EC-China eco-design and standards cooperation project

China Green Design Products and Green Products

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ECORYS Consortium

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Contents

List of Abbreviations (Note: See also Appendix I)

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   Overview

China has followed four phases of "green" product policy development since the early 2000s. The initial phase of "green" product development focused on increasing energy efficiency. In 2002, the 16th National People's Congress called for the promotion of an improvement in energy efficiency, increased energy conservation and a reduction in energy consumption, as well as speeding up of the construction of an energy-saving society to alleviate energy constraints and broader environmental pressures. Under the guidance of this requirement, different ministries started to work on various product systems within their respective responsibilities.

The second stage was the development of a range of eco-labelled products with management and coordination spread amongst various ministries. The third stage focused on the introduction of the concept of eco-design in 2009 leading to the publication of a guide - *GB/T24256-2009 General principles of Product Ecological Design* - to help producers implement eco-design. Following the publication of GB/T24256-2009, policies and standards related to eco-design products were gradually formulated. Research has indicated that in 2015, the Ministry of Industry and Information Technology (MIIT) proposed in *the Key Points of Industrial Energy Conservation and Comprehensive Utilization in 2015* to continue the initial piloting of eco-design product development   amongst selected companies, to study and formulate measures for the evaluation and management of eco-design products, to formulate evaluation standards for key eco-design products, and to carry out evaluations. GB/T 32161-2015: General principles for eco-design product assessment was issued in October 2015 and implemented in May which prescribes the definition, evaluation principles and evaluation requirements of a number of eco-design products. Importantly, this standard included indicators for Life Cycle Assessment (LCA). In 2016, eco-design products were renamed Green Design Products (GDP).

In 2016, a fourth stage was entered into in China with a significant change announced by the State Council of a movement towards one unified "green" product system. The construction of a unified "green" product system is and will be a complicated process. It is the understanding of the authors, that the existing Green Design Product (GDP) and eco-labelling systems need to gradually transition towards the new "one unified system". It is predicted that the conversion process, alignment of the different terms and bases, and the different ownership of "green" products and eco-labelling systems by relevant government authorities will be a complex, medium to long-term process.

The word "green" in China is a general concept and is used as a prefix for many initiatives that support environmental protection and resource saving e.g. *green* cities, *green* finance, etc. For example, "green" can refer to circular economy, resource and energy conservation, organic food, environmental-friendly living consciousness, etc. "Green products" are considered to be a very general concept, but there are some specific uses of the term, e.g. Green Design Products (GDP) which were previously known as Eco-design products (EDPs): EDPs were renamed as GDP in 2016. As indicated above, other usage related to "Green Products" started to emerge from 2016: Green Products were highlighted in the Green Manufacturing System in 2016, then in "Opinions on Establishing a Unified System of Standards, Certifications and Labels for Green Products" in 2016 and finally in *GB/T 33761-2017: General Principles for Green Product Assessment* in 2017). Previously, "Green" product" policy development had been implemented indirectly through the launching of specific eco-labelling schemes covering, for example, organic food, low- carbon products, water-saving products and energy-saving products, etc.

"Green" products and the development of a "green" market has become an increasingly important issue within the Chinese government. In 2015, the high level *Overall Plan for*

Ecological Civilization System Reform[1] was published by the State Council. This Plan highlighted the importance of the need to improve the "green" market system and increase the supply of "green" products (see Section 1.2, Policy Structure, for further background on the overall thinking and changes made in recent years).

On 7th December 2016, the General Office of the State Council (SC) published and issued "Opinions on Establishing a Unified System of Standards, Certifications and Labels for Green Products" (hereinafter referred to as the "Opinions" policy document). By 2020, it was proposed that a systematic, scientific, open and integrated "green" product standard, certification and labelling system would be established with advanced indicators and one unified managing authority. This policy document is viewed as a prerequisite for promoting the development of environmentally friendlier lifestyles and developing "green" markets in China. It is also viewed as an important policy measure to strengthen supply-side structural reforms, improve the quality and efficiency of the supply of "green products" and to guide industrial transformation. In addition, the "Opinions" policy document also aimed to provide policy guidance and support in relation to the achievement of China's international emission reduction commitments and its active participation in global governance of "green" products.

In May 2017, *GB/T 33761-2017: General Principles for Green Product Assessment* was issued and implemented in China. This standard highlighted green product evaluation standard indicators, and the planned establishment of a unified green product certification authority, whose role was to achieve the goal of the system integration of one standard e.g. "one list, one certification and one labelling system" per category of Green Product. To achieve this, the Chinese government will need to tackle the issues related vague and confusing use of definitions and terminology, and different policy ownership (e.g. by different Ministries). In summary, at present, in China, "green product" policy and standards relate to specific eco-labelling schemes, Green Design Products (GDP) and Green Products (GP); and specific mandatory standards related to product-related energy consumption goals (similar to the EC Energy-related Products Directive (Ecodesign Directive) and Implementing Measures)

This report covers the following two broad aspects:

- Policy structure: The background on GDP and GP in China, including an explanation of the different concepts and relationships between GDP, GP and Green Manufacturing (GM). This is then followed by a description of the policy structures, legal bases and key stakeholders in the policy making process.
- Implementation process: The overall structure of how the GDP and GP policies are implemented is explained, together with an explanation of who are the key stakeholders involved in the policy implementation process and what their respective responsibilities are. Additional information is provided on the standardization processes, including a list of existing GDP and GP standards and an examination of the process of certifying a GDP product, using a washing machine as an example.

The report starts with the description of the overall policy framework, with the aim of increasing the reader's understanding of the evolving Chinese policy measures and the interconnection between GDP - formerly known as Eco-design Products (EDP) - and GP, as well as the relationship with eco-labelled products (see Diagram 1). The report then covers the background, definition, standardization process and the stakeholders involved to provide an overview of GDP and GP, including an example showing GDP criteria, assessment procedures and different stakeholder responsibilities for a washing machine. A list of government departments

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[1] The "Ecological Civilization System Reform" covers both sustainable and healthy economic development, but also more fundamentally political and social development. The State Council has given this reform a prominent position and it has been integrated into all aspects and the overall process of economic, political, cultural and social development.

and the key organizations involved in GDP and GP standardization are included in Annex 1. Annex 2 provides a full list of GDP standards (as at March 2020) and Annex 3 provides a full list of GP standards (as at September 2020)

Research has indicated that "green product" standards in China are developed according to the progress of the industrial sectors involved, and the perceived need to upgrade the related industrial structures.

1.1 Background

In 2009, the General Administration of Supervision, Inspection and Quarantine (AQSIQ)[2] and the Standardization Administration of China (SAC) introduced the concept of eco-design in China by publishing the National Standard - *General Principles and Requirements of Eco-design for Products (GB/T 24256-2009)*, which laid the foundation for developing Green Design Product (GDP) standards. The development of GB/T 24256-2009 referred to various EU Eco-design and related directives, including the original Eco-design 2005/32/EC Directive, together with the following EU forerunner pieces of legislation: 92/42/EEC Directive, 76/57/EC Directive, 2000/55/EC EUP Directive, and EU COM (2001), as well as international standards such as ISO/TR 14062: 2002, IEC 114, ECMA 341 and IEC 62430:2009. GB/T 24256-2009. The standard also referred to the learning that had emerged from the European Commission (EC) funded project Asia Eco-design Design Electronics (AEDE) project that was completed between 2006 and 2009 [3] that was led by the lead author of this report.

In 2013, the Ministry of Industry and Information Technology (MIIT), National Development and Reform Commission (NDRC) and Ministry of Environmental Protection (MEP) [4] jointly published the *Guide for Promoting Eco-design of Industrial Products*. MIIT then began to support work on developing standards, established pilot projects and set-up a monitoring mechanism for Eco-design Products (EDP[5]) by industrial sector[6] under the "General Principle and Requirements of Eco-design for Products" (GB/T 24256-2009).

In GB/T 24256-2009, eco-design of products was also known as "green design" or "environmental-friendly design", and referred to the activities of introducing environmental considerations into product design and development in order to improve the environmental performance and reduce the environmental impact of products during the products' whole life cycle.

Eco-design is defined in the "General Principle for Eco-design Product Assessment" (GB/T 32161-2015), as "the environmental protection activities that systematically take into consideration the impacts of raw material selection, production, sales, recycling and disposal on resources and environment in the stage of product design and development, such as to minimize resource consumption, to restrict or remove hazardous substances, and to reduce pollutants emissions, etc".

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2 AQSIQ was merged into the State Administration for Market Regulation (SAMR) in 2018.

3 Asia Eco-design Electronics (AEDE) project http://cfsd.org.uk/aede/ was funded by through European Commission (EC) Asia Pro-Eco programme and focused on eco-design in electronics sectors in China, India and Thailand and the learning from the project was incorporated into the first eco-design standard in China.

4 Ministry of Environmental Protection (MEP) changed the name to Ministry of Ecology and Environment (MEE) in 2018.

5 Eco-design products are based on the concept of eco-design products.

6 Metallurgy, electric power, coal and coking, petroleum, chemistry, machinery, building materials, forest, food, textile, sewing and leather, paper and cultural and educational supplies, other industries.

The term "Eco-design Product" (EDP) refers to products which meet the requirements of published Chinese eco-design standards. By the end of 2015, five national standards[7] had been developed and published via SAC. The name "EDP" was maintained until the concept of Green Manufacturing was introduced in 2016 (see Table 1). In line with the introduction of a more official use of the term *Green*, MIIT began to replace the term EDP with GDP from 2016 onwards. It should be noted, however, that GDP is effectively a re-branding of EDP and the standardization basis used for GDP is the same as that used previously under EDP. The logo of GDP retains within its text the name of "Eco-design Product", and the physical logo also remains unchanged (*see Diagram 1*).

1.2   Policy Structure

The need for China to update its industrial structure and improve the environment for its citizens led the State Council (SC) to publish two important policies in 2015: firstly, *Made in China 2025* and secondly, the *Overall Plan for Ecological Civilization System Reform.* These 2015 policy documents put forward the concepts of Green Manufacturing (GM) and Green Products (GP) for the first time.

In June 2016, as part of its response to the SC, MIIT published the following documents: firstly, *The Industrial Green Development Plan (2016-2020)* and, secondly, *The Guide for developing a* GM *Standard System.*

According to the framework of these policies, Green Manufacturing (GM) has five pillars: Green Products (GP); Green Enterprise; Green Factories; Green Industrial Parks and Green Supply Chain (see text box below for further information).

From research by the authors, it appears that within the Green Manufacturing specific framework in MIIT interpreted, "Green Products" (GP) as equating to rather than as a new definition of Green Products. However, it is understood that the SC did not share this view and launched a separate Green Products approach – focused on one unified system. The new definition from the SC emerged in 2017 within *GB/T 33761-2017: General Principles for Green Product Assessment*. The reasons behind these different views may be as follows: even though the GDP and GP policies seek to develop products that have reduced environmental impact via similar objectives, the GDP focuses on promoting the upgrading and modernization of the industrial structure via a more detailed understanding of the life cycle impacts of products. By contrast, the (new) GP focuses on the overall promotion of green consumption.

The common goal of GDP and GP policies is to develop products that have reduced environmental impacts throughout their lifecycles. The general aim of the SC is to unify GDP (managed by MIIT), GP (managed by ASIQ) and eco-labelled products (managed by various Ministries) into one overall green product system. The overall focus is on upgrading and modernizing the industrial structure, through a more detailed understanding of the environmental impact of products' life cycles. It appears that the policy also aims to help to transform China's consumption patterns to become greener, via citizens' and value chain participation in the construction of a unified green product system, based on supply-side structural reform e.g. through the increased provision of "green" products on the market.

As highlighted previously, in December 2016, the SC published *the Opinions on Establishing Unified Green Product Standard, Certification, and Labelling Systems*, authorizing AQSIQ[8] to coordinate all ministries to gradually abandon the existing green product systems[9] e.g. eco-

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[7] The five standards are *General Principles for Eco-design Product Assessment, Label for Eco-design Product, Specification for Eco-design Product Assessment - Household Detergents, Degradable Plastics and Insecticides?*

[8] A key responsibility of AQSIQ is the general administration of the work on standardization.

[9] No official timeline for the completion of this process.

label product systems and develop a unified Green Product (GP) system.[10] By developing a unified system with strict standards, as well as phasing out existing eco-labelled products, the goal is to produce one consistent label for all Chinese products (for more information refer to Table 1). According to the "Opinions" policy document, and as referred in *GB/T 33761-2017: General Principles for Green Product Assessment*, GP aims to include the top 5% products[11] – in terms of environmental performance - on the Chinese market and further improve the overall competitiveness of Chinese products in overseas markets. At the same time, the goal is that market recognition and acceptance of GP will be increased through one unified GP label and this will also be useful for negotiating mutual recognition on Green Product certification between China and other economies.

Table 1: Five pillars of Green Manufacturing (GM): Green Products (GP) Green Enterprise, Green Factories, Green Industrial Parks and Green Supply Chain

✓ Green Products (GP): the usage of the term Green Products under the Green Manufacturing system appears to equate to *Green Design Products (GDP)*

✓ Green Enterprises: GDP was initially progressed through pilot demonstrations aimed at the evaluation the GDP of typical products such as household appliances, office equipment, etc, will develop a number of GDP demonstration enterprises and formulate green product standards. By 2020, China will establish 100 GDP demonstration enterprises and 100 GDP centres and, strive to develop and promote 10,000 GDPs

✓ Green Factories: Demonstration of green factories will formulate standards and guidelines for the construction of green plant and conduct pilot demonstrations in key industrial sectors such as iron and steel, non-ferrous metals, chemical industry, building materials, machinery, automobiles, light industry, textiles, medicine and electronic information. By 2020, thousands of green demonstration factories will be established.

✓ Green Industrial Parks: Industrial park that focus on resource conservation and also environmental protection will be established, in an initiative that reflects green management requirements such as energy efficiency improvement, pollution reduction, recycling, and industrial chain coupling. A number of industrial parks will be selected to complete demonstration projects of green industrial parks. By 2020, 100 green industrial parks will be established.

✓ Green Supply Chain: Demonstration of green supply chain architecture will take supply chain core enterprises as the starting point and carry out pilot demonstrations, implementing green procurement, implementing the extended producer responsibility (EPR). The goal for 2020 is to initially form a green supply chain in major industries such as information and communications, automobiles, household appliances and textiles and so on.

At present, China still needs to further integrate the current policies and standards related to "green" products. MIIT is responsible for overall Green Manufacturing (GM) in which GP (which MIIT appeared to equate to GDP) is a key pillar, as outlined in the Industrial Green Development Plan (2016-2020). Under the GM system, GPs appears to equate to GDPs. Meanwhile, in parallel, in accordance with the "Opinions" policy document issued in December 2016, AQSIQ

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[10] Each existing green product systems e.g. eco-labelling system is promoted by a supporting ministry, e.g. Energy Label Product (National Development and Reform Commission, NDRC), Water-saving product (Ministry of Water Resources), Environmental Label product (MEE), Low Carbon Product (MEE), Green Building Material Product (Ministry of Housing and Urban-Rural Development, MOHURD), Organic Products (Ministry of Agriculture and Rural Affairs, MOA). In addition, each eco-labelling system (green product system) has their own standards for assessment

[11] It is understood from an expert meeting organised by the EC with MIIT in October 2020, that 5% is viewed as a guideline rather than a strict target but the details of this

is leading the development of GP system with the aim of integrating all existing eco-labelling schemes ("green" product systems) into the unified GP system. It appears, at present, therefore that the GDP (MIIT) and GP (ASIQ) systems will carry on running in parallel.

It should be noted that the GDP standard has a stricter requirement to provide Life Cycle Assessment (LCA) reports for each product and it is therefore is more demanding than the requirements for the GP standard[12]. From a standardization perspective, although the existing standards do not have much overlap (see Annex 2 and Annex 3), the scope of the two product systems and the principles used for developing standards are similar, and this may cause potential confusion amongst companies operating within China, and companies exporting to China. There appears to be significant uncertainty over the differences between GP and GDP within Chinese government ministries, companies and experts. For more details of the policy structure, refer to *Diagram 1 Policy Structure and the Relationship among Different Green Concept Product Systems.*

1.3 Relationship of GP, GDP and EDP

The unified Green Product system was launched after the publication of the previously mentioned 'Opinions' policy document that, in turn, was based on the *Overall Plan for Ecological Civilization System Reform and Made in China 2025* (see Diagram 1). In 2016, MIIT published the *Industrial Green Development Plan* (2016-2020) which changed the name of Eco-design Products (EDP) to GDP. MIIT changed the name from EDP to keep the latter term consistent with the wording *Green*, in parallel to the use of the term Green Products (GP) in Green Manufacturing (GM). GDP – as did EDP - requires an LCA to be completed and a report to be published as part of the process to be able to display the GDP label. It should be underlined that the use of GP within GM is understood to mean GDP.

Below are the definitions of GDP (previously EDP) and GP that illustrate the similarities. *The main difference is that GDP requires an LCA and a GP does not require an LCA to be completed:*

- GDP (EDP): The 2015 National Standard *General Principles for Eco-design Product Assessment GB/T 32161-2015 (prior to the name change from EDP to GDP in 2016)* defines EDP as a product that takes into consideration of whole life-cycle environmental and resource impacts at the design phase. The goal of EDP (GDP) is to achieve environmental protection by minimizing or eliminating the use of raw materials containing toxic and hazardous substances and reducing the generation and emission of pollutants. [13] Moreover, the GDP (EDP) standard also appears to include requirements at a factory level, not just at a product level itself. The requirements for GDP (EDP) are more rigorous and require of the completion of an LCA and production of LCA report on target products.
- GP: the National Standard *General Principles for the Green Product Assessment (GB/T 33761-2017)* was published in 2017 and defines GP as "products that meet the requirements of environmental protection through the whole life cycle, harmless or less harmful to the ecological environment and human health, consume less resources and energy, and have high product quality". An LCA and LCA report is not required for GPs for target products.

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[12] The GDP standard also appears to include criteria at a factory level NOT only at a product level – therefore GDP appears much broader than a product standard or aligns with other aspects of the Green Manufacturing (GM) system that includes requirements of Green Products (interpreted as GDP under GM), Green Enterprise, Green Factories and Green Supply Chains. This needs further research.

[13] The GDP definition is quoted from GB/T 24256-2009 and GB/T32161-2015.

There are some similarities between GDP (previously EDP) and GP systems. Both GDP and GP are based on whole life-cycle principle. The indicators for product assessment are divided into 3 common categories in both *GB/T 32161-2015* and *the GB/T 33761-2017*:

- Environment impact (noise, wastewater quality, greenhouse gas emission, toxic components, etc)
- Resource utilization (resource consumption and material recycling)
- Energy utilization (energy efficiency and use of renewable energy)

However, GDP includes a 4th indicator

- Product characteristics

And GP includes a different 4th indicator

- Quality

Both GDP and GP have assessment requirements that need to be completed by producers in relation to targeted products. However, GDP requires an LCA report before a GDP label can be authorised and attached [14]; whereas a GP does not require an LCA to be completed before the GP label is authorised and attached.

The two product systems are managed by different ministries: GDP is managed by MIIT; and GP by AQSIQ.

GP highlights the overall performance of a product. To ensure GP represents the highest level of the overall performance through the product life cycle (including the removal and/or reduction of hazardous substances, and/or reduction of pollutions/emissions) and achieves the goal of green consumption at the same time, the GP standard requires the product to have lower environmental impact e.g. to be more energy-efficient, resource-efficient, etc. The performance index is supposed to be stricter than the previous "generation" of performance, and the baseline of indicators for assessment is then set at the top 5% level of the product category, e.g., for a washing machine to achieve GP status, the level of energy efficiency of the type of washing machine stated has to be in the top 5% among all models of the "same type" of washing machine.

However, the details of how these statistics are compiled, and how the system functions overall, remain unclear. For example, there are questions related to who verifies the veracity of the claimed performance indices in an independent manner, and how the system retains its dynamism. Such a continuously "moving target" framework requires considerable "market research" to continually monitor and control, and then to feed the results back into the system, with subsequent re-verification of the whole market, and related performance indices. The time interval at which the "top 5%" are assessed is also unclear, and whether "top 5%" refers to an amalgamated scoring overall, or whether it relates mostly to the energy performance reference point of what represents "best-in-class", and therefore which product models are the uppermost 5% best performers. Finally, it is unclear how the Chinese regional and national equivalents of market surveillance interface to make sure that the above elements occur with the required monitoring accuracy, to ensure that dynamic changes are maintained in product design and performance, with a level playing field, and at appropriate time intervals.

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[14] LCA is a compilation and evaluation of the inputs, outputs and potential environmental impacts of a product or service throughout its life cycle. (ISO 14040/ISO 14044)

Table 2. Comparison of GP and GDP

		GP	GDP
Definition		Products that meet the requirements of environmental protection through the whole life cycle, harmless or less harmful to the ecological environment and human health, consume less resources and energy, and have high product quality.[15]	Products that take into consideration whole life-cycle environmental and resource impacts at the design phase. GDP will achieve environmental protection by minimizing or eliminating the use of raw materials containing toxic and hazardous substances and reducing the generation and emission of pollutants.
Scope		All products	According to published GDP standards (see Annex 2). Petrochemicals, steel, non-ferrous metals, building materials, machinery, light industry, textiles, communications, electronics, cars, others
Year Started		2016	Eco-design products were established in 2013 and the name was changed to GDPs in 2016
Lead Government		SAMR (coordinate all other ministries)	MIIT
Type of standard		Non mandatory (voluntary)	Non mandatory (voluntary)
Standard [16]	Numbers of standards[17]	23	129
	Standard Making Principle	Whole Life Cycle and Circular Economy	Whole Life Cycle and Circular Economy[18]
	Requirements on the Producer	Yes. Producer should conform to laws, regulations on environmental protection and pollutant emission. Producer should conform to	Yes. Producer should conform to laws, regulations on environmental protection and pollutant emission. Producer should conform to national / local standards on product quality.

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[15] National Standard - *General Principles for the GP Assessment (GB/T 33761-2017)*

[16] Part of the reason that why GP and GDP standard systems are similar may because CNIS is leading the NSGGPA and NIGPPA which are responsible for the overarching design for the standardization of GP and GDP.

[17] By 30th April 2019.

[18] Circular Economy was launched in China in 2008 in the Circular Economy Promotion Law. The rate of recyclable and recycled material was established as indicators in the GP and GDP standards, which were based on this Law.

		national / local standards [19] on product quality. Producer should set up an Environmental Management System and a Quality Management System. [20] Producer should not have had a safety accident in the past 3 years.	Producer should set up: Environmental Management System, Energy Management System [21], Quality Management System and Occupational Health and Safety System[22]. Producer should not have had a safety accident in the past 3 years. Producer should reach advanced levels (level 1 and level 2) according to the Clean Production Standards[23]. Producer should be equipped with pollution monitoring devices and online monitoring system.
	Criteria on product	Environment impact: noise, wastewater quality, greenhouse gas emission, toxic components and re-use of emitted elements) Resource utilization: resource consumption and material recycling Energy utilization: energy efficiency and use of renewable energy Quality characteristics: quality performance.	Environment impact: noise, wastewater quality, greenhouse gas emission, toxic components and re-use of emitted elements) Resource utilization: resource consumption and material recycling Energy utilization: energy efficiency and use of renewable energy Product characteristics: product performance.
Assessment		Certification Does not need an **LCA report**	Self-declaration plus expert review Requires an **LCA report**

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[19] National standards set basic and requirements for all provinces, each province can decide whether to use national standards or set higher local standards to regulate local producers.

[20] Environmental Management System GB/T 24001 is a version of the ISO standards 14001 that are transposed into Chinese regulations. Quality Management System GB/T 19001 is a version of the ISO 9001 standards that are transposed into Chinese regulations.

[21] Energy Management System GB/T 23331 is equivalent to ISO 50001.

[22] Occupational Health and Safety System GB/T 28001 is equivalent to ISO 45001.

[23] MEE leads the standard development of Cleaner Production. According to the standards, producer's cleaner production can be divided to 3 levels. Level 1: international advance level; Level 2: domestic advanced level; Level 3: domestic average level.
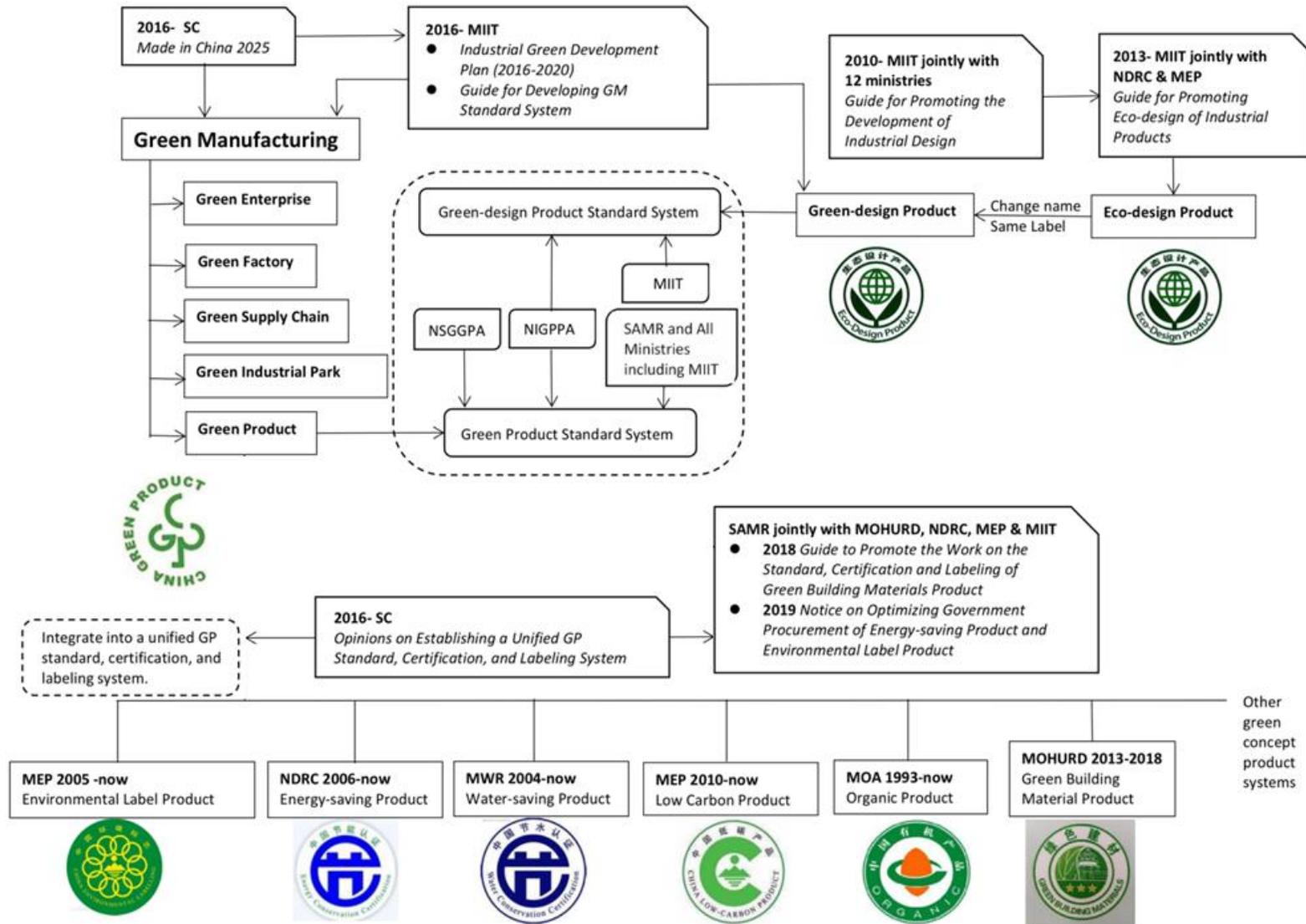
Diagram 1. Policy Structure and the Relationship between Different Green Product Concepts and Systems

Early in 2009, the former Standardization Administration of China (SAC) - a Vice Ministerial government agency now under the SAMR - issued GB/T 24256-2009, with the support of MIIT. GB/T 24256-2009 marked the first use of the terms of eco-design and eco-design products (EDP) in China.

In 2013, MIIT (jointly with NDRC and MEP [now the MEE]) issued the *Guide for Promoting the Development of Industrial Design Products to support industrial sectors* advancing EDPs.

In 2015 the State Council (SC) published two important policies in order to accelerate the upgrading of China's industrial structure and develop a better environment for citizens:

- In 2015 - the *Overall Plan for Ecological Civilization System Reform* and *Made in China 2025* - in which the concept of Green Manufacturing (GM) and Green Products (GP) was put forward for the first time.

- In June 2016, as a response to the State Council (SC), MIIT published the Industrial Green Development Plan (2016-2020) and the Guide for Developing a Green Manufacturing Standard System that incorporated five pillars: Green Products (GP), Green Enterprise, Green Factories, Green Industrial Parks and Green Supply Chains.

MIIT set a goal to advance GDP system and interpreted GPs under the Green Manufacturing Standard System as being the same GDP.

The 2016 State Council (SC) published the *Opinions on Establishing Unified Green Product Standard, Certification, and Labelling Systems* policy document, that highlighted that by 2020 the following should be established:

- One green product standard

- One open and comprehensive certification and labelling system

- One scientific management system

- One advanced green product evaluation standard indicators

- One unified green product certification authority.

The goal of the above five-point plan was to move towards systems integration of all "green" product standards e.g. "one standard, one list, one certification and one labelling system" per category of product.

An example of one of the challenges is green building products where there are various standards. SAMR - jointly with MOHURD, NDRC, MEP and MIIT - issued the *Guide to Promote the Work on the Standard, Certification and Labelling of Green Building Material Products* (2018) and the *Notice on Optimizing Government Procurement of Energy-saving Products and Environmental Label Products* (2019). The goal for both is help to form a unified, scientific, complete and effective green building materials product standard, certification and identification system throughout the country, realize the integration goal of one class product, one standard, one list, one certification and one logo, establish a sound promotion and application mechanism of green products,

In the future, existing eco-labelled products ("green" products) e.g. water-saving product and low-carbon products will be gradually integrated into the unified GP system (see Diagram 1).

2 China: Green Design Products (GDP)

2.1 Definition

In 2016, MIIT published the *Industrial Green Development Plan* (2016-2020) which changed the name of Eco-design Products (EDP) to Green Design Products (GDP). All requirements and indicators in the National Standard (GB/T32161-2015) "General principles for Evaluation of Ecological Design products" are applicable to GDPs. According to this standard, GDP is a product that takes into consideration life cycle environmental and resource impacts at the design phase. GDP aims to achieve environmental protection by minimizing or eliminating the use of raw materials containing toxic and hazardous substances, and reduce the generation and emission of pollutants.

2.2 Policy Progress

To promote Green Manufacturing (GM), MIIT set the targets[24] within the 13th Five Year Plan (FYP) to develop 100 green industrial parks, 1000 green factories, and promote thousands of GDPs[25]. By 18th July 2019, MIIT had announced 120 green industrial parks, 1427 green factories, 661 GDPs and 90 green supply chain pilot enterprises[26].

2.3 Standards

2.3.1 General Consideration

MIIT has the responsibility for GDP implementation and CNIS (under SAC) has the responsibility to support the management of GDP. GDP standardisation is based on the life cycle concept as being pursued at an international standards level. GDP covers petrochemicals, steel, non-ferrous metals, building materials, machinery, light industry, textiles, communications, electronics, automobiles and a range of other products; however, of note for this report is that there are eight national standards[27] that are commonly referred to in the development of GDP standards for electrical and electronic products. In 2016, MIIT *published the Industrial Green Development Plan (2016-2020)* and the *Guide for developing the Green Manufacturing Standard System*.

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[24] The 13th five-year plan for industrial green development was released in April 2016.

[25] Thousands of GP refers to more than 10,000 GPs; this appears to be a broad target rather than a specific target.

[26] MIIT has announced 4 batches of green manufacturing (GM) list by 18th July 2019. According to the "Notice of the General Office of the MIIT on the Construction of Green Manufacturing System", the GM list which includes the GPs (note: it is understood that GP interpreted as GDP by MIIT under GM), green factories, green industrial parks and green supply chain pilots is published batch by batch gradually.

[27] 1) Environmentally conscious design for electrical and electronic products (GB/T 23686/IEC 62430); 2) Environmentally conscious design - Integrating environmental aspects into design and development of electrotechnical products (GB/T 21273/ IEC Guide 114); 3) Environmental management - life cycle assessment - principles and frameworks (GB/T 24040/ ISO 14040); 4) Environmental management - life cycle assessment - requirements and guidelines (GB/T 24044/ ISO 14044); 5) Material declaration of electronic and electrical products (GB/Z 26668/ IEC 62474 CDV); 6) Procedure for the declaration of materials in products of the electrotechnical and electronic industry (GB/Z 23690/ IEC/PAS 61906); 7) Directives of the calculation method for recoverability rate of products (GB/T 20862); 8) Requirements of concentration limits for certain restricted substances in electrical and electronic products (GB/T 26572).

There are three kinds of GDP standards - national standards, industrial sector standards and social group standards.[28]. More than 90% of existing GDP standards are social association (or group) standards.

- GDP **National Standards** are initiated by MIIT, published by SAMR and CNCA, and administrated by the SAC.
- GDP **Social Group (or Association) Standards** can be initiated by MIIT, published and administrated by NIGPPA and CAI. These standards can also be initiated, published and administrated by an authorized social association (or group) – see footnote 30.
- GDP **Industrial Sector Standards** are initiated by MIIT, and published and administrated by industrial sector associations

2.3.3 Progress

According to *the 13th FYP Industrial Green Development Plan*, MIIT was set the goal of establishing green manufacturing standard system. By 2020, the objective was to develop and promote over 10,000 green products and establish 100 green design demonstration enterprises, 100 green design centres and 1,000 green demonstration factories will be created and 100 green industrial parks. Taking the core enterprises of supply chain as the starting point, we should carry out pilot demonstration, implement green procurement, implement producer responsibility extension system, and cultivate 100 green supply chain demonstration enterprises in information and communication, automobile, household appliances, textile and other industries. As at March 2020, MIIT has published 129 GDP standards (see Annex 2).

2.4 Stakeholders and respective responsibilities

2.4.1 Policy Making

MIIT is the leading ministry that oversees the development of the GM and the GDP systems, and is responsible for launching national/group standards for GDPs. MIIT also has the responsibility for the development of Green Products with GM system, help to build green factories and green supply chains, create green industrial parks and publishing green manufacturing lists; select and release GDP ; organizing the experience exchange of green products, green factories, green industrial parks and green supply chain creation. MIIT also is in charge of establishing and improving demonstration projects, and strengthening the monitoring of the GDPs, green factories and green supply chains.

2.4.2 Standards Making

SAMR and CNCA are responsible for the issung and administering national, group (or association)/industrial sector GDP Standards.

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[28] In China, national standards have three categories: recommended national standards (GB/T); technical guiding national standards (GB/Z); and mandatory national standards (GB) which cover sectors related to human safety. The industry standards - which compliment national standards - are initiated by administrative government of the specific industrial sector and developed by industry associations. If there is no national standard or industry standard that can be applied to a certain product, social association (group) standards can be set up to fill the standard blank.

NIGPPA is the body responsible for promoting and overseeing the development of GDP in the context of national, social association/group and industrial sector association standards.

CNIS provides the secretariat and chairs for NIGPPA. CNIS also provides technical support to most of the GDP standards-making process and supports MIIT in carrying out GDP assessment pilot projects. CNIS is also responsible for the document review, organizing experts review, information disclosure of successful GDP applications, as well as regular information updates of the assessed GDPs. CNIS also maintains a Green Manufacturing Public Service Platform, which serves as a portal for enterprises to apply for GDP assessment. *http://en.gmpsp.org.cn*

Industrial sector associations, such as the China Office Appliance Manufacturing Association (COAMA) can propose, initiate, draft, publish and manage the GDP Group Standards related to the products that their members produce.

Social Association or Group, is a kind of market-based standard, which can be initiated, drafted and issued by an authorized social association[29] depending on the market demand under the overseeing and administration of NIGPPA.

Well-known **enterprises and research institutes** are invited to engage in the standardization process through drafting standards, attending stakeholder meetings and commenting on documents. For example, China Research Institute for Household Electric Appliance (CRIHEA) contributed to the GDP standard on washing machines.

2.4.3 Market Surveillance

Local administrators at the provincial level within the MIIT and SAMR systems are responsible for encouraging local enterprises to apply for GDP. The local provincial MIIT administrators also perform regular market surveillance.

2.5 GDP Assessment

2.5.1 General Principles

GDP uses a "self-declaration and post-market supervision" model to reduce the burden on producers. The GDP application process is free of charge for producers and CNIS reviews the GDP applications at no cost. Producers voluntarily apply for GDP assessment through the Green Manufacturing Public Service Platform *http://en.gmpsp.org.cn,* and are responsible for the authenticity of their application and the provision of relevant data. It is the sole responsibility of the producer to ensure that its enterprise and its products meet the requirements of relevant GDP standards.

At present, there is no specific training available on the application process for the producers. Instead, MIIT and CNIS provide guidance documents that are available online for producers' reference. As a back-up, CNIS provides a contact number in the guidance document for producers to consult and answer questions during the application process. CNIS organises in-house and/or external experts to review the application.

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[29] The definition of a "social group" refers to social organizations such as societies, associations, chambers of commerce, federations and industrial technology alliances that are a a legal entity and have professional and technical, standardization, organizational, and managerial capabilities.

2.5.2 Procedures

The evaluation procedures for GDP are the same for products produced and sold in China or imported to China. If the product is exported, the GDP, just like other non-GDP, will need to meet all the legal import requirements of the destination country.

To assist in the understanding of the GDP assessment procedures, an example related to a washing machine is given below:

Stage 1 - Self-Assessment[30]

Based on the example of washing machines and the guidance in *Technical Specification for Green-design Product Assessment - Washing Machine (*T/CAGP 0002-2016, T/CAB 0002-2016*),* the applicant initially needs to check whether their enterprise itself and washing machine meet the following requirements:

- Does the production enterprise have the qualification of legal person?

- Do the pollutant emissions by the producer meet the national and local standards?

- Does the producer have a recognised Quality Management System and an Environmental Management System?

- Has the producer implemented *the General Principles for Eco-design Product Assessment (GB/T 32161-2015)*?

- Has the producer has carried out green supply chain management[31]?

- Does the producer achieve the appropriate energy efficiency standards? Note: the energy efficiency of the main energy-using equipment[32] used in the enterprise shall reach level 2 or above of the 3 levels associated with relevant standard[33]?

- Does the product quality meet relevant national standards (see Table 1)?

- Does the product manual include information on toxic and hazardous substances and instructions on 'end of life cycle' treatment?

- Does the product packaging conform to the relevant national standards? e.g. different products have different packaging requirements to ensure safe transportation, water resistance and recycling, etc.

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[30] All the requirements on producers should be met before further assessment on the products.

[31] See http://www.miit.gov.cn/n1146295/n1652858/n1652930/n3757016/c5258692/part/5258701.pdf

[32] At present, the energy efficiency label is not applied to all energy using or related products. The EE certification only includes 33 categories of products. CHECK

[33] Prior to 1st October 2013, China's energy efficiency labels were divided into five levels, according to the relevant provisions of national standards. Level 1 indicates that the product has reached the international advanced level of energy saving and has the lowest energy consumption; Level 2 indicates that the product is comparatively energy saving; Level 3 indicates that the energy efficiency of the product is the average level of the Chinese market; Level 4 indicates that the energy efficiency of the product is lower than the average level of the market; Level 5 is the market access index of the product, and the product that is lower than the requirement of the level is not allowed. From 1st October 2013, five types household appliances, including frequency conversion air conditioner, flat panel television, washing machine, heat-pump water heater and kitchen ventilator began to implement the new energy efficiency standards.

If the above conditions are met, MIIT then announces the application notification document (through official and public documents) and the internet. The enterprise then has to submit the GDP application documents on paper to local Industrial and Information Management Department (IIMD) (provincial branch of MIIT)[34] before a deadline. The IMMD will then screen and recommend to MIIT the producers that have fulfilled the criteria in accordance with procedures. Subsequently, the recommended enterprises are required to submit documents electronically through the Green Manufacturing Public Service Platform for review by CNIS. *http://en.gmpsp.org.cn.*

Stage 2 - Document Submission

The enterprise that applies for a GDP will need to fill in the *GDP Self-assessment Report* from the MIIT, which includes the information below:

- Provide basic information on the production enterprise
- Provide basic information on the washing machine
- Provide the Product Self Compliance Report according to the requirements of *Green-design Product Assessment- Washing Machine (*T/CAGP 0002-2016, T/CAB 0002-2016*)*
- Provide an LCA Report[35] to meet the standard required [36]
- Provide a copy of business license and organizational code

Stage 3 - Document Check

After the application documents are submitted through the Green Manufacturing Public Service Platform to CNIS (which supports MIIT with management and coordination of the GDP application process), CNIS forwards the application documents to in-house and/or external experts for document checking; and after review, on-site verification is organized by CNIS.

Stage 4 - Double Check

Based on the experts' review and any on-site 3rd party verification, CNIS will double check all information to make the decision.

Stage 5 – Request for Comments

If the review is passed, CNIS publishes the verification/validation result on the Green Manufacturing Public Service Platform for 10 working days to collect opinions from society. If there is any objection, the objecting individual or company can contact CNIS within the 10 working day period.

Stage 6 - Information Release

If there is no objection, the enterprise and their product will then be registered in the authorized list of GDPs. The product details of product are then archived and are then published on the websites of both MIIT and Green Manufacturing Public Service Platform (that is managed by CNIS).

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[34] Industrial and Information Management Department (IIMD) are the local implementation and administration branches of MIIT at the provincial or city level.

[35] LCA report as required in GB/T 24256-2009, GB/T 32161-2015, GB/T32162-2-15 and the specific GDP standards can be drafted by the producer or a third-party consulting company.

[36] LCAs for GDP are completed using a variety of software on the market – it unclear over the parameters that are used for LCA reporting

Stage 7- Use of the GDP Label

Once the GDP is included in the authorized list of GDPs, the enterprise can print the GDP label on to the product, packaging, manual and use it for advertising.

Stage 8 - Market Surveillance and Administration

MIIT and SAMR regularly spot check and monitor GDP products on the market and remove any problematic products from the GDP lists according to the related policies including *"Guiding Opinions on Developing Ecological Design of Industrial Products"* (jointly managed by MIIT with NDRC and MEP), GB/T 24256-2009, GB/T 32161-2015, GB/T32162-2-15 and document requirements such as those in the specific GDP standards. In the future, according to the "Opinions" policy document, the SAMR will gradually integrate the GDPs into the unified GPs market surveillance and administration.

2.6 Future development

During the 13th Five-Year Plan, the Chinese government actively promoted the financial support for producers applying for GDPs and GPs, and provided comprehensive financial support such as loans, investments, bonds, leases and securities. MIIT and the National Development Bank are also active in developing preferential financial policies for producers of GDPs and GPs. Local government may decide to provide increased financial and other support for technological innovation related to green manufacturing through discounted loans, subsidies and other incentives, and also provide preferential tax policies for energy conservation and emission reduction

On the demand-side policies are being considered to encourage public procurement of GDP and GP Local governments will make decisions on how or if this will be implemented. decisions.

3　China: Green Products (GP)

3.1　Background

The concept of Green Products (GP) was officially introduced within the Green Manufacturing (GM) framework in 2016, under the responsibility of MIIT. ***It is the authors' understanding that MIIT took 'Green Products' to mean 'Green Design Products (GDP)'.*** As referred to previously, at this time there were already several parallel product systems that used the concept of "green" and "environmental" (see Diagram 1). Examples include GDP (previously EDP) and other specific existing eco-labelling systems e.g. energy saving, water saving, recycling, low-carbon, renewable and organic products**.**

However, the current situation has led to fragmented systems that have led to problems including, but not limited to:

- No unified concept of GP in China. Chinese producers can only refer to foreign GP standards, due to a lack of GP national standards, which has meant that there was no way to achieve mutual recognition with other international GP standards.

- Different ministries manage different *green* product concepts or eco-labelling schemes e.g. energy saving, water saving, recycling, low-carbon, renewable and organic products.

- The scope of one Green Product standard and an eco-labelling scheme might overlap on some individual product categories, and indicator requirements for the same product might vary across different product systems. As highlighted earlier, for example, different authorities have different standards for building panel products, which has resulted in different evaluation standards for the same product. Therefore, a producer needs multiple certification from different departments, which increases the cost to producers and may bring confusion to purchasers / consumers.

Before the State Council (SC) unifies the green product market in 2016, each green product system or ecological labelling scheme is related to some aspect of the eco-environmental performance of a product's life cycle. Taking water conservation as an example, in order to achieve maximum water efficiency, washing machine manufacturers can choose a complex manufacturing process. At the same time, the resulting higher energy consumption and lower water consumption, as well as lower pollutant emissions, are also weighed in order to produce a green washing machine (i.e. the manufacturer conducts one or more trade-off design calculations and internal performance checks).

The need to develop <u>one</u> unified green product system was a based on the State Council (SC) recognition of the need to build up a comprehensive assessment system that takes account of all environmental (or green) aspects of a product's life cycle. This <u>one</u> system approach to Green Products was then established in 2016 by the SC in the "Opinions" policy document.

3.2　Legal Basis

The legal basis of GP follows existing laws, including: *Product Quality Law, the Energy Conservation Law, the Environmental Protection Law and the Cleaner Production Promotion Law[37]*. In addition, the *General Plan for Reform of Ecological Civilization Systems* also puts forward political requirements for the issuance of the "Opinions" for GP. In addition to complying

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[37] The Product Quality Law came into force on September 1, 2000. The Energy Conservation Law came into effect on April 1, 2008.The Environmental Protection Law was promulgated on December 26, 1989 and came into force on January 1, 2015.The Cleaner Production Promotion Law came into force on January 1, 2003.

with the environmental requirements related to GP, GP producers must ensure that production processes and product quality comply with all the above policies and laws.

3.3   Definition of Green Products (GP)

According to the National Standard - *General Principles for the GP Assessment (GB/T 33761-2017)*, GP refers to the products that meet the requirements of environmental protection through the whole life cycle, are harmless or less harmful to the ecological environment and human health, consume less resources and energy, and have a high product quality[38].

3.4   Scope

According to the *Guideline to Construct the Green Manufacturing Standard System* jointly published by MIIT and SAC, the scope of GP covers 13 categories of products: Communication & Electronics, Household Electrical appliance, Chemicals & Petrochemicals, Steel and Metals, Mechanicals, Building materials, Rare earth materials, Automotive and Spare parts, Office appliances, Textile, Packaging, Plastics and Paper products. In 2016, MIIT and the National Standardization Management Committee (NSMC) jointly issued the "Guidelines for the construction of green manufacturing standards", proposing the construction of green manufacturing standard system. The GM system focuses on *Green Products* (that are the outputs of *Green Factories* that are owned by *Green Enterprises*), *Green Factories* (the manufacturing units of Green Enterprises are part *Green Supply Chain* enterprises), *Green Factories* and *Green Enterprises* are potential components of *Green Industrial Parks. Green supply chain* is an important element running through products, factories, enterprises and parks. ***However, the authors understand Green Products in this content to refer to Green Design Products.***

The authors have found it difficult to understand the details of Green Product standard. It appears that following on from the "Opinions" document in 2016, GB/T 33761-2017: General Principles for Green Product Assessment was published in 2017. At the 1st level, the standard highlighted that there are four "basic requirements" for all GPs, related to (Section 5.3 of Standard GB/T 33761-2017).

- Environment impact
- Resource utilization
- Energy utilization
- Quality characteristics.

To develop a standard for a certain sector's Green Product, 2nd level indicators are set under the 1st level indicators. There are four indicators included (the indicators' requirements of different categories of products are different):

Resource property (reduction of resource use, etc)
- Energy property (energy saving and energy efficiency)
- Environment property (pollutants produced during manufacturing process, release of toxic and hazardous substances during the use phase),
- Quality property (durability, health and safety of the products; encouraging "high-end" quality overall)

There are also "Confirming principles" regarding inter alia the information collection, inspection and testing, as well as a form of "Top Runner" type of approach for performance and market

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[38] Those products that meet industry standards (voluntary standards, made by leading companies) and global class international standards are regarded as high quality/ high performance products.

share, that refers to a limit of the top 5% of performance requirements, and the top 10% of the proportion of production of a certain product group (Section 5.4 of Standard GB/T 33761-2017).

3.5 Progress

As mentioned in Chapter 1.2, the State Administration for Market Regulation (SAMR, previous known as AQSIQ) is leading the development of the unified GP product system by gradually withdrawing the use of existing eco-labelling (green product) concepts. For example, in 2017, SAMR worked together with the MOHURD and MIIT to incorporate the Green Building Material Product System into a GP standard. They agreed that all the 3-star Green Building Material Products[39] could be automatically granted a GP certification as a bridging solution.

On 1st May 2018, SAMR published the Administrative Measures of the Use of GP Certification Labels, which set the regulations on a unified release of GP identification, construction and management of GP identification information platform, and the use of GP identification supervision and management; the style and scope of the GP label, and how to make, print and attach the GP label. 23 GP national product standards have now been published (see Annex 3).

On the macro level, *green quality* is being promoted as an advanced form of quality development. *Green quality* aims to meet the green needs of consumers, and comprehensively considers the economic, social and ecological environmental benefits, so as to meet the needs of consumers in protecting the environment, saving resources and energy, and protecting human health. On the micro level, green product's performance is an important content of product and service quality. It can be related to whether the product itself contains ingredients harmful to human body and the environment; whether the design, production and consumption of the product pay attention to saving resources and energy and protecting the environment; whether the product packaging is easy to decompose; whether the product can be recycled after use. For example, the energy efficiency index of   energy-using products such as air conditioner, washing machine and refrigerator, water efficiency index of water products such as toilet and water nozzle, and fuel consumption of passenger cars are all important indicators of quality. By September 2020, 23 national product standards for GPs have been published (see Annex 3). These newly released GP standards and other eco-labelled products will co-exist for some time and this will lay the foundation for a unified green product market in China in the future.

The State Council has a goal to integrate concept of green into industrial development, build a market-oriented system of green product innovation, and form an industrial structure, and production processes that reduce energy consumption, save resources and protects the environment.

Currently, there appear to be no GP standards covering communications and electronics products

3.6 Stakeholders and respective responsibilities

3.6.1 Policy Makers

SAMR and Certification and Accreditation Administration of China (CNCA) are the leading authorities responsible for the establishment of the GP system. They are responsible for coordinating other ministries to unify other existing green product systems (or eco-labelling

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[39] On May 27, 2016, the MOHURD and MIIT held a symposium on the evaluation and labelling of green building materials and announced the first batch of 45 products that had been evaluated and were to be labeled three-star green building materials.

schemes), issue GP national standards, develop GP labels, approve GP certification bodies and conduct GP market surveillance.

Supporting ministries: Other related ministries are involved, especially those that have existing eco-labelling (green product) systems within their responsibility. However, there is no clear timetable to incorporate all the existing eco-labelling (green product) systems into the unified GP system. *Note: At the time of writing the report, there is no public information regarding whether GP standards relating to communication and electronics are in development.*

3.6.2 Standardization bodies

The Standardization Administration of China (SAC) is responsible for the administration of all GP standards. They have established the National Standardization Group for Green Product Assessment (NSGGPA)[40] to lead the development of GP standards. NSGGPA will lead the standardization process for each product sector with support from respective ministry/ ministries related to that product sector.

Supporting bodies: **China National Institute of Standardization (CNIS), industry associations and leading enterprises** that are responsible for setting GP standards. Both foreign and Chinese enterprises are invited to participate in the GP and GDP standards making process, including both domestic and foreign companies including Huawei, Alibaba, Siemens, Bell, Ericsson, etc.

The China Electrical Equipment Industry Association (CEEIA) is a member of NSGGPA and is one of main associations supporting standard making for communications and electronics products. Other relevant bodies for GP related standards, besides CEEIA, include the Solar Water Heating System, CNIS, Technology and Industrialization Promotion Center of MIIT, National Solar Water Heater Quality Inspection Center, the China Academy of Building Research, the China Quality Certification Center and leading companies on solar energy and water heating systems.

3.6.3 Market Surveillance

The local administration of market surveillance is managed under provincial governments, which can be work together with third-party testing bodies to perform regular GP quality inspections. China aims to use big data technology (built using Chinese standards) to improve the supervision of GPs, establish evaluation standards for GPs and a quantitative evaluation mechanism for the implementation of certification, in order to strengthen information collection and disclosure throughout the certification process, as well as making certification evaluation results and products open to market inspection and social supervision.

Market surveillance is a very complex system in China. The basic process is：a) SAMR grants authorities to third-party certification bodies; b) enterprises apply for the certification to SAMR, including in their application the necessary test data, as provided by relevant authorized third-party certification bodies; **or** enterprises provide the required documentation to SAMR together with the complete GP label self-declaration; c) SAMR monitors the use of GPs in the market by sampling and periodic verification.

Certification bodies are responsible for regular factory audits and reassessment of the GP.

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[40] NSGGPA is a standardization Group set up by SAC.

4 Conclusions and recommendations

- GP, GDP and eco-labelling policies are evolving in parallel. Therefore 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 over *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.

- It appears that GDPs will be brought under GP over time. However, it is unclear how LCA-backed GDP will be brought under the lighter-touch GP 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.

- 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 for the <u>one</u> green product unification process. It is 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. Research was unable to determine whether there are any standards related to the LCA tool 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 the LCA of products. There is a need to strengthen policy and practice exchanges in this area; this would support the improvement of GDP standardization in China.

- It was 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 understanding.

- There is a lack of information on how market surveillance of GDP and GP operates at a provincial government level, and how provincial government communicates to central

government 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. Policies to improve public environmental awareness and to encourage consumers' preferences are needed with regard to the buying of GDPs and GPs. In turn, any increase in consumers purchasing GPs and GDPs will be an important incentive to increase the motivation of producers to design and manufacture GDPs and GPs. In the future, there needs to be better public environmental education on the concept of 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.

- There a need to consider the role of green public and private procurement as a mechanism to drive the demand-side for GDPs and GPs. 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, other demand-side policy incentives should be developed 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 focused on good practice related to the development of GDPs and GPs, which should be then be 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.

- Annex 4 includes a series of remaining questions that have emerged from the background research for this report and Annex 5 highlight some potential areas for future policy cooperation

Annex 1

List of Governments and Standardization Bodies

Governments	SC	SC is the chief administrative authority of China. It is chaired by the premier and includes the heads of each of the cabinet-level executive ministries. SC directly oversees the various subordinate People's Governments in the provinces, and in practice maintains membership with the top levels of the Communist Party of China.
	MIIT	MIIT is a department directly under the State Council. The main responsibilities are to: formulate and implement industry planning, industrial policies and standards; monitor the daily operation of the industry; promote the development of major technical equipment and independent innovation; manage the communication industry; guide and promote the informatization construction; and coordinate and maintain national information security.
	SAMR	SAMR is the China's governmental authority for regulating areas such as market competition, monopolies, intellectual property, and drug safety. The Administration was created in the 2018: it consolidates in one ministry the market regulation functions previously shared by three separate ministries, the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), the China Food and Drug Administration (CFDA), and the State Administration of Industry and Commerce (SAIC).
	MEE	The Ministry of Ecology and Environment (MEE) was formerly known as the Ministry of Environmental Protection of China, and prior to 2008 known as the State Environmental Protection Administration (SEPA). Directly under the State Council, it is empowered and required by law to implement environmental policies and enforce environmental laws and regulations. Complementing its regulatory role, it funds and organizes research and development. It also has jurisdiction over China's nuclear safety agency.
	MOA	Ministry of Agriculture and Rural Affairs (MOA) was formed on 2018 as a replacement for its predecessor, the Ministry of Agriculture. It is responsible for studying and implementing strategies, plans and policies on agriculture, rural areas and rural people. It will also regulate crop farming, husbandry, fishery, agricultural mechanization and quality of farm produces. Some of its additional responsibilities come from the agricultural investment projects of the National Development

		and Reform Commission, the Ministry of Finance, the Ministry of Land and Resources, and the Ministry of Water Resources.
	MOHURD	MOHURD is responsible for the administration of construction projects in China, the main responsibilities of the ministry include guiding the planning and construction of rural and urban areas in China; establishing national standards of construction; guiding construction activity and regulating the construction market in China; and managing the housing and real estate industry.
	MWR	MWR is responsible for development and utilization of water resources in China. There are several authorities responsible for water management in China. Water pollution control is the responsibility of the Ministry of Ecology and Environment. Sewage is administered by the Ministry of Housing and Urban-Rural Development, and groundwater falls within the realm of the Ministry of Land and Resources.
	NDRC	NDRC is a macro-economic management agency. It is mainly in charge of macro-economic issues, planning for the overall situation, strengthening the comprehensive coordination of major strategic planning, major reforms and major projects across departments, regions, industries, and fields, and coordinating comprehensive innovation and reform. Its responsibilities are to study and formulate policies for economic and social development, maintain the balance of economic development, and to guide restructuring of China's economic system.
	SAC	SAC is the standards organization authorized by the SC to exercise administrative responsibilities by undertaking unified management, supervision and overall coordination of standardization work in China. SAC represents China within the ISO, IEC and other international and regional standardization organizations; it is also responsible for organizing the activities of the Chinese National Committee for ISO and IEC. SAC approves and organizes the implementation of international cooperation and the exchange of projects on standardization.
	CNCA	CNCA was established by the State Council and under the SAMR. Its administrative responsibilities are undertaking unified management, supervision and overall coordination of certification and accreditation activities across China.
Standardization Bodies	NSGGPA	NSGGPA was developed by SAC in 2016. It's responsible for: 1) developing China's green product standardization development strategy and promotion measures; 2) developing China's green product assessment standard system framework; 3) developing work plan for green product standardization; 4) organizing green product standard development activities; 5) promoting the standardization of green products at the international level;

		6) promoting the application of green product standards and labels.
	NIGPPA	NIGPPA is a non-profit technical alliance developed various industry alliances and research institutions. The secretariat is hosted by CNIS. NIGPPA is responsible for: 1) Research and policy recommendations on green development; 2) collect technologies and standards on green design and green manufacturing; 3) Develop corporate standards, group standards and national standards for green design, green manufacturing, green products; 4) Provide relevant information on domestic and international technologies, standards and green trade developments such as green design, green manufacturing, green products, etc.
	CNIS	CNIS is subordinate to SAMR. As a national social service institution dedicated to standardization research, it mainly addresses the global, strategic, and comprehensive standardization issues in national economy and social development of China.

Annex 2

List of Green Design Product Standards from 2015-2020 by Industry Sector (updated in March 2020)

No.	Standard Name	Standard Code
1.	General Principles for Eco-Design Product Assessment	GB/T 32161-2015
2.	Labelling for Eco-Design Product	GB/T 32162-2015
Petrochemical Industry		
3.	Technical Specification for Green-Design Product Assessment-Water-Borne Architectural Coating Materials	T/CPCIF 0001-2017
4.	Technical Specification for Green-Design Product Assessment-Auto Tyres	T/CPCIF 0011-2018, T/CRIA 11001-2018
5.	Technical Specification for Green-Design Product Assessment-Compound Fertilizer	T/CPCIF 0012-2018
6.	Technical Specification for Green-Design Product Assessment-Adhesives for Footwear and Case and Bag	T/CPCIF 0027-2019
7.	Technical Specification for Green-Design Product Assessment-Polyvinyl Chloride Resins	T/CPCIF 0028-2019
8.	Technical Specification for Green-Design Product Assessment-Water Based Coatings for Woodenware	T/CPCIF 0029-2019
9.	Specification for Green-Design Product Assessment-Drip Irrigation Fertilizer	T/CPCIF 0030-2019
10.	Technical Specification for Green-Design Product Assessment-Carbon Disulfide for Industrial Use	T/CPCIF 0031-2019
11.	Technical Specification for Green-Design Product Assessment-Chlorinated Polyvinyl Chloride Resin	T/CPCIF 0032-2019
12.	Technical Specification for Green-Design Product Assessment-Mixed Metal Oxide Pigments	T/CPCIF 0033-2019
13.	Technical Specification for Green-Design Product Assessment-Cathodic Electrodeposition Coatings	T/CPCIF 0034-2019
14.	Technical Specification for Green-Design Product Assesment-1,4-Butanediol for Industrial Use	T/CPCIF 0035-2019
15.	Technical Specification for Green-Design Product Assessment-Poly Tetra Methylene Ether Glycol for Industrial Use	T/CPCIF 0036-2019
16.	Technical Specification for Green-Design Product Assessment-Polybutylene Terephthalate Resin	T/CPCIF 0037-2019

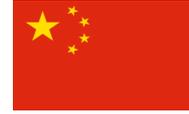|		
17.	Technical Specification for Green-Design Product Assessment-Polyethylene Terephthalate Resin	T/CPCIF 0038-2019
18.	Technical Specification for Green-Design Product Assessment-Polystyrene Resin	T/CPCIF 0039-2019
19.	Technical Specification for Green-Design Product Assessment-Liquid Disperse Dyes	T/CPCIF 0040-2019
Iron and Steel Industry		
20.	Specification for Green-Design Product Assessment-Rare-Earth Steel	T/CAGP 0026-2018，T/CAB 0026-2018
21.	Specification for Green-Design Product Assessment-Iron Ore Concentrate Products (Open Pit Mining)	T/CAGP 0027-2018，T/CAB 0027-2018
22.	Specification for Green-Design Product Assessment-Sintered Nd-Fe-B Magnetic Material	T/CAGP 0028-2018，T/CAB 0028-2018
23.	Technical Specification for Green-Design Product Assessment-Steel Pipes of Complex Plastic	T/CISA 104-2018
24.	Technical Specification for Green-Design Product Assessment-Vanadium Pentoxide	T/CISA 105-2019
25.	Technical Specification for Green-Design Product Assessment-Grain Oriented Electrical Steel	YB/T 4767-2019
26.	Technical Specification for Green-Design Product Assessment-Pipeline Steel	YB/T 4768-2019
27.	Technical Specification for Green-Design Product Assessment-Non-oriented Electrical Steel for New Energy Vehicle	YB/T 4769-2019
28.	Technical Specification for Green-Design Product Assessment-Stainless Steel for Kitchenware	YB/T 4770-2019
Non-ferrous Metal Industry		
29.	Specification for Green-Design Product Assessment-Antimony Ingot	T/CNIA 0004-2018
30.	Specification for Green-Design Product Assessment-Rare Earth Hydrometallurgical Separation Products	T/CNIA 0005-2018
31.	Specification for Green-Design Product Assessment-Polysilicon	T/CNIA 0021-2019
32.	Specification for Green-Design Product Assessment-Fumed Silica	T/CNIA 0022-2019
33.	Technical Specification for Green-Design Product Assessment-Copper Cathode	T/CNIA 0033-2019
34.	Technical Specification for Green-Design Product Assessment-Copper Drawing Stock for Electrical Purpose	T/CNIA 0034-2019

35.	Technical Specification for Green-Design Product Assessment-Copper Concentrate	T/CNIA 0035-2019
Building Material Industry		
36.	Specification for Eco-Design Product Assessment-Part 4: Light Inorganic Plate	GB/T 32163.4-2015
37.	Technical Specification for Green-Design Product Assessment-Sanitary Wares	T/CAGP 0010-2016，T/CAB 0010-2016
38.	Technical Specification for Green-Design Product Assessment-Wood Plastic Composite Profile	T/CAGP 0011-2016，T/CAB 0011-2016
39.	Technical Specification for Green-Design Product Assessment-Block	T/CAGP 0012-2016，T/CAB 0012-2016
40.	Technical Specification for Green-Design Product Assessment-Ceramic Tiles	T/CAGP 0013-2016，T/CAB 0013-2016
Machinery Industry		
41.	Technical Specification for Green-Design Product Assessment-Metal-cutting Machine Tools	T/CMIF 14-2017
42.	Technical Specification for Green-Design Product Assessment-Loader	T/CMIF 15-2017
43.	Technical Specification for Green-Design Product Assessment-Internal Combustion Engines	T/CMIF 16-2017
44.	Technical Specification for Green-Design Product Assessment-M1 Conventional Vehicles	T/CMIF 17-2017
45.	Technical Specifications for Green-Design Product Assessment-Forklift Trucks	T/CMIF 48-2019
46.	Technical Specifications for Green-Design Product Assessment-Stainless Steel Blades Castings for Hydraulic Turbine	T/CMIF 49-2019
47.	Technical Specifications for Green-Design Product Assessment-Cast Iron for Medium and Low Speed Engine Blocks	T/CMIF 50-2019
48.	Technical Specifications for Green-Design Product Assessment-Coatings for Lost Foam Casting	T/CMIF 51-2019
49.	Technical Specifications for Green-Design Product Assessment-Diesel Engine	T/CMIF 52-2019
50.	Technical Specifications for Green-Design Product Assessment-Wind Turbine of Direct Drive Permanent Magnet	T/CMIF 57-2019 T/CEEIA 387-2019
51.	Technical Specifications for Green-Design Product Assessment-Wind Turbine of Gearbox Transmission	T/CMIF 58-2019
52.	Technical Specifications for Green-Design Product Assessment-Remanufactured Metallurgical Machinery Parts	T/CMIF 59-2019
53.	Technical Specification for Green-Design Product Assessment-Lead Acid Battery	T/CAGP 0022-2017，T/CAB 0022-2017

54.	Technical Specification for Green-Design Product Assessment- Seamless Stainless Tube for Nuclear Instrument	T/CAGP 0031-2018 T/CAB 0031-2018
55.	Technical Specification for Green-Design Product Assessment- Coil Steam Generator	T/CAGP 0032-2018 T/CAB 0032-2018
56.	Technical Specification for Green-Design Product Assessment- Vacuum Hot Water Unit	T/CAGP 0033-2018 T/CAB 0033-2018
57.	Technical Specification for Green-Design Product Assessment- Punched Paper Carrier Tape	T/CAGP 0041-2018 T/CAB 0041-2018
58.	Technical Specification for Green-Design Product Assessment- BLDC Motor for Roller Washing Machine	T/CAGP 0042-2018 T/CAB 0042-2018
59.	Technical Specification for Green-Design Product Assessment- Lithium Ion Battery	T/CEEIA 280-2017
60.	Technical Specification for Green-Design Product Assessment- Electric Tools	T/CEEIA 296-2017
61.	Technical Specification for Green-Design Product Assessment- Circuit-Breakers for Overcurrent Protection for Household and Similar Installation	T/CEEIA 334-2018
62.	Technical Specification for Green-Design Product Assessment- Moulded-Case Circuit-Breaker	T/CEEIA 335-2018
63.	Technical Specification for Green-Design Product Assessment- Plugs and Socket-outlets for Household and Similar Purposes	T/CEEIA 374-2019
64.	Technical Specification for Green-Design Product Assessment- Switches for Household and Similar Fixed-electrical Installations	T/CEEIA 375-2019
65.	Technical Specification for Green-Design Product Assessment- Appliance Couplers for Household and Similar General Purposes	T/CEEIA 376-2019
66.	Technical Specification for Green-Design Product Assessment- Small-power Motor	T/CEEIA 380-2019
67.	Technical Specification for Green-Design Product Assessment- AC Motor	T/CEEIA 410-2019
Light Industry		
68.	Specification for Eco-Design Product Assessment-Part 1: Household Detergents	GB/T 32163.1-2015
69.	Specification for Eco-Design Product Assessment-Part 2: Degradable Plastics	GB/T 32163.2-2015
70.	Technical Specification for Green-Design Product Assessment- Room Air Conditioners	T/CAGP 0001-2016 T/CAB 0001-2016
71.	Technical Specification for Green-Design Product Assessment- Washers	T/CAGP 0002-2016 T/CAB 0002-2016
72.	Technical Specification for Green-Design Product Assessment- Household Refrigerators	T/CAGP 0003-2016 T/CAB 0003-2016

73.	Technical Specification for Green-Design Product Assessment-Range Hoods	T/CAGP 0004-2016 T/CAB 0004-2016
74.	Technical Specification for Green-Design Product Assessment-Household Induction Cookers	T/CAGP 0005-2016 T/CAB 0005-2016
75.	Technical Specification for Green-Design Product Assessment-Electric Rice Cookers	T/CAGP 0006-2016，T/CAB 0006-2016
76.	Technical Specification for Green-Design Product Assessment-Electrical Storage Water Heaters	T/CAGP 0007-2016，T/CAB 0007-2016
77.	Technical Specification for Green-Design Product Assessment-Air Cleaner	T/CAGP 0008-2016，T/CAB 0008-2016
78.	Technical Specification for Green-Design Product Assessment-Purified Water Treatment Devices	T/CAGP 0009-2016，T/CAB 0009-2016
79.	Technical Specification for Green-Design Product Assessment-Commercial Induction Cookers	T/CAGP 0017-2017，T/CAB 0017-2017
80.	Technical Specification for Green-Design Product Assessment-Commercial Kitchen Refrigerator	T/CAGP 0018-2017，T/CAB 0018-2017
81.	Technical Specification for Green-Design Product Assessment-Commercial Electric Water Boiler	T/CAGP 0019-2017，T/CAB 0019-2017
82.	Technical Specification for Green-Design Product Assessment-Tissue Paper	T/CAGP 0020-2017，T/CAB 0020-2017
83.	Technical Specification for Green-Design Product Assessment-Signage	T/CAGP 0023-2017，T/CAB 0023-2017
84.	Technical Specification for Green-Design Product Assessment-Electrical Kettle	T/CEEIA 275-2017
85.	Technical Specification for Green-Design Product Assessment-Robotic Floor Cleaners	T/CEEIA 276-2017
86.	Technical Specification for Green-Design Product Assessment-Fresh Ventilating Systems	T/CEEIA 277-2017
87.	Technical Specification for Green-Design Product Assessment-Smart Toilet Spray Seat	T/CEEIA 278-2017
88.	Technical Specification for Green-Design Product Assessment-Room Heaters	T/CEEIA 279-2017
89.	Technical Specification for Green-Design Product Assessment-Water-Based and Solvent-Free Artificial leather Synthetic Leather	T/CNLIC 0002-2019
90.	Technical Specification for Green-Design Product Assessment-Garment Leather	T/CNLIC 0005-2019
91.	Technical Specification for Green-Design Product Assessment-Amino Acid	T/CNLIC 0006-2019 T/CBFIA 04002-2019
92.	Technical Specification for Green-Design Product Assessment-Cane Sugar Products	T/CNLIC 0007-2019

93.	Technical Specification for Green-Design Product Assessment-Beet Sugar Products	T/CNLIC 0008-2019
94.	Technical Specification for Green-Design Product Assessment-Packaging Paper and Paperboard	T/CNLIC 0010-2019
	Textile Industry	
95.	Technical Specification for Green-Design Product Assessment-Silk Product	T/CAGP 0024-2017，T/CAB 0024-2017
96.	Technical Specification for Green-Design Product Assessment-Printed and Dyed Sanded Polyester Blended Fabric	T/CAGP 0030-2018 T/CAB 0030-2018
97.	Technical Specification for Green-Design Product Assessment-Outdoor Multipurpose Fabric	T/CAGP 0034-2018 T/CAB 0034-2018
98.	Technical Specification for Green-Design Product Assessment-Polyester Products	T/CNTAC 33-2019
99.	Technical Specification for Green-Design Product Assessment-Woven Towels	T/CNTAC 34-2019
100.	Technical Specification for Green-Design Product Assessment-Leather Suit	T/CNTAC 35-2019
101.	Technical Specification for Eco-Design Product Assessment-Cashmere Goods	T/CNTAC 38-2019
102.	Technical Specification for Eco-Design Product Assessment-Wool Worsted Products	T/CNTAC 39-2019
103.	Technical Specification for Eco-Design Product Assessment-Knitted Printing and Dyeing Fabric	T/CNTAC 40-2019
104.	Technical Specification for Eco-Design Product Assessment-Indoor Ornamental Textiles	T/CNTAC 41-2019
105.	Technical Specification for Green-Design Product Assessment-Spun-dyed Yarn	T/CNTAC 51-2020
106.	Technical Specification for Green-Design Product Assessment-Recycled Polyester Products	T/CNTAC 52-2020
	Electronics Industry	
107.	Technical Specification for Green-Design Product Assessment-Printer and Multi-function Printer	T/CESA 1017-2018
108.	Technical Specification for Green-Design Product Assessment-Televisions	T/CESA 1018-2018
109.	Technical Specification for Green-Design Product Assessment-Microcomputers	T/CESA 1019-2018
110.	Technical Specification for Green-Design Product Assessment-Smart Terminal-Tablet Computer	T/CESA 1020-2018
111.	Technical Specification for Green-Design Product Assessment-Metalized Film Capacitor	T/CESA 1032-2019

112.	Technical Specification for Green-Design Product Assessment-Projectors	T/CESA 1033-2019
113.	Technical Specification for Green-Design Product Assessment-Monitor	T/CESA 1068-2020
114.	Technical Specification for Green-Design Product Assessment-Smart Terminal-Head Mounted Device	T/CESA 1069-2020
115.	Technical Specification for Green-Design Product Assessment-Printed Circuit Board	T/CESA 1070-2020
116.	Technical Specification for Green-Design Product Assessment-Electromechanical Elementary Relays	T/CESA 1071-2020
117.	Technical Specification for Green-Design Product Assessment-Toner Cartridge	T/CESA 1072-2020
118.	Technical Specification for Green-Design Product Assessment-Organic Photoconductive Drum	T/CESA 1073-2020
119.	Technical Specification for Green-Design Product Assessment-Photovoltaic Silicon Wafer	T/CESA 1074-2020 T/CPIA 0021-2020
Communications Industry		
120.	Technical Specification for Green-Design Product Assessment-Optical Network Terminal	YDB 192-2017
121.	Technical Specification for Green-Design Product Assessment-Ethernet Switch	YDB 193-2017
122.	Technical Specification for Green-Design Product Assessment-Mobile Communication Terminal	YDB 194-2017
123.	Technical Specification for Green-Design Product Assessment-Wearable Wireless Telecommunication Device Wrist-worn Wearable Device	T/CCSA 251-2019
124.	Technical Specification for Green-Design Product Assessment-Wearable Wireless Telecommunication Device Head Mount Display/Near-eye Display Device	T/CCSA 252-2019
125.	Technical Specification for Green-Design Product Assessment-Server	T/CCSA 253-2019
126.	Technical Specification for Green-Design Product Assessment-Video Conference Device	T/CCSA 254-2019
127.	Technical Specification for Green-Design Product Assessment-Communication Cable	T/CCSA 255-2019
128.	Technical Specification for Green-Design Product Assessment-Optical Fiber Cable	T/CCSA 256-2019
Others		
129.	Technical Specification for Green-Design Product Assessment-Smart Toilet	T/CAGP 0021-2017，T/CAB 0021-2017

GDP Standards and Assessment Status (as of 17th April 2019) showing Type of Standards and Number of GDPs Assessed

Note: Type N-National Standard; G- Group Standard; A- Association Standard

Product categories highlighted in bold italics relates to energy related products

No.	Standard No.	Name	Type	Number of GDP Assessed
1	GB/T 32161-2015	General Principles for Eco-design Product Assessment	N	0
2	GB/T 32162-2015	Label for Eco-design Product	N	0
3	GB/T 32163.1-2015	Specification for Eco-design Product Assessment – Part 1: Household Detergents	N	129
4	GB/T 32163.2-2015	Specification for Eco-design Product Assessment – Part 2: Degradable Plastics	N	43
5	GB/T 32163.3-2015	Specification for Eco-design Product Assessment – Part 3: Insecticides	N	2
6	*T/CAGP 0001-2016，T/CAB 0001-2016*	*Technical Specification for Green-design Product Assessment- Room Air Conditioners*	*G*	*69*
7	*T/CAGP 0002-2016，T/CAB 0002-2016*	*Technical Specification for Green-design Product Assessment- Washers*	*G*	*37*
8	*T/CAGP 0003-2016，T/CAB 0003-2016*	*Technical Specification for Green-design Product Assessment- Household Refrigerators*	*G*	*130*
9	*T/CAGP 0004-2016，T/CAB 0004-2016*	*Technical Specification for Green-design Product Assessment- Range Hoods*	*G*	*6*
10	*T/CAGP 0005-2016，T/CAB 0005-2016*	*Technical Specification for Green-design Product Assessment- Household Induction Cookers*	*G*	*0*
11	*T/CAGP 0006-2016，T/CAB 0006-2016*	*Technical Specification for Green-design Product Assessment- Electric Rice Cookers*	*G*	*3*
12	*T/CAGP 0007-2016，T/CAB 0007-2016*	*Technical Specification for Green-design Product Assessment- Electrical Storage Water Heaters*	*G*	*4*
13	*T/CAGP 0008-2016，T/CAB 0008-2016*	*Technical Specification for Green-design Product Assessment- Air Cleaner*	*G*	*5*
14	*T/CAGP 0009-2016，T/CAB 0009-2016*	*Technical Specification for Green-design Product Assessment- Purified Water Treatment Devices*	*G*	*12*
15	T/CAGP 0010-2016，T/CAB 0010-2016	Technical Specification for Green-design Product Assessment- Sanitary Wares	G	2

16	T/CAGP 0017-2017, T/CAB 0017-2017	*Technical Specification for Green-design Product Assessment- Commercial Induction Cookers*	*G*	*1*
17	*T/CAGP 0018-2017, T/CAB 0018-2017*	*Technical Specification for Green-design Product Assessment- Commercial Kitchen Refrigerator*	*G*	*8*
18	*T/CAGP 0019-2017, T/CAB 0019-2017*	*Technical Specification for Green-design Product Assessment- Commercial Electric Water Boiler*	*G*	*0*
19	T/CAGP 0020-2017, T/CAB 0020-2017	Technical Specification for Green-design Product Assessment- Tissue Paper	G	13
20	T/CAGP 0021-2017, T/CAB 0021-2017	Technical Specification for Green-design Product Assessment- Smart Toilet	G	0
21	T/CAGP 0022-2017, T/CAB 0022-2017	Technical Specification for Green-design Product Assessment- Lead Acid Battery	G	35
22	T/CAGP 0023-2017, T/CAB 0023-2017	Technical Specification for Green-design Product Assessment- Signage	G	1
23	T/CAGP 0024-2017, T/CAB 0024-2017	Technical Specification for Green-design Product Assessment- Silk Product	G	20
24	T/CAGP 0025-2017, T/CAB 0025-2017	Technical Specification for Green-design Product Assessment- Cashmere Knitting Goods	G	22
25	*YDB 192-2017*	*Technical Specification for Green-design Product Assessment- Optical Network Terminal*	*A*	*0*
26	*YDB 193-2017*	*Technical Specification for Green-design Product Assessment- Ethernet Switch*	*A*	*0*
27	*T/CEEIA 275-2017*	*Technical Specification for Green-design Product Assessment- Electrical Kettle*	*A*	*1*
28	*T/CEEIA 276-2017*	*Technical Specification for Green-design Product Assessment- Robotic Floor Cleaners*	*A*	*0*
29	*T/CEEIA 277-2017*	*Technical Specification for Green-design Product Assessment- Fresh Ventilating Systems*	*A*	*0*
30	*T/CEEIA 278-2017*	*Technical Specification for Green-design Product Assessment- Smart Toilet Spray Seat*	*A*	*0*
31	*T/CEEIA 279-2017*	*Technical Specification for Green-design Product Assessment- Room Heaters*	*A*	*0*
32	T/CPCIF 0001-2017	Technical Specification for Green-design Product Assessment- Water-borne Architectural Coating Materials	G	74
33	T/SSEA 0010-2018	Technical Specification for Green-design Product Assessment- Stainless Steel for Kitchenware	G	5
34	T/CEEIA 280-2017	Technical Specification for Green-design Product Assessment- Lithium Ion Battery	A	6

35	*T/CESA 1017-2018*	*Technical Specification for Green-design Product Assessment- Printer and Multi-function Printer*	*G*	*0*
36	*T/CESA 1018-2018*	*Technical Specification for Green-design Product Assessment- Televisions*	*G*	*4*
37	*T/CESA 1019-2018*	*Technical Specification for Green-design Product Assessment- Microcomputers*	*G*	*7*
38	*T/CESA 1020-2018*	*Technical Specification for Green-design Product Assessment- Smart Terminal – Tablet Computer*	*G*	*12*
39	TCMIF 16-2017	Technical Specification for Green-design Product Assessment- M1 Conventional Vehicles	G	9
40	*YDB 194-2017*	*Technical Specification for Green-design Product Assessment- Mobile Communication Terminal*	*A*	*23*
41	T/CAGP 0026-2018， T/CAB 0026-2018	Technical Specification for Green-design Product Assessment- Rare-earth Steel	G	5
42	T/CAGP 0027-2018， T/CAB 0027-2018	Technical Specification for Green-design Product Assessment- Iron Ore Concentrate Products (Open Pit Mining)	G	1
43	T/CAGP 0028-2018， T/CAB 0028-2018	Technical Specification for Green-design Product Assessment- Sintered Nd-Fe-B Magnetic Material	G	12
44	*T/CMIF 14-2017*	*Technical Specification for Green-design Product Assessment- Metal-cutting Machine Tools*	*G*	*0*
45	T/CMIF 15-2017	Technical Specification for Green-design Product Assessment- Loader	G	0
46	T/CMIF 16-2017	Technical Specification for Green-design Product Assessment- Internal Combustion Engines	G	0
47	T/CNIA 0004-2018	Technical Specification for Green-design Product Assessment- Antimony Ingot	G	0
48	T/CNIA 0005-2018	Technical Specification for Green-design Product Assessment- Rare Earth Hydrometallurgical Separation Products	G	0
49	TCPCIF/ 0011-2018	Technical Specification for Green-design Product Assessment- Auto Tires	G	13
50	TCPCIF/ 0012-2018	Technical Specification for Green-design Product Assessment- Compound Fertilizer	G	12
51	*T/CEEIA 296-2017*	*Technical Specification for Green-design Product Assessment- Electric Tools*	*A*	*0*
52	T/CEEIA 334-2018	Technical Specification for Green-design Product Assessment- Circuit-breakers for Overcurrent Protection for Household and Similar Installation	A	0
53	T/CEEIA 335-2018	Technical Specification for Green-design Product Assessment- Molded-case Circuit-breaker	A	0
54	T/CAGP 0030-2018	Technical Specification for Green-design Product Assessment- Printed and Dyed Sanded Polyester	G	0

	T/CAB 0030-2018	Blended Fabric		
55	T/CAGP 0031-2018 T/CAB 0031-2018	Technical Specification for Green-design Product Assessment- Seamless Stainless Tube for Nuclear Instrument	G	0
56	T/CAGP 0032-2018 T/CAB 0032-2018	Technical Specification for Green-design Product Assessment- Coil Steam Generator	G	0
57	**T/CAGP 0033-2018** **T/CAB 0033-2018**	**Technical Specification for Green-design Product Assessment- Vacuum Hot Water Unit**	**G**	**0**
58	T/CAGP 0034-2018 T/CAB 0034-2018	Technical Specification for Green-design Product Assessment- Outdoor Multipurpose Fabric	G	0
59	T/CAGP 0041-2018 T/CAB 0041-2018	Technical Specification for Green-design Product Assessment- Punched Paper Carrier Tape	G	0
60	T/CAGP 0042-2018 T/CAB 0042-2018	Technical Specification for Green-design Product Assessment- BLDC Motor for Roller Washing Machine	G	0
61	T/CNTAC 33-2019	Technical Specification for Green-design Product Assessment- Polyester Products	G	0
62	T/CNTAC 34-2019	Technical Specification for Green-design Product Assessment- Woven Towels	G	0
63	T/CNTAC 35-2019	Technical Specification for Green-design Product Assessment- Leather Suit	G	0
64	*T/CESA 1032-2019*	*Technical Specification for Green-design Product Assessment- Projectors*	*G*	*0*
65	T/CESA 1033-2019	Technical Specification for Green-design Product Assessment- Metallized Film Capacitor	G	0
66	T/CISA 104-2018	Technical Specification for Green-design Product Assessment- Steel Pipes of Complex Plastic	G	0
67	TCMIF 48-2019	Technical Specification for Green-design Product Assessment- Forklift Trucks	G	0

Annex 3

Green Product Assessment Standards (Update - Sept 2020)

Product categories highlighted in bold italics relates to energy related products

No.	Standard Code	Title	Status
1	GB/T 33761-2017	General Principles for GP Assessment	In Effect
2	GB/T 35601-2017	Green product assessment—Wood-based panels and wooden flooring	In Effect
3	GB/T 35602-2017	Green product assessment—Coating Material	In Effect
4	GB/T 35603-2017	Green product assessment—Sanitary Wares	In Effect
5	GB/T 35604-2017	Green product assessment—Building Glass	In Effect
6	GB/T 35605-2017	Green product assessment—Wall Material	In Effect
7	*GB/T 35606-2017*	*Green product assessment—Solar water heating system*	*In Effect*
8	GB/T 35607-2017	Green product assessment—Furniture	In Effect
9	GB/T 35608-2017	Green product assessment—Thermal Insulation	In Effect
10	GB/T 35609-2017	Green product assessment—Water Proof Materials and Sealants	In Effect
11	GB/T 35610-2017	Green product assessment—Ceramics Tiles (boards)	In Effect
12	GB/T 35611-2017	Green product assessment—Textile Products	In Effect
13	GB/T 35612-2017	Green product assessment—Wood Plastic Composites Products	In Effect
14	GB/T 35613-2017	Green product assessment—Paper and Paper Products	In Effect

15	GB/T 37866-2019	Green product assessment—Plastic products	In Effect
16	GB/T 39084-2020	Green product assessment—Packaging for express service	To be implemented on 2020-10-01
17	GB/T 39020-2020	Green product assessment—Detergents	To be implemented on 2021-02-01
Program of National Standards Development			
18	20182166-T-606	Green product assessment—Tyres	Under review from 2018-10-16 to 2020-10-16
19	20190983-T-607	Green product assessment—Kitchen and bathroom hardware	Under review from 2019-03-28 to 2021-03-28
20	*20194332-T-607*	*Green product assessment—Electric toys*	*Drafting from 2020-01-13*
21	20202648-T-607	Green product assessment—Stationer	Drafting from 2020-08-07
22	20202644-T-607	Green product assessment—Domestic ceramic	Drafting from 2020-08-07
23	*20202652-T-607*	*Green product assessment -- Lighting equipment*	Drafting from 2020-08-07

Annex 4

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?

Annex 5

Future Cooperation: EU and China policy dialogue: Ecodesign, Energy Labelling & Circular Economy?

- Extend the webinar knowledge exchange/ training programmes
  - MIIT
  - Other Ministries
  - Provincial governments
  - Training/ research institutions
  - EU and China Market surveillance authorities/ third party certification organisations

- Specific capacity building project(s)
  - Public Procurement/ Green Public Procurement rules & verification methods
  - Circular Economy
  - Materials efficiency & Critical Raw Materials (CRMs)
  - Energy labelling
  - Digital "Product Passports"

- Specific capacity building project
  - LCA/PEF focused on EEE products & other product groups