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Feasibility on Establishment of EGSS-based Environmental industry Statistic Framework under the Statistic System in China

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Foreword »

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Since its opening-up and reform, China has been in the process of rapid economic development with its people enjoying an increasingly improved standard of life. Meanwhile accompanying this dramatic economic growth is the degradation of environment which has, to some extent, damaged the gains of the opening-up and reform and prevented the economy from a healthy and sustainable development. The Chinese government is increasingly aware of that without addressing the environmental issues it is facing now, will jeopardize its long term goal of the great rejuvenation of the Chinese nation. Given the magnitude and complexity of the environmental issues in China, there is no easy way in addressing them and the solution to them entails an equal priority being given to environmental protection, ecological conservation and economic development or even higher than the latter by mainstreaming the former into the overall socio-economic decision-making process. As a matter of fact, China has been in the struggle against environmental pollution since the very beginning of its economic take-off and trying to explore a pathway that could help address China's environmental issues in the way most suitable to China's specific circumstances.

In recent years, especially since the 12th Five-Year Plan period, the enhanced measures including legislation, policy, regulatory and economic means have been taken by the Chinese government in dealing with environmental problems, of which environmental policies have played an important role in this regard. Corresponding to this situation and in meeting the demand of governments at different levels for environmental policy tools, the environmental policy research projects on topics of a wide range have been conducted by some Chinese environmental research institutions including the Chinese Academy of Environmental Planning (CAEP).

CAEP founded in 2001, is a research advisory body supporting governments in the development of key environmental planning, national environmental policies, and major

environmental engineering projects. In the past more than 10 years, CAEP has accomplished the development of the overall planning of national environmental protection for the 10th, 11th and 12th Five-Year Plan periods; water pollution prevention and control planning for key river basins; air pollution prevention and control planning for key regions; soil pollution prevention and control planning; and some regional environmental protection plans. In the same period of time, CAEP also actively engaged in research on such topics as green GDP, environmental taxation, emission trading, ecological compensation, green financing, etc. By so doing, CAEP has become an indispensable advisory body in the environmental decision-making in mainland China. According to *2013 Global Go To Think Tanks Report and Policy Advice* published by University of Pennsylvania, CAEP was ranked 31 in the field of environment in the world. Many of CAEP's research results and project outcomes regarding environmental policies have drawn great attention of decision makers and international institutions, and have been utilized to contribute to the formulation of national environmental policies concerned.

The Chinese Environmental Policy Research Working Paper (CEPRWP) is a new internal publication produced by CAEP for the purpose of facilitating the academic exchange with foreign colleagues in this field, in which the selected research papers on environmental policies from CAEP are set out on the irregular basis. It is expected that this publication will not only make CAEP's research results on environmental policies be known by foreign colleagues but also serve as a catalyst for creating opportunity of international cooperation in the field of environmental policies, and environmental economics in particular, with a view of both the academic research and practical policy needs.

Measuring progress towards a green economy is an important pathway to implement sustainable development. The two priority areas for green economy indicator are those that assess greening degree of the conventional economic activities and those that assess the growing share of the environment-related sectors.

The environmental goods and services sector (EGSS)accounting framework , developed by Eurostat and embedded in the System of Environmental-Economic Accounting (SEEA) Central Framework issued by the UN Statistical Commission in 2012, is considered as a key approach for quantifying the performance of the environmental sectors in the economy system.

As the world's largest emerging economy, China has been experiencing continuous growth in the environmental industries over the past decades. In order to comprehensively assess development of the environmental industry and provide technical supports for the decision making of environmental industry policies, the Chinese Academy for Environmental Planning (CAEP), in collaboration with UN Environment Programme, conducted a pilot study on measuring the environmental industry sector in China based on the EGSS framework. The case study has been made in the city of Chongqing, where the environmental industry is at a certain scale and covers a wide range of areas. The paper shows us the research work and the main finds.

Contents

LIST OF ACRONYMS

EGSS, Environmental goods and services sector

CEPA, Classification of Environmental Protection Activities

CEPA1, Protection of ambient air and climate

CEPA2, Wastewater management

CEPA3, Waste management

CEPA4, Protection and remediation of soil, groundwater and surface water

CEPA5, Noise and vibration abatement (excluding workplace protection)

CEPA6, Protection of biodiversity and landscapes

CEPA7, Protection against radiation (excluding external safety)

CEPA8, Research and development

CEPA9, Other environmental protection activities

CReMA, Classification of Resource Management Activities

CReMA10, Management of water

CReMA11A, Management of forest areas

CReMA11B, Minimization of the intake of forest resources

CReMA12, Management of wild flora and fauna

CReMA13A, Production of energy from renewable sources

CReMA13B, Heat/energy saving and management

CReMA13C, Minimization of the intake of fossil resources for raw materials for uses other than energy production

CReMA14, Management of minerals

CReMA15, Research and development activities for natural resource management

CReMA16, Other natural resource management activities

SS, Specific services

CS, Connected Services

CG, Connected goods

ET, End-of-pipe technologies

IT, Integrated technologies

AG, Adapted goods

1. INTRODUCTION

The environmental industry is policy driven, and has thus in recent years developed along with the increase in importance of environmental issues and the accompanying of public attention. The environmental industry is still emerging and is not yet clearly classified and defined. No independent "environmental industry" exists in the statistical and classification standards of most countries. Instead, it is distributed through various conventional industries. The statistical framework of the environmental goods and service sector (EGSS) is a method developed by Eurostat and used for the collection and collation of relevant statistics. The aim is to collect statistics of environmental goods, technologies, and services distributed from various conventional industries and propose standards and a framework for the integration and analysis of the data relating to the environmental industry. The EGSS statistic framework has been incorporated by the United Nations Statistics Division (UNSD) into the "System of Integrated Environmental and Economic Accounting (SEEA)"to become an international statistic standard. China's environmental industry is developing rapidly, and it must learn and reference the statistical practices of domestic and foreign environment protection industries to establish a statistical system to fully comprehend the actual conditions of the industry, enabling further development in China.

Based on the cooperative project "Drive Cooperation in Partnership for Action on Green Economy (PAGE) and Promote Low-carbon Development" of the United Nations Environment Programme (UNEP) and GIZ (Gesellschaft für Internationale Zusammenarbeit), the CAEP of the Ministry of Environmental Protection of China(MEP), Chongqing Municipal Bureau of Statistics, and Hubei Academy of Environmental Sciences, jointly conducted the "Research on Establishment of EGSS-based Environmental industry Statistic Framework in China." The project is comprised of two phases.

Phase I includes initial research on the implementation of EGSS in an emerging economy, and tests the feasibility of using the EGSS Statistic Framework of the European Union to track the latest data and trends in China's environmental industry. This will contribute to compiling a green development strategy and identifying potential opportunities in the green economy.

The findings of Phase I suggest that establishing an EGSS statistic framework in China on the basis of conventional statistic reports and Environmental Industry Survey is a major challenge. We therefore plan to continue our research and further analyze the probability of establishing an EGSS environment industry statistic framework in China from the perspectives of statistical policy and standards. In Phase II of the project, we will investigate the feasibility of obtaining more comprehensive and detailed statistics from the base forms that can be used as EGSS statistics, and study the applicability of the Classification of Strategic Emerging Industries (2012) and the classification of the EGSS. The most feasible routes for introducing the EGSS statistic framework into China can then be further identified.

This report is the research study of Phase II. It comprised of seven parts. The Introduction

describes the background and significance of the project, and the following chapters analyze the channels for the introduction of an EGSS statistic framework into China. In the report the frameworks of the National Economic Census, Strategic Emerging Industry Statistics, and EGSS statistics are compared, and data from the pilot city of Chongqing are collected and analyzed. The probability of introducing the EGSS from the basic form of the Economic Census is then evaluated, along with the probability of combining Strategic Emerging Industry Statistics and those of the EGSS. Finally, we summarize the project research and propose suggestions regarding policies on introducing the EGSS statistic framework in China.

2. ANALYSIS OF CHANNELS FOR THE INTRODUCTION OF EGSS STATISTIC FRAMEWORK INTO CHINA

According to "A Data Collection Handbook of the Environmental Goods and Services Sector: Eurostat, European Commission 2009" (hereinafter referred to as the "EGSS Handbook 2009"), the scope of research on the EGSS statistic framework can be divided in terms of the environmental sector and product nature, in which the objects of the statistics are the governments and enterprises engaged in EGSS-related production activities. The primary research indexes include operating income, value added, quantity of employment, amount of exports, etc. According to these requirements, a survey that conforms to the EGSS statistic framework must be of a large scale, with extensive coverage and a complete index system. Current Chinese surveys that are appropriate and can provide EGSS-related indexes and broad data include National Economic Census, Input-output Survey, and Environmental Industry Survey conducted by the Ministry of Environment Protection. These surveys must therefore be studied to determine which are appropriate for EGSS research. The statistics are compared in Table 1.

Table 1 Comparison of Statistic Programs in China

Statistic program	National Economic Census (3rd)	Input-output Survey	Environmental Industry Survey
Scope of statistics	All legal entities, industrial entities, and individual businesses engaged in the secondary and tertiary industries in China	Primarily legal entities in all industries of the national economy except agriculture, forestry, pasturage, and fishing industries	Environment protection products, environment-friendly products, resource recycling products, and environment services
Indexes of statistics	Basic nature, workforce, financial conditions, production and operating conditions, production capacity, raw material, energy and main resource consumption, science and technology R&D activities, strategic emerging industry, etc.	Cost and expense makeup, profit, project investment makeup, etc.	A series of indexes including production and operation conditions, production capacity, technical level, R&D investment, workforce, and export
Data collection and collation	Upload data from the bottom; substantial national publicity	An important source of the input/output table; helps to ensure the scientificity of the input/output form	Upload data from the bottom; summarized by the authority with jurisdiction
Statistic mechanism	A National Economic Census once every 5 years	One national input-output survey once every 5 years (the 2nd and 7th year of each decade)	One-time special investigation

2.1 Comparative study of the applicability of various survey statistics for EGSS

Using the knowledge of the basic conditions of the various surveys, a comparative study will be conducted on the applicability of the three surveys for EGSS, with the aim of selecting the base form applicable for this research.

2.1.1 Comparative study of Economic Census and Input-output Survey

Economic Census and Input-output Survey both play a crucial role in their respective areas. Both surveys initially appear to correspond to the EGSS on the basis of the industrial codes for the national economy, and it is possible to screen out the industries in the EGSS and acquire the corresponding research indexes. However, an in-depth comparison shows that Economic Census is more suitable for the EGSS than Input/output Survey, primarily because: (1) it has a wider scope of objects; (2) its data are more up to date; and (3) its economic indexes are more comprehensive. Comparatively, the methods of acquiring the indexes are simpler and more flexible, accurate, and specific when Economic Census data are applied to the EGSS.

2.1.2 Comparative study of Economic Census and Environmental Industry Survey

Economic Census and Environmental Industry Survey have certain similarities when applied to the EGSS. To measure the feasibility of using the statistical framework of the EGSS for the environmental industry in China (Phase I), Environmental Industry Survey from the pilot city of Wuhan was chosen as the research object of the EGSS statistical framework. The research found that to some extent the environmental industry survey can be feasibly applied to the EGSS. However, the Economic Census has important advantages when used for EGSS research, including: (1) the objects of the environmental industry survey are only some of the objects of the Economic Census and therefore the latter has a wider scope of objects; (2) the data of the Economic Census are more recent than the that of the environmental industry survey; and (3) a strategic emerging industry statement is provided in the third National Economic Census, which is more closely related to the environmental industry statistics. It is recommended to research the feasibility of integrating strategic emerging industry data with the EGSS statistic framework.

2.2 Summary

For the purpose of the research, EGSS data are collected and analyzed using the data and base forms of the Economic Census. The Economic Census base forms will also be applied to study the statistics of strategic emerging industries and to examine the feasibility of their integration into the EGSS statistic framework. In Economic Census, however, an enterprise is included in a particular industry based on the nature of its main production activities, and so all of its activities will then be classified into that industry. Therefore, the summary only identifies the environment industry to which its main activities belong, but not those of its secondary or supporting activities. These issues must be addressed in subsequent research to better integrate with the EGSS statistic framework.

3. CHINA'S NATIONAL ECONOMIC CENSUS AND EGSS

3.1 The third National Economic Census related to EGSS

The third National Economic Census and the EGSS statistic framework have obvious differences in statistic positioning and thus in the scope, objects, and indexes of statistics and their collection and collation, as Table 2 shows.

Table 2 Comparison of Third National Economic Census and EGSS Statistic Framework

	EGSS statistic framework	Third National Economic Census
Classification of scope of statistics	Classified as per environment sector, product nature, and other perspectives	Not classified as per environment sector and product nature; classified as per the 19 industries of the national economy but not referring to products in detail
Objects of statistics	All governments and enterprises engaged in EGSS-related production activities, including manufacturers but excluding retailers	All legal entities, industrial entities, and individual businesses in the secondary and tertiary industries, including all manufacturers and retailers in all industries except agriculture, forestry, pasturage, and fishing, and also including governmental bodies
Indexes of statistics	Four indexes: operating income, value added, quantity of employment, and amount of exports	Multiple indexes: employment quantity and makeup, asset and financial conditions, operating and production conditions, output, primary raw material and energy consumption, scientific and technological activities, etc.
Data collection and collation	No uniform data collection standards; countries have to choose their own data collection method and all data is finally summarized in a uniform format	Data are collected and the survey form is filled via an electronic terminal (PDA) from the bottom up; registration and input work is completed by a specific time. Detailed survey procedures are established
Statistic mechanism	Conventional statistics are collected once every two years	Conventional statistics are collected once every five years

As a conventional Chinese statistic system with an extensive survey scope, the Economic Census focuses on the main business activities of an enterprise. Therefore, enterprises within the scope of the EGSS can be conveniently and accurately identified using the key words of their main business activities. Detailed statistics statements are produced from an Economic Census, and include multiple economic indexes of the surveyed organization, generally covering the four indexes required for the EGSS.

3.2 Measuring EGSS variables through the National Economic Census

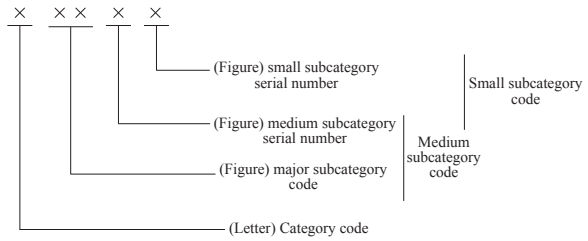
3.2.1 General ideas

Industrial classification of the national economy is the basis of statistical work in China. Establishing an EGSS statistic catalog based on the industrial classification of the national economy can utilize the massive database of the statistic system to acquire EGSS-related statistics, and can enable the research results to be referenced and promoted nationwide.

The industrial classification of the national economy is the basic domestic standard for the illustration of economic and industrial contents and structure, and corresponds to international standard industrial classification. All industrial activities are included in a four-layered classification system. In the Industrial Classification of National Economy (GB/T 4754-2011), economic activities

are classified into 20 categories, which further include 96 main subcategories, 434 medium subcategories, and 1,095 small subcategories[1]. It thus provides the basic code for the collection of economic management and industrial statistics. See Figure 1 for the code structure.

Figure 1 Structure of the Industrial Classification Code of the National Economy



With reference to the EGSS Handbook2009 and the category descriptions in the Industrial Classification of National Economy (GB/T 4754-2011), the four-digit small subcategory codes correspond to the goods classification and the environment sector classification under the EGSS statistic framework, and are used for selecting environment technologies, goods, and services from China's general economic activities. The manufacturers of environmental goods and services are then regrouped according to the industrial code of the national economy and reclassified according to the environment sector and the nature of the goods. The national economy industrial categories and the organization code of each enterprise are then used to identify or estimate the turnover, value added, the quantity of employment, and the level of exports, via the statistics database of Economic Census. Manufacturers in the industrial categories of the national economy can also be regrouped into the standard form, for data reporting to Eurostat.

The third National Economic Census statistics are used to collect EGSS statistics in the following basic framework:

Figure 2 Framework for EGSS Data Collection via Third Economic Census

Identify objects of statistics

Match the 4-digit small subcategory code of the Industrial Classification of National Economy (GB/T 4754-2011) with the goods classification and environment sector classification under the EGSS statistic framework, and mark accordingly.

↓

Identify manufacturers

Screen out the environmental goods and service manufacturers according to the goods code of the survey object and then classify them according to the environment sector and product nature in EGSS.

↓

Collect and process data

Collect the data required for the EGSS framework according to the survey data provided by the manufacturer.

Make appropriate estimations if the manufacturer engages in multiple production activities and part of these activities are not within the range of EGSS.

[1] Industrial Classification of National Economy, see official website of the National Bureau of Statistics at http://www.stats.gov.cn/tjsj/tjbz/hyflbz/.

3.2.2 Identification of objects of statistics

Each category in the Industrial Classification of National Economy (GB/T 4754-2011) is first matched with the goods classification and environment sector classification under the EGSS statistic framework. See Annex 1 of the report for details. Based on the comparisons in Annex 1, the data are summarized in the data base of the third National Economic Census as per the small subcategory code of the national economy, so they can be processed under the EGSS statistic framework.

As Table 3 shows, the Industrial Classification of National Economy (GB/T 4754-2011) covers all sectors of "environment protection" included in the EGSS statistic framework. The product nature primarily includes "Specific services & connected services," "Connected goods," "End-of-pipe technologies," and "Adapted goods." Broadly speaking, "Integrated technology" is not classified accordingly.

As Table 4 shows, three categories of "resource management" activities under the EGSS statistic framework are not incorporated in the Industrial Classification of National Economy (GB/T 4754-2011): "CReMA 14 Management of minerals," "CReMA 15 Research and development (R&D) activities for resource management," and "CReMA 16 Other resource management activities." The product nature is primarily "Specific services & connected services" or "Adapted goods." Goods in the "Connected goods," "End-of-pipe technologies," and "Integrated technology" categories can to a certain extent also be identified.

Table 3 Comparison of Industrial Classification of National Economy (GB/T 4754-2011) and EGSS Statistic Framework (CEPA)

	CEPA 1	CEPA 2	CEPA 3	CEPA 4	CEPA 5	CEPA 6	CEPA 7	CEPA 8	CEPA 9
Specific services & connected services (SS&CS)	√	√	√	√	√	√	√	√	√
Adapted goods(AG)	√	×	√	√	×	—	—	—	—
Connected goods(CG)	√	√	√	√	√	×	√	★[2]	√
End-of-pipe technologies(ET)	√	√	√	√	×	—	×	—	—
Integrated technology (IT)	×	√	×	×	×	—	—	—	—

Note: " √ " indicates the products that can be found in the Industrial Classification of National Economy (GB/T 4754-2011) and can be incorporated in the EGSS statistic framework; "×" indicates the products that cannot be found in the Industrial Classification of National Economy(GB/T 4754-2011) and can be incorporated in the EGSS statistic framework; "—" indicates the parts that are not cited in the EGSS Handbook, i.e., those that do not require statistics; " ★ " indicates the parts that are not listed in the EGSS Handbook but are included in the Industrial Classification of National Economy (GB/T 4754-2011).

CEPA, Classification of Environmental Protection Activities;CEPA1,Protection of ambient air and climate;CEPA2, Wastewater management;CEPA3, Waste management;CEPA4, Protection and remediation of soil, groundwater and surface water;CEPA5, Noise and vibration abatement (excluding workplace protection)

CEPA6, Protection of biodiversity and landscapes;CEPA7, Protection against radiation (excluding external safety);CEPA8, Research and development;CEPA9, Other environmental protection activities.

[2] Production of substances for the treatment of environmental pollution (all activities in this industry belong to EGSS)

Table 4 Comparison of Industrial Classification of National Economy (GB/T 4754-2011) and EGSS Statistic Framework (CReMA)

	CReMA 10	CReMA 11A	CReMA 11B	CReMA 12	CReMA 13A	CReMA 13B	CReMA 13C	CReMA 14	CReMA 15	CReMA 16
Specific services & connected services (SS&CS)	√	×	√	√	√	√	★[3]	—	?	?
Adapted goods(AG)	√	—	×	—	×	√	√	?	—	—
Connected goods (CG)	×	√	—	—	√	—	×	—	—	?
End-of-pipe technologies (ET)	√	√	—	×	×	×	—	—	—	—
Integrated technology (IT)	√	×	×	—	×	√	×		—	—

Note: " √ " indicates the products that can be found in the Industrial Classification of National Economy (GB/T 4754-2011) and can be incorporated in the EGSS statistic framework; "×" indicates the products that cannot be found in the Industrial Classification of National Economy (GB/T 4754-2011) and are supposed to be incorporated in the EGSS statistic framework; "—" indicates the parts that are not cited in the EGSS Handbook, i.e., those that do not require statistics; " ★ " indicates the parts that are not listed in the EGSS Handbook but are included in the Industrial Classification of National Economy (GB/T 4754-2011); "?" indicates a high degree of conformity to the industry subcategory in the national standard corresponding to different classes in the EGSS, making it difficult to find an example.

CReMA, Classification of Resource Management Activities;CReMA10, Management of water;CReMA11A, Management of forest areas;CReMA11B, Minimisation of the intake of forest resources;CReMA12, Management of wild flora and fauna;CReMA13A, Production of energy from renewable sources;CReMA13B, Heat/energy saving and management;CReMA13C, Minimisation of the intake of fossil resources for raw materials for uses other than energy production;CReMA14, Management of minerals;CReMA15, Research and development activities for natural resource management;CReMA16, Other natural resource management activities.

3.2.3 Identification of Manufacturers

The identification of manufacturers is divided into the following two phases:

Phase for the integration of EGSS classification and the industrial classification of the national economy: a comparison between the EGSS classification standards and interpretation and the Industrial Classification of National Economy will be conducted, and a four-page comparison table will be produced. This will include all industrial categories from the national economy, all activities belonging to the EGSS, partial activities belonging to the EGSS, activities that cannot as yet be defined in the EGSS, and activities that cannot temporarily be defined as those of EGSS in part.

Phase to determine the scope of statistics: In this phase the four-page comparison table will be assessed to determine if it can be incorporated in the EGSS statistic framework. (1) Industries whose activities all belong to the EGSS are fully incorporated into the scope of EGSS research; (2) the main business activities of those whose activities partially belong to the EGSS will first be compared with the EGSS interpretation, and the matching enterprises will be

[3] Artificial crude oil wholesale and import and export (partial activities of this industry belong to EGSS)

incorporated into the EGSS. Second, if the main business activities, in the screening process, are not found to match the EGSS interpretation, but the enterprise's business is related to environment protection, they will each be examined and assessed in terms of "environment protection," "environment," and other EGSS-related fields. The selected enterprises can then be incorporated into the EGSS. Finally, all unselected enterprises will be eliminated. (3) Enterprises from industries whose activities cannot be defined as those either fully of the EGSS, or temporarily, or in part, will not be taken as objects of research. Instead, deeper research will be carried out in the next phase.

A database that incorporates environmental goods and service sector groups will be established. Each enterprise in the database will be classified as per the small subcategory code in the industrial classification of the national economy and its environment sector. The data from this code will be collected from the base form of Economic Census. The environment sector is determined as per the activity descriptions of the enterprise and the corresponding sector in the environment and industry manual of the OECD/Eurostat.

3.2.4 Data compilation

After the EGSS enterprises are identified, a unique identification organizational code will be input into the database of Economic Census to check turnover, employment, export, value added, and other relevant information, which are recorded in statements submitted by the enterprises.

The Economic Census database is entirely based on enterprise data and those enterprises screened out during the phase when the scope of the survey is determined. The basic Economic Census forms consist of six pages: the organization census form (Form 611); the financial conditions of industrial legal entities above a designated scale (Form B606-1); the costs and expenses of industrial legal entities above a designated scale (Form B606-2); the financial conditions of construction legal entities qualified as general contractors and discipline contractors (Form C603); commodity purchase, sale, and inventory of above-limit wholesale and retailing legal entities (Form E604); and the financial conditions of key service legal entities(Form F603). The data extracted from these forms primarily include the industrial code, industrial category, goods code, organization code, main business activities, employment, operating income, export value, income of strategic emerging industry, and relevant data used for calculation of value added. Each enterprise is then classified into the corresponding EGSS sub-sector and type with reference to the industrial classification of the national economy and the corresponding form of the EGSS statistic framework. Finally, the enterprises are grouped and summarized into the two main categories of environment sector and product nature. By referring to the industrial classification comparison table between the national economy and the EGSS statistical framework, each enterprise can be included in the corresponding sub-sector and nature categories of the EGSS. Finally, the enterprises will be grouped by environment sector and by product nature, and conclusions can be drawn.

The turnover, employment, export, and value added as given in the EGSS statistical framework are acquired by the following methods:

3.2.4.1 Turnover

As per the definition of turnover in EGSS and with reference to the third National Economic Census results, the sum of operating income, operating tax and surcharge is determined as the operating revenue and the sum of main operating income, main operating tax, and surcharge is used as the main operating revenue. The source data include operating income, operating tax and surcharge, main operating income, and main operating tax and surcharge, derived from the basic form of the census (Form 611).

Thus, turnover = operating income + operating tax(Form 611)

3.2.4.2 Employment

Under the EGSS statistic framework, employment is defined as all personnel working at and for an institution and receiving cash or other forms of compensations at regular intervals. In the third National Economic Census, it is defined as the number of personnel working at an institution and entitled to salaries or other forms of labor compensations at 24:00 on the last day of the reporting period. The employment data for this research is extracted from the base form of the census (Form 611).

Thus, employment = workforce (Form 611)

3.2.4.3 Export

Under the EGSS statistic framework, export is defined as the transaction via which goods and services are transferred from permanent residents to nonpermanent residents. As export is not an index in the basic form of the census, the export figures in the financial conditions of various industries in Economic Census are used to represent the export value in this research.

Thus, export value = export data in the financial statements of relevant industries

Note: 1: The export value of industrial enterprises is the export value specified in the "Financial Statement of Cost and Non-cost Expenses of Above-prescribed-scale Industrial Enterprises (Form B603-1, Form B603-2)."

2. The export value of construction enterprises is the operating revenue achieved overseas as specified in the "Financial Statement of Legal entities with General Contracting and Subcontracting Qualifications (Form C603)."

3. The export value of the wholesale and retailing industry is specified in the "Statement of Purchase, Sale and Inventory of Above-limit Whole sale and Retailing Enterprises (Form E604-1)."

4. The export value of the key service industry (Form F603), the real estate industry (Form X603), the accommodation and dining industry (Form S603), and non-connected enterprises who report directly to the government, are excluded from the statistics.

3.2.4.4 Value added

As defined in the EGSS statistic framework, value added is the difference between sales price of goods and the total expenses of goods and services. The Economic Census is a comprehensive survey and covers most economic indexes. Calculating value added using the income method is reliable and accurate, but this is not applicable as value added data are not currently certified by the government. Value added is thus calculated using the value added rate, which is the ratio of value added to the total output within a given period of time. By multiplying the total output by the value added rate the value

added can be obtained. The specific operating method is as follows:

First, the industry-based value added rate data are only derived for major and medium subcategories of industries as the rate is difficult to acquire for the small subcategory. These are primarily sourced from the third National Economic Census and the annual report of 2013. The value added rate is taken as the corresponding value added rate in the EGSS statistics after expert evaluation. The formula is as follows:

$$\text{Value added rate}_{EGSS}=\frac{\text{Value added of major and medium subcategories}}{\text{Corresponding total output of major and medium subcategories}}$$

Second, the total output can be calculated. To ensure comparability of data, operating income and other indexes are primarily used to indicate the total output of the corresponding EGSS industry.

Third, the value added can be calculated as per the relationship between value added and total output, i.e., the product of value added rate and total output. The formula is as follows:

$$\text{Value added}_{EGSS}=\text{Value added rate}_{EGSS}\times\text{Total output}_{EGSS}$$

4.CHINA'S STRATEGIC EMERGING INDUSTRY STATISTICS AND EGSS

4.1 Classification of statistic objects

The Classification of Strategic Emerging Industries (2012) (Trial) is a reclassification of activities relating to strategic emerging industries on the basis of the Industrial Classification of National Economy and directly corresponds to the original conventional statistics: 359 industrial categories correspond to the Industrial Classification of National Economy, including more than seven hundred pieces of products (service) in the Catalog of Product Classification for Statistic Purpose.

As per the definition of the "environmental goods and service sector" in the EGSS statistical framework and the Classification of Strategic Emerging Industries (2012) (Trial), three of the seven major strategic emerging industries, the environmental industry, the new energy industry, and the new energy vehicle industry, may be incorporated into the EGSS framework. See Annex 2 for the comparison of the niche goods of these three industries with the classification standards under the EGSS statistical framework.

4.2 Comparative analysis of statistic objects

From the perspective of product classification, a comparative analysis of strategic emerging industries and the EGSS statistic framework can be made:

The Classification of Strategic Emerging Industries (Trial) covers all sectors of "environment protection" activities under the EGSS statistic framework. However, the product natures are primarily "Specific services & connected services," "Connected goods" and "End-of-pipe technologies." Goods are in general not classified as "Adapted goods" and "Integrated technology."

Four categories of "resource management" activities under the EGSS statistical framework are not included in the Classification of Strategic Emerging Industries (Trial). These are "CReMA 11A: Management of forest areas" and "CReMA 11B: Minimisation of the intake of forest resources" in CReMA 11: Management of forest resources, and CReMA 12: Management of wild flora and fauna and CReMA 13C: Minimisation of the use of fossil energy as raw materials. The product nature primarily includes "Specific services & connected services" and "Adapted goods." Goods of other natures are not classified. Further research is also required on the category "CReMA 13A: Production of energy from renewable resources."

4.3 Measuring EGSS variables through the Strategic Emerging Industry Statistics

The 3rd Economic Census of 2013 is the only statistic program for which a special statement of strategic emerging industries is established. However, it has simple contents and only includes the number of entities and operating revenues by industrial category and region. The database of Economic Census may help screen out the enterprises

that are engaged in strategic emerging industries, but more detailed statistic statements are required to satisfy the data needs of EGSS statistics.

Table 5 Comparison of Classification of Strategic Emerging Industries and EGSS Statistic Framework (CEPA)

	CEPA 1	CEPA 2	CEPA 3	CEPA 4	CEPA 5	CEPA 6	CEPA 7	CEPA 8	CEPA 9
Specific services & connected services (SS&CS)	√	√	√	√	√	√	√	√	√
Adapted goods(AD)	×	×	×	×	×	—	—	—	—
Connected goods(CD)	√	√	√	×	√	√	√	—	√
End-of-pipe technologies(ET)	√	√	√	√	√	—	√	—	★[4]
Integrated technology (IT)	×	×	√	×	×	—	—	—	—

Note: " √ " indicates the products that can be found in the Classification of Strategic Emerging Industries and can be incorporated in the EGSS statistic framework; "×" indicates the products that cannot be found in the Classification of Strategic Emerging Industries and that can be incorporated in the EGSS statistic framework; "—" indicates the parts that are not cited in the EGSS Handbook, i.e., those that do not require statistics; " ★ " indicates the parts that are not listed in the EGSS Handbook but are included in the Classification of Strategic Emerging Industries.

Table 6 Comparison of Classification of Strategic Emerging Industries and EGSS Statistic Framework (CReMA)

	CReMA 10	CReMA 11A	CReMA 11B	CReMA 12	CReMA 13A	CReMA 13B	CReMA 13C	CReMA 14	CReMA 15	CReMA 16
Specific services & connected services (SS&CS)	√	×	×	×	?	√	—	—	√	√
Adapted goods(AG)	√	—	×	—	√	√	×	×	—	—
Connected goods (CG)	√	×	—	—	?	—	×	—	—	×
End-of-pipe technologies (ET)	×	×	—	×	?	×	—	—	—	—
Integrated technology (IT)	×	×	×	—	?	×	×	√	—	—

Note: " √ " indicates the products that can be found in the Classification of Strategic Emerging Industries and that can be incorporated in the EGSS statistic framework; "×" indicates the products that cannot be found in the Classification of Strategic Emerging Industries and that can be incorporated in the EGSS statistic framework; "—" indicates the parts that are not cited in the EGSS Handbook, i.e., those that do not require statistics; " ★ " indicates the parts that are not listed in the EGSS Handbook but are included in the Classification of Strategic Emerging Industries.

[4] Other special-purpose equipment for environment pollution treatment

5. CASE STUDY: CHONGQING

Chongqing is located on the upper reaches of the Yangtze River and lower reaches of the Jialing River. It is the only municipality in central west China and has a coverage area of 82,400sq.km, a population of 32.7561 million, and 38 districts and counties within its jurisdiction. The environmental industry is taken as one of the "three pioneer hi-tech industries" and "top 10 strategic emerging industries" to be aggressively developed. In 2011, Chongqing had 763 entities engaged in environment protection-related business, with a total workforce of 121,600, an annual operating income of 102.489 billion Yuan, an annual operating profit of 7.852 billion Yuan, and an annual export contract value of 2.667 billion U.S. dollars.

This case study is designed to collect EGSS data from the database in basic forms of the third National Economic Census of Chongqing. The Environmental industry Classification Catalog can first be compiled according to the correspondence relationship specified in Annex 1, and the statistics of the Economic Census can be used to screen out the catalog of survey entities and extract the data and indexes for the target research.

5.1 Harmonizing China's National Economic Census with EGSS Framework

5.1.1 Product classification

The scope of the survey covers the 23 municipal districts, 11 counties, and 4 autonomous counties of Chongqing. A total of 166 industrial subcategories have been summarized in the Environmental industry Classification Catalog, with reference to the current conditions of Chongqing (Annex 1), in which the activities of 36 subcategories were found to be fully within the scope of the EGSS, and those of 79 subcategories were partially within the scope. The activities of 51 subcategories need to be further studied and determined. A total of 41,700 entities were initially screened out from the database of the third Economic Census of Chongqing.

5.1.2 Data collection

The information of relevant enterprises was exported to an Excel file via the database of the third Economic Census of Chongqing, and with reference to the identification process of manufacturers specified in Article 3.2.3. The data of enterprises in the same sector based on the EGSS sector can first be screened out, and the turnover, employment, export value, and value added of all enterprises of the same nature can then be summarized as per the EGSS nature, and prepared in the EGSS standard format.

5.1.3 Data analysis

The results are presented by economic variables, environmental domain, and type of output. The proportion of RM activities may be underestimated because a large number of RM activities are not included in the National Economic Census.

Turnover

The environmental goods and service sector of Chongqing has a total turnover of 128.002 billion Yuan, in which the main turnover is 124.32 billion Yuan. The EP turnover is apparently higher than RM (Table 7). In terms of the environmental sectors, the three

with the highest ratio of turnover are CEPA 1, CEPA 3, and CReMA 13a (Table 8). In terms of product type and nature, CG has the highest share of turnover, at 65.0%. This is primarily from automotive and power generation companies (Figure 3).

Table 7 Comparison of Main Turnover of CEPA and CReMA in Chongqing

Category	Turnover (100m Yuan)	Ratio to turnover (%)	Main turnover (100m Yuan)	Ratio of main operating revenue to turnover (%)
CEPA2000	1131.21	88.4	1095.81	96.9
CReMA2008	148.81	11.6	147.39	99.0
Total	1280.02	-	1243.20	-

Table 8 Comparison of Turnover in Different Environment Sectors

EGSS category	Turnover (100m Yuan)	Ratio to turnover (%)	Main turnover (100m Yuan)	Ratio of main operating revenue to turnover (%)
CEPA1	776.15	60.6	745.71	60.0
CEPA2	10.39	0.8	10.35	0.8
CEPA3	230.32	18.0	227.42	18.3
CEPA4	50.64	4.0	50.38	4.1
CEPA5	29.92	2.3	28.89	2.3
CEPA6	2.04	0.2	2.04	0.2
CEPA8	1.29	0.1	1.17	0.1
CEPA9	30.46	2.4	29.87	2.4
CReMA10	6.17	0.5	5.97	0.5
CReMA11a	2.43	0.2	2.40	0.2
CReMA12	0.03	0.0	0.03	0.0
CReMA13a	130.90	10.2	129.85	10.4
CReMA13b	8.88	0.7	8.73	0.7
CReMA13c	0.40	0.0	0.40	0.0

Employment

The total employment figure in Chongqing's EGSS is 136,800, which includes 35,600 female staff. Like the turnover, EP employment is significantly higher than RM. CEPA 1, CReMA 13a, CEPA 3, and CEPA9 have the most employees, accounting for 43.0%, 18.8%, 13.3%, and 7.0% of the total, respectively (see Table 9). CG is the type of product that involves the largest number of employees at 79,200, accounting for 57.7% of the total (Figure 4).

Figure 3 Comparison of Different Types of Goods in Turnover

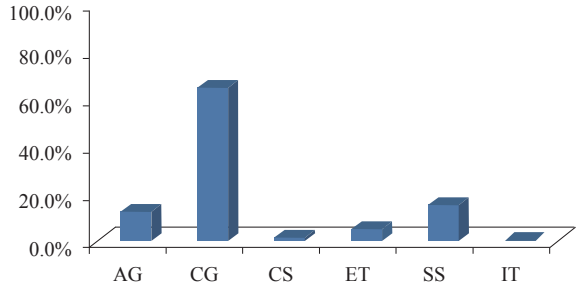


Figure 4 Ratio Comparison of Different Types of Products

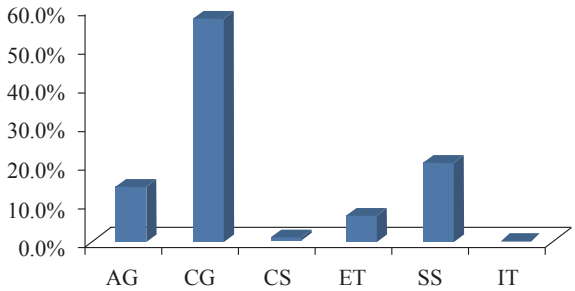


Table 9 Distribution of Employees in Different Sectors in Chongqing

EGSS sector	Employee (people)	Ratio of employees (%)	Female employees (people)	Ratio of female employees (%)
CEPA1	58781	43.0	11462	32.2
CEPA2	3140	2.3	1102	3.1
CEPA3	18251	13.3	5381	15.1
CEPA4	6923	5.1	1860	5.2
CEPA5	3587	2.6	1120	3.2
CEPA6	900	0.7	272	0.8
CEPA8	884	0.7	284	0.8
CEPA9	9587	7.0	3556	10.0
CReMA10	1822	1.3	293	0.8
CReMA11a	4101	3.0	1618	4.6
CReMA12	431	0.3	207	0.6
CReMA13a	25771	18.8	7763	21.8
CReMA13b	2441	1.8	605	1.7
CReMA13c	202	0.2	69	0.2

Export

Chongqing's EGSS sector has a total export value of 2.35 billion Yuan. EP export is much higher than that of RM (Figure 5). EP export primarily originates from CEPA1, CEPA4, CPEA5, CEPA9, and CReMA12. CG and AG are the major sources of export. CG has the highest ratio in CEPA1, CPEA5, CEPA9, and CReMA12. Its ratios in all types except CEPA1 (99%), are 100%. In CEPA4, AG hasa ratio of 100% (Figure 6).

Figure 5 Comparison of Environment Protection Activities and Resource Management Activities in Export Value

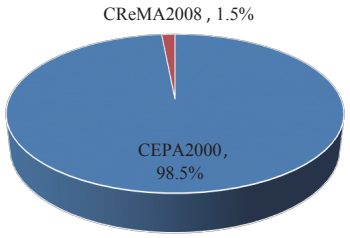
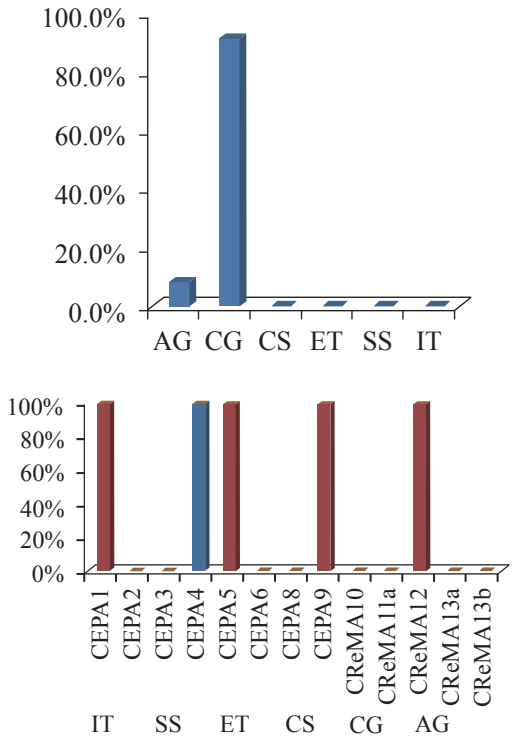


Figure 6 Export Comparison of Different Types of Products; Export Ratios of Different Sectors (by product nature)



Value added

Chongqing's EGSS has a total value added of 42.576 billion Yuan, of which EP activities account for 87.4% and RM activities account for 12.3%. The EP sectors can be very different in terms of value added, andCEPA1, CEPA3, CEPA4, and CReMA13a have the highest levels (see Figure 7). In particular, CEPA1 and CEPA3 account for most of the total value added of the EGSS. In terms of product type, connected goods (CG) have the highest ratio (see Figure 8).

Figure 7 Comparison of Various Sectors in Value Added

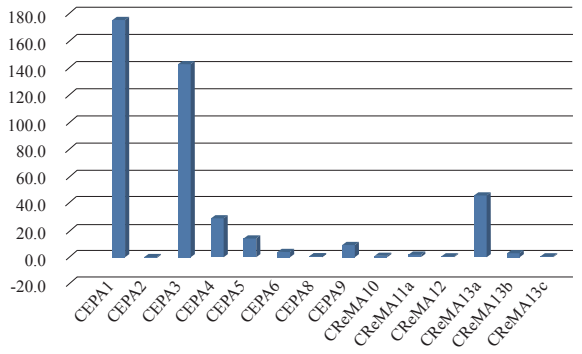
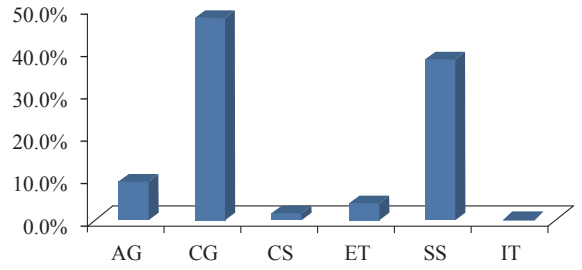


Figure 8 Comparison of Different Types of Goods in Value Added



5.2 Application of Strategic Emerging Industry Statistics in EGSS

Strategic emerging industries are included in the third National Economic Census for the first time. Two additional indexes, “does your business involve strategic emerging products” and “annual income of strategic emerging industrial product,” are established to provide an initial understanding of the development of strategic emerging industries. From the classification and data collection as per the relationship specified in Annex 2, it is possible to acquire the incomes of strategic

emerging products in EGSS industries. Unfortunately, the survey on strategic emerging industries in the third National Economic Census is crude, and provides no accurate explanation or interpretation of the collected data. The indexes and the data are thus limited.

The turnover of products in the strategic emerging industries of Chongqing's EGSS amount to 12.179 billion Yuan, in which EP and RM account for 92.1% and 7.9% of the total turnover, respectively (see Figure 9). In terms of product type, CG has the highest ratio (see Figure 10).

Figure 9 Comparison of Environment Protection and Resource Management Activities in Turnover (in Strategic Emerging Products)

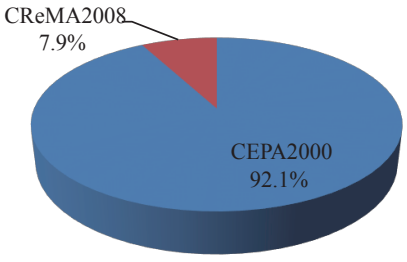
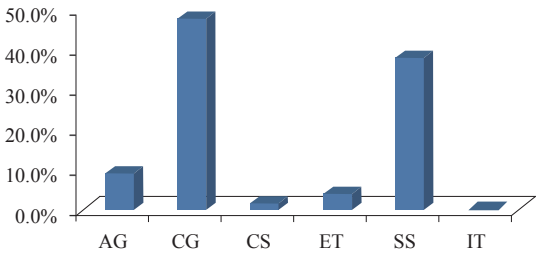
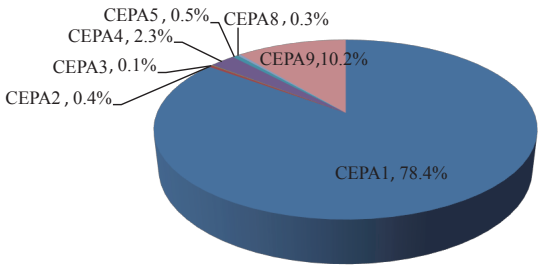


Figure 10 Comparison of Different Types of Products in Income (in Strategic Emerging Products)



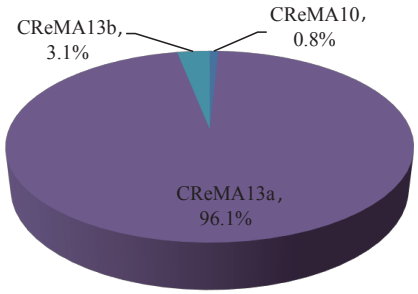
In terms of EP, CEPA 1 has the highest ratio (see Figure 11), primarily because Chongqing's manufacturing industry, particularly the automotive industry, has developed well. It provides advantages to the development of new energy, new-energy automobiles, etc., compared with other industries.

Figure 11 Comparison of Different Types of Goods in Turnover in Chongqing



In terms of RM, CReMA 13a has the highest ratio (Figure 12), primarily due to the effects of energy-saving and environment protection industries. Chongqing's energy-saving and environmental industry is therefore developing well.

Figure 12 Comparison of Different Environmental Sectors in Turnover (RM)



6. FEASIBILITY ANALYSIS OF APPLYING EGSS FRAMEWORK IN CHINA

6.1 Feasibility of collecting EGSS data through National Economic Census

When assessing the actual conditions in China, the Economic Census that provides EGSS statistics at the small subcategory level may be a good starting point for adopting EGSS statistics in China for the following reasons:

- The EGSS classification and the Industrial Classification of National Economy basically correspond to each other. In the Chongqing pilot project, 166 small subcategories (including 36 that are fully within the scope of the EGSS, 79 partially within the scope of the EGSS, and 51 that need to be further determined) are finally determined according to different classification standards specified in A Data Collection Handbook of the Environmental Goods and Services Sector: Eurostat, European Commission by environment sector and product nature, and with reference to the industrial classification standards of national economy, which covers all sectors of the EGSS.

- The research indexes under the EGSS statistical framework can be acquired. In Economic Census, the main business activities of an enterprise are surveyed and a detailed statistic statement is designed, which includes multiple economic indexes of the surveyed company and in general covers the four indexes required for EGSS. The Chongqing pilot project demonstrates that the EGSS statistic framework and Economic Census can be combined on a local level.

- The Economic Census has certain technical and system guarantees. A dedicated set of census software is applied for the submission and summarizing of data from all across China. The data collection can be simplified when this software is integrated with the EGSS statistic framework by virtue of industry codes. To ensure the generality and comprehensiveness of the census, a "from bottom to up" approach is adopted. Local authorities at different levels screen out the objects to be used in the census and collect the data under the leadership of the National Bureau of Statistics.

The weaknesses in the application of the EGSS framework in China are:

- Incomplete objects of statistics.

- When establishing the table of comparison between the industrial classification of the national economy and the EGSS statistic framework, three classes are not taken as objects of this research, because determining whether the small subcategories in the national standards correspond to CReMA15:Research and development (R&D) activities for resource management, is difficult, and CReMA16:Other resource management activities, has a high degree of coincidence with CEPA9:Other environmental protection activities;
- Not all EGSS industries are considered during manufacturer identification. The industrial activities of enterprises that cannot be determined to be fully or partially within the scope of EGSS are not included in the scope of this research;

- For enterprises whose industrial activities are partially within the scope of the EGSS, there are differences between their main activities and the EGSS explanation, and to an extent the judgment is subjective.

- The data of Economic Census does not fully correspond to the EGSS statistical framework.

- Employment: the year-end employment is used in this research. This can well reflect the industries with low employee mobility. However, there may be some deviations for industries with high employee mobility;

- Export value: this is taken from the financial statements of the industries in the Economic Census. The statistic standard does not conform to turnover, employment, and value added. First, the selected financial statements only involve the connected entities that report directly to the government but exclude those that are not connected to the network. Second, the non-connected entities do not have statistics for their export value. Third, the key service industry, real estate industry, and accommodation and dining industry do not have export statistics;

- Value added: this is acquired on the basis of total output and the calculation results have many problems. First, the value added ratio of large- and medium-sized industries is used, to reflect the value added ratio of EGSS industries, and this lowers the accuracy of the EGSS value added. Second, value added is obtained through inference and it is only a rough value.

- Continuous statistics are lacking and the relevant indexes are not systematic enough. The Economic Census is conducted once every five years and it is difficult to obtain continuous EGSS statistics. Therefore, it is difficult to predict the future EGSS industrial development trend. Although the statistics departments may infer relevant indexes according to the information available, these are not sufficiently systematic.

6.2 Feasibility of combining Strategic Emerging Industry Statistics and EGSS

To combine the EGSS statistic framework and the strategic emerging industries, multiple data source and data quality challenges must be addressed, primarily:

- The statistic activities are not as yet conducted on an extensive scale and it is difficult to collect the data. Only the "third Economic Census" involves surveys on strategic emerging industries, but the corresponding indexes are limited. The indexes only state if the businesses cover strategic emerging products and the incomes of strategic emerging products, which cannot satisfy the research requirements of the EGSS statistic framework on strategic emerging industries.

- The classification catalog of strategic emerging industries may be further revised or dynamically updated, and therefore data continuity may be a problem.

7. CONCLUSIONS AND POLICY PROPOSALS

7.1 Main conclusions

The main conclusions of the research are:

- EGSS can be introduced into China to improve the environmental industry statistic system. There are certain conditions and bases for this, but many challenges must still be addressed. The statistic system of China's environmental industry is still developing and this provides a very good opportunity for the introduction of the EGSS framework. The environmental industry does, however, have a weak base of conventional statistics, and the statistics are somewhat rough and general. Much work is required to adapt to the EGSS framework.

- EGSS data can be collected via the base forms of Economic Census. The census is the most comprehensive economy related statistical survey to date, as it has extensive coverage, comprehensive content, and technical and institutional assurance. Most of the EGSS variables can be extracted from the original data collection forms or the integrated data of the Economic Census, thus an attempt can be made to determine EGSS data based on conventional statistic standards. However, interfacing and integration are required for data continuity, industrial subcategory classification, and a range of economic indexes for statistics.

- Strategic Emerging Industry Survey may be a key point for China to introduce the EGSS statistic framework. The Classification of Strategic Emerging Industries (2012) (Trial) includes a comprehensive classification catalog of energy-saving and environment protection industries. The National Bureau of Statistics is currently formulating relevant statistic activities for strategic emerging industries, and proposes a feasible plan for their combination with the EGSS statistic framework while making preparations for the combined task. This is easier than revising the existing conventional statistic system. However, Strategic Emerging Industry Statistics are primarily oriented to the manufacturing industry, which is defined by the State Council as a pillar industry. Deriving separate statistics, expanding the scope of existing statistics beyond the manufacturing industry, and combining them with the scope of EGSS statistics is recommended.

7.2 Policy proposals

Using the original data in the basic form of the Economic Census, the feasibility of accounting for the EGSS data with a conventional statistical capability is enhanced. However, due to the heavy workload and difficulties at state level, coordination from governments and the related functional departments at various levels is required. To maximize the feasibility of accounting for the EGSS data based on the Economic Census, the following framework can be adopted. First, statistical bureaus at provincial and municipal levels can collect all statements submitted by each legal entity during the Economic Census. The industry codes, employment, turnover, tax, addition, etc. of each legal entity can be identified, and the indexes used for calculating value added as remuneration, net production tax, depreciation of fixed assets, and operating surplus can be extracted, along with export value from the basic form of the Economic Census and statements of financial conditions.

Second, the information of each legal entity can be integrated into a summary sheet, and matched to the EGSS categories according to industry code. Third, the integrated information can be classified and summarized by industrial classification, environment sector, and product nature, to obtain EGSS-related data. However, the data objects are incomplete, particularly when accounting for export value, as the statements of financial conditions are only completed by enterprises that report online, and so those not doing so are not accounted for. The value added is also accounted for indirectly by Chongqing in accordance with the relationship between the value added and the gross output, due to the provisional confidentiality of the value added accounting of the Economic Census. This method can therefore only be used to account for the value added after the Economic Census data is checked and approved.

Strategic emerging industry information is crucial in research on the EGSS statistical framework. However, the relevant statistic activities are not yet extensively conducted in China. In the next phase, it will be necessary to incorporate the EGSS statistic framework into the statistic system of the strategic emerging industries, to provide a good base for the collection of EGSS-related data. The measures may include: (1) adding and improving the classification catalog of products of strategic emerging industries and establishing a detailed classification of environment service products, management of forest resources products, and management of wild flora and fauna products; (2) adding EGSS statistic-related survey items into the basic statistic statements to increase the accuracy and comprehensiveness of data collection from the source; (3) setting up a special organization to analyze and integrate the data from the perspective of the EGSS statistic framework.

From the consideration of Environment Industry Survey, Strategic Emerging Industry Statistics, and National Economic Census, and with reference to the EGSS statistic dimensions, indexes and procedures, it is recommended that the EGSS statistic framework is systematically introduced into China in a “phased and gradual” manner. In the first phase, a preliminary assessment of the economic indexes of core environmental products and services should be conducted, as per the environmental industry's survey data and the Economic Census data. The research will primarily focus on the first phase of work. In the second phase, supplementary surveys can be conducted on the areas that cannot be identified according to conventional statistic standards or during the survey of the environmental industry. The key sectors for these surveys include: integrated technology of environment protection activities, environmental and associated services of resource management activities, related products, terminal treatment technology, and integrated technology. In the third phase, the research results of the previous two phases can be referenced to establish a complete catalog of environment products and services, based on the EGSS statistic framework, and a routine EGSS statistic system can be set up.

The following supporting measures are recommended when introducing the EGSS statistic framework into China and finally establishing a complete EGSS statistic system: (1) the Ministry of Environment Protection must collaborate with the National Development and Reform Commission, the Ministry of Industry and Information Technology, and the National Bureau

of Statistics, to provide organizational guarantees for environment product and service statistics; (2) strengthen research and pilot programs to establish a routine mechanism for EGSS statistics as soon as possible; (3) strengthen the capability and provide policy assurance for EGSS statistics; (4) strengthen international exchange and cooperation, and learn from and reference foreign experiences.

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ANNEX 1

Comparison of the Industrial Classification of National Economy and the EGSS Statistic Framework

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
0720	Natural gas mining	*	- LNG	AG	CEPA1
2512	Artificial crude oil production	*	-Biofuel: biodiesel; fuel oil made from straw; fuel oil made from waste and waste materials; fuel oil made from wood; other biofuel - Fuel made from biomass densification forming - Other biological energies - Synthetic liquid fuel: ethanol gasoline, methanol gasoline, and other synthetic liquid fuel	AG	CEPA1
3610	Whole automobile production	*	- Production of new automobiles driven by energies other than gasoline and diesel	AG	CEPA1
3620	Production of refitted automobiles	*	- Production of refitted automobiles driven by energies other than gasoline and diesel	AG	CEPA1
3713	Train accessory production	?*	- Production of accessories for electric and power-driven trains	AG	CEPA1
3720	Urban rail traffic equipment manufacturing	√		AG	CEPA1
3762	Power-assisted bicycle production	√		AG	CEPA1
4500	Fuel gas production and supply	*	- LNG supply	10.0	3556
3433	Special-purpose vehicle production	*	-Electric (lift) vehicles: electric counterbalance operated forklifts, electric operated warehouse forklifts, electric walking warehouse vehicles, other electric vehicles	CG	CEPA1
3640	Trolley manufacturing	√		CG	CEPA1
3711	Locomotive and train unit manufacturing	*	- Electric locomotives: microprocessor-controlled DC electric locomotives, AC electric locomotives, and other electric locomotives - Steam locomotives and storage batteries locomotives - Electric train units: integrated power train units, and distributive power train units	CG	CEPA1

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
2661	Chemical reagent and assistant production	*	- Exhaust purification catalysts, gas purification catalysts, etc.	ET	CEPA1
4840	Industrial, mining, and engineering constructions	*	- Sewage treatment plant construction - Water treatment system installation and construction - Solid waste treatment facility construction: e.g. urban waste landfilling, incineration, sorting and composting facility construction - Electricity, water and gas production facilities (partial): sewage treatment facilities; fuel gas supply facilities; heat production facilities; other electricity, water and gas production facilities - Electric project construction and genset installation: e.g. hydropower, nuclear power, wind power, etc.	ET	CEPA1
2511	Crude oil processing and petroleum product manufacturing	*	- Petroleum gas and relevant hydrocarbon gas: liquefied petroleum gas (but a gas for lighters; other liquefied petroleum gases); other petroleum gases and relevant hydrocarbon gases	SS	CEPA1
5172	Automobile wholesale	*	- Wholesale of automobiles other than gasoline and diesel-powered automobiles	SS	CEPA1
5173	Auto part wholesale	*	- Wholesale of parts of automobiles other than gasoline and diesel-powered automobiles	SS	CEPA1
5175	Hardware wholesale	?*	- Wholesale and import/export of bicycles and their parts: wholesale and import/export of bicycles and their parts and components	SS	CEPA1
5211	General merchandise retailing	?*	- Retailing of environment protection-related goods	SS	CEPA1
5238	Bicycle retailing	?		SS	CEPA1
5261	Auto retailing	*	- Retailing of automobiles other than gasoline and diesel-powered automobiles	SS	CEPA1
5262	Auto part retailing	*	- Retailing of parts of automobiles other than gasoline and diesel-powered automobiles	SS	CEPA1
5297	Retailing of living fuels	*	- Retailing service of LPG	SS	CEPA1
7111	Auto lease	*	- Lease of automobiles other than gasoline and diesel-powered automobiles	SS	CEPA1
7119	Other machinery and equipment lease	*	- Lease of environment protection-related goods	SS	CEPA1

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
7722	Atmospheric pollution treatment	√		SS	CEPA1
3413	Steam turbine and auxiliary machine production	?*		SS	CEPA1
1332	Processing of inedible plant oil	*	- Plant oil and grease products: plant wax (sugarcane wax, cotton wax, flax wax, and other plant waxes), degras (natural degras, artificial degras, oil foot, soap stock, stearin pitch, and other degras)	CG	CEPA2
3463	Gas and liquid separation and purification equipment manufacturing	*	- Gas liquefaction equipment: natural gas liquefaction equipment, oxygen liquefaction equipment, nitrogen liquefaction equipment, argon liquefaction equipment, coal gas liquefaction equipment, and other gas liquefaction equipment - Alcohol recycling equipment: methanol recycling tower, alcohol recycling tower, multifunctional alcohol recycling unit, waste alcohol recycling system and other alcohol recycling equipment - Water filtration, purification machinery and devices (reverse osmosis, EDI, ultra-filtration, nano-filtration, fine filtration, and mechanical filtration devices, water softeners, ion exchangers, reclaimed water recycling devices, other water filtration and purification machinery and devices) - Other liquid filtration and purification machines - Gas purifiers: regenerative gas purifiers, harmful gas purifiers, other gas purifiers - Other gas filtration, purification machines and devices - Engine fuel and air intake filter: oil filter; air intake filter; motor vehicle purifier; other engine fuel and air intake filters	CG	CEPA2
4620	Sewage treatment, regeneration, and recycling	√		ET	CEPA2
4840	Industrial and mining project construction	*	- Sewage treatment plant construction - Water treatment system installation and construction - Electricity, water and gas production construction and facility (part): sewage treatment construction and facility; fuel gas construction and facility; heat production construction and facility; other electricity, water and gas production construction and facilities	ET	CEPA2
2619	Other basic chemical raw material production	*	- Biological energy (part): biological hydrogen - Per hydro (hydrogen peroxide)	IT	CEPA2

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
2681	Soap and synthetic detergent production	?*	- Natural soap made from plant oil	IT	CEPA2
4990	Other construction and installation industries	*	- Water treatment facility installation service	SS	CEPA2
1731	Hemp fiber pre-weaving processing and spinning	?		AG	CEPA3
1732	Hemp weaving and processing	?		AG	CEPA3
1751	Chemical fiber weaving and processing	?*	- Recyclable resources	AG	CEPA3
1789	Production of textiles other than home textiles	?*	- Recyclable and degradable resources	AG	CEPA3
1910	Leather tanning	?*	- Regenerated leather processing	AG	CEPA3
1921	Leather apparel production	?*		AG	CEPA3
1929	Other leather product manufacturing	?*		AG	CEPA3
2041	Bamboo product manufacturing	?		AG	CEPA3
2042	Rattan product manufacturing	?		AG	CEPA3
2043	Palm coir product manufacturing	?		AG	CEPA3
2049	Straw and other product manufacturing	?		AG	CEPA3
2120	Bamboo and rattan furniture manufacturing	?		AG	CEPA3
2435	Natural plant fiber weaving artifact manufacturing	?		AG	CEPA3
2663	Forest chemical product manufacturing	*	- Forest pigment (lac red), forest wax (Chinese insect wax), peach gum powder, etc.	AG	CEPA3

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
2911	Tire manufacturing	*	- Refitted rubber tires: passenger vehicle refitted rubber tires, cargo vehicle refitted inflated rubber tires, bus refitted rubber tires, aircraft refitted rubber tires, and other refitted rubber tires	AG	CEPA3
2914	Regenerated rubber manufacturing	√		AG	CEPA3
3034	Waterproof construction material production	?*	- Regenerated rubber modified asphalt waterproof rolls	AG	CEPA3
2530	Nuclear fuel processing	*	- Nuclear waste treatment	SS	CEPA3
3211	Copper smelting	*	- Regenerated parts	SS	CEPA3
3212	Lead and zinc smelting	*	- Regenerated parts	SS	CEPA3
3213	Nickel and cobalt smelting	*	- Regenerated parts	SS	CEPA3
3214	Tin smelting	*	- Regenerated parts	SS	CEPA3
3215	Antimony smelting	*	- Regenerated parts	SS	CEPA3
3216	Aluminum smelting	*	- Regenerated parts	SS	CEPA3
3217	Magnesium smelting	*	- Regenerated parts	SS	CEPA3
3219	Other common nonferrous metal smelting	*	- Regenerated parts	SS	CEPA3
3221	Gold smelting	*	- Regenerated parts	SS	CEPA3
3222	Silver smelting	*	- Regenerated parts	SS	CEPA3
3229	Other precious metal smelting	*	- Regenerated parts	SS	CEPA3
3239	Other rare metal smelting	*	- Regenerated parts	SS	CEPA3
3461	Oven, smelting furnace and electric furnace production	*	- Solid waste treatment equipment (partial): waste incinerators (waste incineration electric furnaces, transverse push-type grate furnaces, inclined push-type grate furnaces, inverse push-type grate furnaces, roller-type grate furnaces, fluidized bed incinerators, rotary kiln incinerators, and other waste incinerators) - Marine waste incinerators	CG	CEPA3

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
3522	Rubber processing equipment manufacturing	*	-Regenerated rubber equipment: rubber breakers, rubber refiners, and other regenerated rubber equipment	CG	CEPA3
3523	Plastic processing equipment manufacturing	?*	- Auxiliary plastic processing machinery or devices: automatic metering and dosing equipment; automatic recycling unit for plastic scrap materials; automatic extraction unit for plastic products and cooling machines for injection mold	CG	CEPA3
3533	Tobacco production equipment manufacturing	*	- Regenerated tobacco leaf machinery - Waste cigarette and pipe tobacco recycling machinery	CG	CEPA3
3541	Pulping and papermaking equipment	*	- Slurrying and pulping equipment: wood grinders, rag cleaning and breaking machines; blasting fiber separators; pulp beating machines, pulp extruding machines, pulp cleaning machines, pulp filters, pulp presses, pulp refiners, pulp screens, pulp mixers, fiber recycling machines, sand removers, waste paper or waste paperboard pulping machines, paper material pulverizers, other slurrying and pulping equipment	1	1
4210	Metal scrap and chip processing and disposal	√		ET	CEPA3
4220	Nonmetal scape and chip processing and disposal	√		ET	CEPA3
4840	Industrial, mining, and engineering constructions	*	- Solid waste treatment project construction, e.g., urban waste landfilling, incineration, sorting, and composting project construction	ET	CEPA3
7723	Solid waste treatment	√		ET	CEPA3
7724	Dangerous waste treatment	√		ET	1
5191	Regenerated material recycling and wholesale	√		SS	1
2625	Organic manure and microbial manure production	√		AG	1
2632	Biochemical pesticide and microbial pesticide production	√		AG	1

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
2929	Other plastic product manufacturing	*	- (Degradable plastic products) - Biodegradable plastic products: natural high-molecular material biodegradable plastic products, petrochemical-based biodegradable plastic products, bio-based biodegradable plastic products, co-mixed biodegradable plastic products, other biodegradable plastics -Photodegradable plastic products -Thermal oxidative degradable plastic products - Bio-based plastic products: starch-based plastic products, plant fiber-based plastic products, and other bio-based plastic products - Other degradable plastic products	ET	CEPA4
5166	Chemical fertilizer wholesale	*	- Organic fertilizer and microbial manure wholesale and import/export	SS	CEPA4
5167	Pesticide wholesale	*	- Biochemical pesticide wholesale and import/export -Microbial pesticide wholesale and import/export	SS	CEPA4
7620	Water resource management	*	- Natural water system management service: river course administration services, lake administration services, and groundwater administration services	SS	CEPA4
7690	Other water resource management industries	*	- Water resource protection services - Water and soil erosion prevention and treatment services - Water resource development and utilization counseling services - Water environment protection counseling services - Water and soil preservation technology counseling services - Water saving management and technology counseling services: water-saving irrigation technology counseling services, industrial water-saving technology counseling services, and living water technology counseling services	SS	CEPA4
7721	Water pollution treatment	√		SS	CEPA4
3035	Heat insulation and sound insulation material production	*	- Sound insulation material	CG	CEPA5
3049	Other glass manufacturing	*	- Multi-layered heat insulation and sound insulation glass: hollow glass, vacuum glass, other multi-layered heat and sound insulation glass	CG	CEPA5
3660	Auto part and accessory manufacturing	*	- Motor vehicle radiators, mufflers, and components: motor vehicle radiators (water tank), motor vehicle mufflers, motor vehicle vent pipes, other motor vehicle radiators and muffler components -Manufacturing of components of vehicles other than gasoline and diesel-powered vehicles	CG	CEPA5

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
3990	Other electronic equipment manufacturing	*	- (Noise and vibration control equipment)	CG	CEPA5
5090	Other unspecified construction industries	*	- Project environment protection facility construction: noise and dust protection facility construction	CS	CEPA5
4990	Other construction and installation industry	*	- Noise insulation project services	SS	CEPA5
7729	Other pollution treatment	*	- Noise pollution treatment services: manufacturing enterprise noise pollution treatment services; worksite noise pollution treatment services; auto noise pollution treatment services; other noise pollution treatment services - Light pollution treatment services - Other unspecified environment treatment services	SS	CEPA5
7711	Natural reserve administration	√		SS	CEPA6
7719	Other nature protection	√		SS	CEPA6
3461	Oven, smelting furnace and electric furnace production	*	- Radioactive pollution prevention and treatment equipment (part): radioactive material treatment furnaces (radioactive waste incinerators, fissionable material recycling and treatment furnaces, furnaces for separation of irradiated nuclear fuel, and other radioactive material treatment furnaces)	CG	CEPA7
4027	Nuclear and nuclear radiation meter manufacturing	*	- Nuclear radiation monitoring and alarm device: ray smoke detectors, fire alarms, nuclear radiation monitors and alarms, nuclear reactor recorders and monitors, nuclear reactor alarms and other nuclear radiation monitors and alarms	CG	CEPA7
7725	Radioactive waste treatment	√		SS	CEPA7
7320	Engineering and technical research, testing, and development	*	- Power and electric project research services - Energy science and technology research services - Nuclear science and technology research services - Water conservancy project research services - Marine science and technology research services -Biological science and technology research services -Other engineering and technical research, test and development services	SS	CEPA8

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
2665	Environment pollution treatment, medicament production	√		CG	CEPA9
3562	Electronic industrial equipment manufacturing	*	- Purification equipment and similar equipment: air purification equipment, high-purity gas extraction equipment, ultrapure water making equipment, waste water treatment equipment, electromagnetic shield equipment, antistatic equipment, and other purification and similar equipment - Environment simulation and reliability equipment: mechanical test equipment, climatic environment simulative test equipment, and integrated test boxes	CG	CEPA9
3591	Environment protection equipment manufacturing	√		CG	CEPA9
4021	Environment monitoring meter and instrument manufacturing	√		CG	CEPA9
4320	General-purpose equipment repair	?*	- Repair of modified goods of general-purpose equipment	SS	CEPA9
4330	Special-purpose equipment repair	?*	- Repair of modified goods of special-purpose equipment	SS	CEPA9
4341	Repair of railway transport equipment	?*	- Repair of electric and power equipment	SS	CEPA9
4342	Ship repair	?*	- Repair of marine seawater purifiers	SS	CEPA9
4350	Electric equipment repair	?*	-Repair of modified goods of generators and engines	SS	CEPA9
4360	Meter and instrument repair	?*	- Repair of environment protection-related products	SS	CEPA9
4390	Other machinery and equipment repair	?*	- Repair of environment protection-related products	SS	CEPA9
5169	Wholesale of other chemical products	*	- Wholesale and import/export of professional chemical products: wholesale and import/export of environment pollution treatment medicaments, animal gum, and other special-purpose chemical products - Wholesale and import/export of rubber products: rubber panels, hoses, belts, regenerated rubber, and other rubber products - Wholesale and import/export of plastic products: industrial plastic film, plastic panel, pipe, profile, foam plastic, plastic artificial leather, synthetic leather, plastic packing box and container, plastic components and other plastic products	SS	CEPA9

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
5179	Wholesale of other machineries, equipment, and electronic products	*	- Wholesale of environment protection-related products	SS	CEPA9
5990	Other storage industry	?*	- Storage of environment protection-related products	SS	CEPA9
7221	Lawyer and related legal services	?*	- The parts related to environment protection	SS	CEPA9
7222	Notarial services	?*	- The parts related to environment protection	SS	CEPA9
7229	Other legal services	?*	- The parts related to environment protection	SS	CEPA9
7231	Accounting, audit and taxation services	*	- The parts related to environment protection	SS	CEPA9
7232	Market survey	*	- The parts related to environment protection	SS	CEPA9
7239	Other professional counseling	*	- Environment protection and treatment counseling services	SS	CEPA9
7430	Marine services	*	- Marine environment protection services - Marine pollution treatment services: marine waste dumping services, marine project pollution treatment services, marine ship pollution treatment services, and other marine pollution treatment services - Marine environment forecast and evaluation services: marine environment forecast services, marine best route forecast services, marine environment evaluation and analysis services, marine disaster investigation, evaluation and analysis services, other marine environment forecast and evaluation services	SS	CEPA9
7461	Environment protection monitoring	√		SS	CEPA9
7462	Ecology monitoring	√		SS	CEPA9
7481	Project management services	?*	- The parts related to environment protection	SS	CEPA9
7482	Project survey and design	?*	- The parts related to environment protection	SS	CEPA9
7483	Planning management	?*	- The parts related to environment protection	SS	CEPA9
7513	New material and technology promotion services	?*	- The parts related to environment protection	SS	CEPA9

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
7519	Other technology promotion services	*	- The parts related to environment protection	SS	CEPA9
7520	Science and technology agency services	?*	- Environment protection technology promotion services and clean production audits(non-governmental function) and general environment contracting services	SS	CEPA9
7590	Other science and technology promotion and application service industries	?*	- The parts related to environment protection	SS	CEPA9
7820	Environment hygiene management	?		SS	CEPA9
7840	Greening management	?		SS	CEPA9
8291	Vocational skill training	?*	- The parts related to environment protection	SS	CEPA9
8294	Educational aid services	?*	- The parts related to environment protection	SS	CEPA9
9121	General affairs management organs	?*	- The parts related to environment protection	SS	CEPA9
9124	Social affairs management organizations	*	- Various levels of governmental organs engaged in environment protection administration affairs	SS	CEPA9
9126	Administrative supervision and inspection organs	*	- Inspection, supervision, audit and punishment activities relating to environment protection (e.g., forest, desertification, water and soil preservation, river, lake, ocean, atmosphere, wildlife, waste gas, sewage, trash, waste, noise, and poisonous and harmful substances, etc.)	SS	CEPA9
9429	Other social groups	*	- Animal and plant protection, ecological environment protection and other social groups	SS	CEPA9
9430	Foundations	*	- Environment, hygiene, and other foundations	SS	CEPA9
9600	International organizations	?*	- The parts related to environment protection	SS	CEPA9
3734	Marine equipment manufacturing	*	-Special-purpose marine equipment: marine seawater desalination devices	AG	CReMA10
4690	Other water treatment, utilization and distribution	*	- Seawater desalination	AG	CReMA10

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
3443	Valve and cork manufacturing	?*	- Water taps that can reduce water consumption	IT	CReMA10
3597	Water resource machinery manufacturing	*	- Dredging machinery: channel dredging machinery, reservoir dredging machinery, port dredging machinery, hydropower station tail water dredging machinery, pipeline dredging machinery and other dredging machinery - Water conservancy machinery: water drainage machinery, sluice gate hoists, ship lifts, trash-holding devices, deicing machinery and other special-purpose water conservancy machinery	SS	CReMA10
4822	Lake and river treatment and flood control facilities and construction	*	- Water conservancy rockwork and earthwork service: lake and river treatment project services	SS	CReMA10
4830	Marine engineering construction	*	- Coastal facilities: seaside sewage treatment project facilities - Seawater utilization facilities: seawater desalination facilities, seawater direct use facilities, and seawater desalination facilities	ET	CReMA10
7610	Flood prevention and control facility management	*	- Lake and river treatment services	ET	CReMA10
220	Forestation and updating	√		CG	CReMA11A
522	Forest fire prevention service	√		ET	CReMA11A
230	Forest operation, management and protection	?		SS	CReMA11B
7712	Wild animal protection	√		SS	CReMA12
7713	Wild plant protection	√		SS	CReMA12
3811	Generator and genset production	*	- Genset: water turbine genset, turbo generator set, wind turbo generator set, nuclear genset, and other genset - Motor and genset components: wind generator set components, and other motor and genset components	CG	CReMA13a
3825	Photovoltaic equipment and element manufacturing	√		CG	CReMA13A
4412	Hydropower	√		CG	CReMA13A
4414	Wind power	*		CG	CReMA13A

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
4415	Solar power	*		CG	CReMA13A
4419	Other electricity generation	*		CG	CReMA13A
4830	Marine engineering construction	*	- Marine energy utilization facilities: wave energy utilization facilities, tidal energy utilization facilities, tidal current energy utilization facilities, and seabed thermal energy utilization facilities	CG	CReMA13A
4840	Industrial and mining project building	*	-Electric project construction and genset installation, e.g. hydropower, nuclear power and wind power.	CS	CReMA13A
3412	Internal combustion engine and component manufacturing	*	- Ignited piston internal combustion engines: methane fuel led engines, other ignited piston internal combustion engines - Substitute fuel internal combustion engines: coal gas internal combustion engines, natural gas internal combustion engines, methanol internal combustion engines, methane fuel led engines, etc. - Other unlisted engines	AG	CReMA13B
3414	Water turbine and auxiliary machine manufacturing	√		AG	CReMA13B
3415	Primary wind power equipment manufacturing	√		AG	CReMA13B
3419	Other primary power equipment manufacturing	√		AG	CReMA13B
3465	Wind-driven and electric appliance manufacturing	?*	- Wind-driven appliance manufacturing	AG	CReMA13B
3861	Fuel gas, solar and similar energy household appliance manufacturing	*	- (Methane appliances) - (Solar appliances)	AG	CReMA13B
3869	Other non-electric home appliance manufacturing	*	- Methane appliance components: methane cooking utensils, incubator components, methane water heater components, and other methane appliance components - Solar appliance components: solar cooking utensils, incubator components, solar water heater components, and other solar appliance components	AG	CReMA13B
3441	Pump and vacuum equipment manufacturing	*	- Wind-driven pumps, etc.	IT	CReMA13B

Subcategory code	Subcategory name	Type	Descriptions	Product Type in EGSS	Environmental Domain in EGSS
7514	Energy-saving technology promotion service	√		SS	CReMA13B
2614	Organic chemical material manufacturing	*	- Biological energy (partial): bio-butanol, methane	AG	CReMA13C
2912	Rubber panel, hose, and belt manufacturing	?*	- The part relating to natural and regenerated rubber	AG	CReMA13C
2913	Rubber component manufacturing	?*	- The part relating to natural and regenerated rubber	AG	CReMA13C
2915	Household and medical rubber product manufacturing	?*	- The part relating to natural and regenerated rubber	AG	CReMA13C
2919	Other rubber product manufacturing	?*	- The part relating to natural and regenerated rubber	AG	CReMA13C
0190	Other agriculture	*	- Planting of pyrethrum cinerariifolium	CG	CReMA13C
5162	Petroleum and product wholesale	*	- Wholesale and import/export of artificial crude oil	SS	CReMA13C
4413	Nuclear power generation	?*		SS	CReMA13C

Note: The marks in the “Type” column are defined as follows:

1. "√" indicates that all activities of this industry belong to the EGSS
2. "*" indicates that partial activities of this industry belong to the EGSS
3. "?" indicates that it is impossible to currently define if the activities of this industry belong to EGSS
4. "?*" indicates that it is impossible to currently define if part of the activities of this industry belong to the EGSS

ANNEX 2

Comparison of the Strategic Emerging Industrial Product Classification and the EGSS Statistic Framework

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
1	Energy-saving and environmental industry				
1.1	Highly energy-saving industry				
1.1.1	Highly energy-saving general-purpose equipment manufacturing			AG	CReMA13B
		3411	Boiler and auxiliary equipment manufacturing	AG	CReMA13B
		3441	Pump and vacuum pump equipment manufacturing	AG	CReMA13B
		3442	Gas compressor manufacturing	AG	CReMA13B
		3444	Hydraulic and pneumatic power machinery and element manufacturing	AG	CReMA13B
		3461	Oven, smelting furnace, and electric furnace manufacturing	AG	CReMA13B
		3462	Wind turbine and fan manufacturing	AG	CReMA13B
		3464	Refrigerating and air-conditioning equipment manufacturing	AG	CReMA13B
		3490	Other general-purpose equipment manufacturing	AG	CReMA13A/B
1.1.2	Highly energy-saving special-purpose equipment manufacturing			AG	CReMA13B
		3511	Mining machinery manufacturing	AG	CReMA13B
		3515	Manufacturing of special-purpose equipment for construction materials	AG	CReMA13B
		3516	Metallurgical equipment manufacturing	AG	CReMA13B

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
		3521	Manufacturing of special equipment for oil refining and chemical production	AG	CReMA13B
		3531	Manufacturing of special equipment for food, wine, beverage, and tea production	AG	CReMA13B
		3532	Manufacturing of special equipment for agricultural products and byproduct processing	AG	CReMA13B
		3546	Manufacturing of special equipment for glass, ceramic, and enamel product	AG	CReMA13B
		3572	Manufacturing of mechanical machines and tools for agricultural and gardening purposes	AG	CReMA13B
1.1.3	Highly energy-efficient electric machinery and device manufacturing			AG	CReMA13B
		3811	Generator and genset manufacturing	AG	CReMA13B
		3812	Motor manufacturing	AG	CReMA13B
		3821	Transformer, rectifier, and inductor manufacturing	AG	CReMA13B
		3839	Other electric device manufacturing	AG	CReMA13A/B
		3871	Electric light source manufacturing	AG	CReMA13A
1.1.4	Highly energy-saving industrial control device manufacturing			AG	CReMA13B
		4012	Electric meter and instrument manufacturing	AG	CReMA13B
		4014	Lab analyzer manufacturing	AG	CReMA13B
		4019	Meter and other general-purpose instrument manufacturing	AG	CReMA13B
1.1.5	New construction material manufacturing			AG	CReMA13B
		2641	Coating manufacturing	AG	CReMA13B

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
		2927	Household plastic goods manufacturing	AG	CReMA13B
		3021	Cement goods manufacturing	AG	CReMA13B
		3024	Light building material manufacturing	AG	CReMA13B
		3031	Clay, tile, and building block manufacturing	AG	CReMA13B
		3035	Heat and sound insulating material manufacturing	AG	CReMA13B
		3051	Technical glassware manufacturing	AG	CReMA13B
		3062	FRP goods manufacturing	AG	CReMA13B
1.2	Advanced environmental industry				
1.2.1	Manufacturing of special equipment for environment protection				
		3562	Special-purpose electronic equipment manufacturing	Uncertain	
		363210	Purification equipment and similar equipment	Uncertain	
		3591	Special-purpose environment protection equipment manufacturing	ET	
		365001	Atmospheric pollution prevention and treatment equipment	ET	CEPA1
			Water pollution prevention and treatment equipment	ET	CEPA2
			Solid waste treatment equipment	ET	CEPA3
		365005	Radioactive pollution prevention, control, and treatment equipment	ET	CEPA7
			Soil pollution treatment and repair equipment	ET	CEPA4
			Other environment pollution treatment equipment	ET	CEPA9
		3597	Water resource machinery manufacturing	Do not belong to EGSS	

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
		3990	Other electronic equipment manufacturing	Do not belong to EGSS	
			Noise and vibration control equipment	ET	CEPA5
1.2.2	Environment protection monitoring instrument and electronic equipment manufacturing				
		4021	Environment monitoring instrument and meter manufacturing	SS	
		410701	Water pollution monitoring instrument	CG	CEPA2/CReMA10
		410702	Gas or smoke analysis and detection instrument	CG	CEPA1
			Noise monitoring instrument and relevant environment monitoring instrument	CG	CEPA5
			Ship pollution prevention and detection system	CG	CEPA9
			Environment monitoring instruments and meters	CG	CEPA9
			Environment quality monitoring network equipment	CG	CEPA9
			Ecology monitoring instrument	CG	CEPA6
			Pollution source process monitoring equipment	CG	CEPA9
		4027	Nuclear and its radiation measurement instrument manufacturing	CG	CEPA7
1.2.3	Environment pollution and treatment medicament manufacturing				
		2665	Manufacturing of special medicament for environment pollution and treatment	ET	
			Water pollution prevention and treatment medicament and material	ET	CEPA2

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
			Atmospheric pollution prevention and treatment medicament and material	ET	CEPA1
			Solid waste treatment and disposal of medicament and material	ET	CEPA3
			Soil pollution treatment, and repair medicament and material	ET	CEPA4
			Other environment pollution treatment medicament and material	ET	CEPA9
1.2.4	Environment evaluation and monitoring services				
		7239	Other professional counseling	SS	CEPA9
		7409100000	Environment protection and treatment counseling services	SS	CEPA9
		7461	Environment protection and monitoring	SS	CEPA9
		7606010000	Environment evaluation services	SS	CEPA9
		760602	Air pollution monitoring services	SS	CEPA1
		760603	Water pollution monitoring services	SS	CEPA2
		760604	Waste monitoring services	SS	CEPA3
		760605	Noise pollution monitoring services	SS	CEPA5
		760699	Other environment monitoring services	SS	CEPA9
		7462	Ecology monitoring	SS	CEPA6
		760606	Natural ecology monitoring services	SS	CEPA6
1.2.5	Environment protection and pollution treatment service				
		4620	Sewage treatment and regeneration	SS	CEPA2
		7430	Marine services	SS	CEPA9
		7719	Other nature protection	SS	CEPA9

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
		8001990300	Forest carbon fixation services	SS	CEPA1
			Ecological reserve management services	SS	CEPA6
		7721	Water pollution treatment	SS	CEPA2
		7722	Atmospheric pollution treatment	SS	CEPA1
		7723	Solid waste treatment	SS	CEPA3
		7724	Dangerous waste treatment	SS	CEPA3
		7725	Radioactive waste treatment	SS	CEPA7
		7729	Other pollution treatment	SS	
			Noise and vibration control services	SS	CEPA5
			Ecology recovery and protection services	SS	CEPA6
			Soil pollution treatment and repair services	SS	CEPA4
			Environment emergency response services	SS	CEPA9
			Other unlisted pollution treatment services	SS	CEPA9
		7810	Public utilities management		
		8101010100	Urban sewage discharge management services	SS	CEPA2
		8101010200	Urban rainwater discharge management services	Do not belong to EGSS	
1.3	Resource recycling industry				
1.3.1	Comprehensive utilization of mineral resource	Multiple	Multiple	IT	CReMA14
1.3.2	Industrial solid waste, water gas, waste liquid recycling, and utilization as a resource	Multiple	Multiple	IT	Multiple

Code	Class of strategic emerging industry	Industry code/ product code	Industry name/product name	Product Type in EGSS	Environmental Domain in EGSS
1.3.3	General utilization of urban and rural living waste	Multiple	Multiple	IT	CEPA3
1.3.4	Agricultural and forest waste utilization as a resource	Multiple	Multiple	IT	CEPA3
1.3.5	Water resource recycling and water saving	Multiple	Multiple	SS	CReMA10
1.4	Integrated management service of energy saving and environment protection	Multiple	Multiple	SS	
1.4.1	Energy saving and environment protection scientific research	Multiple	Multiple	SS	CReMA15
1.4.2	Energy saving and environment protection project survey and design	Multiple	Multiple	SS	CReMA 13B/ CReMA16
1.4.3	Energy saving and environment protection project construction	Multiple	Multiple	SS	CReMA 13B/ CReMA16
1.4.4	Energy saving and environment protection technology promotion service	Multiple	Multiple	SS	Cepa3/CReMA 13B / CReMA16
1.4.5	Energy saving and environment protection quality evaluation	Multiple	Multiple	SS	CEPA9/CReMA16

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