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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA1</b>
<b>Post title:</b>	<b>Expert in energy efficiency standards</b>
<b>Number of days:</b>	20
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	2
<b>Days in China:</b>	14
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located
<b>Associated sub-contracts:</b>	<ul style="list-style-type: none"><li>• B02 Developing Standards of Energy Efficiency Retrofitting on Existing Public Buildings</li></ul>

### Background and Organizational Context

The China End-Use Energy Efficiency Project (EUEEP) is designed to support the first phase of a 4-phase, 12-year strategic plan developed by the Chinese government to significantly improve the efficiency of its major end-use sectors, buildings and industry. The project fosters a strategic approach to developing, implementing and enforcing a comprehensive and effective energy conservation policy and regulatory system consistent with the objectives of the Energy Conservation Law of 1998. The project's purpose is the removal of barriers to the widespread application and practice of energy conservation and energy efficiency in the major energy consuming sectors (buildings and industrial) in China. The project activities focus on the industrial and buildings sectors and are supplemented by crosscutting activities that will benefit both sectors.

There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency and Technology and Development of building energy efficient products.

In sub-component "Policies and standards for building energy performance", activities will focus on developing the "Implementation regulations for hot summer and warm winter zone" and "Energy efficiency retrofitting standard on existing public buildings", reviewing and

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updating the "Standard for residential buildings in heating zone", studying regulations for promoting building energy efficiency standards implemented, assess the incentive policies for more efficient buildings which comply with market economy, design a classification system for building energy consumption.

The "Policies and standards for building energy performance" component will be implemented via 6 sub-contracts, one for each region, including design standard for new buildings and existing buildings, incentive policies, classification system and implementation regulations. This component will collect and introduce international experience, analyze Chinese relevant status, assist in the design of policies and standards for building energy performance and train the stakeholders to use policies and standards.

The main tasks of the expert in building energy efficiency standards implementation is primarily to provide training and technical support to sub-contractor of B02 and introduce international experience and best-practice in developing "Energy efficiency standards for retrofitting of existing public buildings" .

### **Profile of consultant – Qualification and Competencies**

- Senior engineer/professor
- Have more than 10 years of working and/or academic experience in the study and application of building energy efficiency standards
- Familiar with building energy efficiency technology, or specialized in building materials
- Experience with formulation of regulations and standards of building energy efficiency in his/her own country or other countries
- Familiar with building energy efficiency standards on existing public building in developed country
- Familiar with energy efficiency retrofitting on existing public building
- Understand China's building energy efficiency situation, especially the existing public building

### **Language:**

Fluent in English (Chinese desired but not essential)

### **Duties and responsibilities:**

- Assemble a compendium of international building energy efficiency standards on existing public building; study and analyze these standards and provide the project group members with analytical reports and photocopies of these standards
- Introduce implementation experience of energy efficiency retrofitting on existing public building in developed countries and provide American and European energy consumption data of existing public building
- Review and analyze Chinese energy consumption data on existing public building and conduct analysis with project group members
- Provide suggestions to project group members on the formulation of building energy efficiency standards of existing public building
- Provide training to relevant government agencies on the setting up and evaluation of building energy efficiency standards of existing public building
- Participate in designing the building energy efficiency standards on existing public building and labeling workshops/meetings
- Provide assistance and suggestions in solving problems on standards and standard development procedures raised by project group members and stakeholders, Chinese experts and Chinese government officials
- Comments on the building energy efficiency standards on existing public building
- Provide documents about the method of water-cooled chiller performance test

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- Provide documents about the method of air-conditioning system energy efficiency examination

**Expected outputs / deliverables:**

- Reports (English) on relevant international building energy efficiency standards and application/implementation experience of existing public building
- Report on the suggestions and technical advice on the development of relevant building energy efficiency standards of existing public building in China, including annex of the analysis of energy consumption data of existing public building in China
- Report on the training provided to the relevant government agencies on the setting up and evaluation of the building energy efficiency standards of existing public building
- Report on the analysis of Chinese building energy efficiency standards on existing public building at the international level

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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA2</b>
<b>Post title:</b>	<b>Experts in information system for support the implementation of building energy efficiency code</b>
<b>Number of days:</b>	15
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	1
<b>Days in China:</b>	No less than 7 days
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located

### **Associated sub-contracts:**

- B12 Application of information technology to promote implementation of building energy efficiency

### **Background and Organizational Context**

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There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency and Technology and Development of building energy efficient products.

In the Standards implementation sub-component, activities will focus on training in building

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energy efficiency standards, assessing the trial implementation of standards, improving information system and implementation system and techniques.

The Standards implementation component will be implemented via 16 sub-contracts. This component will introduce international standard implementation experiences and train the government officials and professional designers.

The main tasks of the experts in information system for support the implementation of building energy efficiency code is primarily to provide technical support to sub-contractor of B12 and introducing international experience and best-practice in the information system for support the implementation of building energy efficiency code.

### **Profile of consultant – Qualification and Competencies**

- senior technologic consultants /professor
- Have more than 10 years working and/or academic experience in the assessment system and examining tools of building energy efficiency
- Knowledgeable about the model for the assessment of building energy efficiency and the development of the computer aided management system for the assessment of building energy efficiency in developed countries
- Practical experiences in assessment for developing information technique of implement code in his/her country or other countries
- Understand the situation of building energy efficiency in China, particularly regarding the practical situation in places where enjoy warm winters and hot summers and Shanghai

### **Language:**

Fluent in English (Chinese desired but not essential)

### **Duties and responsibilities:**

- Introduce the model for the assessment of building energy efficiency and the development of the computer aided management system for the assessment of building energy efficiency in developed countries and provide relevant material and documents
- Analyze the situation of building energy efficiency in China, particularly regarding the practical situation in places where enjoy warm winters and hot summers and Shanghai
- Provide suggestions to project group members on the development of the model for the assessment of building energy efficiency and the development of the computer aided management system for the assessment of building energy efficiency
- Participate in designing model for the assessment of building energy efficiency and the development of the computer aided management system in China and labeling the workshops/meetings
- Provide assistance and suggestions in designing model for the assessment of building energy efficiency and the development of the computer aided management system raised by project group members and stakeholders, Chinese experts and Chinese government officials
- Comments on the model for the assessment of building energy efficiency in China

### **Expected outputs / deliverables:**

- Documentation of the model for the assessment of building energy efficiency and the development of the computer aided management system for the assessment of building energy efficiency in developed countries and suggestions on the model for the assessment of building energy efficiency in China

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- Analysis of the situation of building energy efficiency in China, particularly regarding the practical situation in places where enjoy warm winters and hot summers and Shanghai
  - Documentation of the analysis of the model for the assessment of building energy efficiency in China at the international level
  - Documentation on the assistance provided in designing model for the assessment of building energy efficiency and the development of the computer aided management system raised by project group members and stakeholders, Chinese experts and Chinese government officials

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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA3</b>
<b>Post title:</b>	<b>Experts on Research and Application of Green and Low Energy Consumption Construction Standard of Shenzhen</b>
<b>Number of days:</b>	12
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	1
<b>Days in China:</b>	7
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located

### **Associated sub-contracts:**

- B16 Research and Application of Green and Low Energy Consumption Construction Standard of Shenzhen

### **Background and Organizational Context**

The China End-Use Energy Efficiency Project (EUEEP) is designed to support the first phase of a 4-phase, 12-year strategic plan developed by the Chinese government to significantly improve the efficiency of its major end-use sectors, buildings and industry. The project fosters a strategic approach to developing, implementing and enforcing a comprehensive and effective energy conservation policy and regulatory system consistent with the objectives of the Energy Conservation Law of 1998. The project's purpose is the removal of barriers to the widespread application and practice of energy conservation and energy efficiency in the major energy consuming sectors (buildings and industrial) in China. The project activities focus on the industrial and buildings sectors and are supplemented by crosscutting activities that will benefit both sectors.

There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency and Technology and Development of building energy efficient products.

In the Standards implementation sub-component, activities will focus on training in building

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energy efficiency standards, assessing the trial implementation of standards, improving information system and implementation system and techniques.

The Standards implementation component will be implemented via 16 sub-contracts. This component will introduce international standard implementation experiences and train the government officials and professional designers.

The main tasks of the experts on research and application of green and low energy consumption construction standard of Shenzhen is primarily to provide technical support to sub-contractor of B16 and introducing international experience and best-practice in low-energy buildings which is fit for Shenzhen.

### **Profile of consultant – Qualification and Competencies**

- Senior engineer/professor
- Knowledgeable in the research on energy-efficient construction technology
- Have more than 10 years of working experience in the technologies and applications of low energy building
- Have an intimate knowledge of special features of technologies and development trend in foreign countries in low energy building fields
- Experience of working in China, and understand the situation of building energy efficiency situation in China, particularly regarding the practical situation in places where enjoy warm winters and hot summers and Shenzhen

### **Language:**

Fluent in English (Chinese desired but not essential)

### **Duties and responsibilities:**

- Introduce international experience in the promotion of green building in other countries.
- Identify the key technologies and impediments for the promotion of green building in China
- Design the principle and theory of green building under the condition of the local climate and resources of different regions in China
- Assist subcontractor to develop a mechanism for promotion of Chinese green building
- Propose the green building technologies suitable for Shenzhen

### **Expected outputs / deliverables:**

- Report on mechanism to promote green building in other countries, including the relevant technologies and impediments for the promotion of green building
- Proposal on mechanism to promote Chinese green building with respect for application of green building technologies in Shenzhen

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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA4</b>
<b>Post title:</b>	<b>Experts in solar building</b>
<b>Number of days:</b>	8
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	1
<b>Days in China:</b>	5
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located
<b>Associated sub-contracts:</b>	<ul style="list-style-type: none"><li>• B20 Study and promotion of Solar Architecture Concept Suitable for local climate and resource condition</li></ul>

### Background and Organizational Context

The China End-Use Energy Efficiency Project (EUEEP) is designed to support the first phase of a 4-phase, 12-year strategic plan developed by the Chinese government to significantly improve the efficiency of its major end-use sectors, buildings and industry. The project fosters a strategic approach to developing, implementing and enforcing a comprehensive and effective energy conservation policy and regulatory system consistent with the objectives of the Energy Conservation Law of 1998. The project's purpose is the removal of barriers to the widespread application and practice of energy conservation and energy efficiency in the major energy consuming sectors (buildings and industrial) in China. The project activities focus on the industrial and buildings sectors and are supplemented by crosscutting activities that will benefit both sectors.

There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency and Technology and Development of building energy efficient products.

In the Standards implementation sub-component, activities will focus on training in building energy efficiency standards, assessing the trial implementation of standards, improving information system and implementation system and techniques.

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The Standards implementation component will be implemented via 16 sub-contracts. This component will introduce international standard implementation experiences and train the government officials and professional designers.

The main tasks of the experts in solar building is primarily to provide technical support to sub-contractor of B20 and introducing international experience and best-practice in study and promotion of solar architecture concept suitable for local climate and resource condition.

**Profile of consultant – Qualification and Competencies**

- Senior engineer/professor
- Have more than 10 years of working experience in the technologies and applications of solar energy building
- Have an intimate knowledge of special features of technologies and development trend in foreign countries in solar energy building fields
- Understand the situation of building energy efficiency situation in China

**Language:**

Fluent in English (Chinese desired but not essential)

**Duties and responsibilities:**

- Introduce the technologies of solar energy building in other countries and analyze and evaluate their suitability to China.
- Assist subcontractor to identify the barriers to promote solar buildings in China.
- Provide technical advice to subcontractor.

**Expected outputs / deliverables:**

- Analysis report on suitable solar building technologies in China
- Report on achievement of solar energy buildings in other countries

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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA5</b>
<b>Post title:</b>	<b>Expert in audit and record system for building energy efficiency</b>
<b>Number of days:</b>	12
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	1
<b>Days in China:</b>	7
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located

### **Associated sub-contracts:**

- B21 Establishment of audit and record system (similar with Moscow energy passport) for building energy efficiency in China
- B22 Pilot program of audit and record system for building energy efficiency in Chongqing

### **Background and Organizational Context**

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There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency

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and Technology and Development of building energy efficient products.

In the Standards implementation sub-component, activities will focus on training in building energy efficiency standards, assessing the trial implementation of standards, improving information system and implementation system and techniques.

The Standards implementation component will be implemented via 16 sub-contracts. This component will introduce international standard implementation experiences and train the government officials and professional designers.

The main tasks of the experts in audit and record system for building energy efficiency is primarily to provide technical support to sub-contractors of B21 and B22 and introducing international experience and best-practice in the establishment of audit and record system for building energy efficiency and pilot program of audit and record system for building energy efficiency separately.

### **Profile of consultant – Qualification and Competencies**

- Senior engineer/professor
- Have more than 10 years of working experience in auditing and record field
- Be familiar to Moscow energy passport
- Understand the analytical methods used for energy efficiency standard
- Understand the situation of building energy efficiency situation in China

### **Language:**

Fluent in English (Chinese desired but not essential)

### **Duties and responsibilities:**

- Introduce the establishment, implementation, effect and barriers of Moscow energy passport
- Analysis the suitability of this system in China and provide proposal and advice on this activity

### **Expected outputs / deliverables:**

- Report on detailed introduction of Moscow energy passport system and their establishment and implementation and other similar system in the world
- Proposal on the establishment of audit and record system for building energy efficiency in China

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# NDRC / UNDP / GEF China End-Use Energy Efficiency Project

## Terms of Reference for International Experts

<b>Post ref:</b>	<b>BITA6</b>
<b>Post title:</b>	<b>Experts in training system for implementation of building energy efficiency</b>
<b>Number of days:</b>	15
<b>Execution period:</b>	24 months
<b>Coming to China:</b>	1
<b>Days in China:</b>	No less than 7 days
<b>Expected start:</b>	To be advised
<b>Reporting to:</b>	PMO
<b>Location:</b>	Beijing and other cities where client sites or workshops are located

### **Associated sub-contracts:**

- B30 Building energy efficiency training in 4 pilot cities and other cities

### **Background and Organizational Context**

The China End-Use Energy Efficiency Project (EUEEP) is designed to support the first phase of a 4-phase, 12-year strategic plan developed by the Chinese government to significantly improve the efficiency of its major end-use sectors, buildings and industry. The project fosters a strategic approach to developing, implementing and enforcing a comprehensive and effective energy conservation policy and regulatory system consistent with the objectives of the Energy Conservation Law of 1998. The project's purpose is the removal of barriers to the widespread application and practice of energy conservation and energy efficiency in the major energy consuming sectors (buildings and industrial) in China. The project activities focus on the industrial and buildings sectors and are supplemented by crosscutting activities that will benefit both sectors.

There are five sub-components in the Buildings Component (Component B): Collection of building energy consumption data, Policies and standards for building energy performance, Building standards implementation, Dissemination and training in building energy efficiency and Technology and Development of building energy efficient products.

In the Standards implementation sub-component, activities will focus on training in building energy efficiency standards, assessing the trial implementation of standards, improving

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information system and implementation system and techniques.

The Dissemination and training of building energy efficiency component will be implemented via 5 sub-constructs, three for dissemination and two for training. This component will introduce foreign dissemination and training system, assist in the design of the dissemination and training scheme for the relevant staffs on building energy efficiency, including professional designers, government officials, and real state developers.

The main tasks of the experts in training system for implementation of building energy efficiency is primarily to provide technical support to sub-contractor of B30 and introducing international experience and best-practice in establishment of sustainable and open training mechanism for building energy efficiency, design a training material for building energy efficiency, design the building energy efficiency training course as part of major training course.

### **Profile of consultant – Qualification and Competencies**

- Senior engineer/professor
- More than 10 years working experience in economy, policy or management of energy efficiency buildings
- Experience of compiling training materials for EEB
- Experience of working in China, and knowledge of China's situation, especially China's policy
- Familiar with the economic incentive mechanisms, policies and strategies about energy efficiency buildings in other countries, approaches for the development of energy efficiency standards

### **Language:**

Fluent in English (Chinese desired but not essential)

### **Duties and responsibilities:**

- Provide materials/documents of relevant international policies, standards and incentive mechanisms and analyze all of these
- Provide suggestion for establish training system in China
- Provide suggestion to serial teaching materials
- Assist in domestic training

### **Expected outputs / deliverables:**

- Case study on design and operation management for building energy efficiency in other countries (in English)
- Report on policies and incentive mechanism for promotion of building energy efficiency in other countries (in English)
- Suggestion on serial teaching materials for building energy efficiency
- Training in China(5 days)