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Lot 4 – Market Access and Trade & Investment Agreement Implementation

Key Findings, Key Outstanding Questions and Recommendations for Future Work on China Green Design Products, and Green Products and China Energy Label Products

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This report has been produced with the assistance of the European Commission. However, the views expressed herein do not necessarily reflect the official opinion of the European Commission.

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ABOUT THIS PAPER

In March 2019, the European External Action Service, as technically supervised by the European Commission (primarily DG GROW) in Brussels launched the project-contract “EC-China eco-design and standards cooperation project” that was completed in December 2020.

During this time, good cooperation was achieved between the appointed External Experts (Prof. Martin Charter, Dr Frank O’Connor, Prof. Jin Min and Zhang Enrui) and China’s Ministry of Industry and Information Technology, the EEAS Representation in Beijing, CEN-CENELEC (particularly via its links with DG GROW and CESIP, the Europe-China Standardization Information Platform), as well as industry stakeholders in Europe and in China, and EU environmental and consumer NGOs.

A series of workshops took place in Kunming, Brussels and online between the External Experts, representative of DG Grow and Chinese counterparts. These events had the objective of exchanging best practice and information on Chinese and EU standards on Green Products and Green Design Products as well as on Energy Label Product.

The present document summarises the main findings, key outstanding questions and recommendations for future work, as emerged from the “Report on Green China Green Design Products and Green Products” and “China Energy Label Product” prepared in the framework of the above-mentioned project.

It should be noted that there is an important drawback of the findings of the two reports, as summarised in the following sections. This important drawback consists of a lack of thorough and consistent knowledge as to how the components explained in the two product policy-related reports are consulted upon and determined. The transparency of practices employed, and the “audit trail” backing up the decision-making for actual product groups could not be verified. The authors have also not been able to obtain clarity or detailed information as to how these mechanisms work in practice between the various actors, nor how the levels of ambition of measures are set. Likewise, consultation mechanisms within China remain largely unknown.

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China Green Design Products and Green Products

List of Abbreviations

Acronyms	Meaning
AQSIQ	The General Administration of Supervision, Inspection and Quarantine (Merge into the newly established SAMR in 2018)
CNCA	Certification and Accreditation Administration of China (Deputy Ministry Level Governmental Body Affiliated to SAMR)
CNIS	China National Institute of Standardization (Research Body Affiliated to SAMR)
COAMA	China Office Appliance Manufacturing Association
CRIHEA	China Research Institute for Household Electric Appliance
EC	European Commission
EDP	Eco-design Product
GDP	Green Design Product
GM	Green Manufacturing
GP	Green Product
LCA	Life Cycle Assessment
MEE	The Ministry of Ecology and Environment (name changed from The Ministry of Environmental Protection in 2018)
MEP	The Ministry of Environmental Protection (the name changed to 'MEE' in 2018)
MIIT	The Ministry of Industry and Information Technology
MOA	The Ministry of Agriculture and Rural affairs
MOHURD	The Ministry of Housing and Urban-Rural Development
MWR	The Ministry of Water Resources
NDRC	The National Development and Reform Commission
NSGGPA	The National Standardization Group for Green Product Assessment (standardization group set up by SAC)
NIGPPA	National Industrial Green Product Promotion Alliance
SAC	The Standardization Administration of China (Deputy Ministry level governmental Body affiliated to SAMR)
SAMR	The State Administration for Market Regulation
SC	The State Council

1. Remarks and recommendations

- In China, Green Product (GP), Green Design Product (GDP) and eco-labelling policies are evolving in parallel. It is anticipated that a unified system will take a significant time to become fully implemented in China due to political issues, the existence of other approaches to green products e.g. eco-labelling and GDP, the huge Chinese market with a numerous products and the need for stakeholder education.
- There will need to be a political resolution over the relative understanding and knowledge regarding *green products* in China. MIIT has published 129 Green Design products to date with a knowledge base going back to 2009-2013. Whereas SAMR, who have overall responsibility to take forward the “one” green product system”, have published 23 standards to date with a knowledge base going back to 2017.
- From this research, it appears that GDPs will be brought under GP over time within the overall envisaged Chinese system. However, it is unclear how LCA-backed GDP will be brought under the “lighter-touch” GP system.
- Also within the overall Chinese system, it appears likely that eco-labelled products will be integrated in Green Product standards over time. However, it is unclear to what extent there is a timetable for existing eco-labelling schemes to be phased out, and what, if any date has been specified for the completion of the process.
- Within the responsible entities of the Chinese administration, SAMR is leading the development of a unified GP standards system. However, MIIT is responsible for the implementation of the Green Manufacturing (GM) plan, in which the development of GP is one of the five pillars. **Research has indicated that MIIT have defined Green Products (GP) as ‘GDP’ within the context of the Green Manufacturing system.**
- However, GDP and Energy Label Products also appear to be within the scope of the one green product unification process. It is as yet unclear how the Chinese government will manage the political and practical complexity of integrating existing approaches into “one” green product system.
- China perhaps may be having some challenges in relation to the development of LCA-backed GDP systems. Several LCA tools appear to be in use, that have been developed by Chinese companies and international consultancies and software developers. However, there appears to be no national database of LCA methodologies and lifecycle data in China. At the national level and at industrial level, LCA tool development appears to lack good life cycle data in China, which may be hindering the development of GDP. Some LCA tools also appear to have been developed based on individual producers’ own production processes; however, the data generated is likely to remain confidential to the individual producer. This research was unable to determine whether there are any standards related to the LCA tool(s) used and/or the LCA reporting used to support applications for GDPs. It might be useful for Chinese organisations to learn from the experiences of how the EU and its Member States have developed life cycle databases for enterprises, as a precursor for completing LCAs of products. There is a need to strengthen Chinese domestic policy and practice exchanges in this area; this would support the improvement of GDP standardization in China.
- It has been difficult to find clear and detailed research or information on the practicalities of Green Product standards within China. The English translation of *General Principles for the GP Assessment (GB/T 33761-2017)* is quite general, brief and vague, with solely overview indications, which does not help overall or detailed understanding.
- There is a lack of information on how market surveillance of GDP and GP operates at a provincial government level in China, and how provincial government entities

communicate to the central government organisations on these issues. Studying how the EU completes market surveillance through standardization and other related policies, together with mechanisms for reporting and acting upon non-compliance, may be useful for China's development.

- In China, it is understood that public awareness and consumer's willingness to buy GDPs and GPs is weak, from feedback obtained during this research. Policies to improve public environmental awareness, and also to encourage/ inform consumers' preferences, are needed with regard to the buying of GDPs and GPs. In turn, any relative increase in consumers' purchasing of GPs and GDPs will be an important incentive to increase the motivation of producers to design and manufacture GDPs and GPs. In the future, it seems that there is a need for better public environmental education on the concepts behind, and directly related to GDPs and GPs. Such educational materials should be incorporated into market promotion and environmental education activities, such as National Energy Conservation Publicity Week, Science Popularization Week, National Low Carbon Day and National Environment Day, etc.
- As referred to above, there is a need to consider the role of green public and private procurement in China as a mechanism to drive the demand-side for GDPs and GPs. For example, Japan developed a strategy to drive the demand side of green product development through passing the Green Purchasing Law in 2001, followed by the establishment of the Green Purchasing Network of public and private sectors organisations.
- In addition, consideration of other demand-side policy incentives could be developed in parallel, to encourage consumers, companies and government agencies to purchase GDPs and GPs.
- More broadly, China perhaps could benefit from an improved understanding of more holistic approaches to demand and supply-side approaches to product policy aimed at *greening* markets. Lessons could be learnt from the EU's Integrated Product Policy (IPP) and current emerging policy developments related to the EU's Sustainable Products Framework, linked to the Green Deal and Circular Economy Action Plan 2.0.
- Finally, there should be more reports by companies which operate within China, or which import into China, focused on good practice related to the development of GDPs and GPs, which should be then publicised in news and online media. This would help strengthen the public and organisational awareness, providing a good basis for a shift to more sustainable consumption. The EU's experience in relation to building public awareness might be useful to learn from.
- Section 2 of this summary includes a series of remaining questions that have emerged from the background research for this report.

2. Research questions related to Green Design Products and Green Products

Green Design Products (GDP)

- Who reviews the LCA reports that are submitted with GDP applications?
- How is the quality of the LCA report verified?
- Can a weak LCA fail a GDP application?
- How many applications have there been for GDPs? And how many LCA reports have been submitted?
- Are there Chinese standards on completing an LCA? Or is there a requirement to follow ISO standards related to LCA?

- Are there standards for LCA software placed on the market?
- What is included in the Product Self Compliance report (related to each GDP standard)? And how does this relate to the LCA report?
- Is the International Reference Life Cycle Data System (ILCD) standard LCA method or the EU's Product Environmental Footprint (PEF) method being used amongst policy-makers?
- Are there plans to expand the use of PEFs in China?
 - How is LCA competence/knowledge being developed in China?
 - Policy-makers
 - Business
 - Universities/research institutions
- Are GDP product assessment standards voluntary?
- What category of standards do GDP standards fall under? Social/Group? Or Association?
- How is market surveillance completed on GDPs at provincial level by MIIT? Is sampling used? Which staff under the market surveillance?
- Is GDP non-compliance data shared between provincial government offices and between central government ministries?
- How many products have been assessed against GDP standards?
- What are the plans for the publication of GDP standards over the next 5 years?
- How will GDPs being integrating into the “one unified green product system” in the future?

Green Products (GP)

- What is the status on the “unified one product standard, certification & labelling system”?
- Does “one product standard, certification & labelling” mean that there will be a Chinese “Single Market” for Green Products, i.e., one set of rules for ALL Chinese provinces, with common market surveillance rules?
- Is the ‘Top 5%’ benchmark a general guideline? Is it based on a ‘top runner’ system? How is the system/ data kept dynamic? Who monitors this? Who verifies this?
- What are the specific definitions of the specific indicators? are they quantified? If so, how are they calculated?
- How is market surveillance for GPs organised? Is sampling used?
- How has the responsibility to organise market surveillance of GPs within provincial governments?
- What is the role of 3rd party laboratories in the market surveillance of GPs?
- Is GP non-compliance data shared between provincial government offices and between central government ministries?
- Are GP product assessment standards voluntary?
- What category of standards do GP standards fall under? Social/Group? Or Association?
- How is the relationship between GPs and GDPs going to be managed over the next 5 years?
- What are the plans for the publication of GP standards over next 5 years?

China Energy Label Product

List of Abbreviations

Acronyms	Meaning
AELE	Alliance for Energy Label Enterprises
AELTB	Alliance for Energy Label Testing Bodies
AMR	Administration for Market Regulation
AQSIQ	The General Administration of Supervision, Inspection and Quarantine (Merge into the newly established SAMR in 2018)
CEL	China Energy Label
CELP	China Energy Label Product
CNCA	Certification and Accreditation Administration of China (Deputy Ministry Level Governmental Body Affiliated to SAMR)
CNIS	China National Institute of Standardization (Research Body Affiliated to SAMR)
DRC	Development and Reform Commission
EEL	Energy Efficiency Labels
EES	Energy Efficiency Standard
ELEC	Energy Label Expert Commission
ELMC	Energy Label Management Center
ELP	Energy Label Product
ErP	Energy-related Product (related to EU legislation – the revised Ecodesign of Energy-related Products Directive 2009/125/EC, OJ L 285/10)
EuP	Energy-using Product (related to EU legislation – the original Ecodesign of Energy-using Products Directive 2005/32/EC, OJ L 191/29)
GP	Green Product
MAEEL	The Measures for Administration on Energy Efficiency Labels
NDRC	The National Development and Reform Commission
QR	Quick Response
SAC	Standardization Administration of China (Deputy Ministry Level Governmental Body Affiliated to SAMR)
SASC	The State Accreditation and Supervision Commission
SAMR	The State Administration for Market Regulation
SAQSI	The State Administration of Quality Supervision, Inspection and Quarantine

1. Overview

This report addresses the energy labelling system in the People's Republic of China, as well as the related standards and regulations. The report provides information on the China Energy Label (CEL) regulation, and regarding China's Energy Efficiency Standard (EES), the management of the CEL and the China Energy Label Product (CELP), experience, and areas for improvement.

The report covers **4 key areas**:

- 1. Policy structure:** the background to China's work on CEL is discussed, the concepts of CEL and CELP are explained, and information is provided on policy structures, legal bases, management, and key stakeholders involved in the policy making process.
- 2. Implementation process:** The overall structure of how the CEL regulation and CELP management are implemented is given, as well as the key partners involved in CELP management and their respective responsibilities. Also, the report presents the current position on the standardization process, including a list of the existing CELP standards and the key stakeholders involved.
- 3. Energy Efficiency Standard (EES):** the EES concept is explained, followed by the requirements for its main content, history and development; finally, the present status, characteristics and functions of EES are highlighted.
- 4. China Energy Label Product (CELP):** the CEL policy system is explained, including the CEL regulation, the CELP scope and catalogue, the CEL enforcement mechanism, the areas for CEL improvement in comparison with Energy Star and EuP/ErP implementation and broader experience from the CEL implementation in China.

An outline of the overall policy framework is given, for readers to understand the evolving policy relevant to the CEL and CELP systems, as well as highlighting the relationship among all stakeholders.

A list of names and functions of the related government departments and the key organisations is included in the List of Abbreviation. Table 2 provides a full list of CELP standards (as of the end of 2020).

2. Analysis

2.1 CEL, Energy Star related to the implementation of the EuP/ErP Directives

This legal basis of China's CEL system comprises the following: the Law of Energy Conservation¹, together with the Law of Product Quality², the Regulation Certification and Accreditation³ and the Regulation on Import and Export Commodity Inspection⁴.

It is claimed that the Chinese governmental departments and the related authorised bodies have attached great importance to all aspects of the implementation of the CEL system, including early and continuous research, implementation and promotion, and related supervision and evaluation. Governmental feedback obtained during this research reports that the system of the EES and CELP Catalogue is functioning well. The overall system comprises the research, preparation and publication of the EES and CELP Catalogue. Other (unsubstantiated) claims by Chinese authorities refer to improvements in the "New MAELL" systems of CEL and CELP data file/input and documentation recording, verification and announcement by ELMC, the record-keeping by the testing laboratories, information publicity and consistent compliance and knowledge training, and the market supervision and inspection has been established and is well operating in China.

At international level, it should be noted that the CEL system, U.S. Energy Star and European Union (EU) EuP/ErP Directives are all energy-saving policy measures based on current and anticipated technology levels to improve the energy efficiency of energy-using and energy-related products. In addition, all of the above systems implement a type of labelling system to show that the relevant products meet the corresponding standards.

EEL systems are conducive to improving consumers' understanding and can effectively influence consumers' purchase decisions and regulate market behaviour patterns. There are indications that CELPs in China are - importantly - also included in governmental purchasing, different to the EU's voluntary Green Public Procurement standards and associated reports.

The Energy Star system (presently dormant between the EU and the USA [status: Sept 2020]) adopts assurance labelling for those energy-using products which are included within its scope. China's CEL implements a step-by-step strategy for energy-using products via a "batch" approach; this "batch" concept may be partly analogous to the periodically-issued Ecodesign and Energy Labelling Working Plan, as practised in the EU. Chinese sources report that the CEL and associated product "batches" are developed according to specific national (Chinese) conditions and demands of green economic development.

In addition, it should be noted that there are differences among the three systems (EU Energy Label/ Ecodesign, Chinese CEL and the US Energy Star) with regard to the energy efficiency targets for specific products. Moreover, due to the differences of geography, history, market and technological development among the three systems, there are some differences in the scope, product classification and test method of the three systems. With the establishment and enforcement of the new MAEEL, China's EES and CEL will aim to improve on an ongoing basis, aiming to continuously retain agility, as has been the experience in the EU and the US. This also includes further expanding the coverage of the EES and the scope of CELPs to add more energy-using and energy-related products into the CELP Catalogue as result of EES R&D.

As a result of gradually increasing the energy efficiency benchmarks of products in China in the corresponding EES, new EES and updated CEL will be progressively issued. A further claimed step in China – namely, to enhance the database for more information disclosure - should also

¹ June 1986

² September 1993

³ September 2003

⁴ June 1984

be helpful in improving the CEL management systems. The CEL-related information platform, with claimed more complete CELP information disclosure, should opening up possibilities for greater public supervision/ transparency/ information provision.

However, compared to the EU and the USA, the foundations and transparency of the Chinese EEL and EES systems remain unclear, since the means by which the CEL levels are negotiated, and how aspects are taken into account, such as purchase price and energy and resource use over the relevant product's lifetime, remain obscure. Whether any included "Circular Economy" aspects (e.g., modular design, repair requirements, and fuller information and disassembly manuals, presence and location of hazardous and/ or valuable substances/ materials for recovery at End-of-Life, etc) are considered remains opaque and unreported, to date.

2.2 Experience from implementation of the CEL

The implementation of CEL has many claimed positive contributions to China's energy-saving targets since the 11th FYP. However, it must be noted that there has been no transparent provision of audited and verified information regarding these claims. China also claims that the CEL system has helped in the upgrading of energy-saving and conservation technologies, thus further contributing to China's industrial transformation process.

In addition, China claims that the following experiences have been learnt from the implementation process, to date:

- (1) The CEL-related management system and institutions are still not perfect. The most appropriate restraint mechanism⁵ to ensure accurate provision of information from enterprises to the ELMC, and to the general public, under the present self-declaration implementation model still needs further research and exploration through the demonstration and pilot projects, in order to avoid so-called "rent behaviour"⁶.
- (2) The links between China's governmental departments and the other stakeholders involved are not smoothly connected. More effective implementation, supervision and evaluation measures for CEL still need to put into practice.
- (3) The new MAEEL provides the opportunity for a so-called "market mechanism" to be introduced in the CEL management by the requirement "The NDRC, GAQSI and SASC (have been merged into the SAMR) shall establish the credit records and those who violate the new MAEEL will be recorded and incorporated into the nationally shared credit information platform"⁷. However, at present, the market is not mature enough and the market credit system is not yet in place which will be a long-term task.
- (4) The self-declaration implementation model adopted in China is based on the EU approach. But, in fact, Chinese manufacturers - especially the SMEs – may not have the resources, self-discipline or self-organisation that is required by MAEEL. ELMC also undertakes the role of training and capacity building, which has been proven to be very helpful, not only in relation to the improvement on the manufacturers' social responsibility, but also has proved helpful in increasing consumers' energy efficiency awareness.
- (5) Feedback from all stakeholders is very important for sound CEL management, i.e., including product identification, inspection and testing, supervision and evaluation. Lack of

⁵ The term "Restraint mechanism" refers to a functional system for enterprises to accept the guidance of macro-economic policies, and the related claimed improvement to social and economic benefits. It is a mechanism for enterprises to adjust their behaviors to adapt to various conditions.

⁶ Economic rent is a part of factor income (or price) that is not necessary for the current use of the factor itself and it exceeds what it would have received elsewhere. In short, economic rent equals the difference between factor income and opportunity cost.

⁷ The national credit information sharing platform has collected nearly 500 million pieces of public credit information, including basic information, administrative penalty information, administrative license information and red blacklist information, providing important support for the construction of China's credit system.

information sharing reduces the effectiveness of the MAEEL. At present, the ELMC information platform aimed at information disclosure and sharing, is not functioning effectively because the technology is limited. The ELMC resource is reported as not yet being “fully developed”; there is lack of an efficient information feedback mechanism, and therefore it is still difficult to complete market surveillance. The information asymmetry of relevant parties leads to a lack of effective market inspection and supervision.

- (6) The corresponding incentive and restraint policies have been proven very helpful to the effective enforcement of MAEEL. These comprise elements such as: schemes to “replace old household appliances with new ones” via offering subsidies; mechanisms to facilitate “consumers’ complaints collection and feedback”; “penalties” such as removing non-compliant CELP products from the market, as well as levying of fines; and finally putting non-complaint CELP on an illegal list, etc.. More incentives and restraints may still be required to ensure a fully fair and open market for CELs.
- (7) Looking at the scope of CELP - we can see that it is limited to 5 product groups. There has not yet been a complete EES standard system established for all products. China should gradually develop the EES system framework to cover all products.

2.3 Room for CEL improvement in China

- (1) According to the 13th Five-Year Plan of Economic and Social Development, the energy conservation standard system should be further improved for green economy and green development. On 4th April 2015, the Opinion of the General Office of the State Council on Strengthening Standardization of Energy Conservation was issued, which aimed to further improve the standard system, and the implementation and inspection system of energy conservation. The EES - together with the energy conservation standards - will cover the key industrial sectors and energy-using equipment, and also the implementation and inspection system of the energy conservation will work together with the CEL implementation and inspection system shall be integrated into an innovative mechanism.

On 17th December 2015, the Development Plan for National Standardization System (2016-2020) was issued by the General Office of the SC. In this plan, the following three key points related to the CEL improvements were put forward: a) establishment of a monitoring and evaluation system for standards implementation and enhanced supervision by society, b) deepen international collaboration, and c) improve energy conservation standards and speed up the development of EESs.⁸ Importantly in the context of this research, China will need to explore how to integrate the “Top Runner” indicators into the EES mandatory standard system, as well as how to set an advanced EES to lead the transfer of green production and consumption.

- (2) Improving and enhancing database of the EES and CELPs: the EU’s self-declaration is implemented on the foundation of information management and disclosure. From the EU’s experience, the construction of the network database and platform should be further developed, via collecting data on the energy efficiency index of products from professional testing laboratories and enterprises. The ELMC should continue to record the data in the EES and CELP database and continually update this data resource, in order for consumers and other stakeholders to gain access to accurate information and knowledge on EES and CELP by scanning the QR Code. This would then enable businesses, stakeholders and

⁸ For instance, some acceleration of EES is planned to happen with the “Decision of the State Council on Strengthening Energy Conservation Work” requires the formulation and improvement of energy efficiency standards for industrial energy-consuming equipment, motor vehicles, buildings, household appliances, and lighting products, and the expansion of the application of energy efficiency labels on household appliances, motors, automobiles and buildings. The “Medium and Long-term Special Plan for Energy Conservation” clearly states that the focus of commercial and civil energy conservation is to improve the energy efficiency of energy-consuming equipment, implement energy efficiency labels, and formulate and implement mandatory regulations for major industrial energy-consuming equipment, household appliances, office equipment, lighting appliances, and motor vehicles. Advanced energy efficiency standards.

consumers to evaluate the energy performance of the corresponding products and to give feedback on their opinions to the ELMC and the governmental departments, including to the local DRCs and AMRs, as well as to manufacturers/ enterprises. The transparency of law enforcement and the convenience of information access need to be effectively enhanced by the market supervision on the CELPs and the trust and recognition of this by consumers.

- (3) Capacity building on the effective implementation of the CEL system: As mentioned above, at present, the CEL system is still facing problems, such as low energy efficiency allowable values, the revision cycles for the EES, and the issue that the scope of CELPs does not yet cover all the energy-consuming products with a high energy-saving potential. Also, the management system lacks an effective market-based method and the enterprises' participation in the EES R&D is limited. According to the current situation of energy-saving technology development and the demand for a green economy and green development in China, there needs to be capacity building to improve the CEL system, and to update the corresponding EES, to ensure that the CEL system maintains a strong adaptability and remains forward-looking. At the same time, there is a need to:
 - a) strengthen international exchanges and cooperation in relation to EES and EEL to permit mutually learning regarding advanced concepts and technological progress.
 - b) develop a mutual recognition of EEL systems with other countries,
 - c) build capacity of enterprises to enable them to introduce advanced technology and new materials, adjust product designs, and to ensure that product energy efficiency indicators meet the higher requirements of progressive and ambitious energy efficiency aims, as consumers' knowledge increases to enable greener consumption.
- (4) Establishment of a complete and transparent market surveillance mechanism: Based on the existing mechanisms of complaints, notification, correction within the limited time and punishment, stricter penalties such as prohibition of sales, revocation of production licenses, suspension of production and rectification or revocation of licenses, which will result in the increasing cost of violations, and should be added in the future revised version of MAEEL. The new MAEEL has added the requirements that the CELPs sold in the online stores must comply with MAEEL, but the surveillance of the e-store sales of CELPs should also be further explored. In addition, feedback from stakeholders about the CELP energy-saving performance is limited but is very important for the ELMC to conduct the information verification of CELPs. The mutual supervision/ cooperation among the manufacturers should be taken into consideration for the revision of MAEEL, or the relevant detailed management rules. Moreover, the incentive and promotion mechanism of CELPs, together with the renewal mechanism of linking up energy efficiency "Top Runner" indicators with the compulsory national standards, should also be established. There were 150 products listed in the energy efficiency "Top Runner" catalogue in 2016, which fall into the three types of products e.g. household refrigerators, flat panel TVs and air conditioners made by the 18 participating enterprises (to date), including Haier, Skyworth and Green Electrical Appliances.
- (5) Establishment of a basic energy-saving management standards system : in order to provide technical support for energy-saving management systems, and to provide the technical support for the implementation of CEL, there is a need for a greater focus on online energy monitoring, energy performance evaluation, energy contract management, energy conservation and energy-saving technology evaluation, energy management and audit, energy-saving supervision, etc.
- (6) EPR (Extended Producers Responsibility) and the implementation of CEL - from the enterprise side, EPR can link with CEL, via ecodesign and the enforcement of EPR in China. EPR pilot enterprises initiatives have been launched by MIIT, and hence the cooperation between MIIT and government departments involved with CEL will be crucial to the

successful combination of the EPR pilot and CEL system. Enterprises will need to be encouraged to invest in R&D related to higher energy efficiency products, using product-related environmental evaluation tools such as Life Cycle Assessment (LCA). According to the requirements of CEL, the gap between product and standard requirements need to be investigated and closed, possibly requiring the introduction of advanced technologies, new materials and product design schemes into the consideration of EES R&D/ standard-setting and ambition levels. In addition, enterprises should actively participate in the formulation of the EPR and CEL-related national standards, because these standards are constantly improving in order to adjust in a timely manner the objectives of technological innovation, and to take advantage of market opportunities. Developing a culture of self-regulation, including establishing a laboratory with high-level testing ability and quality management system, is an important part of each relevant enterprise's ecodesign, energy efficiency labelling and recycling systems.

- (7) Finally, and fundamentally, due to the government's stated mission to develop a unified Green Product (GP) system (within the main responsibility of the General Office of the State Council (SC), the AQSIQ and SAC), it is still uncertain whether the CEL system will be incorporated into the GP system, and if so, when this might occur, and how it will be accomplished.

3. Open questions

The work related to Contract 2018/402135 for the European External Action Service, as technically supervised by the European Commission (primarily DG GROW) in Brussels, took place between March 2019 and December 2020.

During this time, good cooperation was achieved between the appointed External Experts (Prof Martin Charter, Dr Frank O'Connor, Prof Jin Min and Zhang Enrui) and China's Ministry of Industry and Information Technology, the EEAS Representation in Beijing, CEN-CENELEC (particularly via its links with DG GROW and CESIP, the Europe-China Standardization Information Platform), as well as industry stakeholders in Europe and in China, and EU environmental and consumer NGOs.

However, there remain a number of open questions resulting from this research, where a definitive understanding of certain topics was not fully achieved. The fact that these questions remain open, despite the systematic and intensive efforts of the research team, as well as the EU's financial and technical investment, indicates the limits of an approach where a culture of reticence or the lack of strong commitment in advancing mutual cooperation and engagement from the stakeholders concerned forms an inhibitor to achieving results. Further research and possible on-the-ground fieldwork in China may shed more light on these topics. Research areas are identified below, based on the sections referred to in the report on China Energy Labelling Product policies.

3.1 CEL SYSTEM

- The report explored the **legal basis of CEL** noticing that other researches also pointed out that the legal framework represents a barrier, together with the lack of engagement with stakeholders. In this regard, what is the process by which the detailed requirements are arrived at? I.e., how is the level of ambition ascertained, and by whom? What 'checks and balances' are there in the system? How transparent is the CEL system, particularly in the preparation and implementation stages? Who is consulted? To what extent are stakeholders engaged, including domestic manufacturers and importers of products to China? It seems a lot is kept in-house within government, while high-level professors and then companies are 'invited in' in some form. Hence, some experts seem to be invited, showing that a degree of engagement exists, but in a different way compared to other countries.
- Regarding the **MAEEL**, further research is needed to understand the process by which the detailed requirements for its implementation are arrived at? For instance, how is the level of ambition ascertained, and by whom? What 'checks and balances' are there in the system? How transparent is it? Who is consulted? What role do stakeholders have, including NGOs?
- Further research is needed to understand the CEL Credit System that the AELE is developing. Who is eligible to receive these "credits": manufacturers, or purchasers? Does it refer to Green Public Procurement? However, is it State Aid in disguise? According to our understanding, it seems that this system may draw inspiration from the Carbon Credit system foreseen in the Kyoto protocol, where not only "negative credits" are given to polluters, but also some form of incentives might be given, for instance by buying energy efficient products from some form of accredited stores. To date, no written evidences has been found during this project about the credit system.
- The overall **CEL system** has been presented, showing its high level of complexity. To better understand it, a closer analysis is needed to show who develops the laws, who votes on them, who supervises them, and who carries out checks and supervisions, and ultimately any "criminal" enforcement, where this happens. In addition, it should also be detailed what is the hierarchy of importance of each of the "players", as well as the presence of competing bodies. To better understand the working framework, greater explanation and detail should be given to discern to what level analogies might be made between China's Catalogue of Products and the EU's Ecodesign and Energy Labelling Working Plan. According to our China-based expert, the Catalogue could be defined as a plan lasting several years in which the products due to

have possible measures are identified; however, what are the selection criteria for product groups' inclusion in the Catalogue, and how is this assessed in practice? (I.e., a close analysis is needed, to compare the study steps with the preparatory stages of the EU's Ecodesign and Energy Labelling Working Plan, every c. 4 years). How are priority product identified? Is the Catalogue the resulting list of products, once Chinese legislation exists to govern them from a CEL/ EES list of requirements? Although we found some literature attempting to explain the level systems, more clarity is also needed re. Labelling System of 1-3, and 1-5. Are both still running, or only now 1-3 labels? Are there other reasons for products to be subject to a Labelling System of 1-3, or 1-5 (if both systems are still in force)? Clarity is also needed to disentangle the relationship with Chinese GPP and "reach" level of labels, eventually.

3.2 About Energy Efficiency Standards

- Some other aspects to be further investigated are related to the **process to derive label values and ambition levels** explaining the actors involved, their roles and tasks, possible consultations as well as timetables of implementation. Is this process similar to that of the EU system for Ecodesign (ED) and Energy Labelling (EL), where the EL market data and sales information, as well as the preponderance of certain performance levels, are discerned from the ED information initially, and then built on to provide the present basis for understanding the EL situation? Further, are these data are used to estimate what could be the future ED minimum levels to set? The same questions apply to proposed levels of increased environmental performance ambition over time (including future-oriented reviews), for both the ED minimum levels and the EL label-specific performance bandwidths and band levels (i.e., the EU's A to G, green to red labelling system).
- There seems to be a **similarity between what is defined by the Chinese as a "limited" value and the "Ecodesign-style" concept** of a mandatory minimum threshold performance value (MEPS). It is understood that the "standard system of resource conservation and comprehensive utilisation" should contain the minimum threshold, i.e., mandatory minimum standards/ levels of performance, as well as the standards that must be met. However, all the above needs to be fully cross-checked and understood.
- The scope of the specific preparatory and implementation policy-related measures research, from technological and market coverage/ penetration perspectives, needs to be clarified for the **Chinese 'ED' and 'EL' systems**. Is the research and checking performed globally or solely within China, regarding leading energy efficiency indexes for devices? For instance, it is reported by the China-based expert in the report that the design of China's energy efficiency "Top Runner" system was compiled via cross-referencing Chinese national conditions but using as its basis the design and implementation experience of the "Top Runner" system in Japan. Since the Japanese "Top Runner System" was taken as a reference, it would be very useful to have details comparing the Chinese and Japanese "Top Runner" schemes, as well as comparing these with the EU's Energy Labelling system, GPP and Ecolabel schemes. In the Chinese scheme, the information this research uncovered was that the Chinese "Top Runner-style" list is determined according to the enterprise declaration, local recommendation, initial evaluation, on-site energy efficiency testing, second evaluation and publicity.
- Several **terms and concepts** are listed in the report. Among them, the "target" energy efficiency indicator is particularly relevant, as it seems to be the core performance measure, and compulsory market-access indicator. It sounds like the EU's Ecodesign minimum threshold (MEPS) approach. Also, the energy efficiency grades sound like the Energy Label (EU style). The three / five years period after the EES is enforced could be seen as the "Tier 1" and "Tier 2" requirements in EU Ecodesign. For a better and clearer understanding, development of a comparative table is highly recommended, based on real implementation of several actual product groups (in both the EU and in China). In addition, for future research, it would be extremely useful to carry out several case studies on the development of how the draft measures for each product group studies were analysed, discussed and reached, and a description of the stages to reach final publication and implementation of the required

performance levels. This should be taken all the way to uncovering who was involved, how transparent was the process, were Chinese trade associations and environmental/ consumer NGOs involved, were foreign trade associations, academia or individual companies able to participate in discussions, or at the very least able to obtain information about the draft measures being considered? How were the content, the ambition, the design and the aims of the associated labels decided upon, technically and graphically, and was it more with regard to the “state-of-play”, or rather if the measure was being designed to encourage manufacturers and potential purchasers to aim for more ambitious levels?

- The **characteristics and functions of the EES** have been explored. Looking at its main features, a cost-benefit approach is used to set the targeted levels of energy efficiency. There might be a similarity with the EU’s “Least Life Cycle Cost” approach, but this is not obvious at all from the information obtained to date from the China-based expert. These aspects require future research, focusing on explaining the main steps mentioned in the section, and a full grasp of the processes and procedures followed in China. A qualitative review and reflection on the degree to which the process is transparently undertaken would also be extremely useful.

3.3 Evolution of the CEL and the MAEEL from 2015 onwards

- Via the exploration presented regarding the **new CEL with QR code**, it is understood that a sampling check is performed. It would be useful to obtain more data on this process to understand what this check implies, as well as the way it is carried out, and the actors involved. Since this sample check is used to score the product and its CEL, the degree of transparency and its reliability needs to be proven.
- Research findings report that **manufacturers and importers who use their own laboratories for testing are responsible for the testing results**, but it was not possible to detail the legal responsibilities they bear and if they differ by company and with regard to third-party test houses. Hence future studies should focus on this element, as well as on the study of the permitted third-party testing houses (typology, location etc.)
- Satisfactory and transparent **market surveillance** is an issue that needs to be pinned down, throughout, as well as how “regional variations” are ironed out, if at all (e.g., whether there is any data exchange and comparability systems between provinces, as is performed in some EU countries and within countries, comparing regions).
- During the preparation of this report, Chinese researchers and stakeholders have mentioned a **credit system**, but without much accompanying explanation. There is very little data that has been collected on the way that such a system works in China. Therefore, it would be very important to gain a much deeper understanding of what these “credit records” comprise, and how the credit system functions. Does “Credit record” refer to the credit rating agency’s description of the credit status of economic subjects, expressed with certain symbols or words? How is the evaluation/ provision of credits performed, and on what is it based, e.g., is it underpinned by certain standards and indicators? How transparent is the system, and how is it audited?
- Regarding the **CEL Product batches published in the catalogue**, the researchers have noted that batches also include updates and modified specifications on specific type of products. These modifications look like the “Reviews” of Ecodesign and Energy Labelling regulations, occurring every 3-4 years (typically) in the EU system. It would be relevant for further research to explore and to cross-check whether this similarity holds between China and Europe. It would also be crucial to understand how the “modification”/ updating process is conducted in China, which stakeholders may be involved, as well as if the discussion (forum, if one exists) is performed openly, in particular if industrial and NGO stakeholders are allowed to take an active part in it, by reviewing draft proposals, up until the final version.

- Regarding **development of new batches** of EEs for CELP, a clearer understanding of the process is needed, and whether there is a consultation with Chinese ministries other than the MIIT.
- Looking at the **Catalogue of CELP**, there could be an analogy with the Ecodesign and Energy Labelling Working Plan in the EU - this should be explored by further studies.
- Concerning **market surveillance**, it is necessary to clarify how it is achieved, and what needs to be improved in the present system. Special emphasis in any future studies should be placed on the level of difficulty for a non-Chinese manufacturer/ importer to get through the market surveillance system, successfully, e.g., what is the timeline for approving a product? Also, how much notice of potential and actual future requirements is given openly to importers into the Chinese market?
- Concerning the **implementation procedures of the CEL System**, further analyses should explain how this process works, by detailing how each step/ box is conducted and who is involved during the progressive steps

3.4 Analysis

- A summary of the **CEL System** has been obtained. However, it was not possible to clarify what are the steps in the process of setting minimum standards, what work is conducted to underpin the proposals (preparation, market, technology, LCA etc), and how the proposals are checked with stakeholders to ensure that the proposals are viable. For example: are the designs that are described and postulated for the future representative?; are the (re)designs realistically costed?; are the necessary future-oriented performance levels feasible, is timetabling discussed with stakeholders, regarding design ambition and implementation steps?
- The fact that **CELPs** are included in governmental purchasing shows that there is some relationship to green public procurement, which seems to make use of the CELP per se, or to take the CELP ratings into account in some way. It is necessary to understand how this works in practice.
- Regarding the **CELP scope**, it should be clarified if the current framework is ready to be applied to “all future products”. And, if so, whether the actual implementation per se depends mostly on matters related to time and resources, and/or the process of choosing which products to address.
- Due to the sensitiveness and the strategic importance of this topic, it has not been possible to get an authorisation to access an **English copy of some key documents**, such as the current and new MAEEL, and the new MAEEL, or at least summary versions of both, with the key features and requirements, as well as details of the energy efficiency "Top Runner" scheme. For future work, it would be very useful to get a clear picture of the bases of these elements. Also, a group of 18 enterprises has been mentioned to the research team. It would be strategically useful to obtain the full updated list, and to understand to what extent the “Top Runner” catalogue is open to non-Chinese enterprises, as well as by whom and how is this decided?
- It is reported that the **establishment of a more efficient energy saving management standard system** needs to be organised online through web interfaces. However, it was not reported on how this is proposed to be undertaken, or whether it concerns online use of products in real time, for instance via “smart meters”, or whether the reported elements refer to solely online sales of the products concerned when first purchased. Future research work should go deeper in studying these aspects.
- In view of developing a **self-regulation culture**, it is argued in the report that the ecodesign of products can play a role to link EPR and CEL from the enterprise side, and that this requires intra- governmental cooperation to encourage companies to invest in R&D, as well as to obtain

the involvement of companies in the formulation of both EPR and CEL standards. However, the link between EPR and CEL still needs to be explored, and some questions are still open on this. For instance, are EPR pilots initiatives in enterprises conducted before full implementation? Will there be a requirement from ecodesign with Chinese EPR? What is the product coverage? How do China EPR differ from the WEEE directive? EPR development seems to be MIIT's responsibility; as such, does the ministry have this role only in relation to the "EPR"/ End of Life/ repairability aspects? What are the roles of the various ministries and agencies involved? Are the delineations of responsibilities clear and unambiguous? Are transparent records available regarding the results obtained, as is done in the EU via the Ecodesign Impact Accounting framework, which is audited by external expert consultants, and compiled at frequent intervals? Future studies should take these matters into account in designing their research questions.

- The report argues that **the CEL system would probably be incorporated into China's ongoing GP system**. Given the roles of the different product regulation systems, and the roles of the different ministries and agencies in China involved, it would be extremely useful for future studies to look closely at this process, to try to understand how it functions, or is planned to function. Results from the CEL/ GP combined system, if possible to establish, would be extremely useful to obtain and to understand, to see if similar ideas might be applied in the EU. This would be especially important where there have been success stories in China (or, on the contrary, also to avoid pitfalls in the EU, where these were experienced in China).