Uganda Ministry of Health

Summary Report

Republic of Uganda

Pilot Survey for Disseminating Full-automatic Washing and Disinfecting Devices for Medical Instrument to Promote Infection Control

November, 2016

Japan International Cooperation Agency

Saraya Co., Ltd.

1. BACKGROUND

(1) Political and Economic Overlook

I. Political Climate

Republic of Uganda (hereafter "Uganda") has been sustaining a relatively stable political condition since Mr. Museveni from the National Resistance Movement party took office as President in 1986. Since then, a decade long reform, shifting to a market based economy and a political economic system with strong emphasis on establishment of a government, has led to the stable political environment. In the north region, where a two decade long dispute against a rebel force, the Lord's Resistance Army (LRA), had been ongoing since the 1980s, the post-conflict stabilization has been carried on since the cease-fire agreement in 2006.[1] In 2016, the latest presidential election allowed the incumbent president Museveni to carry on his 5th term with the overwhelming number of votes against the opposition.

Regarding its regional role in East Africa, Uganda has been one of the founder members of East African Community (EAC), and it has been taking an important part of the regional diplomacy by delivering active supports for further regional integration. EAC is consisted of six countries, such as Uganda, Kenya, Tanzania, Rwanda, Burundi, and South Sudan with a total population of approximately 153 million[2]. With its aim for political and economic integration of the five member nations, EAC enhances economic cooperation, looking for a monetary union. In 2010, EAC Common Market has been established. Although Kenya has seen sporadic outbreaks of terrorism, EAC overall has sustained a relatively stable political status.

II. Economic Climate

Since the early 2000s, Uganda has seen continuous economic growth by implementing appropriate macroeconomic policies to carry out a consistent reform. Due to its rapid population growth, over the last decade, the annual GDP growth per capita has remained approximately 4.0%. According to the World Bank Group's "Doing Business 2016", Uganda ranks at 122 out of 189 economies in the Doing Business Rank.[3]

In terms of regional development, EAC embarked on the shift to a customs

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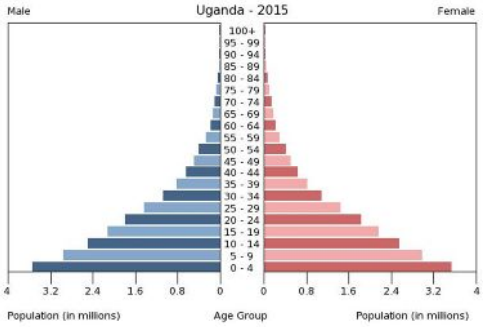
[1] Ministry of Foreign Affairs of Japan (2010). Uganda Kunibetsu Hyouka [Republic of Uganda: Evaluation by country] (Japan's ODA Official Development Assistance Homepage). Retrieved 5 12, 2016, from http://www.mofa.go.jp/mofaj/gaiko/oda/shiryo/hyouka/report/uganda1.html

[2] CIA "The World Factbook (2016)",

[3] The World Bank. (2016). Doing Business in Uganda. Retrieved 5 12, 2016, from http://www.doingbusiness.org/data/exploreeconomies/uganda

union in 2005, realizing the abolition of intra-regional tariffs, the introduction of common external tariffs, and the introduction of common rule of origin. In 2010, it preceded the intra-regional economic integration by opening the common market, which enables mobilizing assets, capital, labor, and service, guaranteeing the right to establish enterprises and settlements, with the aim of further intra-regional harmonization in economic and social sectors. For accelerating economic integration in the region, the introduction of common currency in the future has been discussed, followed by the abolition of intra-regional tariffs.[4]

III. Social Climate

1) Area	241,038 sq. km (Land: 197,100 sq. km)
2) Population	37,101,745 (July 2015 est.) Population growth rate: 3.24% (2015 est.)  Figure: Population Pyramid (2015)
3) Major industries	Agriculture (fresh fish, coffee, tea, cotton, tobacco) Mining (steel, cobalt, gold) Industries (sugar, brewing, tobacco, cotton textiles, sugar, cement, steel production)
4) Currency	Uganda Shilling (UGX)
5) Currency exchange rate	1 USD = Approx. 3,339.6 UGX (2015 est.)
6) Life expectancy at birth	Total population: 54.93 years Male: 53.54 years Female: 56.36 years (2015 est.)
7) HIV/AIDS - Adult prevalence rate:	7.25% (2014 est.)

Source: CIA "The World Factbook"[5]

[4] Japan External Trade Organization (JETRO) Nairobi Office. (2011). Higashi ahurika kyoudoutai (EAC) no ikinai tougou no shinten to kigyou doukou [The Regional Integration of EAC and Business Trends]. Retrieved 9 1, 2014, from http://www.jetro.go.jp/jfile/report/07000569/eac_ikinai_tougou.pdf

[5] CIA "The World Factbook (2016)". AFRICA: UGANDA. Retrieved 5 12, 2016, from

IV. Transport Infrastructure

In terms of freight transportation in international trades, expensive products, such as precision equipment, can be transported by flight, whereas large equipment and relatively cheap products, such as detergents, can be transported on land through the Northern Corridor in East Africa. This section is a discussion regarding transportation mainly from both domestic and international points of view.

i. Domestic Transportation

As land transportation is the main means in African logistics, Uganda has been developing main roads connecting major domestic cities and leading to major cities in neighboring countries. However, the low quality of road infrastructure causes damages to cargos, and unavoidable problems occur; increased transportation cost, additional cost for theft insurance and quality deterioration. At the moment, a plan to develop a railway connecting Kampala and Mombasa has been discussed to solve the logistics issues.

ii. International Transportation

It is estimated to take about 30 days for the Japan (Kobe/Yokohama)-to-Kenya (Mombasa) shipping route. It takes almost a month for transportation and customs clearance procedures in the case of Mombasa-to-Kampala transportation. At the moment, it takes at least 2 months to transport cargos from Japan to Kampala.

There is a long unloading time at the ports in Sub Saharan Africa because they have not carried out appropriate investment enough to handle the volume of international trade, which has been rapidly increasing recently, hence incapable of processing deals.

Regardless of recent expansion of the Mombasa port and railways renovation, the total transportation time has not been reduced in this project term.

iii. Customs Clearance Procedures

According to “Doing Business 2016” by World Bank, 13 documents are required to import from Japan. It takes about 31 days for the process and costs 3,375 USD.

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https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html

(2) Development Issues Regarding the Projected Sector

I. Healthcare Sector in Uganda from Respective Stakeholder's View

The main hypothesis in this project is that, while there are a number of problems to combat, the introduction of full-automatic washing and disinfecting devices for medical instrument (SARAYA Washer-disinfector AR-40, hereafter "AR-40") to healthcare facilities would increase the efficiency of washing operation for medical instruments and improve the healthcare service – one of the most prioritized issues in Uganda. As a result, the reduction in the occurrence of healthcare associated infection (HAI) would be expected.

According to "Uganda's National Development Plan", "Increasing access to quality social services" was set as one of the eight strategic objectives. Following the plan, the Japanese government set the roll out plan for Uganda's development, including improvement in healthcare service as one of the most important issues. It was interpreted into two aspects of healthcare as JICA projects: the hardware – healthcare infrastructure; and the software – quality of healthcare services.

In terms of software aspect in the healthcare issue, Saraya, Co., Ltd (hereafter, "Saraya") conducted a BOP project from 2012 to 2014, "Preparatory Survey on BOP business on infection control with new alcohol hand rub", to improve the hygienic situation among the BOP class through the introduction of its alcohol hand rub product. As a next step, the hardware aspect of the issue – appropriate cleaning/management of medical instruments to use for examinations and surgeries – was targeted in this project.

II. The Focused Issue on Healthcare Sector in This Project

In this project, among HAI, surgical site infection (SSI) was especially focused, and AR-40 was expected to be effective in preventing SSI by providing an appropriate sanitation process.

SSI is considered to be of great importance among HAI in the healthcare sector. SSI is thought to be a serious HAI issue in the developing world[6], and the occurrence rate of SSI is higher in African countries than that of developed countries. The occurrence and frequency of SSI in Uganda was 10 cases per 100 patients in 1997[7]. Officials in Uganda see SSI as one of the vital issues to resolve. In developed countries, for instance, it also represents the second largest percentage of the whole HAI in the United States: in 2011, SSI counts for 20 %

[6] Klevens.M, et al. (2002). "Estimating health care-associated infections and deaths in U.S. hospitals, 2002". *Public Health Rep 2007*. 122. 160-6.

[7] *WHO Health-care Associated Infection in Africa a Systematic Review*

(about 160,000 cases) of all the HAIs occurred in acute care settings in the United States[8]. It has a huge financial impact on national healthcare services as well: the cost of SSI per patient ranged approximately from $11,000 to $29,000 in 2007, so the national cost could be simply estimated from $1.7 billion to $4.6 billion per year.[9]

General HAI preventive actions have been conducted, covering air-borne, droplet and contagion infections; however, the infection preventive actions for SSI have not been introduced in developing countries.[10] As SSI is mainly caused by failure in performing aseptic processes according to medical articles[11], proper washing, sterilization, and maintenance of the medical equipment are critical in the SSI prevention process.

2. OUTLINE OF THE PILOT SURVEY FOR DISSEMINATING SME'S TECHNOLOGIES

(1) Purpose

The ultimate aim is to contribute to decreasing the maternal mortality ratio and the under-five mortality ratio through improving hygienic conditions in hospitals hence lessening the occurrence of HAIs.

Among all the HAIs, SSI is one of the major parts all over the world. In developing countries, counter-actions to SSI have not been taken sufficiently due to lack of technology and education on infection control.

In this project, our purpose was to improve the development of robust infection control practices by covering the inadequacy of infection control measures.

(2) Activities

In order to actualize the purpose, two approaches were planned:

- Raise the effectiveness in washing and sterilizing surgical equipment and improve the maintenance level by introducing AR-40
- Provide medical professionals with educational/enlightenment programs on prevention of HAIs and hygiene management of medical instrument so as to reduce the risk of HAIs among them

In this project, we conducted four activities:

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[8] Centers for Disease Control and Prevention. (2016). HAI Data and Statistics. Retrieved 5 9, 2016, from http://www.cdc.gov/hai/surveillance/

[9] R., Douglas Scott II. (2009). The Direct Medical Cost of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention. Retrieved 5 9, 2016, from http://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf

[10] Japan Nosocomial Infections Surveillance, Ministry of Health, Labour and Welfare, Japan. (2006). "Iryoukikan ni okeru innaikansen taisaku manyuaru sakusei no tameno tebiki". Retrieved 5 9, 2016, from https://www.nih-janis.jp/material/material/Ver_5.0%E6%9C%AC%E6%96%87070904.pdf

[11] Association of Operating Room Nurses. (1999). "Association of Operating Room Nurses: Standards, Recommended Practices, Guidelines".

I. Fact-finding survey on infection control policies and procedures
II. Field-test of AR-40 at project hospitals
III. Educational and enlightenment activities
IV. Feasibility study for localized AR-40 and local production of detergent

(3) Information of Product/ Technology to be Provided

AR-40 Washer Disinfector

(4) Counterpart Organization

The Uganda Ministry of Health

(5) Target Area and Beneficiaries

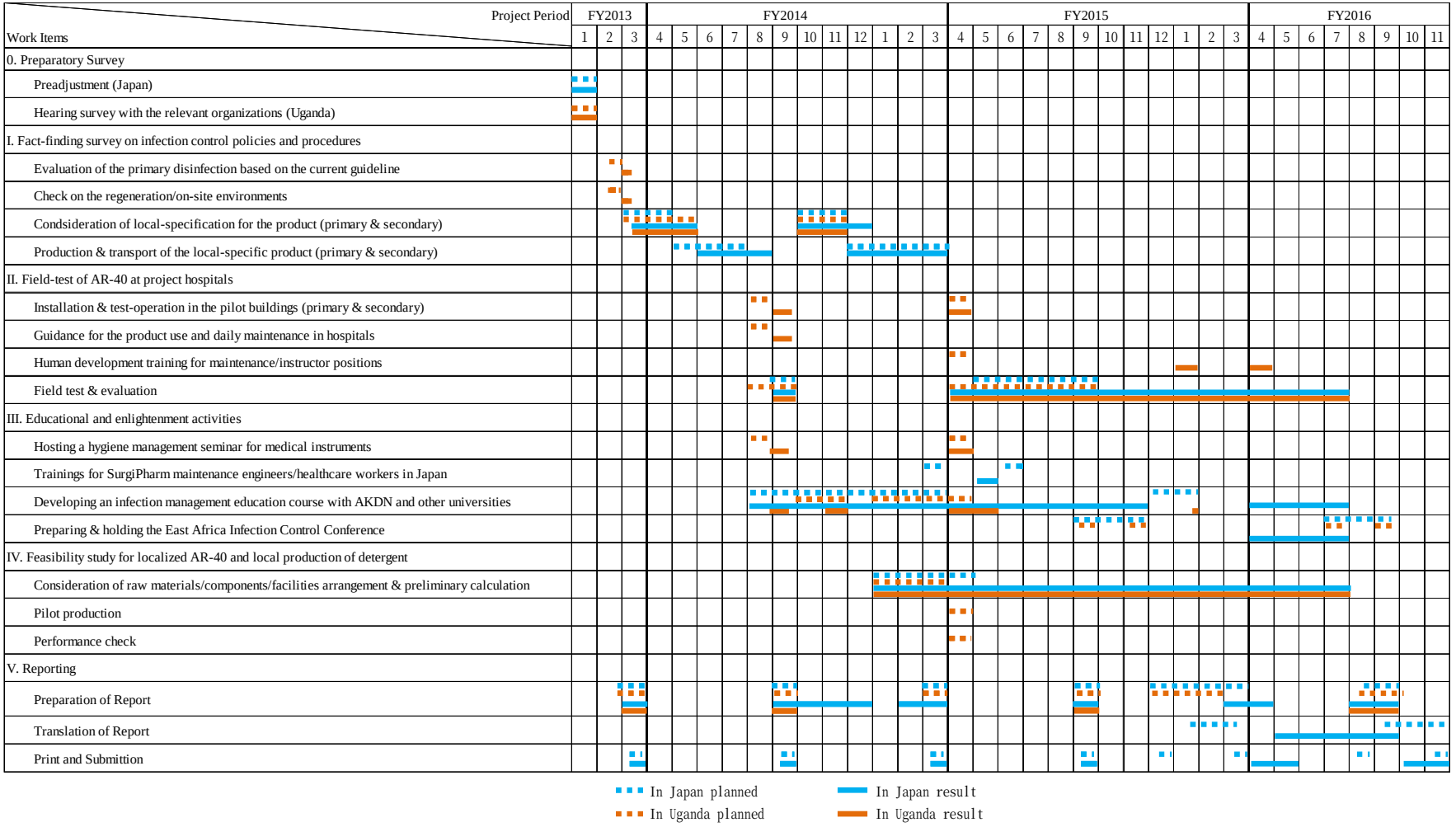
Four public hospitals under the Ministry of Health (MoH):

- Mulago National Referral Hospital
- Jinja Regional Referral Hospital
- Entebbe General Hospital
- Gombe General Hospital

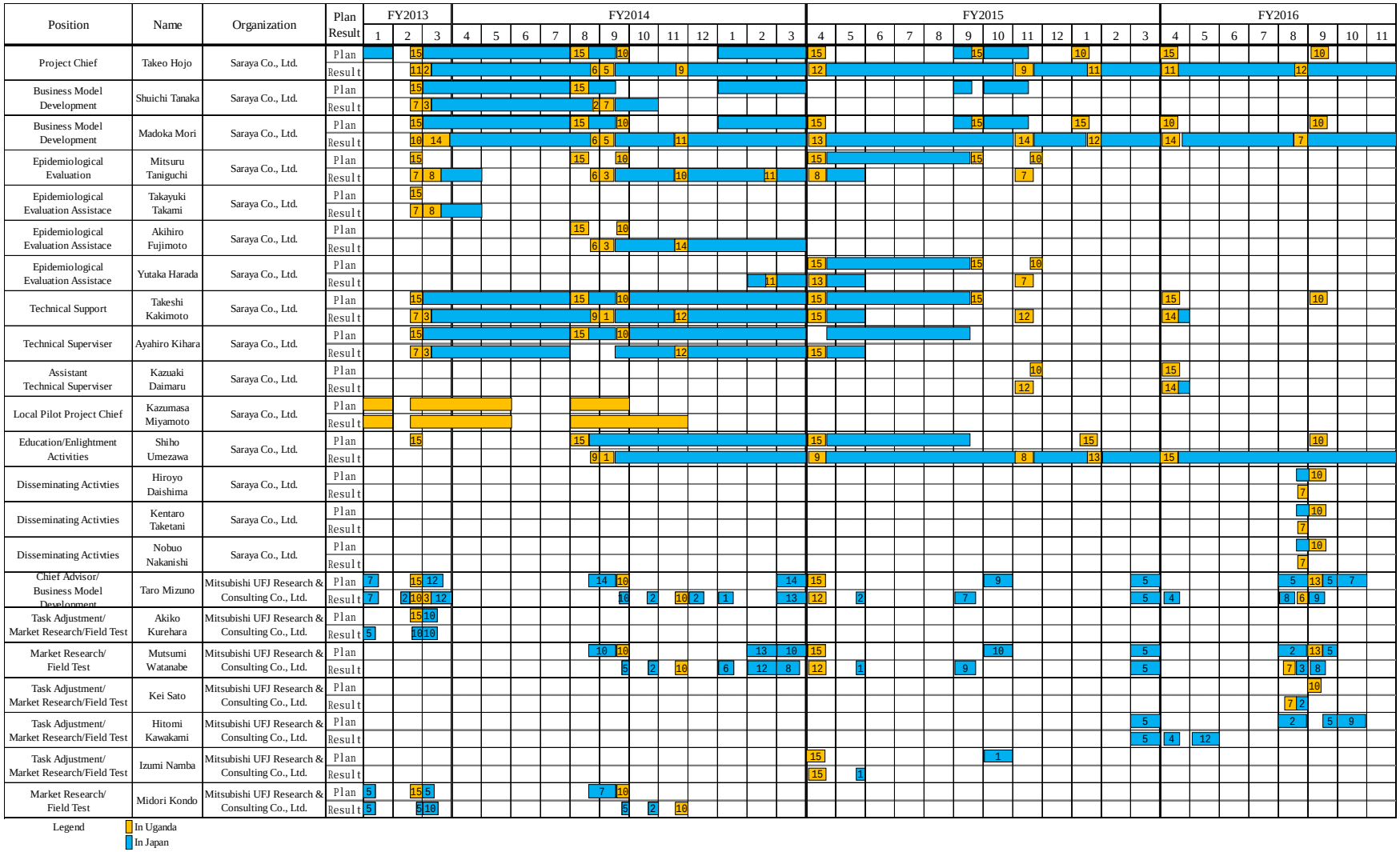
(6) Project Period

December 5th 2013- November 30th 2016

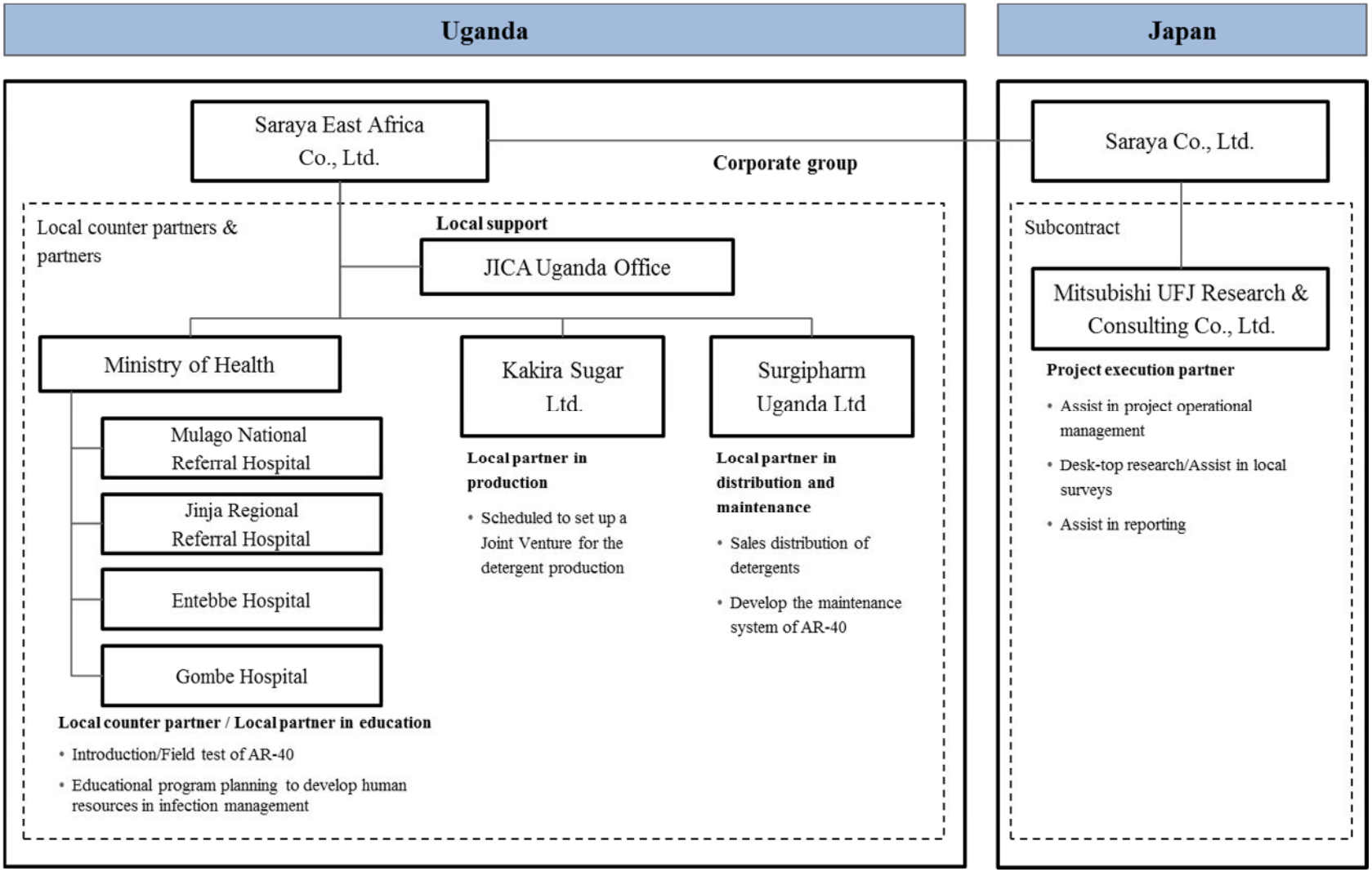
(7) Progress Schedule



(8) Manning Schedule



(9) Implementation System



3. ACHIEVEMENT OF THE SURVEY

(1) Outputs and Outcomes of the Survey

I. Fact-finding survey on infection control policies and procedures

- "Infection Control: Policies and Procedures (2005)" by the government regulates the disinfection methods for medical instruments, and medical professionals follow the guideline.
- In Uganda, machine washing is not common, but three buckets disinfection system (each bucket contains chlorine bleach, soap and water respectively) is regularly used.
- According to medical professionals, insufficient supply of Jik bleach (The Jik Bleach brand by Reckitt Benckiser is the leading brand in the Ugandan chlorine bleach market) and difficulty to keep effective chlorine concentration of the chlorine bleach bucket were pointed out as safety risks.
- The officials from MoH requested the introduction of washer disinfectors and educational opportunities of global-level infection control for medical professionals.

II. Field-test of AR-40 at project hospitals

- We introduced in total 13 localized AR-40 to project hospitals: 3 for Mulago National Referral Hospital, 6 for Jinja Regional Referral Hospital, 2 for Entebbe General Hospital, and 2 for Gombe General Hospital.
- We confirmed enough washing and disinfection effects of AR-40 and the practicality of AR-40 in regular operation in each hospital.
- In Gombe General Hospital, where the supply of water and electricity are not always available, medical professionals in charge of AR-40 reported that stable operation of AR-40 was difficult due to its infrastructure.
- Medical professionals in charge requested periodical guidance regarding the effective use, good practice and maintenance procedure of AR-40.
- The survey conducted in Jinja Regional Referral Hospital showed that AR-40 reduced workload of medical professionals.
- The result of this field-test showed that AR-40 improved the level of infection control and required stable supply of electricity and water.
- The market potential of AR-40 in Uganda was estimated in a total of 130 hospitals (public, PNFP and private hospitals) due to the infrastructure conditions.

III. Educational and enlightenment activities

- Basic infection control seminars were held for 20 doctors/nurses by hygiene

instructors from Saraya East Africa twice in each project hospital. In these seminars, we enhanced understanding of washing used medical instruments with the device and explained the benefits of AR-40.

- We planned an education course for nurses in the field of infection control with the cooperation of Aga Khan University; however, this course could not launch because we could not meet an agreement within a limited period.
- In May 2015, we invited officials from the Ministry of Health and project hospitals to Japan and held a practical training in order to learn Japanese infection control system by comparing to that of Uganda. Through this training, the participants comprehended the global standards, and we developed the curriculum of infection control optimized for Ugandan hospitals.
- In January 2016, we held “Infection Prevention and Control Course in Uganda” for officials from regional referral hospitals in charge of management and infection control at Jinja School of Nursing and Midwifery. The level of understanding among the participants was improved.
- The participants of “Infection Prevention and Control Course in Uganda” elaborated the plan of Infection Control Association as their action plan.

IV. Feasibility study for localized AR-40 and local production of detergent

- In this project, both alkaline and neutral detergents were used for field demonstrations. As a result, it became clear that an alkaline detergent was appropriate for use in Uganda.
- In terms of distribution, we have already developed our distribution network and supply system in cooperation with Surgipharm.
- In terms of supply chain, part of the raw materials for our alkaline detergent is not available in Ugandan and other EAC markets. Therefore, we could not start the pilot production of detergent in this project.

(2) Self-reliant and Continual Activities to be Conducted by Counterpart Organization

- AR-40 manuals and DVDs were provided by Saraya to project hospitals for proper maintenance.
- Based on the action plans assembled in “Infection Prevention and Control Course in Uganda”, Infection Control Association was launched under the initiative of MoH. This Association will spread the knowledge and know-how across Uganda.

4. FUTURE PROSPECTS

(1) Impact and Effect on the Concerned Development Issues through Business Development of the Product/ Technology in Uganda

- We confirmed that AR-40 performed successfully and improved the disinfection level of medical equipment in this project.
- Through the field-test, medical professionals started to use AR-40 in general operations, and it led to a high-level disinfection level that prevents infectious contamination related to HAI, especially SSI. In addition, the operation of AR-40 decreased the safety risk and reduced the workloads of medical professionals.
- Educational trainings on infection control raised participants' awareness and developed their capability.
- We transferred technologies and know-how to realize continuous AR-40 maintenance and self-reliant educational activities.

(2) Lessons Learned and Recommendation through the Survey

From the lessons learned in this project, we found measures Uganda ought to take in order to solve the development issue, namely HAI. We would like to recommend the Ugandan government to promote the following activities collectively:

I. Government

- Periodical revision of the guideline, "Infection Control: Policies and Procedures", referring to global standards
- Infrastructure development related to improvement of medical service quality, especially stable supply of water and electricity

II. Hospitals

- Sophistication of medical information management concerning HAI
- Establish an infection control manager /team to maintain disinfection level in hospital entirely

III. Medical professionals

- Raise awareness and develop capability regarding infection control
- Practice infection control at their own workplaces and implement improvement activities, such as 5S-KAIZEN-TQM activity

ATTACHMENT: OUTLINE OF THE SURVEY