



# Training on application of the UNFC for sustainable resource management

**Report of the Second and Third Training Workshops  
undertaken under the project *Integrated energy and  
water resource management in support of sustainable  
development in South-East Europe and Central Asia***

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# 1 Introduction

An important element in the UNDA project *Integrated energy and water resource management in support of sustainable development in South-East Europe and Central Asia* is improving national capacity in four beneficiary countries<sup>1</sup> for the collection of fossil energy and mineral reserve statistics coherent with the *United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009*<sup>2</sup> (UNFC) and with the *United Nations System of Environmental-Economic Accounting Central Framework 2012*<sup>3</sup> (UN-SEEA).

Resource assessment and management based on the UNFC is regarded as an essential element in the post-2030 development agenda. Resource extraction is often portrayed negatively as a source of pollution and environmental degradation. Critics point to resource depletion, so-called “Dutch disease” and the volatility of commodity prices as negative aspects. The UN Sustainable Development Goals call for integrated natural resource management, which requires a single framework for classifying all mineral and energy reserves. The UNFC provides such a framework and therefore is recommended for use in all UN member states.

Assessment of mineral and energy resources using the UNFC and application of the resulting data and information in policy development and strategic decision making has much to offer to policy and decision-making processes. The UNFC is a single framework that serves at once as the basis for national resource stock assessment, business process innovation and efficient capital allocation. As such, benefits of its use will accrue to many stakeholders. Rather than furthering the traditional divide between economic, environmental and social goals, the UNFC offers the potential to inform all three at the same time. This has the potential to transform previously negative social and environmental impacts into opportunities for holistic benefits across all three pillars of sustainability; for example, improved food security and environmental quality from mineral extraction, as well as resource security.

To promote use of the UNFC for the compilation of mineral and energy reserve statistics in the beneficiary countries and the in broader eastern Europe, Caucasus and Central Asia regions, three training workshops were undertaken. The overall objective of the training workshops was to introduce experts from the beneficiary countries to the UNFC and the benefits of its use. The training was conducted by international experts and focused on 1) the application of the UNFC to the classification and management of mineral energy resources and 2) the use of mineral and energy reserve statistics in the broader context of environmental-economic accounting. The training workshops were open to all representatives from the four beneficiary countries.

This report pertains to the second and third workshops, which took place in Geneva, Switzerland (April 19-20, 2019)<sup>4</sup> and Nur-Sultan, Kazakhstan (June 19-20, 2019) respectively.<sup>5</sup> The report summarizes Midsummer Analytics’ contributions to the training workshops, which focused on:

- providing feedback on the “baseline reviews” of mineral and energy reserve statistics in the beneficiary countries prepared by national experts under separate contract to the UNECE, and

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<sup>1</sup> Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan and Serbia.

<sup>2</sup> See [https://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/pub/UNFC2009\\_Spec\\_ES42.pdf](https://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/pub/UNFC2009_Spec_ES42.pdf)

<sup>3</sup> See [https://seea.un.org/sites/seea.un.org/files/seea\\_cf\\_final\\_en.pdf](https://seea.un.org/sites/seea.un.org/files/seea_cf_final_en.pdf)

<sup>4</sup> As part of the Tenth Session of the UNECE Expert Group on Resource Management.

<sup>5</sup> The first workshop took place in Kiev, Ukraine (12-15 December 2019) as part of the International Forum on Energy for Sustainable Development. Its outcome was discussed in a previous report.

- explaining the links between the mineral and energy reserve statistics, the UNFC and the *System of Environmental-Economic Accounting* (SEEA).

The workshop agendas are included here in Annex 1. The presentations given by Mr. Smith during the workshops, along with short descriptions of the objective of each presentation, are included in annexes 2 through 13.

The remainder of this short report summarizes Mr. Smith's overall conclusions regarding the strengths and weaknesses of existing mineral and energy reserve statistics in the beneficiary countries (Section 2) and our main observations for each beneficiary country (Section 3). They should be seen as complementary to the more detailed assessments of the four beneficiary countries provided in our main report for this project.<sup>6</sup>

## 2 Strengths and challenges of existing mineral and energy statistics – Overall conclusions

### 2.1 Strengths

Overall, the following strengths of mineral and energy reserve statistics in the beneficiary countries can be noted:

- mineral and energy are clearly of economic importance in all beneficiary countries
- each country has a wide range of mineral and energy reserve statistics and these data are generally of good quality
- a variety of activities are underway in the countries relevant to the production and demand for mineral and energy reserve statistics:
  - development of new reserve data
  - applications of new reserve classification systems to reserve data, including the classification of the [Combined Reserves International Reporting Standards Committee \(CRIRSCO\)](#), the Petroleum Resource Management System
  - development of new legislation related to the management of energy and mineral reserves
  - actual mineral and energy development activities (driven by both domestic and foreign investors)
- there is considerable interest in using the UNFC to classify mineral and energy reserves but, to date, relatively little practical experience.

### 2.2 Challenges

A variety of challenges are faced in the development of mineral and energy statistics in the beneficiary countries. Broadly, these can be grouped into challenges related to administrative arrangements and challenges related to data.

#### 2.2.1 Challenges related to administrative arrangements

- Political complexities exist in some countries that complicate the collection and dissemination of statistics; for example, many agencies – some with overlapping or competing mandates – can be involved and the will to cooperate is not always present. The situation is further complicated by the diversity of the organizations involved. Some are public with mandates for transparency and others are private with a need to mandate confidentiality. Both domestic and foreign entities are

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<sup>6</sup> This report is available from Mr. Viktor Badaker of the UNECE Sustainable Energy Division.

involved, meaning that national laws do not apply to all in the same ways; for example, a national ministry may be obliged by national law to publish a particular statistic, while a foreign company may face no similar legal requirement. Finally, the situation is complicated by the different goals of research and policy institutes and their differing needs for and interest in publishing statistics.

- The responsibilities for mineral and energy statistics are not fully clear in all countries. It is not clear, for example, which government department or agency has the authority to decide that the UNFC should be applied in a given country. In the absence of clarity on this, it is more difficult to move toward use of the UNFC.
- All countries expressed concerns about the human and financial resources available for statistics in general and mineral and energy reserve statistics specifically.

## 2.2.2 Challenges related to data

A variety of challenges related to data were mentioned and most were common to all of the countries.

- Even in cases where data exist on mineral and energy reserves, lack of access to the data limits their relevance. Access can be hampered by political factors (excessive data confidentiality), by a lack of transparency in terms of metadata and by scattering of data across organizations.
- Data quality is also impacted by issues related to time series. Problems include short time series, especially for electronic data in on-line databases; breaks in time series due to change in methodologies and definitions and infrequent updating of data
- There is considerable heterogeneity at the moment in terms of the classification systems used for mineral and energy statistics across the countries. All of the following classification systems can be found in active use today: old Soviet-era systems; more recent Russian systems; the CRIRSCO system; PRMS and unique national systems.
- Finally, countries reported that financial and statistical reporting systems for minerals and energy are not harmonized. As a result, the opportunity to improve official mineral and energy reserve statistics by drawing upon financial databases (such as tax filing information) is limited.

## 3 Observations by country

In this section, we summarize our observations regarding mineral and energy reserve statistics in each beneficiary country. These observations are based on information gleaned from the national expert presentations made during the first training workshop in Kiev and from our reviews of the reports submitted to the UNECE by the national experts, which were summarized in detail in our main report.

### 3.1 Bosnia and Herzegovina

Bosnia and Herzegovina (B&H) emerged from the war in 1995 with an economy that had been largely destroyed economy. The Dayton Peace Accords set the basis for economic rebuilding but put in place a complex political arrangement in which the management of natural resources is challenging. Two statistical agencies and two ministries responsible for mineral and energy resources exist within the country, one set for the Federation of Bosnia and Herzegovina and other for the Republika Srpska, both of which are autonomous entities with the country of B&H.

B&H is witnessing increasing production of electricity from thermal power plants and reductions in hydroelectricity production, as climate change reduces water availability. The

hydroelectricity plants, which are located in karst areas, are reliant upon regular rainfall for normal operation.

Production of other renewable energy is low. The main non-hydro source is firewood and it relies on forests that are being depleted. There is considerable geothermal potential in the country, but it does not receive much interest from the ministries of energy.

Coal is the main fossil fuel used in the country. There is no production of oil today, though there are reserves that were exploited at the time of WWII. Reserves of bauxite, iron, lead and zinc exist. Antimony may become of importance. There is a former silver/gold mine near Sarajevo that no longer operates. The possibility of development of lithium resources, which seems to be happening in Serbia, is of interest.

As for data, the statistical offices do not report mineral and energy reserves. These are available from the relevant ministries, but they are not routinely made available to the public. Users interested in them must make a phone call to obtain the data. Some data are available in electronic form, but many are still only accessible in hardcopy.

Other notable data challenges include:

- absence of any legal basis for mineral and energy resource statistics
- need for stronger cooperation among agencies involved in data collection
- need for more active data sharing among agencies
- failure of companies to report data they are legally obliged to
- incomplete reserve data especially for polymetallic ores
- no national quality control laboratory for mineral assays
- general lack of electronic data
- continuing use of Soviet-era reserve classification system
- no experience to with UNFC, though it will be applied in three pilot projects.

Overall, the UNFC is seen as a useful tool in B&H, especially for the social dimension it brings, which offers a risk mitigation strategy for investors.

## 3.2 Kazakhstan

Kazakhstan hosted the [World Mining Conference](#) in 2018, which helped push its transition to international standards in its mineral and energy statistics. The country adopted a new mining code in 2018, through which it mandated the use of the CRISCO classification standard. Preparation of national reports using the CRIRSCO standard has already begun and it is working well at the national level, though there may be some difficulties in its application at the state government level. However, in the case of iron, titanium, nickel and cobalt, reserves are still classified using a Soviet-era system and have not been updated in many years; it is questionable how accurate these data are.

Kazakhstan continues to suffer from a lack of investors to develop its mineral and energy resources.

Since 2005, there has been a high degree of transparency in reporting mineral and energy reserve statistics. Prior to that, most data were considered state secrets. Today, the country is compliant with the reporting standards of the [Extractive Industries Transparency Initiative](#) (EITI).

Data are available from the State Committee on Geology, from the State Committee on Statistics and from state-owned companies. The basic data available include mineral reserves; fossil fuel reserves; production; processing; exploration; exports; taxes and dividends to the state. No data are available on groundwater reserves.

Other notable data challenges include:

- budgets for statistics are falling
- some reserve data are very old (1950s) – hard to attract investment with such unreliable data
- data are inconsistent from one resource to another
- time series are short in many cases.

### 3.3 Kyrgyzstan

As a mountainous country (nearly half at 3000 m above sea level), Kyrgyzstan's geography influences its energy resources, with hydroelectricity playing a significant role. Less than 10% of the country's hydroelectric potential is exploited by the 8 large and 13 small existing generating stations.

In terms of other renewable energy, Kyrgyzstan also has solar, wind, geothermal and biomass resources, though not all are used to any extent. In terms of fossil fuels: coal, oil and gas are all exploited. Uranium is present, but not currently mined. The majority of coal discoveries were made during Soviet times. Today, coal extraction is carried out by companies with both foreign and domestic investors. As of Jan 2018, the country had 1.4 million tonnes of coal reserves.

Kyrgyzstan is still using a Soviet-era classification system for mineral and energy reserves. There are no plans to replace it in the short, though a plan is in place to switch to the CRIRSCO classification in the longer term. There is also a plan to investigate the UNFC with Russian colleagues.

#### 3.3.1 Serbia

Serbia has considerable mineral and energy reserves, with more than 2500 known deposits. The country has had an active geological survey for 125 years. Known resources reserves include 1000 ore occurrences and 30 ore deposits; 27 coal basins; 90 oil/gas basins; 250 oil/gas deposits; 11 basins with oil shale potential; 9 uranium deposits. Active extraction takes place in 2 open-pit coal mines; 1 underwater coal mine; 7 underground coal mines; 70 oil and gas fields; 6 underground mineral mines; 2 open-pit mineral mines. A major lithium discovery has recently been made by Rio Tinto.

The country has huge hydro/geothermal electric power potential.

Official mineral and energy statistics in Serbia do not include data on reserves, only extraction. There is no working relationship between the NSO and the Ministry of Energy.

The "Book of Regulations" of the ex-Yugoslavia is used to define existing mineral and energy reserves. New reserves will be classified based on the PRMS. International standards are used for reporting to stock exchanges.

Few people in Serbia are aware of the UNFC and it is not clear who would be responsible for any decision to use it. However, Serbia has signed an MOU with the UNECE to develop a case study on the UNFC.