

Design of China Leading Energy Efficiency Program (LEP) for equipment and appliances and comparative study of international experience on super-efficient products

Xiuying Liang*, Chunyan Zhu

China National Institute of Standardization, Beijing 100191, China

liangxy@cnis.gov.cn

Abstract. With rising global emphasizes on climate change and sustainable development, how to accelerate the transformation of energy efficiency has become an important question. Designing and implementing energy-efficiency policies for super-efficient products represents an important direction to achieve breakthroughs in the field of energy conservation. On December 31, 2014, China's National Development and Reform Commission (NDRC) jointly six other ministerial agencies launched China Leading Energy Efficiency Program (LEP), which identifies top efficiency models for selected product categories. LEP sets the highest energy efficiency benchmark. Design of LEP took into consideration of how to best motivate manufacturers to accelerate technical innovation, promote high efficiency products. This paper explains core elements of LEP, such as objectives, selection criteria, implementation method and supportive policies. It also proposes recommendations to further improve LEP through international policy comparison with Japan's Top Runner Program, U.S. Energy Star Most Efficient, and SEAD Global Efficiency Medal.

1. Introduction

End-use energy consuming products include a multitude of products, equipment and devices such as home appliances, lighting devices, office and commercial equipment, industrial equipment and transport tools in the sectors of buildings, industries and transportation that provide service functions. Given their tremendous and growing quantities and significant energy consumption, these products are the focus of attention in energy conservation and emissions abatement across various countries. In order to reduce inefficient energy consumption, countries have adopted the strategy to increase energy efficiency of end-use energy consuming products.

Since early 1960s, Poland implemented compulsory minimum energy efficiency standards for a host of industrial appliances. France initiated compulsory energy efficiency label program in 1976. To date, more than 30 countries or regions around the world have adopted compulsory energy efficiency standards or labels. Energy efficiency standards are intended to phase out inefficient products, while energy efficiency labels help consumers make informed decisions of purchase. Over the past half a century, energy efficiency standards and labels have yielded favorable results.

With rising global emphasize on climate change and sustainable development, how to accelerate the transformation of energy efficiency has become an important question. Designing and implementing energy efficiency policies for super-efficient products have become an important direction to achieve breakthroughs. Japan's Top Runner Program, U.S. Energy Star Most Efficient and SEAD Global Efficiency Medal are typical examples among similar polices. Recently, China's Leading Energy Efficiency Program (LEP) has been officially implemented. For LEP, which is a new



policy aiming for the energy conservation from end-use products, it is of significance to investigate its core elements including objectives, evaluation criteria, implementation and supporting measures. This paper also outlines an international policy comparison, and proposes recommendations for improvement on the basis of referencing practical implementation experiences, which will promote the implementation of LEP.

2. China's LEP scheme

2.1. Objectives

During the 12th Five-Year Plan period (FYP, 2011-2015), the vision to establish energy efficiency leader scheme was clearly indicated in various policy documents promulgated by central Chinese government. On December 31, 2014, NDRC and six other ministerial agencies jointly promulgated Implementing Scheme for LEP (hereinafter 'Implementing Scheme'), which marks the official start of establishing the new program for energy conservation from end-use energy consuming products.

LEP products refer to those with the highest energy efficiency compared with their peers [1]. LEP regularly selects and releases the catalogue of the most efficient end-use energy consuming products available in the market to create an energy efficiency benchmark for the same categories of products. In addition, LEP provides policy support to its recognized products, encourages consumers and users to purchase LEP products, and incentivizes manufacturers to compete to meet LEP criteria, develop more efficient products, catch up with and overtake existing LEP manufacturers, and thus drive the upgrade of advanced industrial technology.

As one of the most important system for energy conservation in China, LEP aims to promote energy conservation through market-based mechanisms. The essence of LEP is to promote energy efficiency upgrade by setting examples of leading products to encourage other manufacturers to follow and foster an energy conservation mechanism. LEP will be coordinated with and supplemented by compulsory energy efficiency standards, labels, voluntary energy saving product certification, thus comprising a complete policy system which integrates government guidance, market-based mechanism and public participation to achieve all-round energy conservation through compulsory phase-out of inefficient products and promotion of efficient ones. This complete policy system intends to develop a long-term energy efficiency mechanism, support supply-side structural reform in the new normal of China's economy, and drive consumption upgrade, green transition of enterprises and product quality and efficiency improvement.

2.2. Product coverage

The Implementing Scheme identifies product scope for LEP: based on considerations of market size, energy-saving potentials, technology trends, standard availability, and testing capabilities, the following home appliance products are selected as the first batch of products covered by LEP: variable speed room air-conditioners, household refrigerators, household electric washing machines and flat panel TVs. Product scope of LEP will gradually expand to include office equipment, commercial equipment, lighting products, industrial equipment and transport tools, etc [1].

On November 2, 2015, NDRC, MIIT and AQSIQ jointly promulgated LEP Implementing Rules for Household Refrigerators, Flat Panel TVs and Variable Speed Room Air-conditioners. On May 27, 2016, after evaluation of nominated candidates, the list of LEP recognized products was released.

NDRC has initiated studies on LEP for household electric washing machines, domestic gas instantaneous water heater and gas fired heating and hot water combi-boilers, microcomputers, small and medium three-phase asynchronous motors and three-phase distribution transformers. Second-round selection of LEP products will be carried out later.

2.3. Selection criteria

LEP product selection criteria involve multiple evaluation indicators, the most critical of which is energy efficiency. In addition to energy efficiency, other evaluation indicators are divided into two

categories of product technology and manufacturer's competence respectively. Product technical indicators are established based on energy saving, environmental protection and functional performance. Manufacturer's competence indicators are determined according to R&D or application capability of energy efficiency technology, service ability of product promotion and structure of production.

LEP products are selected based on voluntary nomination from manufacturers against pre-set criteria. Product-specific criteria include: product scope and classification, energy efficiency threshold and product safety, quality, performance and other indicators. Manufacturer-specific criteria include: legal person qualification, brand ownership and promised threshold of shipment. Product scope and classification are adjusted according to mainstream product models and excludes categories or models whose conditions are not ready. Product energy efficiency threshold is determined on a case-by-case basis according to current situation of energy efficiency and indicators of MEPS. Promised threshold of shipment should be determined with a view to promoting LEP products. Manufacturers may set sales targets not lower than promised threshold and formulate and implement promotion plan. Examination period for promised threshold of shipment is effective policy year.

2.4. Organization for implementation

LEP products selection process includes manufacturer's application, recommendation by local authorities, preliminary expert review, site testing, comprehensive selection, public disclosure and release of catalogue. NDRC, MIIT and AQSIQ are responsible for organizing selection. Local authorities of energy conservation, industry and information, and quality and technical supervision should organize the application of local manufacturers, review application dossiers and submit recommendations. NDRC and competent authorities should organize experts to conduct preliminary evaluation of applicant products and select candidate products for site testing. Then, a qualified and competent third-party testing institution should be authorized to test the candidate product. Based on testing results, product technology and manufacturer's competence, products with the highest scores should be identified as candidate LEP products. Results of selection should be published on the organizer's official website and media. If no objection is raised, the catalogue of LEP products will be officially released by the organizer.

NDRC, MIIT and AQSIQ will jointly organize the supervision and inspection of LEP products, including the promotional information and quality performance of LEP products. Examination period is the effective policy year after the promulgation of catalogue. When the policy year expires, LEP manufacturers should submit annual LEP product promotion report. For any violation found during supervision and verification, punitive measures should be taken.

2.5. LEP logo

Special logos can be used for the branding and marketing campaign of LEP products. LEP manufacturers are permitted to print LEP logo on their products. The logo has a similar pattern with China Energy Saving Products & Manufacturers Leaders List. Compact and simple, it vividly shows the identity information of LEP product and uses consistent colors with existing energy efficiency label. LEP logo and existing energy efficiency label should be brought under unified management and used in conjunction to increase influence. Figure 1 shows LEP logo style.



Fig.1. Style of LEP Logo [1]

2.6. Supporting policies

LEP products should be given priority in government procurement, fixed asset investment projects, and energy retrofitting projects supported by central finance. LEP implementation should be coordinated with energy efficiency standards and policy methods such as public communication and training.

3. Review of overseas policies

3.1. Japan's Top Runner Program

Japan's Top Runner Program is the earliest energy conservation policy that sets super-efficiency objectives. In 1998, Japan revised its Energy Conservation Law, coinciding with its commitment to cut greenhouse gas emissions under the Kyoto Protocol. According to the amendment, the Japanese Ministry of Economy, Trade and Industry (METI) was authorized to set efficiency standards for energy consuming products and machinery including refrigerators, air conditioners and passenger vehicles. Meanwhile, the Top Runner Program was introduced to obligate manufacturers to increase equipment energy efficiency.

Top Runner Program sets the benchmark that is more advanced than the highest energy efficiency in place and aims to propel manufacturers to improve energy efficiency. Competitive improvement of energy efficiency helped the Japanese government to contain energy consumption in key sectors. At first, Top Runner Program covered 11 products categories. In 2002, another seven were added. Three more were further added in 2006, followed by the addition of two more in 2009 and eight more in 2013. By 2015, Top Runner Program covered a total of 31 categories of energy consuming products and equipment, including passenger vehicles, air conditioners, lighting equipment, TVs, copying machines, computers, magnetic disk units, freight vehicles, VCRs, refrigerators, freezers, space heaters, gas cooking appliances, gas water heaters, oil water heaters, electric toilet seats, vending machines, transformers, electric rice cookers, microwave ovens, DVD recorders, routers, switching units, multifunction devices, printers, electric water heaters, AC motors, self-ballasted LED lamps, insulation materials, sashes and multi-paned glazing [2].

Energy efficiency standards lie at the heart of Top Runner Program. They define the scope of products to which standards are applicable and classify products by their functions, models and capabilities, set different target efficiency values and target years for implementation, and provide specific testing methods and compliance criteria [3]. Target energy efficiency values are set based on the currently highest energy efficiency of products available in market, efficiency improvement tendencies, and future technology prospects. Establishment of target years for implementation is subject to current product efficiency, target efficiency, product R&D cycle and technology progress potentials. Target years can be set differently for different products and normally, Top Runner Program will be implemented in three to ten years after issuance. Determination of testing methods should not only reflect national conditions but keep abreast with international practice to provide convenience for product export. Achievement rate reflects the extent to which a manufacturer's

products meet energy efficiency standards. The percentage between actual product efficiency and target efficiency value is achievement rate. Achievement rate below 100% is non-compliance. According to the types of products, the achievement rate should be calculated through average sales-weighted efficiency of all products sold. Japan's product energy efficiency standards are formulated and updated following strict procedures and supported by extensive data, comprehensive survey and analysis, good information services and multi-stakeholder deliberation procedures [3, 4].

Stakeholders of Top Runner Program include the government, energy experts, manufacturers, importers, retailers and consumers. In order to ensure successful implementation, the Japanese government adopted different incentives and restraints for stakeholders. Incentives include: outstanding manufacturers are entitled to R&D support, low-interest loans for green procurement, lending guarantee for energy retrofitting, inclusion of products into government procurement catalogue, and opportunities for brand promotion. Retailers may participate in the selection of excellent store awards for energy efficient products and brand promotion. Consumers are entitled to the subsidy of 'environmental protection points'. Restraints include: Manufacturers must create demonstration projects to receive government supervision and review and non-compliant companies in target years are subject to administrative penalties [3].

In addition, the Japanese government correlated energy efficiency label system with Top Runner Program. In 2000, voluntary energy-saving labeling program was implemented to inform consumers of energy efficiency of home appliances and to promote energy-efficient products. An energy saving label typically consists of the energy conservation logo in combination with information on target year, achievement rate of energy efficiency standards, and annual energy consumption (see Figure 2). Furthermore, in order to provide easy-to-understand information to consumers, the uniform energy-saving label system for retailers was introduced in 2006, which not only integrates original energy-saving labeling system but adds multi-stage rating system with a five-star-grade and expected annual electricity bill (see Figure 3). The uniform label serves an important role in encouraging retailers to take part in energy performance demonstration, help consumers to increase their awareness and purchase energy-efficient products [2].

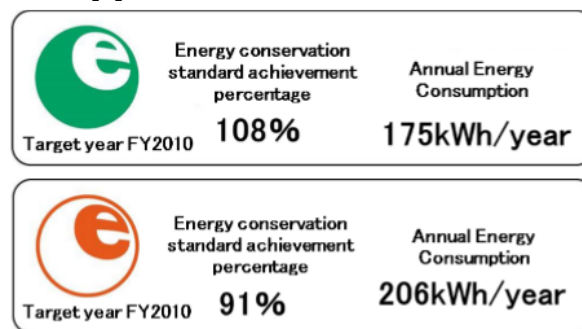


Fig.2. Japan's voluntary energy-saving label [2]



Fig.3. Japan's uniform energy-saving label [2]

3.2. U.S. Energy Star Most Efficient

Launched in October 2010, U.S. Energy Star Most Efficient is a sub-program under the U.S. EPA's Energy Star framework to identify and label the most efficient product models from among Energy Star models. The program aims to encourage the R&D and application of innovative energy efficiency technologies and expedite the market uptake of efficient products [5].

Energy Star Most Efficient is a new pilot program. The U.S. EPA establishes criteria above Energy Star specifications for specific product categories that will earn Energy Star Most Efficient designation for that year. Products that achieve super-efficiency without affecting other aspects of performance will be recognized as 'Energy Star Most Efficient' product. This distinction goes to a very small proportion of super-efficient or top-efficient product models and helps environment-conscious consumers identify the most efficient products. Early users of super-efficient products will encourage more energy-efficient products to enter the market. In comparison, Energy Star program aims to promote products that generally represent the top 25% energy efficient products in the market with a broader target consumer group. In January 2011, Energy Star Most Efficient program was officially launched and initially included seven products of refrigerators, air-source and geothermal heat pumps, clothes washers, central air conditioners, furnaces and TVs. Later, the scope was expanded year after year, covering boilers, dish washers, ductless air conditioners and heat pumps, computer monitors, ceiling fans, residential ventilating fans and residential windows.

Due to different technology development status and tendencies, the U.S. EPA analyzed various products for their energy performance data and technology level and set most efficient criteria. Energy Star Most Efficient is targeted at products with outstanding energy efficiency. As long as product availability is sufficient to cause market shift and retailers are able to implement the program, energy efficiency criteria can be set very high. Through regular review and evaluation according to standardized procedures, Energy Star Most Efficient continuously updates its criteria to keep abreast with latest market demand and technology. These updates should also ensure that manufacturers are given prior notice to prepare. After the release of Energy Star Most Efficient criteria, manufacturers may apply for verification and recognition of compliance with qualification requirements for their products. Products recognized as Energy Star Most Efficient must be existing products available in market. The most efficient criteria are established with market share as a key consideration, thus exempting applicant products from setting sales targets. Instead, manufacturers are required to provide proof that this product is available to consumers through normal sales channels.

Supported by Energy Star's testing and compliance systems, Energy Star Most Efficient provides an important assurance for the most efficient products. In the course of project implementation, attention has been given to coordination with existing programs. Creation and adjustment of criteria are coordinated with the updates of Energy Star specifications or federal mandatory efficiency standards, and logo design is consistent with Energy Star logo (see Figure 4). In order to avoid possible confusion to consumers arising from co-existence of the two programs, the U.S. EPA requires that the Most Efficient label cannot be used for the product itself but should be used in promotional materials at sales outlets or product introduction and websites [6,7].



Fig.4. U.S. Energy Star Most Efficient Label [7]

Information openness and transparency are a key aspect of Energy Star Most Efficient. Energy Star's official website publishes all available information related to designation criteria formulation and update, product catalogue, certification and testing. Sufficient disclosure has increased confidence of consumers, manufacturers and other stakeholders. Consumers are encouraged to purchase the most efficient products through participation in rebate programs and marketing activities. Since its initiation in 2011, the participation of state and local rebates tripled, reducing the burden of initial cost for consumers. In addition, consumer awareness increased greatly through federal government procurement, radio and TV, internet advertisement and retail communication.

3.3. SEAD Global Efficiency Medal

The Super-efficient Equipment and Appliance Deployment Initiative (SEAD) is a voluntary international program to encourage the manufacturing, purchase and use of energy-efficient home appliances, lighting products and equipment globally. Member countries of SEAD include Australia, Brazil, Canada, Chile, the European commission, Germany, India, Indonesia, Japan, Korea, Mexico, Russia, South Africa, Sweden, UAE, U.K., and U.S. The implementing authority is Collaborative Labeling and Appliance Standards Program (CLASP). China became an observer of SEAD in November 2011.

In order to spur the innovation, manufacturing and global market uptake of super-efficient products with powerful functions, SEAD initiated and sponsored the Global Efficiency Medal. Australia, Canada, India, Japan, Sweden, U.K. and U.S. are responsible for the selection of this award. Winners are selected from four regions including Australia, Europe, India and North America. The most energy efficient products among regional winners will be recognized as international champion. Global Efficiency Medal sets qualification criteria for competition, including product specifications and basic performance but does not use existing empirical data for determining efficiency values. Final winners and their energy efficiency level are determined according to the results of selection. In addition, winning products are subject to additional sales commitments. Applicant manufacturers should formulate product promotion plan and promise the minimum sales volume within one year after receiving the award. Minimum sales volume thresholds vary across regions. In order to encourage super-efficient product innovation, development and commercialization, SEAD Global Efficiency Medal recognizes not only super-efficient products available in market but emerging technologies and additionally provides a separate emerging technology award. Applicants for emerging technology award only need to submit a plan to mass produce award-winning products within two years after award in order to be qualified for competition [8].

A critical process in the selection of winners for SEAD Global Efficiency Medal is the testing and verification of nominated products. Both manufacturers of products already available in market and

manufacturers of emerging technologies are qualified to apply, as long as whose products are distributed in designated region(s). Applicants must provide product energy performance statements and once preliminary evaluation is passed, must provide serial numbers of 50 available product models from different locations, from which two samples will be randomly extracted for testing. If the tested energy performance results are within a 2% margin of the manufacturers' claims, the product will be recognized as a winner. In addition, a globally nominated winning product should undergo round-robin testing and inter-lab testing to ensure cross-regional compatibility and transparency of testing results. Selection results will be published through media, press conference and other forms. Later, an award ceremony will be held to recognize award winners. Winning products may use special logo (see Figure 5) for product communication, helping consumers to identify the globally most efficient products. For the protection of patents and competitiveness, only the details of award-winning brands and products will be disclosed to the public. Within one year after the announcement of award, manufacturers of award-winning products must provide evidence to show the completion of minimum sales threshold; manufacturers that fail to reach minimum sales threshold will be disqualified of future award selection.



Fig.5. SEAD Global Efficiency Medal Logo [8]

In 2012, the selection of Global Efficiency Medal was officially initiated and the first round of selection focused on flat panel TV. In the following rounds of annual selection, the target product for selection was computer display monitors in 2013, electric motors in 2014, lighting products in 2015 and flat panel TVs again in 2016. These four products are in extensive use with great energy-saving potentials, complete testing methods and comparability across regional markets, which make it easier to incentivize manufacturers to innovate. Accelerating the promotion and application of super-efficient products may unleash great potentials of energy conservation.

4. International Policy Comparison

The following table provides a summary of the features of China's LEP, Japan's Top Runner Program, U.S. Energy Star Most Efficient and SEAD Global Efficiency Medal (Table 1).

Table1. Comparison of Chinese and international energy efficiency policies for super-efficient products

Item Comparison	of	Japan's Runner Program	Top	U.S. Energy Most Efficient	Star	SEAD Energy Medal	Global Energy Efficiency	China's LEP
Time initiation	of	1999		2010		2012		2015
Objectives		Set energy efficiency targets above status quo to lead future industry development and encourage upgrade.		Designate the most efficient product models, drive more energy efficient products into the market and at a faster pace by targeting early adopters.		Showcase manufacturers' ability to provide energy efficient and top quality products, drive innovation.		Select highly efficient products available in market and promote their application, encourage competition and drive industry upgrade.
Scope products	of	31 products including air conditioners, fluorescent lamps, TVs, refrigerators, freezers, heaters, rice cookers, electric toilet seats, computers, disk units, transformers, cars, trucks, VCRs, copying machines, vending machines, microwave ovens, DVDs, routers and etc.		Washing machines, air-source and geothermal heat pumps, central air conditioners, clothes washers, refrigerators, TVs, furnaces, boilers, ductless air-conditioners and heat pumps, dish washers, computer monitors, ceiling fans, residential ventilating fans, windows and etc.		Flat panel TVs, computer display monitors, electric motors, lighting products.		Refrigerators, flat panel TVs, variable speed room air-conditioners.
Evaluation indicator		Preset energy efficiency target values and target years.		Preset energy efficiency values for designation criteria and requirement for manufacturers to provide proof of product sales channel.		Establish nomination qualification criteria, and requires manufacturers to formulate promotion plan and promised minimum sales volumes.		Establish selection criteria with integrated evaluation indicators, including energy efficiency thresholds for applicant products and promised shipment thresholds for applicant manufacturers.
Method of implementation		Compulsory; examine the achievement rate of manufacturers by target year.		Voluntary application, verification and recognition.		Voluntary application for nomination, testing and verification, announcement.		Voluntary application, review and approval, testing, public disclosure, announcement.
Supervision and examination		Conduct questionnaire survey.		Conduct sample testing, certification and recognition.				Information verification, law-based supervision

Evaluation and renewal	Annual regular evaluation.	Annual regular evaluation and review.	Regular evaluation and review.	and inspection.
Basis of standards	Average energy efficiency standard as basis.	Reference Star and MEPS.	Energy specifications	Reflect the principle of international harmonization.
Is there any exclusive logo?	Yes, correlated with energy efficiency label.	Yes, correlated with Energy Star label but used with differentiation.	Yes.	Reference MEPS, leading energy values adopted into MEPS when appropriate.
Supporting policies	Credit support, government procurement, brand communication, excellent store awards, consumer subsidy, etc.	Federal government procurement, state and local rebate programs, targeted marketing, promotion, etc.	Award ceremony and promotion.	Government procurement, priority procurement, communication and training.

Comparison results show that these different programs are all compatible with local cultural, institutional and policy conditions. Japan's Top Runner Program is widely acclaimed as a successful policy and is supported by Japan's sophisticated market economy, high manufacturing industry concentration and complete corporate credibility system. The most distinguishing features of this program are flexibility and freedom for independent corporate decision-making on the basis of average energy efficiency standard system. Energy Star Most Efficient features a complete certification and testing system supported by Energy Star. In addition, transparent information services and effective rebate programs provide an important guarantee for the program implementation. Global Efficiency Medal is a cross-regional program that encourages the participation of manufacturers, promotes competition and inspires innovation. It is characterized by simple procedures of implementation and powerful design of product testing and verification procedure. China's LEP gives sufficient consideration to China's national conditions and current-stage development characteristics. Against the backdrop of low manufacturing industry concentration, incomplete corporate and social responsibility systems and inadequate testing capabilities, China's LEP adopts rigorous implementing procedures for comprehensive evaluation and not only gives enterprises autonomy but invites expert consultation and professional testing.

As a core policy element, energy efficiency indicators are an important basis for assessing product qualification and identifying super-efficient products with sufficient potential sales volume to bring about market transformation. Energy efficiency values can be set through following methods: (1) preset energy efficiency values: for instance, under Japanese and U.S. programs, criteria are proposed based on market survey and technical and economic analysis, and target products that meet criteria are considered as qualifying products; (2) selection method: for instance, SEAD and China's LEP establish selection criteria but no energy efficiency values, they determine which products can be recognized based on a selection process. The first method requires tremendous data, a long cycle and high cost; the latter offers flexibility but must ensure that selection rules are fair and selection criteria are reasonable and free from excessive subjectivity. It needs to be noted that China's LEP requires minimum shipment threshold and annual information verification to review manufacturers' achievement, which enhance the guidance of LEP in the transformation of market energy efficiency.

Despite different policy objectives, the same principle is followed, i.e. energy efficiency benchmark should be established to lead market shift towards higher energy efficiency level and be

used in conjunction with other policy tools including standards and labels to promote effective and sustained results of market transformation.

5. Recommendations for LEP improvement

The creation of China's LEP has referenced the practices and experiences of overseas policies and reflects China's national conditions and characteristics. As a new policy, it still has potentials for adjustment and improvement. Referencing overseas policies and experiences, we offer the following recommendations:

- Expand product scope in a step-by-step manner, give priority to the inclusion of extensively used energy-intensive products with great energy efficiency potentials; implementation should be expedited for key products with appropriate conditions to maximize the effects of energy conservation;
- Design of evaluation indicators should be more science-based and reasonable and selection procedures and methods should be standardized on a case-by-case basis according to product functions and features;
- Enhance supervision of implementation, develop product testing capabilities, improve testing certification, optimize sampling plan, increase penalty on violations, and develop core influence of LEP brand;
- Enhance evaluation mechanisms, carry out extensive survey, collect and accumulate basic data, support system update and adjustment, maintain flexibility and give priority to necessity, and increase effectiveness of system implementation;
- Enhance communication and exchange, increase stakeholder engagement, attach importance to collection, confirmation and processing of feedbacks, increase information transparency, and timely release information, selection results and supervision and inspection results;
- Design and implement supporting policies, further develop various forms of incentives, enhance communication and training, and promote market uptake of LEP products.

6. Concluding Remarks

China's LEP marks an important effort to implement the concept of green development and the principles of the 13th Five-Year Plan Outline. It is a key component of supply-side structural reform, consumption upgrade, green transition and product efficiency. Upon its launch, LEP has drawn attention from various sectors and the selection of the first three categories of products has been completed. It is necessary to make analysis and summary based on the status of implementation, improve system development and ensure that LEP represent the benchmark of energy efficiency that drives overall improvement.

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