Evaluation Methods and Processes for Sustainable Management of Power Grid Enterprises

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Abstract. This article is guided by the United Nations Sustainable Development Goals, follows the laws of sustainable development of power grid enterprises, adheres to the "three principles" and "three combinations", and constructs an evaluation index system for sustainable management of power grid enterprises. Based on the consideration of guiding adherence to the "triple bottom line" and valuing ESG, four dimensions of economic benefits, social benefits, environmental benefits, and corporate governance benefits are designed. Based on the United Nations SDGs and referring to the development characteristics indicators of power grid enterprises and the construction indicators of world-class demonstration enterprises, a sustainable management evaluation index system for power grid enterprises is constructed, which includes four dimensions, 13 primary indicators, and 40 secondary indicators.

Keywords. power grid enterprises, sustainable management, evaluation indicators

1 Introduction

Sustainable development is a global topic of common concern and pursuit. The sustainable development of enterprises is receiving increasing attention with the deepening of economic and social sustainable development issues [1]. Chinese power companies should comply with the new normal and actively promote the transformation of social responsibility reporting to sustainable development reporting in a strict policy environment and an interconnected economic environment [2]. Sustainable management is an international cutting-edge management method that implements sustainable development from the macro level to the actual situation of enterprises, and transforms concepts into actions [3]. And it promotes corporate governance in a win-win manner for enterprises, society, environment, and stakeholders. It is crucial for power grid enterprises to promote sustainable development of themselves, the economy, and society through sustainable management.

From the perspective of research topics, the overall trend of research hotspots on sustainable development of domestic enterprises shows a transformation from basic theory to development strategy and then to innovative management. In terms of quantitative research, further research

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is needed to evaluate the sustainable development of enterprises [4]. For power grid enterprises, some studies have attempted to construct an evaluation index system for their sustainable development capabilities [5], but there is a lack of relevant evaluation research from the perspective of sustainable management. Therefore, it is necessary to study and construct a sustainable management evaluation index system suitable for Chinese power grid enterprises.

2 The construction ideas and principles of the evaluation index system

2.1 Building ideas

Keeping up with the forefront of international management, guided by the 17 Sustainable Development Goals of the United Nations, closely integrating with the development positioning of power grid enterprises, following the laws of sustainable development of enterprises, constructing a sustainable management evaluation index system for power grid enterprises, in order to promote the coordinated development of power grid enterprises with the economy, society, and environment.

2.2 Building principles

To construct a sustainable management evaluation index system for power grid enterprises, it is necessary to adhere to the principles of comprehensive system, prominent focus, and practical feasibility, while considering the combination of process and outcome indicators, qualitative and quantitative indicators, general and characteristic indicators, in order to provide a strong scientific, systematic, and practical evaluation system for evaluating the sustainable management practices of power grid enterprises at relevant levels.

2.2.1 Adhere to the "Three Principles"

Firstly, the sustainable development evaluation indicators of power grid enterprises should systematically and comprehensively reflect the economic benefits, social effects, environmental effects, and other aspects of enterprise development.

Secondly, in the setting of specific indicators, the focus should be on the long-term, with a focus on selecting or proposing key indicators that can reflect the concept of sustainable development in enterprise development.

Thirdly, the evaluation indicators should be representative, authoritative, and reliable. Based on the United Nations Sustainable Development Indicators (SDGs), the selection of indicators should mainly be based on reports or documents recognized by enterprise leaders. At the same time, the difficulty of quantifying indicators and the availability of data should be considered, and main and comprehensive indicators should be selected as much as possible to ensure that the information is available, the calculation is feasible, and the conclusion is credible.

2.2.2 Adhere to the "Three Combinations"

Firstly, combining process indicators with outcome indicators. Sustainable development is not only an end, but also a process. Evaluation is not limited to the current situation, and the key lies in exploring potential. Therefore, evaluation indicators should not only have static indicators

that reflect results, but also dynamic indicators that reflect processes, such as setting relevant growth rate indicators.

Secondly, combining qualitative and quantitative indicators. The sustainable development evaluation indicators of power grid enterprises should be quantified as much as possible, in order to quantitatively evaluate the development status. For some difficult to quantify and significant indicators, qualitative indicators can be used to describe them.

Thirdly, combining general indicators with characteristic indicators. The evaluation indicators should be based on the universal United Nations Sustainable Development Indicators (SDGs), combining characteristic indicators such as the strategic goal indicators of power grid enterprises, "world-class" construction, and company planning indicators.

3 Evaluation index system of power grid group company

3.1 Design of evaluation dimensions

Based on the evaluation purpose, the determination of evaluation dimensions takes into account the following two aspects:

On the one hand, guiding the development of power grid enterprises to adhere to the "triple bottom line" and promoting the coordinated development of enterprises with the economy, society, and environment. Therefore, the evaluation index system is first divided into three dimensions: economic benefits, social benefits, and environmental benefits brought by the company's development.

On the other hand, guide power grid enterprises to strengthen their attention to ESG (environmental, social, and corporate governance) and promote sustainable development from the perspective of corporate governance. ESG (Environmental, Social and Governance) represents the three major factors of environment, society, and corporate governance, and is an important consideration factor in sustainable development investment decision-making. It is promoted by the United Nations Principles of Responsible Investment (UN PRI) to include major investment institutions in investment decision-making. Therefore, in the evaluation of sustainable management for power grid enterprises, in addition to considering economic, social, and environmental benefits, an additional dimension of corporate governance is added to guide them to strengthen their attention to ESG and promote sustainable development.

Therefore, the sustainable management evaluation index system of power grid enterprises is divided into four dimensions: economic benefits, social benefits, environmental benefits, and corporate governance benefits.

3.2 Specific indicator settings

Under each evaluation dimension, guided by the United Nations SDGs, the specific settings of corresponding primary indicators and their subordinate secondary indicators are carried out, mainly referring to the development characteristics of power grid enterprises, enterprise development planning indicators, and world-class demonstration enterprise construction indicators.

Firstly, the economic benefits dimension is divided into two primary indicators: current business situation and potential business (as shown in Table 1). Among them, the economic benefits of sustainable management are mainly measured by indicators reflecting profitability, debt paying ability, and production efficiency. Specifically, three secondary indicators were selected, including EBITDA profit before interest, tax, depreciation, and amortization, asset liability ratio, and employee labor productivity; The specific operating potential includes two secondary indicators: return on equity and growth rate of operating revenue.

Table 1. Economic benefits evaluation indicators

Evaluation dimension	Primary indicators	Secondary indicators
Economic benefits	Business status	EBITDA
		Asset liability ratio
		Employee labor productivity
	Business potential	Return on equity
		Revenue growth rate

Secondly, the social benefits dimension is divided into six primary indicators: quality service, employee growth, social livelihood, government relations, business relations, and international influence (as shown in Table 2). Among them, quality service includes four secondary indicators: inter provincial and inter regional transmission capacity, customer service scale, power supply reliability, and "access to electricity"; Employee growth includes three secondary indicators: employee career development, employee turnover rate, and equal employment; There are five secondary indicators for social livelihood, including East West assistance, employment promotion, external donations, poverty alleviation, and community relations; There are two secondary indicators for government relations: the completion of central decision-making and deployment, and serving local governments; The specific sub indicators of business relations include supply chain management, equipment sharing, anti unfair competition, and partner performance; International influence includes three secondary indicators: international standard participation, international credit rating, and the Global Top 500 Most Valuable Brands.

Table 2. Social benefits evaluation indicators

Evaluation dimension	Primary indicators	Secondary indicators
Social benefits	Quality service	Cross provincial and cross regional transmission capacity
		Service customer scale
		Power supply reliability
		"Electricity acquisition" indicator
	Employee growth	Employee career development
		Employee turnover rate
		Equal employment
	Social livelihood	East West Assistance
		Promoting employment
		External donations

		Poverty alleviation and poverty alleviation
		Community relations
	Government relations	Completion status of central decision-making and deployment
		Serving local governments
	Business relations	supply chain management
		Device sharing
		Anti Unfair Competition
		Partner Fulfillment of Responsibilities
	International repercussions	Participation in international standards
		International credit rating
		Global Top 500 Most Valuable Brands

Thirdly, the environmental benefits dimension is divided into three primary indicators: reducing emissions, promoting environmental friendliness, and mitigating climate change (as shown in Table 3). Among them, reducing emissions includes three secondary indicators: reducing gas emissions, reducing solid waste emissions, and recycling and utilization rate of waste materials; Promote environmental friendliness by setting up three secondary indicators: environmental impact assessment coverage rate of specific planning projects, utilization rate of environmentally friendly equipment, and eco-friendly design and construction; The specific measures to mitigate climate change include three secondary indicators: clean energy consumption reduction, line loss reduction, and electricity substitution reduction.

Table 3. Environmental benefits evaluation indicators

Evaluation dimension	Primary indicators	Secondary indicators
Environmental benefits	Reduce emissions	Reduce gas emissions
		Reduce liquid waste emissions
		Reduce solid waste emissions
	Promoting environmental friendliness	Coverage rate of environmental impact assessment for planned projects
		Environmentally friendly device usage rate
		Ecological friendly design and construction
	Mitigating climate change	Consuming clean energy to reduce emissions
		Reduce line loss and displacement
		Electricity substitution for emission reduction

Fourthly, the dimension of corporate governance is divided into two primary indicators: governance capability and innovative development (as shown in Table 4). Among them, governance capacity includes three secondary indicators: compliance with business operations, risk management level, and modern corporate governance; There are two secondary indicators for innovative development, including the intensity of research and development (R&D) funding investment and the status of major scientific and technological awards.

Table 4. Corporate governance evaluation indicators

Evaluation dimension	Primary indicators	Secondary indicators
Corporate governance	Governance capability	Compliance operation situation
		Risk management level
		Modern corporate governance
	Innovative development	research and development intensity
		Obtaining of Major Science and Technology Awards

As a result, a sustainable development management evaluation index system for power grid enterprises has been formed, which includes four dimensions, 13 primary indicators, and 40 secondary indicators.

4 Application of evaluation index system

4.1 Evaluation range

For different power grid enterprise levels, the relevant specific sustainability management evaluation indicators will be different.

For the sustainability management evaluation of power grid group companies, the above company-level evaluation index system can be applied.

For the evaluation of provincial power grid companies, according to their functional positioning and business characteristics, the indicators at the group company level can be transformed into sustainability management evaluation indicators suitable for provincial power grid enterprises by directly incorporating relevant indicators, refining and disintegrating relevant indicators or deleting unsuitable indicators. Among them, the first-level index "international impact" and its three sub-indexes "International standard participation", "international credit rating" and "the world's top 500 most valuable brands" are not suitable for the sustainability management evaluation of provincial power grid enterprises; The two secondary indicators of "trans-provincial and trans-regional transmission capacity" and "central decision-making and deployment completion" are also not suitable.

The evaluation of the implementation effectiveness of sustainability management demonstration projects can be carried out by referring to the relevant evaluation indicators of provincial power grid enterprises, combined with the characteristics of the project itself, and focusing on some indicators of the corresponding dimension. For example, highlighting the environmental protection of sustainable management projects, can focus on the selection of environmental benefit dimension of the relevant indicators to evaluate.

4.2 Evaluation process

The sustainability management evaluation of power grid enterprises mainly includes the following processes:

Firstly, release the evaluation work plan and plan, clarify the evaluation indicator system and evaluation methods. Secondly, optimize and provide feedback on evaluation indicators. The

relevant departments of the group company and the provincial power grid company have proposed optimization suggestions from the perspectives of professional management and practical operation of the provincial company. Thirdly, collect and organize evaluation indicator data. Usually, the centralized management department organizes the collection and review of indicator data, with the cooperation of relevant departments and units. Fourthly, conduct evaluations, promptly report any issues discovered, communicate and coordinate to resolve relevant issues. Fifthly, write and provide feedback on the evaluation report, clarifying improvement goals, measures, progress arrangements, and division of responsibilities. Sixthly, summarize and refine, select typical cases, promote achievement cases, and enhance the sustainable development image of power grid enterprises.

5 Conclusion

Based on the above analysis, the following conclusions can be drawn:

(1) The sustainable management evaluation of power grid enterprises should be guided by the United Nations Sustainable Development Goals, follow the rules of enterprise sustainable development, adhere to the "three principles", and achieve the "three combinations".

(2) In order to guide enterprises to adhere to the "triple bottom line" and strengthen their attention to "ESG", the evaluation of sustainable management of power grid enterprises can be divided into four dimensions: economic benefits, social benefits, environmental benefits, and corporate governance benefits.

(3) Under each evaluation dimension, based on the United Nations SDGs, specific indicator settings are carried out with reference to the development characteristics indicators of power grid enterprises and the construction indicators of world-class demonstration enterprises. Ultimately, a sustainable management evaluation indicator system for power grid enterprises is formed, which includes four dimensions, 13 primary indicators, and 40 secondary indicators.

(4) The evaluation indicators for sustainable management applied in different levels of power grid enterprises may vary. For the evaluation of the power grid group company, the evaluation index system constructed in this article can be directly applied. For the evaluation of provincial power grid companies, the relevant indicators of the group company can be transformed into evaluation indicators suitable for provincial power grid enterprises through three methods: direct inclusion, refinement and decomposition, or deletion of unsuitable indicators.

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