

INNOVATION · OPENNESS · DEVELOPMENT

Development and Outlook of China's Solid Waste Treatment Industry



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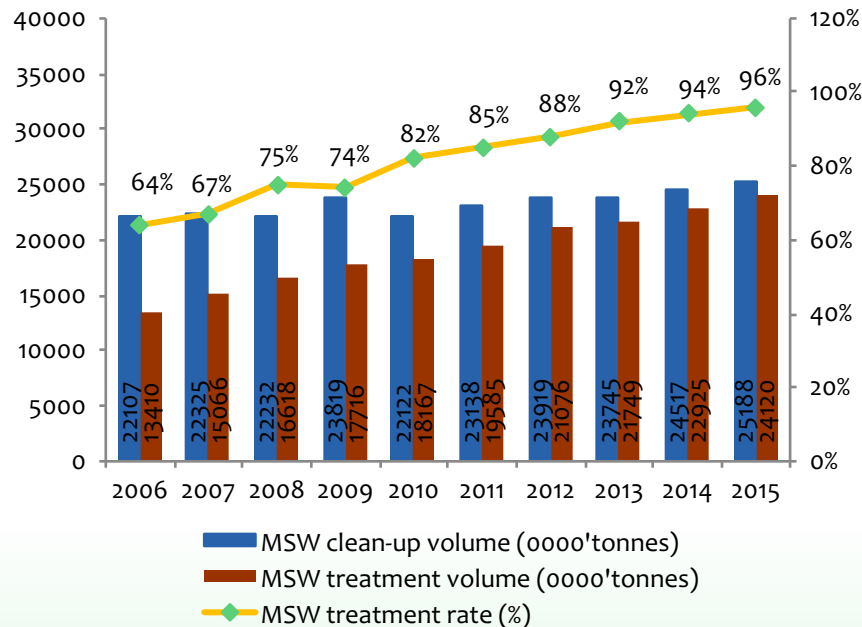


Overview of China's MSW Treatment Industry (I)

- ◆ China's environmental industry is policy-driven. Change in national policies and the country's economic system will lead to a fundamental transformation in the environmental industry;
- ◆ During the last decade (2001-2010), China commercialized its infrastructure projects, by allowing private enterprises to invest in and operate waste management;
- ◆ PPP-models, including BOT, BOO, BT and TOT etc., help to promote corporate development.

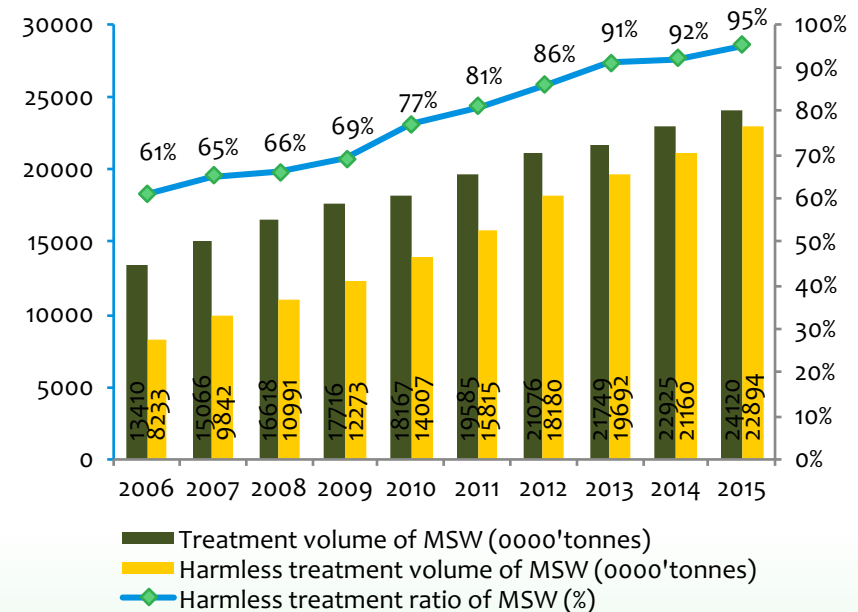
Overview of China's MSW Treatment Industry (II)

Current Status of MSW Treatment



- In 2015, China's MSW clean-up volume reached 250 million tonnes, its treatment volume was 240 million tonnes and its treatment rate amounted to 96%.
- Compared with the early years of the 11th Five Year Plan, i.e. 2006, the rate saw an increase of 32 percentage points
- China's MSW treatment market developed rapidly during the 11th Five Year Plan period.

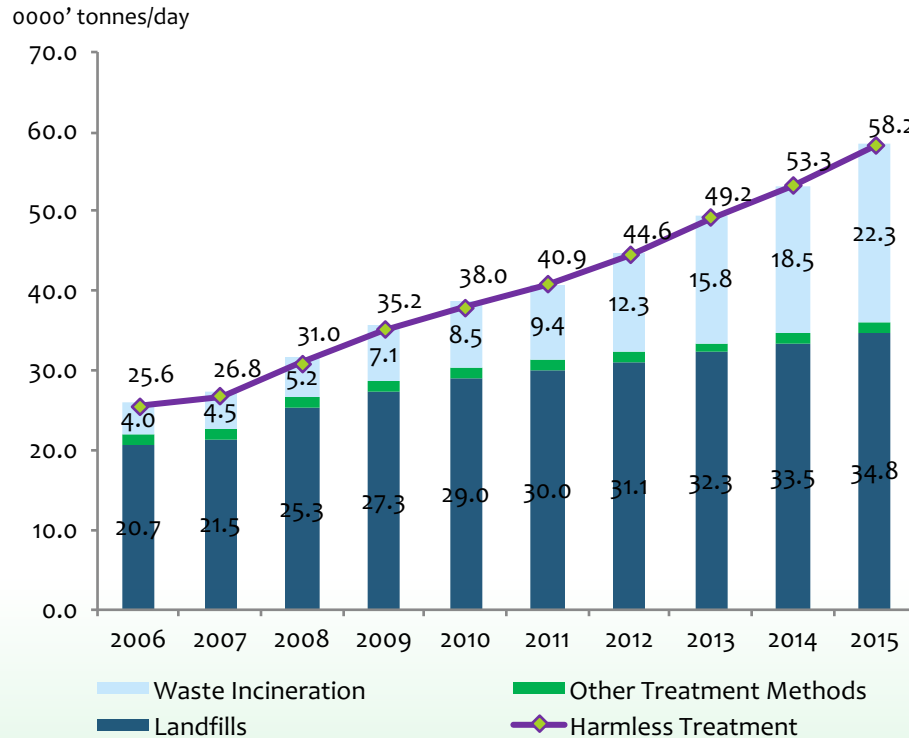
Current Status of the Harmless Treatment of MSW



- MSW treatment can be categorized into either general processing and harmless treatment.
- Harmless treatment mainly utilizes Waste-to-Energy plants and landfills.
- In 2015, the harmless treatment volume of MSW in China amounted to 229 million tonnes, which accounted for 95% of total treatment volume of MSW.

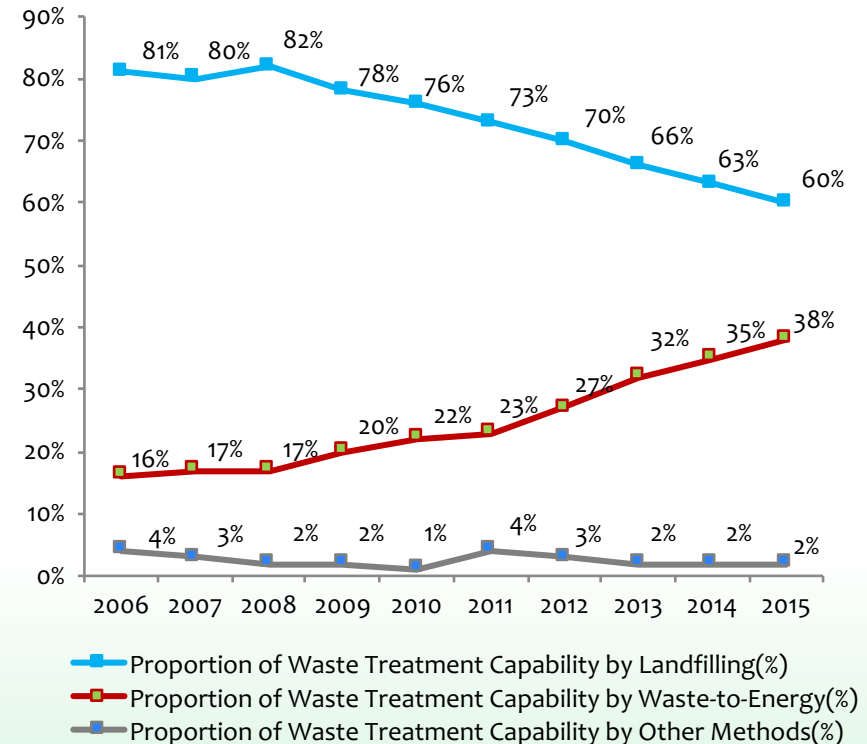
Overview of China's MSW Treatment Industry (III)

MSW Treatment Capabilities by Harmless Treatment Methods



- MSW Treatment: Waste-to-Energy has grown rapidly at a rate that has been significantly higher than that of landfills. However, landfills are still the dominant form of waste treatment.

Harmless Treatment Methods as a Proportion of MSW Treatment



- Currently, landfilling is still the dominant form of MSW treatment in cities in China.
- In terms of methods, the use of landfills as a proportion of MSW treatment has gradually reduced over time, while that of Waste-to-Energy has gradually increased.

Overview of China's Solid Waste Treatment Industry(IV)

Characteristics of MSW in China:

- Mixed waste
- High water content
- High ash content
- Low heat value
- No waste sorting



Comparison of Waste-to-Energy with Landfills in China

	Waste –To-Energy	Landfilling
Occupied Area	Less than 60,000 m ² *	Operational lifetime: Over 30 years; Storage capacity: 24.5 million m ³ *
Amount of leachate discharged	5~10% of the total volume of waste	More than 20% of the total volume of waste
Amount of pollutant emissions	Less in variety, point source pollution, high level of controllability	More in variety, non-point source pollution, low level of controllability
Utilization of resources	All: 1. Generating power from combustion; 2. Methane-to-energy; 3. Making bricks with bottom ash; 4. Utilization of fly ash; 5. Reuse of leachate, etc.	Only a few: 1. Collection of methane; 2. Reuse of leachate

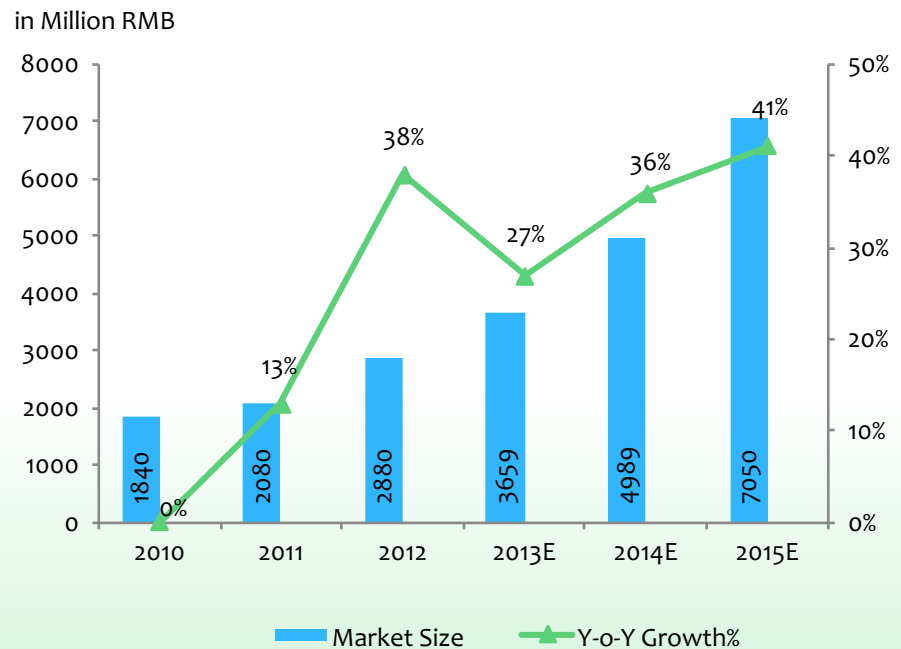
* Measured with a daily processing capacity of 5,000 tonnes

Overview of China's Solid Waste Treatment Industry(V)

◆ The rapid rise of waste-to-energy

- Driven by accelerated urbanization and population growth, China is experiencing steady growth in its generated solid waste.
- Waste-to-Energy notably outperforms other treatment methods, mainly because it helps to significantly reduce waste, and has a relatively small impact on the environment due to stricter emission standards, and is able to convert waste into energy.
- However, since Waste-to-Energy projects are not widely adopted across China, it is expected that there will be still a lot of potential for it to grow in the future.

Chinese WTE Market Size



Source: Ministry of Environmental Protection of the P.R.C., Chinese Ministry of Housing and Urban-rural Development of the P.R.C., E20 Policy & Market Research, Wind, CICC

Core Values:

An Enterprise is not only the Creator of Wealth

but also the Safeguard of Environmental
and Social Responsibility



Rise of *Everbright International* in MSW Treatment Industry

The Rise of Everbright International in the Solid Waste Treatment Industry (I)

- E** Everbright International is a high-tech industrial group that is actively engaged in the development of municipal utilities related to energy conservation and environmental protection, and integrates PPP investment, project construction, operating management, development and research and equipment manufacturing. It is also the first one-stop integrated environmental solution provider in China.
- E** Since 2003, Everbright International has transformed into an enterprise which focuses on the development of municipal utilities related to energy conservation and environmental protection. Through hard work over the past 13 years, it has, driven by its talent and technology, been able to fully promoted the development of its four major business segments, namely Envirotech (to form a comprehensive integrated system which encompasses R&D, design and equipment manufacturing), Environmental Energy (WTE and environmental protection industrial park), Environmental Water (integrated water resource management, which is listed on SGX) and Greentech (an innovative industry, in the process of a spin-off and separate listing on the HKEx). It has also developed a number of ground-breaking projects which meet relevant international standards.



Suzhou Waste-to-energy Project



Boluo Waste-to-energy Project



Changzhou Waste-to-energy Project

Rise of Everbright International in the MSW Treatment Industry (II)

Everbright International has rapidly expanded its presence in the solid waste treatment industry, becoming one of the largest investors and operators in the sector as well as a pioneer in the industry in China and across Asia:

- E** Company has been recognized as a leading enterprise within the environmental protection industry in 2012 by eight PRC government departments and committees, including the Ministry of Environmental Protection.
- E** Company has been selected as a constituent member of the Hang Seng Corporate Sustainability Benchmark Index for seven consecutive years from 2010 to 2016.
- E** Company has been selected as a constituent member of the Hang Seng Corporate Sustainability Index for three consecutive years from 2014 to 2016.
- E** Company has been a Constituent Stock of MSCI China Index for four consecutive years from 2013 to 2016.
- E** Company was included in the Dow Jones Sustainability Emerging Markets Index in 2016.
- E** Company was included in the Dow Jones Sustainability World Index in 2016.

MEMBER OF
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Sustainability Indices
 In Collaboration with RobecoSAM



The Rise of Everbright International in the Solid Waste Treatment Industry (III)

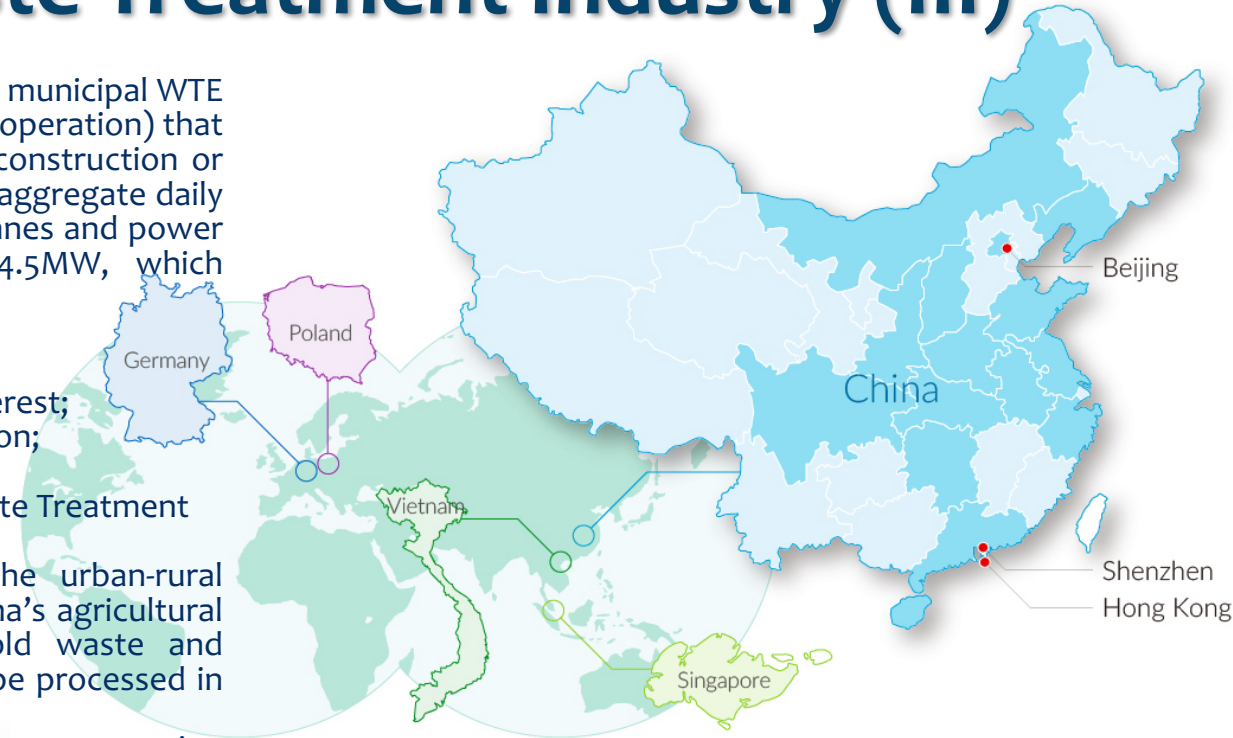
E Currently, the company has a total of 56 municipal WTE projects (excl. projects under entrusted operation) that are either currently operational/under construction or in the preparatory stage. They have an aggregate daily waste processing capacity of 47,700 tonnes and power generation designed capacity of 974.5MW, which include:

- ◆ 47 wholly-owned projects;
- ◆ 6 jointly-owned projects;
- ◆ 3 projects with non-controlling interest;
- ◆ 3 projects under entrusted operation;

E Created the Urban-rural Integration Waste Treatment Business Model

- ◆ Took a lead in implementing the urban-rural integration business model in China's agricultural counties, which allows household waste and agricultural biomass materials to be processed in a consolidated manner.
- ◆ The designed daily household waste processing capacity of the projects in the counties is 3,800 tonnes.
- ◆ The designed annual biomass processing capacity is around 5.3 million tonnes.
- ◆ The aggregated power generation designed capacity is 592MW

E The aggregate annual waste processing capacity of our solid waste treatment projects that are operational, under construction and in the preparatory stage has surpassed 22.55 million tonnes.



Everbright International has built municipal WTE projects in 9 Chinese provinces, including more than 50 counties and cities, as well as in Vietnam. Specifically in China, 23 projects have been completed and commenced operations, with an annual household waste processing capacity of over 8.6 million tonnes; 33 projects are under construction or in the preparatory stage, which, when completed, will benefit more than 50 Chinese cities with a total population of 160 million people and will process 20 million tonnes of waste annually.

Rise of Everbright International in the MSW Treatment Industry (IV)

E Technology and Management

- ◆ Considering that MSW is characterized by “high water content, high ash content, low heat value, and the absence of waste sorting and separation” in China and other developing countries, the Company has developed a roadmap for technological development which will involve years of exploration, centered upon in-house R&D, and supplemented by technological imports and collaboration with scientific research institutes and tertiary education institutions.
- ◆ We have gained intellectual property rights for our core waste incineration technologies, independently developed key equipment, and put into operation a self-developed series of grate furnaces with daily capacities ranging from 200 to 750 tonnes.
- ◆ The gas emissions all comply with the 2010/75/EU Industrial Emissions Directive.
- ◆ We have established a process to completely treat and reuse leachate, as well as developed high efficiency IOC anaerobic reactor technology with intellectual property rights, which lead the market. Also worthy of note is the self-developed third-generation of high efficiency anaerobic leachate treatment technology that increases the COD removal rate from 80% to 92%.
- ◆ After being treated with a chelating agent and tested its compliance with the relevant standards, fly ash is sent to a designated area in a household waste landfill site.
- ◆ Bottom ash is recycled to make bricks to ensure the full utilization of resources, and waste water generated from cleaning the residue and the ground during this process is collected and reused after precipitation, while the tailings are sent to a household waste landfill site for disposal.

With over 120 patents, we have successfully registered the “Everbright Environmental Protection” trademark. In particular, our self-developed grate furnace product series has received the European Union’s CE certificate.



The Rise of Everbright International in the Solid Waste Treatment Industry (V)

E Technology and Management

The First company in China to promote the adoption of the EU2000 Standard when constructing waste-to-energy projects

The First company in China to connect with local environmental protection departments to communicate real-time emissions data

The First company in China to disclose different kinds of data relating to the emissions of its waste-to-energy projects, allowing public supervision, promoting information disclosure within the industry, being bold and showing its strengths and commitment to social responsibility.

In May this year, Everbright International started disclosing on a daily basis the emission standards of its operating projects ahead of schedule, taking lead in promoting information transparency within the industry. In June this year, the Group started opening its operating projects to the public through open-house days, with an aim of joining hands with the public to help boost ecological awareness.

Core Values:

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but also the Safeguard of Environmental
and Social Responsibility



Outlook of China's MSW Treatment Industry

Outlook of China's MSW Treatment Industry (I)

Thanks to China's increased support for the environmental protection industry and the attention paid to environmental management, Waste-to-Energy industry will continuously enjoy an enlarged market space and further development opportunities.

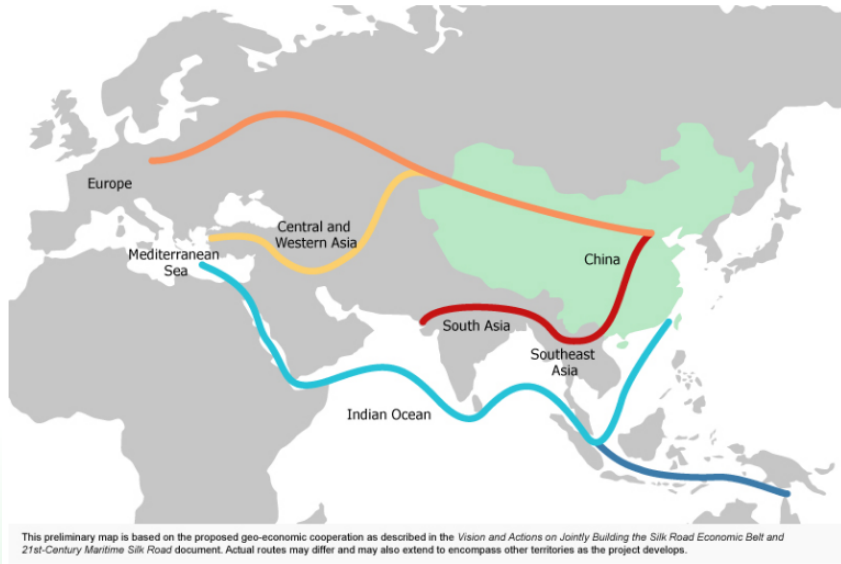
Outlook of China's MSW Treatment Industry (II)

- **The pursuit of green development requires commitment to the fundamental national policy of resource conservation and environmental protection.**
 - The implementation of the revised Environmental Protection Law.
 - The promulgation and implementation of the “Clean Water Action Plan”, “Clean Soil Action Plan” and “Clean Air Action Plan”.
 - Priorities: waste water treatment, soil remediation and air quality management.

- **During the 13th Five-year Plan Period (2016-2020), the total amount of social investments in the environmental protection industry will exceed RMB10 trillion**
 - This means that social investments in the industry will amount to around RMB2 trillion annually on average.
 - The amount of environmental investments reached RMB3.4 trillion during the 12th Five-year Plan Period, an increase of 62% compared with that during the 11th Five-year Plan Period.

Outlook of China's MSW Treatment Industry (III)

The One Belt, One Road Initiative, which refers to the Silk Road Economic Belt and the 21st Century Maritime Silk Road, is a significant development strategy launched by the Chinese government.



Source: Hong Kong Trade Development Council

- The “One Belt, One Road” initiative will connect Central Asia with West Asia, South Asia and Southeast Asia and even cover Africa.
 - The total population of countries involved amounts to 4.4 billion, accounting for 62% of the global population
 - The aggregate economy of countries involved amounts to USD21 trillion, making up 29% of the global economy
- The “One Belt, One Road” initiative is derived from the land-based “Silk Road Economic Belt” and the sea-based “Maritime Silk Road” in Chinese history.
 - **Politically:** involved big empires spanning the continents of Asia, Africa and Europe such as Persia, Macedonia, Rome and Osman.
 - **Historically:** linked ancient civilizations such as China, India, Egypt and Babylon.
 - **Economically:** formed an economic chain closely linked to densely populated regions around the world.
 - **Culturally:** promoted the emergence of three major religions that influence hundreds of millions of people: Buddhism, Christianity and Islam.
- The “One Belt, One Road” initiative aims to bring back the glorious “Made-in-China” era.



Everbright International's Development Strategy and Goals

Everbright International's Development Strategy

Everbright International's development strategy: Leveraging Talent, Science and Technology to Expand from Coastal Areas to Inland Cities, from Cities to Rural Areas, and from Domestic to Overseas Markets

E From Coastal Areas to Inland Cities:

- With national development strategies in place for the Yangtze River Economic Zone, the Beijing-Tianjin-Hebei Region and China's western regions, the Company will strengthen its presence in regions where its existing projects are located and will also seek to expand into other locations.

E From Cities to Rural Areas:

- With a focus on ecological and environmental restoration in rural areas, the Company will proactively promote the development of various operation models, such as integration treatment of urban and rural waste, and integrated utilization of agricultural waste and straw.

E From Domestic to Overseas Markets:

- In line with the "One Belt One Road" initiative, the Company will manage the environment on the basis of its BOT, TOT and PPP models, and will promote its environmental protection technology and core equipment abroad.
- The Company will actively seek new overseas development opportunities.

Everbright International's Target & Positioning

Corporate Positioning





光大國際
Everbright International



Thank you