

# **Progress and Prospects of China's low carbon metrology**

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- In 2013, seven cities in China started carbon trading pilot
- In 2016, national carbon trading market will be established.
- NDRC predicts China will become the world's largest carbon trading market

## China's Commitments



- reduce 40%-45% carbon dioxide emissions per unit of GDP by 2020 than 2009.
- in 2030, the greenhouse gases emission in China will reach max value.
- plans to invest \$6.8 trillion to reduce greenhouse gases emissions.

# Low Carbon Metrology

## Energy Consumption



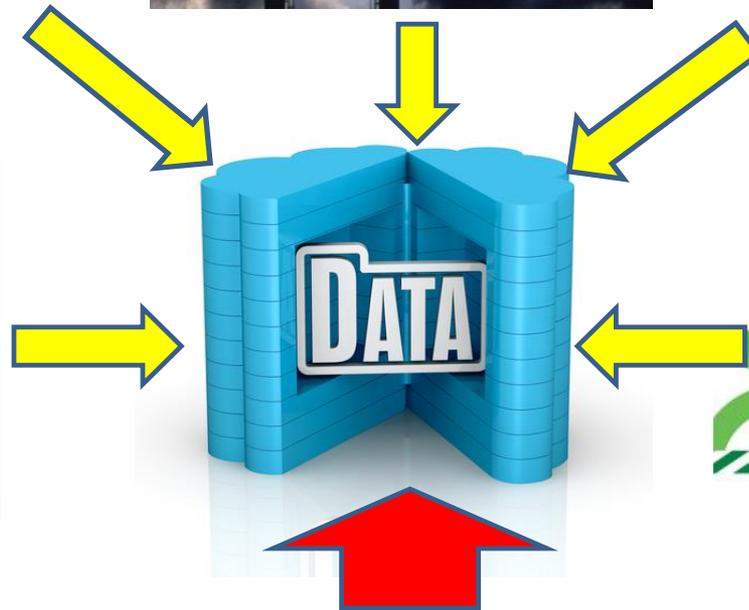
## Greenhouse Gas/Pollution Emission & Carbon Trading



## Carbon Labeling



## Atmospheric Monitoring



## Energy Efficiency



**Metrology**

- National Metrology Technical Committee of Carbon Measurement was established in 2012
- which has the obligation to develop National Metrology Verification Regulation in low carbon area

## 国家质量监督检验检疫总局

国质检量函〔2013〕90号

### 质检总局关于批准成立全国低碳 计量技术委员会的批复

中国计量科学研究院：

你院《关于成立“全国低碳经济计量技术委员会”的请示》(计量院业发〔2013〕6号)收悉。经研究，批准成立全国低碳计量技术委员会(组成名单见附件)。该委员会秘书处设在中国计量科学研究院。自批准之日起，委员会即可依照《全国专业计量技术委员会章程》开展工作。

附件：全国低碳计量技术委员会组成人员名单



2013年2月19日

- National Metrology Technical Committee of Carbon Measurement was established in 2012
- Committee Members
  - NIM
  - Local metrology institutes
  - National Development and Reform Commission
  - National Meteorological Bureau
  - National Institute of standardization
  - National Electric Power Research Institute
  - China Academy of Building Research

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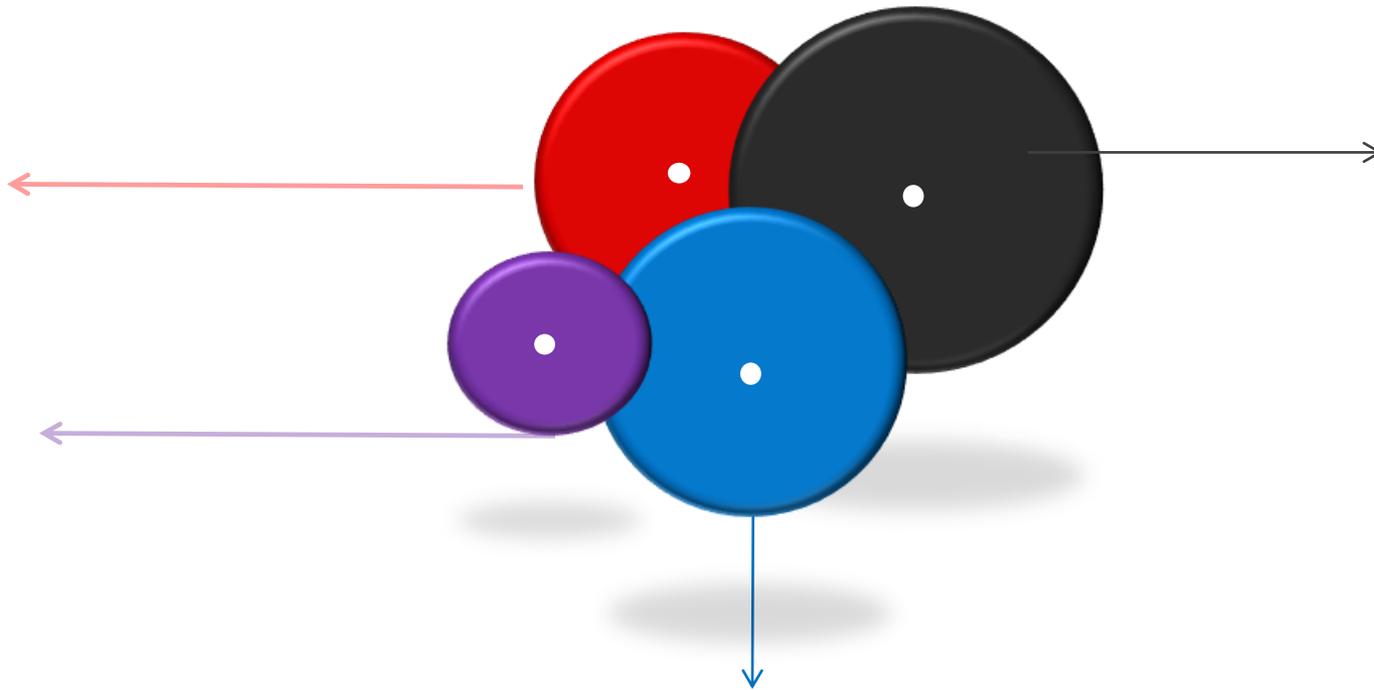
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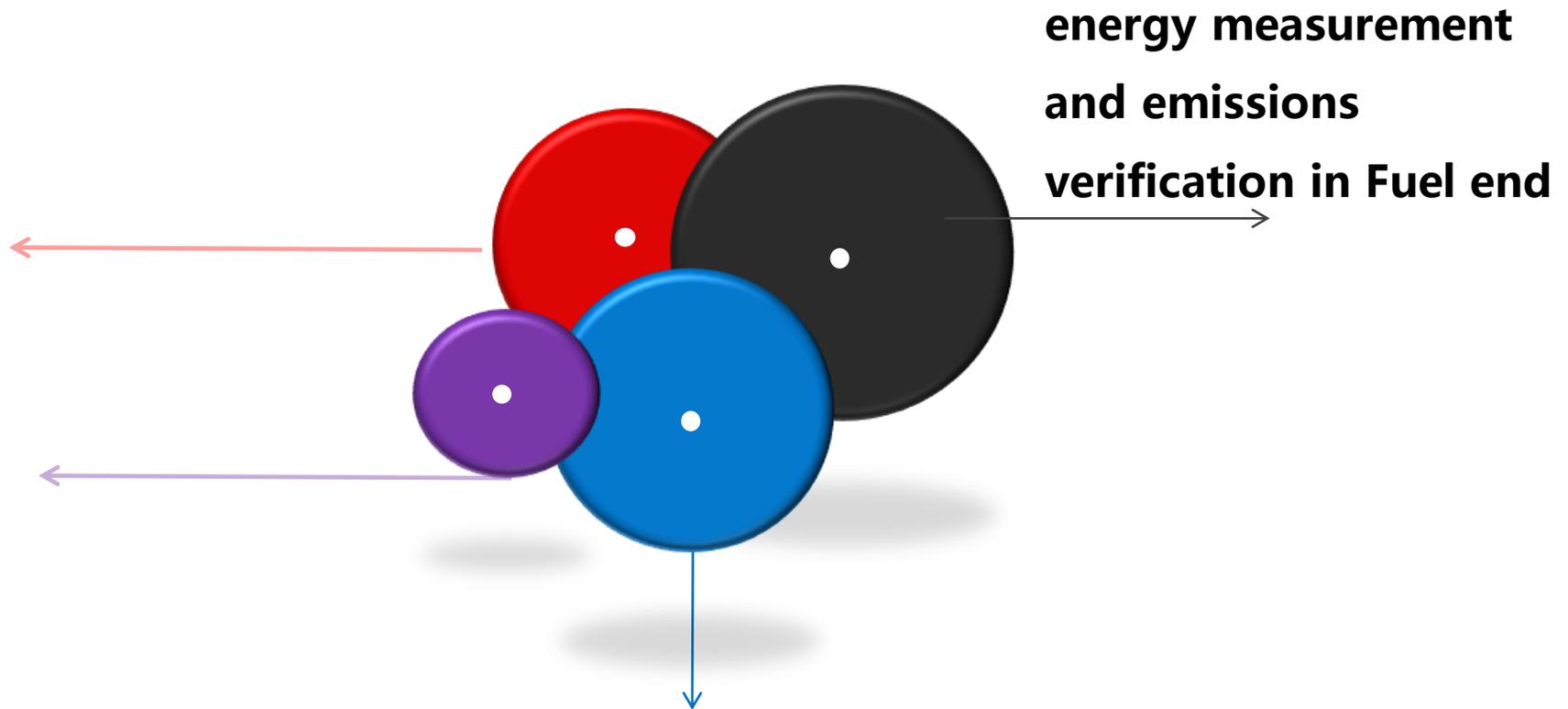


# contents of low carbon measurement

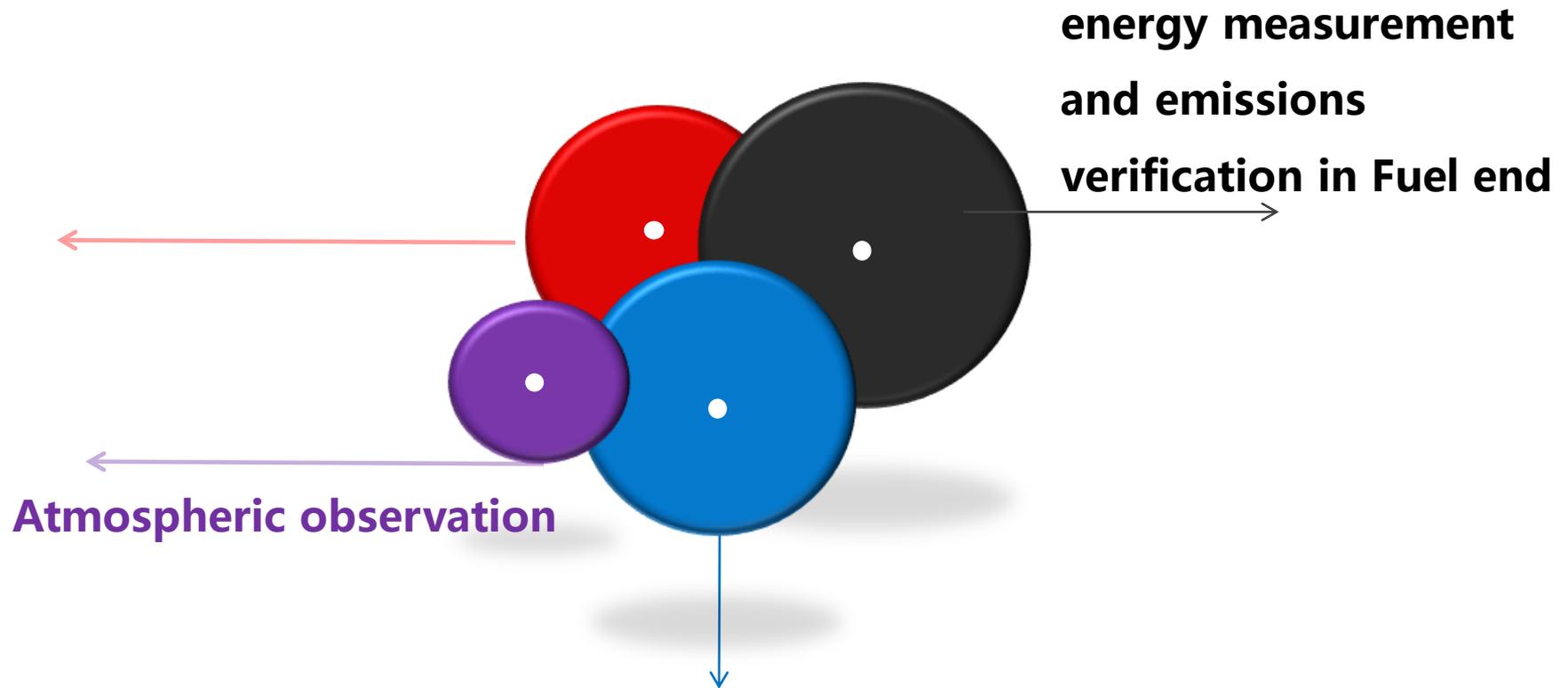
- ❑ avoid covering with other traditional metrology branches.
- ❑ low carbon metrology can be divided into four parts.



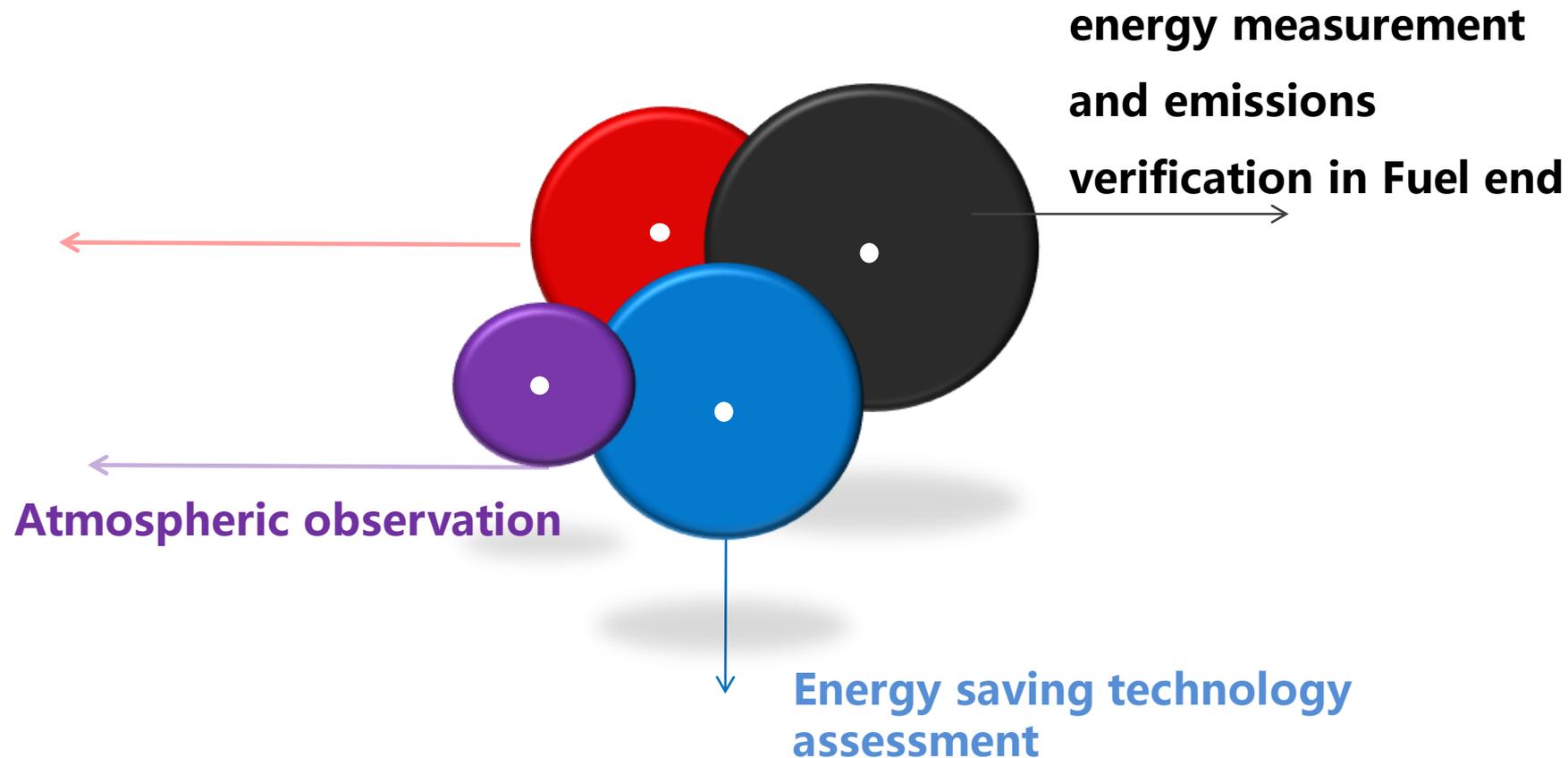
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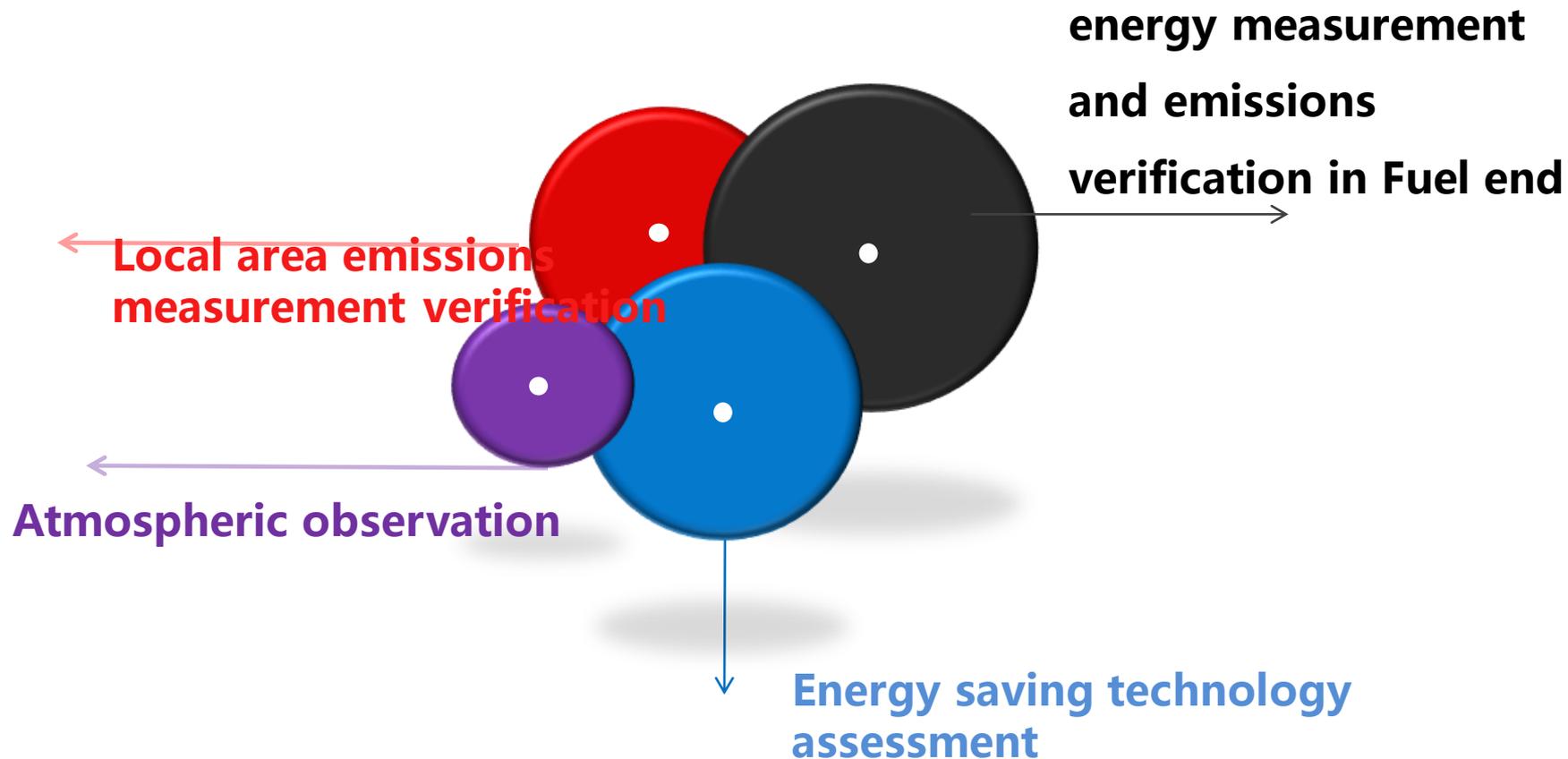
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This is a Large and 'complex task, we prefer to start some of the work as early as we can, and now, There is one branch committee and five working groups were established, including

**Energy Efficiency Sign Branch Committee**

# Energy Efficiency Sign Branch Committee

5 working groups were established

1. Natural Gas Low Carbon

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**4. Building Energy Efficiency**

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**5. Energy Efficiency Comparison**

**Metrology  
in fuel end**

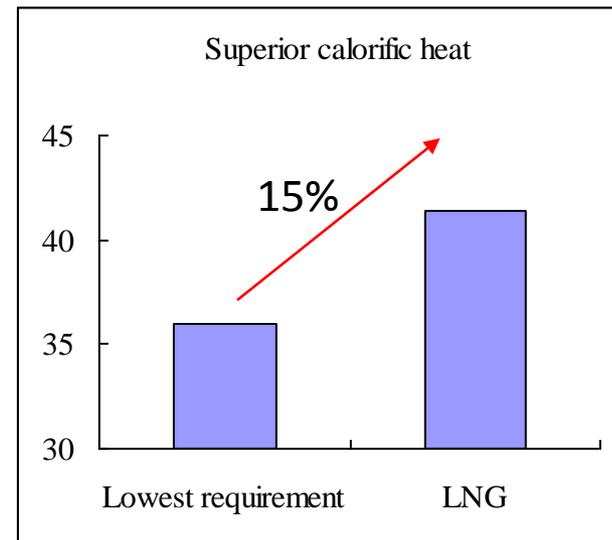
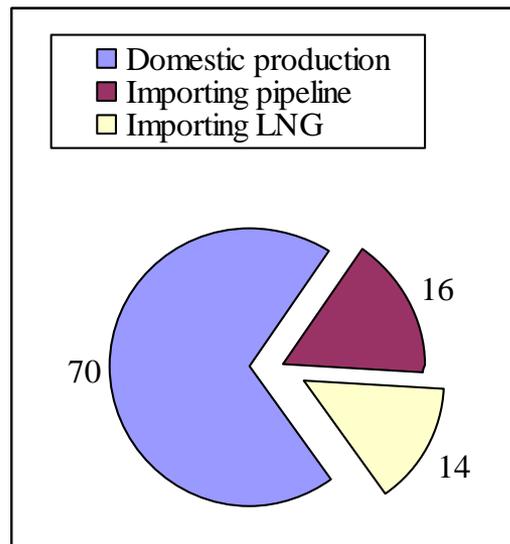


**1**

**Study on energy metering method of  
fuel end**

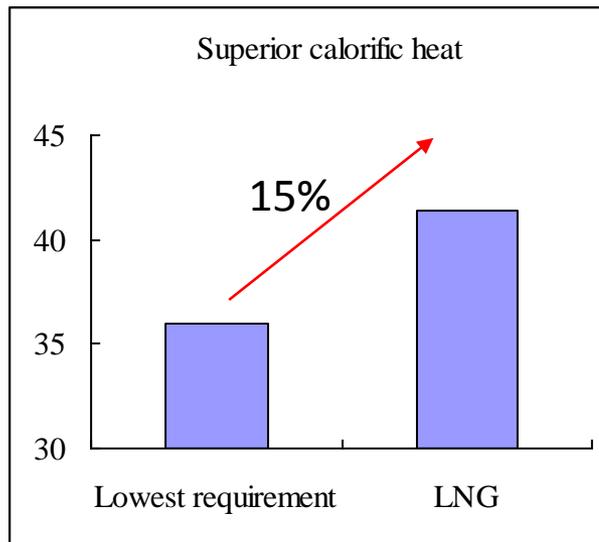
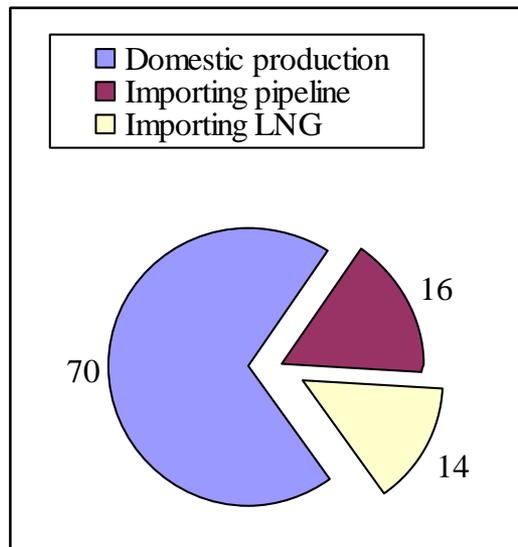
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- ❑ calorific value of LNG about  $42\text{MJ} / \text{m}^3$ .



# Fuel end metering

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- ❑ In Chinese national standard, natural gas calorific value is not less than  $36\text{MJ}/\text{m}^3$
- ❑ calorific value of LNG about  $42\text{MJ} / \text{m}^3$ .
- ❑ Natural Gas Working Group will be working on the natural gas trade.



**Metrology  
in fuel end**



**1**

## **Study on energy metering method of fuel end**

The calorific value of natural gas, coal quality parameters, fuel, steam and hot water, etc.

## Metrology in fuel end



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### Study on energy metering method of fuel end

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### Effective collection of energy consumption data and verification method based on energy supply side data

## Metrology in fuel end



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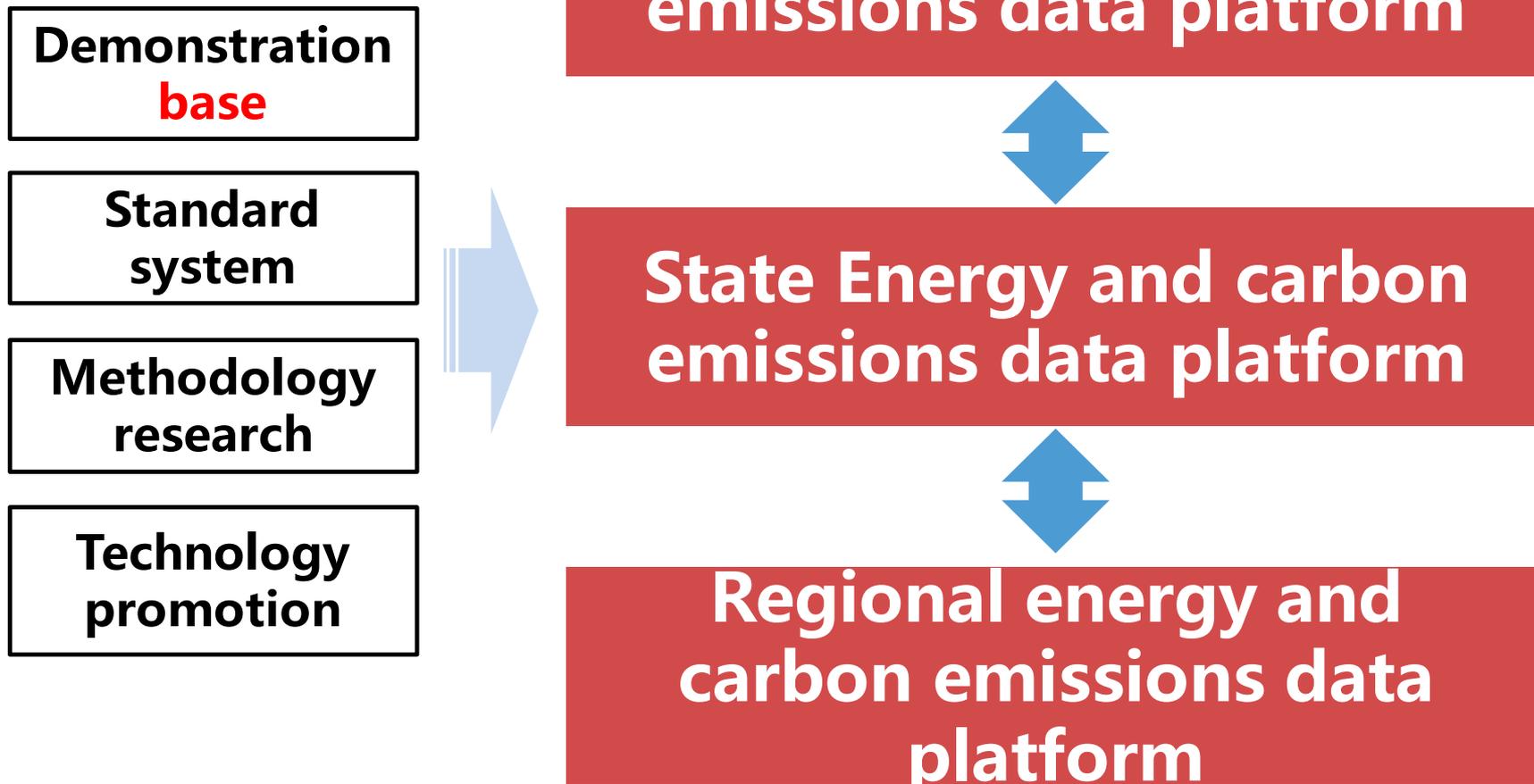
**Effective collection of energy consumption data and verification method based on energy supply side data**

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**Study on measurement method of emissions**

4

**Research on statistical and analytical methods of data**



**Demonstration  
base**

**Standard  
system**

**Methodology  
research**

**Technology  
promotion**



**National energy and carbon  
emissions data platform**



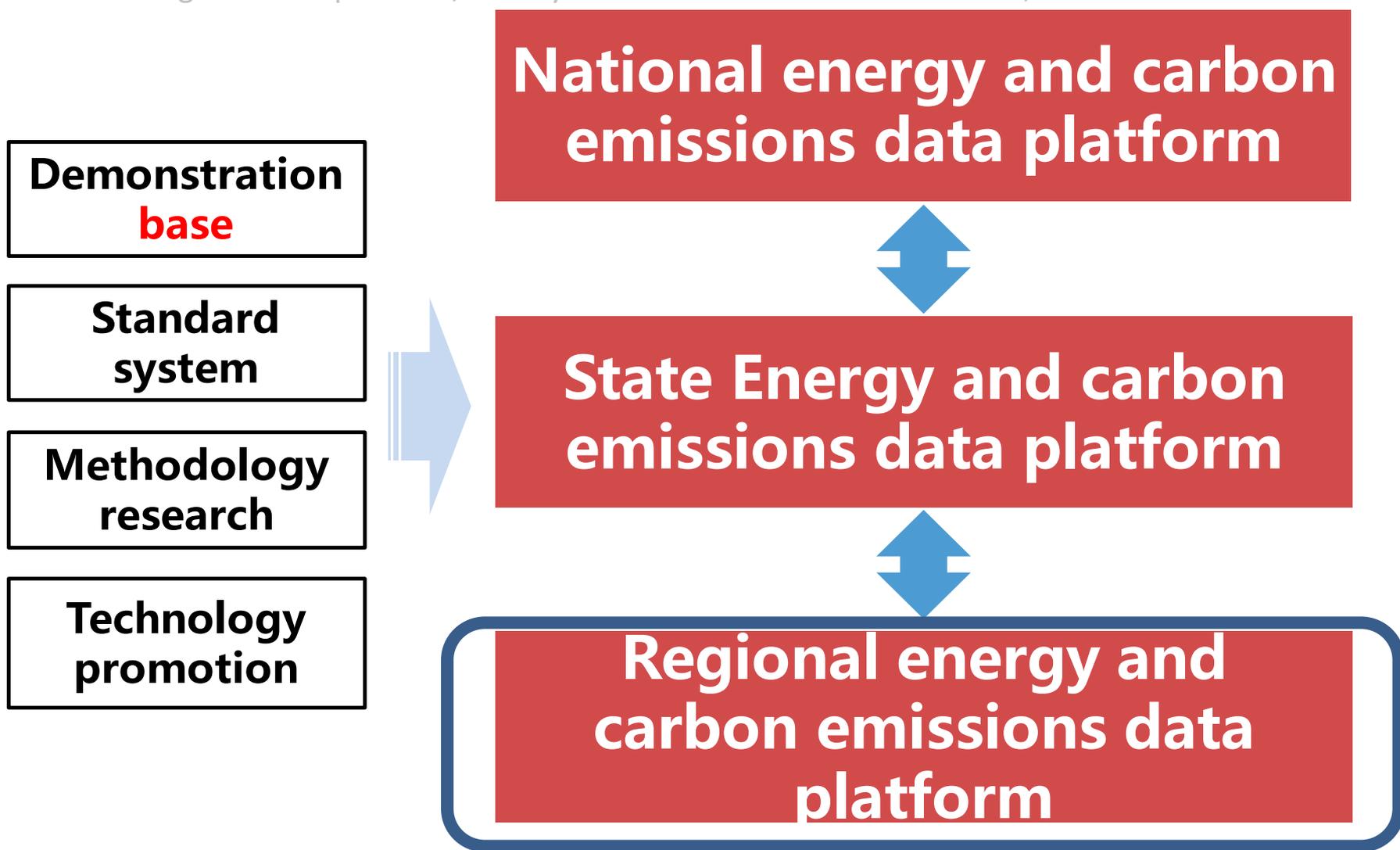
**State Energy and carbon  
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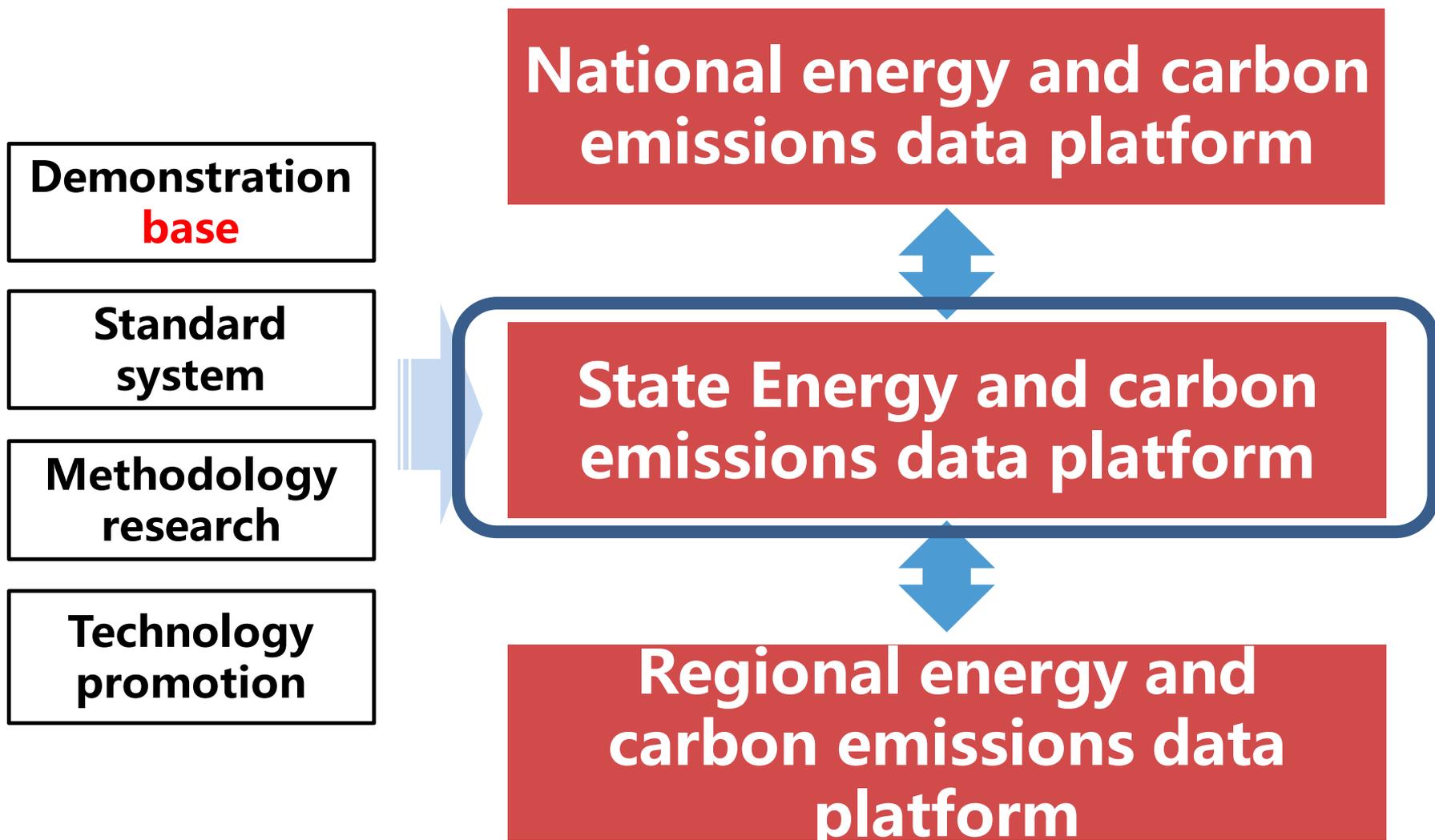


**Regional energy and  
carbon emissions data  
platform**

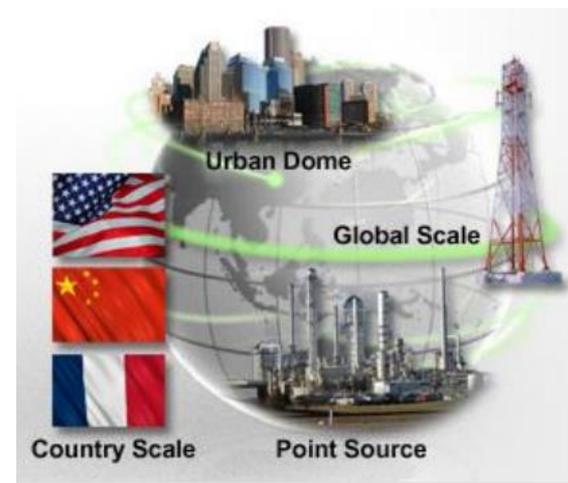
# Future Plan

Second is the Regional data platform, usually it will be used in the middle cities, and all the





- Atmospheric Monitoring Working Group, led by the Chinese Academy of Meteorological Sciences, is committed to enhance the effectiveness of observation data of Chinese meteorological stations



## **Energy saving technology:**

- 1. Energy efficiency evaluation of energy system: energy efficiency assessment, energy efficiency benchmarking**
- 2. Energy industry related components and system performance evaluation**
- 3. Energy consuming products energy efficiency evaluation**
- 4. Energy efficiency benchmarking**

# Low-carbon Metrology Committee

1. 18 energy efficiency measurement technology standards.
2. Standard device for the measurement of air conditioner refrigeration (heat), and to carry out the value delivery service.
3. Energy efficiency measurement and supervision work.
4. On-line calibration of the dynamic and complex measurement device of energy efficiency.

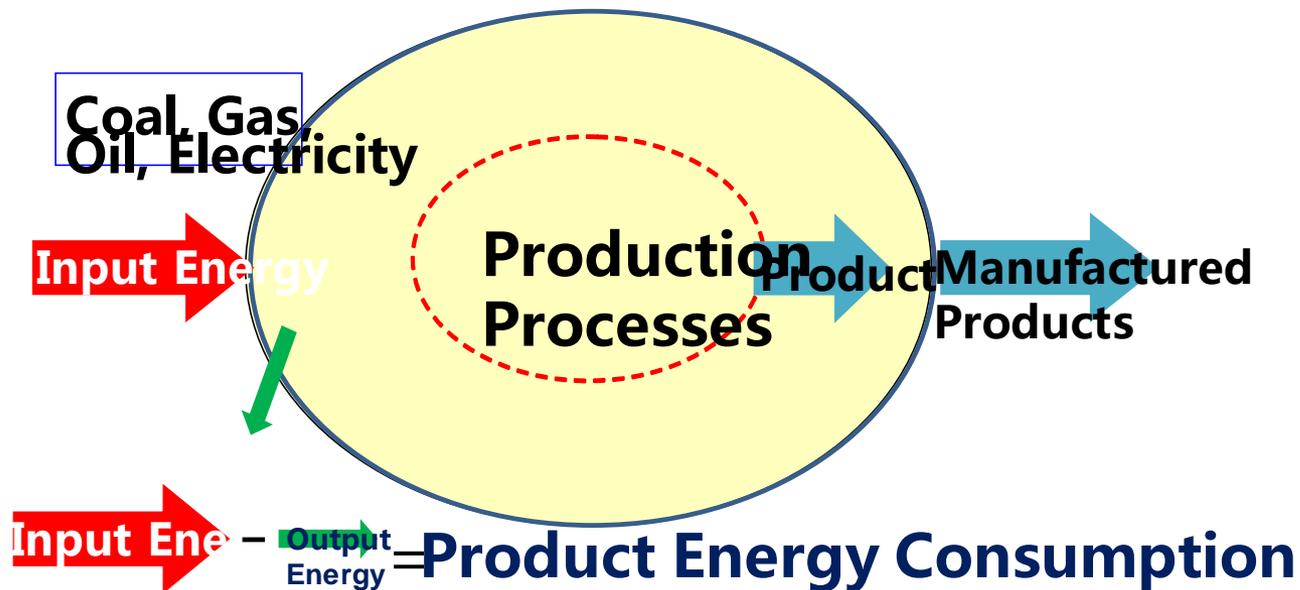


空调器制冷（热）量测量标准装置



- ❑ energy efficiency per unit product
- ❑ Metrological procedures to ensure its consistency and stability for comparison and evaluation

## Measurement boundary and methods of unit energy consumption for cement production



# Emission monitoring

- ❑ monitor the position and intensity of the emission source
- ❑ accurate traceability, effective data, analysis and calculation.

# Emission monitoring

**Study on regional  
emissions monitoring**

**Direct measurement of flue gas emissions**

**Greenhouse gas Standard by CRDS**

**Greenhouse gas measurement by LIDAR**

**The measurement and calculation of emission  
sources in the inversion model**

**Measurement method of wind speed**

# Thank you!

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