



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



**ITPO**  
INVESTMENT AND TECHNOLOGY  
PROMOTION OFFICE  
TOKYO, JAPAN



# UNIDO-Japan Cooperation

MITIGATING THE IMPACTS OF COVID-19 THROUGH TECHNOLOGY  
TRANSFER FROM JAPAN

VISIT OUR WEBSITE!

UNIDO ITPO Tokyo's  
**STePP**  
Sustainable Technology Promotion Platform



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# BACKGROUND

The novel coronavirus (COVID-19) pandemic has primarily been a global health crisis, but it also has had far-reaching worldwide economic consequences. It has disrupted millions of people's livelihoods, with disproportionate impacts on the poor. Since the start of the pandemic, the international community has been expected to provide agile and suitable responses to the worldwide socioeconomic impacts, in particular to those concerning fragile health infrastructures in developing and emerging countries.

Recognizing this challenge and the need for international commitment and solidarity, the Government of Japan (GoJ), through the Ministry of Foreign Affairs (MOFA), provided a supplementary budget of 432.8 million yen (equivalent to about 4 million US dollars) to UNIDO to

meet the increasing demand for emergency technical support to developing and emerging countries. Through this cooperation, UNIDO formulated the project **“Strengthening the capacity of developing countries to mitigate the impacts of the COVID-19 pandemic through appropriate technology transfer from Japan” (STePP Demo hereafter)**, which aimed to apply Japanese technologies that could assist emerging and developing countries, particularly their fragile health infrastructures, which needed to be strengthened to improve their national response measures during the COVID-19 pandemic.

This cooperation between the GoJ and UNIDO also was part of the early responses to the call of the United Nations to mitigate the socioeconomic impacts of the COVID-19 pandemic.

“

*I am pleased that Japanese technologies, including those of SMEs, could contribute to mitigating the risk of COVID-19 and other infectious diseases through this project. I would like to congratulate all stakeholders for their hard work and dedication in achieving the results.*

**- H.E. Mr. Takeshi Hikihara**

Ambassador Extraordinary and Plenipotentiary,  
Permanent Representative of Japan to the International Organizations in Vienna

”





# INTRODUCTION

The project was launched in June 2020 with the goals of: (1) supporting developing and emerging countries in their efforts to improve their health, sanitary, and hygiene environments in the fight against COVID-19 and other infectious diseases; (2) leveraging the capabilities of Japanese enterprises, especially small and medium-sized enterprises (SMEs), to meet demand during the emergency situation; and (3) providing the GoJ's contributions to international cooperation to mitigate the socioeconomic impacts of the COVID-19 crisis.

UNIDO assigned the project implementation to its Investment and Technology Promotion Office in Tokyo (ITPO Tokyo), which is part of a global network of offices that are coordinated at UNIDO HQ. Established in 1981, ITPO Tokyo's mission is to assist developing countries and economies in transition in their efforts to achieve sustainable economic development by promoting foreign direct investment (FDI) and technology transfers from Japan.

A flagship program of the office is the Sustainable Technology Promotion Platform (STePP), which focuses on promoting Japanese technologies in energy, the environment, agribusiness, public health, and disaster management that could tackle many issues and challenges faced by developing and emerging countries. Nearly 130 technologies from 112 Japanese companies are registered with STePP (1). Technologies are evaluated by a technical committee based on the following criteria:

- » Applicability in developing and emerging countries;
- » Competitive advantage;
- » Conformity with UNIDO's mandate; contribution to sustainability;
- » Technical maturity.

Regarding this project, technologies registered under the public health category of STePP were identified, taking into consideration the following criteria:

- » Potential impact on the prevention of COVID-19 and other infectious diseases;
- » Compatibility with local demands and needs for health and hygiene aspects;

- » Technologies applicable and transferable to developing and emerging countries without significant difficulties in project operation and planning;
- » Provision for the dissemination of further investment that would achieve sustainable development after the completion of the project.

Target recipient countries were determined based on an evaluation of technological needs, the strategic importance of UNIDO's activities, and the business strategy of the Japanese technology providers.

While mitigating the effects of COVID-19 was at the heart of the project, the ongoing pandemic from 2020 to 2022 posed serious challenges to traveling abroad for project implementation. Therefore, most of the discussion and training required for technology transfer and promotional activities were carried out via online communication and tools. In particular, activities that were previously thought impossible without engineers visiting project sites and providing face-to-face guidance were successfully carried out virtually.



“

*The STePP Demo project was implemented within limited time to bring immediate results in the fight against COVID-19. Close and continued cooperation between Japanese companies, business partners, and recipients country governments made this project successful.*

**- Mr. Yuko Yasunaga**  
Head, UNIDO ITPO Tokyo

”

## PROJECT CONCEPT

### JAPAN



#### Technology Providers

- » Transfer of technologies
- » Future business opportunities

### STePP DEMONSTRATION PROJECT



Inclusive and Sustainable Industrial Development (ISID)

### ASIA/AFRICA



#### Recipient Countries Business Partners

- » Adoption of new technologies
- » Contribution to medical workers
- » Contribution to local society

## PROJECT OVERVIEW

TECHNOLOGIES	Disinfectant Incineration of medical waste Water purification Medical monitoring & diagnosis equipment Antibacterial coating And others
RECIPIENT COUNTRIES	India, Indonesia, Kenya, Madagascar, Mongolia, Morocco, Nigeria, Senegal, Uganda, Viet Nam
DURATION	June 2020 – March 2022
DONOR	Ministry of Foreign Affairs (MOFA), Government of Japan
FUNDING	USD 3,481,898 (incl. UNIDO programme support cost)





“

*We tested every technology available in Kenya to ensure that network problems would not stop the implementation of the project. Because of the six-hour time difference, working with the country was not easy, but we are pleased to hear that our equipment is helping the medical workers in Mutuini Hospital now.*

**- Mr. Kimikazu Yano**  
Kinsei Sangyo Co., Ltd.

”



# LIST OF COUNTRIES, COMPANIES & TECHNOLOGIES





## INDIA

### COMPANY

- » MARUSYO SANGYO CO., LTD.
- » JTOP CO., LTD.

### TECHNOLOGY

- » Photocatalytic coating with antibacterial effect
- » Water regeneration system



## INDONESIA

### COMPANY

- » SOLAR WIND TECHNOLOGY INC.

### TECHNOLOGY

- » Hypochlorous acid type disinfectant



## KENYA

### COMPANY

- » KINSEI SANGYO CO., LTD.
- » MARUSYO SANGYO CO., LTD.
- » TSP TAIYO INC.

### TECHNOLOGY

- » Gasification incinerator for medical waste
- » Photocatalytic coating with antibacterial effect
- » Mobile PCR inspection system



## MADAGASCAR

### COMPANY

- » CHUWA INDUSTRIAL CO., LTD.

### TECHNOLOGY

- » Incinerator for medical waste



## MONGOLIA

### COMPANY

- » MARUSYO SANGYO CO., LTD.

### TECHNOLOGY

- » Photocatalytic coating with antibacterial effect



## MOROCCO

### COMPANY

- » HINODE SANGYO CO., LTD.

### TECHNOLOGY

- » Wastewater treatment system



## NIGERIA

### COMPANY

- » TECHNO MEDICA CO., LTD.

### TECHNOLOGY

- » Blood gas analyzer



## SENEGAL

### COMPANY

- » CHUWA INDUSTRIAL CO., LTD.

### TECHNOLOGY

- » Incinerator for medical waste



## UGANDA

### COMPANY

- » SARAYA CO., LTD.

### TECHNOLOGY

- » Alcohol-based hand sanitizer



## VIET NAM

### COMPANY

- » AGC INC.
- » TROMSO CO., LTD.

### TECHNOLOGY

- » Hypochlorous acid water generator
- » Water purifying system



KENYA

## KINSEI SANGYO CO., LTD.

# Gasification Incinerator for Medical Waste

Eco-friendly gasification incineration system to detoxify infectious waste to prevent infection in medical institutions



### BACKGROUND

Inadequate segregation of medical waste is a potential source of infection, including COVID-19. According to a survey by the World Bank and the Ministry of Health of Kenya, 17% of medical facilities in urban areas and more than double the proportion in rural areas do not dispose of their waste correctly. The safest way of disposing of medical waste is incineration within medical facilities; however, less than half of medical facilities in Kenya were found to have functioning incinerators. There is an urgent need to install incinerators and train medical workers on proper handling and segregation of waste, especially in large hospitals and clinics.

### OVERVIEW OF THE PROJECT

UNIDO implemented a waste management project at Mutuini Sub-Regional Hospital in Nairobi in cooperation with Nairobi Metropolitan Services (NMS) and Kinsei Sangyo Co., Ltd to respond to the urgent need. The project installed a small-scale gasification incinerator system for medical waste with a processing capacity of 500kg per day. The equipment contributes to detoxicate hazardous substances disposed at the hospital, protecting medical workers and waste handlers from the risk of secondary infection. The smokeless incinerator was introduced in Kenya for the first time, and the local authority proved that no emission or air pollutants are included in the exhaust gas.



“

*Before the incinerator was installed, we accumulated medical waste until bringing to another hospital for disposal, which caused the bad odor. The incinerator has changed a lot of our awareness on waste – more waste segregation is being done compared with before.*

**- Dr. Josephine Nguri**  
 Medical Superintendent, Clinical Pharmacist, Mutuini Sub-County Hospital

”

## PROJECT PROFILE





### CITY, COUNTRY

Nairobi, KENYA

### COUNTERPARTS

- + Ministry of Industrialization, Trade & Enterprise Development (MoITED)
- + Ministry of Health (MoH)
- + Nairobi Metropolitan Services
- + Mutuini Sub-Regional Hospital

### KEY OUTCOMES

	Installed incinerator capacity of up to <b>500kg/day</b>
	<b>57</b> engineers and operators trained
	<b>100%</b> of medical waste at the hospital being disposed safely
	<b>75%</b> of the beneficiaries were women

## WORKING TOWARDS



## COMPANY PROFILE

<b>NAME</b>	KINSEI SANGYO CO., LTD.
<b>WEBSITE</b>	<a href="https://kinsei-s.co.jp">https://kinsei-s.co.jp</a>
<b>ADDRESS</b>	Yanaka-machi 788, Takasaki-shi, Gunma, Japan 370-1203
<b>CAPITAL</b>	50 million JPY
<b>CONTACT PERSON</b>	Mr. Keiichi KANEKO Telephone: +81-27-346-2161 E-mail: <a href="mailto:kinsei@kinsei-s.co.jp">kinsei@kinsei-s.co.jp</a>
<b>TYPE OF BUSINESS</b>	Manufacturer of waste incinerators





VIET NAM

AGC INC.

# Hypochlorous Acid Water Generator

Acidic electrolyzed water generator with an ion-exchange membrane

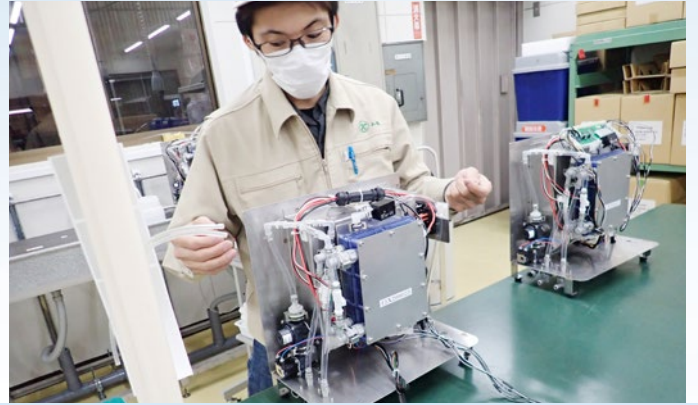


## BACKGROUND

The health care system has been rapidly improving in Vietnam, yet many hospitals still face challenges in hygiene management. A number of hospitals do not have the appropriate water-purifying equipment to eliminate various viruses and bacteria, including COVID-19. This has exposed medical workers and patients to the risk of secondary infection. In addition, according to a 2016 report by the World Bank, 10% to 40% of the food in Vietnam was found to be contaminated with microbes or parasites. Improved hygiene practices in food-processing factories and quality control in the value chain are required not only for the nation's health but also for the economy and its broader industries.

## OVERVIEW OF THE PROJECT

UNIDO installed equipment that produces hypochlorous acid water in a medical facility and in a food-processing factory, with the goal of improving hygiene in the Vietnamese health care and food industries. The commissioning and training took place online, while collected data showed the system's effectiveness. Furthermore, the project established the organizational health management system within the hospital and the factory by training leaders to oversee the team and ensure proper sanitation practices. The training was carried out to ensure proper management, operations, and maintenance, as well as sustainable behavioral practices.



“

*We are pleased to receive hypochlorous acid water equipment from Japan, which helps to eradicate bacteria and viruses, including the virus that causes COVID-19. The equipment is compact and easy to operate; we were excited to learn how this product can improve hygiene conditions in our hospital.*

**- Dr. Hoan Hai**  
University of Danang

”

## PROJECT PROFILE

### CITY, COUNTRY

Ho Chi Minh and Danang, VIET NAM

### COUNTERPARTS

- + DCSElab, Ho Chi Minh City University of Technology
- + University of Danang
- + Hoa Vang General Hospital
- + Yen Viet Joint Stock Company

### KEY OUTCOMES



**8** sets of hypochlorous acid water production equipment installed



**218** health care workers benefitted from the project



**198** food-processing company workers benefitted from the project



**69%** of the beneficiaries were women



**224,000** hospital patients and **106,000** consumers benefitted from this project through enhanced hygiene

## COMPANY PROFILE

NAME	AGC INC.
WEBSITE	<a href="http://www.agc.com">http://www.agc.com</a>
ADDRESS	Shin-Marunouchi Bldg., 1-5-1 Marunouchi Chiyoda-ku, Tokyo, 100-8405, Japan
CAPITAL	90,873 million JPY
CONTACT PERSON	Mr. Masaaki OKABE Telephone: +81-50-9014-4370 E-mail: <a href="mailto:masaaki.okabe@agc.com">masaaki.okabe@agc.com</a>
TYPE OF BUSINESS	Manufacturing and sales of Glass, Electronics, Chemicals, Ceramics/Other

### WORKING TOWARDS





MADAGASCAR



SENEGAL

## CHUWA INDUSTRIAL CO., LTD.

# Incinerator for Medical Waste

Smokeless incinerator of medical waste to prevent infectious diseases in Francophone-African countries



### BACKGROUND

Poor segregation of medical waste is a potential source of infection, including COVID-19. However, due to budget constraints, only a few hospitals in Madagascar and Senegal were found to have functioning incinerators. Moreover, the existing incinerators produced smoke and ash, which cause environmental pollution. Therefore, to prevent secondary infections caused by exposure to health care waste, there is an urgent need to introduce smokeless and easily operable incinerators and to train medical workers as well as operators on the proper handling and segregation of waste, especially in large hospitals and clinics.

### OVERVIEW OF THE PROJECT

UNIDO installed small-scale medical-waste incinerators (with a capacity of 470kg per day) at public hospitals in Madagascar and Senegal that accept COVID-19 patients. The incinerator has a water-cooled structure, which provides excellent durability and prevents damage, even when high-calorific values such as plastics are incinerated. It is also a smokeless incinerator that is safe for the environment. The project provided full training on commissioning and operations to medical workers, in cooperation with local authorities and hospitals.





“

*This project was very timely during the COVID-19 pandemic. When the virus is rapidly spreading, burning the biomedical waste is one of the most effective ways to prevent the spread of the disease.*

**- Mr. Oumar Dabo**  
Director, Chunoda Service Sarl

”

## PROJECT PROFILE

### CITY, COUNTRY

Antananarivo, MADAGASCAR  
Dakar, SENEGAL

### COUNTERPARTS

#### MADAGASCAR:

- + Ministry of Public Health
- + University Hospital Joseph Raseta Befelatanana

#### SENEGAL:

- + Ministry of Health and Social Action
- + University Hospital Fann

### KEY OUTCOMES



**12** incinerators installed with a capacity of up to **470kg/day** (one unit per country)



**6** days of training held for engineers (2 in Madagascar, 4 in Senegal)



**9** engineers trained (6 in Madagascar, 3 in Senegal)

## COMPANY PROFILE

NAME	CHUWA INDUSTRIAL CO., LTD.
WEBSITE	<a href="http://www.chuwastar.co.jp">http://www.chuwastar.co.jp</a>
ADDRESS	OG Bldg.3F, 2-8-7, Nihonbashihoncho, Chuo-ku, 103-0023, Tokyo, Japan
CAPITAL	10 million JPY
CONTACT PERSON	Mr. Kuniaki IMAO Mr. Kyoji SUGIURA Telephone: +81-3-5643-2571 E-mail: <a href="mailto:chuwa-kikou@chuwastar.co.jp">chuwa-kikou@chuwastar.co.jp</a>
TYPE OF BUSINESS	Design, planning and sales of incinerators



**5** days of training held for operators and health care personnel (3 in Madagascar, 2 in Senegal)



**43** operators and health care personnel trained (30 in Madagascar, 13 in Senegal)



The capacity to dispose of **450kg** of medical waste each day

### WORKING TOWARDS





INDIA



KENYA



MONGOLIA

## MARUSYO SANGYO CO., LTD.

# Photocatalytic Coating with Antibacterial Effect

Room lighting-responsive photocatalytic coating technology to eliminate pathogenic microorganisms in hospital rooms



### BACKGROUND

The spread of COVID-19 has raised awareness about the importance of disinfection. On the other hand, daily chemical disinfection has been a heavy burden for hospitals, in terms of medical workers' time and costs. Photocatalytic coating technology creates an antibacterial effect on surfaces that reacts to room light. In addition, the coating can provide a safer work environment for medical staff by preventing secondary infection.

### OVERVIEW OF THE PROJECT

UNIDO applied photocatalytic coatings in a total of eight hospitals in three countries (India, Kenya, and Mongolia) to demonstrate and test the elimination of pathogenic microorganisms. The project provided training on coating techniques as well as helped increase medical workers' knowledge about general hygiene practices at hospitals. In each country, a swab sample was sent to a laboratory and proved that the coating is effective in eliminating microorganisms. The coating successfully contributed to reducing the time medical workers spent on disinfection.



“

*Before the photocatalytic coating was applied, our hospital had sanitation issues. With this coating, we succeeded in minimizing the risk of infection to workers. We feel safe in the workplace now.*

**- Mr. Sam Munjuga**  
Biomedical Engineer, Jumuia Hospital Huruma, Kenya

”

## PROJECT PROFILE

### CITY, COUNTRY

New Delhi, Chennai, and Rajkot, INDIA  
Nairobi and Kiambu, KENYA  
Ulaanbaatar, MONGOLIA

### COUNTERPARTS

#### KENYA:

- + Ministry of Industrialization, Trade and Enterprise Development (MoITED)
- + Jumuia Hospital
- + Nyathuna Sub-country Hospital
- + AAIC Partners Africa Ltd.

#### MONGOLIA:

- + State Second General Hospital
- + National Center of Communicable Diseases
- + First Central Hospital of Mongolia
- + Tana Lab Co., Ltd.

#### INDIA:

- + National Institute of Tuberculosis and Respiratory Diseases
- + Rajiv Gandhi Government General Hospital
- + Pandit Dindayal Upadhyay Medical College Hospital
- + Allair Solutions Pvt Ltd.

### WORKING TOWARDS



## KEY OUTCOMES



Applied coating to **23** rooms  
in **8** hospitals



**29** engineers trained



**270** medical workers participated in  
general hygiene training



Training video and manuals created  
in **3** languages

## COMPANY PROFILE

NAME	MARUSYO SANGYO CO., LTD.
WEBSITE	<a href="https://marusyosangyo.jp">https://marusyosangyo.jp</a>
ADDRESS	171 Tajimacho, Sanoshi, Tochigi, 327-0031, Japan
CAPITAL	10 million JPY
CONTACT PERSON	Mr. Takayuki YOSHIKAWA Telephone: +81-283-22-1901 E-mail: <a href="mailto:yoshikawa@marusyosangyo.jp">yoshikawa@marusyosangyo.jp</a>
TYPE OF BUSINESS	Textile and chemical products manufacturing



UGANDA

## SARAYA CO., LTD.

# Alcohol-Based Hand Sanitizer

Antibacterial/antiviral technology for the prevention of nosocomial infections through the mass production of alcohol hand sanitizers and hand-hygiene instructions



### BACKGROUND

Uganda reported its first case of COVID-19 on 22 March 2020. Despite the country's strict measures against the disease, including restrictions on movement, closures of international and subnational borders, and reductions in business activities, the virus has spread throughout the nation, risking lives and the health and well-being of individuals. With the reopening of the economy and an increase in in-person contact, strict hand sanitization has become critical, especially in Uganda, where the demand for hand sanitization products against non-enveloped viruses remains extremely high following the 2018 Ebola virus outbreak.

### OVERVIEW OF THE PROJECT

UNIDO installed a manufacturing technology for the mass production of alcohol-based sanitizers to improve sanitation in the health care and food industries. The technology provided a safe and effective formulation of hand sanitizers that counter non-enveloped and alcohol-resistant viruses, including Ebola and the coronaviruses. The technology enabled production capacity to increase from 10kL/month to 200kL/month to meet increasing demand for the sanitation solution. In addition to manufacturing, the project also focused on changes in infection prevention protocols and in control practices at hospitals and in the food industry that can improve sanitation. To improve the hygiene and sanitary conditions in the country, the project provided hygiene instructions in line with the WHO's hand-hygiene guidelines to doctors, nurses, and food industry workers.



“  
*We appreciate the UNIDO ITPO Tokyo office’s partnership over the years with Uganda, in view of current global circumstances, and its promotion of technology transfers and investment in the health sector. On behalf of our country, we would like to extend our appreciation to both UNIDO and Saraya for such a timely intervention, especially in the health sector.*  
 - Ms. Evelyn Ngalonsa  
 First Secretary, Embassy of the Republic of Uganda in Japan  
 ”

## PROJECT PROFILE

### CITY, COUNTRY

Kampala, UGANDA

### COUNTERPARTS

- + Saraya Manufacturing (U) Ltd.
- + Mengo Hospital
- + Uganda Cancer Institute
- + Uganda Heart Institute
- + Naguru General Hospital
- + Lubaga Hospital
- + Medipal International Hospital
- + Doctor’s Hospital Seguku
- + Bethany Women’s Hospital

### KEY OUTCOMES



**1** unit of equipment for the mass production of alcohol-based sanitizers installed



Factory with the capacity to produce **200** thousand liters of alcohol sanitizer per month established



**314** medical workers trained in hygiene practices



**58.9%** of the participants were women



Hand-hygiene compliance rate increased from an average of **21.2%** to **50.8%**

## COMPANY PROFILE

NAME	SARAYA CO., LTD.
WEBSITE	<a href="https://saraya.world/">https://saraya.world/</a>
ADDRESS	2-2-8 Yuzato, Higashisumiyoshi-ku, Osaka, 546-0013, Japan
CAPITAL	45 million JPY
CONTACT PERSON	Ms. Tamaro Stephanie NAKAMURA Telephone: +81-6-6703-6336 E-mail: <a href="mailto:nakamuratomaro@global.saraya.com">nakamuratomaro@global.saraya.com</a>

TYPE OF BUSINESS	Development, manufacturing, and sales of household and commercial cleaning products, disinfectants, hygiene products such as mouthwash, chemical liquid supply equipment, food products  Consulting on food and environmental hygiene
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### WORKING TOWARDS





KENYA

TSP TAIYO INC.

# Mobile PCR Inspection System

Solar-powered mobile COVID-19 inspection vehicles



## BACKGROUND

The COVID-19 pandemic is impacting people across the world, causing millions of deaths. Rural communities in developing countries particularly face challenges in providing adequate medical facilities. For instance, nearly three-quarters of Kenya's ICU beds are in the two largest cities, Nairobi and Mombasa. Yet the new coronavirus is spreading into rural areas, where the public health system is poor. Experts point out that the actual number of infections is much higher than reported, due to inadequate testing in rural Kenya. Improving access to the public health system in remote areas, particularly to conduct PCR tests to detect infection, is an urgent need.

## OVERVIEW OF THE PROJECT

This project's technology provides a safe way to conduct PCR tests remotely in areas where electricity is unstable. The design concept is a "mobile PCR testing laboratory" that integrates a photovoltaic module, battery unit, sample collection, sample storage and transport function into a trailer-type system that can be towed by a standard vehicle. Once inspectors collect samples from test subjects, the samples are placed in a storage box and subsequently transferred to the local PCR test facility. The internal passages within the trailer keep inspectors and test subjects completely separated, and the air within the vehicle is kept clean through negative pressure to prevent aerial infection. Through the use of the mobile unit, the project plans to conduct at least 100 PCR tests per day at two demonstration sites in Machakos County.



“

*This mobile lab provides complete protection to medical staff from patients taking COVID-19 PCR tests. Since the equipment was installed, we have not had a COVID infection among the medical staff.*

**- Mr. Stephen Mutiso**  
Medical Staff, Clinical Machakos Referral Hospital

”

## PROJECT PROFILE

### CITY, COUNTRY

Machakos, KENYA

### COUNTERPARTS

- + Ministry of Industrialization, Trade and Enterprise Development
- + Machakos County
- + Machakos County Referral Hospital
- + Kangundo Level 4 Hospital

### KEY OUTCOMES



**1** mobile lab installed



**20** medical workers trained for operation



**545** PCR tests conducted during the demonstration



**46%** of the beneficiaries were women

### WORKING TOWARDS



## COMPANY PROFILE

NAME	TSP TAIYO INC.
WEBSITE	<a href="https://www.tsp-taiyo.co.jp">https://www.tsp-taiyo.co.jp</a>
ADDRESS	1-17-16 Higashiyama, Meguro-ku, Tokyo, 153-0043 Japan
CAPITAL	100 million JPY
CONTACT PERSON	Mr. Takayuki NISHI Telephone: +81-3-3719-3357 E-mail: <a href="mailto:nishi@tsp-taiyo.co.jp">nishi@tsp-taiyo.co.jp</a>
TYPE OF BUSINESS	Planning and construction of venue facilities; merchandise sales; rental of facilities, equipment, and furnishings; etc.





INDONESIA

## SOLAR WIND TECHNOLOGY INC.

# Hypochlorous Acid Disinfectant

Technology transfer and local production of hypochlorous acid water sprays



### BACKGROUND

In addition to its rapid increase in novel coronavirus cases, Indonesia is home to various infectious diseases such as diarrhea, typhoid fever, cholera, and hepatitis. This is due to the contamination of tap water with pathogenic bacteria and to insufficient sewage coverage, especially in rural areas. Disinfectants are practical and versatile when used in prevention, but an ethanol-infused alcohol sanitizer is not a viable option, due to the country's religious nature. Hence, non-alcohol disinfectants are in high demand in Indonesia.

### OVERVIEW OF THE PROJECT

UNIDO implemented a project to set up local production of aqueous hypochlorous acid for use at hospitals and public facilities. The project took into consideration on the local culture of avoiding alcoholic products and introduced non-alcoholic disinfectant using hypochlorous acid called «JIAT-X,» which is not yet commonly used in the country. In addition to establishing a factory of diluting the concentrated hypochlorous acid solution, the project covered technical training for quality control, shipment, and sterilizational effect evaluation.





“

*I am very impressed with the technology of JIAT-X, which produces disinfectants that are environmentally friendly and safe for adults, children, and pets in everyday life. The training provided an opportunity to learn how to disinfect properly.*

**- Ms. Rami**  
Nursing Student, Indonesian University of Education

”

## PROJECT PROFILE

### CITY, COUNTRY

Bandung, INDONESIA

### COUNTERPARTS

+ Indonesian University of Education  
(Universitas Pendidikan Indonesia)

### KEY OUTCOMES



**42,000** liters of JIAT-X diluted



**8,500** people used the product for disinfection



**7** local operators trained



**99.99%** of bacteria eliminated by the product

## COMPANY PROFILE

NAME	SOLAR WIND TECHNOLOGY INC.
WEBSITE	<a href="https://www.solarwindtech.jp/">https://www.solarwindtech.jp/</a>
ADDRESS	Powers Station, 1-38-5 Tomigaya, Shibuya-ku, Tokyo, 151-0063, Japan
CAPITAL	25 million JPY
CONTACT PERSON	Mr. Tatsuhiko NAKAZAWA Telephone: +81-3-5465-5439 E-mail: <a href="mailto:hikari@solarwindtech.jp">hikari@solarwindtech.jp</a>

**TYPE OF BUSINESS** A think tank specialized in renewable energy, energy-saving and environmental improvement.

## WORKING TOWARDS





NIGERIA

## TECHNO MEDICA CO., LTD.

# Blood Gas Analyzer

Blood gas analyzer for physical conditions management of severe infectious patients



### BACKGROUND

When it came to COVID-19, Nigeria-like almost every other country in the world-felt its severe effects, which placed a heavy weight on medical facilities and their workers. Lagos, Abuja, and FCT are the most impacted cities in Nigeria, accounting for nearly 45% of the total confirmed cases in the country. The constant monitoring of patients' conditions is crucial in dealing with infectious diseases such as COVID-19; however, that is difficult in countries where the health care system is fragile. Hence, there was an urgent need for an adequate physical condition management technology that was equipped with medical workers, including laboratory technicians.

### OVERVIEW OF THE PROJECT

To test their utility, UNIDO installed blood gas analyzers in three hospitals in Nigeria. These analyzers can detect various blood parameters, including pH, K, Ca, and N, which also enables the examination of patients infected by diseases other than COVID-19. The pilot demonstrations took place at three hospitals in Lagos and Abuja that accept COVID-19 patients. The project also targeted female medical workers to acquire skills to achieve higher skills needed to treat patients.



“

*I really think this UNIDO project can support the citizens, hospitals and government of Nigeria, and establish a tighter relationship between Nigeria and Japan, even during the COVID-19 pandemic.*

**- Ms. Adunni Udu**  
CEO, ACOUNS/LAB-ASSIST NIGERIA Ltd.

”

## PROJECT PROFILE






### CITY, COUNTRY

Abuja, Lagos and Kano, NIGERIA

### COUNTERPARTS

- + Association Medical Laboratory Scientists in Nigeria
- + Nigerian Medical Association
- + Guild of Medical Laboratory Directors of Nigeria
- + National Hospital, Abuja
- + Federal Medical Center Ebute Metta, Lagos
- + Aminu Kano Teachers Hospital, Kano

### KEY OUTCOMES

	<b>3</b> blood gas analyzers were installed at <b>3</b> hospitals
	<b>746</b> patients tested (as of Dec 2021)
	<b>7</b> days of training on the operation of the analyzers conducted
	<b>20</b> engineers and <b>52</b> medical staff trained
	<b>46%</b> of the beneficiaries were women

## COMPANY PROFILE

NAME	TECHNO MEDICA CO., LTD.
WEBSITE	<a href="http://www.technomedica.co.jp">http://www.technomedica.co.jp</a>
ADDRESS	5-5-1 Nakamachidai, Tsuzuki-ku, Yokohama-Shi, Kanagawa, 224-0041, Japan
CAPITAL	1,069 million JPY
CONTACT PERSON	Mr. Eiichi GOTO Telephone: +81-45-948-1967 E-mail: <a href="mailto:Overseas@technomedica.co.jp">Overseas@technomedica.co.jp</a>
TYPE OF BUSINESS	In vitro diagnostics analyzer, research & development, manufacture, sales, import & export

### WORKING TOWARDS





VIET NAM

TROMSO CO., LTD.

# Water Purifying System

Water-purifying device with rice husk-activated carbon to prevent infectious diseases



## BACKGROUND

In the Mekong Delta district of Vietnam, supplying safe drinkable water to households has become difficult due to the severe contamination of natural water sources. In Soc Trang Province, domestic water supplies fail to meet national drinking water standards; nearly half the residents lack an adequate drinking water supply, and two-thirds lacked basic sanitation in 2015. According to a national survey, almost all households expressed the need for a water purifier, which could immensely enhance water quality and lessen the risk of water-borne diseases such as the influenza virus and MS2 virus.

## OVERVIEW OF THE PROJECT

UNIDO installed built-in water purifiers using activated carbon made from rice husks in about 200 hospitals and schools supplied with water by the Center for Rural Water Supply and Sanitation in Soc Trang Province. The installed rice husk-activated carbon filters removed 99.9% of E. coli and general bacteria at the site. The project not only contributed to reducing the risk of waterborne infectious diseases but also improved sanitation in public spaces. The project also provided a technical seminar to for further dissemination within Vietnam.



## PROJECT PROFILE

### CITY, COUNTRY

Soc Trang Province, VIET NAM

### COUNTERPARTS

- + Soc Trang Province Centre for Rural Water Supply and Sanitation
- + CONG TY TNHH SAN XUAT THUONG MAI DICH VU HIKARU
- + S-TAIL ecp Inc.

### KEY OUTCOMES



**200** sets of water purification system installed



Installed in **150** schools, **13** hospitals, **10** medical centers, and **27** clinics



**11** engineers and operators trained



Purified water meets the national standard for drinking water

### WORKING TOWARDS



## COMPANY PROFILE

### NAME

TROMSO CO., LTD.

### WEBSITE

<https://tromso.co.jp/>

### ADDRESS

5265, Innoshima Shigei-cho, Onomichi-city, Hiroshima, 722-2102, Japan

### CAPITAL

3 million JPY

### CONTACT PERSON

Mr. Yuichi YANAKA  
Telephone: +81-845-24-3344  
E-mail: [info@tromso.co.jp](mailto:info@tromso.co.jp)

### TYPE OF BUSINESS

Production and sales of rice husk briquette machines and water purification systems





MOROCCO

## HINODE SANGYO CO., LTD.

# Wastewater Treatment System

Hinode Microbubble System; aeration device for waste water treatment



### BACKGROUND

The development and sustainable management of water resources remain challenging in Morocco, especially in rural areas. Some 48% of sewage water is discharged into rivers or applied to land; the rest is discharged into the sea without any treatment. The lack of wastewater treatment before reuse in inland cities has resulted in the exposure of the local population to waterborne diseases and the degradation of surface water and groundwater resources. Morocco has approximately 100 purification systems; however, the lack of technical, financial, and human resources poses challenges to the sustainable use of the technology.

### OVERVIEW OF THE PROJECT

This project focused on the construction and operation of wastewater treatment systems that are sustainable in the community. The project conducted environmental studies and site surveys to assess the applicability of the technology in Douar Boughanim, located in Al Haouz Province, which is approximately 80km east of Marrakesh. The technology has the capacity to treat the household wastewater of the entire village of Boughanim, which has approximately 800 residents. The system is effective, easy to maintain, eco-friendly, and cost efficient.



“

*We appreciate UNIDO and Hinode Sangyo installing this technology in our village. This is very applicable to the challenges we have. We have suffered from waterborne diseases. The technology is much needed by our people.*

**- Mr. Khalifa Elmasfioui**

President, Boughanim Association for Development and Agricultural Cooperation

”

## PROJECT PROFILE

### CITY, COUNTRY

Al Haouz Province, MOROCCO

### COUNTERPARTS

- + Ministry of Interior
- + Ministry of Economy and Finance
- + Tazart Commune
- + Douar Boughanim Village

### KEY OUTCOMES



**1** water treatment system installed



**1** operational manual created in Arabic



**5** days of training provided to local engineers on instalment, daily operation and maintenance



**40%** of trainees and beneficiaries to be women

(\*figures include expectations as of March 2022)

### WORKING TOWARDS



## COMPANY PROFILE

NAME	HINODE SANGYO CO., LTD.
WEBSITE	<a href="https://www.hinodesangyo.com">https://www.hinodesangyo.com</a>
ADDRESS	3854 Ikebe-cho, Tsuzuki-ku, Yokohama City, Kanagawa 224-0053, Japan
CAPITAL	20 million JPY
CONTACT PERSON	Ms. Kaori FUJITA Telephone: +81-45-507-3031 E-mail: <a href="mailto:k-fujita@hinodesangyo.com">k-fujita@hinodesangyo.com</a>
TYPE OF BUSINESS	Waste water treatment



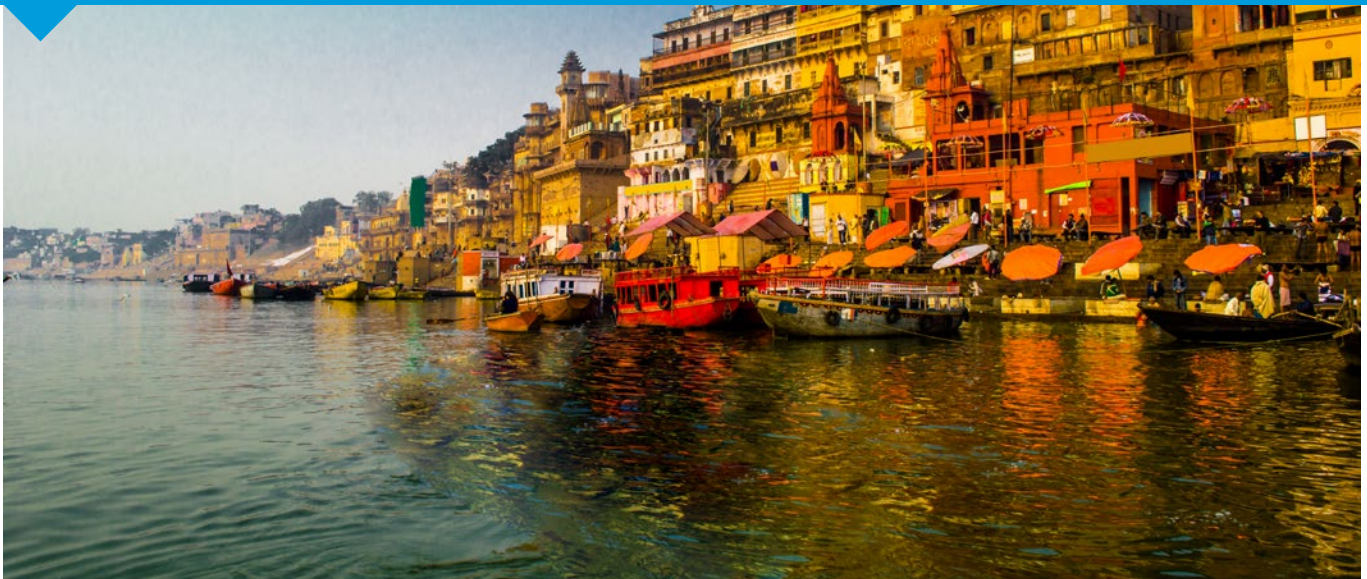


INDIA

JTOP CO., LTD.

# Water Regeneration System

Water cycle project to supply domestic sanitary water with an active carbon water purification device



## BACKGROUND

According to a 2017 UNICEF report, two-thirds of India's 718 districts were affected by extreme drought. Due to a lack of facilities to ensure a safe water supply, households typically purchase bottled water. In rural areas, lower middle-income and low-income households cannot afford to buy enough water. Hence, their option is to use rainwater and surface water in storage or to draw up water from a well. Utilization of rainwater and surface water without any treatment can bring severe problems, as contamination by suspended solids and pathogenic microorganisms can cause such illnesses as diarrhea, cholera, hepatitis, etc..

## OVERVIEW OF THE PROJECT

UNIDO implemented a project to assist in securing safe water for daily use. The project implemented a filtering system that purifies contaminated surface water through an activated carbon filtration device and regeneration system. The project analyzed the system's effectiveness and efficiency by monitoring the level of E. Coli and pollutants in the water. The company is currently exploring other industrial applications in the country.





## PROJECT PROFILE

### CITY, COUNTRY

Maharashtra, INDIA

### COUNTERPARTS

- + Sojitz India Private Ltd.
- + SBSEnviro Aqua Concepts Pvt. Ltd.

### KEY OUTCOMES



**1** activated carbon regeneration device installed



**13** operators trained

(\*figures include expectations as of March 2022)

### WORKING TOWARDS



## COMPANY PROFILE

NAME	JTOP CO., LTD.
WEBSITE	<a href="http://www.jtops.com">http://www.jtops.com</a>
ADDRESS	4-5-44 Migata-cho, Izumi-city, Osaka, 594-0042, JAPAN
CAPITAL	20 million JPY
CONTACT PERSON	Mr. Jiichi NAKAKI Telephone: +81-725-51-3860 E-mail: <a href="mailto:nakaki@jtops.com">nakaki@jtops.com</a>
TYPE OF BUSINESS	Manufacturing and sales of equipment for environmental protection, environmental consulting



SENEGAL

TERIOS-TEC CO., LTD.

# Hypochlorous Acid Water Generator

Value chain and dissemination of a safe and secure disinfection system by introducing the hypochlorous acid water generator



## BACKGROUND

Senegal reported its first case of COVID-19 on March 2, 2020, and the number of patients has been rapidly increasing ever since. Dakar is the most affected city in Senegal, accounting for nearly 60% of total confirmed cases in the country. Hence, there is an urgent need to establish a proper disinfection system through the local production of disinfection products and to train a person in charge of disinfection in public settings, including hospitals.

## OVERVIEW OF THE PROJECT

This project focused on installing acidic hypochlorous water generators and on training people on the manufacturing and utilization of the products, together with technology verification and demonstrations at hospitals in Senegal. The installed generator is easy to operate, and, compared to other conventional methods, its patented technology strongly affects various types of viruses and bacteria, including COVID-19, anthrax bacteria, the influenza virus, and the SARS virus.



## PROJECT PROFILE

### CITY, COUNTRY

Dakar, SENEGAL

### COUNTERPARTS

+ Biotechnology Equipments, Dakar

### KEY OUTCOMES



**1** hypochlorous acid water generator installed



**5** health care personnel trained



**6.5** tons of hypochlorous acid water generated

(\*figures include expectations as of March 2022)

## COMPANY PROFILE

NAME	TERIOS-TEC CO., LTD.
WEBSITE	<a href="http://www.teriosec.jp">http://www.teriosec.jp</a>
ADDRESS	529 Nisso 18 Building, 3-7-18 Shin-Yokohama, Kohoku-Ku, Yokohama, 222-0033, Japan
CAPITAL	3.9 million JPY
CONTACT PERSON	Mr. Yasuo OGATA Telephone: +81-45-594-6981 E-mail: y.ogata@teriosec.jp
TYPE OF BUSINESS	Development, planning, marketing, and foreign trade of environmental and health products



## WORKING TOWARDS





United Nations Industrial Development  
Organization (UNIDO)  
Investment and Technology Promotion  
Office (ITPO), Tokyo

UNU HQs Bldg. 8F, 5-53-70, Jingumae,  
Shibuya-Ku, Tokyo 150-0001 Japan



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UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION