

Role of circular economy in achieving Sustainable Development Goals(SDGs): A Case Study of China



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The process of transfer to circular economy

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Circular economy in achieving SDGs in China

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Challenges in the development of circular economy

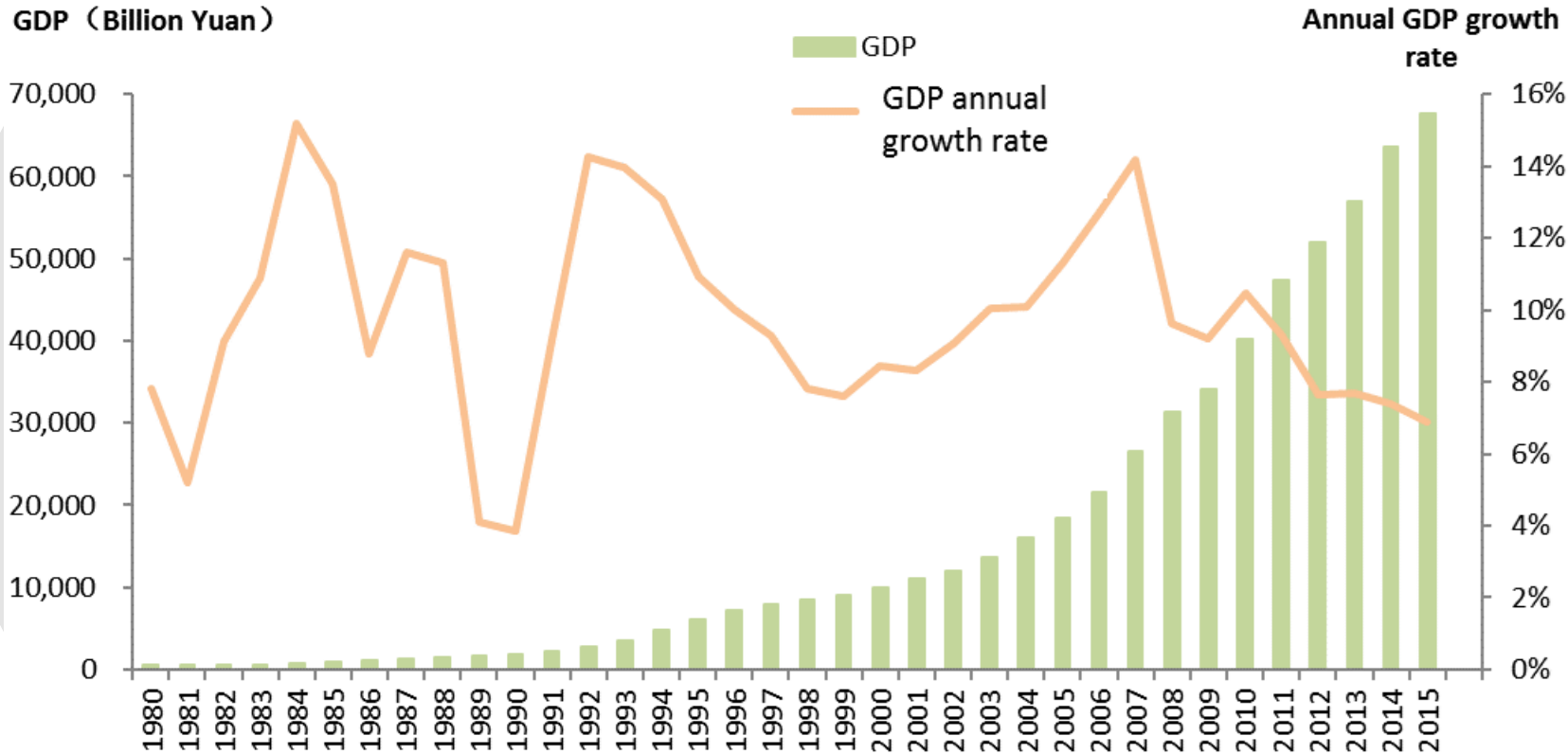
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Suggestion on the promotion of Circular economy



1. Background

From 1978, China's economy has a rapid growth, in recent years, the GDP growth rate gradually slow down.



- Intensive economic growth mode
- Un-sustainable development mode
- Resource consumption at high level, and damaged the ecological environment

The linear “take-make-consume-dispose” economic model

1. Background

Resource Scarcity

- **Metal resource per capita lower than world average level :** ferrous ore 17%, copper ore 17%, alumina 11%, oil 11%, nature gas 4.5%
- **external dependency:** 70% copper, 58% iron, 50% alumina, 35% lead, 13% zinc rely on import

Environmental Pollution

- In 2010, raw metal relative industry generated **1.8 billion industry solid waste**, and discharge **2.73 million tons SO₂**
- product waste cause the environment pollution and risk by the un-regular treatment

High carbon emission

- **coal-smoke pollution** - 85% of SO₂, NO_x, CO₂ emissions and 70% of dust come from coal
- Total GHGs emissions in China has ranked first in the world since 2007.
- In 2012, the primary consumption proportion of raw coal and crude in China was 86%, compare to world average 63%

1. Background

Sustainable development

--an international consensus

Sustainable economic development

- Encourage economic growth
- Improve the quality of economic growth

Sustainable environmental and ecological

- Developing under resource and environmental capacity

Sustainable social development

- Improve life quality and healthy level
- Equality, free education and peace

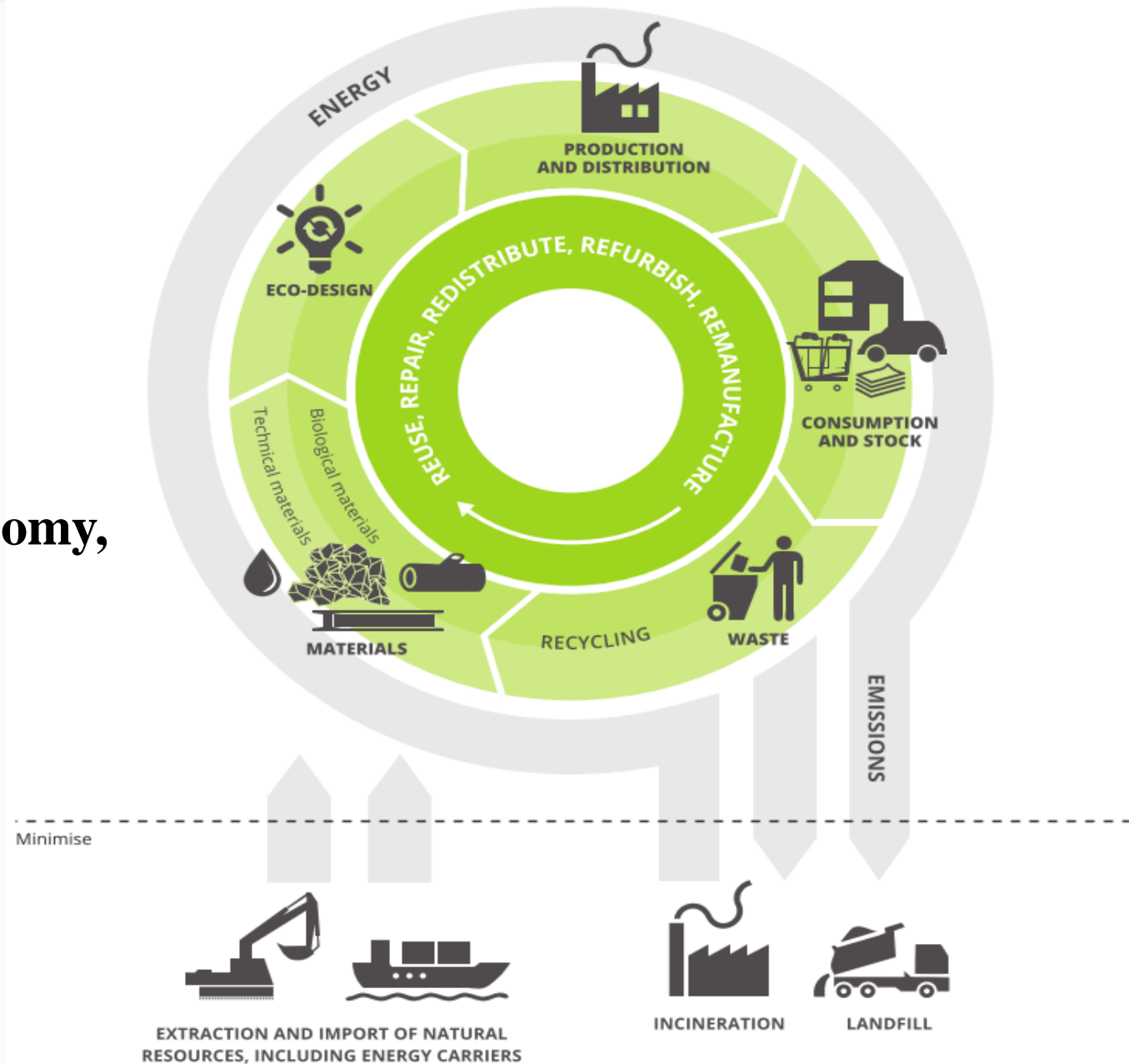


1. Background

Circular economy

To achieve

- Less resource consumption
- Less environmental deterioration
- Harmonized development among **economy, environment and society**



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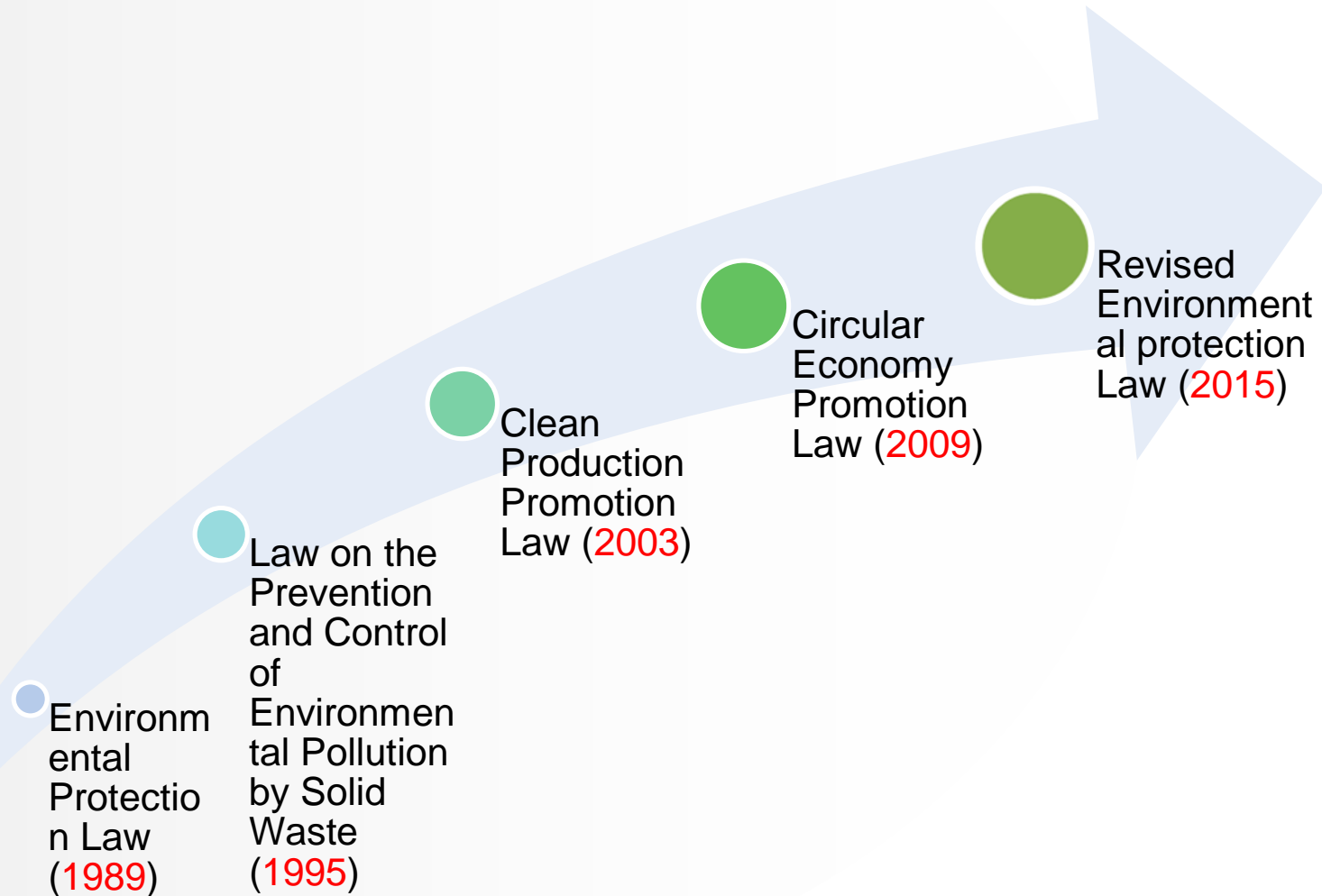
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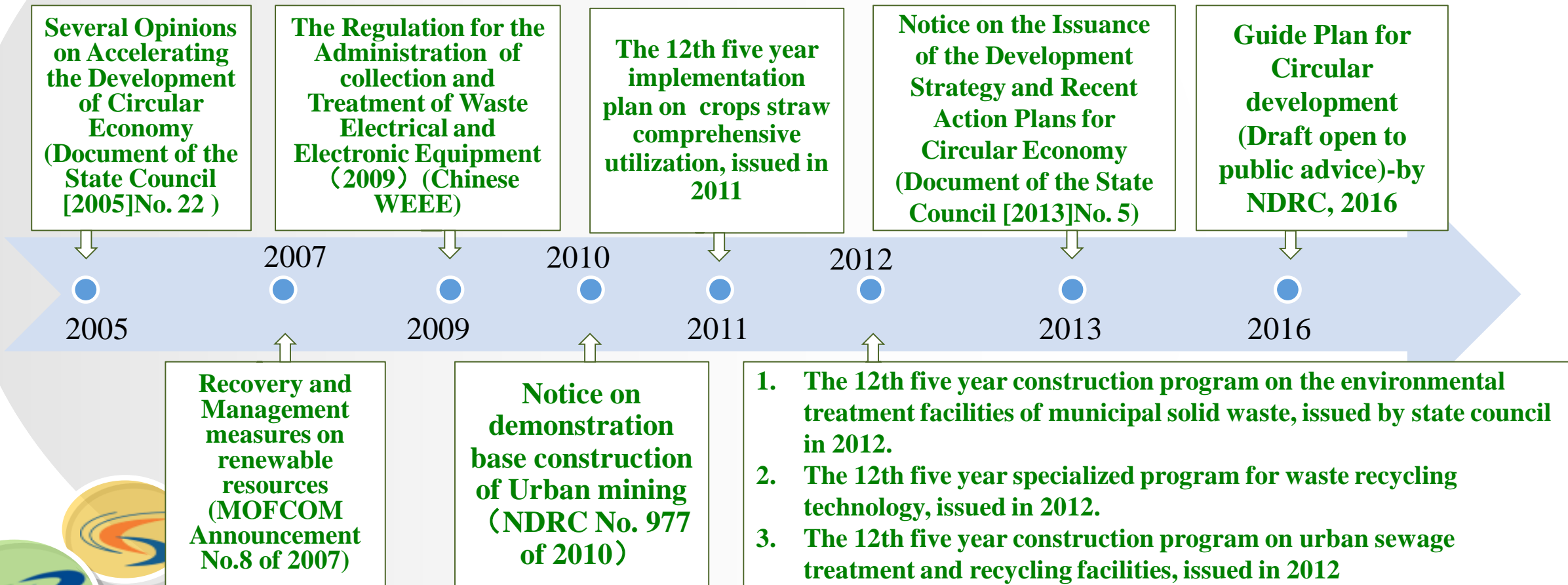
2. The process of transfer to circular economy

China's history of legislation related to circular economy



2. The process of transfer to circular economy

Development of Policies, regulations and plans of related to circular economy



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3. Circular economy in achieving SDGs in China

urban mining demonstration base construction

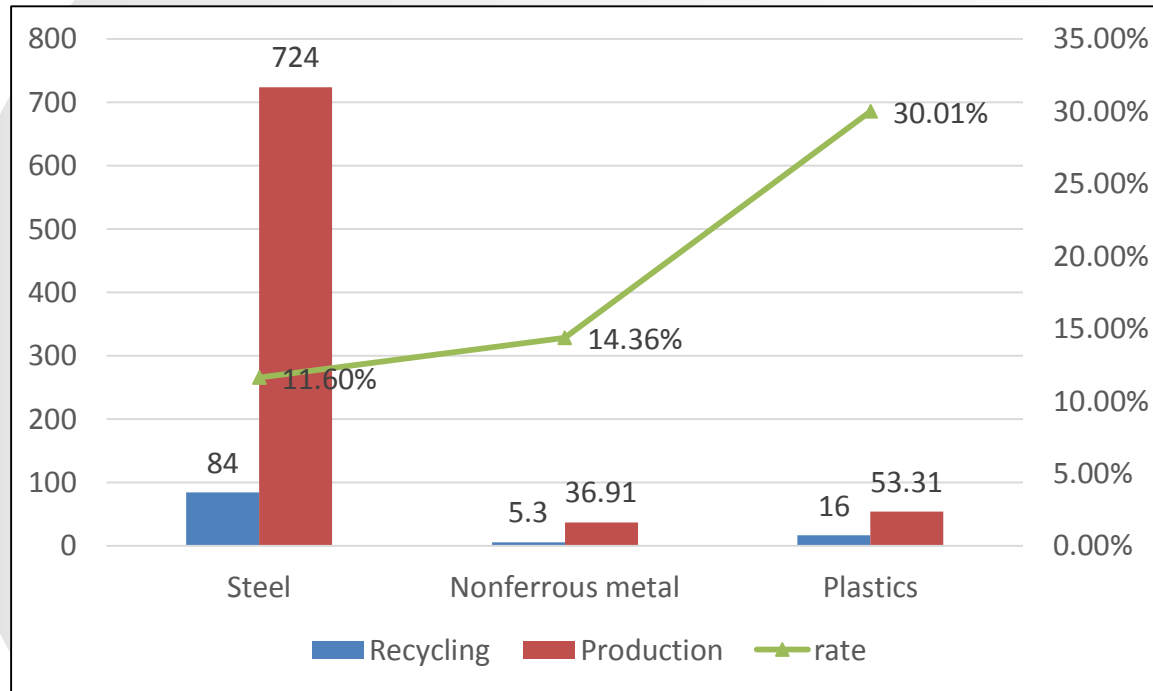
Until now, the national development and reform commission and the ministry of finance has approved 6 batch of a total of 49 countries "urban mining" demonstration bases.

Mainly locating at the eastern China.



3. Circular economy in achieving SDGs in China

Part of waste collection and recycling in China



Recycling status of some types waste in China in 2013 (million tons)

Recycling situation of waste papers in China(million tons)

Year	Domestic Consumption of paper and paperboard	Domestic Comprehensive utilization of waste paper	comprehensive utilization rate	Waste paper imports
2009	85.69	37.62	43.90%	25.70
2010	91.73	40.16	43.80%	26.10
2011	97.52	43.47	44.57%	27.28
2012	100.48	44.72	44.51%	30.07
2013	98.10	43.77	44.75%	29.24



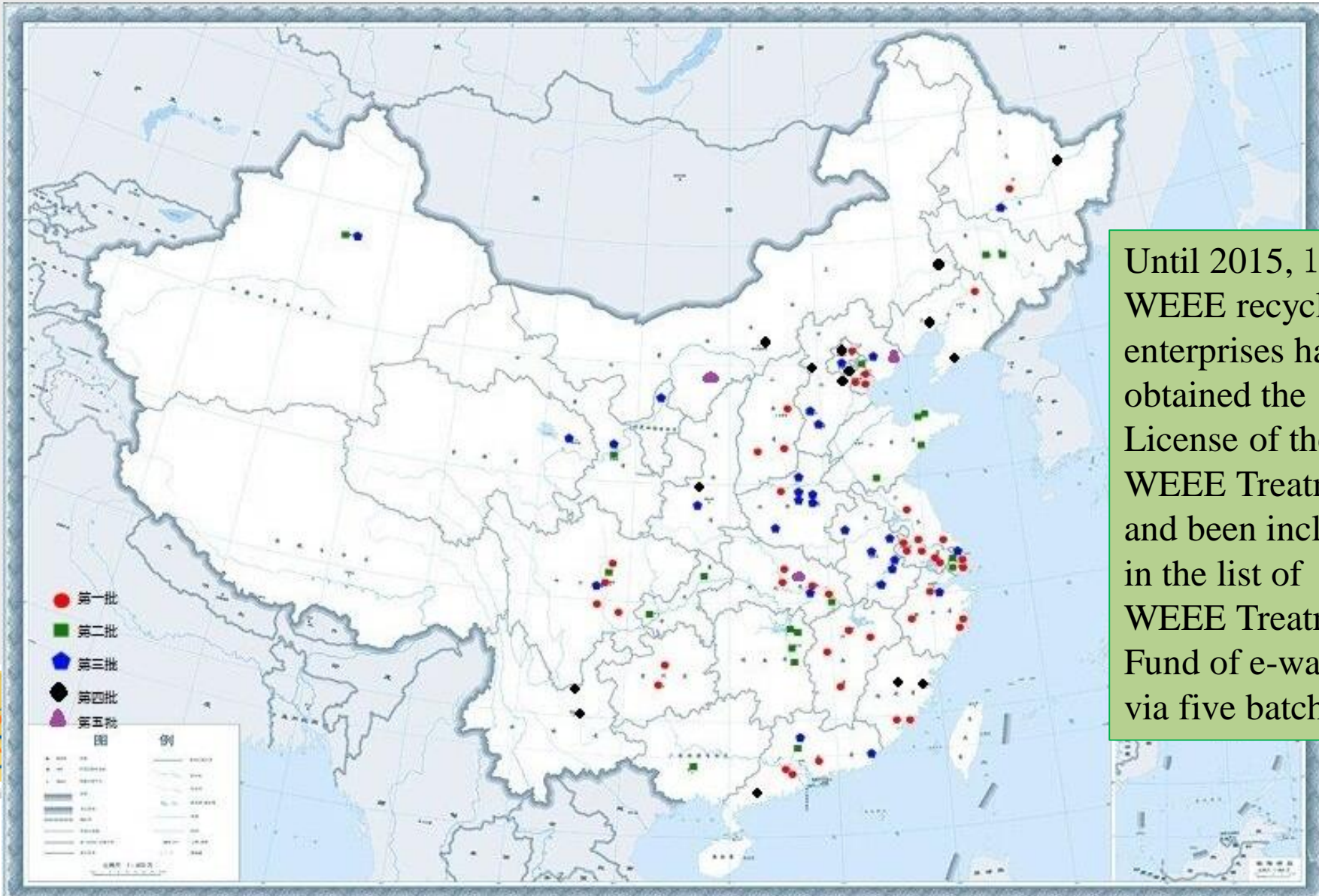
3. Circular economy in achieving SDGs in China

Re-manufacture industrialization progress

- 2008, 14 enterprises were chosen as the auto parts pilots.
- 2013, 18 enterprises were chosen as the auto parts pilots.
- 2014, 10 enterprises were chosen as the auto parts pilots.



WEEE Facilities development

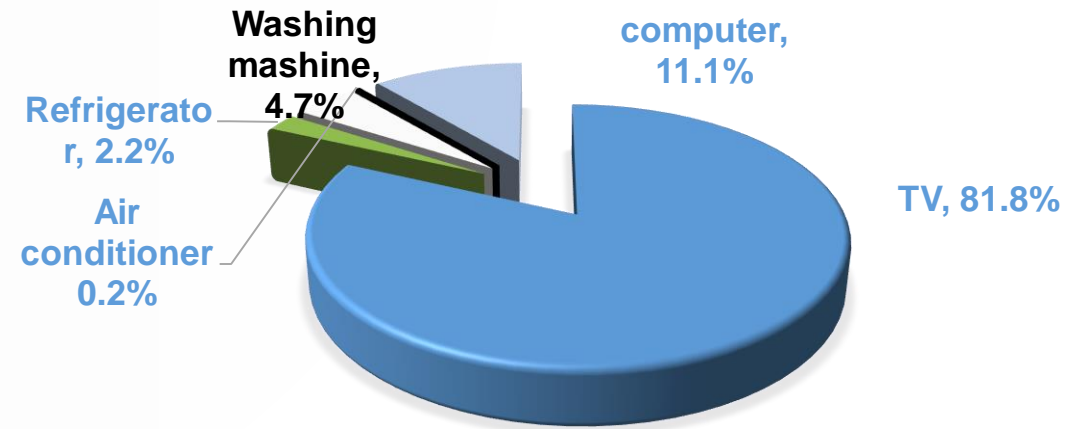
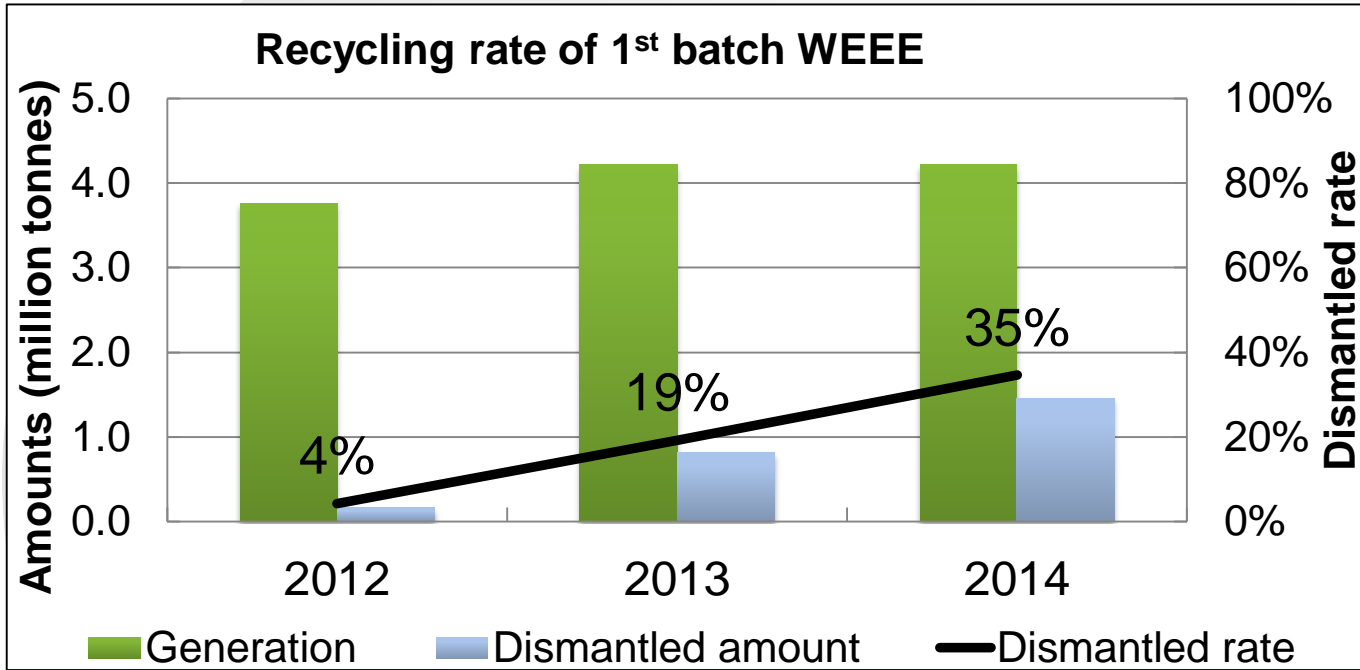


Until 2015, 109 WEEE recycling enterprises have obtained the License of the WEEE Treatment and been included in the list of WEEE Treatment Fund of e-waste via five batches.



3. Circular economy in achieving SDGs in China

WEEE implementation effect



The proportion of dismantled and recycled WEEE in 2014



3. Circular economy in achieving SDGs in China

kitchen waste pilot development

- At present, the number of kitchen waste demonstrative city has reached 100 in China. NDRC and MF has established five batches of pilot city of utilization and harmless treatment of kitchen wastes in 2011, 2012, 2013, 2014, and 2015 of which the first batch was 33 city (District), the second batch was 16 city, the third batch was 17 city, the fourth batch was 17, and the fifth batch was 17.



3. Circular economy in achieving SDGs in China

Industrial waste collection and disposal in China

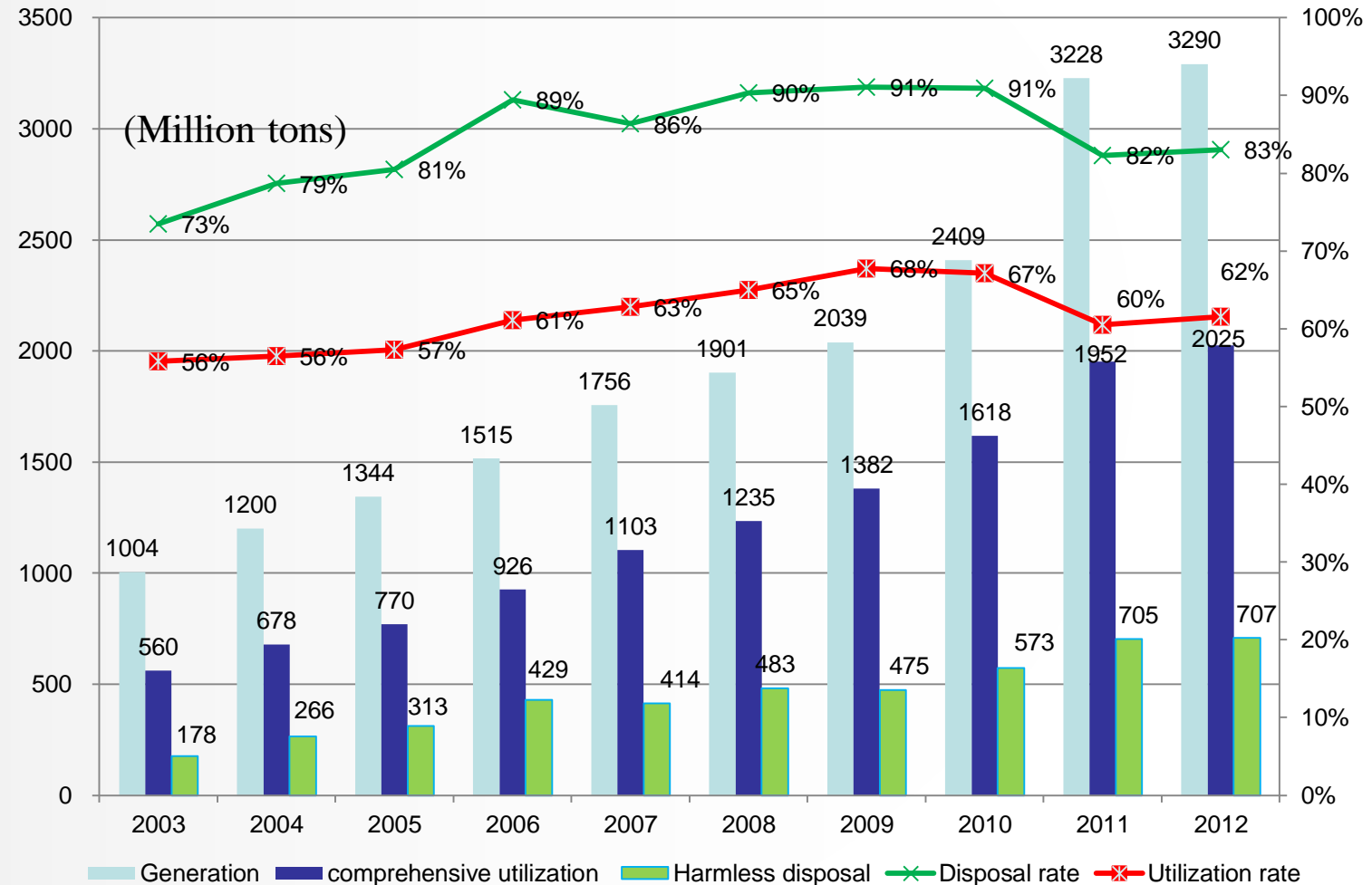
Generation ↑

Comprehensive utilization ↑

Harmless disposal ↑

Utilization rate and disposal rate ↓

(due to fast increasing of industrial waste in 2011 and 2012,)



3. Circular economy in achieving SDGs in China

Impact of circular economy on environment and resource

Improvement of resource efficiency

In 2011, 1.22 tons of coal to generate 10 thousand RMB GDP



In 2015, 0.76 tons of coal to generate 10 thousand RMB GDP

In 2005, 357 m³ of water to generate 10 thousand RMB GDP



In 2010, 139 m³ of water to generate 10 thousand RMB GDP

In 2015, 104 m³ of water to generate 10 thousand RMB GDP

Improvement of comprehensive utilization

by recycling iron and steel:

2500 million tons of coal, 17 tons of billion of water can be saved per year, 6000 million tons of CO₂ and 5 billion tons of solid waste was reduced per year

In 2013, 63% of industrial solid waste was recycled, can save 6700 hectare land

Water resource recycling

2010-2013, annual water recycling volumes was 6 billion tons.

> 60% of mining water was recycled

Carbon Recycling

In 2013, around 10 million tons of CO₂ was recycled

- Primary resource waste replaced, reduce reliance on natural resource
- Reduce used of coal and crude and reduce Carbon emission
- Reduce production of waste

3. Circular economy in achieving SDGs in China

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 
6 CLEAN WATER AND SANITATION 	7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 
11 SUSTAINABLE CITIES AND COMMUNITIES 	 THE GLOBAL GOALS For Sustainable Development			12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE AND JUSTICE STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 



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4. Challenges in the development of circular economy

Economic incentives

- Economic incentives-useful tool for guiding the development direction
- Unwillingness to pay by government

Governmental management system

- Complexity- difficulties in management and monitoring

Systematic information network

- Information-key to decision making
- require information exchange platform
- require systematic information network



Systematic assessment standards

- Lack of standard for data collection, calculation and submission
- Lack of transparency monitoring and inter-city inequity of auditing

Enforcement of legislation

- Circular Economy Promotion Law-not compulsive
- Punishment for noncompliance is inadequate

Technology development

- Technology-primary productive forces and key to improve resource efficiency
- Financial support on technology development
- Encourage academic institution

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5. Suggestion on the promotion of Circular economy in regional Level

- ❖ Institution establishment- relative legislation regulations, standards and guidelines
- ❖ encourage economic incentives by local government
- ❖ Make use of existing organizations- information exchange platform, technology transfer and support, Consulting service
- ❖ A standard assessment system in national level and international level- benefit corporations and competitions among countries.
- ❖ Multi-stakeholder involvement
- ❖ Explore different cooperation modes among different type of enterprises
- ❖ the Belt and Road initiative- form 3R group with neighboring countries – international cooperation.



Thanks for your attention!

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