

Energy statistics and balances (e-Learning course)

19 January - 6 March 2026

Guideline

1 OVERVIEW OF THE COURSE

Energy is fundamental for socio-economic development. The availability of and access to energy is particularly essential to poverty reduction and further improvements in standards of living. However, with the constantly increasing demand for energy, there are growing concerns about the sustainability and reliability of current production and consumption patterns and the impact of the use of fossil fuels on the environment. Under these circumstances, the reliable and timely monitoring of the supply and use of energy becomes indispensable for sound decision making. Such monitoring is only possible with high quality energy statistics that are systematically compiled and effectively disseminated. This is recognized by the international community with the inclusion in the Sustainable Development Goal (SDG) of a dedicated goal on energy (SDG 7).

To help countries compile these statistics in a comparable way, the United Nations Statistical Commission adopted the International Recommendations for Energy Statistics (IRES) at its forty-second session. Given the critical role of high-quality energy statistics for informing policy, it is imperative to strengthen national capacities of countries for the sustained and regular production of energy statistics and indicators, in order to measure progress towards sustainable development.

The course introduces concepts, definitions and methods on energy statistics and balances. It has been developed by the United Nations Statistics Division (UNSD) and is being facilitated by the United Nations Statistical Institute for Asia and the Pacific (SIAP).

2 LANGUAGE

Course modules will be available in English and Russian. All other course activities will take place in English.

3 TARGET PARTICIPANTS

Target participants are staff of national statistical offices, ministries of energy and other line ministries, and other agencies working on issues related to energy statistics and energy balances.

4 LEARNING OUTCOMES

By the end of the course, participants will be expected to:

- (a) understand the basic concepts of energy statistics;
- (b) identify possible data sources for collecting energy statistics;
- (c) report energy statistics based on international standards and methodologies;
- (d) understand the relationship between energy statistics and energy balances;
- (e) build energy balances based on energy statistics;

- (f) compute useful energy indicators based on such statistics; and
- (g) understand how energy statistics can be used to calculate CO2 emission estimates according to the IPCC methodology.

5 COURSE DESIGN AND CONTENT

The course is comprised of online modules and live webinars. Each online module consists of interactive slides with explanations; modules are available in English and Russian. Participants are expected to attend regularly scheduled webinars. The webinars will provide an overview of the course topics and allow participants to ask questions. Furthermore, participants are encouraged to actively post their questions and comments in the online discussion forum of the course. After all modules have been completed, participants will be required to complete a final test that will cover all modules. The course is expected to take a maximum of 20 hours to complete. More details will be provided at the beginning of the course.

Outline

Module	Coverage
1. Introduction to energy balances and UNSD	• Introduction to energy • Introduction to energy balances • About UNSD
2. Energy data collection on national level: framework and institutions	• Legal framework • Institutional arrangements • Fundamental principles of official statistics
3. Fundamentals of energy statistics	• Units of energy statistics • Calorific values • Commodity balances
4. Coal, peat and derived fuels	• The role of coal • Coal classification • Coal production, supply, consumption and transformation process • Compiling coal data
5. Primary oil and oil products	• Importance of oil • Primary production of oil and supply • Transformation and transfers • Consumption of oil • Definitions of oil products • Units and conversions
6. Natural gas	• Background • Key natural gas concepts • Reporting of natural gas statistics and key takeaways

7. Renewables and waste	• Importance of renewables • International methodology • Renewable electricity and heat • Combustible biofuels and wastes • Conclusion
8. Electricity and heat	• Key electricity trends core • Concepts in electricity statistics • Primary energy equivalent • Generation efficiencies and capacity factors • Conclusion
9. Data sources and data quality	• What data are needed to build energy balances? • Data collection strategies • Data sources and data collection methods • Data quality and energy statistics
10. Energy balances	• Commodity balances • Structure and principles of energy balances • Building, reading and checking and energy balance • Importance of conversion factors • Conclusion
11. Energy efficiency indicators	• Importance of energy efficiency • Energy intensity and energy efficiency • Starting data collection for energy efficiency • Energy efficiency indicators • Data sources for energy efficiency indicators
12. CO2 emissions	• Introduction • IPCC methodology for estimating CO2 emissions • Calorific values and CO2 emission factors • CO2 intensity indicators

6 EVALUATION

Participants must receive a 70% or higher in the test at the end of this course.

Participants will be given 60 minutes to complete the test. They may take the exam up to three times and retain their best score. Participants may not work together on the test. The course facilitator reserves the right to deny course certificates to participants suspected of cheating on the test.