

Chapter 3 Potential for Environmental Assistance by Japan

3.1 Assistance for the Rehabilitation of Iraq's Southern Marshlands

3.1.1 Identification of Issues and Assistance Goals

Iraq's southern marshlands were up to the 1970s the greatest expanse of marshland in the western half of Eurasia, and were an ecosystem of global importance as a major stopover site for migrating birds and a spawning ground for fish species of the Persian Gulf. However, the development of water resources on the upper reaches of the Tigris and Euphrates Rivers combined with the draining and desiccation of the marshlands under Saddam Hussein's regime has had a disastrous impact on the ecosystem.³⁴ Demolition of water channel and dikes by the Marsh Arabs immediately after the collapse of Saddam Hussein's regime, and the opening up of floodgates by the Ministry of Water Resources has subsequently resulted in a reflooding of 30%–40% of the marshlands as they were in the 1970s.

Reflooding the marshes and returning the vegetation and ecosystem to their former state is of great importance, but the ultimate goal of marshland rehabilitation efforts should be to go beyond mere regeneration of the natural environment to rebuild the foundations on which the Marsh Arabs structured their livelihoods, and ensure the maintenance of a harmonious balance between the human community and nature of the marshlands over the long term.

The destruction of the southern marshlands and the expulsion of the Marsh Arabs from their homeland is one of Iraq's most pressing environmental and humanitarian problems. The marshlands are also significantly affected by international water resource division issues and the problems caused by oilfield development in the former marshland area; their rehabilitation is a key priority in the reconstruction of Iraq. The Marsh Arabs began to reflood the marshes from immediately after the Iraq War in 2003, but this has had some adverse effects on the recovery of the ecosystem, such as salt accumulation.

From the perspective outlined above, one can conclude that the rehabilitation of Iraq's southern marshlands requires the restoration both of the marshland ecosystem—one of the most important in the Middle East—and of the human community that was once a vital part of that ecosystem, in a way that rebuilds the balanced relationship between the human

population and natural environment that had existed from ancient times, but was all too quickly lost.

3.1.2 Required Approach to Marshland Rehabilitation

Any examination of marshland rehabilitation requires the consideration of the following points.

(1) Social perspective

Rehabilitation of human communities, wise use of the marshes

During the process of marshland rehabilitation, competition and contradiction frequently arise between, on the one hand, restoration of the marshland ecosystem and biological diversity, and on the other, restoration of agriculture, livestock, fishing and other industries on which human livelihoods depend. Surmounting such competition and contradiction to rehabilitate the marshes in a way that guarantees the protection of both the natural environment and human livelihoods requires the drafting of a rational land-use plan that includes zoning based on the principle of wise use.* The Committee also recommends that possibilities for introducing ecotourism and other initiatives with minimum competing consequences also be considered.

Local development efforts

Now that the marshes are being reflooded and the ecosystem is slowly recovering, local industries need to be restored. It is up to Iraq to decide how exactly the marshlands are rehabilitated, but because reinstating fishing as the mainstay of the local human population will require the teaching of fishing techniques to the younger generation, restoration of the marshes will likely need to be carried out in stages. Industries other than fishing currently being carried out in the marshlands include dairy cattle-based dairy product manufacturing and fish canning.

(2) Scientific and technological perspective

Water resource issues and water quality management

Declining water inflow and rising salinity are having an adverse impact on agriculture, drinking water, and ecological balance in Iraq's southern marshlands. However, the marshlands are a diverse aquatic environment made up of a multitude of marshes and bodies of water, and in terms of salinity alone, for example, two locations may differ by a factor of 10

* A Ramsar Convention concept that stipulates the sustainable use of marshes by humankind in a way that does not change the natural characteristics of the ecosystem.

or more. As such, the peculiarities of each marsh or body of water in terms of natural and social environments first need to be investigated and tabulated before issues are analyzed and priorities considered.

Effective use of local biological resources and low-cost, low-energy, low-chemical, easily maintained technology

Low-cost, environment-friendly technologies that consume little energy and use few chemicals would be the most effective for marshland rehabilitation. Such technologies should be examined to identify, combine, and deploy those that could be most easily used and maintained by the local population in the current local environment, and a flexible approach based on the principles of adaptive management* should be applied to the deployment of the technologies chosen.

(3) International perspective

Coordination with other countries in the Tigris and Euphrates watersheds

Any examination of the rehabilitation of Iraq's marshland would be remiss if it fails to consider the relationship between the marshes and upstream use of water resources and the marshes located in neighboring Iran. There is a need to consider cooperation from the viewpoint of cross-border water resource management and marshland rehabilitation, and this urgently requires an objective evaluation of the current status of the whole Tigris and Euphrates watersheds of which Iraq's southern marshlands are a part, including the impact of canals and other structures built during the tenure of the former regime. In the past, Iraq and Iran had a committee for discussing watershed issues, and Iraq also discussed water volume with Turkey, but such discussions have not been held for a long time. Within Iraq too, there are issues related to the distribution of water in northern, middle, and southern regions, and there is also a need for an overall management system for handling agricultural water and wastewater.

International teamwork for the exchange of information and division of roles

The cooperation organizations working on the rehabilitation of Iraq's marshlands should team up to drive the independent efforts being made by the Iraqi government and local inhabitants to rehabilitate the marshes. They should establish a common platform for promoting education and raising awareness among the younger generations in particular and for enabling the sharing of information, division of roles, and integration of initiatives.

* An outcome-based management approach or system designed for areas of scientific uncertainty that is applied in particular to wildlife and ecosystem conservation. The possibility that early predictions may be mistaken is incorporated from the outset into the management system, and actions are modified according to the results of constant monitoring of ongoing processes.

3.1.3 Points to Consider in Marshland Rehabilitation

Sustainable use of biological resources

Building a sustainable foundation for supporting human communities that is in tune with the natural environment requires that attention be paid to such issues as livelihoods, living facilities, and healthcare. Where protection of the environment is concerned, it is particularly important to consider how the sewage and waste generated by human communities is handled. The deployment of systems for recycling such waste as a resource would help to bring benefits to both the human communities and the natural environment. Plans for the deployment of such systems for the recycling and reuse of resources should address recycling and reuse at large district, local community, and household levels. Deployment in specific areas would also require estimates for demand from local agriculture, and so the required approach is one that starts with research and progresses to verification.

Matching marshland rehabilitation with the social system

In determining the lifestyles of the Marsh Arabs, consideration should be paid both to the views of the returnee population and to mechanisms whereby marshland rehabilitation contributes to the improvement of living standards. The returnee population includes both those wanting to return to their former way of life and those aspiring to new lifestyles. Moreover, water resource restrictions and development in the former marshland area (oil field development) make the 100% restoration of the marshes an unrealistic target, and initiatives to build a sustainable social system need to take into account such real-life constraints.

Setting priorities based on knowledge of current living standards

In rebuilding the foundations of everyday life of the Marsh Arabs, a to-do list should be prepared which separates items into those related to basic needs and those related to the improvement of living standards. In the event that basic needs such as livelihood (poverty measures), sanitation (health issues), housing (security), and primary education are not being met, addressing these needs should take top priority. Once basic needs have to a certain extent been addressed, attention should be directed to the improvement of living standards such as industry and economy, skills and occupations, infrastructure (power, water, roads), and environmental protection.

Showing consideration for biological diversity by exercising caution in the introduction of non-native species

Careless introduction of non-native species in the name of industrial development can not only disturb biological diversity and the ecosystem, but can also threaten the livelihoods of people who have traditionally used native species as a biological resource. For such reasons,

caution should be exercised in the introduction of non-native species and priority placed first on the effective use of the existing local biological resources.

Responding to long-term impacts of climate change on the marshlands

With the aim of forecasting climate change on a global scale, Japan's Meteorological Research Institute has used 15 types of combined atmospheric/oceanographic models to forecast temperatures up to the year 2100. Results have shown that the region covering the Middle East and Central Asia is likely to experience a conspicuous decline in rainfall and river water volume during this period. Fluctuations in weather patterns are also forecast to intensify, with sudden droughts and flooding. These results point to a need to also consider measures that take account not only of past and present trends, but also of mid- to long-term climate change.

3.1.4 Japanese Knowledge and Technology for Assistance

Japan should apply the knowledge, technology, and experience at its disposal to rehabilitation of the marshlands. The following are areas of potentially useful knowledge, technology, and experience that Japan could offer.

(1) Marshland monitoring

Broad research and development of applications in the field of environmental monitoring through remote sensing is being carried out in the following areas: (1) marshland eutrophication monitoring (chlorophyll a concentration, etc.), (2) water quality monitoring (temperature, turbidity, conductivity, etc.), (3) estimation of ground surface temperature and soil moisture, and (4) vegetation distribution in the environs of desert oases.

Not that much marshland research using remote sensing has been carried out in Japan, but existing research includes mapping marshland vegetation distribution, mapping the Kushiro Marshes (identification of marsh types: raised marsh, low marsh, marsh woodland (alders), and water bodies), and estimation of biomass in the Kushiro Marshes. By combining remote sensing data with field observation data, it should be possible to develop a picture of the characteristics of each of the individual marshes, said to number about 1000, in southern Iraq.

(2) River basin hydrological simulation

Regarding marshland rehabilitation, there is a need to forecast the impacts of the reflooding process on the water balance and so forth of the Tigris and Euphrates Rivers. This could be effectively carried out by running simulations based on sufficiently detailed hydrological models that factor in such influences as the status of dams used by Iraq, Turkey, Iran and

other watershed countries, agricultural development and irrigation, water resource management, and future development plans of relevant countries.

(3) Kushiro Marshes Rehabilitation Program

The Kushiro Marshes are one of Japan's most noteworthy natural environments, and are an important wildlife habitat. The marshes are also of significant value to people by holding and purifying water, helping to control flooding through serving as a drainage basin, and mitigating local climate fluctuations. As such, the Kushiro Marshes are a precious asset that should be protected for future generations. However in recent years the area of the marshes has shrunk dramatically in the face of increasing economic exploitation of the river basin, and the vegetation too has changed rapidly from communities of reeds and sedges to alder woodland. Concrete efforts including practical surveys and experiments are being made to conserve the marshes and restore them to their former state.

In 2003, the Nature Regeneration Promotion Law was enacted, and a Kushiro Marshes Nature Regeneration Committee was established to implement initiatives for the rehabilitation of the Kushiro Marshes in line with this law. The Committee is taking actions to achieve the following goals: (1) qualitative and quantitative recovery of the marshland ecosystem, (2) rehabilitation of the circulatory processes supporting the marshland ecosystem, and (3) community building for sustained involvement in the marshes. The committee has also drafted 6 policies for achieving its goals and methods for assessing each of these policies.

The rehabilitation of the Kushiro Marshes is the largest and most comprehensive initiative of its kind ever undertaken in Japan, and the Committee feels that Japan could provide a great deal of knowledge that could be applied to assistance for the rehabilitation of Iraq's southern marshlands.³⁵

(4) Knowledge and technology related to primary industry (agriculture and fisheries)

As a salt damage countermeasure, leaching technology is being studied and applied to decide irrigation levels and methods appropriate to the relationship between water volume and salt concentration. Research is also being carried out to select salt-tolerant crops capable of growth even in high salt concentrations and in the use of plants that absorb and store salt within their cells to mitigate salt concentration in croplands.

Development of the fishing industry requires the selection of fish species with high economic value, but the introduction of non-native species poses the risk of disturbing the ecosystem if stock were to escape. As such, consideration should be given to fishing industry development that takes into account both economic and environmental considerations.

Going beyond improvement of primary industry product harvests and quality, there are also possibilities for providing guidance in appropriate agricultural and fisheries management, including distribution and market price movements, and for applying Japanese expertise in such fields as fish farming.

(5) JICA research and technical assistance for marshland conservation

JICA has carried out the following 2 wetland conservation projects: The Study on Integrated Management for Ecosystem Conservation of the Anzali Wetland in the Islamic Republic of Iran, a development study in Iran, and Coastal Wetland Conservation in Yucatan Peninsula, a technical assistance project in Mexico. In view of the current situation in Iraq, implementing such full-scale studies and projects is for the time being unfeasible, but the Committee feels that there is nevertheless potential for using environmental assistance projects currently in progress in surrounding countries to provide technical assistance to wetland conservation in Iraq. Examples of such projects in the environmental management and monitoring technology field include technical assistance projects currently being carried out in Syria and Egypt, respectively titled Capacity Development of Environmental Monitoring at Directorates for Environmental Affairs in Governorates (December 2004 – February 2008) and Environmental Monitoring Training Project (November 2005 – March 2009). The Committee feels that such projects hold out possibilities for providing concrete assistance for the rehabilitation of Iraq's southern marshlands through the possibilities they offer for training in water quality analysis and monitoring technology.

3.2 Assistance for Water Supply and Sanitation (including Waste Management)

3.2.1 Assistance Goals

Iraq boasts relatively highly developed water supply infrastructure and sewer networks in its cities. However, facilities have become dilapidated due to maintenance problems, and so the short-term goal is to rehabilitate existing facilities and pipelines, with expansion of capacity as a longer-term goal. Under the current circumstances of almost total lack of working water treatment facilities, large volumes of sewage are flowing into the Tigris and Euphrates river system, particularly in Baghdad. Therefore, there is an urgent need for initiatives to build sewage treatment facilities in major cities such as Baghdad and Basra and to reduce the unsanitary disposal of sewage in other governorates and autonomous regions through means such as the use of household sewage treatment systems.

Where waste management is concerned, a large workforce recruited as a job creation strategy is already engaged in the task of refuse collection. Refuse collection and other equipment provided in the 1990s is antiquated, and there is a need for assistance in the form both of new collection equipment and of sewage treatment plant construction, together with the training of personnel capable of formulating long-term waste management policy.

3.2.2 Potential for Application of Japanese Knowledge and Technology

(1) Sewage treatment technology

In the field of sewage treatment, Japan can offer original non-permeation technology for storing and collecting sewage, the sanitary treatment of which would help to prevent waterborne disease. Homegrown Japanese sewage treatment systems made a major contribution to the improvement of postwar Japan's public hygiene. Research is also being carried out on the use of artificial wetlands as a low-cost and easy-to-run sewage treatment solution that is particularly effective in hot regions with high plant productivity.

As for domestic wastewater treatment, Japan can offer homegrown technology in the form of combined Johkasou tanks.* These tanks function as mini-sewage treatment plants, and are designed for stable operation in response to fluctuating intake and so forth. Even more importantly, they have made a big contribution to the growth of Japan's Johkasou industry in terms of standardization, mass production, maintenance, cleaning and inspection. In Japan, the fact that a system already existed for collecting sewage for treatment in sewage treatment plants played a major role in the spread of these combined Johkasou tanks. In a country like Iraq with no such history, it will be difficult to popularize the use of such Johkasou tanks rapidly, but the deployment of mid-scale community plants should be able to contribute to the treatment of domestic wastewater in the suburbs of large cities and in smaller cities, towns, and rural communities.

(2) Waste management technology

Unlike water issues, waste management is more of a human issue (i.e. training of personnel) rather than just a matter of improving infrastructure. There is also the issue of raising awareness among the general public. Japanese knowledge could be applied to the creation of management systems through investigating the current situation in communities and building collection systems based on an overall consideration of factors such as the

* Under Japan's Johkasou Law, these tanks are defined as equipment other than night soil treatment plants that purifies both sewage and domestic wastewater, releasing purified water back into the environment rather than into public sewers.

potential for sorting and recycling, including the difficulties of sorting, and recycling industries, and to ways of securing funds for operating such systems.

For developing countries in which open dumping is still the main waste disposal method, Japan can also offer the Fukuoka Method,^{*} a relatively low-cost and sanitary semi-aerobic landfill technology that can prevent the scattering of refuse and groundwater pollution, and has already been applied successfully in China, Malaysia, Iran, and other countries.

(3) Wastewater reuse and non-potable water supply

Water resources are particularly valuable in arid regions, and there are high expectations for available resources to be used in the most effective way possible. From the perspective of effective use, Japan already possesses technology for treating sewage to create a non-potable water supply for agricultural and other uses. This technology could be utilized to curb the amount of water that requires treating to potable water levels, thus reducing overall water treatment costs. Particularly where membrane technology is concerned, Japan possesses world-class technology.

(4) Water quality monitoring

Appropriate monitoring is necessary also to guarantee compliance with environmental standards for water quality, and makes it possible to judge whether sustainable water resource management is being practiced or not. In Japan, telemetry systems have been developed for monitoring compliance with environmental standards, and are being used by local governments. Sensor technology for enabling online measurement of various parameters is an important aspect of such systems, and various advances have been made, such as the application of biotechnology to develop BOD sensors that enable the online analysis of organic contamination. Portable analysis equipment for the speedy on-site analysis of water quality parameters is also commercially available now. These technologies have the potential to contribute to improving environmental management capacity through the use of standard protocols setting forth items to be monitored, frequency of monitoring, and so forth.

* A semi-aerobic landfill technology developed in the 1970s by the city of Fukuoka and Fukuoka University. It involves equipping the base of the landfill site with a perforated pipe system for leaching wastewater from refuse rather than allowing it permeate into layers below. Fresh air in the pipes causes microorganisms around them to flourish, promoting aerobic respiration that results in the emission of carbon dioxide rather than methane.

3.3 Other Environmental Assistance (Sustainable Energy Usage, etc.)

3.3.1 Assistance Goals

Putting top priority on the restoration of basic living standards of the Iraqi people, it is important to set staged targets and implement plans for raising the quality of life of inhabitants while protecting the environment in conjunction with economic development. Atmospheric pollution and global warming are intertwined, and energy generation needs to be handled in tandem with long-term issues such as greenhouse gas reduction policy. An urgent task is the removal and detoxification of harmful and dangerous substances in environmental hotspots, followed by decontamination of soil and prevention of groundwater pollution by harmful substances in the locations concerned.

3.3.2 Potential for Application of Japanese Knowledge and Technology

(1) Solar power generation systems

Japan is a leader in solar panel manufacturing technology, accounting for about half of worldwide solar panel production.* Solar power is being put to practical use to power wireless network relay stations located away from power supply lines and in locations lacking both power lines and means of delivering fuel easily. In Iraq, solar power could be put to good use particularly in the southern marshlands as a simple power source for scattered community facilities and households. Because solar power modules have an expected life of over 30 years and no moving parts, they are in principal maintenance-free. However, lead-acid car batteries are the main means of storing the electricity generated, and as such, care must be taken to ensure that used batteries are disposed of appropriately. Car batteries have a life of about 3 to 5 years, but there are now solar power systems being developed that use lead-free batteries that last as long as 10 years, and these could well be deployed in Iraq.³⁶ However, because the operating temperature range of such batteries is limited, consideration needs to be paid to ensure that they can be used in the marshland climate.

(2) Atmospheric monitoring

In Japan, local governments operate ambient air pollution monitoring stations and car exhaust gas monitoring stations for round-the-clock monitoring of NO_x, suspended particulate matter, photochemical oxidants, SO₂, CO, hydrocarbons, and so forth. The speedy

* Japan manufactured about 600 MW of the 1.2 GW of worldwide solar panel production volume for 2004.

compilation of data from such stations and the building of networks to implement appropriate actions are as important as the actual monitoring of atmospheric pollution.

(3) Exhaust Gas Desulfurization equipment

Japan began to deploy exhaust gas desulfurization equipment in the 1960s to reduce SO_x emissions, and the use of such equipment has now spread to many developing countries. Although it removes only 60% to 80% of SO_x, simple and cost-effective desulfurization technology is also being developed and transferred to China, ASEAN countries, and other developing countries under Japan's Green Aid program.

As oil production in Iraq is maintained and increased, the construction and restoration of oil refineries and thermal power stations is like to proceed apace. Japanese exhaust gas desulfurization technology could be effective in preventing atmospheric pollution by SO_x that would otherwise be emitted by such facilities.

(4) Climate change countermeasures

In oil-producing countries like Iraq, fugitive methane emissions from oil pipelines are very common, and clean development mechanism (CDM) methodologies for recovering and burning these emissions are already recognized. Japanese knowledge and technologies for recovering methane released during oil drilling, sequestering CO₂, implementing cleaner production in heavy industries, and so forth might also be able to make a significant contribution as Iraq begins to participate in frameworks for the prevention of global warming.

(5) Soil decontamination technology

It is likely that Iraq suffers from localized soil contamination derived from spillages from oil-related facilities, former chemical plants, war waste, waste fluid from mines, and so forth. While decontamination technologies differ according to the type of contaminant—VOCs, heavy metals, etc.—available methods include on-site decontamination, the pumping up of contaminated groundwater, and the excavation and removal of contaminated soil.

3.4 Assistance for Improvement of Environmental Management Capacity

(1) Improving environmental management systems

As Iraq's political system undergoes major changes, the creation of legislation and building of institutions is a matter of maximum priority. Because EPID, the body that became the core of the current Iraqi Ministry of Environment, was mainly an organization for research and

monitoring, it almost certainly requires assistance for the improvement of its capacity to formulate policy and implement initiatives. Environmental statistics constitute fundamental data for the consideration of national environmental policy and standards, while monitoring and evaluation are important means for measuring the effectiveness of environmental policy. As such, there is an urgent need to improve the capabilities of the Iraqi Ministry of Environment in these fields.¹⁴

In the mid- to long-term view, the nurturing of highly competent environmental specialists is also called for. The scant attention paid by the former regime to research in environmental fields drove researchers overseas and starved those that remained of journals carrying the latest research. As a result, there is a dire lack of capable researchers in Iraq.

(2) Participation in international frameworks

Another need, in view of the fact that Iraq has, owing to its long isolation from the international community, not become a signatory to international conventions in the environmental sphere, is the acceptance of these conventions and the implementation of environmental management based on those treaties through international cooperation.

If Iraq becomes a signatory nation to the existing Framework Convention on Climate Change, it will be required to submit regular reports on its GHG emissions, and if CDM projects based on the Kyoto Protocol are carried out, it will need to set up an agency to authorize those projects.

The Convention to Combat Desertification obliges signatories to identify the factors causing desertification and draft a national plan to resolve the underlying causes. This requires not only the collection and analysis of scientific data, but also consideration of the building of early warning systems for desertification, the securing of livelihoods of local inhabitants, and funding mechanisms. Japan is playing a leading role in research and development related to the Convention, and could provide technical assistance.

Under the Convention on Biological Diversity, data based on the reports filed by member countries is compiled on the efforts being made by each country and the impact of those efforts. Through these reports, agencies involved in preserving biodiversity are being provided with assistance in the drafting and implementation of policy.

(3) Environmental and social considerations arising from reconstruction development

In view of the risk that a rush of aid for the reconstruction of Iraq could lead to further environmental degradation, there is a need to establish mechanisms such as environmental

assessment for ensuring that sufficient attention is paid to the environmental and social aspects of development. There are still no Ramsar or World Natural Heritage designated sites in Iraq, and still not enough information on valuable natural environments warranting international conservation. Efforts are being made to list Iraq's southern marshlands as a Ramsar site, but the capabilities of the relevant Iraqi government agencies are limited. There is accordingly a need to develop knowledge of such environmental assets and launch efforts to prevent their degradation. The Iraqi Ministry of Environment's ability to carry out environmental assessments and subsequent monitoring is limited, and its capabilities need to be strengthened.

(4) Planning and implementation of capacity building programs

Japan has held training programs in healthcare, elections, law enforcement, electric power, telecommunications, and other fields since 2003 as part of its reconstruction assistance for Iraq, but there is a need to actively solicit the participation of Iraqi personnel in environmental training programs held in Japan. For example, JICA has run, or is currently running group training programs such as "Conservation of Wetland Ecosystems and their Biological Diversity", "Conservation, Restoration and Wise Use of Wetland Eco-systems and their Biological Diversity", and "Management of Eco-tourism and Sustainable use of Natural Parks". JICA has also held many training courses on environmental management and water quality monitoring. JICA is considering having its Water Resources Management in Arid Regions group training program for 2006 focus exclusively on Africa and the Middle East and doubling capacity for participation. Such training opportunities focused on the Middle East should be made use of to develop the capacities of Iraqi personnel.

In addition to participation in existing training programs, training programs specifically aimed at training Iraqi personnel and improving Iraqi environmental management capacity could also be organized. Efforts should be made to organize training in the 8 fields proposed in JICA's survey of capacity development needs: "Environmental Assessment and Environmental Impact Assessment (EIA)", "Environmental Research, Statistics and Study Approaches", "Environmental Monitoring", "Management of Protected Areas", "Conservation Biology", "Environmental Awareness", "Environmental Laws, Legislations, Regulations and Agreements", and "Solid Waste Management: Legislative and Technical Aspects". Training programs for government officials aimed at nurturing the skills of Iraqi government officials in areas such as the drafting of environmental standards could be held in Japan.

3.5 Common Perspectives on Environmental Assistance Project Planning

(1) Compliance with guidelines for environmental and social considerations

In the event that Japanese assistance includes development projects, efforts need to be made to ensure that such projects comply with the guidelines established by agencies such as JBIC and JICA for the confirmation of the consideration of environmental and social impacts of Japanese ODA projects. Japan needs to make sure that its assistance contributes to the reconstruction of Iraq and the rehabilitation of the livelihoods of the Iraqi people without adversely affecting the natural environment.

(2) Support for South–South cooperation

Japan encourages South–South cooperation whereby developing countries share their technology. Alongside third country training programs using Egypt’s Environmental Monitoring Training Center, forms of cooperation such as the dispatch of specialists from other Arabic-speaking countries with a higher level of technology (e.g. Egypt, Jordan, and Tunisia) could also be considered.

(3) Use of intermediate (appropriate) technology

The Committee recommends the use also of appropriate technology as simple and sturdy technology that does not impose economic burdens. There are technologies that may not be effective in Japan, but could well prove useful in the context of Iraq’s local culture and customs.

(4) Participation-based (process-focused) development

Under the kind of compartmentalized, field-specific cooperation regimes that have dominated up to now, assistance providers have tended to base their assistance on preconceptions that are not always in line with local needs. Participation-based initiatives are important to identifying local needs and accommodating them as far as possible.

(5) Environmental promotions

Much has been said about the need for environmental education, but even if education is effective in nurturing awareness among children who are still in their formative years, changing the habits and lifestyles of adults is not always easy. Environmental promotions offer a means of driving environmental protection through providing an economic incentive. In addition to ecotourism and other green businesses, practical benefits such as the prevention of endemic diseases can drive environmental protection. Environmental promotions that push

comfort as an incentive can also be effective. The Cool Biz* campaign run by Japan's Ministry of the Environment in the summer of 2005 could be described as a successful example of such environmental promotions.

* Casual business attire for summer that enables people to work comfortably and effectively at 28°C, so that office air conditioners can be set to this temperature during summer to contribute to the prevention of climate change.