

Course Syllabus

Energy Efficiency Indicators: Fundamentals on Statistics

1. Background

Energy efficiency is key to ensuring a safe, reliable, affordable and sustainable energy system for the future. It is the one energy resource that every country possesses in abundance and is the quickest and least costly way of addressing energy security, environmental, social and economic challenges. Although energy efficiency policies are becoming a key part of the global energy market, as much as two-thirds of cost effective energy efficiency potential remain untapped.

To better understand the drivers and potential for energy efficiency, it is important to develop and maintain well-founded energy efficiency indicators to better inform the policy process and help decision-makers develop policies that are best suited to meet domestic and/or international policy objectives. Yet choosing and developing appropriate indicators to support the development of policies is not straightforward.

The International Energy Agency (IEA) is working closely with many countries to help improve their energy data and enhance the development of energy efficiency indicators through workshops, training events and tailored technical advice.

To scale up these efforts, and to reach a greater number of countries, officials, researchers and academics, the IEA's Energy Efficiency in Emerging Economies (E4) Programme has created a free online energy efficiency indicator training course. The online training builds upon IEA's energy efficiency indicators manuals: the [Energy Efficiency Indicators: Fundamentals on Statistics](#) and the [Energy Efficiency Indicators: Essentials for Policy Making](#).

2. Target Groups and Participants

The e-learning course "Energy Efficiency Indicators: Fundamentals on Statistics" is primarily aimed at energy statisticians and analysts working at national, sub-national and local statistical bureaux. The course is recommended for statistical officers in developing and emerging countries, where improved energy efficiency is a national priority. Other individuals engaged in the process of collecting, analysis and dissemination of data (such as researchers and academics, consultants, environmental managers, civil society representatives) are also invited to complete the course.

3. Learning Objectives

The overall objective of the course is to increase the knowledge and skills of policy makers to identify energy efficiency needs and opportunities, develop and implement appropriate energy efficiency policies and measure their impact.

After completing the e-learning course "Energy Efficiency Indicators: Fundamentals on Statistics", participants will be able to:

- Identify the set of indicators that can be developed across sectors, as well as the data required
- Clarify the role of detailed data collection for effective EE indicators and policies
- Explain the process of formulating disaggregated EE indicators (applying IEA's methodology)

- Define available approaches for EE surveying, metering and modelling in specific sectors
- Discuss the setup of a data collection programme for EE indicators in specific sectors.

4. Course Structure and Content

The course is made up of 5 key modules (approximately 10 learning hours in total). All participants will also take a short introductory module and a course wrap-up. Further details on the course structure are outlined below.

Course introduction: Energy Efficiency 101

This short introductory session will provide learners with an overview of some of the key concepts for energy efficiency, presenting the IEA's work on the multiple benefits of energy efficiency and provides the rationale for developing energy efficiency indicators. There is no assessment quiz in this module.

Module 1: Why indicators? A methodological framework

Module 1 will present the methodological framework for identifying and developing disaggregated energy efficiency indicators for effective policies. The module will take participants through the main principles and challenges for effective policy making based on approaches to data collection and the development of energy efficiency indicators. The module includes: **Lesson 1: Key concepts**; **Lesson 2: IEA pyramidal framework**; **Lesson 3: Data collection methods**

Learning Objectives: After completing Module 1, participants will be able to:

- Explain the purpose of developing and using EE indicators;
- Discuss various approaches for data collection;
- Identify the challenges and benefits of disaggregated energy efficiency indicators;
- Explain the link between disaggregated indicators for effective energy efficiency policies.

Module 2: Data and indicators for the residential sector

Module 2 will focus on the residential sector. This module will take participants through relevant energy efficiency indicators and will discuss approaches for data collection, interpretation and dissemination. The module includes: **Lesson 1: Overview of the residential sector**; **Lesson 2: Indicators for the residential sector**; **Lesson 3: How to collect data**; **Lesson 4: Validation and dissemination of data**.

Learning Objectives: After completing Module 2, participants will be able to:

- Identify the main end-uses for energy consumption in the residential sector;
- Formulate key residential sector energy efficiency indicators;
- Explain the challenges and opportunities in using different approaches for data collection;
- Discuss approaches for data validation and dissemination from the residential sector.

Module 3: Data and indicators for the services sector

Module 3 will focus on the services sector. This module will take participants through relevant energy efficiency indicators as well as approaches for data collection, interpretation and dissemination. The module includes: **Lesson 1: Overview of the services sector**; **Lesson 2: Indicators for the services sector**; **Lesson 3: How to collect data**; **Lesson 4: Validation and dissemination of data**.

Learning Objectives: After completing Module 3, participants will be able to:

- Identify the main end-uses of energy consumption in the services sector;
- Formulate key service sector energy efficiency indicators;
- Explain the challenges and opportunities in using different approaches for data collection;
- Discuss approaches for data validation and dissemination from the service sector.

Module 4: Data and indicators for the industry sector

Module 4 will focus on the industry sector. This module will take participants through the relevant energy efficiency indicators and will discuss approaches for data collection, interpretation and dissemination. The module includes: **Lesson 1: Overview of the industry sector**; **Lesson 2: Indicators for the industry sector**; **Lesson 3: How to collect data**; **Lesson 4: Validation and dissemination of data**.

Learning Objectives: After completing Module 4, participants will be able to:

- Identify the main categories of energy consumption in the industry sector;
- Formulate key industry sector energy efficiency indicators;
- Explain the challenges and opportunities in using different approaches for data collection;
- Discuss approaches for data validation and dissemination from the industry sector.

Module 5: Data and indicators for the transport sector

Module 5 will focus on the transport sector - both passenger and freight. The module will take participants through relevant approaches for developing energy efficiency indicators that support policy planning and implementation. The module includes: **Lesson 1:** *Overview of the transport sector*; **Lesson 2:** *Indicators for the transport sector*; **Lesson 3:** *How to collect data*; **Lesson 4:** *Validation and dissemination of data*.

Learning Objectives: After completing Module 5, participants will be able to:

- Identify the main types energy consumption in the transport sector;
- Formulate key transport sector energy efficiency indicators;
- Explain the challenges and opportunities in using different approaches for data collection;
- Discuss approaches for data validation and dissemination in the transport sector.

Course wrap-up: Where to? Building on IEA's work, best case examples and initiatives for national impact

The course wraps up with a short section containing information on recommended initiatives and best practices created by the IEA.

5. Learning Methodology

Learning Approach

The course pedagogy has been developed to adapt to individuals working or studying on a full-time basis. Participants are provided with the opportunity to learn through various experiences: engage (read); hands-on experience (activity); interact (discuss with peers); and reflect (relate to one's own experience). The course is self-paced and unmoderated. The 5 modules of the course do not have to be completed in a sequential order. However, the IEA recommends that learners start with the Course Introduction and Module 1, before proceeding to the sector specific modules. Each module contains an interactive lesson or lessons, a discussion space and a quiz. Each Module takes between 2 – 3 hours to complete, depending on the participant's objectives and prior knowledge.

Interactive Lessons

The lessons and units guide the learners through the key messages of the module and help them reach the learning objectives of the module. Besides substantial knowledge, learners are given the opportunity to test their knowledge and reflect on key concepts. The interactive lesson includes a variety of content including: short expert video lectures, formative questions and exercises, reflection points, case examples, and additional materials.

Discussion Forums

A Discussion Forum is set up within each Module to foster interaction and encourage participants to reflect on specific issues and topics discussed throughout the module. The discussion questions are pre-defined and each participant can answer in a common thread.

Assessment Tests

At the end of each module, participants take an assessment test that will test their understanding of the key facts and concepts that have been covered. Participants must attain a score of 70% or higher in all 5 assessment tests in order to successfully complete the course.

6. Course Completion

In order to successfully complete the course, participants need to:

- Pass all 5 Module assessment tests (with a minimum score of 70%);
- Make a minimum of 2 contributions to the discussion fora;
- Complete the course evaluation survey.

Participants who successfully complete the course will receive an IEA certificate, which can be linked to LinkedIn profiles.

7. Technical Requirements

The Open edX platform is tested and works best with current versions of: [Chrome](#), [Safari](#), [Firefox](#), and [Microsoft Internet Explorer 11](#). The Open edX platform is routinely tested and verified on the current version and the previous version of each of these browsers. We generally encourage the use of, and fully support only, the latest version. Lower versions may experience unexpected behaviour.

Software:

- Adobe Acrobat Reader (download at <http://www.adobe.com/products/acrobat/readstep2.html>).
- Adobe Flash Player (download for free at <http://get.adobe.com/flashplayer>)
- Microsoft Office (Windows or Apple version) or Open Office (download at <http://www.openoffice.org>)
- Platform: Windows 95, 98, 2000, NT, ME, XP or superior; MacOS 9 or MacOS X

Hardware: 64 MB of RAM, 1 GB of free disk space.

8. Contact

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