

# Profile of WASTEC Inc.

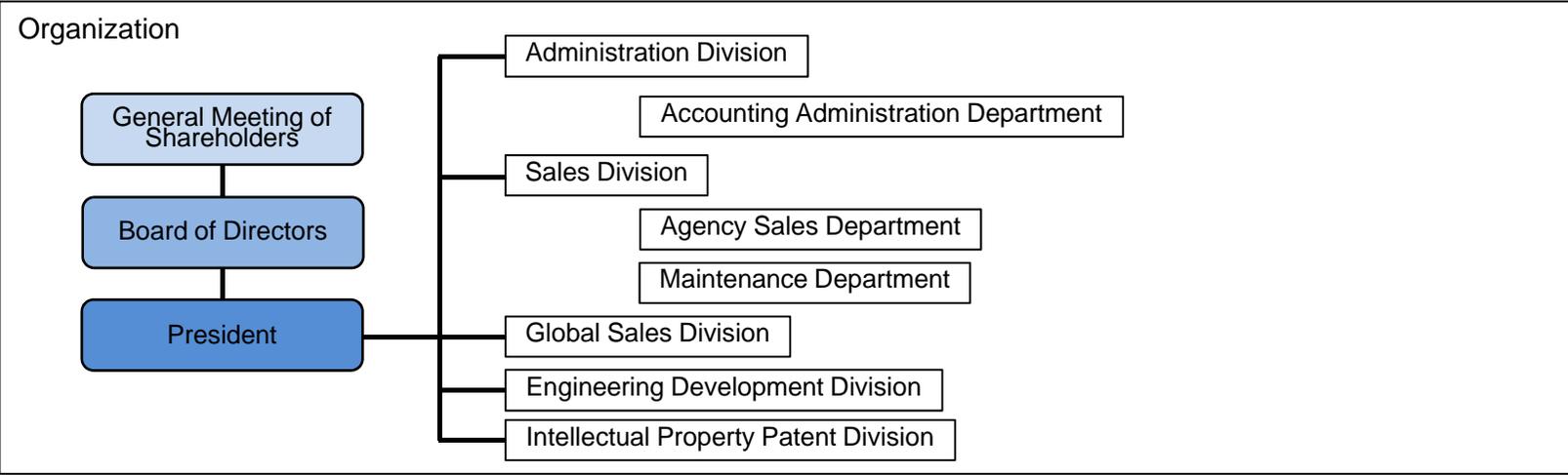


The WASTEC contributes to the activities of the United Nations by supporting the activities of the FSUN which is a "category 1" NPO of the United Nations.

# Company outline



Name of company	WASTEC Incorporated	
Address	Myaim Watanabe Bldg. 203, 5-9-20 Shinjuku, Shinjuku-ku, Tokyo 160-0022 Japan	
Date of Establishment	July 23, 2009	
Tel	+81-3-6457-4056	
Fax	+81-3-3350-0272	
Email	info@wastec.jp	
URL	www.wastec.jp	
Management	Chairman & Director	Mitsuo Oguchi
	President	Ryosuke Odawara
	Vice President	Kimihiro Tsuyuki
	Director (Africa's Department)	Joseph O. Davies
	Auditor	Yoshiyuki Yamaguchi (CPO)
	Corporate Lawyer	Harutaka Nakamura
	Advisor	Takashi Nakagami (Chairman of JEDES and JEPIA)
Capital	24,000,000 J.YEN	
Representative Office	Europe : FBC Business Consulting GmbH August-Schanz-Str. 8 60433 Frankfurt/Germany Africa : Sarl Jay Nigeria Ltd. Lagos, Nigeria	



# Philosophy and Vision

WASTEC protects the precious lives of children responsible for the next generation around the world

International symposium called Global Water Issues and Nanotechnology (GWIN2009) to discuss how nanotechnology is whether the solution to the water problems was held in Kyoto on September 30 and October 2, 2009.

In this symposium , measures to mitigate the water situation that tight to ( tight ) is pointed out to be the diversification of water resources , the water resources of the future , reservoirs in areas where recovery of rainwater , urbanized , and the pollution groundwater degradation that has received , reuse of sewage , brackish water containing salt, a possible salt water desalination , etc. were raised .

In addition, it is attention to the water problems of the African continent, rather than the large-scale seawater desalination plant for oil-producing rich countries, the importance of providing an inexpensive water purification system of decentralized and non-energy-consuming distributed capable of supplying clean water to poor resident inland was proposed.  
(Journal of Industry-Academia-Government Collaboration Vol.5 No.11, 2009)

Thus, there is a situation where tense world by water shortage worldwide.  
In world affairs, securing water resources has been pointed out than the oil, the role of WASTEC is very important.  
WASTEC's mission is to develop water purification systems that can be anywhere, anyone easily make drinking water from seawater and utilization of reclaimed water.  
It also has the important task hybrid water purification system combined solar and wind power as a power.

In addition, WASTEC is also working on the practical application of organic waste processing system that can convert organic waste, food wastes and raw sewage, into water and energy resources.

By addressing the technology development and reduction of the waste problem as described above, WASTEC will also contribute to establish of a Sound Material-Cycle Society and solve of environmental problems of the world.

# Business concept

- ★WASTEC is a research and development company related to water purifiers, wind power and waste processing systems.
- ★WASTEC conducts research, development, production and sales, but it is a fables company basically.
- ★WASTEC is selecting exact strategic partners on a global scale and providing the appropriate technical assistance for each countries, regions and markets to contribute to the promotion of new employment.
- ★Overseas sales area of WASTEC are mainly in Africa, Asia, the Middle and Near East and South America.

## *Domestic Market*

- ★Stockpile of portable water, according to regional disaster prevention programs.
- ★Providing WASTEC`s items to designated public institutions, according to regional disaster prevention programs.
- ★Self-disaster prevention organizations.
- ★Disaster affected gas stations.
- ★Fostering rainwater usage.
- ★Counter measures for polluted ground water (Government subsidy)
- ★Emergency supply for kindergarten and schools (Government subsidy)
- ★Condominiums
- ★Disaster-prevention Parks
- ★Hotels and Restaurants
- ★Hospitals and Schools

*Source: IWMI ANNUAL REPORT 2006/7 P.14*

# WASTEC Products

## ● Water Purification System

- ◆ Movable type Water Purification System
  - Gasoline engine type
  - Electric motor type (under development)
  
- ◆ Business-use Water Purification System
  
- ◆ Home-use Water Purification System



Gasoline engine movable type water purification system



Home-use water purification system

## ● Wind Power Generation System (under planning)

## ● Waste Material Reutilization System(under planning)

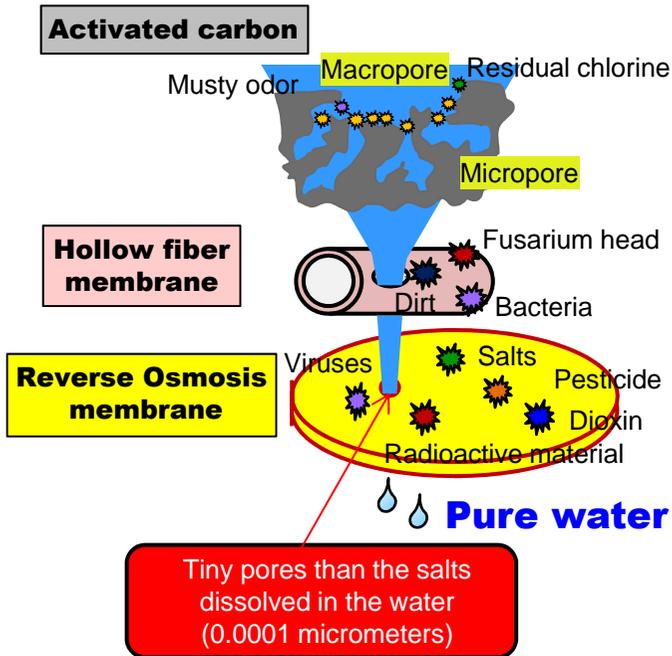
# Insistence on Water Purification Technology

**Water purification technology of WASTEC was born from manned space technology.**

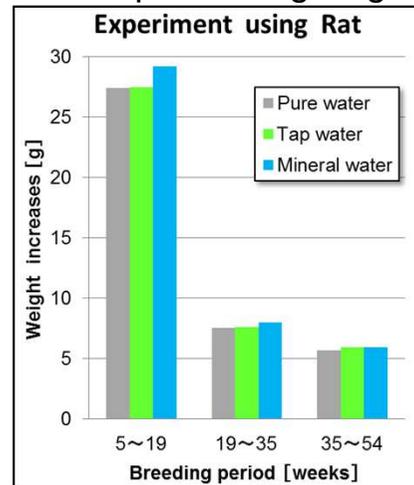
By providing a water purification system with low cost, high performance and high reliability, WASTEC aims to create a drinkable water that more safe and delicious and to build a water environment that can be safe and secure.

★**Safety and Security**  
 ↓  
**Reverse Osmosis membrane**

★**Delicious and Healthy**  
 ↓  
**Mineral component elution filter**



Weight increase was remarkable in breeding previous period of giving a mineral water.



**Effect of mineral filter**  
 Mineral concentration (ppm)

Mineral components	Outlet of RO membrane	Outlet of Mineral filter
Calcium	1.8	6.8
Magnesium	1.6	1.6
Potassium	0.2	3.3

# Differentiation of Water Purification System

**"Simple three stages for purification" is the best way.**

## ***First stage: Sediment Filter (Particular Filtration)***

It is a pre-processing filter to make a filtration raw water for the first time. In order to extend the life of the reverse osmosis membrane, fine particles and residual chlorine are removed by 5 micrometers filter and specialized activated carbon.

### **●Removable substances;**

Residual chlorine, Musty odor, Turbidity, Algae, Rust, Water mold and Bacteria, etc.

## ***Second stage: Reverse Osmosis Membrane***

The water pretreated in the first stage should be divided into purified water and waste water by removing the remaining impurities further reverse osmosis membrane.

Our reverse osmosis membrane with the pore size of 0.0001 micrometers (0.1 nanometer) can remove the virus and pathogenic bacteria of all as long as there is no damage to the reverse osmosis membrane.

### **●Removable substances**

Virus, Bacterium Coli, Heavy metals, Aluminum, Dissolved Lead, Trihalomethane, Chloroform, Trichloroethylene, Radioactive substances, Arsenic, Pesticide, Nitrate-Nitrogen, etc.

## ***Third stage: Mineral filter (Mineral addition and sterilization function)***

The water filtered through reverse osmosis membrane is pure water that does not contain most of the necessary minerals to life. Though the water was highly pure, the taste was disagreeable and continuous consumption of the water over a long period proved to be unhealthy.

The water purification system of WASTEC provides more safe and delicious drinking water by a filter combined with natural materials and special activated carbon with a sterilization function.

# Design concept of Water Purification Systems

***Raw Water Sources : Sea, River, Lake, Pond, Rain, Pool, Bath, Tap water, Groundwater, etc***

## ● Movable type water purification system

- Compact structure ⇒ Density growth of each part article.
- Handling ⇒ Simple operation and intelligent control.
- Weight saving ⇒ Materials are using stainless steel, titanium and alloy.
- Durability ⇒ Vibration absorption structure and acoustic technology.
- Frame construction ⇒ Large-scale rubber tire and impact absorption pipe structure.
- Water quality management ⇒ Installation of microcomputer control.

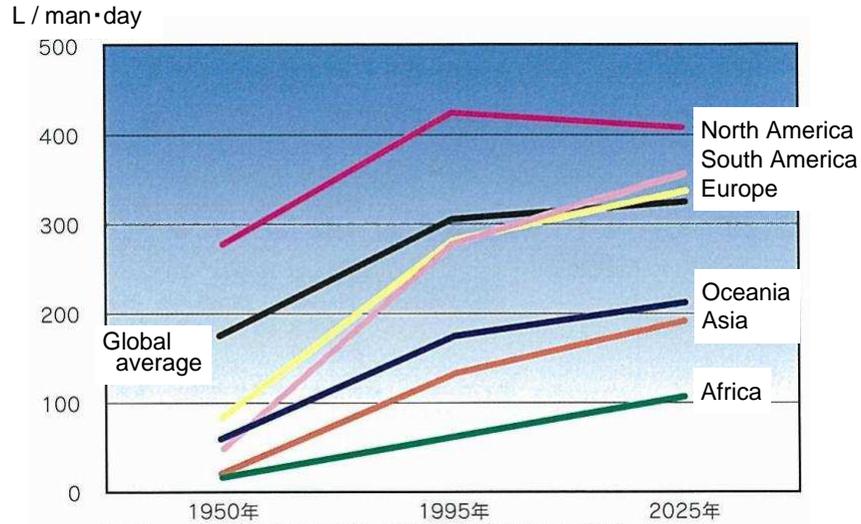
## ● Business-use water purification system

- Compact structure ⇒ Density growth of each part article.
- Handling ⇒ Simple operation and intelligent control.
- Water quality management ⇒ Installation of microcomputer control.

## ● Home-use water purification system

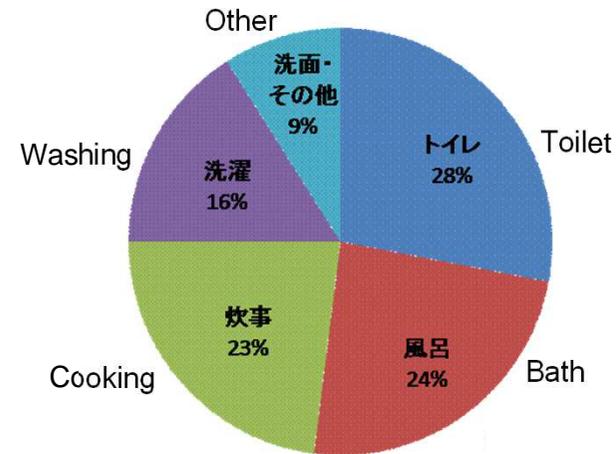
- Compact structure ⇒ Density growth of each part article.
- Handling ⇒ Simple operation and intelligent control.
- Water quality management ⇒ Installation of microcomputer control.
- Reduction of manufacturing cost ⇒ Adoption of mass production and standardization of parts.

## The water consumption of drinking and cooking water in the world



**Expected changes in daily life water consumption in the world**

Source: The Ministry of Land, Infrastructure, Transport and Tourism



**The use items of water for home use**

Source: Tokyo Waterworks Bureau (2006)

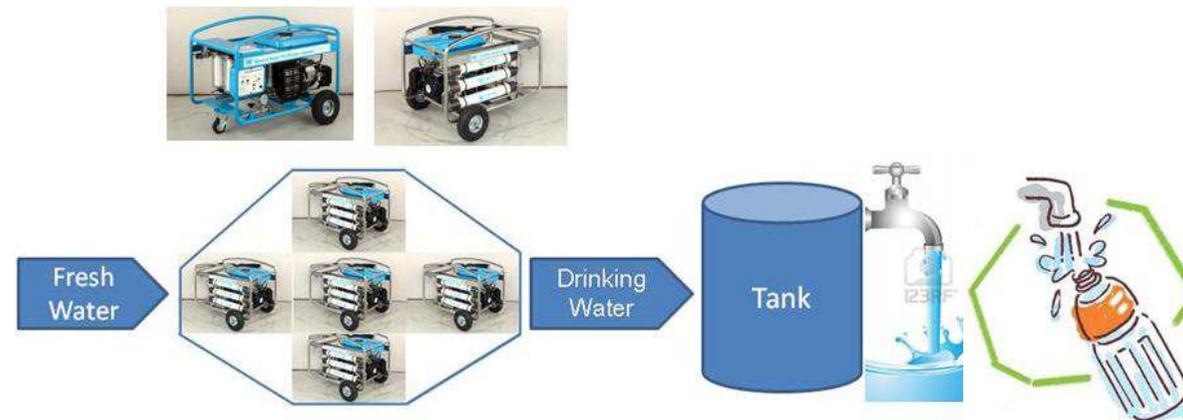
Since an average of one person/one day water consumption in Asia is about 160 liters, among those drinking water is 3 liters and cooking is 36.8 liters (23% of 160-liter). It becomes a total of about 40-liter average.

However, since the number of the advanced industrial production countries of Asia is also included this number, if it presumes, it will seem that 20 liters will be appropriate to this abbreviation half.

Please note drinking water of 3 liters is the standard of WHO.

# Case study and Running cost

- In the case of fresh water, one movable type water purification system can produce drinking water of 267 liters per hour.  
Since continuous running is possible, quantity of water desalination will be 5,340 liters for 20 hours per day. This will be 267 persons if the water consumption on the 1st of drinking water and the water for cooking is calculated with 20 liters.
- If five machines are used at once as shown in the following figures, the domestic non-commercial water for 1,335 persons per day can be produced.



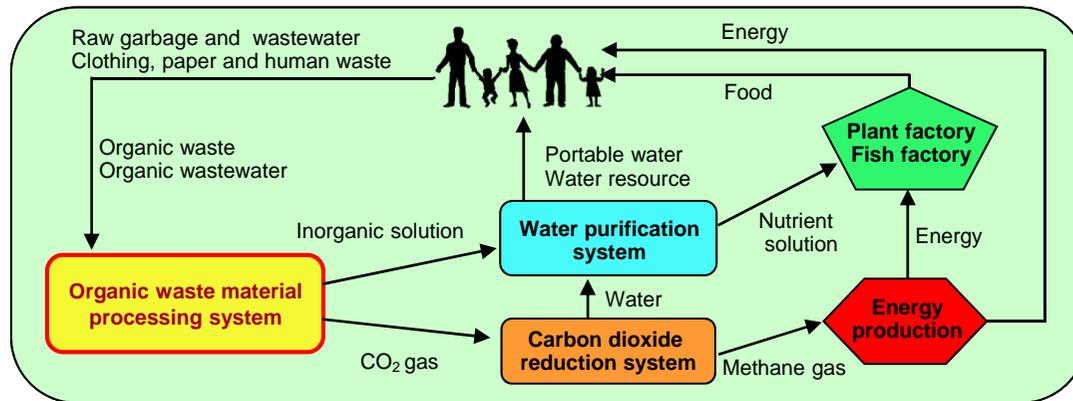
- It is possible not to install big water-purifying equipment system but to install a water purification plant immediately by using it, comparing with five machines and ten machines.

## ★Running cost

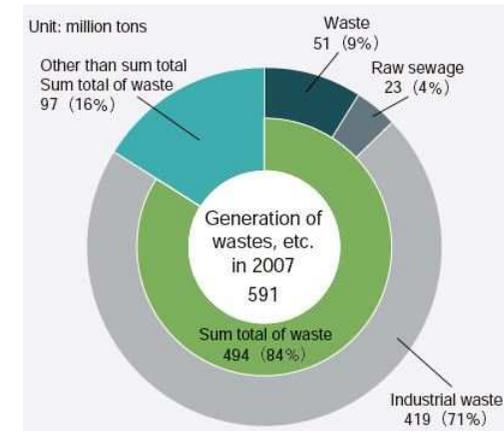
Estimate the running cost in Nigeria, it is 0.86 J.yen / L in the case of fresh water and is 3.0 J.yen / L in the case of sea water.

As a condition, operating time is 2,000 hours. Including gasoline, oil, filters,, maintenance expenses, and equipment purchase price.

# Establishing a sound material-cycle society



**Block diagram of waste recycling structure**



**The Amount of Generation of Wastes, etc. in 2007**

Source : *Establishing a sound material-cycle society 2010*, p.25

The total amount of garbage generated and the daily amount of garbage generated per person dropped slightly after 1979. But from around 1985 there has been a sharp increase till 1990. And from 2001 until the present there has been a decreasing trend.

The amount of waste generation still remains at a high level. It is important in terms of ensuring proper material circulation to hold down the generation of waste and eventually the discharge into the environment.

In fiscal 2007, the amount generated as waste was 590 million tons. Among these, municipal wastes accounted for 70 million tons (50 million tons of garbage and 20 million tons of night soil).

In order to decrease the amount of garbage directly sent for final disposal, we have to consider the changes of garbage processing methods.

**We are planning an organic waste material processing system called “Hypro-system” to convert food waste, wastewater, and human waste into clean water.**

# Waste Material Reutilization System

## Generation and treatment status of food waste (fiscal year 2007)

(Unit: ten thousand tons)

	Waste generation	Disposal					Total
		Disposal by incineration or landfill	Recycled			Total	
			Composting	Livestock feed	Others		
Municipal waste:	1,642	1,371	—	—	—	271	
Domestic	1,119	1,055	—	—	—	64	
Business	522	316	109	56	41	207	
Industrial waste	307	43	108	132	24	264	
<b>Total</b>	<b>1,948</b>	<b>1,414</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>535</b>	

Source : Establishing a sound material-cycle society 2010, p.40

Industrial wastes derived from food manufacturing industries are relatively easy to be reclaimed, because it is easy to meet the required volume and their composition is stable, therefore they are reclaimed a total of 2.64 million tons (a recycling rate of 86%).

The food wastes derived from food distribution industries and restaurants are reclaimed a total of 2.07 million tons (a recycling rate of 40% ).

On the other hand, food wastes derived from domestic households are generated in small amounts and from numerous places, and the composition is too complicated, therefore, only 640,000 tons (6%) are now reclaimed.

As a result of the foregoing, the remaining 14.14 million tons (73%) are incinerated and disposed by landfill.

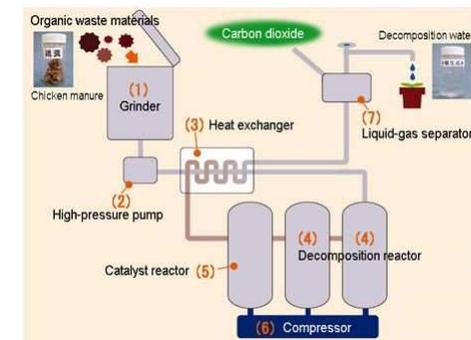
## The ultimate recycling technology converts waste into water

WASTEC is planning **Hypro-system** which can convert organic waste, food wastes and raw sewage, into water and energy resources.

Hypro system uses a physicochemical process that is well-known as wet-oxidation reaction. Garbage and wastewater are mixed together and stirred in the air-tight reactor. The reaction is conducted under the condition of high temperature (280°C) and high pressure (9 MPa) in water. The processing time is very fast in about one hour.

The water generated after the decomposition is clear, colorless, and residue-free. It is even potable after passing through a water purification system. The water can also be used as plant fertilizer, because it contains inorganic components.

Rubbish type biomass including food wastes and raw sewage have more possibility to be converted to water and energy resources, it is required to further promote their reuse in the establishment of a Sound Material-Cycle Society and the creation of a society that does not cause global warming.



Block diagram of Hypro system

## Founder of Wastec and Developer of the system



Source: [http://global.jaxa.jp/article/special/eco/oguchi\\_e.html](http://global.jaxa.jp/article/special/eco/oguchi_e.html)



The water purifying experiment demonstration in the time of a communication event with the Wakata astronaut (June 3, 2009 Prime Minister's official residence)

Former Prime Minister, Mr. Asoh and Mr. Oguchi and children

### Mitsuo Oguchi (Past Career)

The Chairman of Wastec Inc.

Senior Researcher, Innovative Technology Research Center, Aerospace Research and Development Directorate, JAXA

After graduating in 1971 from the School of Engineering at the Department of Aeronautics and Astronautics, Tokai University.

Mr. Oguchi employed the National Aerospace Laboratory of Japan (NAL, now part of JAXA), where he worked on development of rocket engine system and inertial guidance systems.

After that, in response to the proposal for the construction of the International Space Station, made by United States President Ronald Reagan in 1984, he began research on air and water recycling technologies for space application.

Since then, he has successfully developed a water recycling system, an air recycling system, and an organic-waste recycling system that converts waste into water.

He now works as the research adviser and the lecturer of JAXA space education center.

# Thank You All for Your Time



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