

# Development of Energy Efficiency Standards in China

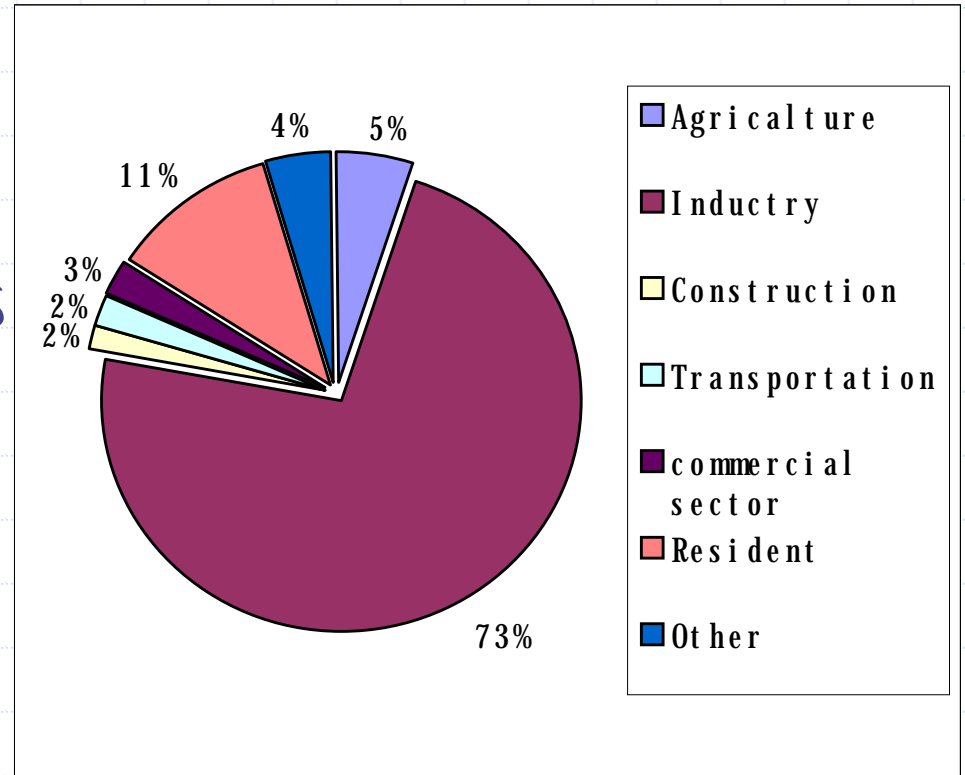
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# Status of energy consumption in China

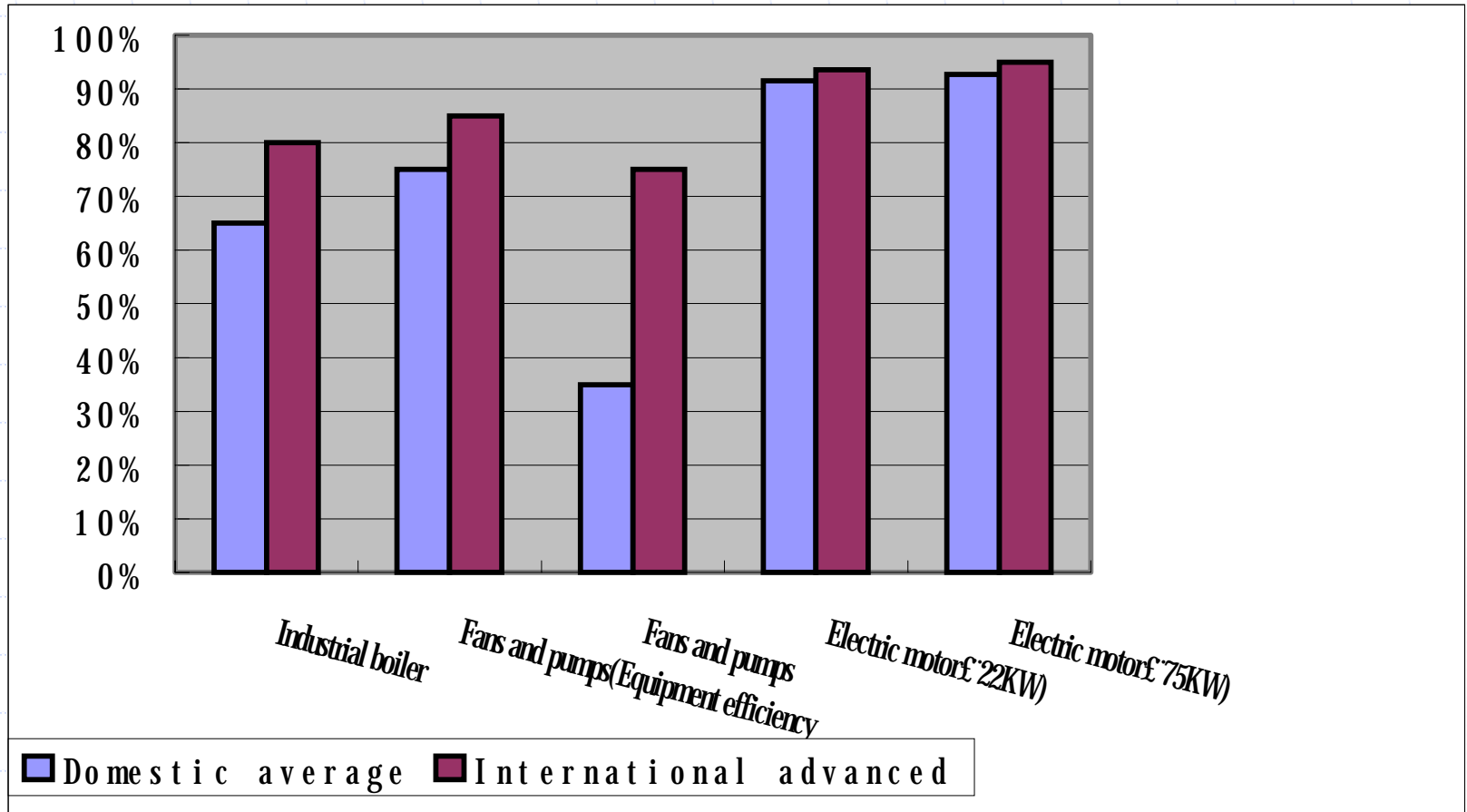
- ◆ energy consumption in industrial sector is 70 per cent more
- ◆ residential consumption is about 11 per cent.



# Energy use in industrial sector

- ◆ energy efficiency of key equipment is comparative low
- ◆ energy consumption per unit for producing major industrial product is about 20 per cent more than the international advanced level

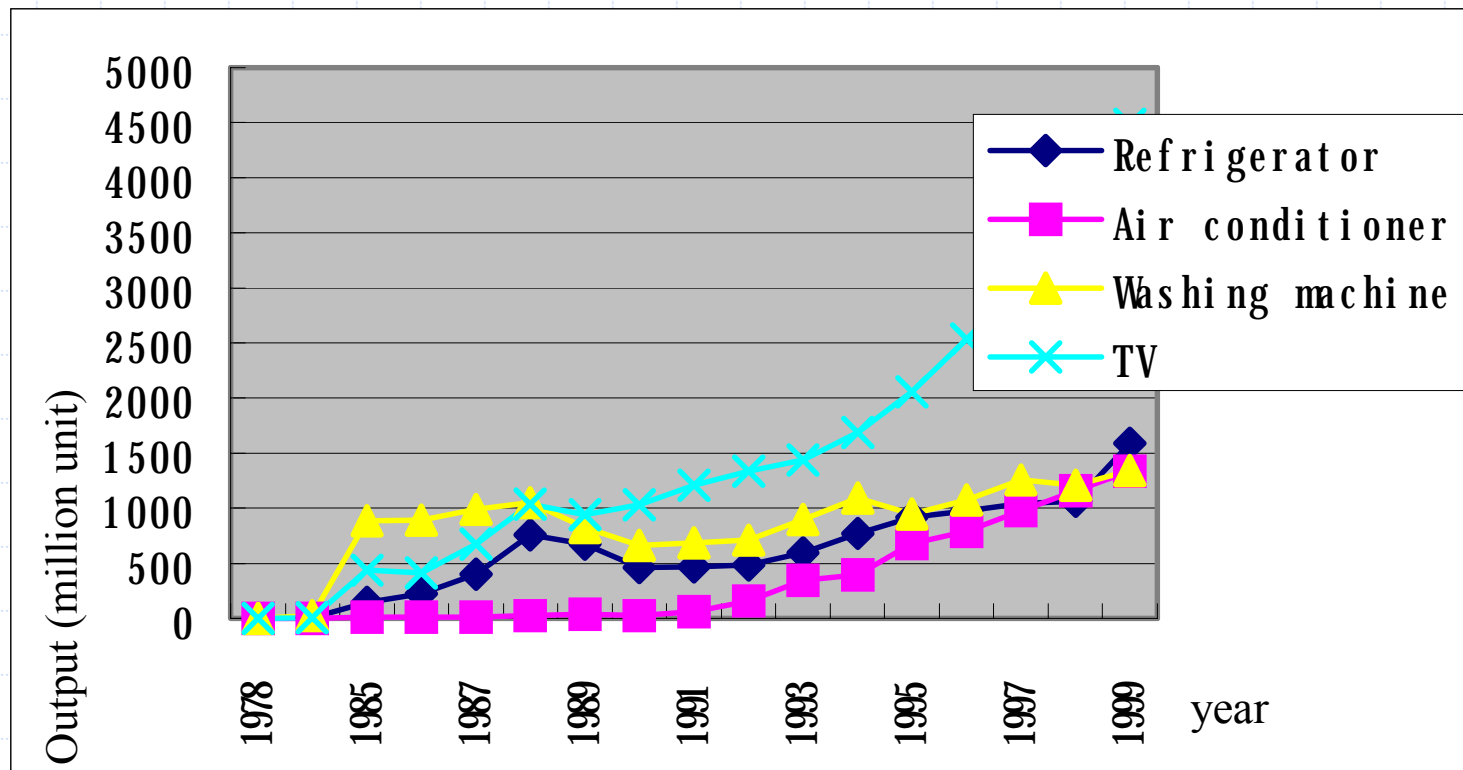
# Comparison of the efficiency of key industrial equipment



# Residential energy consumption

- ◆ **Amount of production appliances is increasing by 32%(1986-1996)**
- ◆ **residential consumption is a 10-15% yearly increase**
- ◆ **result in the peak load increasing**

# Production of household appliances 1978-99



# Tasks in the near future

- ◆ utilize energy reasonably
- ◆ increase the energy efficiency of energy-consuming products
  - industrial energy consuming equipment
  - household appliance
- ◆ Energy- saving and environment protection

# Energy-saving Policy and Measures

- ◆ Policy: “*Energy Conservation Law of the people’s Republic of China*”
- ◆ Measures mentioned
  - Energy consumption limit for the production process in industry
  - elimination products of high energy consumption in the market •
  - Energy labeling
  - Energy Standards

# energy standards in China

- ◆ **Organization of Standardization**
  - **China State Bureau of Quality and Technical Supervision • CSBTS •**
  - **China National Institute of Standardization • CNIS •**
  - **China National Technical Standardization Committee for Energy Basis and Management**
  - **National testing centers**
  - **Support by SETC • SDPC**

# Process of developing standards

- ◆ Proposal of standard development or revision by related Department
- ◆ Work plan approved by SBTS
- ◆ organize the standards working group by Standardization Committee
- ◆ Draft out the standard
  - draft standard
  - comment
  - Proposed standard
  - Examination by Standardization Committee
  - the final standard approved by SBTS
- ◆ Implement

# the first batch of energy efficiency standards

- ◆ Issued by CSBTS on Dec 25, 1989
- ◆ Implemented on Dec 1, 1990
- ◆ Mandatory

# Revised and developed

- ◆ **Since 1995, through technical cooperation with USA *EPA* • *LBNL* and some other international organizations, three national standards have been revised and developed**
  - **Refrigerator: revised in 1999**
  - **Air conditioner: revised in 2000**
  - **Ballast: developed in 1999**

# Standards revised

- ◆ contents of standards were adjusted according to the demand of China's energy conservation plan and appliance market
- ◆ mainly performance requirements:
  - the limited value of energy efficiency
    - ◆ mandatory
    - ◆ to eliminate the low efficiency products
  - the evaluation value of energy conservation
    - ◆ Voluntary
    - ◆ the energy conservation target

# The list of energy standards

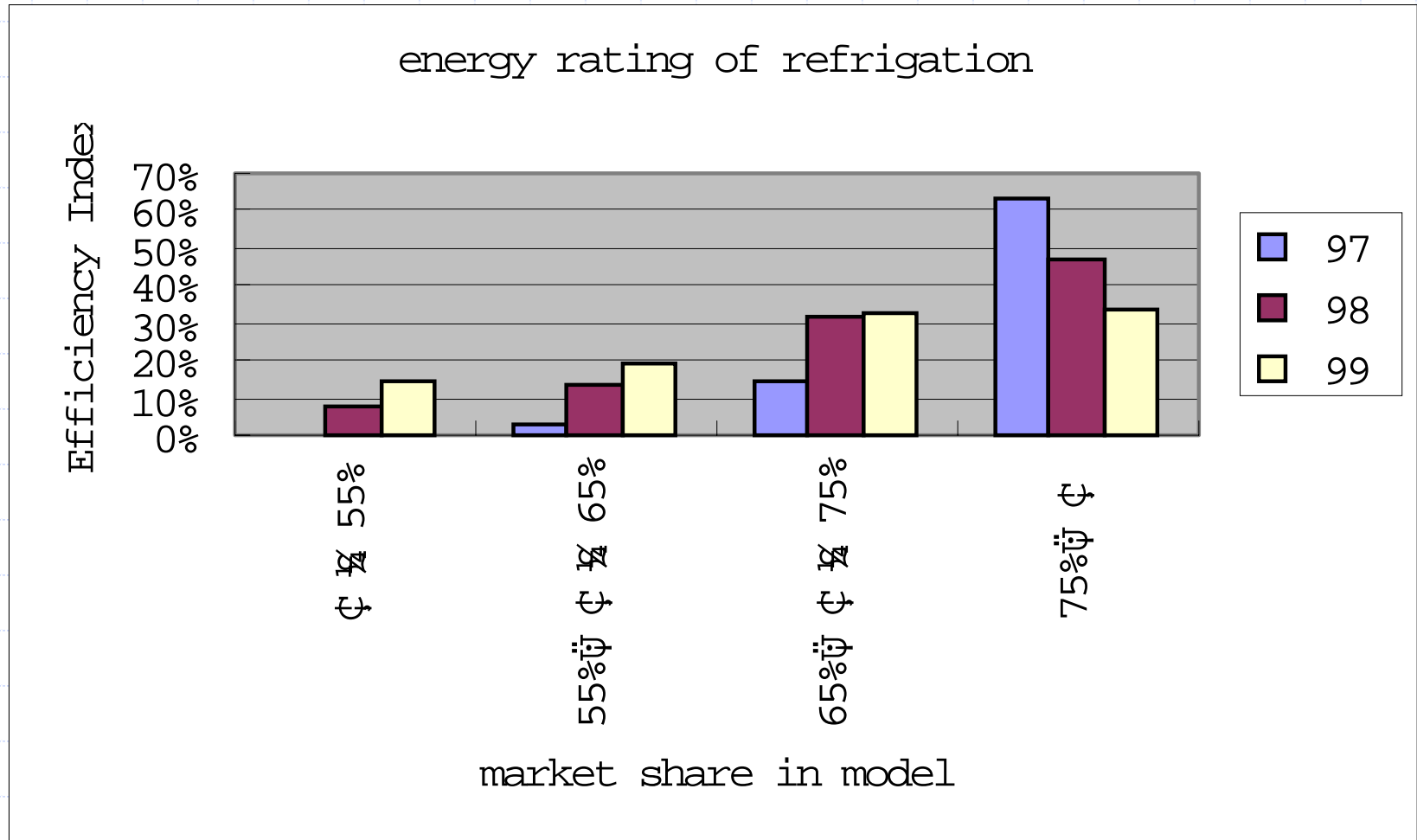
GB12021.2	<b>The maximum allowable values of the energy consumption and evaluating values of energy conservation for household refrigerators</b>
GB12021.3	<b>The limited values of energy efficiency and evaluating values of energy conservation for room air conditioners</b>
GB12021.4	<b>The limited value and testing method of the energy consumption for household electric washing machines</b>
GB12021.5	<b>The limited value and testing method of the energy consumption for electrical iron</b>
GB12021.6	<b>The limited value and testing method of the energy consumption for automatic rice cooker</b>
GB12021.7	<b>The limited value and testing method of the energy consumption for broadcasting receiver of colour and monochromic television</b>
GB12021.8	<b>The limited value and testing method of the energy consumption for radio receivers and recorder</b>
GB12021.9	<b>The limited value and testing method of the energy consumption for electric fans</b>
GB17896	<b>The limited values of energy efficiency and evaluating values of energy conservation of ballasts for tubular fluorescent lamps</b>

# Effect of main energy standards




## ◆ Refrigerator

- eliminate nearly 15 per cent of the low efficiency products off the market
- the energy consumption of major refrigerator products decreased by 8.5 per cent from 1997 to 1999
- Market share of high efficiency product increase

# Share of high efficiency product in the market (1997-1999)



# Target for refrigerators in the coming 10 years

-  **Energy efficiency will be increased by 40% in the coming 10 years**
-  **Reduce electricity consumption: 120 billion kWh**
-  **cut the emission of CO<sub>2</sub>: 21 million ton (counted by carbon)**

# Effect of air-conditioner standards

- ◆ eliminate nearly 15 per cent of the low efficiency products off the market
- ◆ energy efficiency of air conditioner increased by 10 per cent (1999-2001.3)
- ◆ the yield of energy conservation reached 1.43 (not include the benefit from emission reduction)
- ◆ Target: during 2001-2010
  - Reduce electricity consumption: 15.5 billion kWh
  - cut emission of CO<sub>2</sub>: 5.73 million ton

# Effect of tubular ballast standards

- ◆ **increase the average efficiency factor**
  - magnetic ballast: from 2.05 to 2.059
  - electronic ballast: from 2.372 to 2.402.
- ◆ **In the coming 10 years**
  - ✍ **Reduce energy consumption: 5 billion kWh**
  - ✍ **Cut CO<sub>2</sub> emissions: 1.35 million tons(carbon)**

# Program under doing

- ◆ **Research on energy information labeling**
  - Supported by CLASP and China Sustainable Energy Program(EF)
  - Department of Resource Conservation and Utilization of SETC has put the research and promotion of energy information labeling in its work plan of 2001

# Energy efficiency standards currently being developed and revised

- ◆ lighting equipment(supported by EF,LBNL)
  - double- capped tubular fluorescent lamp
  - compact fluorescent lamp etc
- ◆ industrial energy consuming product
  - Electric motors (supported by IIEC)
  - Central air-conditioners
- ◆ household appliance(supported by EF,LBNL)
  - washing machine
  - TVs.

# Electric motor - Example in the industrial sector

Energy consumption is more than 60%

- ◆ Measure
  - Energy standard
  - Technical specifications of Energy conservation products for motor
- ◆ Target: reach to requirement of EU EFF2
- ◆ Partners: CNIS, IIEC, SEARI, etc
- ◆ to be finished by the end of 2001

# Problems exist and main obstacles(1)

- ◆ Development and revision cycle of standards is relatively long
- ◆ lack of fund in data collection and data analysis
- ◆ Not enough effort made in the propaganda and publication

## Problems exist and main obstacles(2)

- ◆ urgently need to enlarge the market demand of high efficiency products
- ◆ budget for R&D is not enough
- ◆ lack of preferential policy and special treatment for high efficiency products

# Future plan(1)

## Energy standards

- **Systematically develop and revise energy efficiency standards**
- **Start on the research of target energy efficiency standards**
- **Develop the energy standards for main industrial product with high energy consuming**

# Future plan(2)

## ◆ Policy and measure

- Develop the preferential policy and special treatment for high efficiency products
- Perfect management format and energy savings target for standards and labeling
- Consider new enforcement measures for elimination of high energy consumption products

# Future plan(3)

- ◆ market transformation activities
  - Strengthen public education and propaganda
  - implementation the energy information labeling
  - R&D on the energy measure of **Voluntary efficiency target**

# Future plan(4)

- International cooperation
  - ◆ R&D of Standards and Labeling
  - ◆ the multi-lateral recognition of standard and labeling to reduce trade barriers
  - ◆ promote harmonization



**Thanks!**