

ICS 13.020.99

CCS Z 01



Group Standards

T/AIAC 001-2022

General Principles of Assessment Criteria for “Zero Carbon China”

Released on Nov. 8, 2022

Implemented on Mar. 1, 2023

Released by The Investment Association of China

Published by Standards Press of China

CONTENTS

Preface.....	I
Introduction.....	III
1 Scope.....	2
2 Normative reference documents.....	2
3 Terminology and definitions.....	2
4 Compilation principles.....	4
5 Basis of compilation.....	5
6 Standard naming.....	6
7 Compilation of elements.....	6
8 Structure.....	8
Appendix A.....	10
Appendix B.....	12
Reference.....	19

Preface

This document is drafted in accordance with the provisions of GB/T 1.1—2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules for Standardization Documents".

The "Zero Carbon China" assessment series of standards is an organic whole composed of basic common standards and specific assessment standards. This document is the basic common standard of the "Zero Carbon China" assessment series of standards, which provides reference and basis for the preparation of specific assessment standards.

Please note that some of the contents of this document may involve patents. The issuer of this document is not responsible for identifying patents.

This document is proposed and endorsed by the Investment Association of China.

Drafting units of this document: Beijing Jiuzhou Zero Carbon Energy Research Institute Co., Ltd., Chinese Classification Society Quality Authentication Company., Energy Investment Committee of Investment Association of China, Rocky Mountain Institute (USA) Beijing Representative Office, State Power Investment Corporation Limited., State Grid Xiongan Integrated Energy Service Co., Ltd., State Grid (Beijing) Integrated Energy Planning and Design Institute Co., Ltd., State Grid Fujian Electric Power Co., Ltd. Economic and Technological Research Institute, Huadian Heavy Industry Co., Ltd., China Tianying Inc., Xizi Clean Energy Equipment Manufacturing Co., Ltd., Shenergy Group Finance Co., Ltd., Towngas Energy Investment limited, LONGi Green Energy Technology Co., Ltd., Mingyang Wind Power Industry Group Co., Ltd., Anhui Yuanchen Environmental Protection Science & Technology Co., Ltd., Zhejiang Haers Vacuum Containers Co., Ltd., Tongwei Co., Ltd., Xinjiang Goldwind Science & Technology Co., Ltd., Qingdao Haier Energy Power Co., Ltd., Siemens Building Technology (Tianjin) Co., Ltd., BP China, TUV SUD Certification and Testing (China) Co., Ltd. Shanghai Branch, TBEA Xinjiang Sunoasis Co., Ltd., Menglang Sustainable Digital Technology (Shenzhen) Co., Ltd., Broccoli Digital Technology (Suzhou) Co., Ltd., Shanxi Xiangrui Energy Co., Ltd., Shanghai Linhai

Ecological Technology Co., Ltd., Xi'an Zhongchuang District Comprehensive Energy Co., Ltd., Meijin Carbon Asset Operation Co., Ltd., Hydrogen Mountain Technology Co., Ltd., National Security and Green Development Research Institute of Jiangnan University, China Digital Smart Information Technology Research Institute Co., Ltd., China Information Technology Designing Consulting Institute Co., Ltd, Great Wall Securities Co., Ltd., Beijing Zhonghong Intelligent Technology Co., Ltd., Ruisi Carbon Environmental Management (Shenzhen) Co., Ltd., Yongzhiqing Carbon (Beijing) Technology Co., Ltd., Asia Green Fund, Jiangsu China Carbon Energy Investment Environmental Service Group Co., Ltd., Enterprise Business Online (Beijing) Digital Communication Technology Co., Ltd

The main drafters of this document are: Shi Dinghuan, Sun Yaowei, Dai Yande, Xu Wei, Liu Shunda, Zhang Hongtao, Fu Chengyu, Zeng Xingqiu, Kang Yi, Ma Weihua, Zhang Yonggui, Zhang Jie, He Yongjian, Ma Rong, Ding Zhimin, Li Ting, Zhong Jinghua, Gao Feng, Feng Wujun, Zhang Jiutian, Yang Lei, Guo Jiaofeng, Lv Xuedu, Zhang Qiang, Xie Qiuye, Wang Peng, Chen Hong, Lin Chengzhen, Bin Hui, Yang Bo, Mei Dewen, Shao Shiyang, Jiang Yi, Zhang Yu, Zhang Xi, Wang Jingjing, Sun Zheng, Zhang Wei, Zheng Yi, Zheng Dongdong, Li Wen, Zhou Jin, Yao Jingli, Mi Shengrong, Zheng Longfei, Li Yifan

Introduction

0.1 Objective

In order to facilitate China's green and low-carbon development action and response to global climate change, the Investment Association of China has proposed the "Zero Carbon China" initiative, which aims to build a green and digital new development pattern through the construction of zero carbon pilot demonstration projects, and accelerate the promotion of technological innovation, product innovation and business model innovation in the green and low-carbon fields. Promoting high-quality economic development coincides with the new round of technological revolution and industrial transformation. The "Zero Carbon China" initiative focuses on the goals of carbon peaking and carbon neutrality (namely "double carbon"), guiding the collective efforts of all sectors of society and focusing on the new track of carbon emission reduction. It has become an important means and carrier to help achieve the "double carbon" goal on schedule.

Zero Carbon China, standards first. In order to support the "Zero Carbon China" initiative along the direction of "low carbon-- near-zero carbon-- zero carbon" , and to ensure that the standard implementation of various "Zero Carbon China" pilot demonstration projects. It is necessary to build a "Zero Carbon China" assessment standard system to guide the establishment and assessment of various zero carbon projects. The "Zero Carbon China" assessment standard system takes the integration of China's double carbon process as the traction, combining the near-term goals and long-term planning of the double carbon strategy, and systematically promotes the implementation of various zero carbon China pilot demonstration projects (Figure 1).

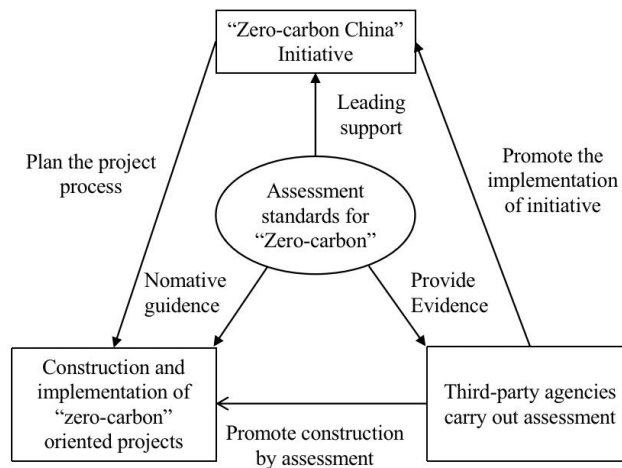


Figure 1: The systematic role of the assessment standard system for "Zero Carbon China"

0.2 Technical Overview

Combining the strategic objectives and promotion ideas of the "Zero Carbon China" initiative, this document identifies the constituent factors of the assessment standard system in four dimensions: assessment level, assessment object, assessment core, and assessment method (Figure 2).

a) Assessment level.

Cities, villages and enterprises are the main sites of energy transformation and green low-carbon development in China, which can be derived from different types of zero-carbon project application scenarios (hereinafter referred to as zero-carbon scenarios);

b) Assessment object

According to the types of project subjects creating zero-carbon scenarios, the assessment objects can be specifically divided into factory, park, campus, data center, community, mine, island, large-scale activities, field, station, etc.;

c) Assessment core

Energy, industry, construction and transportation and other fields are the key areas for energy saving and carbon reduction in China, and they are also the common starting and ending points for all kinds of zero-carbon projects to achieve green transformation, and the carbon reduction level of the above-mentioned areas is the assessment core of "Zero Carbon China";

d) Assessment method

The combination of qualitative assessment and quantitative assessment, self-assessment and other assessment, diversification of assessment methods and diversification of assessment subjects, and objective, accurate and comprehensive evaluate the carbon reduction measures and effectiveness of the assessment object.

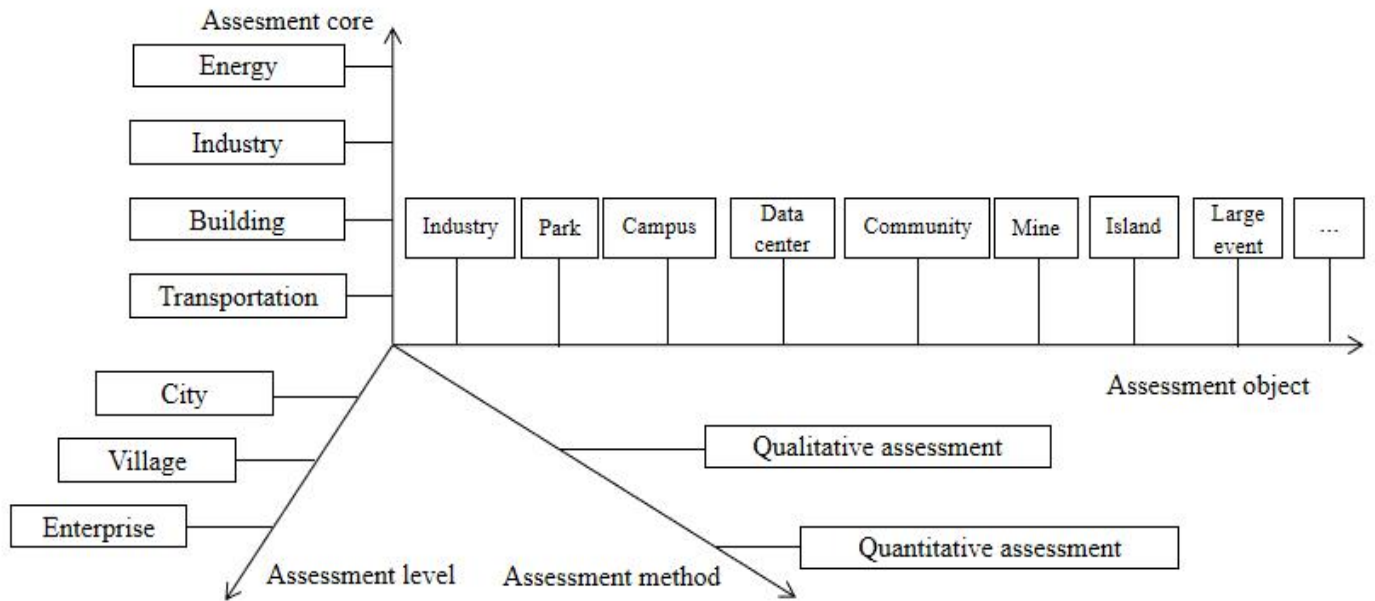


Figure 2: Component factors of the assessment standard system for "Zero-carbon China"

0.3 Relationship between the standards of the assessment system

The "Zero Carbon China" assessment standard system consists of basic common standards and specific assessment standards (see Figure 3), which are important for improving the unity and social influence of the "Zero Carbon China" initiative. This document is one of the basic common standards in the "Zero Carbon China" assessment standard system. It aims to promote the coordination of the content and the consistency of the form of specific assessment standards, and ensure that the establishment and assessment of various zero carbon projects are systematically promoted.

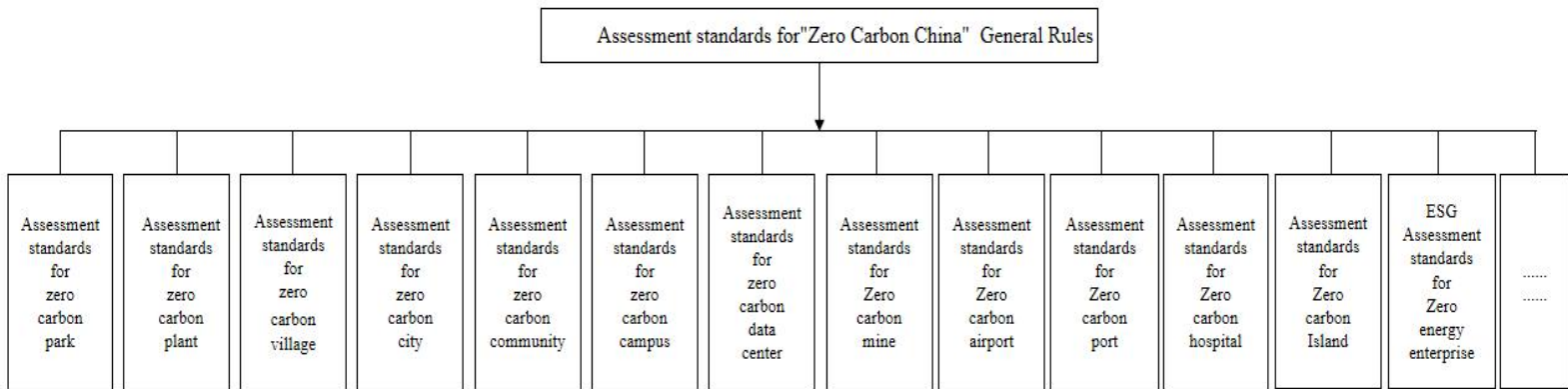


Figure 3: The framework of "Zero Carbon China" Assessment standard system

General Principles of Assessment Criteria for “Zero Carbon China”

1 Scope

This document stipulates the compilation principles, compilation basis, naming methods and elements of the "Zero Carbon China" assessment series standards.

This document is applicable to guide the formulation and revision of the "Zero Carbon China" assessment standards.

2 Normative reference documents

The contents of the following documents constitute the essential provisions of this document through the normative references in the text. Among them, the reference document with the date, only the version corresponding to the date is applicable to this document; the reference document without the date, its latest version (including all the revision sheets) is applicable to this document.

GB/T 1.1-2020 Guidelines for Standardization Part 1: Structure and drafting rules for standardization documents.

3 Terminology and definitions

The following terms and definitions are applicable to this document.

3.1

Assessment standards for “Zero-carbon China”

The assessment standards are created around various specific zero-carbon application scenarios under the Zero-Carbon China initiative.

3.2

Greenhouse Gas

A gaseous component of the atmosphere that absorbs and emits radiation in the infrared spectrum from the earth's surface, atmosphere and clouds, both naturally occurring and generated by human activities.

Note: Unless otherwise specified, the greenhouse gases in this standard mainly include: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

[Source: GB/T 32150-2015, 3.1]

3.3

Carbon Emission

All carbon dioxide emissions generated from all parts of production, activity and service processes within the accounting boundary, expressed in terms of carbon dioxide equivalent.

[Source: GB/T 32150-2015, 3.7]

3.4

Near-Zero Carbon

Through the adoption of measures to reduce greenhouse gas emissions and the use of carbon offsets, greenhouse gas emissions are continuously reduced to zero during the assessment period.

3.5

Zero Carbon

By producing clean energy, using advanced energy-saving and emission reduction technologies and carbon capture, the amount of greenhouse gas emissions and removals during the assessment period can be balanced.

3.6

Carbon Negative

Carbon dioxide is removed from the atmosphere through ecological carbon sequestration, carbon capture utilization and storage (CCUS), direct air carbon capture (DAC) and carbon recycling, etc., so that the amount of greenhouse gases removed during the assessment period is greater than the amount of greenhouse gases emitted.

3.7

Carbon Allowance

The total amount of greenhouse gases (carbon dioxide equivalent) that an enterprise can emit into the atmosphere within a certain period of time, as approved by the government authorities.

3.8

Carbon Credit

The carbon emission reduction indicator issued by a relevant institution or organization after the greenhouse gas emission reduction project has confirmed the quantified effect of emission reduction in accordance with relevant technical standards and certification procedures.

3.9

Structural Emission Reduction

Optimize the energy structure by increasing the proportion of renewable energy,

hydrogen and other low-carbon clean energy, or optimize the industrial structure by cultivating green advantageous industries and innovating and developing advanced manufacturing industries to achieve greenhouse gas emission reduction.

3.10

Technological Emission Reduction

Through the research and development and application of low-carbon, zero-carbon and carbon-negative technologies, preferential selection and iteration, to achieve greenhouse gas emission reduction.

3.11

Managerial Emission Reduction

Through strengthening energy management, carbon emission management and cultivating zero-carbon concept, it can directly or indirectly improve energy conversion efficiency and reduce energy demand through management means to achieve greenhouse gas emission reduction.

4 Compilation principles

4.1 Demand-oriented principle

Combined with the "Zero Carbon China" initiative to promote arrangements, timely organize the compilation of assessment standards applicable to specific zero carbon scenarios, through the standards to lead and support the construction of various zero carbon scenarios.

4.2 Principle of openness and compatibility

Maintain the openness and expandability of the assessment indicator system, convert the relevant national standards, industry standards and local standards into the assessment standards of each zero-carbon scenario, and ensure the coordination and consistency with existing laws, regulations and mandatory standards.

4.3 Principle of keeping pace with the times

Based on the update of relevant national standards and industry standards, industrial low-carbon technology upgrading speed and market demand changes, reasonably identify the revision cycle of assessment standards for each zero-carbon scenario, and increase the revision frequency at the initial stage to ensure the advanced, scientific and rational assessment indicator system.

4.4 Principle of cyclic lifting

Based on the development route of "low-carbon-near-zero-carbon-zero carbon", and integrated into the method of "planning-do-check-action" (PDCA) (see Figure 4), the assessment, construction and operation management level of zero-carbon projects are continuously improved to provide support for the realization of zero-carbon goals.

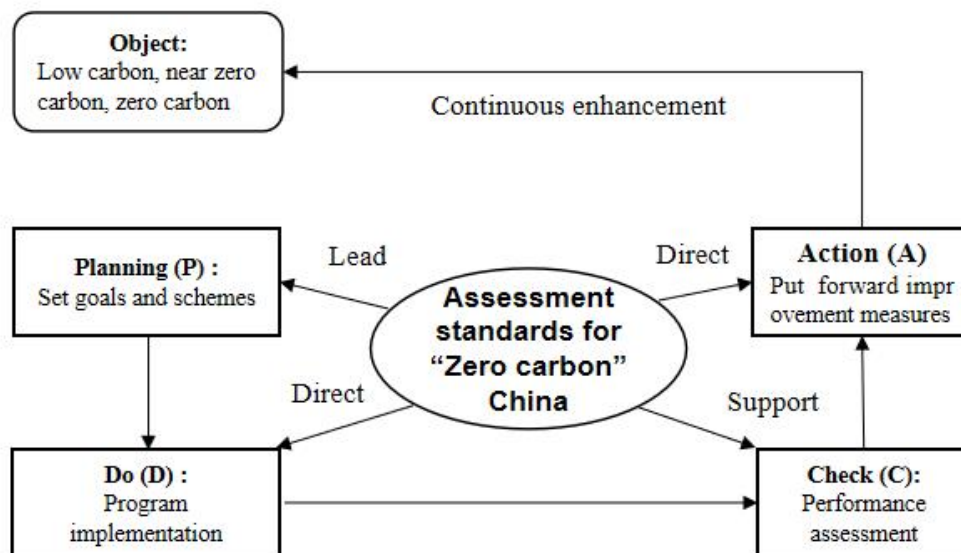


Figure 4 Combining PDCA cycle to promote the gradual achievement of zero carbon target

5 Basis of compilation

The following documents and materials should be used as the basis for the preparation of the "Zero Carbon China" assessment series standards

- Relevant national laws, regulations and mandatory standards;
- National technical specifications for carbon peaking and carbon neutral;
- Industrial carbon emission management/energy management standards;
- Relevant industrial policies and comprehensive resources utilization policy;
- Policies on the demonstration and promotion, transformation and application, restriction and elimination of technology and equipment, etc.;
- Relevant standards and technical specifications issued by ISO and other international standardization organizations.

6 Standard naming

When naming the "Zero Carbon China" assessment series standards, it is appropriate to choose one of the following naming methods according to the assessment content:

- a) "Zero Carbon" + object name + "assessment standard", e.g.: "Zero carbon park assessment standard " "Zero carbon countryside assessment standard";
- b) Enterprise type + "ESG assessment standard" or "ESG information disclosure standard", e.g. "ESG assessment standard for energy enterprises". ESG information disclosure standard for listed companies in China's petroleum and chemical industry".

7 Compilation of elements

7.1 Cover page

The cover shall be marked with the following necessary information: should be indicated on the cover: the word "Group Standard", International Standard Classification (ICS) number, China Classification of Standards (CCS) number, document number, Chinese name of the document, English name of the document, date of publication, date of implementation, issuing agency (the Investment Association of China), etc.

7.2 Table of Contents

The table of contents is an optional element of the "Zero Carbon China" assessment series standard. According to the specific circumstances of the resulting document, a listing of the following contents shall be established in order:

- a) Preface;
- b) Introduction;
- c) Chapter numbers and titles;
- d) Article numbers and headings (listed as needed);
- e) Appendix numbers, "(normative)"/"(informative)" and titles;
- f) Appendix article numbers and titles (listed as required);
- g) References;
- h) indicator;
- i) Figure numbers and titles (including those in the appendices) (listed as needed);
- j) Table numbers and figure titles (including those in the appendices) (listed as needed).

The complete title should be listed in the table of contents. The entry numbers

and terms in the chapter "Terms and Definitions" should not be listed in the table of contents.

7.3 Preface

This element of the preface is used to give information other than the content of the document itself, such as the other documents on which the document is based, the relationship to other documents and their compilation, and basic information about the drafters. The preface should not contain requirements, instructions, recommendations, or permissive clauses, nor should it use figures, tables, or mathematical formulas, etc. The preface should not give chapter numbers and should not be divided into articles.

According to the specific circumstances of the resulting document, the following appropriate content should be given in the preface in turn:

a) The standards on which the drafting is based. The specific expression is: in accordance with GB/T 1.1-2020 《Guidelines for standardization work Part 1: the structure of standardized documents and drafting rules》 of the provisions of the draft.

b) The relationship with this document. The following elements need to be stated:
1) The relationship between the standards compiled and this document, namely prepared in accordance with the requirements of this document, and together with this document constitute the "Zero Carbon China" assessment standard system;
2) When divided into parts, list the names of all published parts that have been published.

c) When applicable, the relationship between the document and the superseded document. The following two aspects need to be clarified:

1) Give the number and name of the superseded document;
2) List the major technical changes compared to the superseded document.

d) The illustration of the patent. When patents have not been identified as being involved, the following should be given in the preface: "Please note that some of the contents of this document may involve patents. The issuer of this document does not assume responsibility for identifying patents."

e) Presentation information of the document. Use "This document is presented by the Investment Association of China". Expression form.

f) Centralized information of the document. Use "This document is filed by the Investment Association of China." Expression form.

g) Information on the drafting unit of the document. Use "The drafting unit of this document:" Expression form.

h) Information about the main drafter of the document. Use "The main drafter of this document:" Expression form.

i) Previous versions of the document. If the document is the first release, it is not necessary to give the statement "This document was first released in ××××." When the document is a revised version, it is appropriate to use "This document ×××× was first published in T/××-××××, ×××× was first revised in; this is the xth revision." Expression form.

7.4 Introduction

This element of the introduction is used to describe information related to the content of the document itself and should not contain requirement-type clauses. Chapter numbers should not be given in the introduction. When the content of the introduction needs to be divided into articles, only the articles should be numbered, numbered 0.1, 0.2, etc.

The following background information is usually given in the introduction:

- a) The reason for the compilation of the document, the purpose of compilation, the reasons for the division into parts and the relationship between the parts and other matters of description;
- b) Special information or description of the technical content of the document.

If the compilation process has identified certain content of the document involves patents, the relevant content should be given in accordance with the provisions of D.3 in Appendix D of GB/T 1.1-2020. If there is a need to give more content about the patent, the relevant content can be moved to the appendix.

8 Structure

8.1 The structure of the "Zero Carbon China" assessment standards shall include but not be limited to the following elements

- Scope
- Normative references
- Terms and definitions
- Basic requirements
- assessment indicators
- assessment methods;
- assessment process.

8.2 In "Scope", the assessment objects and all aspects to be covered shall be defined, and the limits of application shall be specified.

8.3 In "Normative references document", the list of normative references shall be listed when applicable.

8.4 In "Terms and definitions", the concepts related to zero carbon projects shall be clearly explained.

8.5 In "Basic requirements", the basic conditions to be met by the zero-carbon project subject to participate in the assessment shall be specified.

8.6 In "Assessment indicators", the zero-carbon project indicator system shall be constructed in accordance with the principles of objectivity, comprehensiveness, accessibility and leadership. It is appropriate to refer to Appendix A to select the assessment indicators and construct the indicator system.

8.7 In the "Assessment methods" and "Assessment Process", the applicable assessment methods and assessment processes shall be given according to the different characteristics of the assessment objects. See Appendix B for an example of assessment process and method.

Appendix A

(Informative)

Indicator system construction of assessment standard for "Zero Carbon China"

A.1 Principles for selecting assessment indicators

A.1.1 Principle of objectivity

The indicators should be selected according to the characteristics of the specific project, with clear concepts and high relevance to the assessment objectives to be achieved, to ensure that the content measured by the indicators has significant meaning and value for both the assessment targets and the assessment objects.

A.1.2 Comprehensive Principle

The assessment indicators reflect the measures taken or results achieved by the main subject of the zero carbon scenario project in terms of structural emission reduction, technical emission reduction, management emission reduction, etc. There are both indicators that respond to the level of development and indicators that respond to dynamic changes, so that the assessment can reflect both the results and the efforts made by the project main subject in the time latitude.

A.1.3 Principle of accessibility

Indicators are highly representative and operable, and relevant information and data should be easy to obtain and verify.

A.1.4 Leading Principle

On the basis of ensuring the corresponding detection and verification capabilities, encourage the selection and presentation of advanced indicators and requirements higher than those in relevant domestic or international standards.

A.2 Assessment indicator system framework

A.2.1 The assessment indicator system of the "Zero Carbon China" assessment standard should be composed of several levels of assessment indicators. The weight can be set for one of the levels of indicators.

Example: See Table A.1 for a schematic diagram of the three-level assessment indicator system with weights set for the first-level indicators.

Table A.1 Framework of Zero Carbon China assessment standard and assessment indicator system

First-level indicators	Second-level indicators	Third-level indicators	Calculation method/satisfaction conditions	Weights
------------------------	-------------------------	------------------------	--	---------

First-level indicators	Second-level indicators	Third-level indicators	Calculation method/satisfaction conditions	Weights

A.2.2 The assessment indicator system can be composed of qualitative assessment indicators and quantitative assessment indicators. Qualitative assessment indicators should clearly meet the conditions, and quantitative assessment indicators should clearly specify the calculation methods and leading values.

Appendix B

(Informative)

Method and process of "Zero Carbon China" project assessment

B.1 Assessment method

B.1.1 The assessment object shall first meet all the basic requirements of the assessment standard.

Note: The creation subjects of various zero-carbon projects (such as zero-carbon park, zero-carbon campus, zero-carbon data center, zero-carbon factory, zero-carbon island, zero-carbon community, etc.) are the assessment objects of each specific "Zero Carbon China" assessment standard.

B.1.2 The assessment can be organized and implemented by the first party, the second party or the third party as the assessment subject. When the assessment results are announced to the public, the assessment party shall be a third-party institution with corresponding capabilities that is independent of the subject being evaluated.

Note: The first party is the creation subject of the zero-carbon project and should have independent legal personality; the second party is the interested party of the zero-carbon project, such as the project authority, partner, investment institution, etc.; the third party is an organization that has no direct relationship with the project and should have a professional technical team and project experience in carbon emission accounting.

B.1.3 The assessment subject shall use the comprehensive scoring method to score the project subject based on the assessment indicator system. If indicator weights are not involved, the total score is obtained by summing up the scores of each final indicator; if indicator weights are set, it is appropriate to calculate and summarize with the setting of weights. For example, the total score is calculated in formula B.1 for the secondary indicator system with weights set.

$$S = \sum_{i=1}^n W_i F_i \dots\dots\dots(B.1)$$

In formula

S - total score;

n - the number of secondary indicator;

W_i - the weight of secondary indicator;

F_i - the score of each secondary assessment indicator.

B.1.4 The assessment results should reasonably distinguish different levels, to facilitate the assessment object to understand their current zero-carbon development

level and formulate future development goals. See Table B.1 for the classification of zero carbon projects.

Table B.1 Classification of Zero Carbon Projects

Grade	Total Score Threshold	Total Score Threshold
Zero carbon three stars (★★★)	$S \geq 95$	Zero carbon
Zero carbon two star (★★)	$95 > S \geq 85$	Near zero carbon
Zero carbon one star (★)	$85 > S \geq 70$	Low carbon

B.1.5 When the third-party assessment results are published to the public in the form of an assessment certificate, the certificate shall include but not be limited to the following contents: basic information of the project subject; greenhouse gas accounting boundary and emissions of the project subject; assessment level; validity period of the certificate.

B.1.6 During the validity period of the assessment, the third-party re-assessment shall be conducted every two years, and the grade shall be retained or adjusted according to the re-assessment results.

B.2 Assessment process

Before conducting the second-party or third-party assessment, the assessment subject shall first complete the self-assessment. The assessment subject collects assessment evidence by reviewing the technical information submitted by the zero carbon project subject, field survey, personnel interview and sample survey, and ensures the completeness and accuracy of the evidence.

The assessment steps are as follows, see Figure B.1:

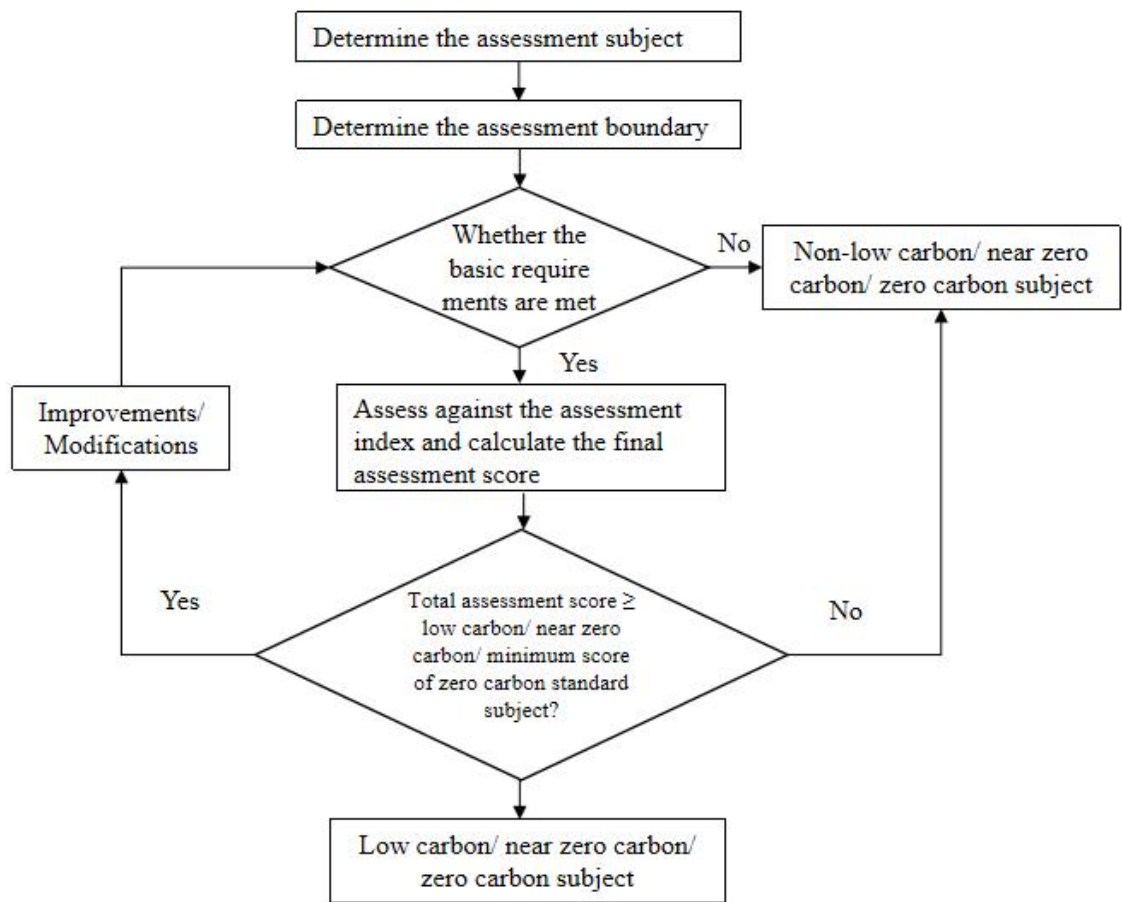


Figure B.1 Assessment process

References

- [1] GB/T 1.2-2020 Guidelines for Standardization Part 2: Rules for drafting standardized documents based on ISO/IEC standardized documents
- [2] GB/T 23331 Energy management system Requirements
- [3] GB/T 24001 Environmental management system Requirements and guidelines for use
- [4] GB/T 32150-2015 General rules for accounting and reporting of greenhouse gas emissions from industrial enterprises
- [5] "Carbon emission trading management measures (for Trial Implementation)" (Ministry of Ecology and Environment Decree No. 19)