**ENERGY DIG DATA CHALLENGE DATA GUIDEBOOK**

**Introduction**

Energy consumption, energy savings, and energy efficiency are among the most important topics in energy debates across the world. While availability of energy sector data in Kosovo is not a problem, ensuring that the data is not only open source, but easily interpreted by Kosovo’s citizens, poses a particular challenge. The data that are already published are often not in an appropriate format for data analysis and data-driven policy making. Furthermore, energy data comes from different sources and often requires adjustments to make the data decipherable across different institution policies and formats.

Given these issues, Kosovo’s citizens and stakeholders are struggling to interpret and create solutions that reflect what actually is happening in Kosovo. Citizens and stakeholders are often forced to make inferences and develop hypothetical scenarios using foreign data and case studies to provide energy-related solutions for Kosovo, rather than using local data that has a greater likelihood of success.

Citizens access to Kosovo’s energy data, including both electricity and thermal/district heating, can increase their information regarding household energy consumption, and the ways they can reduce energy consumption and costs; would benefit non-governmental organizations in researching new solutions for energy savings, energy resource management, green energy, and potential inequalities related to gender, ethnicity, and region; and research enthusiasts who enjoy fostering better social outcomes through data.

The Millennium Foundation Kosovo (MFK) has cooperated with the Energy Regulatory Office and the Kosovo Agency of Energy Efficiency to publish ten (10) datasets, which contain different data on energy production, energy consumption, renewable energy resources, customer-related requests and complaints related to energy and investments in energy efficiency. The datasets are focused only on the electricity side of the energy, and do not include information regarding thermal heating. Through these datasets, as well as in combination with outside research sources, researchers, civil society, the private sector, academia, journalists, technology innovators, and creative problem solvers can come up with data-driven solutions for energy-related topics in Kosovo.

Energy data can be found online, at the Energy Regulatory Office website, as well as at the Kosovo Agency of Energy Efficiency website, and are available to be downloaded in format compatible for data analysis. Data users will have the opportunity to download and work with raw data, and analyze them to develop different solutions.

The following is a list of data categories published online:

1. Energy costs
2. Energy consumption
3. Household energy consumption
4. Customer complaints
5. Energy losses
6. Renewable energy
7. Lignite resources and environmental pollution
8. Energy efficiency investments by type of investment
9. Energy efficiency investments by municipality
10. Energy efficient products and their consumption

**Data Descriptions**

**Energy Costs**

|  |  |
| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | This category of datasets contains information on energy costs incurred in distributing, transmitting, and supplying energy. Specifically, the datasets contain information on the Maximum Allowed Revenues (MAR) for the energy distribution, transmission, and supply systems. Distribution and transmission costs are an integrated part of the supply costs. Maximum Allowed Revenues for energy supply is determined based on supply costs, and supply costs are used to determine energy tariffs for different customer categories. Furthermore, these datasets contain information on electricity generation (electricity purchase), divided into lignite resources, renewable energy resources, and imports.  MAR data is presented in Euro units, while energy purchase data are presented in terms of GWh consumption, as well as in terms of Euro costs for purchase of MWh. |
| Possible usage of datasets | * Calculate energy costs * Calculate percentage change in energy costs from one year to another * Analyze the factors that drove the yearly change in energy costs * Analyze the effect of transmission and distribution costs on overall costs * Analyze the importance of imports, lignite resources, and renewable resource on the overall energy purchase costs |
| Number of datasets | Four (4) |
| Frequency of data available | Annually |
| Years available | 2013-2019 |

**Energy Consumption**

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| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | This category focuses on energy consumption and losses data. The datasets contain information on the monthly consumption of different groups, including households, industrial, and commercial consumption. Furthermore, the datasets include information regarding technical, commercial and unbilled energy supply losses.  The third dataset in this category contains yearly average tariff prices for each of the aforementioned costumer types. The data are available from 2009.  The primary focus of this category, as well as of others, is households. As such, the fourth dataset contains data on household billing determinants and the household day and night consumption and tariffs. These data allow for analysis of household electricity bills.  Billing determinants are available for 2018 and 2019, while day and night household consumption and tariffs data are available on an annual basis from 2017 to 2019. |
| Possible usage of datasets | * Calculate energy production and cost for each production unit * Calculate household consumption and costs based on day and night tariffs * Calculate monthly household consumption |
| Number of datasets | Six (6) |
| Frequency of data available | Annually and monthly |
| Years available | 2009-2019  2017-2019 |

**Household Energy Consumption**

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| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | This category provides detailed data on household energy consumption. All of the data are presented monthly. The datasets include:   * Household monthly energy consumption * Household tariff structure * Household appliances’ power consumption * Household consumption by district * The number of customers in each district   + Total   + By municipality   These datasets, when used together, provide detailed information on the energy consumption behavior of Kosovo’s households, and as such offer insights for possible energy savings solutions that are tailored to households. |
| Possible usage of datasets | * Calculate monthly household energy consumption and costs through monthly average energy prices * Calculate household consumption by district, depending on the number of customers per district * Analyze energy consumption of different household appliances and calculate of their impact on household energy costs * In combination with the datasets from the second category, calculate the impact of reduced or increased energy consumption on average tariff levels. * Pair with other data, such as data on vulnerable socioeconomic households receiving subsidies (Ministry of Labor and Social Welfare), to understand consumption data for these households and develop solutions |
| Number of datasets | Six (6) |
| Frequency of data available | Monthly |
| Years available | 2019 |

**Customer Complaints**

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| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | The datasets in this category are divided into:   * Complaints against the energy supplier * Complaints against the ERO   Data on complaints against energy suppliers are categorized by month, district, the nature of the complaints, and the complaint status. Data on complaints against the ERO are presented based on the reason for the complaint, the customer type, and the complaint status.  These data provide detailed information on the number of complaints that households and other customers file, based on different causes. The data includes information regarding the number of complaints that have been decided in favor and against the complainant. Furthermore, this dataset includes information regarding the customer complaints in courts.  Citizens and stakeholders can use complaint datasets to analyze the type of complaints and propose solutions that would decrease complaints and increase household satisfaction with energy provision. |
| Possible usage of datasets | * Analyze complaints based on region and offer solutions towards decreasing their causes * Analyze complaints based on their nature, and offer solutions that would tackle the highest source of complaints * Analyze the number of complaints that are decided in favor of costumer, and develop solutions that decrease complaints. * Combine data and desk research to analyze changes in complaint type over time and analyze what caused the change * Analyze any potential disparities in customer treatment or unjust rulings |
| Number of datasets | Eight (8) |
| Frequency of data available | Monthly and Yearly |
| Years available | 2015-2019 |

**Energy Losses**

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| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | This category provides detailed data on energy losses, divided into technical and commercial losses. The data are presented by district and by month.  Specifically, this dataset includes:   * Monthly data on technical losses, for each district * Monthly data on commercial losses, for each district * Monthly data on energy load, for each district * Monthly data on billed energy, for each district   Through these datasets, citizens will be able to analyze different types of losses. When combined with the Energy Costs dataset, citizens are able to determine the impact of losses on customer energy bills. |
| Possible usage of datasets | * Combine data with other categories to analyze the impact of network losses on customer bills * Analyze losses by district * Analyze losses by month * Analyze energy load by month * Analyze energy load by district, and compare it with consumption * Analyze energy billing by district, and compare it with consumption * Analyze energy billing by month |
| Number of datasets | Eleven (11) – data by district |
| Frequency of data available | Monthly |
| Years available | 2010-2019 |

**Renewable Energy**

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| --- | --- |
| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | This series of datasets presents data on renewable energy sources. Energy production in Kosovo is a combination of lignite coal and renewable energy sources, and this category provides monthly production data of different energy sources. Besides the total energy balance data presented in the other datasets, this category offers insights on the monthly production of:   * Kosovo A Power Station * Kosovo B Power Station * Distribution of renewable energy sources * Transmission of renewable energy sources   Besides production, these datasets also include Kosovo’s energy import and export prices, as well as renewable energy prices.  As such, the data can contribute to better understanding energy production in Kosovo and the associated costs. The data also addresses renewable energy investments currently under construction that will become available in Kosovo in the near future, particularly:   * The amount of energy that will be produced by renewable sources in Kosovo in the near future * The costs associated with energy produced by renewable sources   In particular, this category includes data on:   * Energy production * Renewable energy production by sources in transmission * Renewable energy production by sources in distribution * Import and export data * Import and export prices * Renewable energy sources for the listed years |
| Possible usage of datasets | * Calculate energy produced by lignite coal * Calculate energy produced by renewable energy resources * Analyze the impact of imports on energy prices * Analyze the impact of price on energy production * Analyze Kosovo’s renewable energy production potential |
| Number of datasets | Five (5) |
| Frequency of data available | Monthly and Yearly |
| Years available | 2009-2019 |

**Lignite Resources and Environmental Pollution**

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| Source | Energy Regulatory Office |
| URL | https://www.ero-ks.org/zrre/sq/te-dhena |
| Format | Excel |
| Description | The dataset presents information on Kosovo’s lignite coal resources. Specifically, this dataset contains monthly information on:   * Lignite coal production * Lignite consumption * Lignite consumption in the market   Furthermore, this dataset includes information regarding pollution from lignite coal resources in Kosovo.  Using these datasets, Kosovo citizens can understand the amount of lignite coal production, consumption, and environmental impact. When combined with data from other datasets and desk research, competitors can conduct a thorough analysis on the costs and tradeoffs associated with Kosovo switching its energy production from lignite coal to renewable sources. |
| Possible usage of datasets | * Calculate monthly lignite coal production * Calculate monthly energy consumption * Analyze the contribution of lignite coal to environmental pollution * Analyze the tradeoffs and costs associated with Kosovo increasing the production of renewable energy resources, and the impact it may have on the environment. * Pair with air quality data and or consumption data to identify vulnerable groups and propose solutions for improved citizen health |
| Number of datasets | Three (3) |
| Frequency of data available | Monthly |
| Years available | 2009-2019  2017-2019 |

**Energy Efficiency Investments by Institution**

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| --- | --- |
| Source | Kosovo Agency of Energy Efficiency |
| URL | https://akee.rks-gov.net/te-dhena/ |
| Format | Excel |
| Description | The dataset presents information on total energy efficiency investments in Kosovo, divided by type of institutions. More specifically, data are available for:   * Investments in inventories * Investment in monetary means   Data on energy efficiency investments are presented by the type of institution that made the investment. Currently, data are divided into:   * Total investments made by institutions * Investments by data   Using these datasets, Kosovo citizens will have the opportunity to understand the amount of money invested in different energy efficient facilities, by institutions. Through these data, citizens can analyze which types of energy efficient facilities are most frequently bought, and which ones make up for the highest percentage of budget devoted to efficiency. |
| Possible usage of datasets | * Analyze energy efficiency investments in facilities * Analyze energy efficiency investment in public lightening * Calculate the amount of money spent in energy efficiency investments as a total, as well as divided by the type of institution |
| Number of datasets | Two (2) |
| Frequency of data available | Yearly |
| Years available | 2018 and 2019 |

**Energy Efficiency Investments by Municipality**

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| --- | --- |
| Source | Kosovo Agency of Energy Efficiency |
| URL | https://akee.rks-gov.net/te-dhena/ |
| Format | Excel |
| Description | The dataset presents information on total energy efficiency investments in Kosovo for each municipality. In this dataset, Kosovo citizens can find information regarding:   * Total investments in energy efficient inventories by each municipality * Total investments in monetary means, divided by year   Through these data, citizens can analyze which types of energy efficient facilities are most frequently bought by different municipalities, and conduct a municipality-based comparison analysis in energy efficiency. |
| Possible usage of datasets | * Analyze energy efficiency investments in facilities by different municipalities * Analyze energy efficiency investment based on categories * Calculate the amount of money spent in energy efficiency investments by municipalities * Comparison analysis between the municipalities that invest the most in energy efficiency |
| Number of datasets | Three (3) |
| Frequency of data available | Yearly |
| Years available | 2018 and 2019 |

**Energy Efficiency Investments by Commercial Banks**

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| --- | --- |
| Source | Kosovo Agency of Energy Efficiency |
| URL | https://akee.rks-gov.net/te-dhena/ |
| Format | Excel |
| Description | This dataset is a combination of the total investment in energy efficient measures made by commercial banks in Kosovo. However, it must be stated that the data presented come only from four (4) commercial banks in Kosovo, because the other banks have not reported to the Agency.  Given that commercial banks orient their energy efficient loans towards households, the data provided lay down important information on the amount of money provided to households for energy efficiency, compared to the money provided to public institutions and municipalities.  Furthermore, this dataset outlines the main energy efficient household appliances and the consumption of the energy by these appliances. Together with the data on the third dataset, on the consumption of the energy from the current household appliances, Kosovo citizens can compare the efficient and non-efficient appliances in terms of their energy consumption, costs, and savings to households in Kosovo. |
| Possible usage of datasets | * Comparison analysis between efficient and non-efficient household appliances * Cost comparison between efficient and non-efficient household appliances * Analyze energy efficiency investments by commercial banks in Kosovo |
| Number of datasets | Two (2) |
| Frequency of data available | Yearly |
| Years available | 2019 |