JSC Japan Sanitation Consortium

JSC Sanitation KnowledgeHub, Japan
Regional Water Knowledge Hub for Sanitation

2ND CONTACT MISSION TO INDONESIA (22-27 FEBRUARY, 2010)
MISSION REPORT

JAPAN-INDONESIA SEMINAR ON SEWERAGE AND WATER ENVIRONMENTAL ISSUES

Jakarta, Tuesday 23 February 2010

SEMINAR OUTLINE

Purpose

The aim of the seminar was to foster good relations between Japan and Indonesia, exchange information on sewerage and water environment systems, and to support Indonesia in its efforts to develop the wastewater management sector. For policy establishment, Japanese organizational, institutional and legal structures were introduced, as well as the technologies that ensure successful wastewater/night soil and sludge treatment in Japan.

Organizing Committee

The seminar was jointly organized by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT-Japan), the Ministry of the Environment (MOE-Japan), and was hosted by the Ministry of Public Works of Indonesia.

Speakers List

Japan

Mr. Yoshiaki Nanami, Director of International Policy Unit, Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Mr. Kazuhide Sasaki, Director for Watershed Management, Sewerage and Wastewater Management Department (MLIT)

Mr. Kazuhisa Matsuda, Officer Promotion of Johkasou, Waste Management and Recycling Department, Ministry of the Environment (MOE)

Mr. Kazushi Hashimoto, Advisor for the Japan Sanitation Consortium (JSC)

Dr. Xinmi Yang, Member of JSC
Mr. Takehiko Kawai, Director of JSC
Mr. Yoshio Kanto, Japan Global Center for Urban Sanitation (GCUS)

Indonesia
Mr. Ir. Budi Yuwono Prawirosudirdjo, Director General of Human Settlements, Ministry of Public Works (MPW)
Mr. Susmono, Director of Environmental Sanitation Development, Directorate General of Human Settlements (MPW)
Mr. Abimanyu, FORKALIM (a forum established under PERPAMSI – association of water companies – to promote a dialogue among the stakeholders in urban sanitation)

CONTENTS OF PRESENTATIONS

Mr. Susmono, MPW Indonesia

According to Mr. Susmono, urgent challenges to tackle are open defecation, garbage thrown into drainage channels causing clogging problems, untreated industrial wastewater discharge, washing or bathing into polluted rivers, and illegal sludge dumping into rivers. Currently, 75 % of rivers are contaminated and 70% of underground water is not available for drinking. Consequently, every year 50 babies out of 1000 die of diarrhea before reaching the age of five. Economic loss caused by such conditions is estimated at 5.6 billion US dollars a year, which corresponds to 2.3% of Indonesia GDP.

The Government of Indonesia is promoting small scale decentralized wastewater treatment systems through a community-based system called SANIMAS. SANIMAS is operated and managed by communities and has been implemented in 97 areas in the country, as of 2009.

The remaining needs for sanitation improvement are listed below:

- Establishment of laws and regulations
- Capacity building
- Promotion of public awareness campaigns
- Choice or combination of wastewater technologies
- Human resources
- Financing

Mr. Abimanyu, FORKALIM Indonesia

The sewerage system in Surakarta city is targeting 23,000 House Connections, which would serve 22% of the total population by 2015, and would meet the Millennium Development

Goals (10,933 houses are currently connected). In Surakarta city, 89% of the wastewater discharged comes from households, 7% from small-scale buildings and 4% from hospitals and industries. The wastewater treatment facility is the Semanggi Wastewater Treatment Plant. Before 2008, this plant had a treatment capacity of 2,600m³/day, which has been modified since to reach 5,200m³/day. Wastewater treatment is done through anaerobic filter bed process. The effluent BOD is 31 mg/l (for an influent of 64 mg/l), and the effluent COD is 80 mg/l (for an influent of 198mg/l).

Introduction of Legal System and Technologies from Japan

Mr. Kazuhide Sasaki, MLIT

Mr. Sasaki introduced the legal and financing systems for sewerage management in Japan. He also explained how is operated the regional sewerage system (owned by prefectures) and the public sewerage connected to the regional sewerage system (owned by cities and towns). Mr. Sasaki finally detailed a comprehensive countermeasure plan for sewerage systems in the event of floods.

Mr. Kazuhisa Matsuda, MOE

Mr. Matsuda described the history of night soil management and decentralized wastewater treatment systems in Japan, and also the current situation. He presented the Japanese legal structure for on-site systems, emphasizing on the Johkasou Law and the Building Standards Law.

Mr. Kazushi Hashimoto, Advisor of JSC

In his presentation, Mr. Hashimoto explained how Japan tackled environmental pollution issues, with sanitation improvement and expansion through a variety of types and an appropriate combination of on-site/off-site wastewater and night soil treatment systems. Finally, he explained the role of JSC as Water Knowledge Hub for Sanitation.

Dr. Xinmi Yang, Member of JSC

Dr. Yang introduced Japanese technologies (johkasou) for decentralized wastewater treatment. He detailed the operation and maintenance system, as well as the inspection procedures done by public agencies. Finally, Dr. Yang highlighted the key points to maintain the wastewater treatment level of johkasou.

Mr. Takehiko Kawai, Director of JSC

Mr. Kawai presented Japan’s approach to wastewater reclamation/reuse and sludge

recycling. Applications of wastewater reuse have been introduced, such as water resources recharge, industrial uses, agricultural irrigation, environmental uses for amenity enhancement in urban areas, mitigation measures for extreme climate conditions or disasters, but also the related problems. The advanced treatment technologies and process required to allow wastewater reclamation have been described as well.

Finally, Mr. Kawai introduced various utilizations of recycled sludge, such as composting and as a cement material for industrial purpose.

Q & A SESSION

The following questions were asked during the seminar:

1. How do inhabitants pay the sewerage charge in Indonesia: per month, per person or per household?

   There are many payment systems for sewerage depending on the municipalities. Generally, each household pay 6,000 to 10,000 rupiah per month and 100,000 rupiah per month for business institutions, which is about 30% of the charge for water supply.
2. How is the rate of the sewerage charge calculated? Is it based on the income of a type of community or the payment ability in Indonesia? ... *No answer.*
3. How is split the sewerage cost between the Central and Local Governments in Indonesia?

   Though it is not legally stipulated, the Central Government subsidizes Local Governments for capital cost.
4. In the sewerage charge billed in Japan, what is the amount paid by municipalities and consumers?

   The Sewerage Law obliges each householder to pay the sewerage charge.
5. What are the possible applications of recycled sludge?

   Recycled sludge can be used as compost for agriculture or as a cement material.
6. In Japan, is there a regulation to oblige the replacement of tandoku-shori johkasou (black water treatment only) by gappei-shori johkasou (black and grey water treatment)?

   Even if its manufacture and installation are prohibited by the Johkasou Law since 2001, there is no regulation to accelerate the replacement of existing tandoku-shori johkasou in Japan.
7. What are the issues to introduce Japanese johkasou technologies in Indonesia?

   As Japanese johkasou manufacturers have invested for its technological development, they own the patents for its production. A license must be obtained to build johkasou in Indonesia.
8. What are the suited areas for johkasou and for sewerage systems implementation?

As installation cost refers to the cost per capita, the sewerage system is normally advantageous in densely populated areas. Therefore in Japan, density is the main factor to select centralized (sewerage) or decentralized (johkasou) systems. However, as Indonesia and Japan have different characteristics, it is difficult to exactly apply in Indonesia what has been done in Japan. Prior assessment in specific areas must be conducted carefully.

9. Four keys to solve sanitation problems were mentioned, which one is the most important?

   There are four keys that have been successful in Japan for sanitation improvement:

   - high coverage rate of Japan's sanitation services was obtained by an ideal combination of on-site and off-site systems;
   - central government's financial support;
   - regulations and standards establishment;
   - hygiene education.

   The most important key is the political determination to implement a sanitation policy. Japan has been spending almost 1% of its GNP for sanitation by both public and private sector which is equivalent to Japan's defense budget.

REQUIREMENTS FOR INDONESIA

Monitoring

Wastewater treatment technologies are closely related to regulations on effluent water quality. Available data of public water body in Indonesia is limited and monitoring needs to be regularly carried out. To be valid, data must be collected based on the same criteria. Data gathering on water quality would enable the definition of new standards for wastewater treatment, standards that would allow a better protection of water resources.

Items to Consider for Provincial/Municipal Master Plan

Before establishing a program for sanitation improvement, it is essential to define the following items for formulating a Provincial/Municipal Master Plan:

- selection of sewered areas
- establishment of improvement goals
- determination of a sanitation roadmap

Preparation of National Policy for Sanitation

Indonesia needs assistance for establishing of organizing legal and financing systems, human resources, as well as raising public awareness.

JSC ASSISTANCE PROPOSAL

To enable effective investment for sanitation improvement, JSC's assistance proposal consists of the four following tasks. To allow revision, updates and enhancement, it is essential to carry out these tasks in a concrete project.

1. Technical Assistance for Water Quality Monitoring

With the experience accumulated in Japan, JSC can provide Indonesian authorities technical assistance in monitoring system and criteria definition, which would enable the determination of appropriate standards for environmental and health protection. This work could be done in collaboration with academic and research institutions in Indonesia.

2. Technical Assistance for Standard Setting

From monitoring, JSC could also assist the Government of Indonesia in setting environmental and wastewater discharge standards and provide advice on suitable technologies to attain these standards.

3. Advice for Technological Improvement of Existing Wastewater and Night Soil/Sludge Treatment Facilities

JSC could offer ways to upgrade the existing wastewater and night soil/sludge treatment facilities and to develop SANIMAS system, with for instance the stabilization of wastewater effluent quality, regardless to the amount of wastewater conveyed before treatment.

4. Capacity Building for Night Soil Collection System and Charge Collection System

To prevent illegal dumping into rivers and promote cost recovery for operation and maintenance of wastewater treatment facilities, JSC could establish a sustainable system for night soil and charge collection, which would be both socially and financially acceptable for communities. To properly do so, JSC wishes to reorganize and involve more the private sector.

DENPASAR SEWERAGE DEVELOPMENT PROJECT (DSDP), BALI

Meeting with Mr. Wayan Budiarsa, Chief of DSDP, Bali Public Works Department (Cipta Karya)

Bali Island, Thursday 25 February 2010

BACKGROUND

The sewerage and sanitation facilities are still at a development stage in Indonesia but the Indonesian Government has enhanced, through the Settlement Sanitation Development Acceleration Program (PPSP) developed in the new National Mid-term Development Program (RPJMN, 2010-2014), the commitment initiated in the previous five-year plan to improve sanitation services, public health and environmental conditions. The acceleration of sanitation development includes the diffusion of off-site sewerage treatment systems in large metropolitan areas, moving from eleven (11) cities already equipped with such system to sixteen (16) by 2014. The Government of Indonesia has planned to invest approximately 6.4 trillion rupiah taken from the National Budget and 1 trillion rupiah taken from the Local Government Budget to improve the existing sewerage system of cities such as Medan, Jakarta, Bandung, Cirebon, Jogyakarta, Solo, Denpasar, Banjarmasin and Tangerang. Five (5) cities are targeted for new development of sewerage system: Palembang, Surabaya, Malang, Makassar and Batam, with allocated funds of an amount of 2 trillion rupiah taken from the National Budget, and 248 billion rupiah taken from the Local Government Budget. The success of this plan strongly depends on the priority given to sanitation and the creation of proper regulations/policy with the enactment of the Wastewater Law (expected for 2011).

SUMMARY OF DENPASAR SEWERAGE SYSTEM, BALI

Description

The Denpasar Sewerage Development Project (DSDP) was established to ameliorate the sanitary environment and water quality (beaches, rivers and groundwater) in Bali Island, and also improve its image for international tourism. This project includes the construction of the wastewater treatment facilities in Denpasar (residential area), Sanur (half business and half residential area) and Kuta-Legian-Seminyak (business area) districts. In these areas, the urgency for sewerage development was particularly important, as the tourist industry is highly developed and the concentration of commercial facilities such as hotels, restaurants, and stores generates a large quantity of polluted water that was formerly discharged to waterways and the sea, thus becoming a growing environmental concern.

The DSDP Master Plan and Feasibility Study have been conducted in 1992-1993, in collaboration with the Japan International Cooperation Agency (JICA), and the findings

were used to determine the sewer service area. The loan for the first phase of DSDP was concluded in November 1994, with the Japan Bank for International Cooperation (JBIC). It covered the implementation of sewer pipes, pumping stations, and wastewater treatment facilities. House connections have been financed by the Local Government. Construction has been planned in three (3) phases, with phase I, starting in 2004 and completed in 2007. After the second JBIC loan agreement in March 2008, phase II implementation started in 2009 and is still presently in progress (this project is expected to be completed by April 2012 with house connections achieved by September 2013). The third phase of the DSDP is currently under discussion with JICA.

Coverage and Connections

About 10,000 house connections, serving approximately 100,000 consumers, have been installed during DSDP phase I, for a total coverage area of 1,145 ha and a total sewer length of approximately 130 km. About 7,200 house connections targeting 50,000 people are planned to be serviced during phase II, for a total coverage area of 805 ha and with 90 km of sewer pipes installed to this day. With more than 300,000 sewered people, the third phase is expected to involve more connections than both phase I and phase II combined. If DSDP II and III construction goes as expected, the sewerage development project should service after completion about half of the population of Denpasar, Kuta-Legian-Seminyak and Sanur.

Depending on the area and space available, sewer pipes were installed using the Open Cut Method or the Pipe Jacking Method (first project using this method in Indonesia). This last method offered the advantage of low disturbance during pipe implementation, especially in narrow residential areas.

Wastewater Treatment Facilities

Wastewater treatment facilities combine the Suwung Wastewater Treatment Plant, the Sanur and Kuta Pumping Stations, an inflow pumping station, an electrical building and a control building inside the wastewater treatment plant. The implementation of DSDP phase III will require the construction of a new wastewater treatment plant and pumping station in Denpasar.

Wastewater treatment is done through two (2) aerated lagoons and two (2) sedimentation ponds, with a total capacity of 51,000 m^3/day (this facility is currently underused, as only about 15,000 to 20,000 m^3/day seems to receive treatment, but this is only an estimation as the plant is not equipped with a wastewater flow meter). The expected effluent BOD ranges from 30 to 50 mg/l and this facility has been designed to treat an

influent BOD up to 180 mg/l. The described treatment process offers the advantages of being simple to operate and maintain, and does not require any sludge treatment/management within ten (10) to fifteen (15) years. To easy the maintenance for houses, house connections are equipped with private control box and house inlet.

Project Investment and Source of Funds

The sewerage system in Bali is mainly funded by the Central Government (through the funds provided by JBIC loans), which finances capital cost, representing about 80% of the whole project cost with land and equipment acquisition, sewer and building constructions. The remaining cost (about 20%) is paid by Local Governments from their own budget and mainly involves house connections and the required equipment: pipes for branch and lateral sewer.

The JBIC loan amount granted to the Government of Indonesia for DSDP phase I was of 5,400 million yen. From this, 66.4 billion rupiah were financed by the Central Government from the National Budget. Then, the Badung Regency and Denpasar City provided more than 20 billion rupiah and the Bali Province offered 10 ha for the wastewater treatment plant area. For DSDP phase II, a second loan package was agreed between JBIC and the Indonesian Government in 2008, for an amount of 6,004 million yen. Bali Province, Badung Regency and Denpasar City invested all together more than 10 billion rupiah for the development of the second phase of this sewerage project.

Future expansion areas have been planned but DSDP III has not materialized yet.

Sewer Connection Charge, Collection System and Management

Willingness to connect with the sewer system among local communities seems to be high (depending on the area, between 70 to 80% in Denpasar and Sanur, and 98% in Kuta). This can be explained by the fact that house connection is free of charge if people connect immediately and also because of the quick and clean construction process (with the Pipe Jacking Method), together with the gradual awareness of sewerage benefits, especially after the successful installation of DSDP phase I.

The sewerage charge varies from the separated distance between the house and the sewer pipe to be connected with, and the size or type of business institutions. Collected rates are expected to be as follows (please note that the prices written below were given during the meeting between Mr. Wayan and JSC staff, and might slightly differ from the ones listed in the Final Report BPAL Establishment for DSDP):

<u>For households:</u>

- from 6 to 8 m: about 15,000 rupiah/month

- from 8 to 10 m: about 20,000 rupiah/month
- from 10 to 12 m: about 25,000 rupiah/month
- more than 12 m: about 30,000 rupiah/month

For business institutions:

Hotels:

- fixed rate for 3 star hotels and under
- for 4/5 star hotel: about 100,000 rupiah/room

Restaurants:

- up to 50 seats: about 27,000 rupiah/month
- from 50 to 100 seats: about 47,000 rupiah/month
- more than 100 seats: about 100,000 rupiah/month

These rates are planned to be collected in January 2011, once the related regulation passes at the local parliament and BLU PAL (Badam Layanan Umum Pengelola Air Limbah: the Sewerage Management Public Service Agency) is legally established. These rates include operation and maintenance cost (O&M), renewal cost for mechanical and electrical equipment of the wastewater treatment plant and pumping stations, but neither capital cost recovery or sewer pipe renewal. The sewer collection charge will be paid to the village-owned financial institutions or Lembaga Perkreditan Desa (LPD), as other bills like the electricity bill, and authorities are confident that payment is expected to go well, with probably only 5 to 10% of unpaid invoice.

Management System

BLU PAL will be the institution in charge of the sewerage system management, including financial management such as the sewer charge collection. “BLU” refers to a public service agency that should be autonomous both legally and financially. However, the present organization is not legally transferred to the Local Government and is still currently managed with budget from the Central Government. After transfer to the Local Government, three (3) years will be given for transition, after which it will be assessed whether this organization can fully manage its activities as a public agency or if it needs to be managed by the Central Government again.

The staff currently working for BLU PAL is minimal with, for instance, only four (4) staffs for the Suwung Wastewater Treatment Plant, excluding outsourced security guards and cleaning workers. Out of the four (4) staffs, two (2) are laboratory staffs. At the pumping stations, only security guards are staying after 2pm. Eleven (11) staffs, taking care of the sewer network, are provided by Mr. Wayan’s department (Cipta Karya-Bali office of the Ministry of Public Works).

General Observations and Challenges

General Observations

- Local communities welcome sewerage system:

  Despite negative memories due to the disturbance caused by the installation of stormwater drainage pipes in Kuta in the past, and probably some concerns toward a new project, the targeted population in the sewer service area seems to have welcomed the arrival of the sewerage system. After the success of the first phase of DSDP, people understood the benefits of the sewerage system and the willingness to connect to the public sewer was even higher for DSDP II. This was also motivated by the possibility to connect for free if done immediately and because the DSDP construction work had limited negative impact on people's activity;
- Interest from business institutions (hotels, restaurants) but not all are reached by the sewer service area:

  To diminish water pollution along the beaches, some hotels, mainly located in the Nusa Dua area, have built their own wastewater treatment facilities managed by the Bali Tourism Development Corporation. Unfortunately, due to their distant location they cannot benefit from DSDP;
- Satisfactory wastewater treatment:

  Effluent BOD obtained after treatment at the Suwung Wastewater Treatment Plant seems to be good and below the quality standards in Bali (50 mg/l). This result is presently enhanced by the low amount of wastewater discharged. Furthermore, the treatment process offers the advantage of being simple to operate and maintain, allowing low frequency of desludging operations;
- Positive example for other sewerage system replication in Indonesia:

  DSDP is a successful project that could motivate other provinces/regencies to invest for sewerage and include such plan in their Citywide Sanitation Strategy (CSS);
- DSDP positive development shows the importance of considering sewerage for wastewater treatment in densely populated areas, as one of the available options compatible with Community-based Sanitation (CBS) for comprehensive wastewater management planning.

Challenges

- BLU PAL needs to increase staff and capability, through training with international experts to properly operate, maintain and manage the Denpasar Sewerage System;
- Lack of knowledge and experience in sewerage systems:

  In Indonesia, sewerage is at a starting stage. Manpower at professional level is

insufficient in governments, academia and in the private sector. This is particularly true in the public sector as Cipta Karya remains a small organization but now handling an increasing amount of sanitation projects. The Government of Indonesia is considering DSDP as a national pilot project for sewerage, but there seems to be an important lack of knowledge and experience, for example regarding sludge management or wastewater operation and maintenance;

- Needs for integrated water resources management planning, including a proper balance and clear regulations to decide in which areas to implement Centralized and Decentralized Wastewater Treatment Systems;
- Needs for an increase of systems and technologies available for wastewater/night soil/sludge management, as well as of an increase of treatment facilities;
- Regular electric power cut occurrence from November to January, at a regular interval of three (3) to four (4) hours, twice a week (regulated from area to area), which requires management measures for the electrical equipment used for wastewater conveyance and treatment. Also, in order to save electric power, the blowers in the Suwung Wastewater Treatment Plant are sometimes switched off which badly affects treatment quality;
- Needs for behavior change as people throw rubbish into sewerage channels that causes clogging and blockages;
- Needs for stormwater/wastewater integrated management system:

  Concern with excess rainwater, as people open the manhole in the event of heavy rainfall, thus overloading with rainwater a system that has only been designed for treating wastewater from households. A sustainable drainage system is required to manage stormwater from regular and heavy rainfalls.

NEXT STEP

To improve basic knowledge on wastewater/night soil/sludge management, including wastewater treatment plant operation and maintenance; and increase manpower, JSC aims to coordinate its activities with JICA, ADB and other international donor organizations to provide expert staff training, and organize seminars and workshops for knowledge dissemination.

INDONESIA SANITATION SECTOR DEVELOPMENT PROGRAM (ISSDP)
Meeting with Mr. Jan Oomen, ISSDP Team Manager
Jakarta, Tuesday 23 February 2010

BACKGROUND

The Indonesia Sanitation Sector Development Program (ISSDP) was launched in 2006 to help Indonesian municipalities in developing sanitation according to the National Sanitation Goals, established by the Government of Indonesia in line with the Millennium Development Goals. Co-funded by The Netherland Embassy through Indonesia Water and Sanitation Sector Program (WASAP) and the Swedish Agency for International Development (SIDA), ISSDP is a partnership between the Government of Indonesia and the World Bank Water and Sanitation Program (WSP). This program has mainly been motivated by the desire to tackle the low priority given to urban sanitation and the lack of organized planning to respond to the Millennium Development Goals. With decentralization in 2001, local governments inherited the responsibility for their sanitation services, but without any operational framework, service delivery standard or measures to develop municipal capacity. The hierarchical relationship between provinces and municipalities has also not been clearly defined and the absence of government guidelines and regulations has made difficult for municipalities to access provincial funds.

Rather than providing direct finance or system, ISSDP aims to foster capability for municipalities to develop sanitation with a focus on planning, capacity building and institutional arrangements at city and provincial levels; policy and general strategy at national level; and awareness-raising in general. It enables collaboration between the different governmental organizations involved in sanitation at municipal level, and allows the identification and prioritization of actions to improve sanitation, including sewer connections, and related services within and beyond the municipality.

ISSDP FIRST STEPS

The first phase of ISSDP started in 2006 with the selection of six medium-sized cities for the conception of city-wide sanitation strategies (CSS): Surakarta (Central Java), Jambi (Central Sumatra), Payakumbuh (West Sumatra), Banjarmasin (capital city of South Kalimantan), Denpasar (capital city of Bali) and Blitar (East Java). It evolved four (4) components:

- sanitation enabling framework through strengthened policy, regulation, institutions, strategies and action plans;
- coordinating framework for activity and investment in sanitation;
- public awareness campaigns with a focus on the urban poor, including publications and

radio messages;

- local level capacity building and development of citywide sanitation strategies to inform sector policy and strategy development at national level.

ISSDP phase I was completed in April 2008 with a city-wide sanitation strategy accepted for all six cities and signed by the head of the City Planning Department (BAPPEDA). Phase II concerned the implementation of developed action plans. ISSDP proved to be such a successful program that it was adopted by the Central Government as a national policy for sanitation development. In 2009, the Government of Indonesia launched the accelerated sanitation development program (PPSP) and, in order to move closer to achieving the Millennium Development Goals, wished to extend the citywide strategy approach to most cities and towns in the country. In 2010, forty (40) cities are going to create a CSS, fifty (50) the next year and eighty (80) in 2012. To develop PPSP roadmap, 330 cities are expected to define a citywide sanitation strategy by 2014, and 162 cities are planned to be implemented by 2014 (forty-one (41) in 2010).This is an important step forward, as the cities that will have shown interest, commitment to improve sanitation services or demonstrate satisfactory performances of sanitation basic services, and have completed their CSS, will be entitled of Special Allocation Fund for implementation (Dana Alokasi Khusus or DAK) from the Central Government. To help municipalities creating their CSS and improving wastewater treatment, drainage and solid waste management, a booklet was published in January 2010 by the Technical Team for Sanitation Development (TTPS) and ISSDP: “Marching Together with a Citywide Sanitation Strategy”.

CSS PROCESS THROUGH ISSDP

A citywide sanitation strategy is a medium-term plan that targets total sanitation services, including domestic wastewater, solid waste and drainage.

The process consists of five stages:

- establishing a sanitation working group among municipal government agencies, the private sector, NGOs, and communities;
- mapping sanitation and collecting information about sanitation conditions; understanding development trends, needs, and opportunities, including the identification of priority areas with the highest environmental health risk;
- formulating a sanitation development framework with a vision, mission, goal and strategic policies;
- preparing a strategy for non-technical aspects: improving awareness and participation of communities, developing institutional capacity, developing policy and regulations, promoting NGO and private sector engagement, financing, monitoring and evaluation.

Next steps include the access of funds, the project memorandum for design and the implementation stage.

One of the CSS goals is to help municipalities finding various sources of funds to increase their budget (from Central Government, Provincial Governments, communities and private sector, households, etc.), and setting for instance appropriate tariffs to at least cover operations and maintenance costs. One of the important parts recommended by ISSDP is also to conduct monitoring and evaluation of city sanitation development. Then the last step is to translate the strategy in annual action plans before it can be implemented in a given budget year.

GENERAL OBSERVATIONS AND CHALLENGES

General Observations

- CSS through ISSDP addressed the long-neglected sanitation issue in Indonesia and showed at municipal level one positive way to enhance synergy, develop planning capacity and enable environment for progress in urban sanitation, as well as stimulating national strategy and policy at national level;
- ISSDP success highlighted the importance of attracting media attention to compare sanitary conditions between cities and use inter-city competition, peer pressure and pride as motivating factors for sanitation development;
- Additionally, publications like “Economic Impacts of Sanitation in Indonesia” from the World Bank Water and Sanitation Program (WSP) have a positive influence to promote sanitation development in Indonesia;
- To allow municipalities to develop their CSS, six (6) billion US dollars are required but even more investment is likely to be needed.

Challenges

- Reluctance to take new loans and national trend of reducing all government borrowing, as some loans from the past still remain unpaid. Consequently, investment in sanitation is low and improvement is taking time;
- National trend for low cost wastewater management systems like SANIMAS or improved septic tanks (capital cost for facilities targeting 200 to 600 people: 300 to 600 US dollars per household without consultancy cost) as these are “affordable” systems without loan;
- The roadmap and strategy for sanitation development is now clear and clearly wanted but it seems that only 25% of the funds needed for implementation are presently available;

- The Government of Indonesia is currently promoting SANIMAS for Community-based Sanitation (CBS), and projects are planned to substantially increase in the near future. However, even if SANIMAS system is an important step to raise awareness and address sanitation issues in low-income areas, treated effluent BOD with such facilities (ranging around 100 mg/l) indicates that SANIMAS system still contributes to environmental pollution in Indonesia and requires technological development.

NEXT STEP

With the nationwide development of CSS, the need for facilitators, sanitation experts has greatly increased and JSC could play an essential role in capacity building, for example through facilitators' technical, institutional and managerial training. JSC is also willing to provide solutions for the sustainability, improvement and future evolution of the existing facilities, such as connecting SANIMAS and/or the septic tanks once sewerage will be available, as well as the construction of night-soil/sludge treatment facilities (construction and desludging/septage management) or/and SANIMAS.

JSC aims to offer other technological options like johkasou for on-site domestic wastewater treatment and the expertise developed in Japan in wastewater/night-soil management through a proper combination of centralized/decentralized systems. JSC wishes to provide a comprehensive range of feasible, affordable and culturally acceptable technologies to suit each area's local characteristics.

MEETING WITH MS. YUYUN ISMAWATI (BALIFOKUS) AND FIELD INSPECTION OF SANIMAS FACILITIES

Bali Island, Thursday 25-Friday 26 February 2010

INTRODUCTION

During its visit to Bali, JSC team met Ms. Yuyun Ismawati, director of BaliFokus: a NGO that promotes and implements low-cost decentralized wastewater treatment systems for small-scale industries, pig/cow farmers and low-income communities, and is involved in solid-waste management. In cooperation with Local Governments and small-scale entrepreneurs/farmers, BaliFokus collaborates for the implementation of SANIMAS projects, funded in cooperation with BORDA (Bremen Overseas Research and Development Association) – a German NPO which also provides the technology – the Central, Provincial and Local Governments, local communities, and others.

BalifoKus aims to work closely, consistently, and empower low-income communities; to improve their life's quality and work together with multi-stakeholders. BaliFokus is involved with communities, prior and after the implementation of SANIMAS projects, and participates to facilitators' training. This NGO works as a consortium with BORDA, which collaborates with the Central Government of Indonesia through memorandum of understanding (MOU). BaliFokus is partly funded by the German Federal Ministry for Economic Cooperation and Development (BMZ).

SUMMARY OF THE SANIMAS FACILITIES VISITED IN DENPASAR, BALI

The first visited SANIMAS facility is located in Ubung, Banjar Batur, Southern Gang. This treatment facility was installed between October 2003 and January 2004 to tackle the pollution caused by the wastewater effluent discharged into the drainage system from fifty-four (54) Tofu-Soya bean industries and chicken slaughter houses established along Southern Gang Pucuk Sari. The construction cost was 85 million rupiah financed by BaliFokus, BORDA and Kelompok Mekarsari Jaya, but operations and maintenance are covered by the users' fee (around 20 000 rupiah for each company). The facility features shallow pipes for wastewater conveyance, a bio-digester of 4.4 m diameter that enables the recovery of methane gas for cooking, an anaerobic baffled reactor with six (6) chambers, a filtration capacity of 54 m^3 and a treatment capacity of 20 m^3/day. It serves six (Tofu-soya bean industries which produce between one (1) to two (2) tons of beans per day, activity that causes severe water pollution with an influent BOD concentration of 5,000 mg/l. Effluent BOD concentration is announced between 300 to 500 mg/l but regular monitoring is not conducted. Operation and maintenance is done by an operator, coming four (4) to five (5)

times per month. Maintenance includes desludging operations and filter change (announced to be done once every five (5) years).

The second visited SANIMAS facility is at close distance from the first one, in Kecamatan Denpasar Barat, Pucuk Sari Selatan Banjar Batur. The project started in October 2001 and the construction of the facility in August 2003. It features 467 m of piping system for thirty-four (34) house connections (simplified sewerage system) and a wastewater treatment system with anaerobic baffled reactor, where is treated gray and black water from about 160 households, and an old public toilet facility or MCK, with a capacity of fifteen (15) users/day. It was financed by the local community, the Government of Denpasar, BaliFokus with BORDA, AusAid and the WORLD BANK for a construction cost of 269 million rupiah. The treatment capacity is 50 m^3/day, but the effluent BOD is not monitored and from JSC staff visual inspection seemed to be around 100 mg/l before discharge into the drainage system. This SANIMAS facility was built to eradicate the problem of open defecation in the community, limit gray and black water discharge into the drainage system, and also help the previously described SANIMAS facility for wastewater treatment from Tofu-Soya bean industries. About 5,000 rupiah per month is charged to each household for operation and maintenance and an operator regularly checks the piping system, controls the tank, does scum cleaning and is also responsible for desludging (every two (2) years). Toilet facilities and household connections are users' responsibilities. Regular monitoring is planned only in case of inappropriate system condition.

The third SANIMAS facility JSC visited was the MCK Jempiring, Banjar Sari, Ubung. This project was funded by BaliFokus with BORDA and the land owner for 210 million rupiah. It features a public toilet unit, with six (6) toilets and six (6) bathrooms, a shallow sewer system connected to fifty (50) to hundred (100) households, an anaerobic baffled reactor and a biogas digester. As for the two previous SANIMAS facilities, regular monitoring is not done and the effluent BOD has not been showed to JSC team. MCK Jempiring system is managed by BaliFokus. Users pay 500 rupiah per visit, which cover operations and maintenance, MCK and treatment plant operator, electricity (also provided by methane gas) and desludging every six (6) years. This SANIMAS facility was built to reduce open defecation from houses not equipped with bathroom and toilet.

GENERAL OBSERVATIONS AND CHALLENGES

General Observations

- SANIMAS is an important step forward in sanitation development for low-income communities;
- Through preparatory work, it raises public awareness on sanitation issues and

promotes active involvement of communities;

- Environment for regular operation and maintenance is established;
- SANIMAS receives unanimous support from the Government of Indonesia and the number of projects has greatly increased throughout Indonesia, as SANIMAS implementations are expected to reach 1,000 implementations in 2010;
- SANIMAS can be quickly installed, is easy to maintain and ensures low energy cost;
- As electricity cost is expensive in Indonesia, biogas recovery is valuable;
- SANIMAS technology allows room for improvements in the future.

Challenges

- Despite important change, effluent quality is still not satisfying enough to prevent from polluting the environment and further improvement must be considered;
- System that does not require huge investment but which can difficultly be replicated in densely populated areas where no space is available for treatment facility installation. Only a limited number of people is targeted in comparison to the needs;
- SANIMAS will be highly replicated in the near future but the lack of available sanitation experts in Indonesia is a crucial issue for the quality of the preparatory work to be conducted with communities;
- Needs to develop effective and reliable night-soil/sludge treatment facilities and systems in Indonesia, as maintenance of SANIMAS facilities includes regular desludging operations;
- Concern with the security of the equipment used for Biogas recovery;
- Concern with the quality of construction and the longevity of SANIMAS facilities;

NEXT STEP

JSC can play an important role in further improving SANIMAS concept, improve technology and increase available options. JSC could also effectively organize and promote desludging business in a way that would be both rewarding for desludging operators and end-users. To ensure sustainability, JSC is willing to assess existing facilities, improve monitoring and find ways to extend longevity.

As well as for CSS, JSC involvement would be positive for the training of facilitators or/and sanitation experts. For future improvement, SANIMAS facilities could be connected through a piping system to a nearby wastewater treatment plant, once the sewerage system is expanded.