Kingdom of Cambodia

Preparatory Survey on BOP Business on liquid disinfectant soaps for hygiene and health improvement – Final Report Summary -

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Japan International Cooperation Agency

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Chapter 1. A Brief History of Cambodia

Following the Paris Peace Agreement in 1991, the Kingdom of Cambodia (Cambodia) shifted into high gear to rebuild their country. In 1997, armed conflict and the Asian financial crisis created economic difficulties for Cambodia, although economic and social infrastructures were ultimately preserved through the leadership of president Samdech Hun Sen.

According to a 2013 population statistics survey half of the total population of Cambodia is under 25 and two-thirds of the total population is of working age. This population pyramid shows not only labor potential but also an up and coming market defined by a growing population. In 1999, Cambodia ratified its commitment to the Association of South-East Asian Nations (ASEAN), thereby joining the international community and promoting further economic development.

Cambodia's per Capita GDP was $305 in 2003 and grew to be $594 in 2007. In 2008, Cambodia's economy continued to expand. It is imperative to continue supporting the systematic growth and development of a country once ravaged by civil war.

According to ASESAN in 2015, Cambodia will play an important role in the North-South corridor that will connect Bangkok, Thailand and Ho Chi Min, Viet Nam. It is believed that this corridor will greatly contribute to international economic growth by increasing transportation.

Chapter 2. Hygiene and Living Conditions of the BOP Population

2.1 Living condition

In 2005, the Base of Pyramid (BOP) population of Cambodia accounted for 93.9% of its total population (12.2 million people). At that time nearly all Cambodians were classified as BOP citizens, with 11.9% of these people living urban areas. It may be inferred from Fig. 1 (below) that the Cambodian population pyramid is primarily formed by the younger generation and that the BOP population continues to grow for the time being.

Table 1: Percentage of BOP Populations

GDP per capital	Total (Million people)	Percentage of national (%)	Urban area (%)
3000	0.4	3	40
2500	0.7	5.5	31.1
2000	1.4	10.7	19.8
1500	2.7	20.5	13.7
1000	4.7	36.2	7.1
500	2.3	18	4.2
Ground total	12.2	93.9	11.9

Note : The Next 4 Billion, Market Size and Business Strategy at the Base of the Pyramid、World Resources Institute & International Financial Corporation、2007

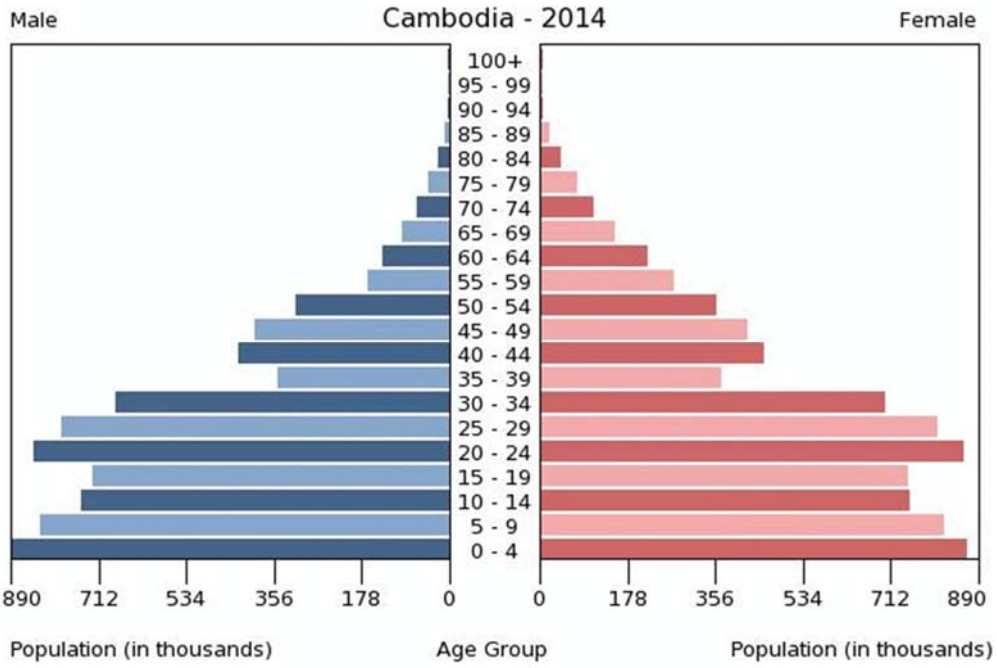

Figure 1. Population pyramid in Cambodia

Note ：CIA world fact book

Our base survey began in August of 2013. The survey dictated that the average monthly household expenditure was 434.8 USD in Phnom Penh city. In stark contrast, the average monthly household expenditure in the Kandar province was 227.7 USD, approximately half of that in Phnom Penh city. As shown in Fig.1, there was a gap in consumption between the urban and rural areas.

Table 2. Sector Based Household Expenditures

Section	Cambodia		BOP		
	Million dollars	Composition rate(%)	Million dollars	Composition rate(%)	Ratio of Cambodia(%)
Food	9,921.3	58.3	8,324.0	63.4	83.9
House rent	354.7	2.1	199.7	1.5	56.3
Water	n.a	-	n.a	-	-
Energy	1,478.1	8.7	1,204.7	9.2	81.5
Domestic article	955.3	5.6	752.8	5.7	78.8
Medical	539.4	3.2	474.1	3.6	87.9
Transportation	1,267.5	7.5	532.4	4.1	42
Telecom bill	244.1	1.4	129.9	1.0	53.2
Education	435.2	2.6	212.4	1.6	48.8
Other	1,810.6	10.6	1,289.1	9.8	71.2
Total	17,006.1	100.0	13,119.0	100.0	77.1

2.2 Current State of Hygiene around Pilot Area

Any effort to analyze the current state of hygiene in a given area must first account for water usage as it is closely entwined with soap usage. After all, we cannot wash our hand without water. Given the prevalence of piped water supplies in the urban areas of Cambodia the range and degree of coverage is very high. In rural areas, however, people must instead make use of rainwater, pond water, river water, lake water, and ground water depending upon their location and the season. Different kinds of water sources each have their own potential usages and the frequency with which they may be used may vary. The development of waterworks facilities focuses on simultaneously supplying populations with both drinking water and hand washing water. Increased access to the water generated by such facilities will also be a driving force for increasing soap sales. That is, developing waterworks facilities will contribute to the improvement of both hygiene and public health.

According to our questionnaire 50～60 % of the people in each area frequently washed their hands. On the other hand, less than 20% of people did not wash their hands regularly. These individuals mainly wash their hands after work, housekeeping, and before cooking. Two conclusions may be drawn from this scheme of hand washing. First, housewives wash their hands more often than other family members. In other words, housewives have frequent opportunities to wash their hands. For example, when cooking, washing clothes, etc. In contrast, children have the worst hand washing habits. For this reason we must consider education programs for children concerned with proper hygiene. Moreover, when asked about the “case of diarrhea,” it was discovered that some people understand the correlation between diarrhea and hand washing as a few of them answered “Inadequate hand washing.”

2.3 Overview of Hygiene Products （For Open-Household and Medical Use）

In our open-household market survey regarding the use of hand soap we did not find a major difference between rural areas and urban areas. Having said that, we did discover that liquid hand soap is popular amongst the middle and upper classes.

We also visited numerous national, provincial, and referral hospitals in addition to other health centers so as to lean about the medical market for hand soap. Our findings dictate that the majority of the medical field uses bur soap. Powdered soap is also used for washing clothes. These soaps are provided by Ministry of Health (MOH) and sent to the Provincial Health Department Office (PHD), which in turn sends them to the various Operational Districts (OD) and Health Centers (HC) on the basis of budget or demand.

However, the supply of soap is limited and meeting demand is difficult. If the demand is not met, inquiring parties can make a request to their competent authorities. For example, HC to OD, OD to PHD, PHD to MOH. We found that if this request is not successful parties in need of soap will use their own budget, generated by health care fees.

We also conducted a market survey regarding the use of alcohol for both open-household and medical markets. It was clear from this survey that the use of alcohol for hygienic purposes was not uncommon in households. Having said that, alcohol is more commonly used for medical purposes. MOH purchases alcohol for all the medical facilities in Cambodia. They distribute it through the same route as their soap supply. When MOH buys the alcohol it is auctioned to local distributers. However, the supply volume is remitted. Most medical facilities need to make additional purchases in the same fashion as the soap procurement. Furthermore, when additional purchases are necessary, these facilities often purchase alcohol from pharmacies within the town. We also conducted a study on pharmacies.

2.4 Hygiene Education and Activities in Cambodia.

We carried out a survey regarding "Community Health Workers" in an effort to promote the products of local partners. There are 2 people in each village who volunteer for the community health program called the "Village Health Service Group." After compiling information about their history, structure, and missions, we have begun to consider cooperating with these individuals and their program.

There are Buddhist temples located throughout Cambodia, where more than 90% of population believes in Buddhism. These temples host many education programs for children, which are facilitated by NGOs that receive donations from foreign countries. We found that some of the NGOs have hygiene education programs which can be corroborated with our project.

Moreover, UN, International NGOs and the Ministry of Rural Development have a monthly WATSAN（Water Waste and Sanitation） meeting so that they may share their activities and develop a strategic action plan.

Chapter 3. Results and Analysis of the Pilot Project

So as to comprehend the present situation that might affect our future business, we decided to implement our pilot project in (1) the city of Phnom Penh, (2) Kandal Province and (3) Kampong Cham Province.

We selected the sites for the pilot project through our first and second field surveys, considering (i) access to running water to enable adequate hand washing, (ii) hand

washing habits, (iii) usage of sanitary materials other than ours, and (iv) the existence of persons in concerned facilities with the capacity and the will to cooperate with our pilot project. The results of selection are as follows: (cf. Table 4).

We adapted the specifics of our pilot project to the situation at each site, that is, one defined by medical institutions where infallible improvement of sanitation is expected and usage of alcoholic products is a primary concern and, for households and retail shops, where soap usage is a primary concern. See Table 3 for details of products adopted for the pilot project.

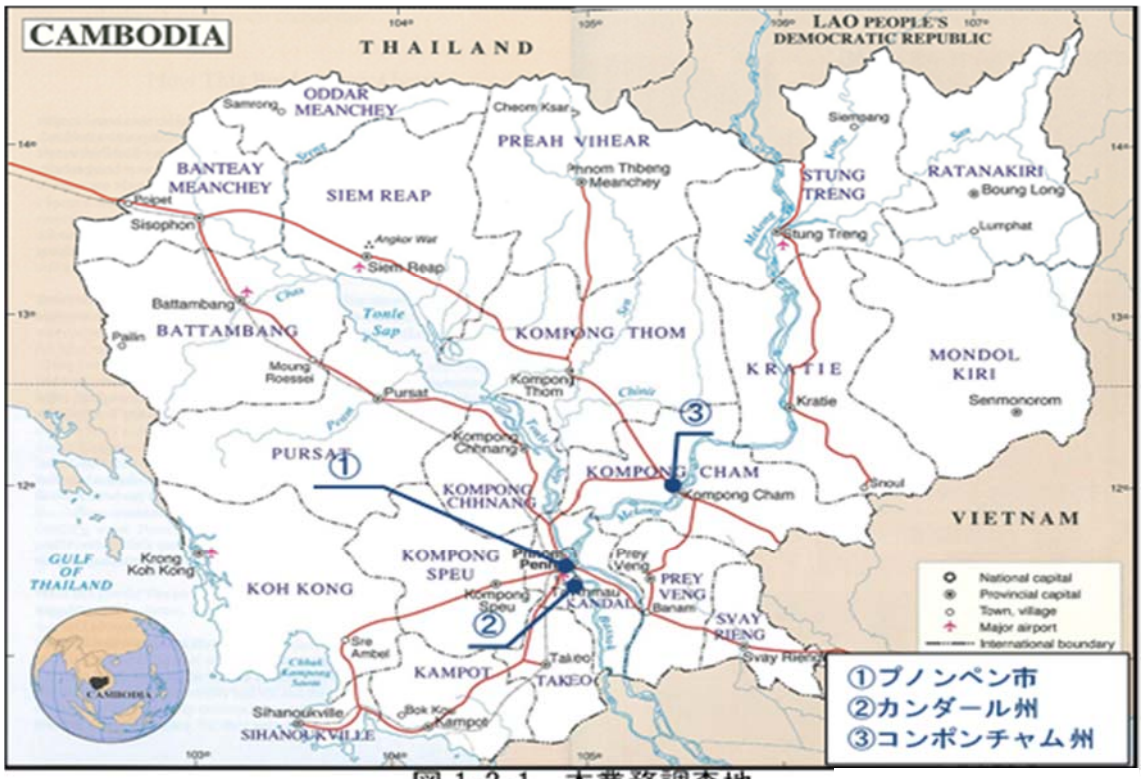

図 1-2-1　本業務調査地

① Phnom Penh
② Kandar
③ Kompong Cham

Figure 2. Map of pilot site

Table 3　Pilot Product

Shavo Green (Liquid hand soap) 250 ml	Hibiskor SH (Alcohol)　1L	SATAYAN gel SH 1 (Alcohol)　40ml
		

Table 4 Detail information of the pilot site

		running water (with or without/ water source)	hand wadhing	hand disinfection	alternative sanitary materials		details of pilot survey
					soap, detergent	alcohol	
urban areas	slum	with / tap water	practiced	unpracticed	laundry detergent(powder); kitchen detergent(liquid)	unused	factual survey(household expenditure, sanitation awareness, alternative sanitary materials etc.) user experience survey of SARAYA products usage measurement of sanitary materials test marketing at retail shops in slums
	NMCHC	with / tap water	practiced	practiced	soap(solid); soap(liquid)	high concentration alcohol preparation	sanitation awareness survey (after inplementing pilot project) setting and usage measurement of alcohol preparation sanitation workshop displaying hand hygiene instruction pannels presentation at IC-IPC ASEAN
	NPH	with / tap water	practiced	practiced	soap(solid); laundry detergent(powder); kitchen detergent(liquid)	high concentration alcohol preparation	sanitation awareness survey (after inplementing pilot project) setting and usage measurement of alcohol preparation sanitation workshop displaying hand hygiene instruction pannels presentation at IC-IPC ASEAN
rural areas	Koh Roka Health Center	with / rain water, pond water, ground water	practiced	practiced	soap(solid); laundry detergent(powder); kitchen detergent(liquid)	high concentration alcohol preparation	factual survey (on present sanitation status) usage measurement of sanitary materials sanitation workshop factual survey of surrounding households(household expenditure, sanitation awareness, alternative sanitary materials etc.)
	Dey Eth Health Center	with / rain water, ground water	practiced	practiced	soap(solid); laundry detergent(powder); kitchen detergent(liquid)	high concentration alcohol preparation	factual survey (on present sanitation status) usage measurement of sanitary materials sanitation workshop factual survey of surrounding households(household expenditure, sanitation awareness, alternative sanitary materials etc.)
	Ban Teay Dek Junior High School	without / ground water	practiced	unpracticed	unused	unused	sanitation awareness survey (after inplementing pilot project) setting and usage measurement of alcohol preparation sanitation workshop preparation and distribution of hand washing posters test marketing at surrounding retail shops factual survey of surrounding households(household

3.1 Test Marketing and Marketing Research

We conducted a hearing survey to 30 retail shops in the slums and 7 retail shops around a junior high school regarding the stocking of sanitary materials, their willingness to pay for Shavo Green, recent sales trends etc. In gathering information and selecting shops to cooperate with our mission we had made all necessary preparations for test marketing. We implemented test marketing in cooperation with four shops in the slums and another four shops around the junior high school for about three months starting in January of 2014. SARAYA had provided 60 bottles of 250ml Shavo Green, 7 bottles of 2.7L Shavo Green, and 61 empty bottles for sale by measure. As a result, two 250ml-bottles, one 2.7L-bottle, and an amount of 62 strokes of the pump were sold, of which the total sales was 83,100 KHR.

We received considerable feedback from the shops after getting this result, with shopkeepers attributing the result to a "lack of promotion," or "excessive pricing." Half of the users who participated in our survey echoed that the price was too high. Hence, we need further discussion about pricing and promotion so as to develop a more appropriate marketing strategy.

Consumer feedback also dictated that there is a strong correlation between "quality" and "comprehensive evaluation." If we consider the coefficient of quality to be weighted as 100, price, convenience, lather, and quantity may be understood to weigh 49, 48, 45, and 31, respectively. This correlation expresses that price, convenience, and lather are almost equal in weight. Thus, each resident's willingness to buy a product is based upon on a scheme of prioritization that follows the order of quality, price, convenience, how well it lathers, and finally quantity.

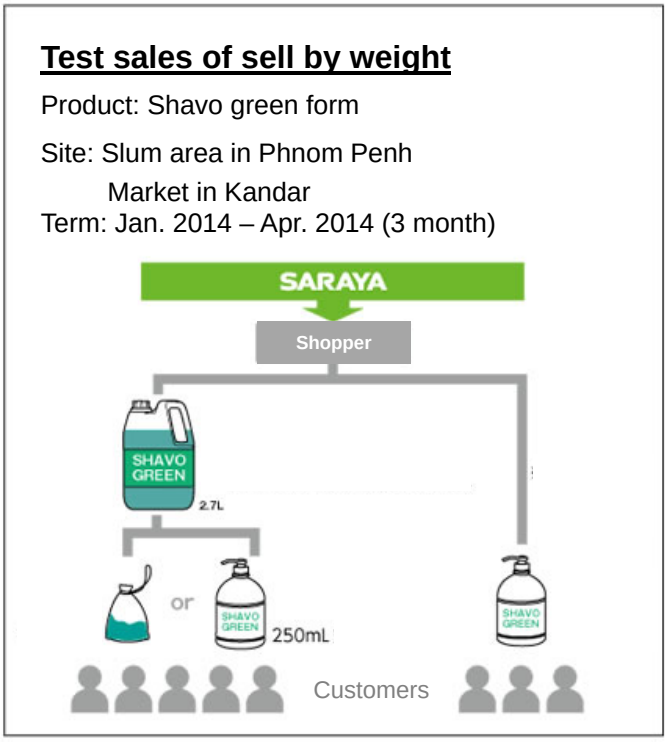

Figure 3. Test sales

Photo 1 Product display

Photo 2 Promotion

We also conducted a hearing survey concerned with how much customers were willing to pay for Shavo Green. In this hearing survey we carefully explained to respondents the utility and nature of Shavo Green before asking if they would be willing to purchase it. Many respondents affirmed that they would be willing to pay 1 dollar or less for Shavo Green, with an average answer of 0.92 dollars in the slums of Phnom Penh and 0.86 dollars in the rural areas of Kandal Province. We also verified affordability in conjunction with this survey.

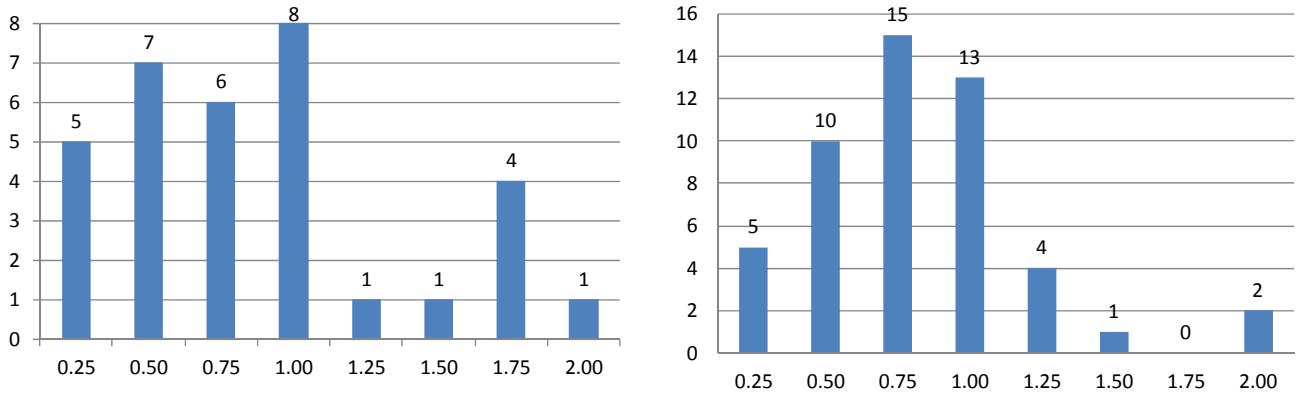

Figure 4. Willingness to Pay (US$)

3.2 Appropriate Hand Hygiene and Transition of Compliance Rate

One result of our survey was that there appears to be a problem with medical students. In both centers we observed that medical students, despite receiving training from established healthcare professionals, skewed our measurement of compliance rate. We had initially compiled one compliance rate for medical students and healthcare professionals taken altogether. However, when we checked the compliance rates of healthcare professionals and medical students divorced from one another we discovered that the compliance rate of medical students was so abysmally low that it pushed down the hospital-wide average. If we observe transition of compliance rate excluding medical students we might find steady improvement of the rate for both centers.

It is most essential for those who are engaged in medical care – whether they are medical students or those who assist in medical activity – to maintain a certain modicum of hand hygiene. Compulsory education aimed at ensuring that proper hand hygiene protocol is carried out must be offered to both medical students and healthcare professionals alike. Practical aspects of hygiene such as timing should be considered when designing education programs in the interest of efficacy.

3.3 Implementation of Sanitation Workshop and Changes in Awareness

We held workshops for healthcare professionals and students at 5 of the 6 sites where we conducted the pilot project – excluding only the slum area – which met 15 times and mobilized over 2,600 people. The themes of these workshops were hand hygiene, nosocomial infection, and feedback regarding the results and progress of our pilot project, the details of which varied by site. To verify changes in awareness we conducted a sanitation awareness survey (questionnaire) at 2 hospitals and a junior high school before and after those sanitation workshops.

As for junior high school, the result of survey showed that "dissemination of knowledge about basic sanitary actions" had led to marked improvement but people still lacked a sufficient "understanding of correlation between health management and hand hygiene." The results of our questionnaire dictated that participation in sanitation workshops would facilitate this understanding. Moreover, as consumption of alcohol set up in classrooms increased in the second month of sanitation workshops, it may be concluded that the workshop resulted not only in changes in hygiene awareness but also behavioral changes.

As for the hospitals, the results of our questionnaire showed that the sanitation workshops made healthcare professionals more cognizant of a "lack of own hand hygiene for medical activity." Another result of our workshops was that many within the hospital responded with "need further effort" to a question about "efforts needed for hand hygiene in medical activity." Both hospitals responded that they must take further measures to establish proper hygiene protocol. In considering these two results one might conclude that health professionals have been made aware of how imperfect their own hand hygiene was through education and feedback regarding hand hygiene and have since developed a desire to improve their hand hygiene.

Through this pilot survey it has been proven that, by improving necessary equipment and drugs and providing educational feedback, the compliance rate increases and awareness of health professionals is enhanced. Still, establishing a system capable of sustaining these improvements is challenging.

3.4 Conference on Infection

In the medically developing countries of ASEAN, such as Cambodia, hand hygiene, one of the most essential measures in controlling the spread of nosocomial infection, has yet to be improved. So as to promote understanding of the importance of hand hygiene in these countries and to announce the result of the pilot survey, which was conducted in NPH and NMCHC in this project, we held the first IC-ICP for healthcare professionals and responsible officers of the Ministry of Health.

Official name: *IC-ICP2014 International Conference on Infection and Control at the Healthcare Facilities in the ASEAN Community*

Date and time: *9:00a.m.-4:00p.m. Tuesday 19th August 2014*
(reception party 5:00p.m.-)

Location: *Intercontinental Hotel Phnom Penh*

Host: *Ministry of Public Health of Cambodia*

Patronage: *JICA office in Cambodia, Saraya Co., Ltd.*

Supporting Company: *Nihon Keizai Shimbun,Inc.*

This conference aimed at recognizing the problems and current state of medical health and infection control in ASEAN countries in addition to raising awareness of the importance of hand hygiene and decreasing nosocomial infection in medical facilities by encouraging a shift in the conduct of medical service workers.

Amongst those who attended was the Minister Mam Bun Heng, Ambassador Kumamaru from the Japanese Embassy in Cambodia, General Manager Izaki from the JICA office in Cambodia, numerous medical service workers from around the country, and about 120 people from the neighboring countries of Vietnam and Laos.

Professor Didier Pittet, of Geneva University Hospital, was invited to deliver a keynote speech on cutting-edge measures aimed at preventing the spread of nosocomial infection. Namely, “Five timings of Hand Hygiene,” which WHO promotes, and a worldwide campaign targeted at the prevention of infection, “Clean Care is Safer Care.” Also, representatives from NPH and NMCHC reported findings from a diffusion demonstration project regarding hand hygiene implemented from February to August 2014. Professor Pittet, the president of SARAYA CO., LTD, Saraya, a nurse from the Ministry of Health of Lao PDR, and a nurse of a hospital in Vietnam were invited to the panel discussion to discuss the status of infection and its control in each country.

Chapter 4　Business Model and Project Plan

The target products of this project are hand soaps (Shavo Green Foam) and ABHR (Alsoft SH). As mentioned above, hand soaps and ABHRs are different in sales demographics and differing sales techniques are therefore required. Therefore, each product requires a demand survey so as to be adapted for particular markets.

4.1　Demand Forecast（Liquid Hand Soap）

According to the results of our survey populations who can access running water for the purpose of hand washing with hand soaps are assumed to be hand-washing populations and determine a detergent demand forecast.

As illustrated in Table 5, the spread of water systems in Cambodia is progressing thanks in part to long-term technical cooperation with Japanese municipalities.

Table 5 : Water Supply Situation in Major Cities

Place	Population -Urban-	Population -Province-	Urbanization rate	Household -Urban-	Piped water connection			
					Provider		Connection	Population ratio
					Public	Private		
Phnom Penh	1,447,239	1,688,044	85.7%	283,772	250,070	14,487	264,557	93%
Siem Reap	234,318	922,982	25.4%	46,864	5,278	2,535	7,813	17%
Battambang	183,048	1,121,019	16.3%	37,357	10,424	8,925	19,349	52%
Kompong Cham	183,048	1,757,223	10.4%	25,779	6,245	17,716	23,961	93%
Sihanouk Ville	105,613	250,180	42.2%	22,471	6,304	1,770	8,074	36%
Kampot	50,078	611,558	8.2%	10,433	4,830	3,673	8,503	82%
Kompong Thom	32,147	690,414	4.7%	6,840	7,187	1,066	9,253	135%
Pursat	24,821	435,596	5.7%	5,396	6,813	1,580	8,393	156%
Svay Rieng	17,049	578,380	2.9%	3,706	2,137	1,313	3,450	93%

※Population in urban areas : Including population of urban areas, except states.
※Definition of urban areas : Population density 200people/㎢, population of commune is more than 2,000people and agriculture workers of men are lower than 50%.
※For Kampong Thom and Pursat, already has water supply to non-urban areas and the access population exceeds the urban area population. That's why the access population rates have become over 100%.

(Written from JICA report "Prospects of water expansion era in Cambodia")

It is assumed that the objective of the Cambodia National Strategy Development Policy (2014-2018) will be achieved on schedule. Also, the population forecast (Statistics Bureau, Ministry of Internal Affairs and Communications "POPULATION PROJECTIONS FOR CAMBODIA, 2008-2030" http://www.stat.go.jp/info/meetings/Cambodia/pdf/rp12_ch10.pdf) will calculate population-wide access to water supplies by 2015 and then again by 2025. Those populations who are capable of hand washing with hand soaps by these intervals are defined as our potential market. The water supply population, defined as a urban population's set access to water supplies each year, will determine the following conditions and thereby allow for the calculation of consumption rates and set the parameters of market sizes:

- Target population :
  Water supplies access population in urban areas (Water supply population)
- Yearly consumption :
  1ml/push × 3push/day × 365days =1,080ml/year/person

Table 6 : Demand forecast

	2013	2015	2025
Conectted population (piped water)	353,353	2,275,303	3,050,162
Total population	14,962,591	15,405,157	17,519,272
Conect ratio	2%	15%	17%
Annual consumption (ml)	381,621,240	2,457,327,283	3,294,174,906
Annual consumption (bottle)	1,526,485	9,829,309	13,176,700

4.2 Demand forecast（Alcohol Based Hand Rub）

The purpose of introducing ABHR is to reduce infection risks in medical fields where people do not have unrestricted access to running water. This survey sample market size of this survey was limited to only medical institutions.

Our first step was confirming that the market scale of ABHR was limited to medical institutions. We confirmed our sample population by ensuring that the number of hospitals and beds examined was identical with the number discussed in interviews with each state's medical departments. The average is 32beds/(40,120beds/ 1,248hospitals).

The hand hygiene pilot project aimed at preventing the spread of infection through the use of ABHR was carried out at two national hospitals. ABHR consumption and compliance rates (Hand hygiene with using ABHR) were closely monitored at these hospitals before and after the introduction of our project. Within four months compliance rate at both hospitals increased approximately 20-30%.

Median：Before intervention/20.5% ⇒ After intervention/44.5%

ABHR consumption changes as follows.

- National Maternal and Child Health Center：12.4pcs/week
- National Pediatric Hospital：36.6pcs/week
- Median：24.5pcs/week

A market size was estimated by each scenario as follows.

A) NMCHC＋NPH (Average scenario)
B) A scenario based on the NMCHC result
C) A scenario based on the NPH result

Table 7. Demand Scenario

Case (Based on the pilot studies)	A) NMCHC＋NPH (average scenario)	B) NMCHC	C) NPH
Annual consumption (L/bed/year)	8.517	4.320	12.713
Average of compliance rate (%)	32.5	32.5	32.5
Average of bed number (bed / hospital)	32	32	32
Annual consumption per hospital (L/year/hospital)	274	139	409
Total annual consumption (L/year)	341.689	173.335	510.043

It should be noted that, in addition to the market mentioned above, our market might also expand so as to include private hospitals and small healthcare centers.

4.3 Operation System

This project has been done by SKH, which was established in January 2014. SKH should strengthen staff organization and education in order to smoothly archive its selling plan. In terms of improving hand-hygiene situation, SKH intends to introduce a health instructor system that will hopefully inform healthcare providers with better knowledge of infection control protocol in addition to monitoring the progression of such infections. SKH hired 2 instructors and educated through both seminar and OJT training. Please see Table 8 for a breakdown of SKH's labor plan.

Table 8 Manpower Planning of SKH

	Number of staff members				
	2014	2015	2016	2017	2018
General Manager	1	1	1	1	1
Administrative Officer	1	1	1	1	1
Instructor	2	2	3	3	3
Sales person	0	1	1	2	2
Driver（from outside）	1	1	1	1	1

4.4 Operation Plan

During the course of our survey we considered an agenda defined by the stages of preparation, production, selling, and operation cost.

【Preparation Plan】

We discovered through this survey that imported products are less desired than their competitors. Thus we turned to the idea of local production. Below is the rough sketch of our preparation plan, which requires at least 3 years prior to implementation:

- Establish a new division, assign members, and apply production license: 1 year
- Establish a new factory (including building and facilities) : 1 year
- Start factory operation in addition to trial production and test marketing: 1 year
- Start mass production and sales

【Production Plan】

1) Product Development

As we discussed above in considering the range of willingness to pay (WTP) and Affordability to Pay (ATP) of both hand soaps and ABHR, importing products from Japan appears to be far less competitive than the sale of domestic products. For instance, hand soap (250ml/unit) occupies a limited space in order to reduce the cost of materials and therefore exceeds the cost of domestic products. On the other hand, in case of ABHR, we should aim to develop high value - added products so as to avoid competition. One such product is ABHR for surgical hand washing which can remove both transient and normal bacteria:

2) Production

We should organize our production system locally so as to establish a price that even low-income groups may afford our product. Also, buying raw material from SKH or their partners will lead to generate income for local suppliers and thereby assist SKH in their mission of raising the sustainability of production. In fact, almost 80% of the Cambodian population is involved farming.

3) Distribution

The factory-made product should be delivered to major markets in each city by local commodity distribution channels. As for supply chains, SKH should discuss further details and logistics with their company and distributors.

【Selling Plan】

1) Hand Soap

We determined the selling price for hand soap on the basis of the current market price and the margin of distributors. In our calculation, the selling price of 250ml is less than the production cost and SKH secures a certain percentage of gross profit for every 2.7L sold. Therefore, we have concluded that a product size of 250ml should be strategically implemented in order to raise awareness of SKH. Meanwhile, the product must also increase awareness of hand hygiene protocol as illustrated by the activities of SKH. We believe this will make SKH hand soap easier to market, particularly 2.7L.

2) ABHR

In the same way of hand soaps, we have determined the selling price of ABHR on the basis of its current market price and the margin of distributors. SKH should endeavor to penetrate ABHR through awareness activities. Moreover, SKH should

carry out B to G marketing in order to secure the budget of MoH and become involved in government purchasing.

【Estimation of Operation Cost】

1) Initial Investment

With regard to the initial product investment, we need USD2.62M (USD1.66M for Buildings and USD0.96M for equipment.) Annual depreciation of costs has been divided over 20 years for building construction and 4 years for equipment manufacturing according to the law of Taxation. Please be noted that percentage of depreciation is fixed for convenience.

2) Working Capital

In the case of administrative costs, including personnel and non-personnel expenses with consideration of the GDP growth rate （7.18%/year、IMF,2014）and inflation rate （4.5%/year：IMF, 2014）, we have established the rate of annual increase as 12%.

4.5 Business Feasibility

The evaluation criteria of business feasibility are the internal criteria of Saraya Co., Ltd. We intend to explore whether the goal can be met within 3 years or can be achieved with minimal losses within 5 years. In short, if net profit would be positive or would be archived in the short term we can say that this endeavor has business feasibility.

In conclusion, business feasibility seems low due to the following reasons:

1) It appears difficult to secure the gross profit because of the tough market prices and various distributors' margins.
2) The amount of annual sales is does not break even with the wholesale price.
3) As we see no.1 and 2, it takes time to make profit and return the initial investment.

However, we believe SKH may solve above problem if the business environment is altered in some way. Thus, we think business feasibility may circumstantially improve with conditions attached. Here is our concrete action plan and expected results.

1) SKH needs to organize their sales structure and then raise the ratio of direct sales. This helps reduce the cost burden of distributors and thereby facilitates a gain in gross profit.
2) SKH must appoint several distributors so as to foster competition. In doing so, the ratio of distributor's margins will be improved.

3) If the market size would be expanded through awareness activities and B to G marketing, the total amount of product sold would increase.

In order to fulfill the above conditions SKH must not only make significant efforts to improve their marketing strategy but also endeavor to change the external environment defining issues related to healthcare and industrial government policy. Therefore SKH should report to MoH directly and watch the future tendency of MEF.

Chapter 5. Cooperation with JICA project

In our feasibility study we cooperated with JICA (head office, Cambodia office, some experts, senior and junior volunteers) in order to confirm the pilot site, allow for basic information exchange, arrange several site visits, and support and establish international conferences in both Japan and Cambodia. Through this cooperation we received great support for our survey. Now we will show our cooperative-work concept for JICA within the next 5 years.

5.1 Necessity and Potentiality of Cooperation with JICA Project

SARAYA Co., Ltd (SARAYA) had trying to improve the hygiene situation in Cambodia through the expansion of their hygienic products, such as liquid soap and alcohol.

1) They established SARAYA Cambodia Co., Ltd.
2) They recruited hygiene instructors
3) They have been attempting to create a local supply and distribution network
4) SARAYA Cambodia has already begun their sales in Cambodia

Moreover based on our feasibility studies, it is concluded that Saraya's hygiene education program and products are improving the motivation and state of hygiene in both medical institutions and households alike. Their efforts appear to be a sustainable solution. However they have not yet established their business base yet. This is due to their budget restrictions and existing infrastructure. Through cooperation with JICA, which has had a profound impact upon their project, productive results have arisen. In addition, it has been primarily successful in its mission of working towards the improvement of hygiene in Cambodia.

≪ Cooperation with existing/running project ≫

1) Project for Expansion of National Maternal and Child Health Center
2) The Project for Improvement of Sihanouk Province Referral Hospital

3) The Project for Expansion of Lower Secondary Schools in Phnom Penh
4) "Undokai" project in Cambodia (2013－ : Japan Overseas Corporation volunteers)

≪ Proposed project ≫

1) Project for Improvement of Hospital Management
2) Project for School Health Education Program
3) Project for Strengthen of the Disaster Control in Cambodia
4) Project for Improvement of 5S at Health Center
5) Project for Improvement of Rural Water Supply with Hygiene Program
6) Project for Improvement of Sanitation Facilities in Rural Area

Chapter 6. Producing a Result

This paper discuss about the scenario and progress for each back ground of this studies as below:

6.1 Infections in the medical fields

This is the scenario to reach our goal;

1) To compile information about hand hygiene in a manual for medical staff.
2) To generate awareness about hand hygiene for medical staff.
3) Prepare the supply of the hygiene products at a reasonable cost.
4) To help establish a large enough budget for the hygiene products by MoH in Cambodia.

In our studies, we completed the following:

1) Supported the signing for the "Clean Care is Safer Care Campaign", recommended by WHO through the IC-PIC.
2) Organized the hygiene education program for medical staff. In addition, we placed the posters ("In an appropriate way for Hand wash" and "5 moments for hand hygiene") and also set up the Alcohol to help keep clean.
3) Established country office "SARAYA Cambodia Co., Ltd." and created a business network in Cambodia.
4) Gained a better sense of the medical budget in each medical organization. We will continue to have discussions with the medical organizations to help form medical budgets.

6.2 The high rate of under-five mortality caused by the "Diarrhea"

To reach our goal:

1) Generate awareness of hand hygiene (especially mothers).
2) Prepare the supply of the hygiene products at a reasonable cost to citizens.
3) Increase the availability of the supply of piped water and increase the use of floating water in household bases.

6.3 Infectious diseases are acquired through contamination of domestic water during inundation season

In addition to the promotion of the hygiene products,

1) Perform 6.2
2) Store medical and hygiene products, and to secure a supply route during inundation
3) Communicate and share technical knowledge about disaster-relief from SARAYA to the Cambodian Government .

6.4 Infection control like bird flu

This is a scenario for the outbreak of infection disease like bird flu

1) Perform 6.1,
2) To store medical products (hand soap and alcohol) by the health sector.
3) Communicate and Share knowledge about re-building farms, markets, houses and so forth where virus is found.