

# Energy Sector Issues in Kosovo

**Lukas Feldhaus, Clemens Stiewe**

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# Structure

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## 1. Energy system overview

- 1.1 Growing energy demand
- 1.2 Energy demand already larger than supply -> import dependency
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- 2.1 Growing electricity demand, import dependency
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## 3. Potential further research and support

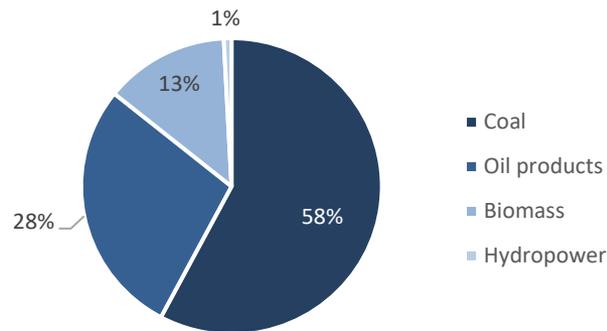
- 3.1 More renewables and flexibility for the electricity grid
- 3.2 Explore and assess future energy demand

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# 1. Energy system overview

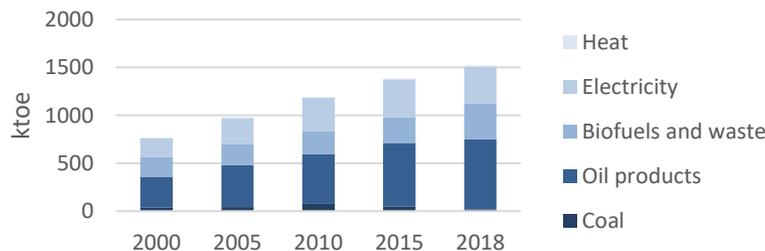
# 1.1 Energy system overview

## Total primary energy supply, Kosovo 2019: 2571 ktoe



Source: Kosovo Agency for Environmental Protection

## Final Energy Consumption by Source



Source: Kosovo Agency for Environmental Protection

## Growing energy demand

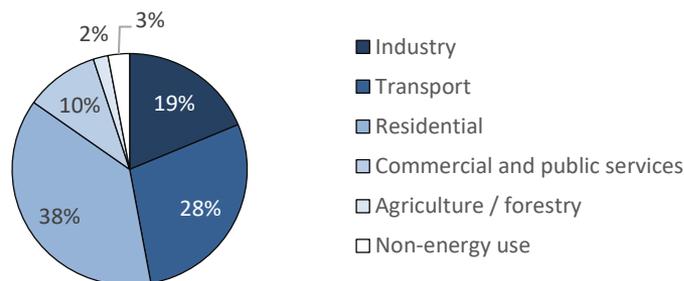
- Kosovo's total primary energy supply is mainly met by coal and oil
- Kosovo's main source for electricity is coal (97% from coal power plants)
- Since 2000, Kosovo's final energy demand has roughly doubled

➤ **High dependency on coal**

➤ **Strong increase in energy consumption over time**

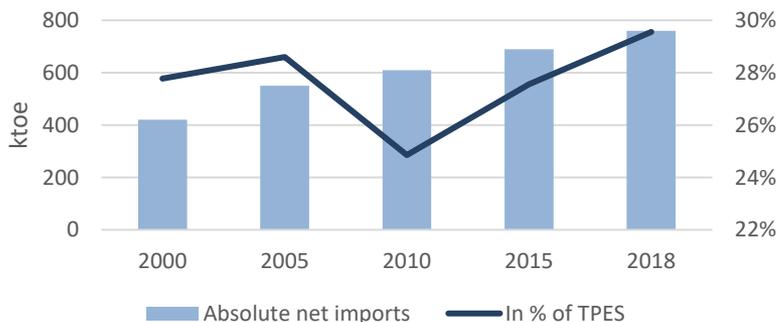
# 1.2 Energy demand larger than supply

## Final energy demand by sector 2018: 1520 ktoe



Source: Kosovo Environmental Protection Agency

## Kosovo, net energy imports



Source: IEA

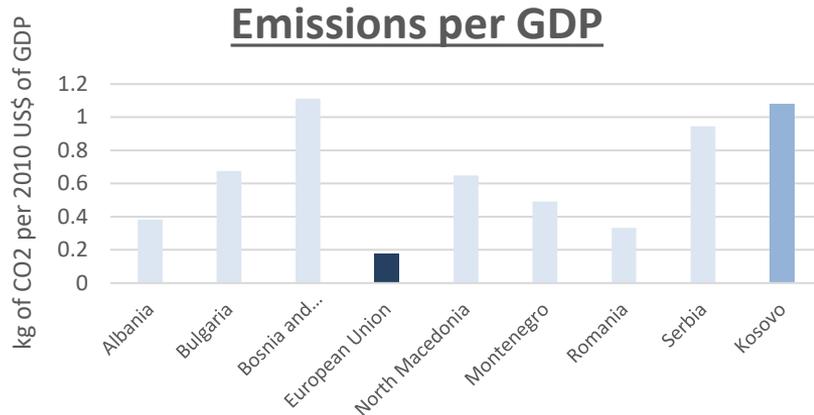
## Energy demand driven by growing GDP

- Energy consumption mainly in transport and residential sector
- GDP expected to grow by 4-5% annually
- Growing industry and services sectors will lead to higher energy demand in the future

## Kosovo depends on energy imports

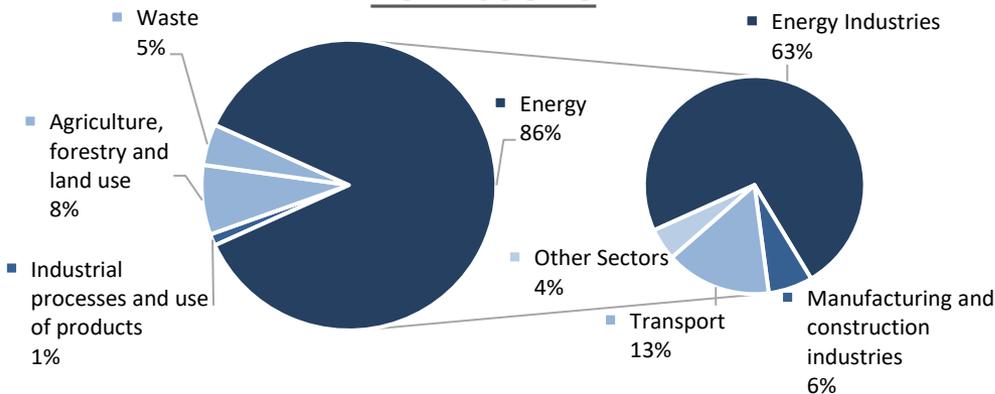
- Import dependency has increased in the last decade
- Imports mainly oil and electricity
- **Growing energy demand**
- **Import dependency for oil and electricity**

# 1.3 High emissions per GDP



Source: World Bank

## Total Emissions Kosovo 2019: 10 MtCO<sub>2</sub>e



Source: KEPA

### High emissions per GDP

- Relative emissions high: CO<sub>2</sub> per GDP: 5 times EU average
- Total emissions low: CO<sub>2</sub>e per capita: 77% of EU average (KEPA)
- Main emissions from coal plants in the energy sector (54%)
- No official CO<sub>2</sub> reduction target

### Coal plants' emissions in breach of Energy Community obligations

- In dispute with Energy Community since 2018 (due to [IED](#) and [LCPD](#))
- Urban areas with high levels of health-hazardous dust ([KEPA](#))
- **Need to dismantle or refurbish coal power plants**

# 1.4 Regulation and targets

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## International obligations under Energy Community (EnCo)

- Kosovo a “contracting partner” to the EnCo → EU directives regarding environment and energy are obligatory in Kosovo
- EnCo positively assessed Energy Efficiency Action Plan (but not adopted)
- EnCo demands implementation of both **Industrial Emissions** and of **Large Combustion Plant Directive**. Both not implemented in Kosovo.

## RES targets for Final Energy Consumption in reach, not for electricity

- National Energy Development Strategy: ca 25% RES in final energy consumption in 2020 – met only due to high share of wood in residential heating ✓
- National Renewable Energy Action Plan: ca 25% RES in final electricity consumption in 2020 – not met ✗

# 1.5 Possible next steps

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## Kosovo would benefit from

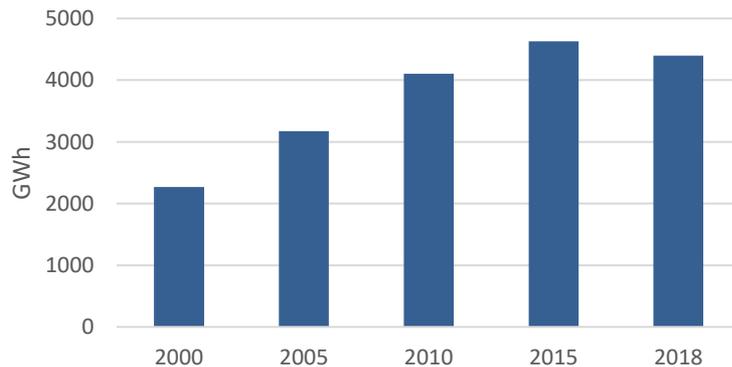
- Increasing domestic energy supply
  - Increasing energy efficiency
  - Lowering the non-GHG emissions of its coal plants to reach Energy Community targets
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- **Possibility 1**: Analyse different **energy demand scenarios**
    - Effects of energy efficiency measures: assessing future energy demand
    - Analyse a variety of sectors: buildings, transport, agriculture, etc.
    - Tracking electricity demand development of the future
  - **Possibility 2**: New **energy supply strategy**
    - Focus on electricity sector, as coal plants need to be replaced or refurbished (see next slides)

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## **2. Electricity system analysis**

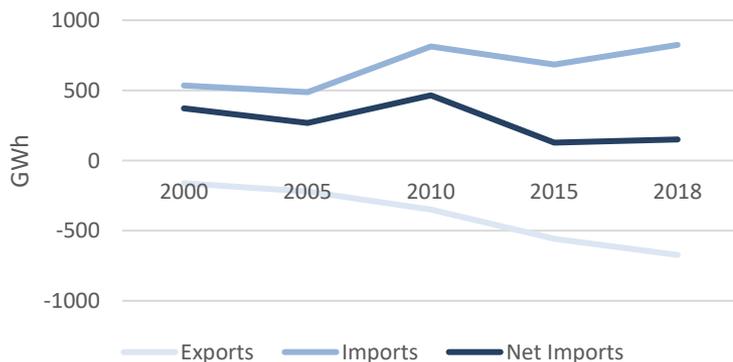
# 2.1 Growing electricity demand and import dependency

## Final electricity consumption



Source: IEA

## Electricity exports vs imports



Source: IEA

## Growing electricity demand

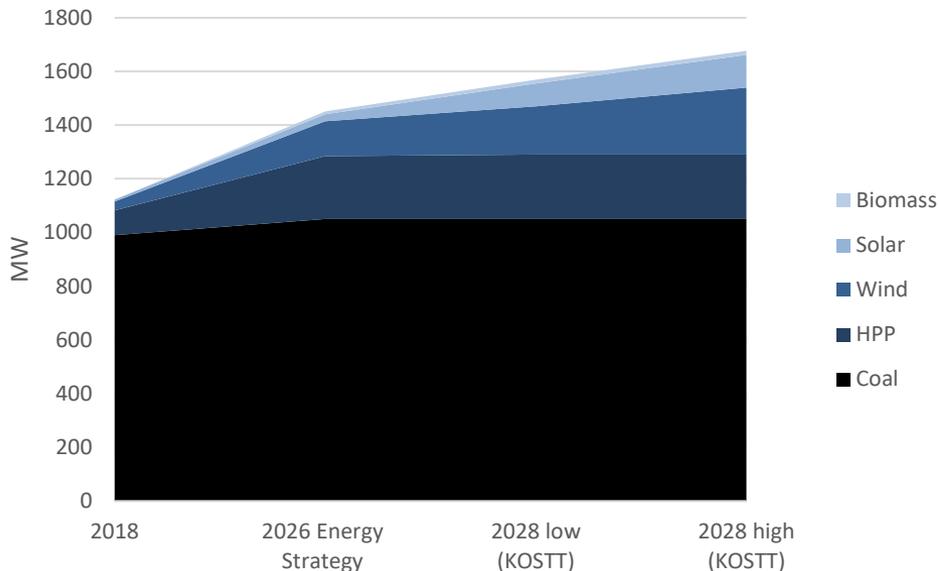
- Driven mainly by residential consumers for electric appliances and heating
- Prospect of growing GDP and population → electricity demand will grow further
- High transport losses (23%, 2020)

## High import dependency

- Kosovo relies on neighbours for demand balancing
- Imports of electricity from surrounding countries during expensive day-time
- Exports in cheap night-hours
- **Joint network operation with Albania will secure reliable imports**
- **Kosovo's energy security would benefit from new electricity capacities**

## 2.2 The future electricity system – as planned

### Existing plans for capacities in Kosovo



Sources: KOSTT, 2018, "Grid integration of variable renewable energy sources in the Kosovo Power System", Kosovo Energy Strategy 2026

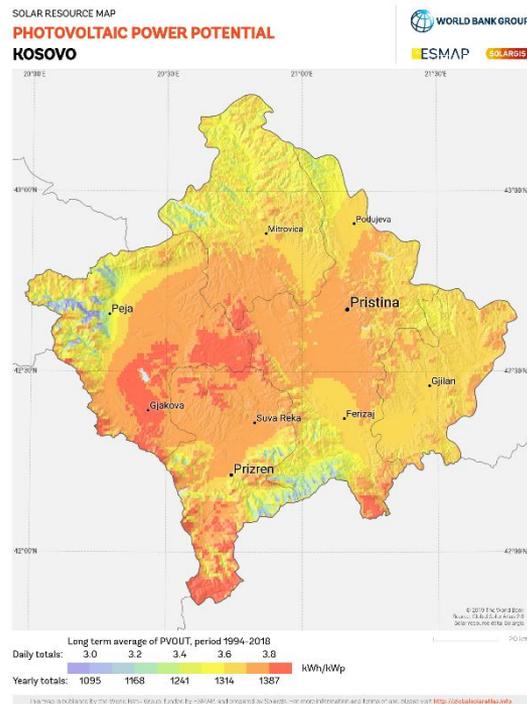
### Plans for new RES capacities exist

- Old [Energy Strategy 2026](#) projected costs of EUR 600 m for new RES capacities
  - But: also planned installation of a new coal plant, which is on hold
- KOSTT plans for increase of RES by at least 380 MW until 2028
  - **Need new capacities to replace old coal power plants & to match growing electricity demand**
  - **Reassessment of plan means that new, cost-efficient power plant park setup needs to be found**
  - **New RES plan should contain**
    - financing
    - energy security
    - working electricity market

## 2.3 The future electricity system – new possibilities

### Solar Resource Map

Source: World Bank – Global Solar Atlas



### High RES potential (but enough?)

- [IRENA](#) finds 581.3 MW (834.5 GWh) of solar PV potential
- Wind: 2,300 MW (3800 GWh)
- But: RES enough to replace coal plants and match future demand?

### Potential to import natural gas from neighbouring countries

- Higher shares of RES would have to be balanced in the electricity grid
- **Flexibility and other sources of energy needed**
- **Gas peakers could provide both flexibility and more electricity**

## 2.4 Electricity market

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### Market liberalisation well-advanced

- Successful unbundling of distribution and transmission companies
- Retail electricity market not yet finalised
- Feed-in-tariffs of **136.4 EUR/MWh** for PV might be too high (IRENA finds only necessary costs of **80 EUR/MWh** for PV)
- **Potential to develop market-based solutions for RES subsidies to keep costs low**
- **Final market system should reward flexibility to ensure system can integrate renewable energy sources**

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# 3. Potential further research and support

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## 1. Kosovo's largest needs and opportunities lie in the electricity sector

1. Decent solar power potential
2. Energy Community: Old coal plants need to be replaced or at least refurbished
3. But: Does the electricity system have enough flexibility to install up to 2900 MW of RES (solar + wind)?
4. → Need to assess options for providing more flexibility
5. → Potential to fine-tune market regulation to provide incentives for a) renewables and b) flexibility, while c) protecting poor households

## 2. Kosovo's energy demand driven by growing industry and GDP

1. Future energy consumption depends on the growth of industry
2. Households and transport sector may be able to save some energy through energy efficiency measures

# About the German Economic Team



Financed by the Federal Ministry for Economic Affairs and Energy, the German Economic Team (GET) advises the governments of Ukraine, Belarus, Moldova, Kosovo, Armenia, Georgia and Uzbekistan on economic policy matters.

Berlin Economics has been commissioned with the implementation of the consultancy.

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