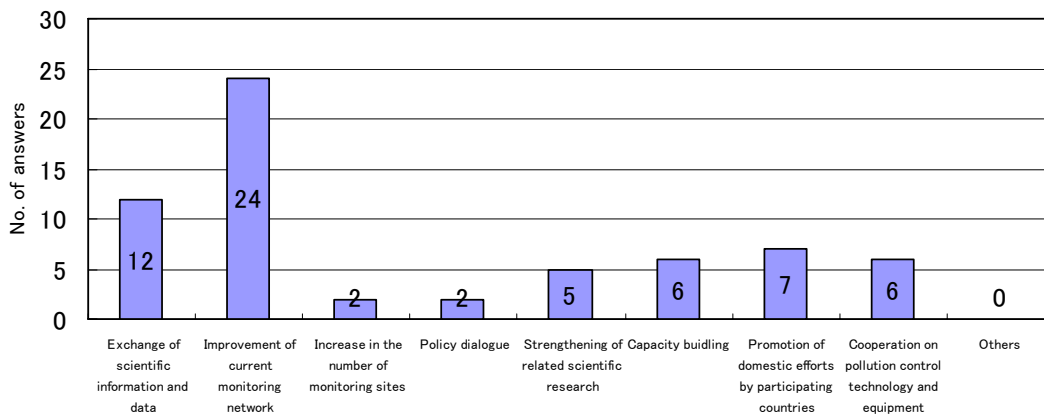
Note: Results of 23 answers provided by 68 respondents

A total of 74 percent of respondents agreed that NEAC should collaborate with other countries at appropriate times and occasions. There were only a few disagreements on this item, with 17 percent giving neutral replies.

Results Related to EANET

Appendix I-28: Expected function of EANET

Question: Catalytic Role to be Played by EANET

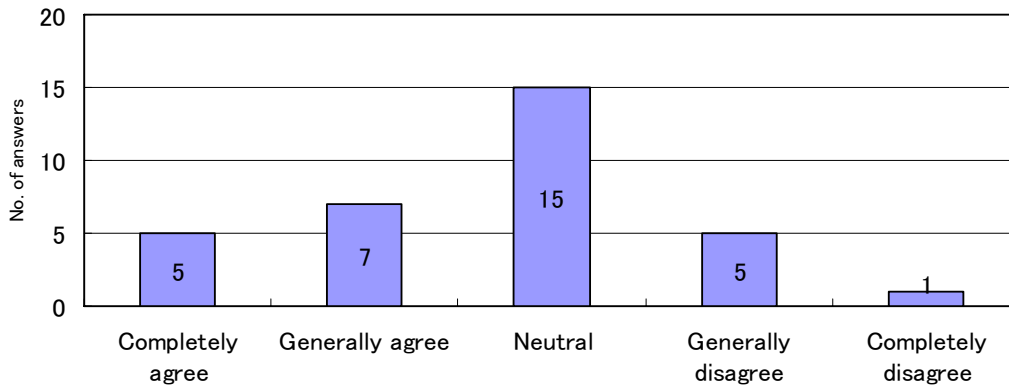


Note: Results of 34 answers provided by 68 respondents (two answers requested from each respondent)

According to survey results, the expected catalytic roles of EANET were the “improvement of current monitoring network” and “exchange scientific information and data”. Other items include “promotion of domestic efforts by participating countries”, “cooperation on pollution control technology and equipment”, “capacity building”, and “strengthening of related scientific research”. The lowest ranking responses were “policy dialogue”, and “increase in the number of monitoring sites”.

Appendix I-29: Improvement in environmental quality in NEA through EANET and related activities

Question: EANET activities improved the environmental quality in NEA

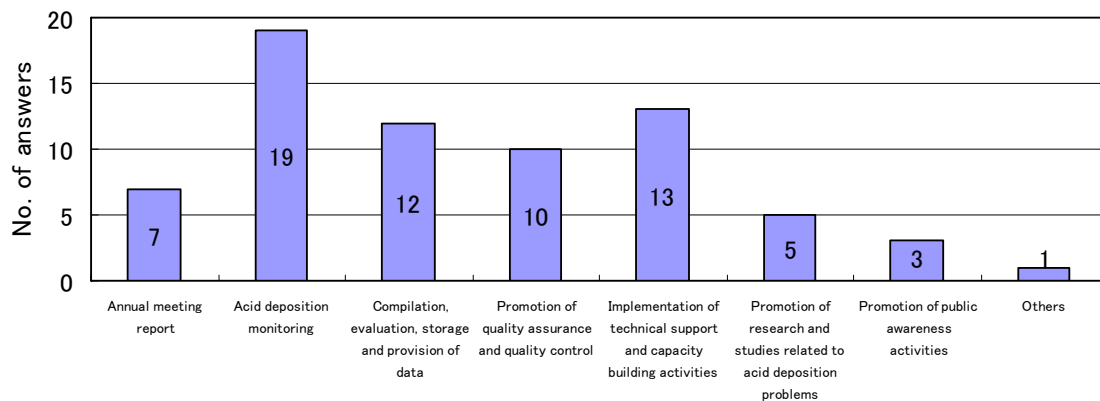


Note: Results of 34 answers provided by 68 respondents

Regarding the effectiveness of EANET activities for environmental quality improvement in NEA, 44 percent of respondents answered in the neutral. Meanwhile, positive answers (35 percent) were greater than negative answers (18 percent).

Appendix I-30: Positive outcomes of EANET and related activities

Question: Positive Outcomes by EANET Activities

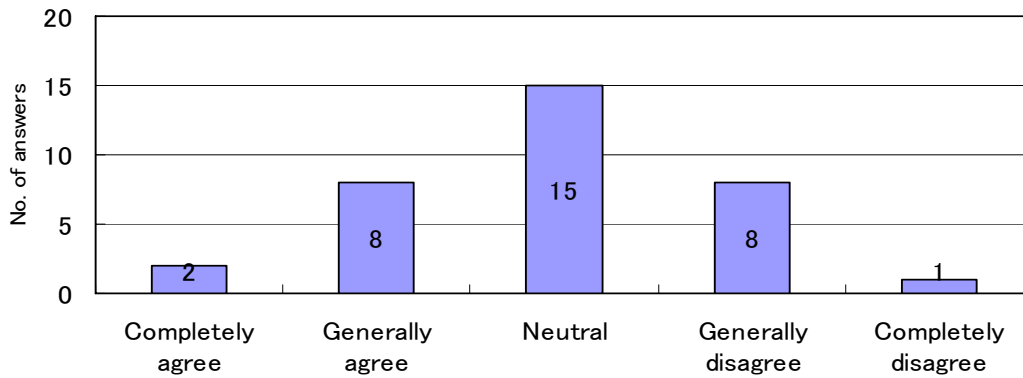


Note: Results of 34 answers provided by 68 respondents (two answers requested from each respondent)

The most prominent outcome of EANET activities was “acid deposition monitoring”. Other notable outcomes included “implementation of technical support and capacity building activities”, “compilation, evaluation, storage, and provision of data”, and “promotion of quality assurance and quality control”. Other answers included “annual meeting report”, “promotion of research and studies related to acid deposition problems”, and “promotion of public awareness activities”.

Appendix I-31: Sufficiency of EANET’s human and financial resources

Question: EANET has fully secured human and resources necessary for its activities

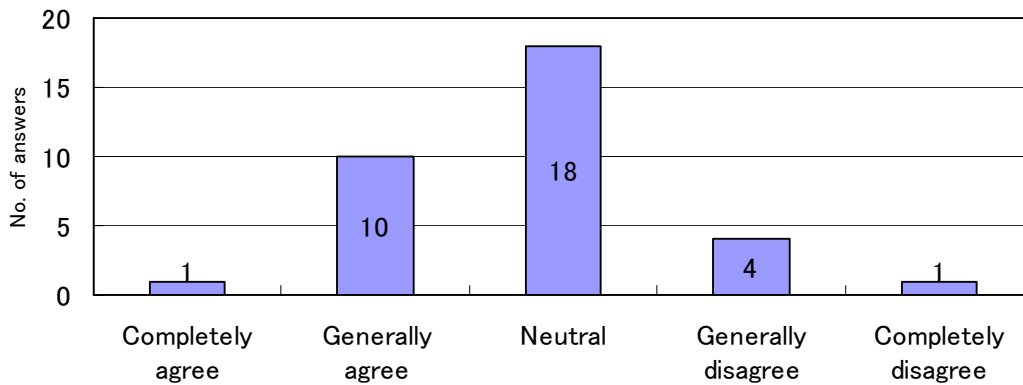


Note: Results of 34 answers provided by 68 respondents

Regarding the sufficiency of EANET’s resources, 44 percent of respondents answered in the neutral, 29 percent agreed, and 26 percent disagreed.

Appendix I-32: Efficiency of utilisation of human and financial resources by EANET

Question: EANET utilizes available human and financial resources in an efficient manner

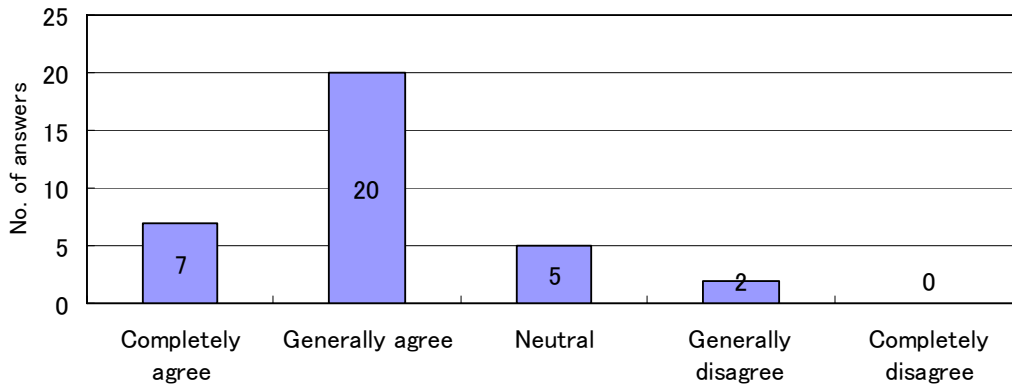


Note: Results of 34 answers provided by 68 respondents

Concerning the efficient use of resources, 53 percent of respondents gave neutral replies. However, compared to item on sufficiency of resources, responses were slightly more positive (32 percent).

Appendix I-33: Expectation for stakeholder participation in EANET and related activities

Question: EANET should further enhance participation of relevant stakeholders and actors in its activities

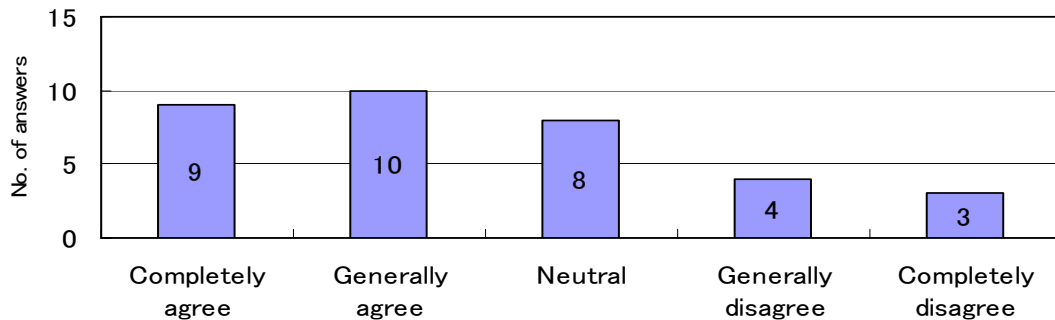


Note: Results of 34 answers provided by 68 respondents

An total of 79 percent of respondents agreed to the need to enhance stakeholder participation. Since governments and academia are already present in the current mechanism, results may indicate the necessity of participation from civil society organisations as well as private sectors.

Appendix I-34: Development of a legal instrument for EANET’s monitoring activities

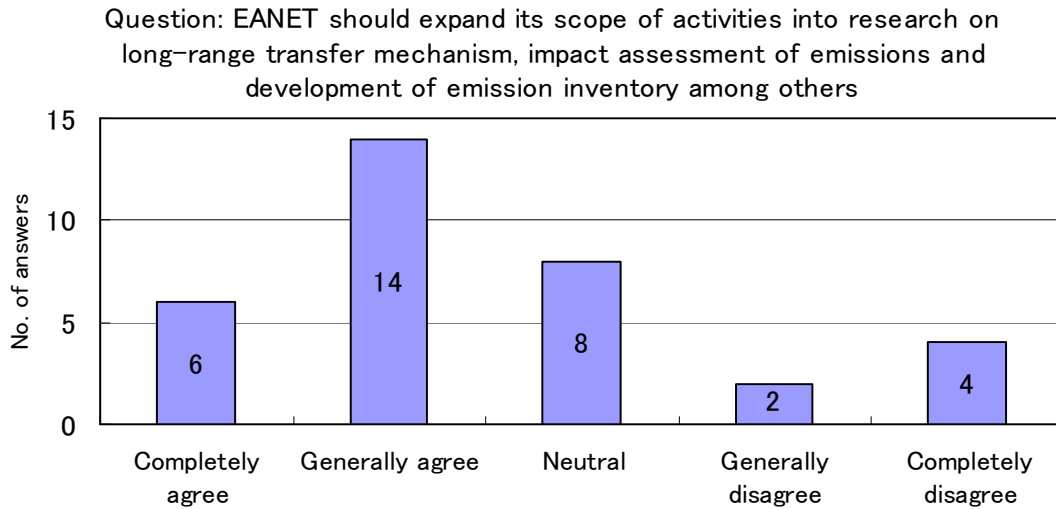
Question: EANET should be equipped with a legal instrumet to monitor acid deposition and transboundary air pollutants



Note: Results of 34 answers provided by 68 respondents

As for the development of a legal instrument to monitor acid deposition and trans-boundary air pollutants, 56 percent of respondents agreed. For the same question, 24 percent answered neutrally, and 21 percent of respondents showed disagreement. Distribution of answers clearly differs according to country.

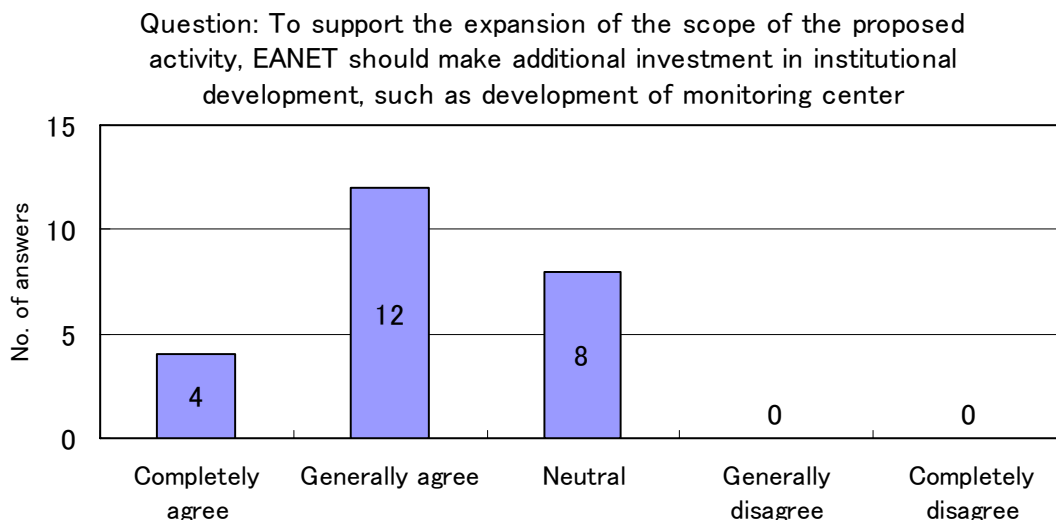
Appendix I-35: Expansion of scope of research activities for EANET



Note: Results of 34 answers provided by 68 respondents

Regarding the scope of research activities, 59 percent of respondents answered that EANET should expand its scope into research on long-range transfer mechanisms (modeling), impact assessment of emissions, and the development of emissions inventories. This shows that many think EANET’s activities should make a more significant contribution to policy-making related to air pollution. However, the distribution of answers among respondents varied remarkably according to country.

Appendix I-36: Further institutionalisation of EANET



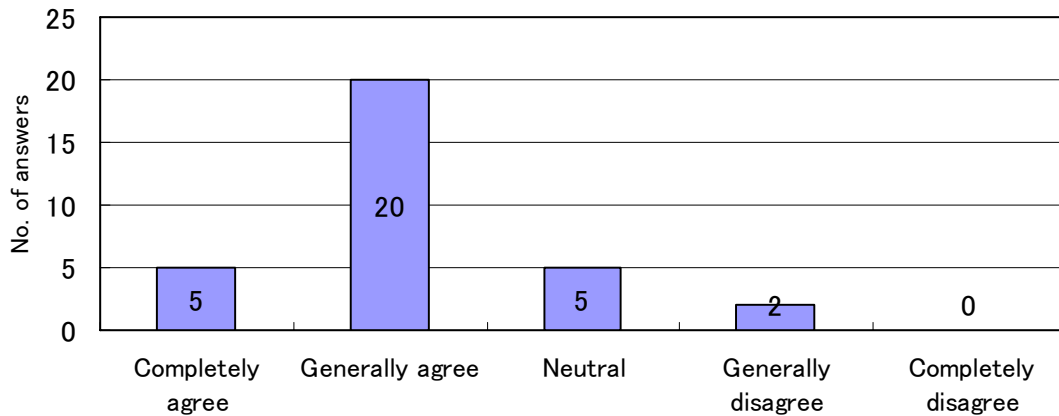
Note: Results of 24 answers provided by 68 respondents

In order to strengthen the scientific research activities of EANET, further institutional development to support the overall scientific assessment may be necessary. In this

regard, many respondents showed agreeable opinions. Specifically, 67 percent answered that EANET should make additional investments into institutional development, and 33 percent answered neutrally to this question. However, it should be noted that answers were provided by only 24 respondents, which is one third of total respondents for the questionnaire.

Appendix I-37: Linkage of EANET activities to other policy forum in NEA

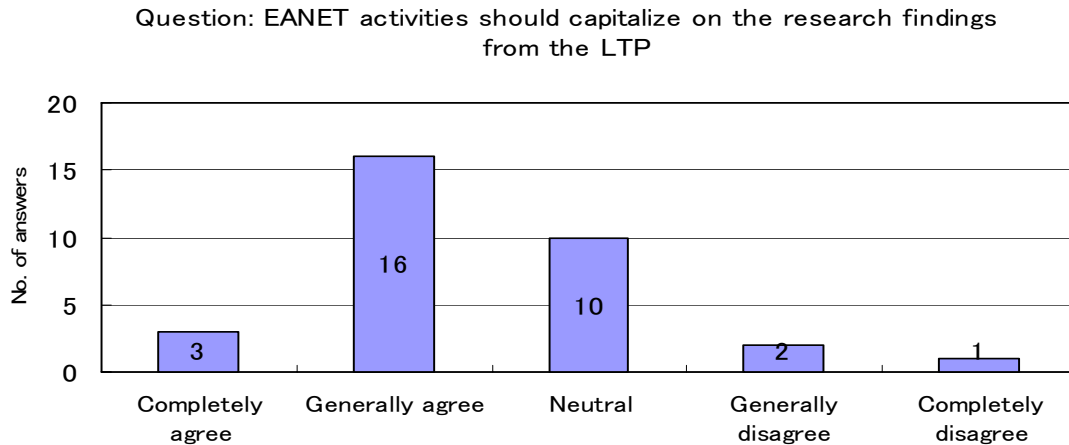
Question: EANET should further strengthen its reporting/consultation activities to relevant regional/subregional policy forum such as TEMM and NESPEC



Note: Results of 32 answers provided by 68 respondents

Concerning utilisation of EANET-conducted scientific assessment by other regional policy forums, such as TEMM and NEASPEC, many respondents had positive opinions. Specifically, 78 percent of respondents agreed that EANET should further strengthen its reporting and consultation activities to relevant regional and subregional policy forums. There were 16 percent giving neutral answers, and 6 percent disagreed. This result indeed indicates the need for formal linkage between scientific research activities and regional policy-making processes.

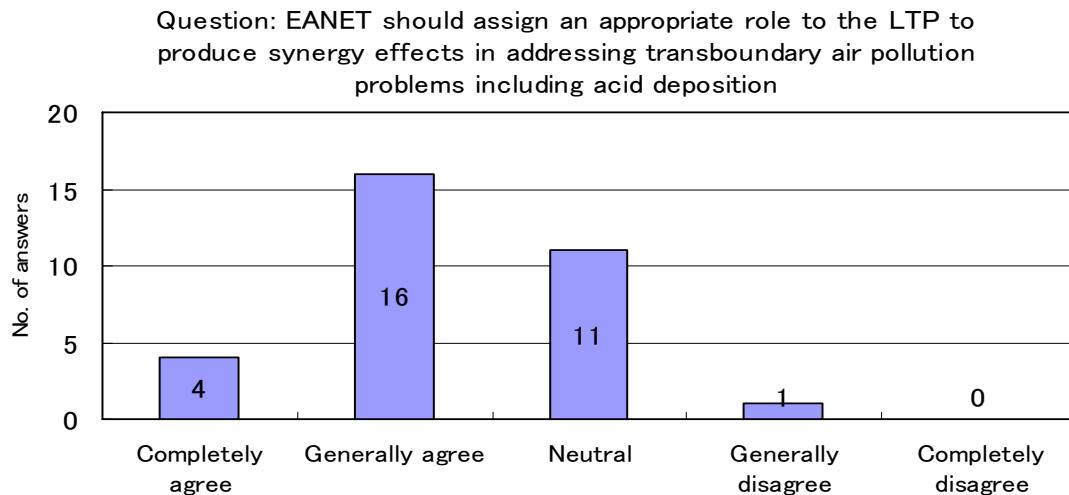
Appendix I-38: Utilisation of LTP research results for EANET activities



Note: Results of 32 answers provided by 68 respondents

Regarding utilisation of LTP research findings for EANET activities, 60 percent of respondents showed agreeable opinions. For the same question, 31 percent provided neutral answers, and 9 percent disagreed. This result indeed indicates the need for coordination between the two programmes, which would eventually enhance the scope of EANET’s research activities, and moreover, regional cooperation activities related air pollution.

Appendix I-39: Development of formal linkage between EANET and LTP



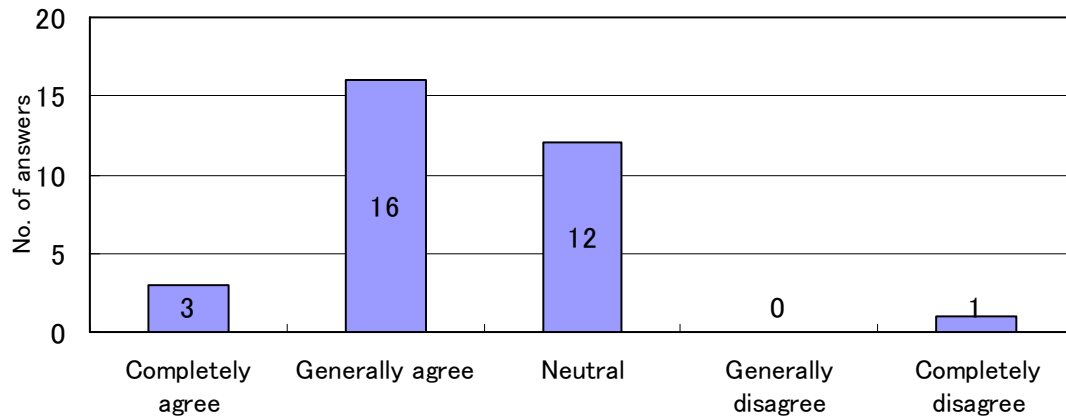
Note: Results of 32 answers provided by 68 respondents

Concerning the development of a formal linkage between EANET and LTP, 63 percent of respondents replied that EANET should assign an appropriate role to the LTP to produce synergy effects in addressing trans-boundary air pollution problems. There were 34 percent giving neutral answers and 3 percent in disagreement on the

same question. This survey result indeed indicates that there should be a formal linkage between EANET and LTP, so that monitoring activities and modeling research can utilise research results in more effective ways.

Appendix I-40: Utilisation of experiences from other regional activities to EANET

Question: EANET should replicate the lessons learned from other environmental cooperation activities, such as LTP



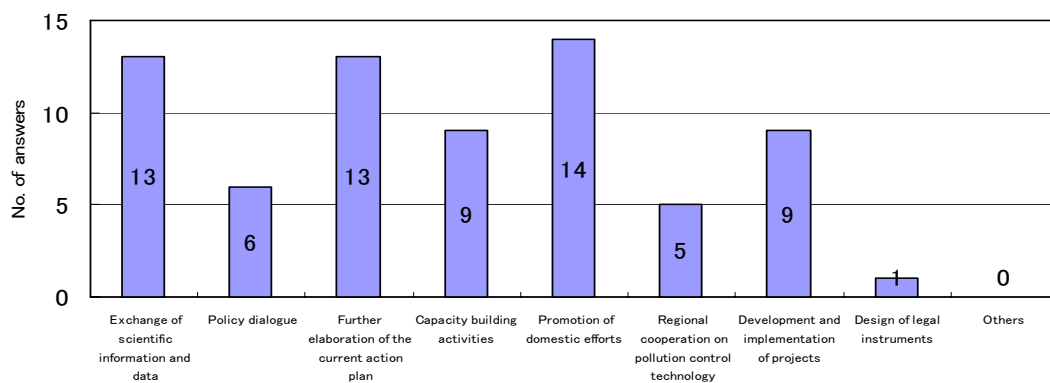
Note: Results of 32 answers provided by 68 respondents

A total of 56 percent of respondents answered that EANET should replicate the lessons learned from other environmental cooperation activities, such as LTP. Neutral answers were given by 38 percent, and 3 percent of disagreed with this item. This result shows the need for sharing experiences in similar environmental cooperation activities within the region.

Results Related to NOWPAP

Appendix I-41: Expected functions of NOWPAP

Question: Catalytic Role to be Played by NOWPAP

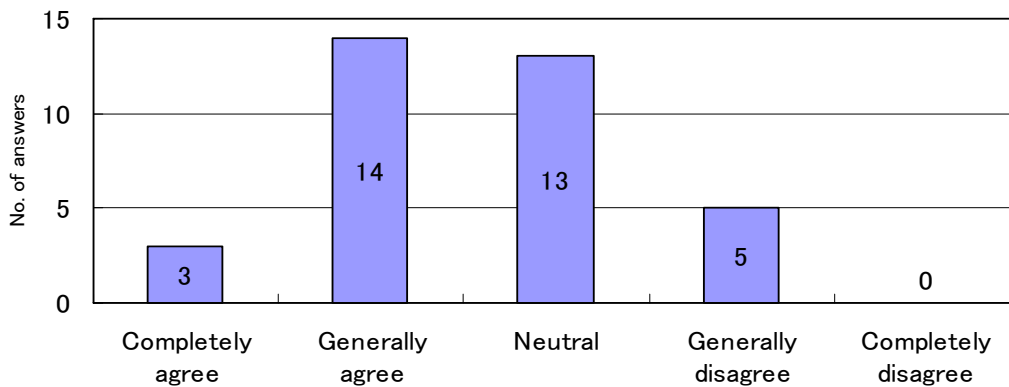


Note: Results of 35 answers provided out of 68 respondents (two answers requested from each respondent).

The most selected catalytic role to be played by NOWPAP was the “promotion of domestic efforts by participating countries”, followed by “exchange of scientific information and data”, and “future elaboration of the current action plan”. These results indicate that while NOWPAP is a framework action plan for management and protection of the marine and coastal environment in NEA, endeavors to strengthen member country’s domestic implementation should be addressed. A notable number of respondents selected “capacity building activities”, and “development and implementation of projects”. Thus, along with framework-level cooperation, specific activities were considered necessary for NOWPAP. In addition, “further elaboration of the current action plan” and “regional cooperation on pollution control technology” were also requested by some respondents.

Appendix I-42: Improvement in environmental quality in NEA through NOWPAP and related activities

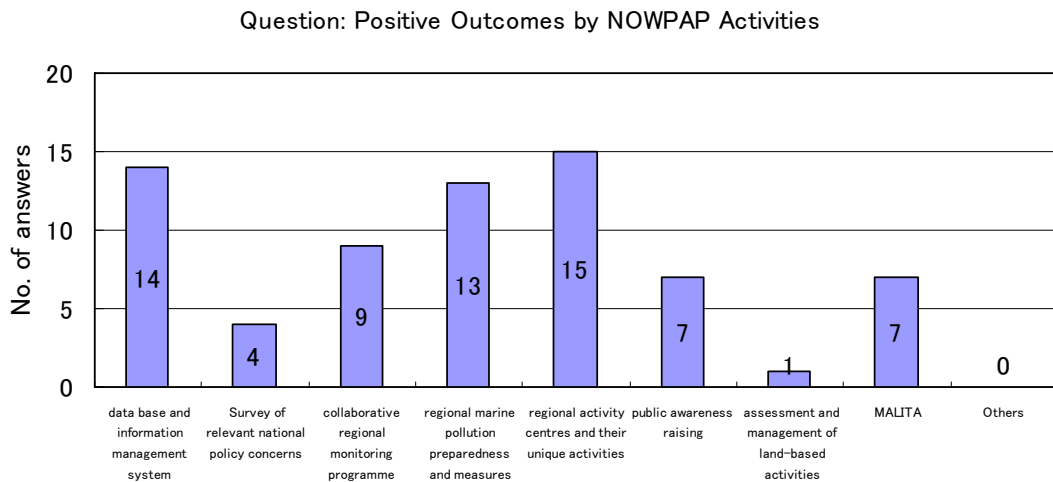
Question: NOWPAP activities improved the environmental quality in NEA



Note: Results of 35 answers provided by 68 respondents

Regarding the effectiveness of NOWPAP activities, opinion was divided with 49 percent in agreement that NOWPAP activities improved the environmental quality in NEA, and 51 percent answering in the neutral or disagreeing.

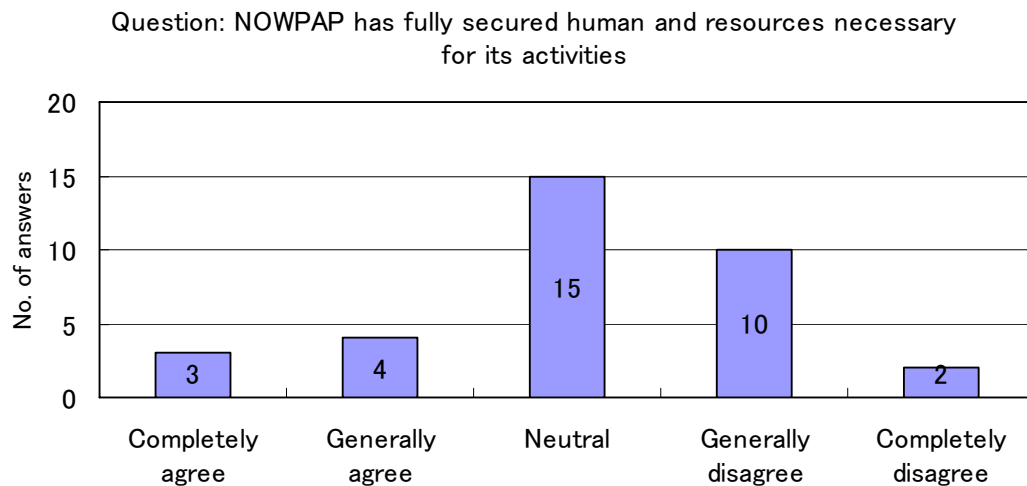
Appendix I-43: Positive Outcomes of NOWPAP and related activities



Note: Results of 35 answers provided by 68 respondents (two answers requested from each respondent).

The establishment of regional activity centers and their activities were chosen among the positive outcomes of NOWPAP activities. The creation of a “data-base and information management system”, as well as “regional marine pollution preparedness and response measures” were also among positive outcomes. Monitoring activities, public awareness-raising and marine litter activities were also considered to be significant results of NOWPAP activities.

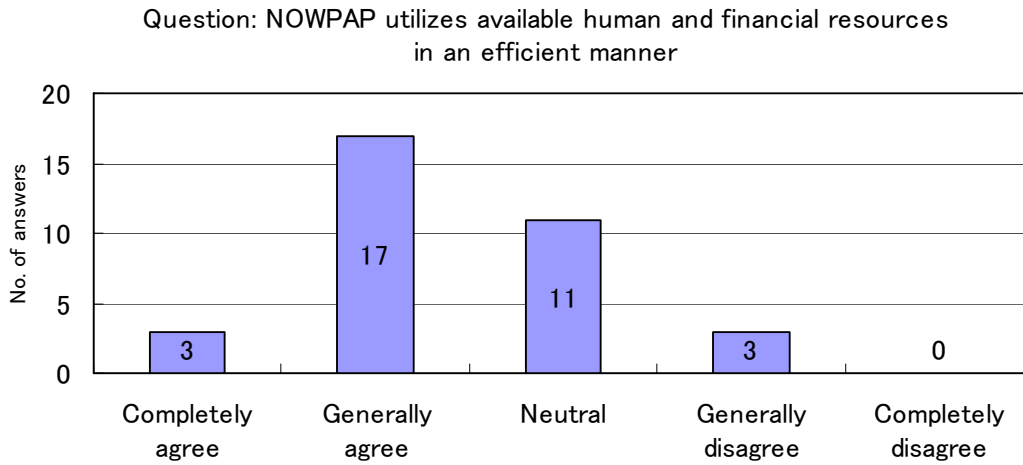
Appendix I-44: Sufficiency of NOWPAP’s human and financial resources



Note: Results of 34 answers provided by 68 respondents

Regarding sufficiency of resources, survey respondents who disagreed were considerably higher (35 percent) than those who agreed (21 percent), with almost half of respondents giving neutral answers (44 percent).

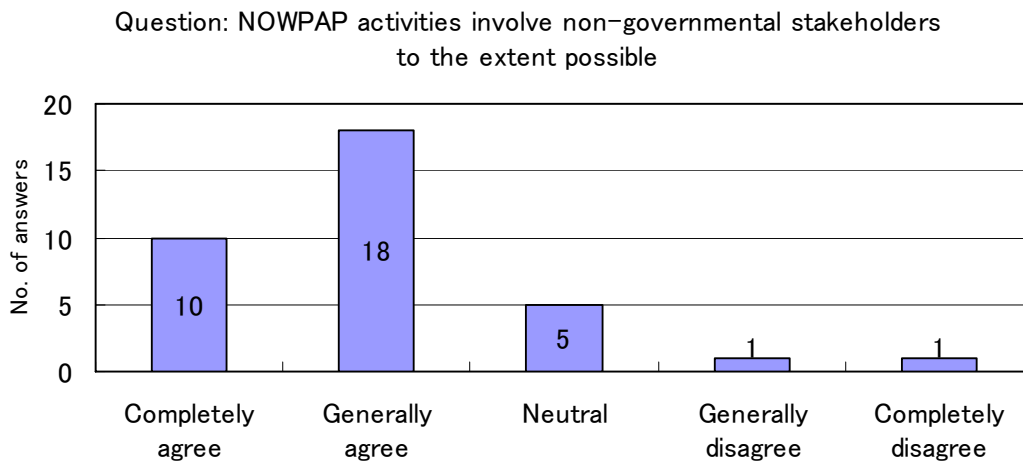
Appendix I-45: Efficiency of the utilisation of human and financial resources by NOWPAP



Note: Results of 34 answers provided by 68 respondents

The efficiency of the NOWPAP activities was noted by nearly 60 percent of respondents.

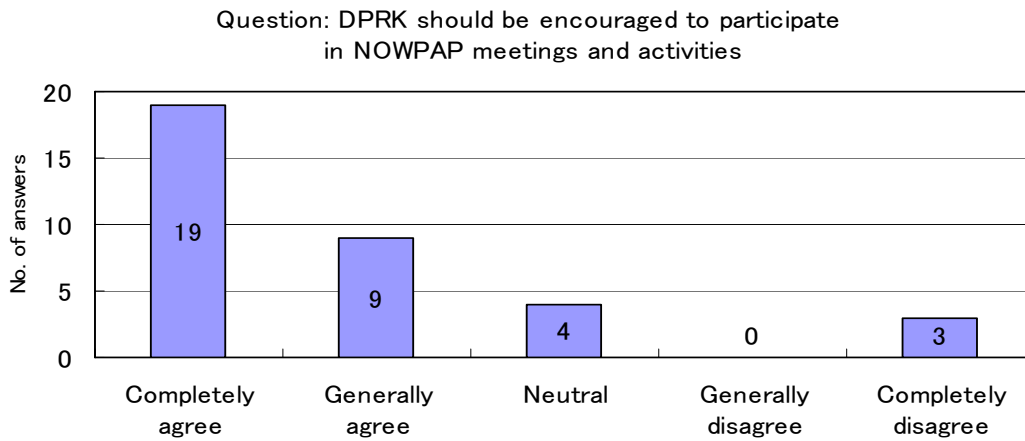
Appendix I-46: Expectation for stakeholder participation in NOWPAP and its related activities



Note: Results of 35 answers provided by 68 respondents

There was found a generally positive agreement among respondents on the participation of non-governmental stakeholders, with 80 percent agreeing.

Appendix I-47: Participation of DPRK in NOWPAP

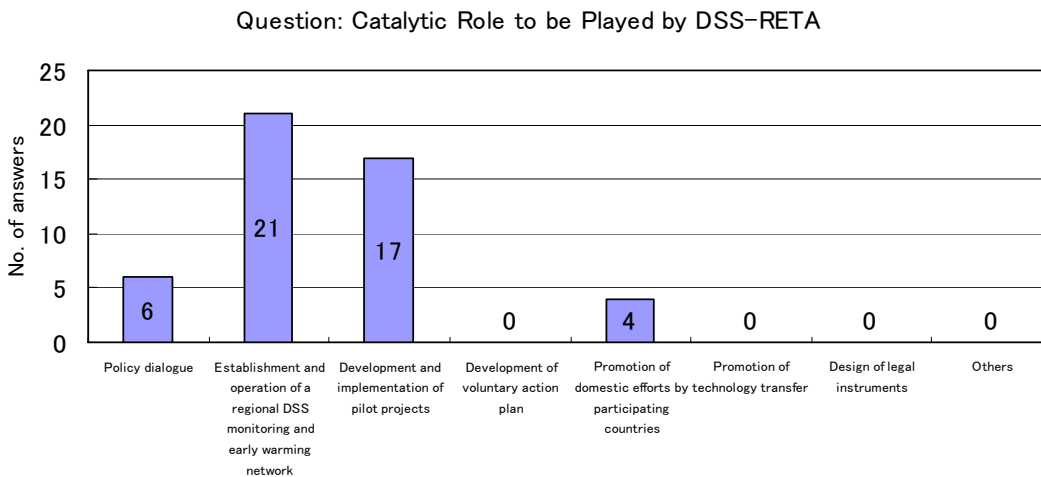


Note: Results of 35 answers provided by 68 respondents

Most respondents had a positive stance toward the participation of the DPRK. Specifically, 80 percent answered that the DPRK should be encouraged to participate in NOWPAP meetings and activities. However, there was some strong disagreement on the inclusion of DPRK as a member state.

Results Related to DSS-RETA

Appendix I-48: Expected function of DSS-RETA

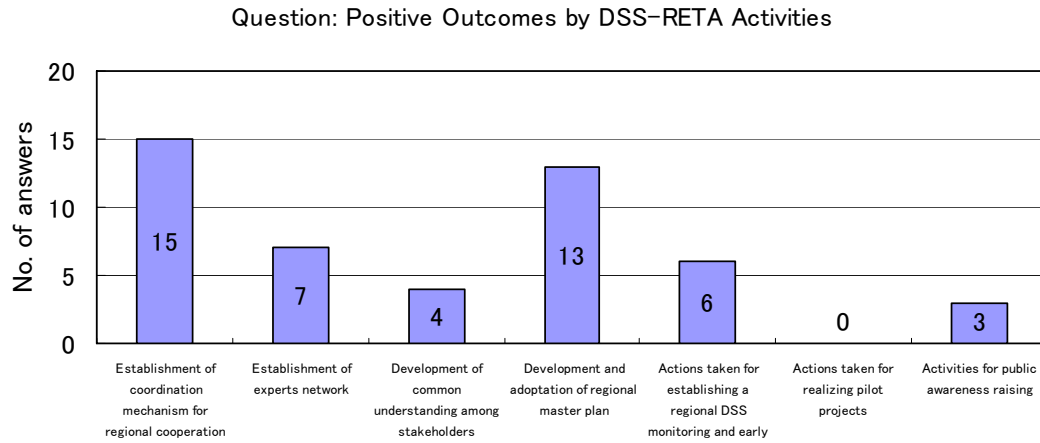


Note: Results of 24 answers provided out of 68 respondents (two answers requested from each respondent)

Most answers were concentrated on two specific roles, namely, “establishment and operation of a regional DSS monitoring and early warning network”, and “development and implementation of pilot projects”. A few responses were given to “policy dialogue”, and “promotion of domestic efforts by participating countries”. One of the expected outputs, which is the establishment and cooperation on a regional

DSS monitoring and early warning network, has been included in the second-phase of the programme. Meanwhile, development and implementation of pilot projects are very much anticipated among respondents, which has not yet been realised.

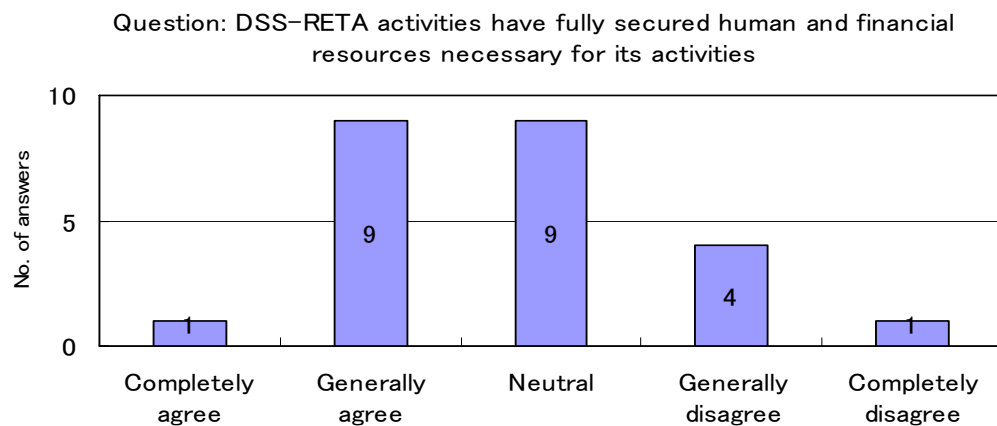
Appendix I-49: Positive Outcomes of DSS-RETA and related activities



Note: Results of 24 answers provided by 68 respondents (two answers requested from each respondent)

“Establishment of coordination mechanism for regional cooperation” was considered to be the most meaningful outcome of DSS-RETA. In addition, “development and adaptation of regional master plan” was also recognised among respondents. Other answers included “establishment of expert network”, “actions taken for establishing a regional DSS monitoring and early warning network”, and “activities for public awareness raising”. No respondent chose “actions taken for realizing pilot projects” as a positive outcome of DSS-RETA.

Appendix I-50: Sufficiency of DSS-RETA’s human and financial resources

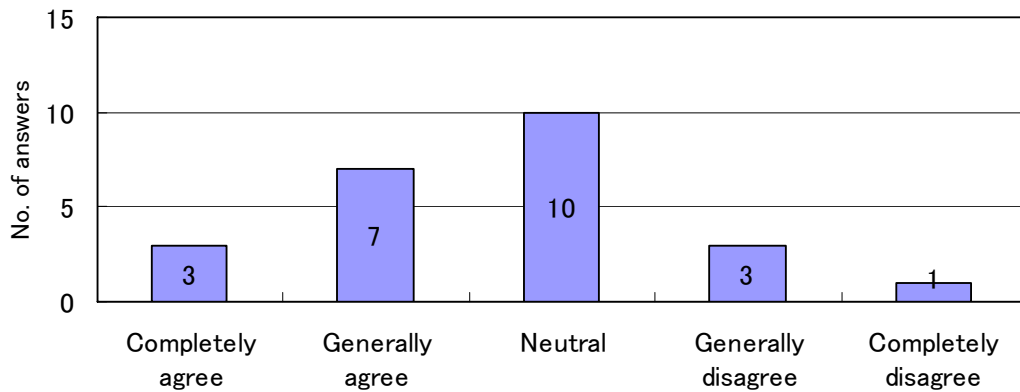


Note: Results of 24 answers provided by 68 respondents

Regarding the sufficiency of resources, while there were slightly more in agreement (42 percent) than neutral (38 percent), there were some opinions supporting resource insufficiency (21 percent).

Appendix I-51: Efficiency of the utilisation of human resources and financial resources by DSS-RETA

Question: DSS-RETA activities utilize available human and financial resources in an efficient manner

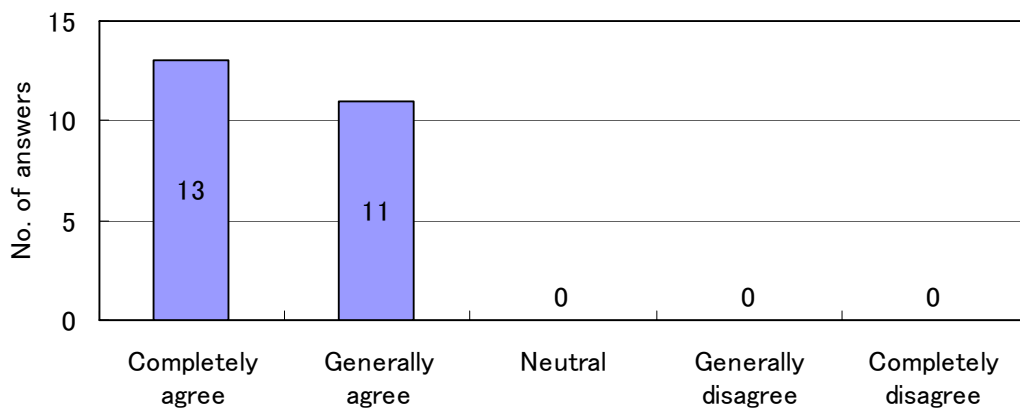


Note: Results of 24 answers provided by 68 respondents

As for the efficiency of resource use, 42 percent was scored for each agreement and neutral answers, and 17 percent for disagreement.

Appendix I-52: Need for linkage among various bilateral level cooperation mechanisms for DSS-RETA

Question: Several bilateral DSS related cooperation need to link each other closely for establishing multilateral cooperation mechanism on DSS monitoring and early warning network

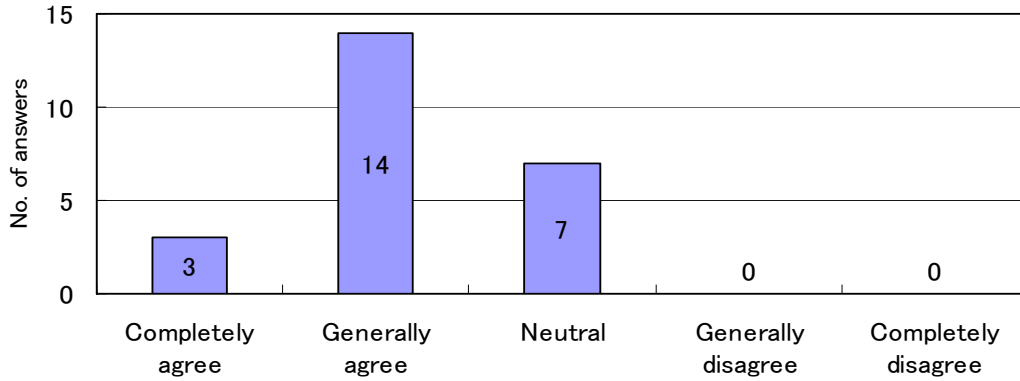


Note: Results of 24 answers provided by 68 respondents

Regarding linkage among various bilateral level cooperation mechanisms, all respondents agreed on this issue.

Appendix I-53: Utilisation of existing bilateral level cooperation activities at the regional level for DSS-RETA

Question: DSS-RETA should replicate the lessons learned from bilateral cooperation activities, such as SINO-KOREA, SINO-JAPAN

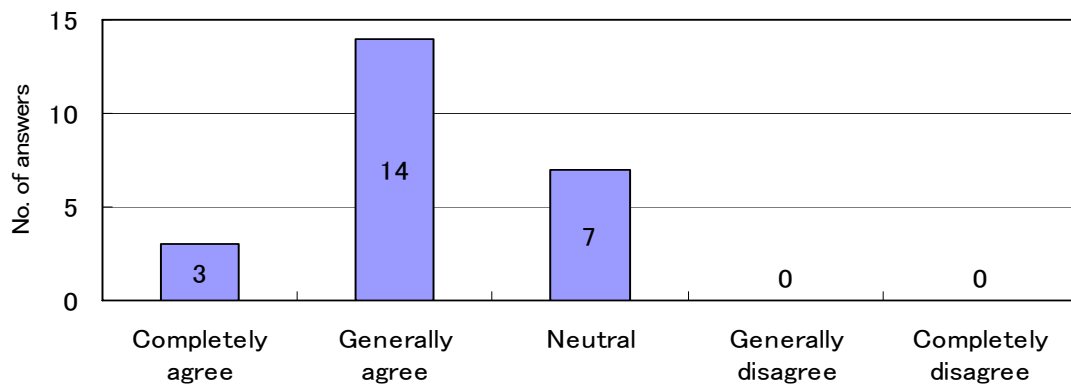


Note: Results of 24 answers provided by 68 respondents

Concerning utilisation of existing bilateral level cooperation activities for the regional level cooperation mechanism, 71 percent of respondents agreed on the replication of lessons learned through bilateral cooperation. Neutral replies were given by 30 percent of respondents, and there were none in disagreement.

Appendix I-54: Need for domestic level follow-up action

Question: DSS-RETA should replicate the lessons learned from bilateral cooperation activities, such as SINO-KOREA, SINO-JAPAN



Most respondents showed strong support for domestic level follow-up actions to meet the objectives of the Master Plan, with 83 percent agreeing that countries should conduct actions for coping with DSS problems based on the DSS-RETA Regional Master Plan in NEA. Neutral answers were given by 17 percent of respondents.

Following is the content of the questionnaire sent to the relevant personal involving in activities of ECMs.

| | | | |
|----|--|--|--|
| ID | | | |
|----|--|--|--|

Survey for (Tripartite) Joint Research on Environmental Management in Northeast Asia

Under the auspices of Tripartite Environment Ministers Meeting among China, Japan and Korea (TEMM), Policy Research Center for Environment and Economy (PRCEE) of State Environmental Protection Administration of China and Institute for Global Environment Strategies (IGES) and Korea Environment Institute (KEI) conduct a survey of government officials, professionals at international organizations and other relevant stakeholders in Northeast Asia*.

This study aims to identify the needs and expectations of major actors and stakeholders to harness the full potential of regional environmental cooperation in addressing common environmental issues. The joint research team is particularly interested in the opinions of those who participate in regional environmental cooperation meetings, implement projects, or provide Secretariat services.

You should know that there are no right or wrong answers and that your responses will be treated confidentially. Survey results will in no way be traceable to individual respondents. Please kindly set aside about 20 minutes of your time to provide us with your opinions. We await receipt of your completed questionnaire by **21 September** either by fax transmission or by email attachment.

Please be assured that the following contact persons are ready to respond to your question at any time.

| | | |
|---|--|--|
| Ms. Chunxiu TIAN Senior Researcher PRCEE, SEPA Email: tian.chunxiu@prcee.org Tel: +86-10-8466-5772 Fax: +86-10-8462-8427 | Mr. Takashi OTSUKA Senior Policy Researcher IGES Email: nea@iges.or.jp Tel: +81-46-855-3862 Fax: +81-46-855-3809 | Mr. Jang Min CHU Research Fellow KEI Email: sinoeco@kei.re.kr Tel: +82-2-380-7773 Fax: +82-2-380-7644 |
|---|--|--|

* For the purpose of this questionnaire, Northeast Asia consists of the following countries: China, Democratic People’s Republic of Korea (DPRK), Japan, Mongolia, Republic of Korea, and Russia

I. Environmental Issues in Northeast Asia

I-1. Many environmental issues affect more than one country at the same time. Therefore those countries often need to cooperate on such issues. Please indicate to which extent you would agree or disagree with the following statements.

(a). In Northeast Asia, regional environmental issues require further collaborative actions.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(b). State of the environment in Northeast Asia will become worse in the future.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

I-2. If you do not currently live in a country in Northeast Asia, please skip this question and proceed to I-3.

I-3. Please choose two of the most significant environmental issues in your country, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Air pollution (acid deposition and transboundary air pollution)
2. Land degradation
3. Dust and sandstorm (Asian dust)
4. Marine environmental problem
5. Biodiversity loss
6. Transboundary movement of waste, including E-waste
7. Chemical pollution
8. Environment and energy
9. Others (please specify _____)

I-3. Please choose two of the most significant, CURRENT environmental issues in Northeast Asia, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Air pollution (acid deposition and transboundary air pollution)
2. Land degradation
3. Dust and sandstorm (Asian dust)
4. Marine environmental problem
5. Biodiversity loss
6. Transboundary movement of waste, including E-waste
7. Chemical pollution
8. Environment and energy
9. Others (please specify _____)

I-4. Please choose two of the most significant, FUTURE environmental issues in Northeast Asia, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Air pollution (acid deposition and transboundary air pollution)
2. Land degradation
3. Dust and sandstorm (Asian dust)
4. Marine environmental problem
5. Biodiversity loss
6. Transboundary movement of waste, including E-waste
7. Chemical pollution
8. Environment and energy
9. Others (please specify _____)

II. Regional Environmental Cooperation Mechanisms and Activities in Northeast Asia

Please indicate all the regional environmental cooperation mechanisms and activities that you have known. In the following pages, you will be asked to provide your opinions on their activities and performance.

_____ TEMM (Tripartite Environment Ministers Meeting)

_____ NEASPEC (Northeast Asian Subregional Programme for Environmental Cooperation)

_____ NEAC (Northeast Asian Conference on Environmental Cooperation)

_____ EANET (Acid Deposition Monitoring Network in East Asia)

_____ LTP (Joint research on Long-range transboundary air pollutants in Northeast Asia)

_____ NOWPAP (Northwest Pacific Action Plan)

_____ YSLME (Strategic Action Programme for Yellow Sea Large Marine Ecosystem)

_____ DSS-RETA (Dust and Sandstorm regional technical assistance project)

Please indicate other regional environmental cooperation mechanisms and activities that you know of, if any:

II-1. TEMM (Tripartite Environment Ministers Meeting)

If you are not familiar with TEMM and its activities, please skip this section and proceed to Section II-2.

(a) Please choose two TEMM activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Announcement of joint communiqué
2. Ecological conservation project
3. Freshwater (lake) pollution prevention project
4. Environmental industry cooperation
5. Joint environmental training project
6. Tripartite Environmental Education Network (TEEN)
7. DSS-related activities (ex. Tripartite Director General Meeting on Dust and Sandstorms).
8. Others (please indicate: _____)

(b) Please choose two types of activities where TEMM should play a catalytic role, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Exchange of scientific information
2. Policy dialogue
3. Identification of priority cooperation area
4. Development of voluntary regional environmental action plan
5. Implementation of pilot projects
6. Promotion of technology transfer
7. Design of legal instruments
8. Others (please indicate: _____)

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) TEMM is addressing priority environmental issues in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(ii) TEMM activities improved the environmental quality in Northeast Asia

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) TEMM should extend its country membership in a phased manner to evolve into “Northeast Asian Environmental Ministers Meeting.”

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) TEMM should keep its membership limited to the current three parties and invite other countries in Northeast Asia when and where it is appropriate.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) TEMM should take leadership environmental cooperation in Northeast Asia.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(vi) TEMM should be equipped with a financial mechanism with mandatory contribution of member countries.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(vii) TEMM should have an independent, permanent Secretariat.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(viii) TEMM has fully secured human and financial resources necessary for its activities.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(ix) TEMM utilizes available human and financial resources in an efficient manner.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(x) TEMM should further enhance participation of relevant stakeholders and actors in its activities.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

II-2. NEASPEC (Northeast Asian Subregional Programme of Environmental Cooperation)

If you are not familiar with NEASPEC and its activities, please skip this section and proceed to Section II-3.

(a) Please choose two NEASPEC activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| | | |
|-------|--------|--|
| First | Second | |
|-------|--------|--|

1. Production of “NEASPEC Framework” and “Vision Statement”
2. Coal-fired power plant and air pollution reduction related projects
3. North East Asian Centre of Environmental Data Training
4. Nature conservation related projects
5. Eco-efficiency related activity
6. Discussion on strengthening institutional and financial arrangements
7. Others (please indicate: _____)

(b) Please choose two types of activities where NEASPEC should play a catalytic role, and rank them in order.

| | | |
|-------|--------|--|
| First | Second | |
|-------|--------|--|

1. Exchange of scientific information
2. Policy dialogue
3. Identification of priority cooperation area
4. Development of voluntary regional environmental action plan
5. Implementation of pilot projects
6. Promotion of technology transfer
7. Design of legal instruments
8. Others (please indicate: _____)

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) NEASPEC is addressing priority environmental issues in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(ii) NEASPEC activities improved the environmental quality in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) NEASPEC should take leadership in Northeast Asia environmental cooperation.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) NEASPEC should be equipped with a financial mechanism with mandatory contribution of member countries

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) NEASPEC should have a permanent Secretariat outside the United Nations system.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vi) NEASPEC has fully secured human and financial resources necessary for its activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vii) NEASPEC utilizes available human and financial resources in an efficient manner.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(viii) NEASPEC should further enhance participation of relevant stakeholders and actors in its activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

II-3. NEAC (Northeast Asian Conference for Environmental Cooperation)

If you are not familiar with NEAC and its activities, please skip this section and proceed to Section II-4.

(a) Please choose two NEAC activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| | | |
|-------|--------|--|
| First | Second | |
|-------|--------|--|

1. Annual meetings and the “Chairman’s Summary”
2. Participation of local governments to the annual meetings
3. Participation of research institutes
4. Participation of NGOs
5. Exchange of information on relevant environmental policies
6. Knowledge sharing activities
7. Others (please indicate: _____)

(b) Please choose two types of activities where NEAC should play a catalytic role, and rank them in order.

| | | |
|-------|--------|--|
| First | Second | |
|-------|--------|--|

1. Exchange of scientific information
2. Policy dialogue
3. Identification of priority cooperation area
4. Development of voluntary regional environmental action plan
5. Implementation of pilot projects
6. Promotion of technology transfer
7. Design of legal instruments
8. Others (please indicate: _____)

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) NEAC is addressing priority environmental issues in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(ii) NEAC activities improved the environmental quality in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) NEAC has fully secured human and financial resources necessary for its activities.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) NEAC utilizes available human and financial resources in an efficient manner.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) NEAC should seek ways to collaborate with other countries when and where it is appropriate.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vi) NEAC should become a subsidiary body of another regional cooperation mechanism such as TEMM and NEASPEC.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vii) NEAC should further enhance participation of relevant stakeholders and actors in its activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

II-4. EANET (Acid Deposition Monitoring Network in East Asia)

If you are not familiar with EANET and its activities, please skip this section and proceed to the next section.

(a) Please choose two EANET activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| First | Second |
|-------|--------|
|-------|--------|

1. Annual meeting report
2. Acid deposition monitoring
3. Compilation, evaluation, storage and provision of data
4. Promotion of quality assurance and quality control (QA/QC)
5. Implementation of technical support and capacity building activities
6. Promotion of research and studies related to acid deposition problems
7. Promotion of public awareness activities
8. Others (please indicate: _____)

(b) Please choose two types of activities where EANET should play a catalytic role, and rank them in order.

| First | Second |
|-------|--------|
|-------|--------|

1. Exchange of scientific information and data
2. Improvement of current monitoring network
3. Increase in the number of monitoring sites
4. Policy dialogue
5. Strengthening of related scientific research
6. Capacity building
7. Promotion of domestic efforts by participating countries
8. Cooperation on pollution control technology and equipment
9. Design of legal instruments
10. Others (please indicate: _____)

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) EANET is addressing priority environmental issues in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(ii) EANET activities improved the environmental quality in Northeast Asia

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) EANET has fully secured human and financial resources necessary for its activities.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) EANET utilizes available human and financial resources in an efficient manner.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) EANET should further enhance participation of relevant stakeholders and actors in its activities.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(vi) EANET should be equipped with a legal instrument to monitor acid deposition and transboundary air pollutants.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(vii) EANET should expand its scope of activities into research on long-range transfer mechanism, impact assessment of emissions and development of emission inventory among others.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(vii-a) If you answer either 1 or 2 in the above question (vi), please indicate if you agree or disagree with the following statement: To support the expansion of the scope of the activities proposed above, EANET should make additional investment in institutional development, such as development of monitoring center.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(viii) EANET should further strengthen its reporting/consultation activities to relevant regional/subregional policy forum such as TEMM and NEASPEC.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(ix) EANET activities should capitalize on the research findings from the LTP*.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(x) EANET should assign an appropriate role to the LTP to produce synergy effects in addressing transboundary air pollution problems including acid deposition.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(xi) EANET should replicate the lessons learned from other environmental cooperation activities, such as LTP.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

* LTP stands for the Joint research on Long-range transboundary air pollutants in Northeast Asia.

II-5. NOWPAP (Northwest Pacific Action Plan)

If you are not familiar with NOWPAP and its activities, please skip this section and proceed to the next section.

(a) Please choose two NOWPAP activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| First | Second |
|--|--------|
| 1. Establishment of data base and information management system | |
| 2. Survey of relevant national policy concerns | |
| 3. Establishment of collaborative regional monitoring programme | |
| 4. Development of regional marine pollution preparedness and response measures | |
| 5. Establishment of regional activity centres and their unique activities | |
| 6. Activities on public awareness raising | |
| 7. Project on assessment and management of land-based activities | |
| 8. Project on marine litter activity (MALITA) | |
| 9. Others (please indicate: _____) | |

(b) Please choose two types of activities where NOWPAP should play a catalytic role, and rank them in order.

| First | Second |
|---|--------|
| 1. Exchange of scientific information and data | |
| 2. Policy dialogue | |
| 3. Further elaboration of the current action plan | |
| 4. Capacity building activities | |
| 5. Promotion of domestic efforts by participating countries | |
| 6. Regional cooperation on pollution control technology | |
| 7. Development and implementation of projects | |
| 8. Design of legal instruments | |
| 9. Others (please indicate: _____) | |

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) NOWPAP is addressing priority environmental issues in Northeast Asia.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

(ii) NOWPAP activities improved the environmental quality in Northeast Asia.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) NOWPAP has fully secured human and financial resources necessary for its activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) NOWPAP utilizes available human and financial resources in an efficient manner.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) DPRK should be encouraged to participate in NOWPAP meetings and activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vi) NOWPAP activities involve non-governmental stakeholders (i.e., scientists, experts, private sector, NGOs and local communities) to the extent possible.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vii) NOWPAP should replicate the lessons learned from other marine environmental cooperation activities, such as YSLME.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

II-6. DSS-RETA (Dust and Sandstorm regional technical assistance project)

If you are not familiar with DSS-RETA and its follow-up activities, please skip this section and proceed to the next section.

(a) Please choose two DSS-RETA activities that produced positive outcomes for the Northeast Asian environmental cooperation, and rank them in order.

| First | Second |
|-------|--------|
|-------|--------|

1. Establishment of coordination mechanism for regional cooperation
2. Establishment of experts network
3. Development of common understanding among stakeholders
4. Development and adoption of regional master plan
5. Actions taken for establishing a regional DSS monitoring and early warning network
6. Actions taken for realizing pilot projects
7. Activities on public awareness raising
8. Others (please indicate: _____)

(b) Please choose two types of activities to address DSS where the DSS-RETA Regional Master Plan can provide the major source of guidance.

| First | Second |
|-------|--------|
|-------|--------|

1. Policy dialogue
2. Establishment and operation of a regional DSS monitoring and early warning network
3. Development and implementation of pilot projects
4. Development of voluntary action plan
5. Promotion of domestic efforts by participating countries
6. Promotion of technology transfer
7. Design of legal instruments
8. Others (please indicate: _____)

(c) Please indicate to which extent you would agree or disagree with the following statements.

(i) DSS-RETA Regional Master Plan is addressing priority environmental issues in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(ii) DSS-RETA activities have fully secured human and financial resources necessary for its activities.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iii) DSS-RETA activities utilize available human and financial resources in an efficient manner.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(iv) Countries should conduct actions for coping with DSS problems based on DSS-RETA Regional Master Plan Guidance in Northeast Asia.

- 1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(v) Several bilateral DSS related cooperation need to link each other closely for establishing multilateral cooperation mechanism on DSS monitoring and early warning network

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vi) DPRK should be encouraged to participate in implementing DSS-RETA Regional Master Plan activities.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(vii) TEMM needs to conduct a leading role to implement DSS-RETA Regional Master Plan activities through operating Tripartite Director General Meeting on Dust and Sandstorms.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

(viii) DSS-RETA should replicate the lessons learned from bilateral cooperation activities, such as SINO-KOREA, SINO-JAPAN.

1.____ Completely agree 2.____ Generally agree 3.____ Neutral 4.____ Generally disagree 5.____ Completely disagree

(Additional Comment: _____)

III. Measures for promoting the Regional Environmental Cooperation Mechanisms and Activities in Northeast Asia

III-1. Please indicate to which extent you would agree or disagree with the following statement: In order to build a more effective environmental cooperation mechanism in Northeast Asia, cooperation bodies and programs need to be streamlined.

1. ___ Completely agree 2. ___ Generally agree 3. ___ Neutral 4. ___ Generally disagree 5. ___ Completely disagree

(Additional Comment: _____)

III-2. Please choose two actors listed below who are CURRENTLY playing a major role in regional environmental cooperation in Northeast Asia, and rank them in order

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Central government 2. Local governments 3. Private sector
 4. Research institutions (experts) 5. NGOs/NPOs 6. International organizations
 7. Others (_____)

III-3. Please choose two actors listed below that are EXPECTED to play an increasingly important role in improving the regional environmental cooperation in Northeast Asia in the future, and rank them in order

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Central government 2. Local governments 3. Private sector
 4. Research institutions (experts) 5. NGOs/NPOs 6. International organizations
 7. Others (_____)

III-4. Please choose two environmental issues that were ameliorated (i.e. getting better) through Northeast Asian environmental cooperation, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Air pollution (acid deposition and transboundary air pollution)
 2. Land degradation
 3. Dust and sandstorm (Asian dust)
 4. Marine environmental problem
 5. Biodiversity loss
 6. Transboundary movement of waste, including E-waste
 7. Chemical pollution
 8. Environment and energy
 9. Others (please specify _____)

III-5. Please choose two environmental issues that deserve more attention in the future in Northeast Asian environmental cooperation, and rank them in order.

| | |
|-------|--------|
| First | Second |
|-------|--------|

1. Air pollution (acid deposition and transboundary air pollution)
 2. Land degradation
 3. Dust and sandstorm (Asian dust)
 4. Marine environmental problem
 5. Biodiversity loss
 6. Transboundary movement of waste, including E-waste
 7. Chemical pollution
 8. Environment and energy
 9. Others (please specify _____)

III-6. Please choose two concrete achievements through Northeast Asian environmental cooperation, and rank them in order.

| First | Second |
|---|--------|
| <ol style="list-style-type: none"> 1. Better environmental quality in Northeast Asia 2. Better understanding of regional environmental problems 3. Establishment of regional environmental monitoring system 4. Strengthened regional environmental governance 5. Increased opportunities of the regional environmental cooperation 6. Better implementation of environmental policy at the national level 7. Increased ODA flows among Northeast Asian countries 8. Increase of technology transfer or of green investment in the private sector of Northeast Asian countries 9. Enhanced cooperation among NGOs/NPOs in Northeast Asia 10. Others () | |

III-7. Please choose two concrete measures by which your country can contribute to the Northeast Asia environmental cooperation, and rank them in order.

| First | Second |
|--|--------|
| <ol style="list-style-type: none"> 1. Enforcement of domestic environmental policy 2. Raising the profile of environmental issues in national policy-making 3. Increased budget allocation for environmental cooperation 4. Increased responsibility of professional staffs responsible for environmental cooperation 5. Restructuring of government agencies in charge of environmental cooperation activities 6. Establishment of a new government organization to oversee the environmental cooperation activities 7. Enhanced cooperation at the local government level 8. Enhances cooperation of non-governmental actors, such as NGOs/NPOs and private sector 9. Others() | |

IV. Respondents' information (for statistical analysis)

IV-1. Which type of organizations are you working for?

1. ___ Central government 2. ___ Local government 3. ___ Research institution
4. ___ Universities 5. ___ Private company 6. ___ NGO/NPO
7. ___ International organization 8. ___ Others (please specify)

IV-2. Which field is your current working field?

1. ___ Environment 2. ___ Foreign affairs 3. ___ Industry 4. ___ Energy
5. ___ Marine 6. ___ Forestry 7. ___ Meteorology
8. ___ Others (please specify)

IV-3. How many years of experience do you have in the field?

1. ___ less than 1 year
2. ___ 1 and under 3 years
3. ___ 3 and under 5 years
4. ___ 5 and under 7 years
5. ___ 7 and under 10 years
6. ___ 10 years or more

IV-4. Have you participated in an environment cooperation activity in NEA?

1. ___ Yes 2. ___ No

IV-5. Please choose your current country of residence

1. ___ China 2. ___ DPRK 3. ___ Japan
4. ___ Mongolia 5. ___ Republic of Korea 6. ___ Russia
7. ___ Others (please specify)

Thank you very much for your kind cooperation in completing the questionnaire

Appendix II-1: overall results of the TEMM's activities

| Output | Outcome |
|---|--|
| Joint Communi qué | <ul style="list-style-type: none"> - Implementation of activities and projects listed in table 2 - Awareness and trust building among three ministers |
| Ecological Conservation in Northeast Asia | <ul style="list-style-type: none"> - First expert workshop on ecological conservation in northwest China, December 2000, in Beijing - Second workshop on the conservation project on Yinshan Mountain region, December 2001, ROK - Third workshop on cooperation on the Inner Mongolian Project and Dust and Sandstorms, February 2003, Beijing - Fourth workshop on ecological conservation in northwest China 27-28 February 2006 - Joint Seminars on the ecological conservation in Inner Mongolia and Inner Mongolia grassland - First study tour on Capacity Building for Ecological Environmental Protection in Inner Mongolia, 25-30 August 2003 - Second study tour in Soraksan National Park and Korean Botanical Garden in ROK, 23-28 August 2004 - Third study tour in Chungnam Province, Gyeryongsan Gyeryongsan national park, and Korea Research Institute of Bioscience and Biotechnology (KRIBB), etc. 10-15 September 2006 - Eco-Village Pilot Project launched in Inner Mongolia and China, First, Second, and Third Phases (2002-) |
| Freshwater pollution Prevention projects | <p>West Lake water quality management system I \ " Project</p> <p>Construction of the West-Lake environment database and the GIS based system</p> <p>Build up the calculation program of the pollutants generation/discharge load</p> <p>Booklet: A Guideline for Lake Water Quality Management</p> |
| Environmental Industry Cooperation | |
| Joint Environmental Training | <p>First program at Environmental Research and Training Institute (NETI): 27 November – 4 December 2001 (20 participants: national and local government officials from China, Japan, and ROK)</p> <p>Second program at National Institute of Environmental Research (NIER): 3-10 December 2002 (19 participants: officials from China, Japan, and ROK)</p> <p>Third Program at Center for Environmental Education and Communication (CEED): 2-9 December 2003</p> <p>Forth program at NETI: 22-26 November 2004 (20 participants)</p> <p>Fifth program at NIERC 20-26 November 2005 (18 participants)</p> <p>Sixth program at CEED, 2006</p> |
| TEMM website | |
| Tripartite Environmental Education Network | <ul style="list-style-type: none"> - First Workshop and Symposium: 29 November – 3 December 2000: in Shizuoka, Japan (30 participants: environmental education experts, practitioners and NGO representatives from three countries) - Second Workshop and Symposium: 29 October – 2 November 2001 in Beijing, China (40 experts and 300 high school students and teachers) |

| | |
|----------------------|---|
| | <p>from 3 countries)</p> <ul style="list-style-type: none"> - Third Workshop and Symposium 25-27 September 2002 in Seoul, ROK (40 experts) - Forth Workshop and Symposium 15-17 January 2004 in Shizuoka, Japan - Fifth Workshop and Symposium December 2004 in Tianjin, China - Sixth Workshop and Symposium December 2005 in Seoul, ROK |
| DSS related projects | |

Appendix II-2: Overall results of the NEASEPEC's activities, in terms of output and outcomes.

| Output | Outcome |
|--|--|
| Two publications | |
| 13 Meetings | |
| Training for sulphur dioxide reduction in coal-fired power plants (subproject I) | |
| Demonstration of low-air pollution coal-fired power plant technology (subproject II) | |
| Environmental pollution data collection, comparability and analysis (subproject III) | |
| Regional training for reducing pollution from coal-fired power plants | <ul style="list-style-type: none"> • Sub-regional training center at KEPRI established; • Two training workshops were organized (10-21 December 2001, 5 participants from PRC and Mongolia) (3-16 December 2002; 6 participants from PRC and Mongolia) |
| Environmental Monitoring, Data Collection, Comparability and Analysis | <ul style="list-style-type: none"> • Sub-regional information center established. • Website finalized. • Two expert group meetings on Capacity Building and Data Inter-compatibility for Ambient Air Quality Monitoring in NEA (Japan in March 2002 and ROK in April 2002) • Report on Recommendations on Methodologies of Monitoring Air Pollution Emissions • Training workshop on Emission Monitoring and Estimation in NEA (RPC in February 2003; 40 participants from PRC, Mongolia, ROK, Japan, and Russia) • On-site Assessment Workshop on Capacity Building and Data Inter-compatibility for Ambient Air Quality Monitoirng in NEA (22-24 September 2003 in Mongolia; 21 participants from PRC, Japan, ROK, and Mongolia) |
| Action plans for improving efficiency of particulate abatement systems | <ul style="list-style-type: none"> • Two on-site workshops (PRC; 12 participants from PRC, Japan, ROK, and Mongolia) • Recommendation to improve the efficiency of the particulate abatement system by optimizing the entire plant operation and |

| | |
|--|---|
| in existing power plants | <p>maximizing the electrostatic precipitator performance.</p> <ul style="list-style-type: none"> • Action plans for 2 power plants (Mongolia, and PRC). • A sub-regional workshop on Action Plan for improvement of the Particulate Abatement Systems of Coal-fired Power Plants (7-8 June 2004, Beijing, 18 representatives from PRC, ROK, and Mongolia). • Proposal to develop national standards on air emission from coal-fired power plant in Mongolia. |
| Air Pollution Abatement Plans | |
| SO2 Emission Regulation and Compliance | |
| Mongolian Power Plant Emission Standards | |
| Knowledge Transfer and Dissemination | |
| Demonstration Project and Management Modules | |

Appendix II-3: overall results of the EANET activities

| Output | Outcome |
|--|---|
| Workshop on Public Awareness (23 February, Niigata: February) | 20 participants from China, Indonesia, Japan, Malaysia, Philippines, Thailand, and Russia. (NGOs, Academic institutions, School teachers, local governments) |
| Intergovernmental Meetings | |
| Individual Training at ADORC (February-March) | Three trainees |
| Individual Training a ADORC (October-November) | Three trainees |
| JICA Country Focused Training Course on the Acid Deposition Monitoring Network in East Asia (October-December) | Ten trainees |
| Inter-laboratory Comparison Project | Report of the Inter-Laboratory Comparison Project: Wet deposition Report of the Inter-Laboratory Comparison Project: Soil Report of the Inter-Laboratory Comparison Project: Inland Aquatic Environment |
| Report of the QA/QC Program for the Air Concentration Monitoring in East Asia | |
| Data Report on the Acid Deposition in the East Asian Region 2000 | |
| Second Workshop on Public | 50 participants (from EANET participating countries: |

| | |
|---|---|
| Awareness (21-22 February, Beijing) | NGOs, academic institutions, governments, experts on environmental education) |
| Individual Training at ADORC (February-March) | Two trainees |
| Individual Training at ADORC (October-November) | Four trainees |
| JICA Country Focused Training Course on the Acid Deposition Monitoring Network in East Asia (October-December) | Nine trainees |
| Workshop on Elaboration and Development of Forest Monitoring in East Asia (EANET/ICP Forest) (16-19 December, Seremban, Malaysia) | 28 participants (from ten EANET participating countries, and experts on forest monitoring) |
| Inter-laboratory Comparison Project | Report of the Inter-Laboratory Comparison Project: Wet deposition Report of the Inter-Laboratory Comparison Project: Soil Report of the Inter-Laboratory Comparison Project: Inland Aquatic Environment |
| Data Report on the Acid Deposition in the East Asian Region 2001 | |
| Inter-laboratory Comparison Project 2002 | |
| Third Workshop on Public Awareness (20-21 February, Niigata) | 30 participants (from ten EANET participating countries: government, NGOs, Academic institutions, local government) |
| Individual Training at ADORC (October-November) | Three trainees |
| JICA Country Focused Training Course on the Acid Deposition Monitoring Network in East Asia (October-December) | Ten trainees |
| Technical Document for Filter Pack Method in East Asia | |
| Fourth Workshop on Public Awareness (19-20 December, Niigata) | 30 participants (from EANET participating countries: government, government, NGOs, Academic institutions, local government, local school, and local NGOs) 200 local residents in Niigata (Fifth grade students, and experts) |
| Inter-laboratory Comparison Project | Report of the Inter-Laboratory Comparison Project: Wet deposition Report of the Inter-Laboratory Comparison Project: Soil Report of the Inter-Laboratory Comparison Project: Inland Aquatic Environment |
| Technical Document for Filter Pack Method in East Asia | |
| Data Report on the Acid Deposition in the East Asian Region 2002 | |

| | |
|--|---|
| Individual Training at ADORC (February) | Two trainees |
| JICA Third Country Training Program on Acid Deposition Monitoring and Assessment (Pathumthani, February) | 18 Participants |
| Individual Training at ADORC (October) | Three trainees |
| JICA Country Focused Training Course on the Acid Deposition Monitoring Network in East Asia | Ten trainees |
| Individual Training at ADORC (November) | Three trainees |
| Inter-laboratory Comparison Project | Report of the Inter-Laboratory Comparison Project: Wet deposition Report of the Inter-Laboratory Comparison Project: Soil Report of the Inter-Laboratory Comparison Project: Inland Aquatic Environment |
| Data Report on the Acid Deposition in the East Asian Region 2003 | |
| Fifth workshop on Public Awareness (28-29 January, Niigata) | 40 participants (from EANET participating countries, and local government of Niigata) 300 local residents of Niigata City (experts, and fifth grade pupils) |
| JICA Third Country Training Program on Acid Deposition Monitoring and Assessment (January, Pathumthani) | 22 Participants |
| Individual Training at ADORC (January-February) | Two trainees |
| Individual Training at ADORC (October) | Three trainees |
| JICA Country Focused Training Course on the Acid Deposition Monitoring Network in East Asia | Ten trainees |
| Joint EANET-EMEP Seminar (1-2 November, Moscow) | 32 participants (from EANET participating countries, ADORC, UNECE, AMAP, EMEP, and national organization and research institution from Russian Federation) |
| Inter-laboratory Comparison Project | Report of the Inter-Laboratory Comparison Project: Wet deposition Report of the Inter-Laboratory Comparison Project: Soil Report of the Inter-Laboratory Comparison Project: Inland Aquatic Environment |
| Data Report on the Acid Deposition in the East Asian Region 2004 | |
| JICA Third Country Training Course on Emission Inventory and Modeling for Acid Deposition Assessment | 24 Participants |

| | |
|--|--|
| (January-February, Pathumthani) | |
| Sixth Workshop on Public Awareness for Acid Deposition Problems (21-22 February, Niigata) | 30 Participants (from EANET participating countries, and Private company, local government, and university in Japan) |
| Individual Training at ADORC | Two trainees |
| Research of Fellowship the Network Center in JFY 2005 | Two researchers |
| Research of Fellowship the Network Center in JFY 2006 | Two researchers |
| Data Report on the Acid Deposition in the East Asian Region 2005 | |
| JICA Third Country Training Course on Emission Inventory and Modeling for Acid Deposition Assessment (January-February, Pathumthani) | 19 Participants |
| Seventh Workshop on Public Awareness (6-7 February 2007, Niigata) | 60 Participants (from EANET participating countries, NGOs, academia, and local government of Japan) |
| Individual Training at ADORC | Five trainees |
| Capacity Building Course on Future Development of EANET for Officials and Experts in the Participating Countries of EANET (28 May-1 June, Pathumthani) | |
| Periodic Report on the State of Acid Deposition in East Asia (Part I: Regional Assessment) | |
| Periodic Report on the State of Acid Deposition in East Asia (Part II: National Assessment) | |
| Periodic Report on the State of Acid Deposition in East Asia: Report for Policy Makers | |
| Data Report on the Acid Deposition in the East Asian Region 2006 | |

Appendix II-4: Overall result of NOWPAP activities

| Output | Outcome |
|---|--|
| The Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Regional and three supporting Resolutions | |
| Creation of a coordinating framework | Establishment of a comprehensive data base and information management system |
| Finalization and Publication of the Directory of Marine Environmental Institutions | |
| National survey and assessment of national databases and information management system | |
| Fact finding mission | |
| Assessment of national databases and preparation of a proposal for a regional database and information management systems | |
| Workshop to present national databases and to agree on regional cooperative framework | |
| Creating of a coordinating framework | Survey of national environmental legislation, objectives, strategies and policies |
| Conducting a survey on national environmental legislation, objectives, strategies, and policies | |
| Preparation of publication, editing of national reports | |
| Creation of a coordinating framework | Establishment of a collaborative regional monitoring programme |
| Conducting of assessment of the state of marine, coastal, and associated freshwater environments | |
| National survey on monitoring activities and capabilities | |
| Fact finding mission | |
| Preparation of a draft proposal for a collaborative, regional monitoring programme | |
| Convening of a three-day workshop on regional monitoring programme | |
| Creation of a coordinating framework | Development of effective measures for regional cooperation in marine pollution preparedness and response |
| Initiation of a Forum | |
| Three Forum Meeting | |
| Inter-sessional work | |
| Creation of a coordinating framework | Commence the establishment of regional activity centres and their network |
| Information collection on other regional | |

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| activity centres Proposals by the NOWPAP States to invite regional activity centres | | |
| Preparation of feasibility study | | |
| Preparation of background document | Regional implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in the NOWPAP region | |
| A regional workshop | | |
| Follow-up to the workshop | | |
| Publication of the Ocean Book | | |
| Editing and printing of the national reports | Establishment of a comprehensive data base on information management system (Phase II) | |
| Establishment of the NOWPAP/1 Coordination Committee | | |
| Coordinating Working Group Meeting | | |
| Exchange of detailed information on existing data and information management systems for various environmental variables. Drafting of an overview report of existing data management status | | |
| Drafting of a NOWPAP Policy on Data Sharing and Guidelines | | |
| Design of the NOWPAP Internet Network and preparation of manual | | |
| Coordination and cooperation with the other NOWPAP projects and other programmes | | |
| Preparation of a Database on Marine Environmental Institutions and Scientists | | |
| Technical workshop on data QA/QC and on data formats for NOWPAP purposes | | |
| CWG meeting | | |
| Publication of an overview report of existing data management systems | | |
| Publication of the manual to use internet network for NOWPAP data and information exchange | | |
| Collection of the inventory information from the community within and outside of NOWPAP | | |
| Preparation of publication, editing of national reports | | Survey of national environmental legislation, objectives, strategies and policies |
| Editing and printing of national reports | | Establishment of a collaborative regional monitoring programme (phase II) |
| Establishment of Coordinating Committee and Working Groups | | |

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| First Meeting of Coordinating Committee and Working Groups | |
| Exchange of detailed information on sampling stations and sampling frequency, methods of analysis and method detection limits | |
| Inter-calibration exercise on nutrients and trace metals in atmospheric precipitation | |
| Training course on river inputs of contaminants to the marine environment | |
| Annual meeting of Coordinating Committee and workshops | |
| Establishment of coordinated network of monitoring stations on atmospheric deposition | |
| Training Course on atmospheric deposition monitoring | |
| Preparation of regional overview on atmospheric deposition and river inputs of contaminants | |
| Training course on use of remote sensing data for monitoring purposes | |
| Inter-calibration exercise on trace metals and pesticides in river and sea waters | |
| Preparation of manual on atmospheric deposition | |
| Establishment of coordinated network of river input monitoring stations | |
| Intersessional work before the Third Forum Meeting | Development of effective measures for regional cooperation in marine pollution preparedness and response |
| Convening of the Third Forum Meeting | |
| Intersessional work after the Third Forum Meeting | |
| Convening of an advisory expert group meeting | |
| Development of a NOWPAP/4 Homepage | |
| Convention of the Forth Forum | |
| Inter-sessional work | |
| Convention of the Fifth Forum Meeting | |
| Intersessional work | |
| Integrated Report on Harmful Algal Blooms (HABs) for the NOWPAP Region | |
| Integrated Report on Ocean Remote Sensing for the NOWPAP Region (CEARAC) | |
| National Reports on HABs in the NOWPAP | |

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| Regions (CEARAC) | |
| National Reports on Ocean Remote Sensing in the NOWPAP Regions (CEARAC) | |
| Guideline for the Use of Dispersants (MERRAC) | |
| Guideline for Shoreline Clean-up (MERRAC) | |
| Sensitivity Mapping (MERRAC) | |
| Coordination of regional activities for assessment of the state of the marine, coastal and associated freshwater environment (CEARAC) | Guidelines for eutrophication monitoring using satellite data; training on remote sensing data analysis and applications; booklet of countermeasures against harmful algal blooms |
| Developing tools for environmental planning and management based on the results of the assessment (CEARAC) | |
| Developing assessment and planning tools including special monitoring programs (monitoring by remote sensing, bio-monitoring etc.) which cannot be covered by the routine pollution monitoring (CEARAC) | |
| Coordination of regional activities for assessment of the state of the marine, coastal and associated freshwater environment (DINRAC) | guidelines for eutrophication monitoring using satellite data; training on remote sensing data analysis and applications; booklet of countermeasures against harmful algal blooms. |
| Developing tools for environmental planning and management based on the results of the assessment (DINRAC) | |
| Developing assessment and planning tools including special monitoring programs (monitoring by remote sensing, bio-monitoring etc.) which cannot be covered by the routine pollution monitoring (DINRAC) | |
| Coordination and integration of monitoring and data-gathering systems on a regional basis and collating and recording environmental data and information to form a comprehensive database and information management system. (MERRAC) | NOWPAP meta-database on bio-diversity, nature reserves, contaminants, clearing house and switch board mechanism |
| Regional co-operation on the marine pollution preparedness and response among the NOWPAP member States (POMRAC) | regional vulnerable resources mapping; oil spill model; minimum level of preparedness for oil spills; preparing for |

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| Development of effective measures for regional cooperation in marine pollution preparedness and Response (POMRAC) | hazardous and noxious substances spills and issues related to OPRC and MARPOL conventions |
| Implementation of the NOWPAP Regional Oil Spill Contingency Plan (POMRAC) | |
| Establishment of a regional pollution monitoring system. MALITA | state of marine environment report; development of integrated coastal zone and river basin management; database of references for WG1 and WG2 |
| • Strengthen the environmental protection and sustainable development of the Northwest Pacific region through the development of a NOWPAP Regional Action Plan on Marine Litter | <ul style="list-style-type: none"> • Regional Action Plan for marine litter management in the NOWPAP region • A data base on marine litter related information |
| The Booklet of Countermeasures against HABs in the NOWPAP Regions | |
| National Reports on River and Direct Inputs of Contaminants into the Marine and Coastal Environment in the NOWPAP Region | |
| National Reports on Atmospheric Deposition of Contaminants into the Marine and Coastal Environment in the NOWPAP Region | |
| Regional Overview on River and Direct Inputs of Contaminants into the Marine and Coastal Environment in the NOWPAP Region | |

Appendix III: Legal Status of the International Environmental Agreements

| | | RPC | DPRK | Japan | Mongolia | ROK | Russia |
|-------------------------------|--|-----|------|-------|----------|-----|--------|
| Air Pollution | Montreal Protocol on Substances that Deplete the Ozone Layer (1989) | √ | √ | √ | √ | √ | √ |
| Land Degradation | United Nations Convention to Combat Desertification (1996) | √ | √ | √ | √ | √ | √ |
| Dust and Standstorms | | | | | | | |
| Marine environmental problems | Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1975) | √ | | √ | | √ | √ |
| | International Convention for the Prevention of Pollution from Ships (1983) | √ | √ | √ | √ | √ | √ |
| Biodiversity | Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975) | √ | | √ | √ | √ | √ |
| | Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (1975) | √ | | √ | √ | √ | √ |
| | Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) | √ | √ | √ | √ | √ | √ |
| | Convention on Biological Diversity (1993) | √ | √ | √ | √ | √ | √ |
| Wastes | Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1992) | √ | | √ | √ | √ | √ |
| Chemical Pollution | Stockholm Convention on Persistent Organic Pollutants (2004) | √ | √ | √ | √ | √ | √ |
| | United Nations Framework Convention on Climate Change (1994) | √ | √ | √ | √ | √ | √ |
| Environment and Energy | Kyoto Protocol (2005) | √ | √ | √ | √ | √ | √ |

Note: inside () is the year of entry into force.

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