

Current Situation and Challenges in S&L Development in China

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Outline

1

The Objectives and Plans for the S&L during the Twelfths Five-Year Plan

2

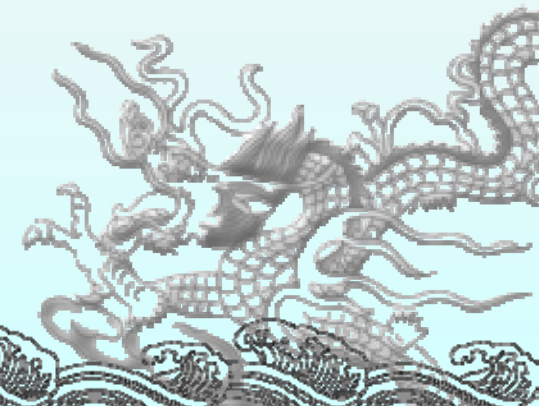
The Current Situation and Development of S&L in China

3

The Current Situation and Challenges of Energy Label in China

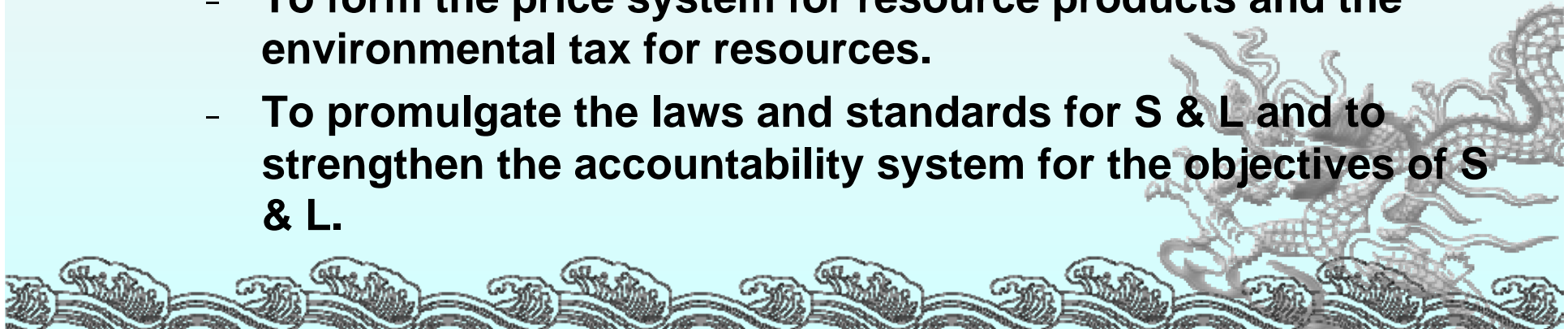
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Nest Steps



1.1 The Objectives of S & L during the Twelfth Five-Year Plan in China

- **The National Objective of S & L in 2015**
 - To reduce the energy consumption per GDP by **16%** , and to reduce the release of Carbon Dioxide per GDP by **17%**.
 - The non-fossil energy accounts for **11.4%** of the entire disposable energy.
- **Policy Orientation**
 - To establish the system to encourage the S & L
 - To perfect the energy structure and to control the total consumption of energy in a rational way.
 - To form the price system for resource products and the environmental tax for resources.
 - To promulgate the laws and standards for S & L and to strengthen the accountability system for the objectives of S & L.



1.2 the Comprehensive Plan for S & L during the Twelfth Five-year Plan

- To include the concept of resource saving and environmental protection into the systems of **Manufacturing, distribution, consumption and construction.**
- To perfect the long-term mechanism for S & L. To form the **Policies on Encouragement**, such as pricing, taxation, finance, etc.
- To speed up the **promotion** of high energy efficiency products and technologies.
- To greatly support the scientific innovation, to promote the **structural adjustment** of the economy and the conversion of the development model. To focus on the upgrade of industry and to improve the ratio of **high-tech industry.**
- To strengthen the management system on S & L, to allocate the responsibilities on the indicators of S & L and to perfect the statistics, monitoring and assessment system of S & L.

1.3 The Policy on Encouragement of S & L

- (1) The Award Funds: to enlarge the supervision scope, to increase the financial award by 20%. (Provisions on the Financial Award for Encouraging the S & L, Caijian[2011]367)
- (2) to strengthen the support on the S & L projects

	“11th Five-Year”	“12th Five-Year”
Content	Ten projects on S & L	Reconstruction Project on S & L Inhabitant benefit Project for S & L products Contract energy management promotion project Model project on the Commercialization of S & L technology Project on the Capacity Building of S & L
Strength	Strong	Stronger
Scope	Broad	Broader
Method	Audit by Government	Audit by the third party

(2) Preferential Income Tax

Enterprise Income Tax Law (2007)

Article 27(3): The income generated by energy and water saving programs can be exempted or reduced from enterprise income tax

Article 34: Specific Equipments, Where enterprises purchase specific equipments for environment protection, **energy and water saving** or production safety, the investment can be charged by the exemption or reduction of income tax at certain proportion.



Regulations for the Implementation of Enterprise Income Tax Law (2007)

Article 88: **S&L Program**: the income generated from the energy and water saving program, can apply for the “three exemption and three half-reduction policy.

Article 100: **Specific Equipments**: Where the enterprises purchase and use the specific equipments for energy and water saving, 10% of the total investment can be charged from the income tax paid in that tax year. Where the income tax cannot cover the investment, the reduction could be covered through the following five tax years.



The List of S & L equipments and programs for Preferential Income Tax(2008, 2009)

S&L Programs: 9 programs including kilns, power generating system, energy saving system, high energy consumption building, heat supply measurement.

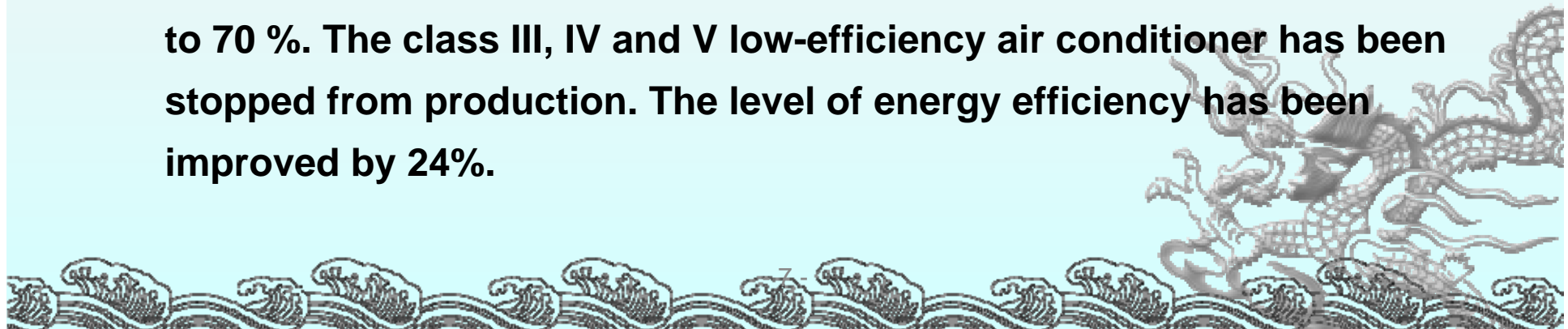
Specific Equipments: 13 categories of equipments, including electromotor, air-conditioner, ventilator, pump, air compressor, frequency transformer, distribution transformer, industrial boiler.

1.4 Policy on Encouragement for S&L Products

(1) Project on Inhabitant Benefit from S&L Products

➤ Achievements

- In the past two years, the central government allocated 16 billion RMB from the central financial fund, in order to promote 34 million S&L air-conditioners, 360 million illumination products, 1 million S&L vehicles.
- To directly leverage the consumption of 12 billion RMB, saving 225 kw-hr electricity and 300,000 tons of oil.
- The market share of S&L air conditioner has been increased from 5% to 70 %. The class III, IV and V low-efficiency air conditioner has been stopped from production. The level of energy efficiency has been improved by 24%.



Project on Inhabitant Benefit from S&L Products during the 12th five-year plan

- **To increase the subsidy on S&L household appliance, vehicles, electromotor, illumination products, and enlarge its scope.**
- **To perfect the implementation mechanism, to improve the management system and to strengthen the supervision.**
- **To form the capacity for 52 billion kw-hr electricity during the 12th five-year plan.**



(2) Government Purchase on S&L products

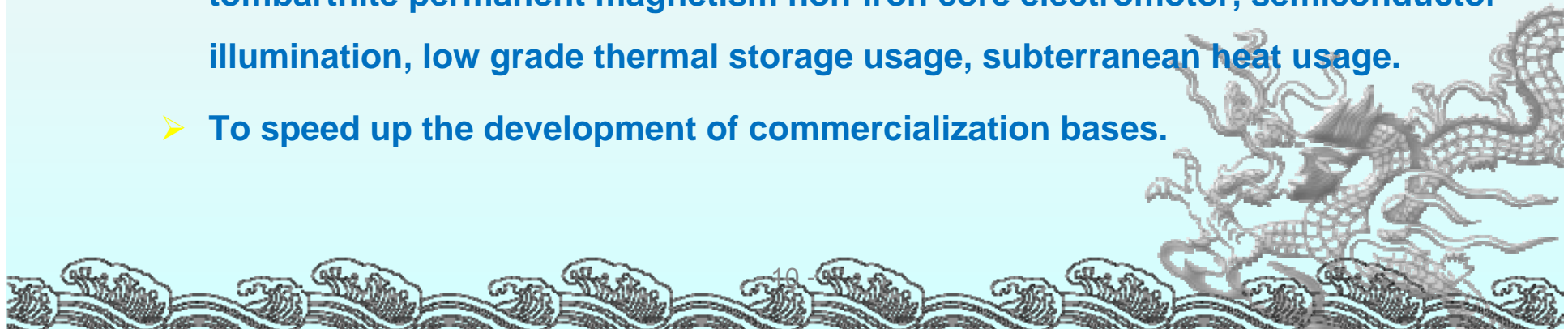
- **Opinions on the Implementation of Government Purchase of S&L Product, promulgated by MOF and NDRC, (CAIKU[2004]185)**
- **The Notice on Compulsory Purchase System of S&L Products promulgated by the State Council (GUOBANFA[2007]51)**
- **Currently, the compulsory purchase system includes air-conditioner, illumination, TV, electric water heater, PC, printer, indicator, stool and chamber pot, water tap.**
- **Generally speaking, the list will be adjusted twice a year. The latest version was issued in August, 2011.**



1.5 The Policy on Encouragement on S&L Tech

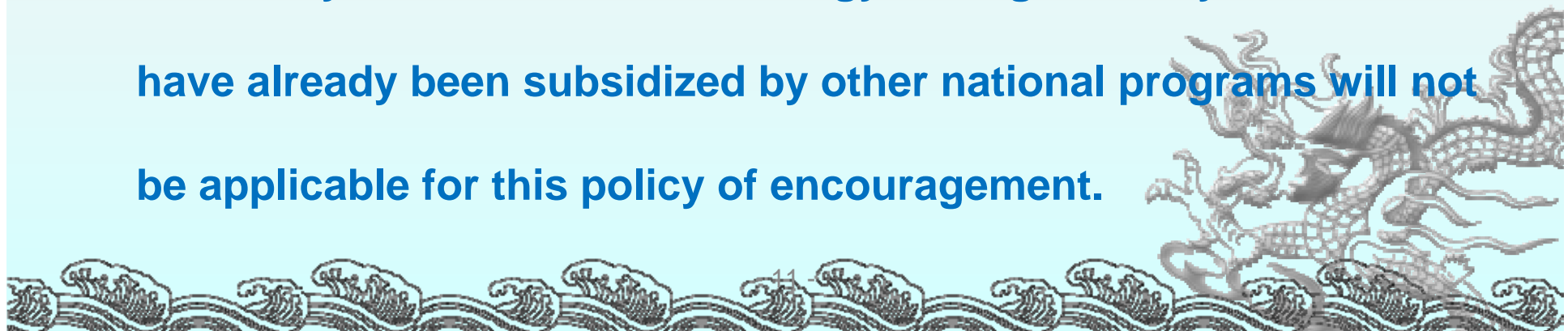
- (1) National List of key S&L Tech
 - **The cascade development of energy, the power generated from wasted heat, the advanced coal gasification, the high pressure frequency conversion for speed adjustment, dry quenching, the thermal storage heating furnace, the absorbing heat pump for heating, the ice storage air conditioner, etc.**

- (2) Models for the Commercialization of key S&L Tech.
 - **To implement the commercialization of key S&L tech and equipments.**
 - **To support the commercialization of key tech and equipments, including tombarthite permanent magnetism non-iron core electromotor, semiconductor illumination, low grade thermal storage usage, subterranean heat usage.**
 - **To speed up the development of commercialization bases.**



1.6 Policy on Encouragement for Contract Energy Management System

- **To support:** companies that provide services for energy saving by implementing the sharing contracts on S&L.
- **Scope:** The financial award is used to support the S&L programs that have implemented the contract energy management system in the fields of industry, construction, transportation and public service system. The contract energy management systems that have already been subsidized by other national programs will not be applicable for this policy of encouragement.



Measurements carried out by Local Authorities

- ◆ **Some provinces and municipalities have implemented the policies to support the reconstruction programs on S&L air-conditioners in the commercial sectors.**

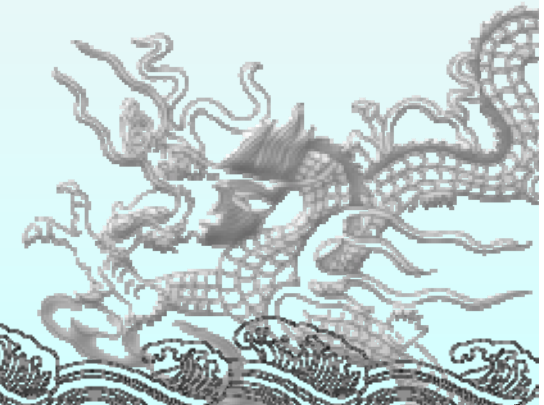
- ◆ **For example, Beijing Municipal Government will support the S&L reconstruction programs in department stores (larger than 10000m²) and supermarkets (larger than 2000m²), including three categories such as central air-conditioner system. The subsidy will be no higher than 35% of the investment for central air-conditioner system and no higher than 30% for other systems.**

The government also enhanced its support on contract energy management system, and will support the giant public buildings (larger than 20000 m²) or other units that consumed over 2000 tons of coal annually, which implement the contract energy management system. The subsidy will be given based on the energy saved.

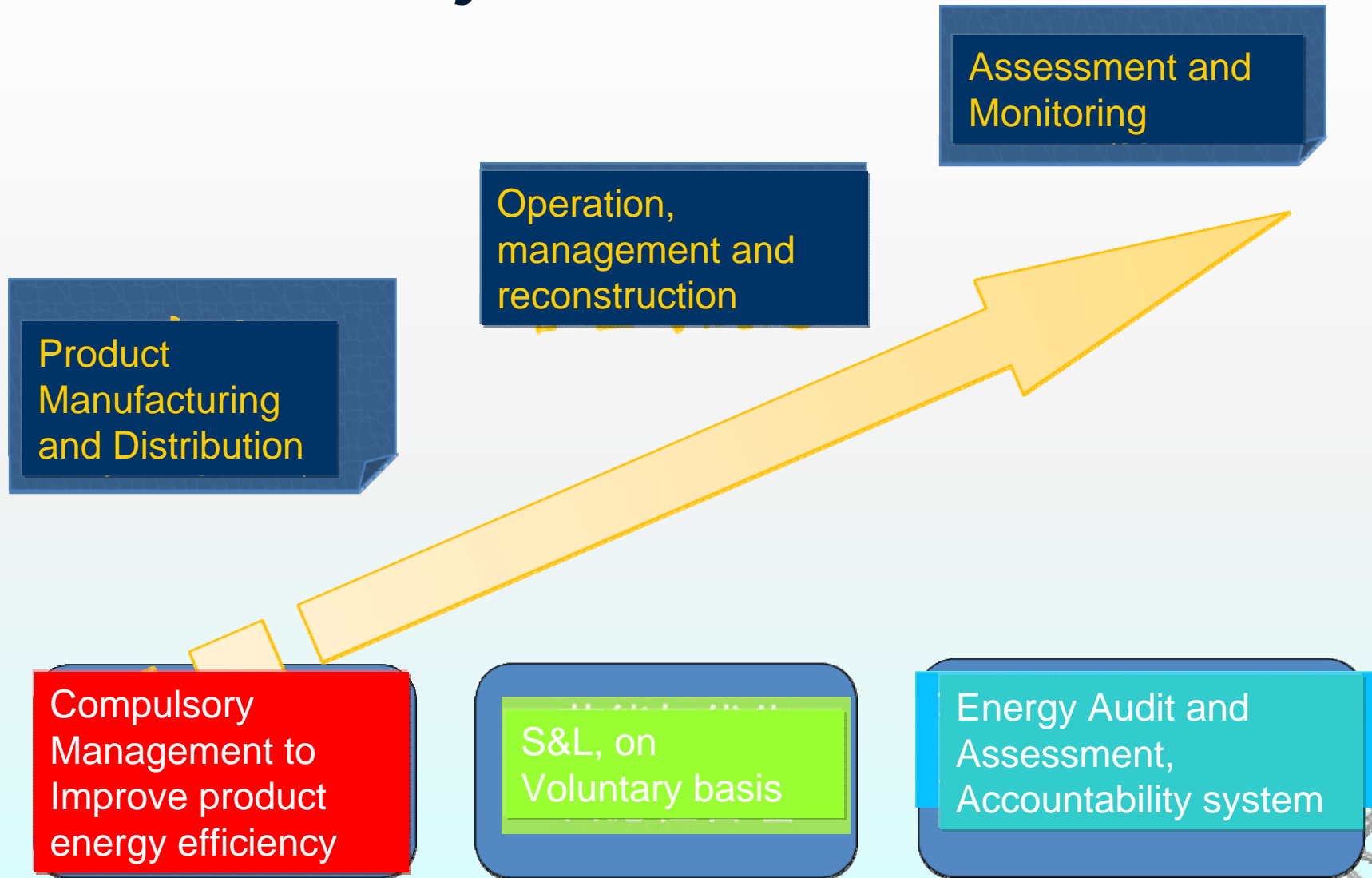
- ◆ **According to the statistics, after the S&L reconstruction, the average electricity consumption has been reduced by 21.6%.**

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- 2 *The Current Situation and Development of S&L in China*
- 3 The Current Situation and Challenges of Energy Label in China
- 4 Next Step

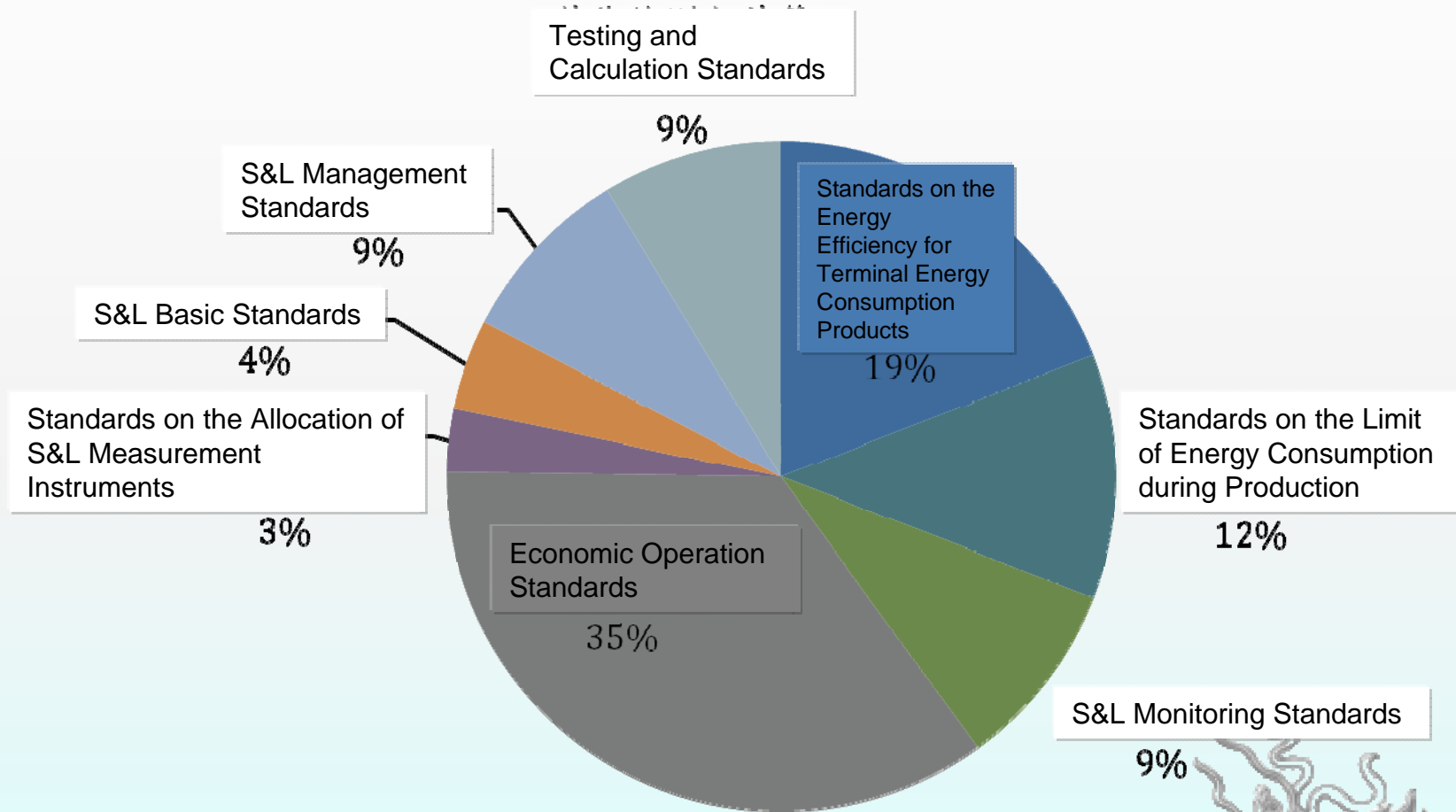


2.1 The Subject for S&L Standards



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2.2 National S&L Standards



Categories of S&L Standards in 2011

(1) Numbers of Energy Efficiency Standards (44)

Household Appliance

12

- Refrigerator
- Room AC
- Washing Machine
- TV
- Electric-Fan
- Electric-Cooker
- Electric-water heater
- Gas water heater
- Frequency Conversion
- Induction cooker
- Flat TV
- Microwave Oven

Illumination

8

- Ballast resistor
- Two-end fluorescent light
- One-end fluorescent light
- self-ballast fluorescent light
- High voltage sodium lamp
- Ballast resistor for high voltage sodium lamp
- Metal halide Lamp
- Ballast resistor for metal halide lamp

Industrial Equipments

10

- Small and medium size three-phase asynchronous motor
- air compressor
- ventilator
- Centrifugal pump
- distribution transformer
- Power transformer
- AC contactor
- Oil furnace
- Industrial boiler
- Miniwatt Electromotor

Commercial Equipments

4

- Unit AC
- Water chilling unit
- multi unit AC
- external power source

Vehicles

6

- Car
- light vehicle for commercial use
- Three-wheeled motor vehicle
- low speed truck
- freight car
- passenger service vehicle

IT

4

- PC Indicator
- Copy machine
- printer and fax machine
- Set-Top Unit

Priorities of Energy Efficiency Standards in 12th Five-Year Plan

4. Illumination

Self ballast fluorescent light, Two-end fluorescent light, One-end fluorescent and ballast resistor, retainer lights, LED lights

1. Household Appliance

Refrigerator
Far Cooling Display Stand
Portable Cooling Display Stand
Water Dispenser
Vendor
Room AC
Wash Machine
Ventilator
Gas Cooking utensils
Heat Pump Water Heating Machine

2. Equipments for Commercial Use

Unit AC
Water Chilling Unit
Water Source Heat Pump Unit
Lithium bromide Absorbing Units

3. IT products

PC
Server
PC indicator

5. Industrial Equipments

Small and medium size threephase asynchronous motor, Centrifugal blower, Immersible pump, High-voltage threephase asynchronous motor, tombarthite permanent magnetism synchronous electromotor, Arc welder

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(2) Performance Evaluation on the S&L system

◆ Challenges

- ◆ Multi factors may undermine the S&L performance
- ◆ The quality for evaluation system needs to be improved

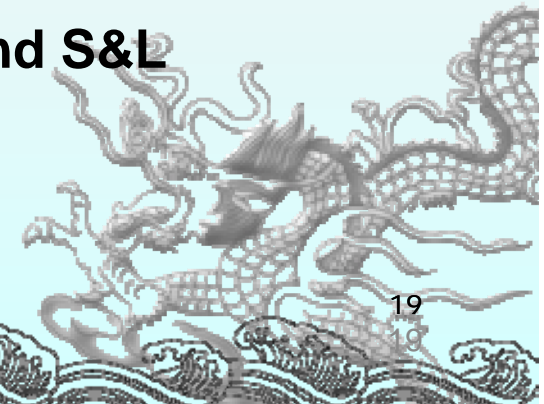
◆ The establishment of Evaluation Index

- ✓ Ratio of S&L
- ✓ Economic factors
- ✓ The usage of equipments and serviceability ratio
- ✓ Environmental evaluation

Field	Progress	Documents promulgated
AC	Under development	Performance evaluation and calculation method on cooling system, Part I, Energy storage AC system
Geothermal heat pump	Project established	Performance evaluation and calculation method on cooling system, Part II, Geothermal heat pump

(3) System Optimization and Management

- ◆ Facing many challenges. Taking the Construction AC as an example:
 - ◆ 90% buildings are high-energy consumption buildings, with a huge potential for S&L
 - ◆ The approximate energy consumption for public buildings is 22kgce/m², 30% higher than that of the advanced international level.
 - ◆ The energy consumption for commercial buildings in big or medium cities is around 150 RMB/m², with a potential S&L of around 20%.
 - ◆ The low load factor of AC system, 10-20% of the power grid
 - ◆ Advice on the Standards
 - ◆ Guidelines on Energy System Optimization and S&L Management
 - ◆ Good Practice and its Application



Product	Progress	Document Promulgated
Cooling machine	Under Development	Operation Procedure for Cooling System, Ammonia Cooling system
Cold Storage	GB/T 15912 .1-2010	Tests on the Cooling machine and Cooling system, Part I, Cold Storage
Water System for Central AC	GB/T26759—2011	Guideline on the S&L Control Appliance for the Water System for Central AC



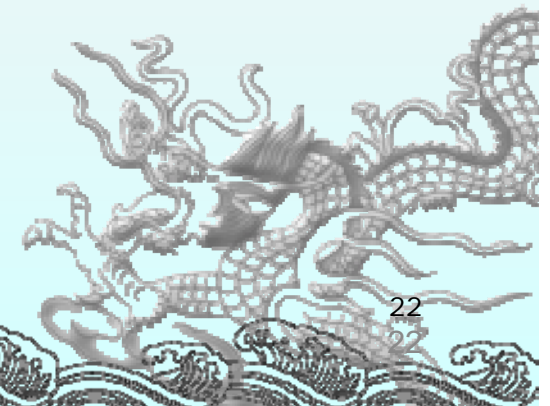
(4) Standards on the Economic Operation of the System

- ◆ Concerning the operating energy consumption system, by using scientific management and essential technical innovation, **the system can be optimized** and therefore the energy consumption and cost could be reduced.

System	Progress	Document promulgated
Air Adjustment System	GB/T 17981-2007	The Economic Operation for Air Adjustment System
Hotels	GB/T 12455-2009	Optimized Electricity Consumption in Hotels
Water Source Heat Pump	Under Development	The Economic Operation for Water Source Heat Pump

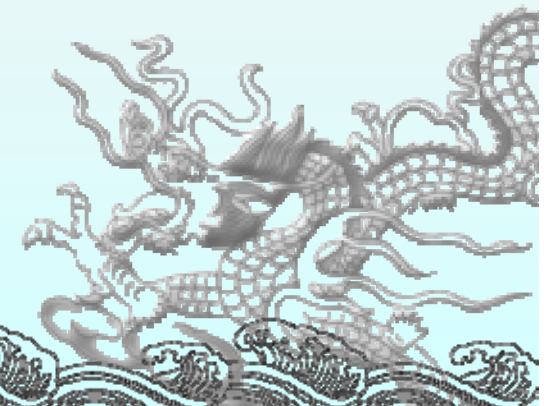
(5) Validation Standards for S&L

- √ Technical Guideline on the Validation of S&L Measurement ;
- √ Tech Requirements on Validation of S&L Measurement: Electromotor
- √ Tech Requirements on Validation of S&L Measurement: Central AC system
- √ Tech Requirements on Validation of S&L Measurement: Illumination
- √ Tech Requirements on Validation of S&L Measurement: Industrial Furnace
- √ Tech Guidelines on Energy Audit (revision);
- √ Tech Guidelines on Energy Audit for Steel Industry ;
- √ Tech Guidelines on Energy Audit for Construction Material Industry.

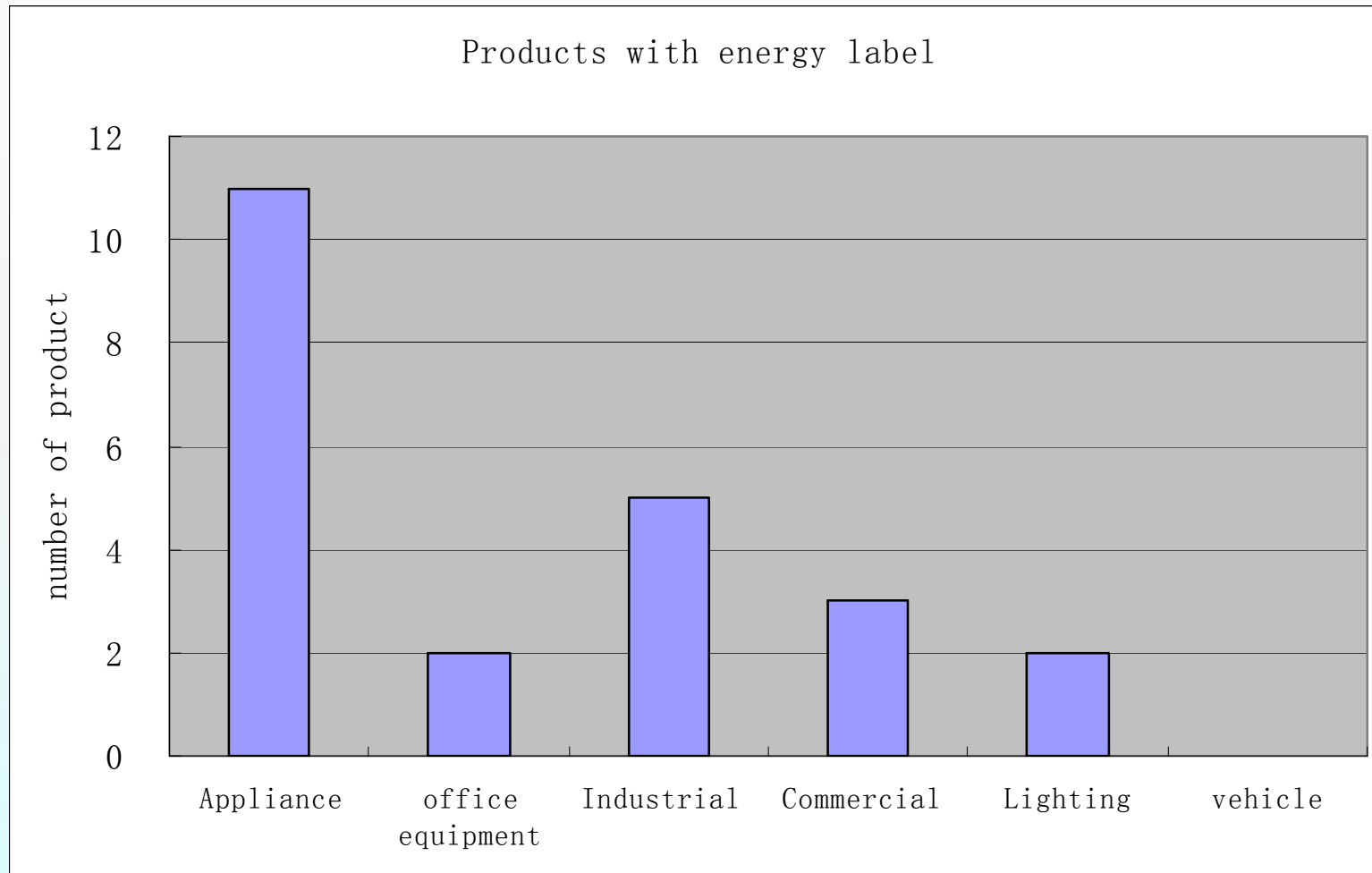


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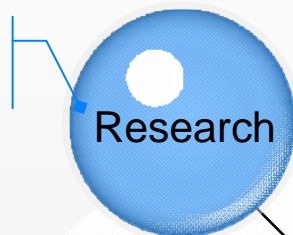


3.1 List on the Products with Energy Label Promulgated: 7 categories (2011-4)



3.2 Segment

1. Research on the system, product list and implementation guidelines.

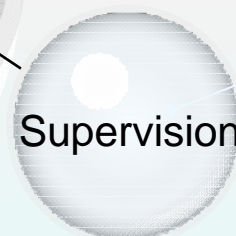


2. Management on the Filing system of Energy Label

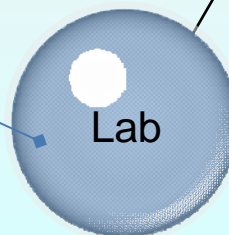


3. Publication and promotion

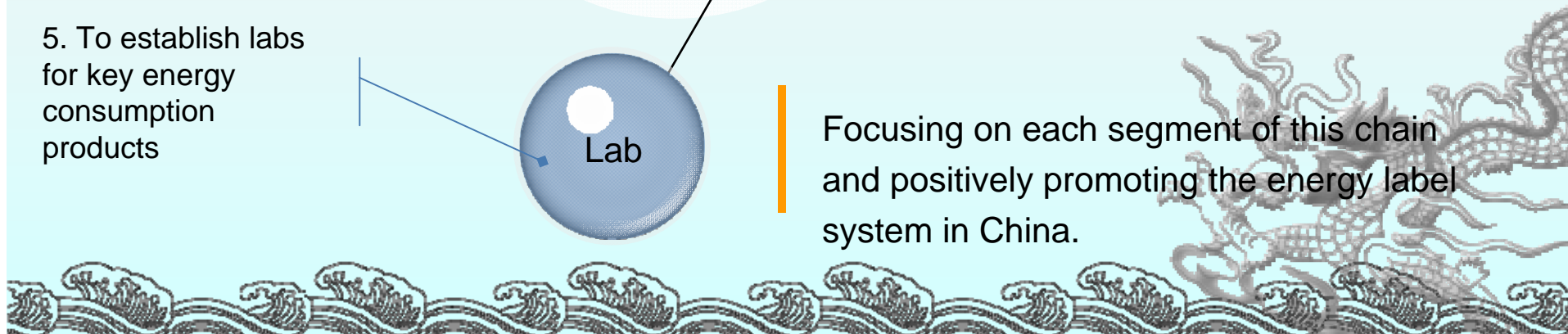
4. Supervision and Inspection on Energy Label



5. To establish labs for key energy consumption products



Focusing on each segment of this chain and positively promoting the energy label system in China.

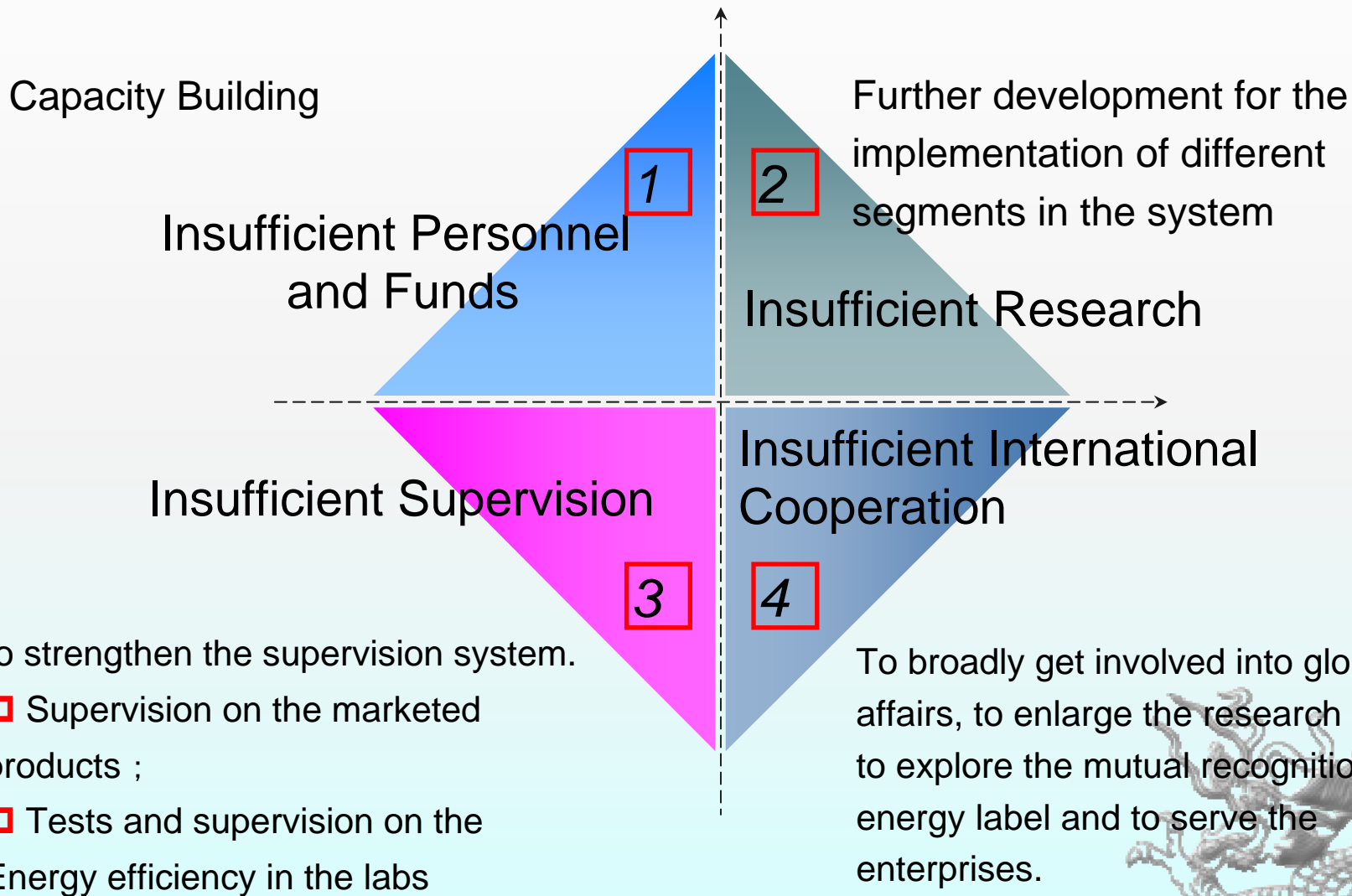


3.3 Supervision and Inspection on the Energy Labels

- To accompany AQISQ and NDRC to carry out specific campaign on inspection, as well as the supervision activities related to Household Appliance in Countryside Families Project.
- To carry out inspections at local level, by local AQSIQ (under development)
- Supervision by the Society and among Enterprises themselves

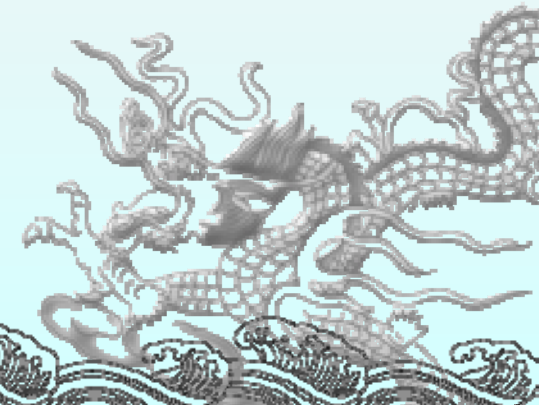


3.4 Facing Challenges



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(1) Energy Efficiency Standards

◆ Products :

- Household Appliance : Room AC, Heat Pump Hot Water System, Refrigerator, TV, etc. ;
- Equipments for Commercial Use : Cooling Display Stand; Water Chilling machine, Water source heat pump, multi unit AC system, etc.



APF Project (Sino-Japan Cooperation) :

To develop the Energy Efficiency Standard and Assessment Index for AC

➤ Cooperating organizations

➤ APF

➤ Members:

➤ Japan Side: IEEJ, JRAIA, Labs, Manufactures

➤ Sino Side: CNIS, Association, Labs, Universities, Manufactures

	Product	Standard	Index	Next step
Almost Finished	Frequency Conversion AC	GB21455-2008	<i>APF</i>	
Planning	Heat Pump Water Heating system	Under development	<i>COP</i>	
	Unit AC	GB19576-2004	<i>EER</i>	<i>APF</i>
	Water Chilling machine	GB19577-2004	<i>COP</i>	<i>IPLV</i>
	Household Refrigerator	GB12021.3-2008	<i>Energy Consumed every 24 hours</i>	<i>Considering to add operating mode and door-opening and closing</i>

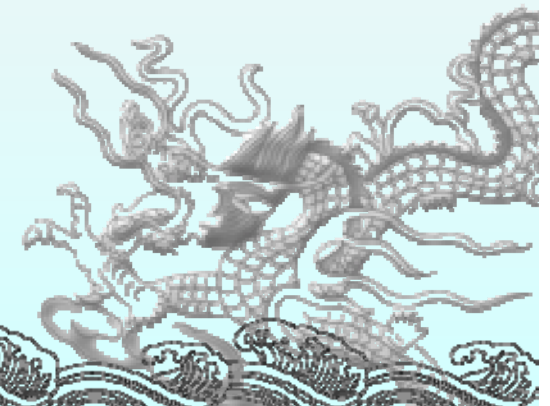
(2) The Usual Practice of Consumers and the Potential S&L in the Family

◆ Directions

- ◆ **The consumers' demand and trend for S&L**
- ◆ **The potential S&L in the family and its methods**
- ◆ **Paying attention to the S&L factors during the product operation (Usual practice, functional design, etc)**
- ◆ **Consumer education**

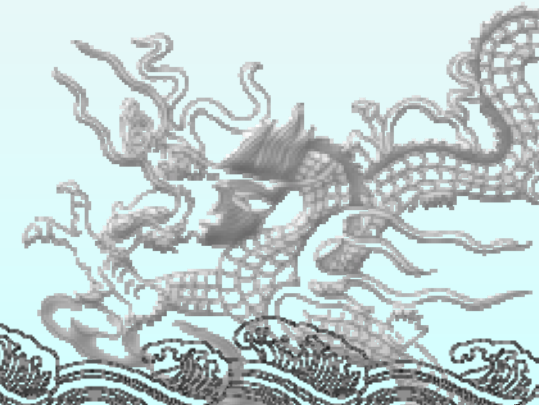
◆ APF Project :

- ◆ **Investigation on the Electricity Consumption in the Family**
- ◆ **Metering project**
- ◆ **small-scale metering**



(3) Market Evaluation and Monitoring System

- ◆ **Evaluation system and the traceability: White Paper on the Energy Efficiency (annual book)**
- ◆ **Market Monitoring :**
 - Sampling on the marketed energy consumption products
 - To monitor and evaluate the situation on the energy consumption units, equipments and systems.
- ◆ **Important Problems**
 - To perfect the laws and regulations
 - The capacity building for supervision and inspection
- ◆ **APF Project**
 - Round Robin Test project

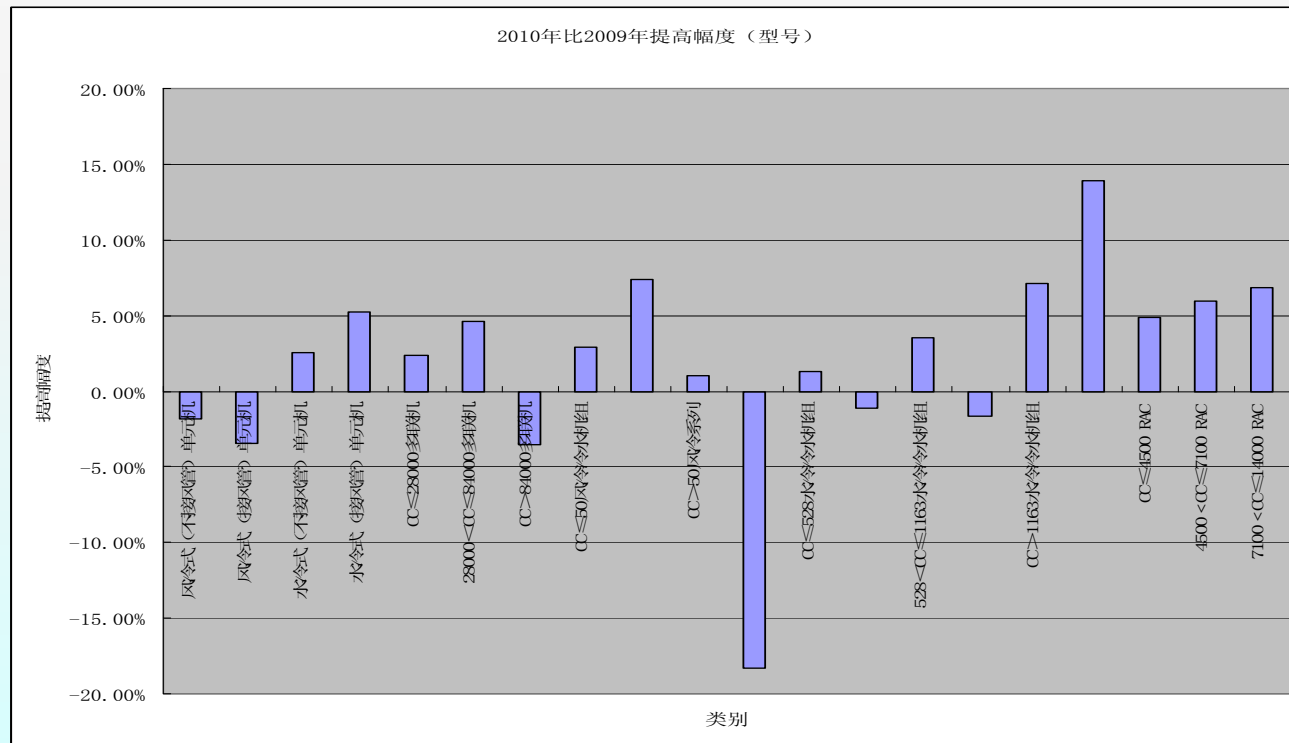


Evaluation on the Product S&L Progress

Annual evaluation, White Paper on the energy efficiency situation in China(2011)

Subjects for research: energy consumption products (household appliance, equipments for commercial use, IT products, industrial equipments)

Content for research: Progress on Energy Efficiency, Trend for S&L, Analysis on the demand



- ◆ In 2010, the energy efficiency for the majority of cooling equipments has been improved.
- ◆ But the efficiency for equipments for **Commercial Use** was not so satisfactory.

(4) Research on the Standard Development Mechanism

- the standard and labels for the leaders of energy efficiency.**
- S&L technology and information**





Thanks!

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