



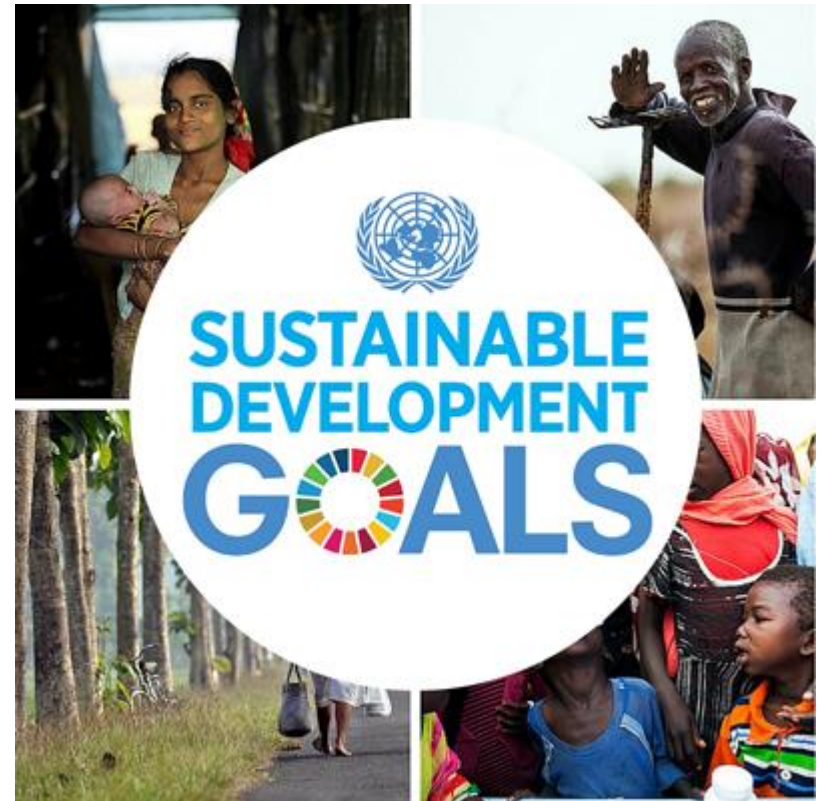
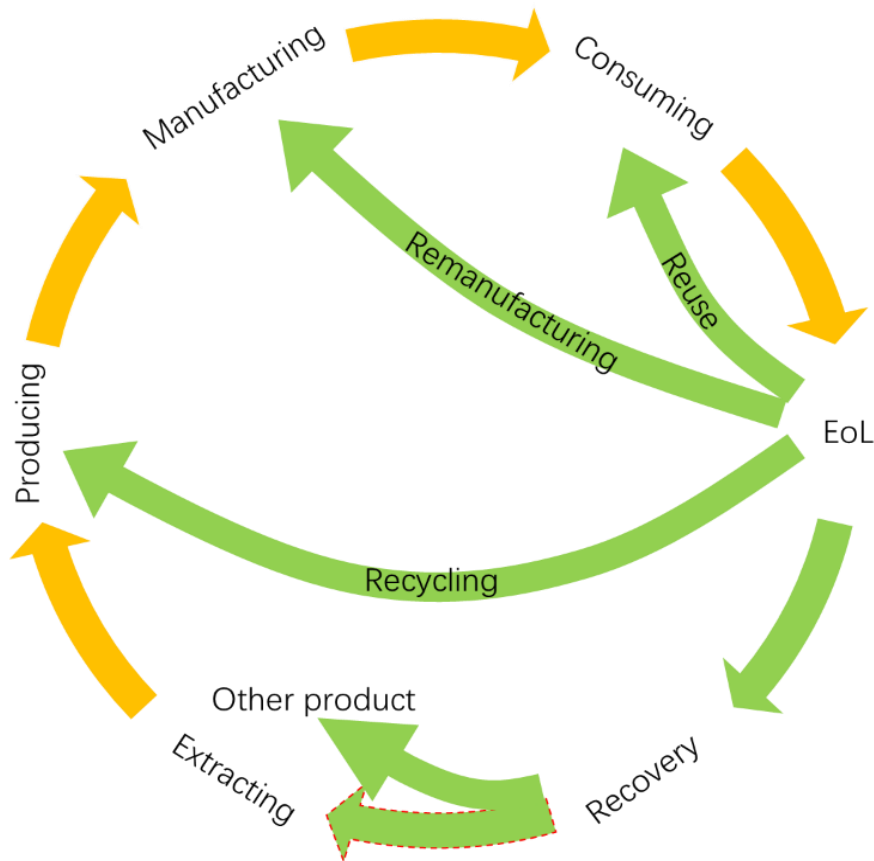
Circular Economic Opportunities for Greening SMEs - The Chinese Experience

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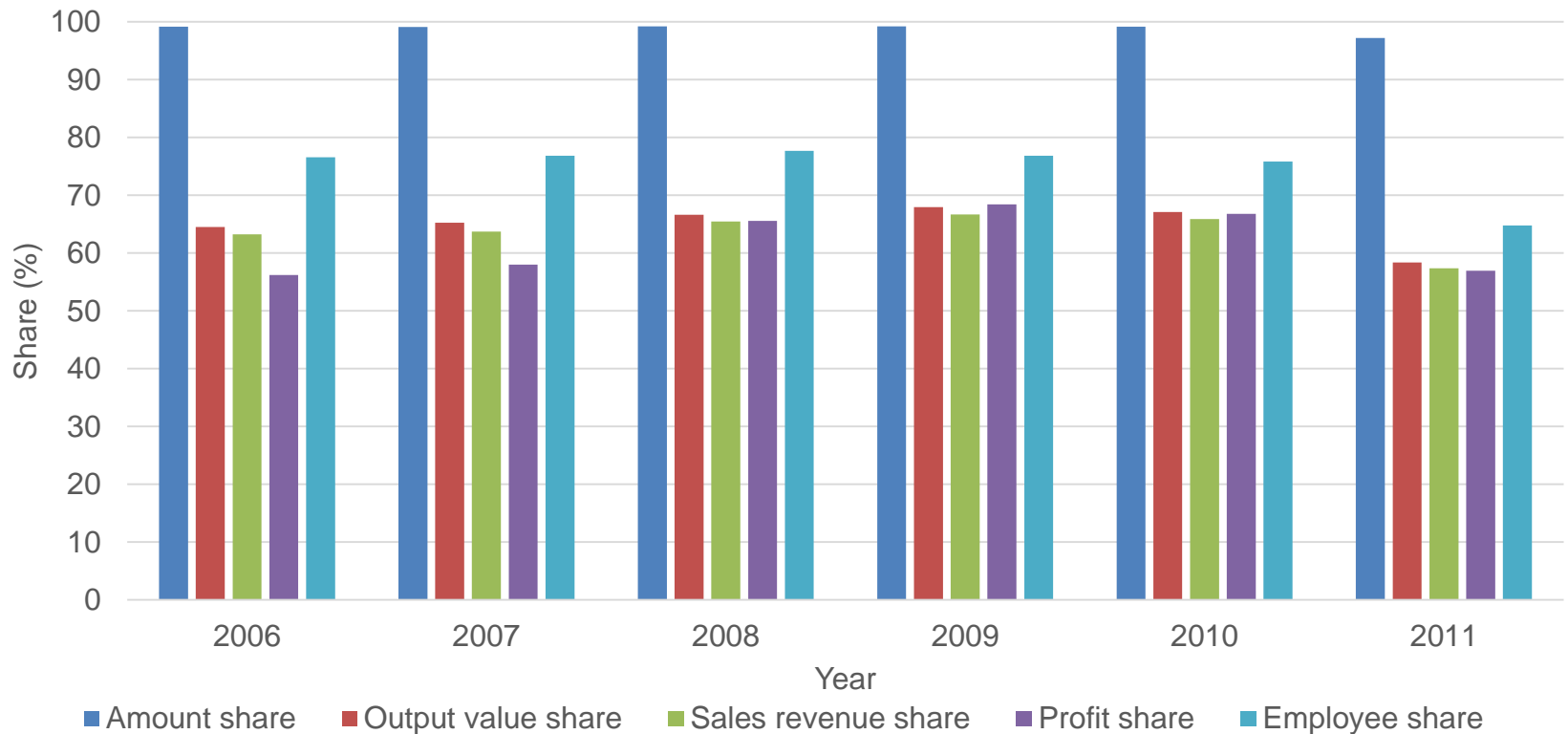


The whole supply chain: the forward logistics and the reverse logistics





SMEs' importance in China



- SMEs contribute more than 60% of the nation's GDP, 50% of tax revenues, 70% of import and export trade, and 80% of urban employment.
- With respect to innovation, SMEs have contributed 66% of patents nationwide, 74% of technological innovations, and 82% of new products

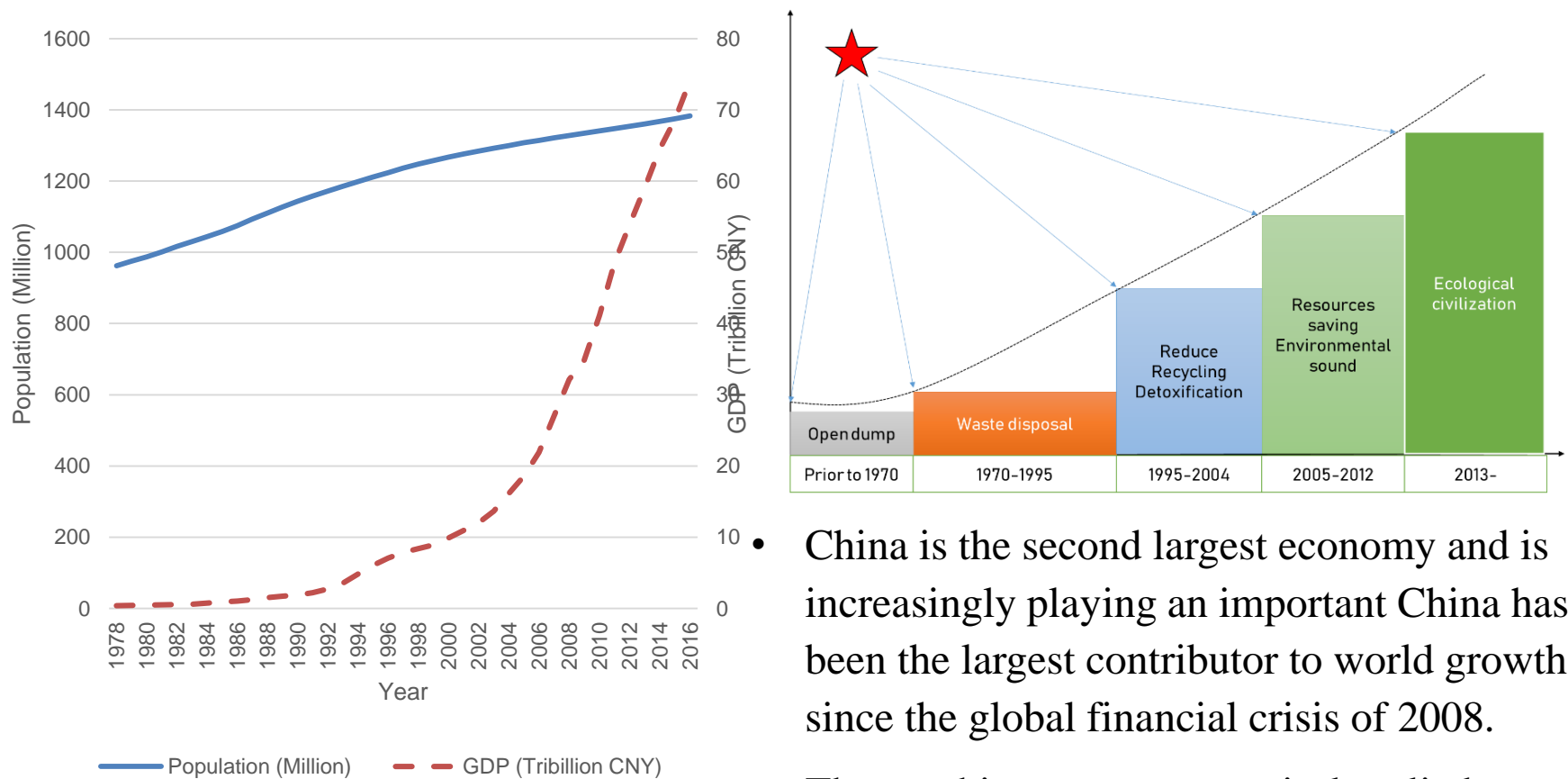


Environmental characteristics of SMEs

- SMEs know much less about the environmental and social impacts of their production networks
- Around **\$4.7 trillion** in environmental costs is externalized each year from global production systems
- SMEs are the **main contributor** of environmental pollution problem in China
- The pollution generated from SMEs contributed over **70%** of total industrial pollution



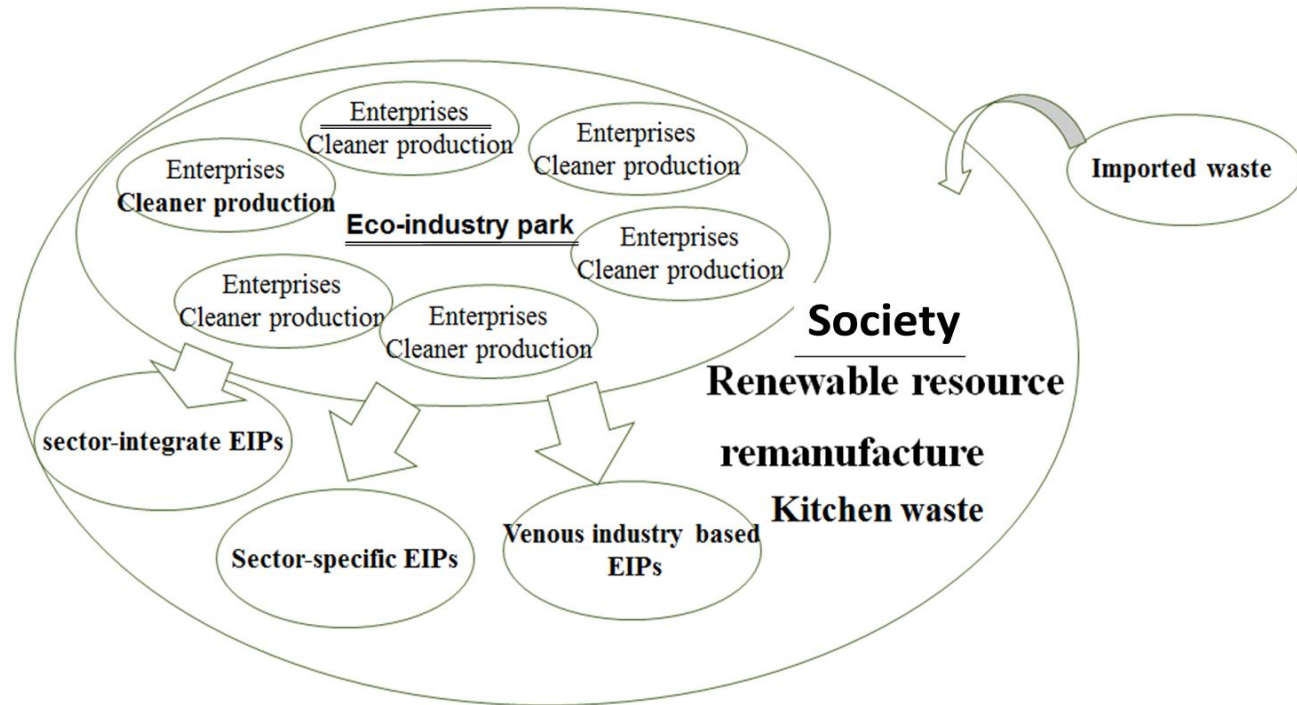
China's adventure on circular economy in recent decades



- China is the second largest economy and is increasingly playing an important role. China has been the largest contributor to world growth since the global financial crisis of 2008.
- These achievements are majorly relied on **over 40 million SMEs** around China.

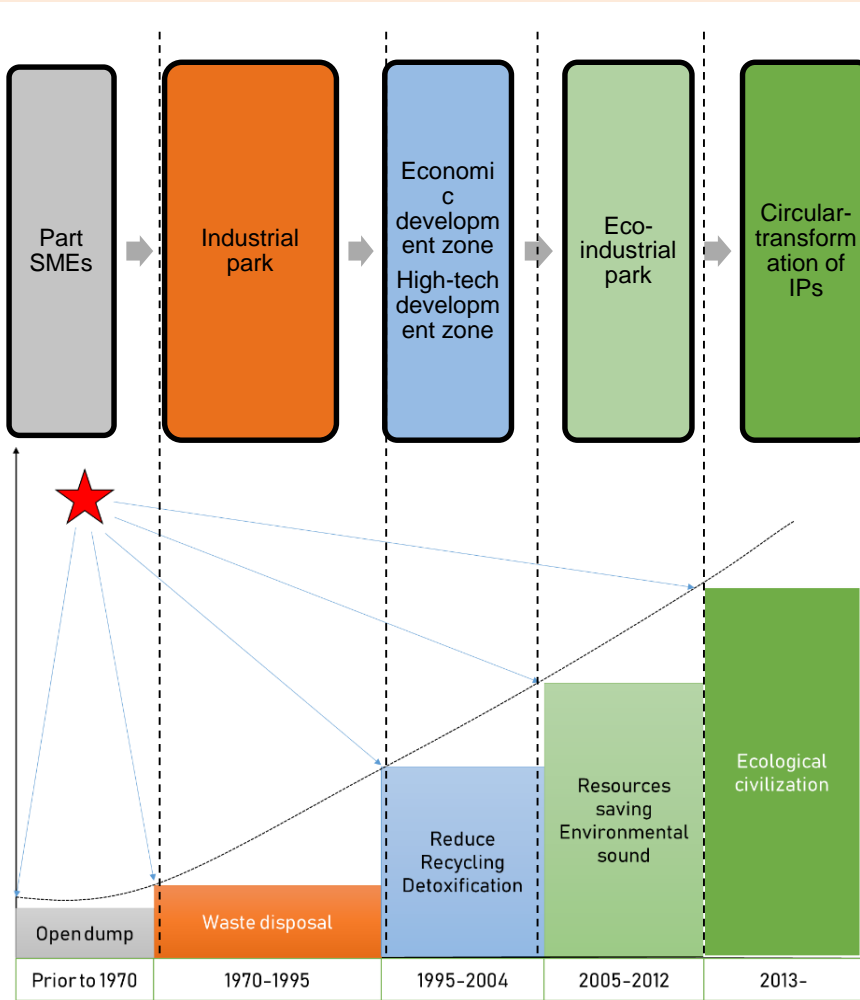


Greening SMEs using circular economy philosophy

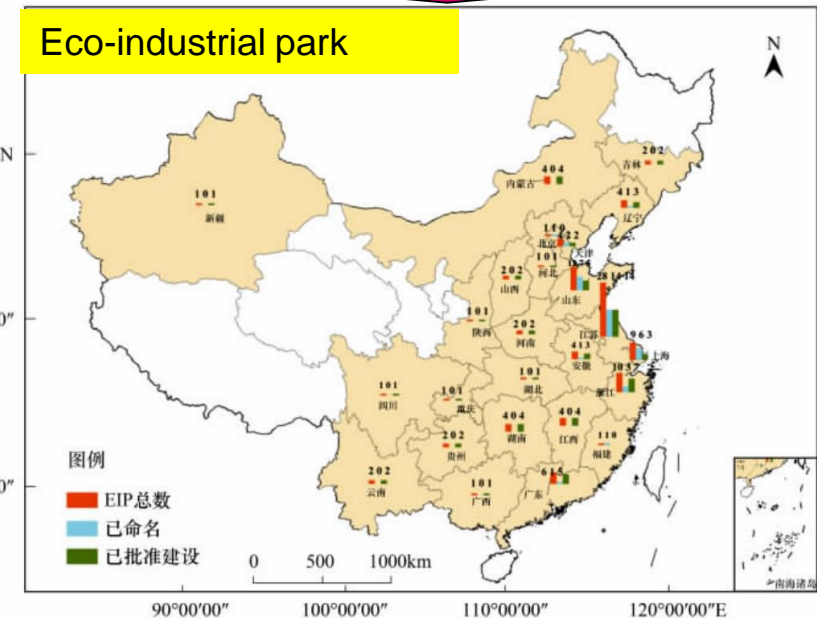
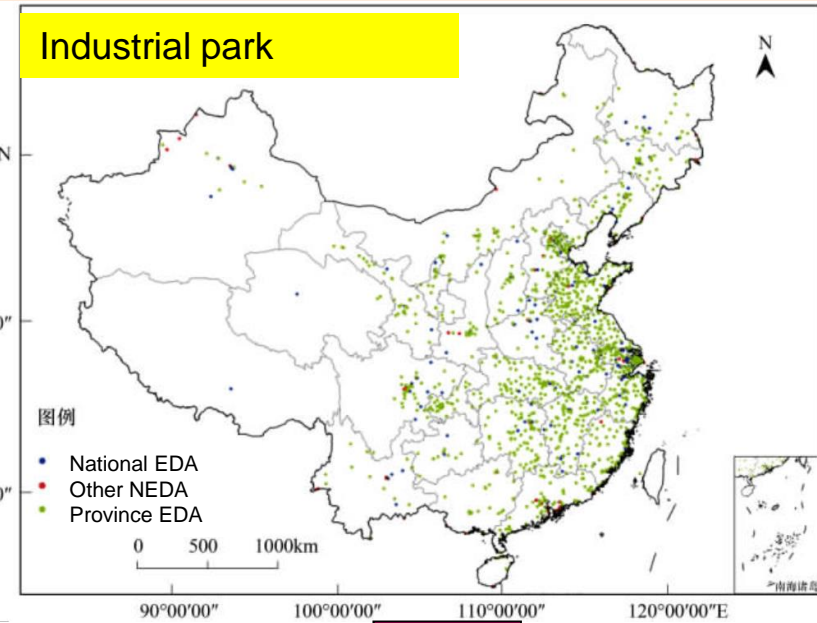


- China's circular economy mainly encompasses **cleaner production** and **waste recycling**.
- In past 3 decades, plenty of laws, regulation, policy, and technology have been put on **cleaner production** and **waste recycling**.

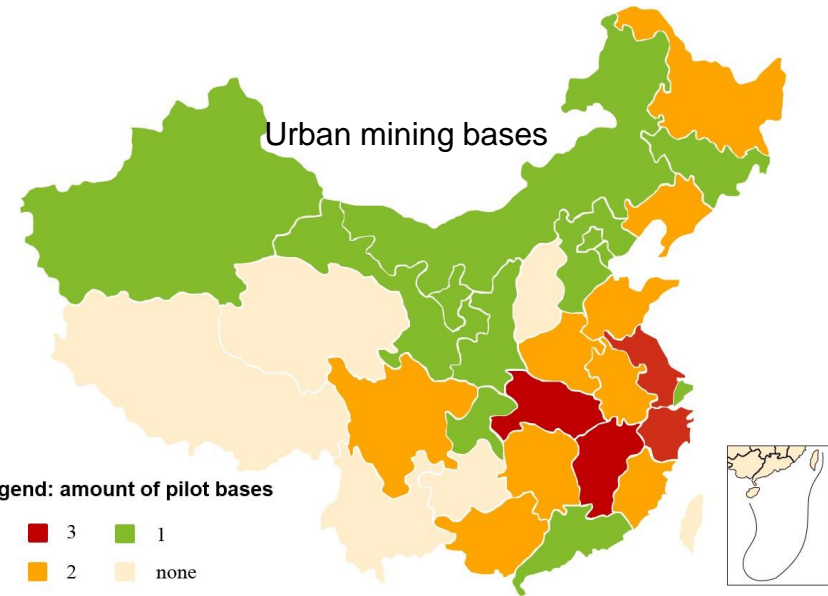
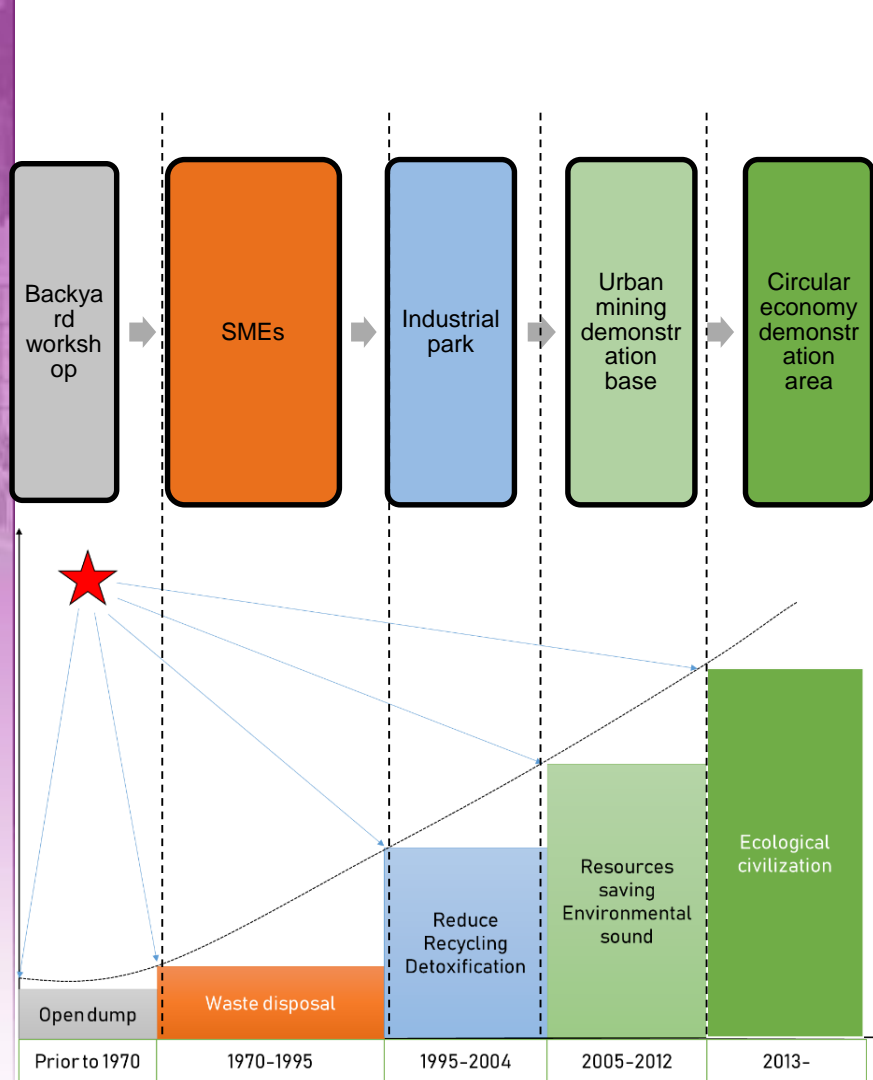
Cleaner production for industrial park



Tian J P, Liu W, Zang N, Chen L J. Review of eco-industrial park development in China. *Acta Ecologica Sinica*, 2016, 36(22):7323-7334.



Waste recycling for urban mining

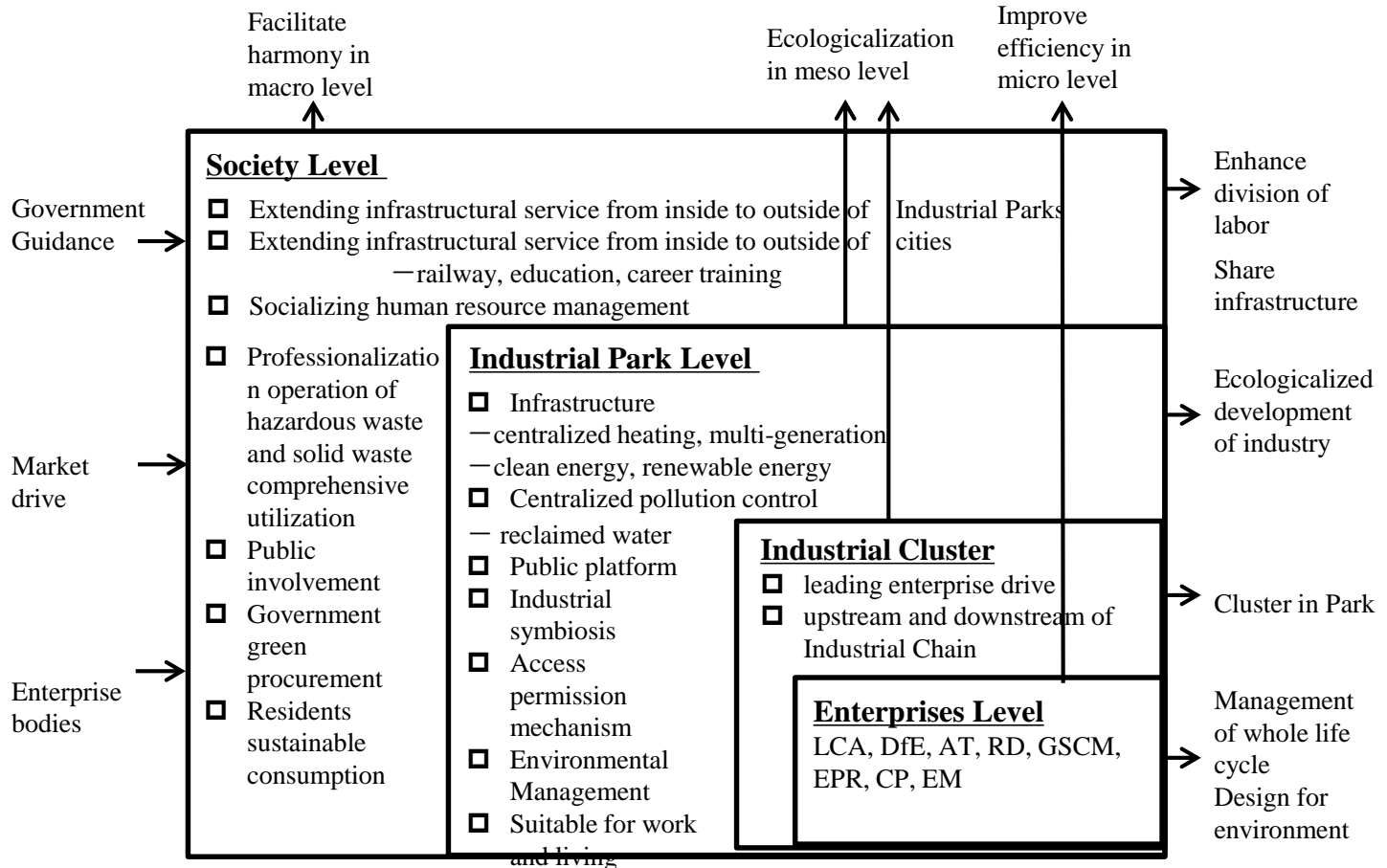


- By July 2017, **43** national pilot bases had been established.
- In April 2017, 14 ministries and commissions joint issued the Action Plan targeting an improvement of **resource productivity of 15%** than 2015, and a **recycling rate of 54.6%** for main kinds of wastes.



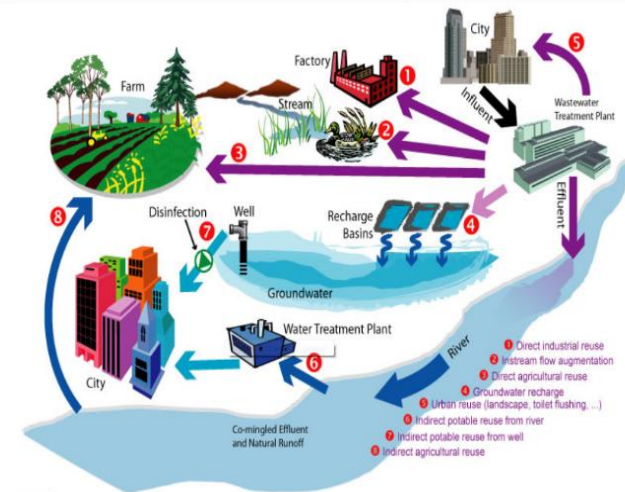
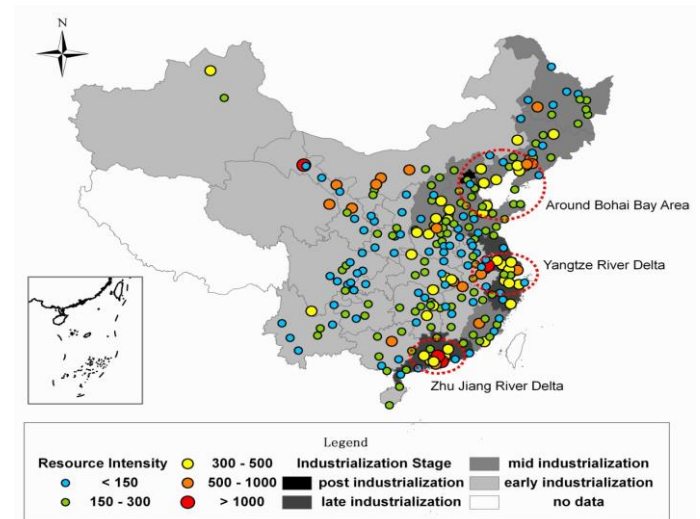
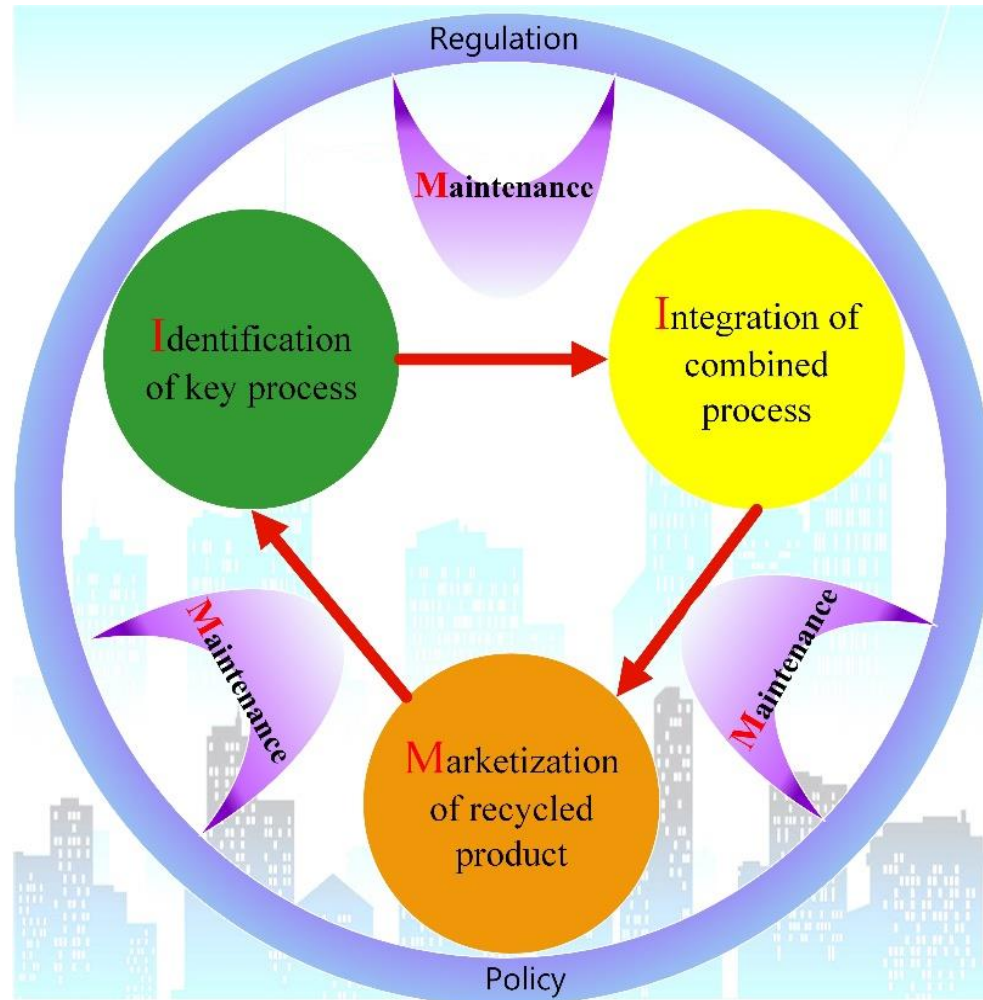
Development model of circular economy: industrial park

➤ **Until 2016, 45 National Demonstrative Eco-industrial Parks (NDEIPs) has the acceptance, 63 NDEIPs was approved for construction.**



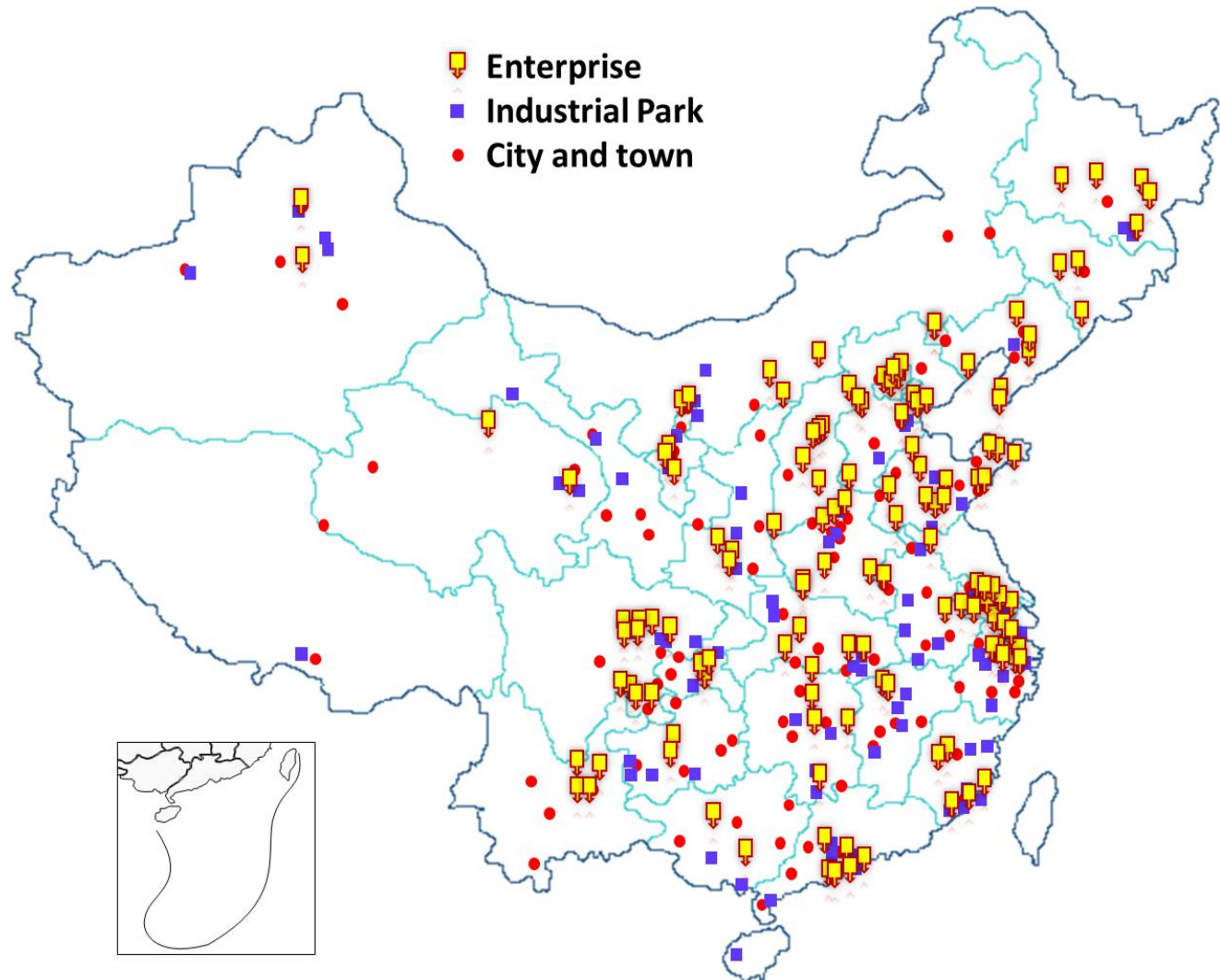


Development model of circular economy: waste recycling



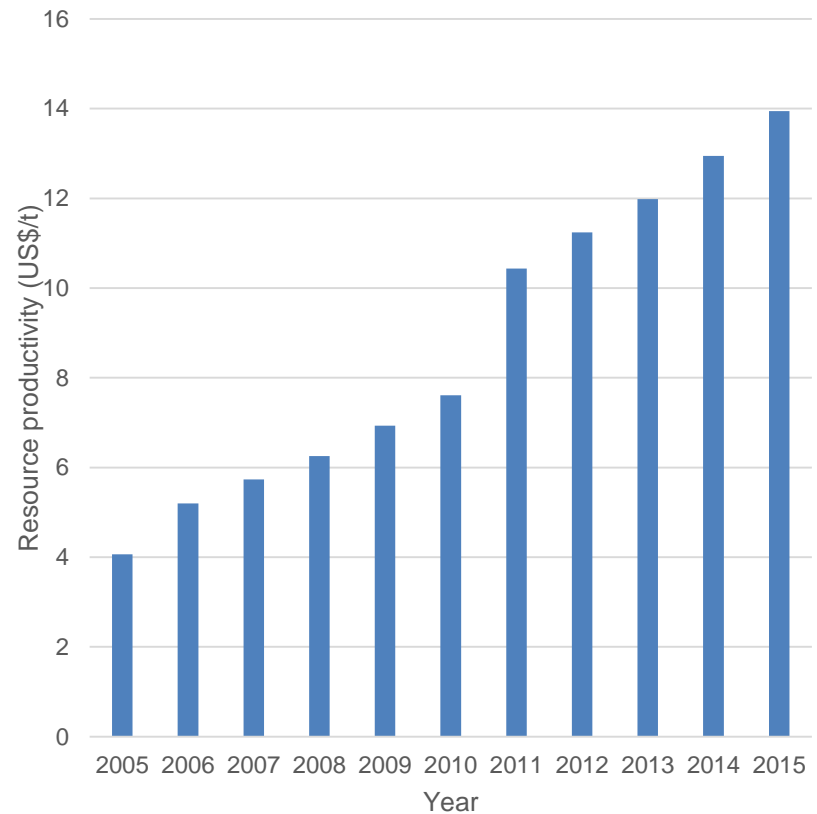
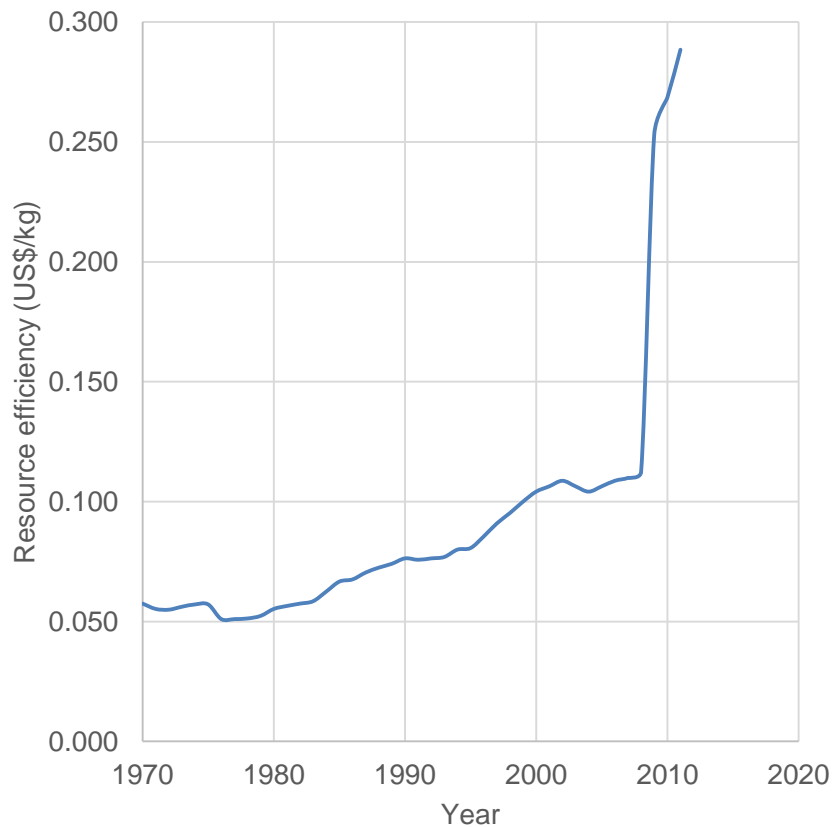


Circular economy practices in China: three levels of enterprise, industrial park, and city & town





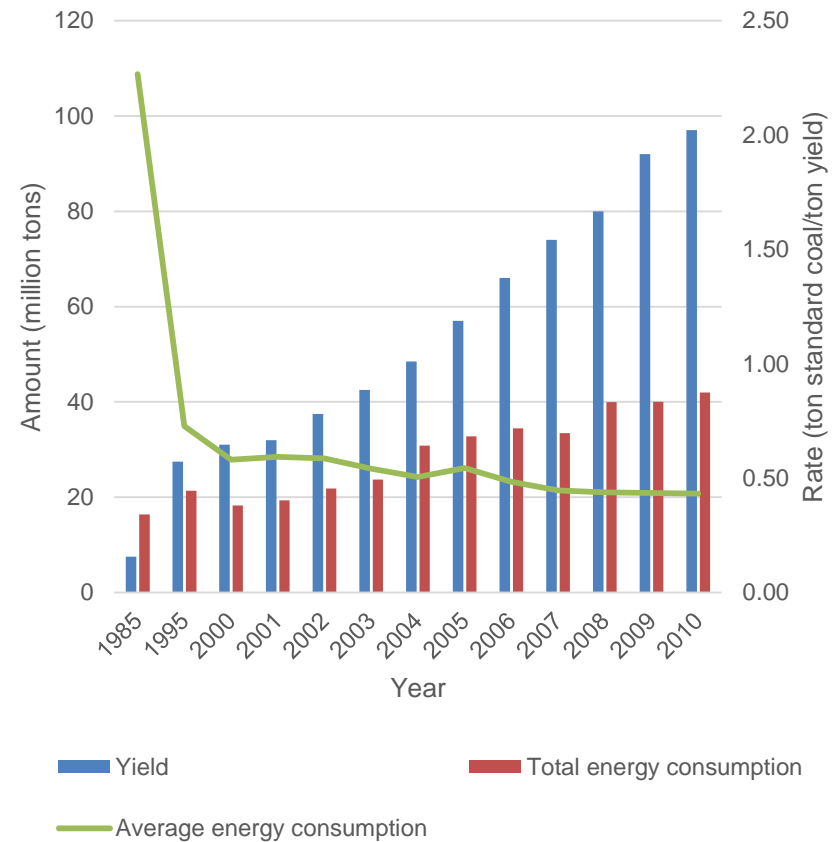
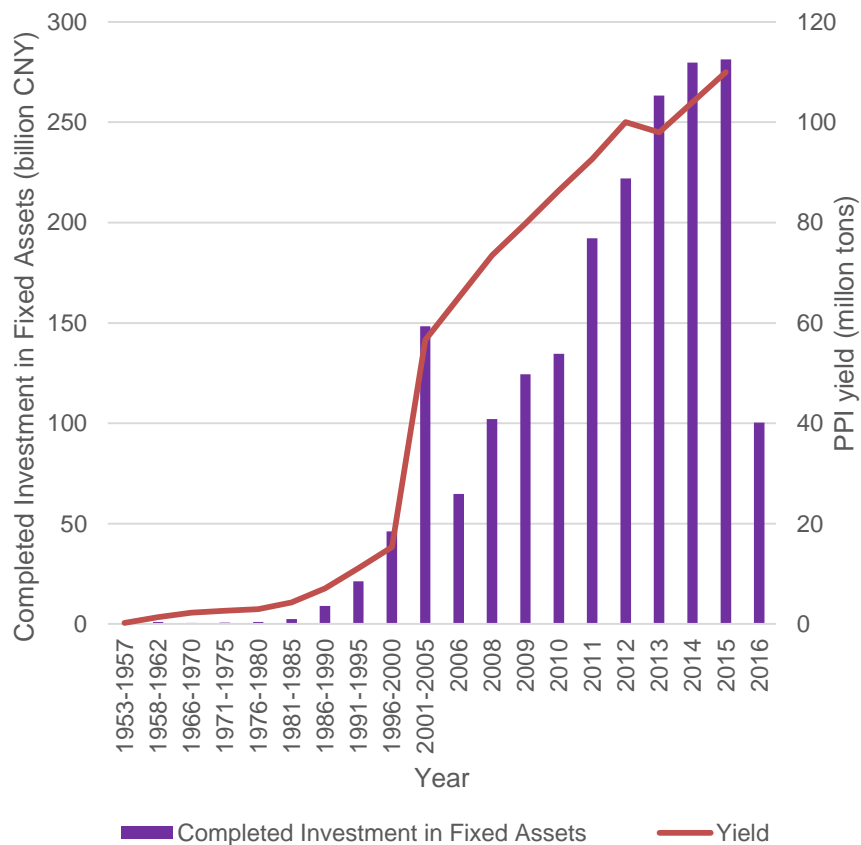
Improving resource efficiency and recycling rate in China



Evolution of resource efficiency in China & Resource productivity of water



Greening SMEs: case of pulp and paper industry

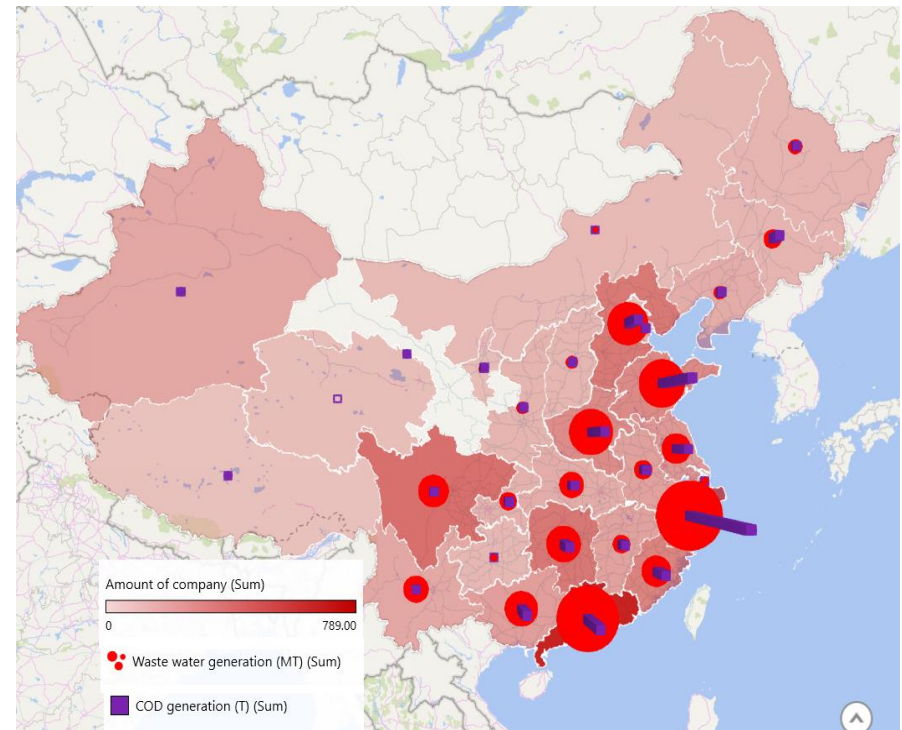
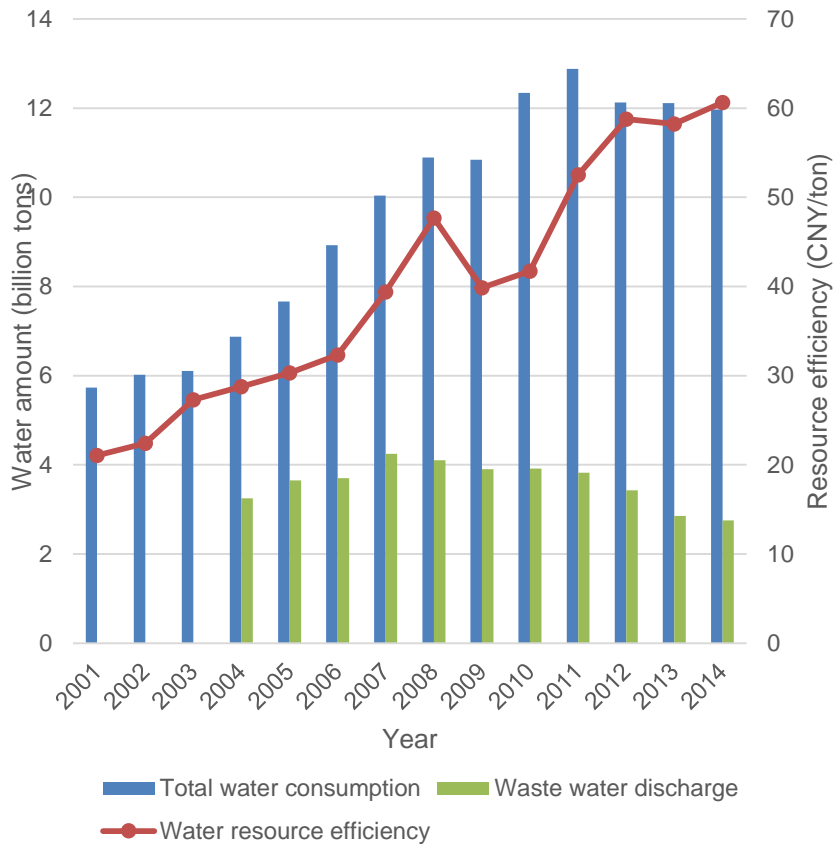


Evolution of pulp & paper industry

Paper and paperboard: yield and energy consumption



Greening SMEs: case of pulp and paper industry

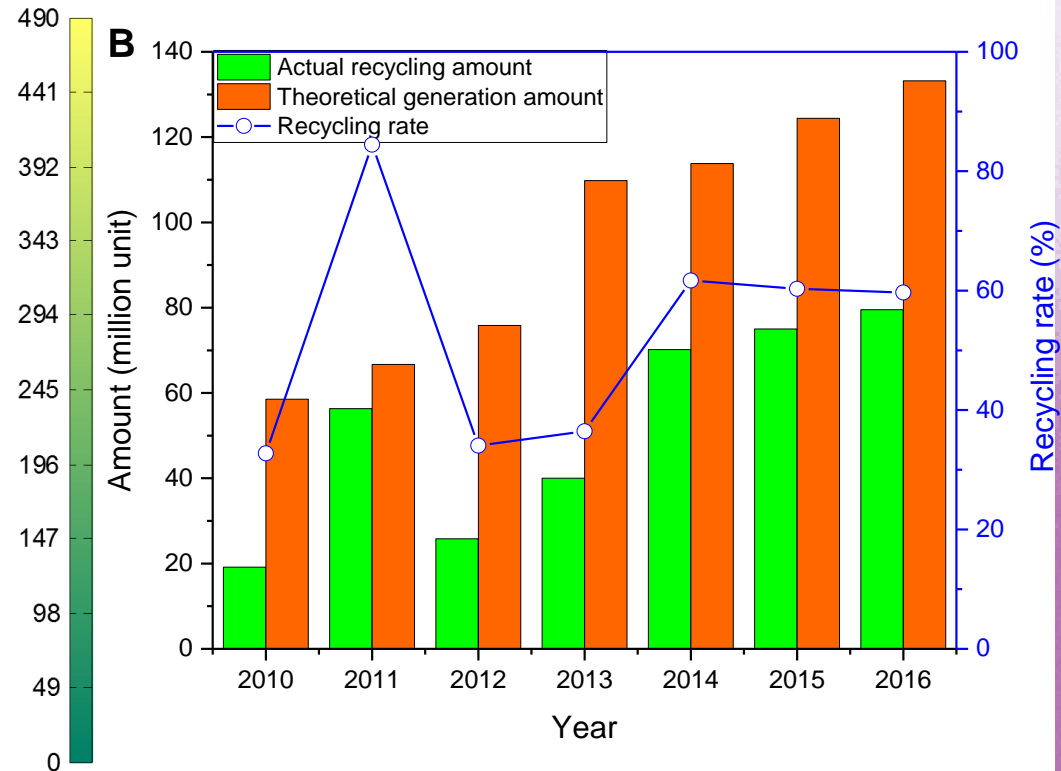
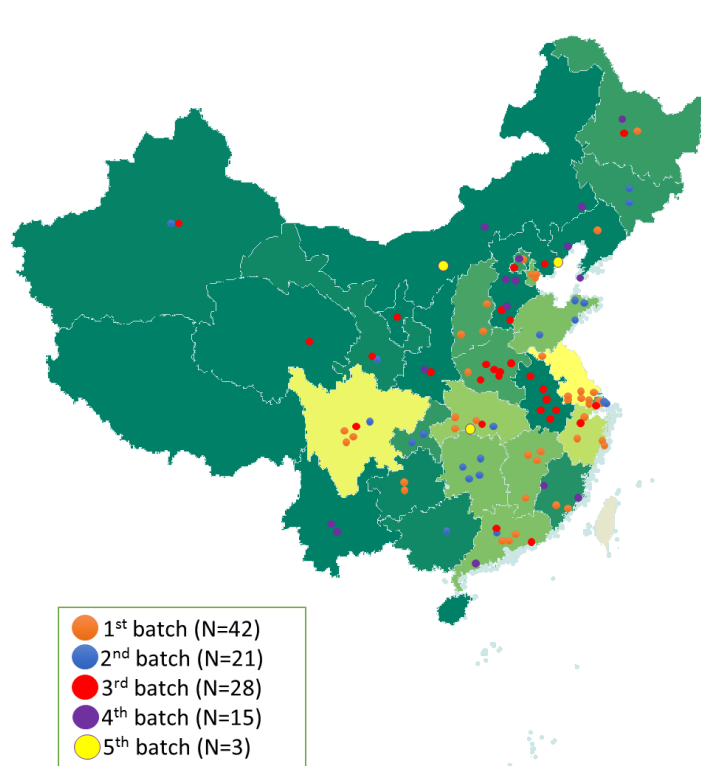


Water consumption and its efficiency

Environmental performance of pulp & paper industry



Greening SMEs: case of e-waste recycling



Driven by policies and regulations in China, new e-waste recycling enterprises greatly proliferated. By September 2015, 109 licensed and certified enterprises across the country had been authorized to receive the subsidies

Since 2012, both recycling and generation of e-waste have been growing, and reach the level of many industrial nations.



Experience in Greening SMEs

- The **complete legislation system**, i.e. laws, regulation & standard, is quite necessity to control the industry development
- The **policy** like economic incentive can inspire the sustainability
- The **technical model** is the most substantial approach to greening SMEs towards the vision of circular economy



The Way Forward

- There is no polluting industry, but polluting technology and polluting management.
- The future of global production and consumption can and must learn from new supply-chain management systems to improve environmental and social sustainability.
- Establishing the new order of circular economy is the fundamental approach to solve the problem of China.
- We also need to provide sufficient resources and networking opportunities so that SMEs can explore the benefits of circular economy opportunities



The full background paper can be seen at <http://www.uncrd.or.jp/index.php?page=view&nr=1019&type=13&menu=198>

Thanks for your attention!

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