

ADB TA-9611 PRC

# 垃圾发电项目区域统筹规划——案例分享

## Case Study on Regional Integrated Planning of MSW Power Generation in BTH and the PRC

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## 2.行业补贴政策演变及调整

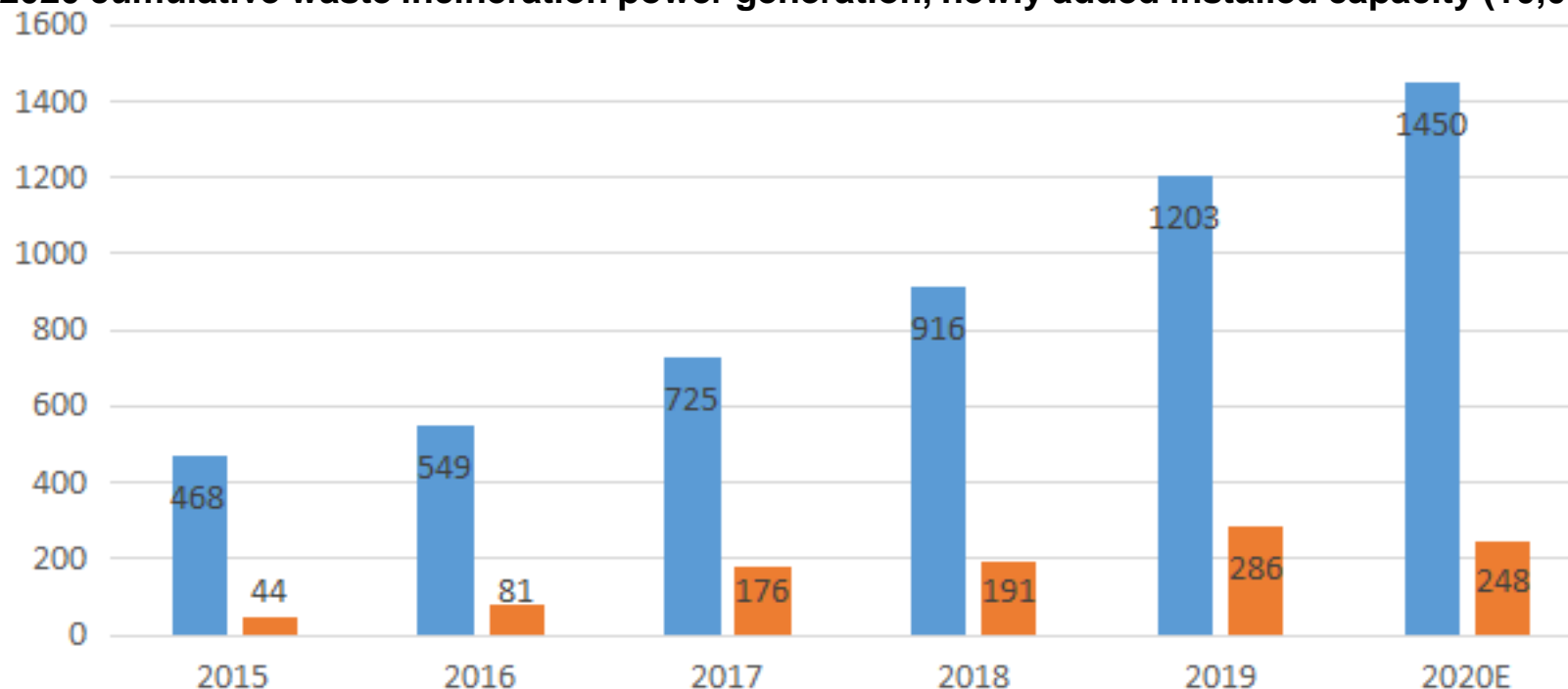
### INDUSTRY SUBSIDY POLICY EVOLUTION AND ADJUSTMENT

#### 2.1 国补政策助推垃圾焚烧发电行业快速发展

National subsidy policy boosts the rapid development of WtE industry

2015年-2020年垃圾焚烧发电累计、新增装机容量（单位：万千瓦）

2015-2020 cumulative waste incineration power generation, newly added installed capacity (10,000 KW)



■ 装机容量（万千瓦） ■ 年新增装机容量

Installed capacity  
(10000KW)

newly added Installed  
capacity (10000KW)

## 2.行业补贴政策演变及调整

# INDUSTRY SUBSIDY POLICY EVOLUTION AND ADJUSTMENT

### 2.2 国补退坡“靴子落地”，行业面临新的挑战

National subsidies decrease, the industry faces new challenges

《关于促进非水可再生能源发电健康发展的若干意见》财建[2020]4号；以下简称“4号文”

*SEVERAL OPINIONS ON PROMOTING THE HEALTHY DEVELOPMENT OF NON-AQUEOUS RENEWABLE ENERGY POWER GENERATION*  
Hereinafter referred to as "Circular 4"

《可再生能源电价附加补助资金管理办法》

财建[2020]5号；以下简称“5号文”

*"ADMINISTRATIVE MEASURES FOR RENEWABLE ENERGY ELECTRICITY PRICE ADDITIONAL SUBSIDY FUNDS"*  
Hereafter referred to as "Circular 5"

《关于<关于促进非水可再生能源发电健康发展的若干意见>有关事项的补充通知》  
财建[2020]426号；以下简称“426号文”

*"SUPPLEMENTARY NOTICE ON "SEVERAL OPINIONS ON PROMOTING THE HEALTHY DEVELOPMENT OF NON-WATER RENEWABLE ENERGY POWER GENERATION""*  
hereinafter referred to as "Circular 426"

*"IMPLEMENTATION PLAN FOR IMPROVING THE CONSTRUCTION AND OPERATION OF BIOMASS POWER GENERATION PROJECTS"*  
Hereafter referred to as "Circular 1421"

《完善生物质发电项目建设运行的实施方案》发改能源[2020]1421号；以下简称“1421”号文



# 2.行业补贴政策演变及调整

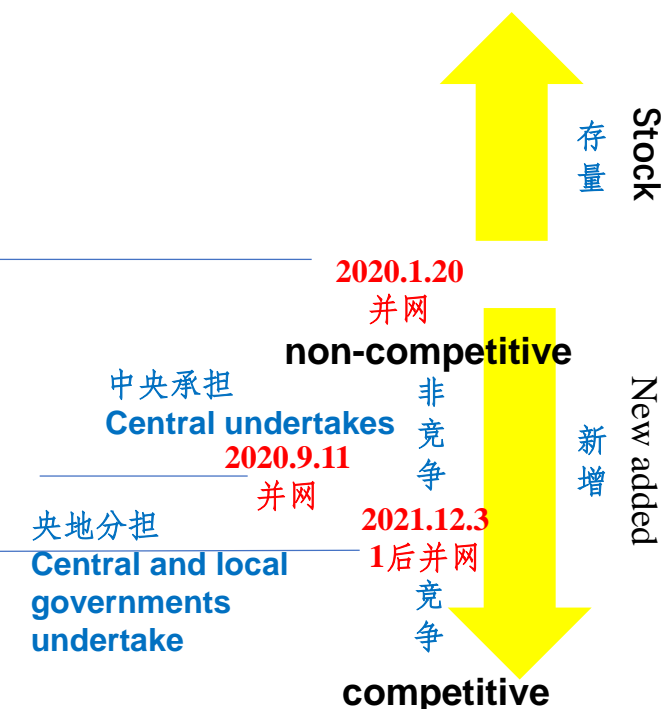
## INDUSTRY SUBSIDY POLICY EVOLUTION AND ADJUSTMENT



### 2.2 国补退坡“靴子落地”，行业面临新的挑战

#### National subsidies decrease, the industry faces new challenges

补贴清单 Subsidy List	类型 Type	项目个数 Number of projects	项目规模 (万吨/日) Project scale (10,000 tons/d)	装机规模(MW) Installed capacity (MW)	上网标准 Grid standards
旧政前七批 The first seven batches of the old policy	存量 Stock	203	19.11	3693.5	0.65
2020年补贴清单 2020 Subsidy List	存量 Stock	68	6.19	1196	0.65
2021年补贴清单 (共22批) 2021 Subsidy List(22 batches in total)	存量 Stock	159	16.58	3204	0.65
	新增 New added	23	2.66	513	0.65
2022年申报结果 (2021年22批之外) 2022 application results (outside the 22 batches in 2021)	新增 New added	23	3.10	650	0.65
合计 Total		476	47.64	9256.5	
未入清单项目 Unlisted items	新增 New added	212	29.73	5740	竞价 (<0.65, 退坡幅度大优先) Competitive price (<0.65)



The new and old policies are alternated, in a period of interruption, and the WtE industry has entered a bottleneck period

\*数据摘自：国家能源局可再生能源中心 E20整理  
\*Reference: E20, Renewable Energy Center, National Energy Administration

## 2.行业补贴政策演变及调整

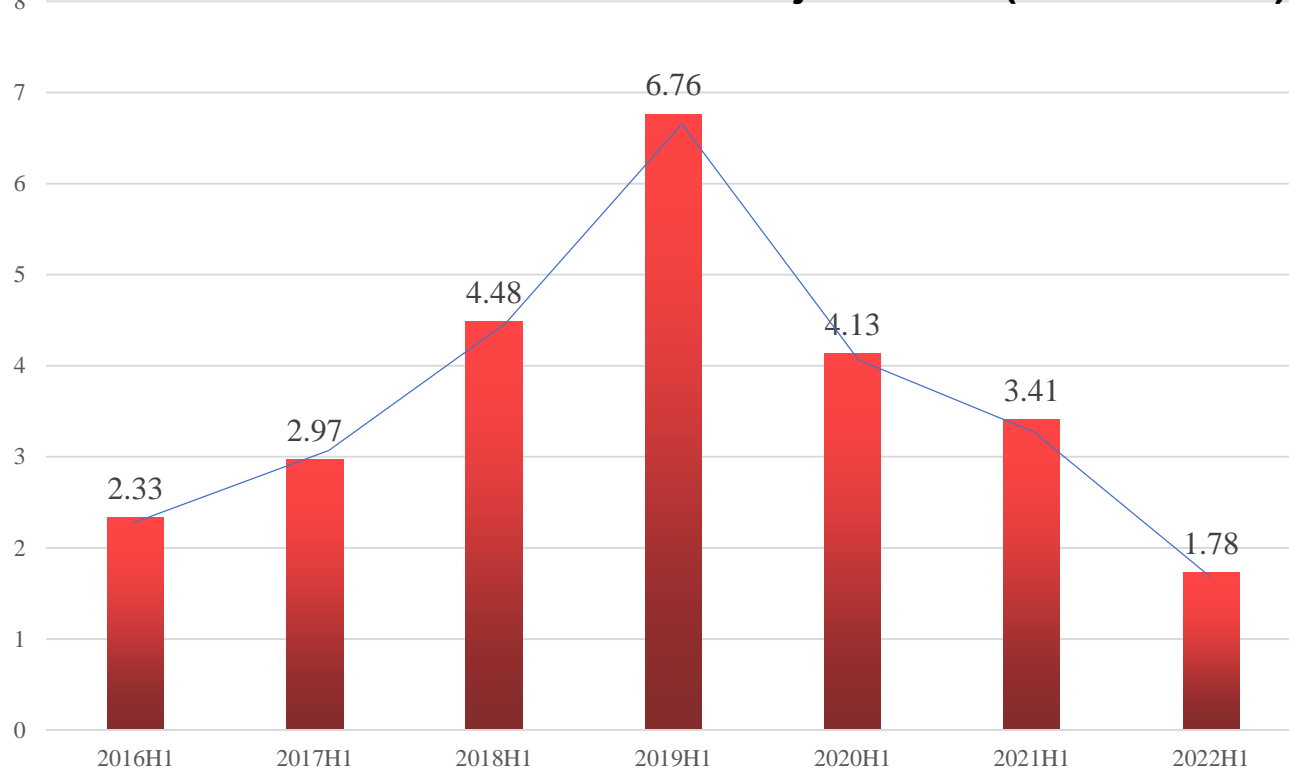
### INDUSTRY SUBSIDY POLICY EVOLUTION AND ADJUSTMENT

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2016-2022年H1全国垃圾发电市场中标规模（万吨/日）

2016-2022 H1 National WtE Market Project Scale (10000 tons/d)



中标规模“三连降”：分别较2020、2021同期下滑132.02%、91.57%

"Three consecutive declines" in the scale of winning bids: down 132.02% and 91.57% from the same period in 2020 and 2021, respectively

## 2.行业补贴政策演变及调整

### INDUSTRY SUBSIDY POLICY EVOLUTION AND ADJUSTMENT

#### 2.2 国补退坡“靴子落地”，行业面临新的挑战

National subsidies decrease, the industry faces new challenges



Local government



Company

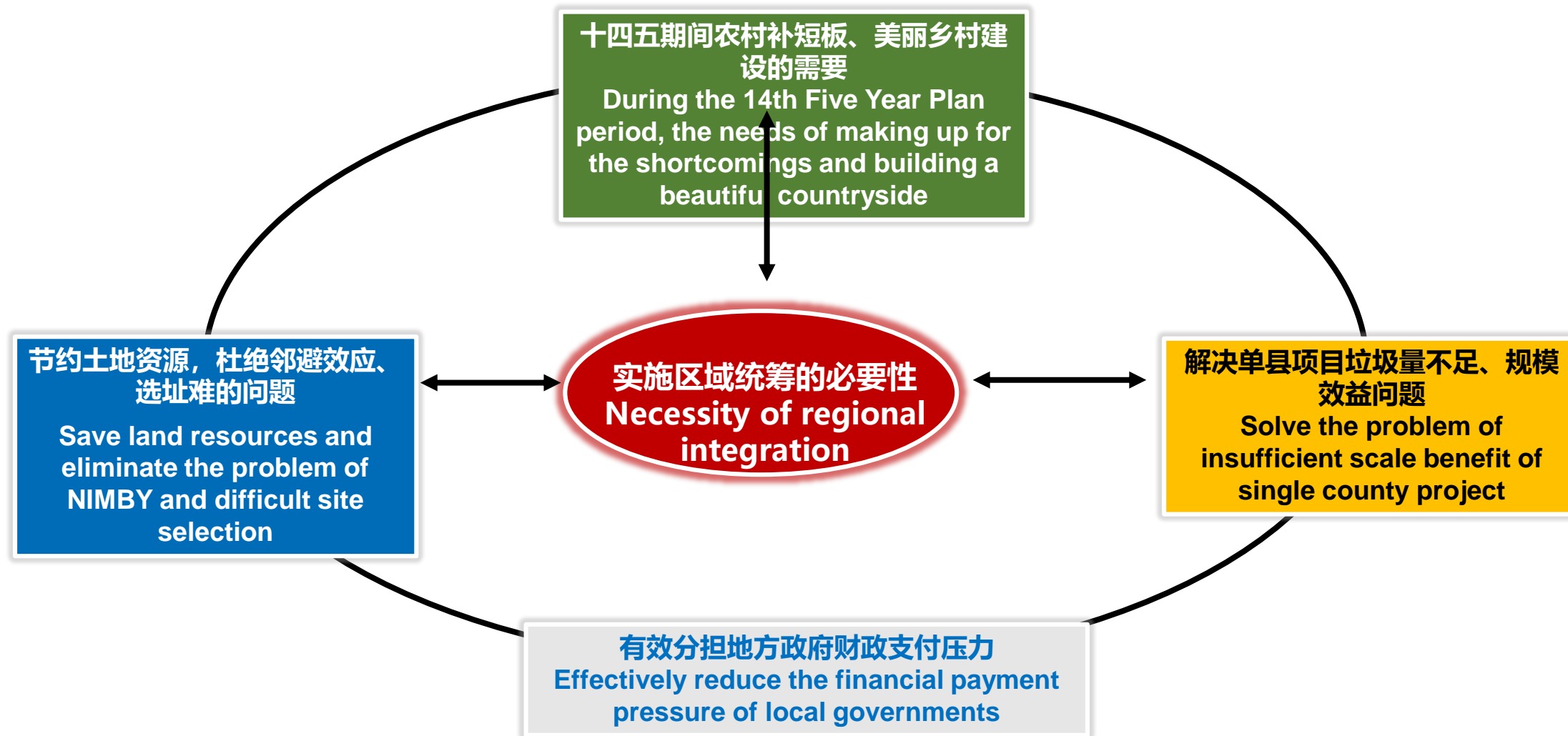
# 3. 垃圾发电区域统筹势在必行

## REGIONAL PLANNING OF WASTE POWER GENERATION IS IMPERATIVE



### 3.1 实施区域统筹的必要性

#### Necessity of regional integration



# 3. 垃圾发电区域统筹势在必行

## REGIONAL PLANNING OF WASTE POWER GENERATION IS IMPERATIVE

### 3.2 实施区域统筹的优势

#### Superiority of regional integration

1

省市政府在项目立项时做好统筹规划，避免盲目或过度投资

Provincial and municipal governments shall make integrated planning during project initiation to avoid excessive investment

2

能有效调节项目间产能配置，实现环境、社会及经济效益统一

It can effectively adjust the capacity allocation among projects and realize the unification of environmental, social and economic benefits

3

便于政府引导和监督，有效降低环保风险，减少群体性事件发生

Facilitate government guidance and supervision, effectively reduce environmental protection risks and reduce the occurrence of group events

4

可有效解决区域内垃圾处理难题，改善农村人居环境

It can effectively solve the problem of MSW treatment in the region and improve the rural living environment



# 3. 垃圾发电区域统筹势在必行

## REGIONAL PLANNING OF WASTE POWER GENERATION IS IMPERATIVE

### 3.3 政企民三生融合模式

#### Government, enterprise and residents

上级主管部门（省级），根据本行政区域内的人口、经济水平，垃圾量特性，编制中长期专项规划，综合考虑经济运距及垃圾处理设施处理能力以组团方式实现垃圾统筹实施。

The superior competent department (provincial level) shall, according to the population, economic level and the characteristics of MSW volume in the administrative region, prepare medium and long-term special plans, and comprehensively consider the economic transportation distance and the disposal capacity of MSW treatment facilities.

**政府为主体**  
Government as the main body



**百姓为居民**  
Residents



在合理运距范围内，企业或政府通过建设大中型垃圾转运站，将周边区县生活垃圾转运至焚烧厂集中处理。

Within a reasonable transportation distance, the enterprise or government will transfer the MSW of surrounding districts and counties to the incineration plant for centralized treatment by building large and medium-sized waste transfer stations.

**企业为主导**  
Enterprise oriented

# 3. 垃圾发电区域统筹势在必行

## REGIONAL PLANNING OF WASTE POWER GENERATION IS IMPERATIVE

### 3.4 垃圾发电区域统筹规划的分工

#### Division of labor in regional overall planning of waste power generation

1. 省级政府负责实施区域统筹规划  
Provincial governments are responsible for implementing regional integrated planning



5. 建设及运营过程中接受当地政府主管部门监管；其他区县按合同要求运输生活垃圾并支付垃圾处理费

The bid winner accept the supervision of local government authorities during construction and operation; other districts and counties transport MSW and pay MSW disposal fees according to contract requirements

2. 市级政府按照规划，明确协同范围及选址，确定主要牵头区县及配合区县

Municipal government clarifies the scope of coordination and site selection, and determines the main leading districts and counties and cooperating districts and counties

3. 牵头区县按照相关规范及程序公开招标

Leading districts and counties will open tenders in accordance with relevant regulations and procedures

4. 中标人与采购人（一般为牵头区县主管部门）签订特许经营协议/PPP合同，并与范围内各区县分别签订垃圾处理服务合同

The bid winner signs a franchise agreement/PPP contract, and a waste disposal service contract with each district/county within the scope.

## 4. 区域统筹案例分享

# CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

### 4.1 益阳地区统筹模式-政企合作的成功样本

#### Yiyang District -A Successful Sample of Government-Enterprise Cooperation



益阳北部项目效果图  
Yiyang North Project



益阳西部项目效果图  
Yiyang West Project



益阳项目效果图  
Yiyang West Project

自2014年起，光大环境先后在益阳地区投资建设了**益阳、益阳西部、益阳北部**三个项目，涉及总投资约17亿元，日均处理生活垃圾超2500吨、餐厨垃圾+地沟油120吨、医疗废物10吨、污泥80吨，服务人口约442万，服务范围包括益阳市2个市辖区、1个县级市、3个县、1个管理区、1个国家级高新技术产业开发区。

Since 2014, three projects in Yiyang, western Yiyang, and northern Yiyang have been built, involving a total investment of about 1.7 billion yuan, with an average daily treatment of more than 2500 tons of MSW. The service scope includes 2 municipal districts and 1 county-level city in Yiyang City, 3 counties, etc.

益阳市区项目，一二期规模**1400吨/日**，位于赫山区，服务范围包括主城区的赫山区、资阳区；

**Yiyang Project, 1400T/D**, located in Heshan District, the service scope includes Heshan District and Ziyang District.

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益阳西部项目效果图

Yiyang West Project



益阳项目效果图

Yiyang West Project

益阳北部项目，规模**600吨/日**，位于沅江市，服务范围沅江以北12个乡镇、南县全县域12个乡镇、大通湖管理区域5个乡镇；

**Yiyang North Project, 600t/d**, Located in Yuanjiang City, it serves 12 towns and towns north of Yuanjiang, Nanxian, and 5 towns in the Datong Lake management area.

益阳西部项目，规模**500吨/日**，位于桃江县，服务范围为桃江县西部6个乡镇（鲇埠回族乡、武潭镇、大栗港镇、马迹塘镇、三堂街镇、鸬鹚渡镇）、安化县全域20个乡镇。

**Yiyang West Project, 500t/d**, located in Taojiang County, it serves 6 towns in the west of Taojiang County and 20 towns in Anhua County.

## 4. 区域统筹案例分享

### CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

#### 4.2 永州地区统筹模式-率先在湖南省内实现生活垃圾焚烧处理全覆盖

#### Yongzhou -Take the lead in achieving full coverage of MSW incineration in Hunan Province



永州项目效果图

Yongzhou Project



永州东部项目效果图

Yongzhou East Project



永州南部项目效果图

Yongzhou South Project

自2015年起，光大环境先后在永州投资建设了**永州市区**、**永州东部和西部**三个垃圾焚烧发电项目，总规模为日处理垃圾2000吨，总装机容量为42兆瓦，涉及总投资13亿元。

Since 2015, three waste incineration power generation projects in Yongzhou have been invested and constructed in Yongzhou. The total scale is 2,000 tons of waste per day, the total installed capacity is 42 MW, and the total investment involved is 1.3 billion yuan.

永州市区项目**800吨/日**，位于零陵区，覆盖包括零陵区、冷水滩区、经开区及周边乡镇；

The **800 t/d project in Yongzhou City** is located in Lingling District, covering Lingling District, Lengshuitan District, Economic Development Zone and surrounding towns;

## 4. 区域统筹案例分享

### CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

#### 4.2 永州地区统筹模式-率先在湖南省内实现生活垃圾焚烧处理全覆盖

#### Yongzhou -Take the lead in achieving full coverage of MSW incineration in Hunan Province



永州项目效果图

Yongzhou Project



永州东部项目效果图

Yongzhou East Project



永州南部项目效果图

Yongzhou South Project

永州东部项目**600吨/日**，位于宁远县，覆盖宁远、新田、蓝山三县；

The **East Yongzhou project is 600 t/d**, located in Ningyuan County, covering the three counties of Ningyuan, Xintian and Lanshan;

永州南部项目**600吨/日**，位于道县，覆盖道县、江华、江永三县及回龙圩管理区。

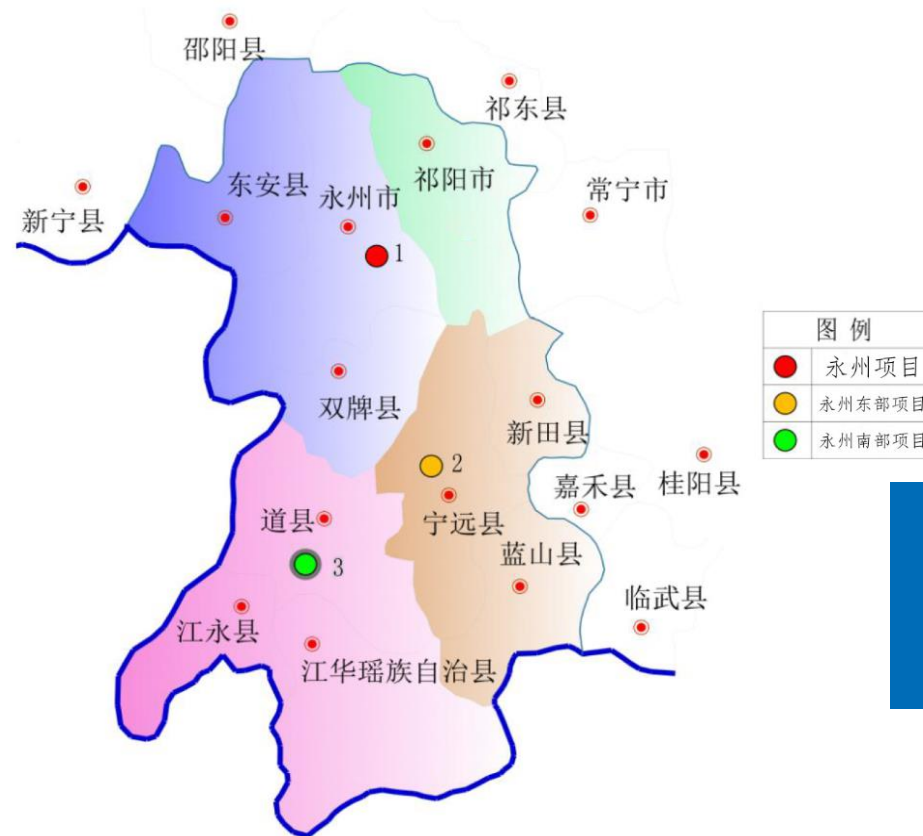
The **600 t/d project in southern Yongzhou** is located in Daoxian County, covering Daoxian, Jianghua, Jiangyong counties and Huilongwei management area.

## 4. 区域统筹案例分享

### CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

#### 4.2 永州地区统筹模式-率先在湖南省内实现生活垃圾焚烧处理全覆盖

Yongzhou -Take the lead in achieving full coverage of MSW incineration in Hunan Province



**全省乃至全国区域统筹、共建共享的成功典范**  
A successful model of MSW regional integrated management, co-construction and sharing of the whole province and even the whole country

永州市生活垃圾焚烧发电项目布局图

Layout of Yongzhou MSW Incineration Power Generation Project

# 4. 区域统筹案例分享

## CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

### 4.3 海南统筹模式-打造无废海岛

#### Hinan – zero MSW island

##### 三亚生活垃圾焚烧发电厂

Sanya MSW Incineration Power Plant

##### 三亚餐厨处理厂

Sanya Kitchen Treatment Factory

##### 三亚污泥处理厂

Sanya Sludge Treatment Plant

##### 三亚医废处理厂

Sanya Medical Waste Treatment Plant

##### 三亚飞灰填埋场

Sanya fly ash landfill

##### 三亚炉渣综合利用厂

Sanya Slag Comprehensive Utilization Plant

##### 三亚粪便处理厂

Sanya Fecal Treatment Plant

##### 三亚布草洗涤厂

Sanya Linen Washing Factory



三亚市循环经济产业园

Sanya City Circular Economy Industrial Park

##### 东方生活垃圾焚烧发电厂

Dongfang MSW Incineration Power Plant

东方飞灰填埋场-委托运营

Dongfang fly ash landfill

Danzhou City Solid Waste Resource Utilization Center

儋州市固体废物资源化利用中心



儋州生活垃圾焚烧发电厂 Danzhou MSW Incineration Power Plant

儋州餐厨处理厂 Danzhou Food and Kitchen Treatment Plant

儋州飞灰填埋场 Danzhou fly ash landfill

儋州炉渣综合利用厂 Danzhou Slag Comprehensive Utilization Plant

##### 屯昌生活垃圾焚烧发电厂

Tunchang MSW Incineration Power Plant

屯昌医废处理厂

Tunchang Medical Waste Treatment Plant

Lingshui County Vein Industrial Park  
陵水县静脉产业园



##### 陵水生活垃圾焚烧发电厂

Lingshui MSW Incineration Power Plant

陵水餐厨处理厂

Lingshui Food and Kitchen Treatment Plant

陵水飞灰填埋场

Lingshui fly ash landfill





# 4. 区域统筹案例分享

## CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

### 4.3 海南统筹模式-打造无废海岛

#### Hinan – zero MSW island



儋州产业园项目  
Danzhou Industrial Park Project



东方垃圾焚烧发电项目  
Dongfang Waste Incineration  
Power Generation Project



陵水产业园项目  
Linshui Industrial Park Project



屯昌垃圾焚烧发电项目  
Tunchang Waste Incineration  
Power Generation Project



三亚垃圾焚烧发电项目  
(一三四期)  
Sanya Waste Incineration  
Power Generation Project

通过区域垃圾协调，实现各焚烧厂之间的入厂量统筹，同时通过调整各焚烧厂的设备检修时间，控制各项目入厂量，克服淡季垃圾量不足、旺季垃圾仓爆仓等困难和问题，实现了各项目“满、稳、长”运行

Through regional integrated management, the MSW quantity among the incineration plants can be overall managed. By adjusting the equipment maintenance time of each incineration plant, the shortage of waste in the off-season, the waste bin bursting in the peak season and other difficulties and problems are overcome.

推进海南省环境厅布点屯昌、三亚一南一北两座医废处理厂，统筹处理全省19个市县医废收运和处置服务，实现光大环境医疗废弃物收运和处置业务覆盖全省100%行政区域，全国罕见

Coordinate the handling of medical waste collection, transportation and disposal services in 19 cities and counties in the province, and realize medical waste collection, transportation and disposal business covering the whole province

按照区域统筹原则，规划建设三亚市、儋州市、东方市、陵水县和屯昌县5座厨余垃圾处理厂，预计亦可实现厨余垃圾服务覆盖全省58%的行政区域。

In accordance with the principle of regional coordination, five food waste treatment plants are planned to be constructed. It is expected that food waste services will also cover 58% of the province's administrative regions.

## 4. 区域统筹案例分享

# CASE SHARING OF REGIONAL INTEGRATED WTE PROJECT

### 4.4 河北故城区域统筹

#### Hebei-Gucheng



项目位于故城县与景县交界，设计处理规模600吨/日，总投资4.1亿元人民币，年处理量21.9万吨，特许经营期为30年。按照衡水市政府统一规划，接收故城与景县生活垃圾。

The project is located at the junction of Gucheng County and Jingxian County, with a design treatment capacity of 600 t/d, a total investment of 410 million yuan, an annual treatment capacity of 219000 tons and a franchise period of 30 years. According to the plan of Hengshui county government and Jingcheng municipal government, the MSW is received uniformly.

# 5. 光大环境简介

## INTRODUCTION TO EVERBRIGHT ENVIRONMENT

中国光大集团股份公司（以下简称“光大集团”），总部位于北京，注册资本超过781亿元，由财政部和中央汇金公司发起设立，是中央直属的15家大型金融企业之一，2021年位列世界500强第194位。

China Everbright Group Co., Ltd. (hereinafter referred to as "Everbright Group"), headquartered in Beijing, with a registered capital of more than 78.1 billion yuan. It is one of the 15 large financial enterprises directly under the central government. Ranked 253rd in the world's top 500.



### 中国光大集团 CHINA EVERBRIGHT GROUP



光大香港  
EVERBRIGHT HONGKONG



光大实业  
EVERBRIGHT INDUSTRIES



光大健康  
EVERBRIGHT HEALTHCARE



青旅集团  
CYTS GROUP



光大科技  
EVERBRIGHT TECHNOLOGY



光大环境  
EVERBRIGHT ENVIRONMENT



光大永年  
EVERBRIGHT GRAND CHINA ASSETS



Bank 中国光大银行  
CHINA EVERBRIGHT BANK



光大证券  
EVERBRIGHT SECURITIES



光大永明人寿  
SUN LIFE EVERBRIGHT LIFE



光大金控  
EVERBRIGHT FINANCIAL HOLDING



光大信托  
EVERBRIGHT TRUST



光大金瓯  
EVERBRIGHT AMC



光大控股  
EVERBRIGHT LIMITED



CYTS  
中青旅  
中国光大集团成员



Cachet®  
嘉事堂  
中国光大集团成员

# 5. 光大环境简介

## INTRODUCTION TO EVERBRIGHT ENVIRONMENT

光大集团于1983年在香港成立，作为国家改革开放窗口企业，以贸易起家、实业开路，积极践行改革开放破冰之旅。经过三十八年的发展，光大集团现已成为横跨金融与实业、香港与内地，机构与业务遍布海内外，拥有金融全牌照和环保、旅游、健康、高科技等特色实业，具有综合金融、产融合作、陆港两地特色优势的国有大型综合金融控股集团。

Everbright Group was established in Hong Kong in 1983. As a window enterprise of the country's reform and opening up, it started with trade, opened the way for industry, and actively implemented the ice-breaking journey of reform and opening up. After 38 years of development, Everbright Group has now become a financial and industrial, Hong Kong and Mainland, with institutions and businesses all over the world. It has a full financial license and special industries such as environmental protection, tourism, health, and high-tech.



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中国光大环境（集团）有限公司（「光大环境」），1993年在香港创立，为光大集团骨干企业，香港主板上市公司（257.HK），现已发展成为**中国最大环保企业、亚洲环保领军企业、全球最大垃圾发电投资运营商及世界知名环境集团**。作为中国首个一站式、全方位的环境综合治理服务商，光大环境于环境、资源、能源、气候四大领域全面布局，积极推进「三五八七」发展战略，下辖两家上市企业：香港上市之光大绿色环保（1257.HK）及新加坡和香港上市之光大水务（U9E.SG及1857.HK）

China Everbright Environment (Group) Co., Ltd. ("Everbright Environment"), founded in Hong Kong in 1993, is a backbone company of Everbright Group and a listed company on the **Hong Kong Main Board (257.HK)**. It has now developed into **China's largest environmental protection company and Asia's leading environmental protection company**, **The world's largest WtE investment operator** and a world-renowned environmental group.



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## INTRODUCTION TO EVERBRIGHT ENVIRONMENT

截至2021年12月31日，光大环境营业收入**498.95亿港币**；**总资产超过2,002亿港币**。

In 2020, Everbright's environmental revenue exceeded **49.895 billion HKD**; as of December 31, 2020, its total assets exceeded **150 billion HKD**.

项目分布全国**25个省（市）自治区、200多个地区**，**海外布局德国、波兰和越南等市场**；共落实逾**500个项目**、累计总投资超过**1,400亿元**人民币。

The projects are distributed in **25 provinces (municipalities), autonomous regions, and more than 200 regions across the country**, with overseas distribution in the **German, Polish and Vietnamese markets**; more than **500** projects have been implemented, with a cumulative total investment of more than **140 billion yuan**.



# THANKS!

