

FACTS AND FIGURES

Ukraine and EU: Towards a decarbonisation partnership

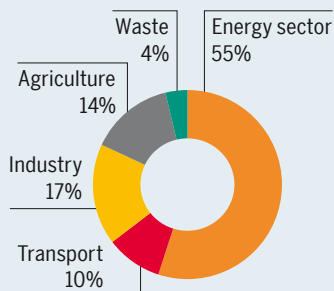
Fossil fuels and nuclear undermine energy security



Map 1: Emissions and age of major power plants in Ukraine

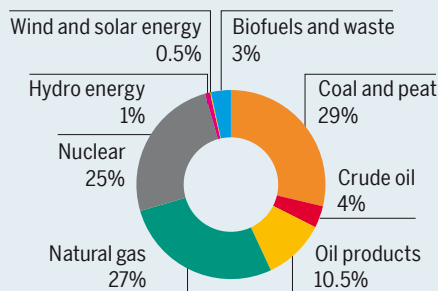
Source: Carbon Brief/Heinrich Böll Foundation

Ukraine imports over 60% of energy sources. In 2018, Ukraine spent 11 billion EUR on import of energy sources.¹ Electricity generation depends heavily on centralised nuclear (54%) and coal (34%) power plants.



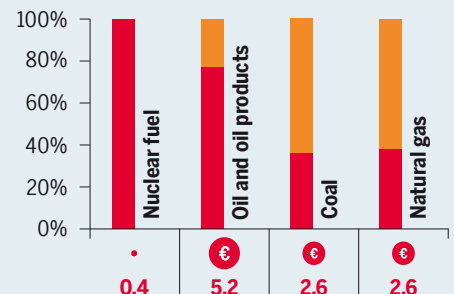
Graph 1: Ukraine's greenhouse gas (GHG) emissions by sector, 2015

Source: UNFCCC



Graph 2: Total primary energy supply by source in Ukraine, 2017

Source: Ukrstat



Import Domestic

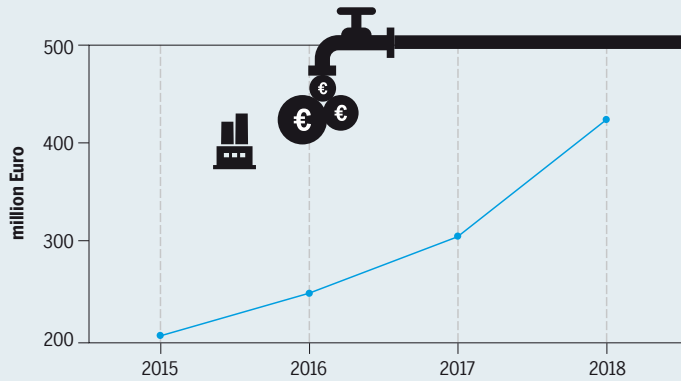
Graph 3: Import share of energy sources (%) and import costs (billion €), 2018

Source: Kosatka media

Multi-billion state subsidies support aging coal power plants

In 2018, subsidies for gas, coal, oil, electricity and heat accounted for 6% of Ukraine's GDP (3.8 billion EUR²).

Coal: Mines and power plants are largely outdated and highly inefficient. Out of 33 state-controlled coal mines, 29 are not profitable.³

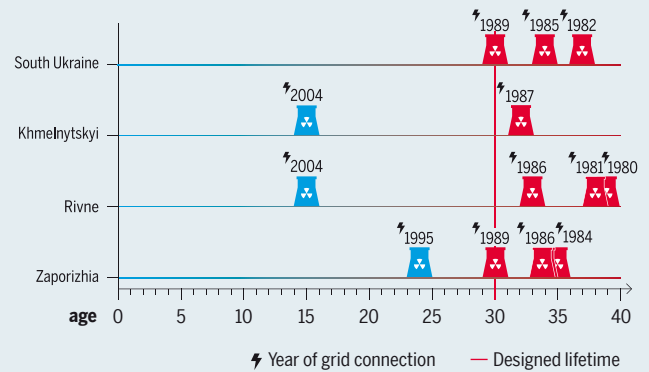


Graph 4: Subsidies for state coal mines 2015–2018

Source: Low Carbon Ukraine

Nuclear power cannot be part of the solution

Ukraine has 15 nuclear reactors at 4 nuclear power plants. **By 2020, design lifetime of 12 of these reactors will have ended.** Ten operation permits have been extended, at least six of them with insufficient risk assessments. Still, most reactors have to shut down until 2037. The state nuclear operator Energoatom by 2018 accumulated only 150 million EUR for decommissioning – not sufficient to dismantle even one of them. What is more, the country is lacking a solution for safe nuclear waste disposal. At Khmelnytskyi NPP, Energoatom is preparing to re-start the construction of two nuclear units using the old building structures from the 1980s.⁴ Expected costs: approx. 3 billion EUR.⁵

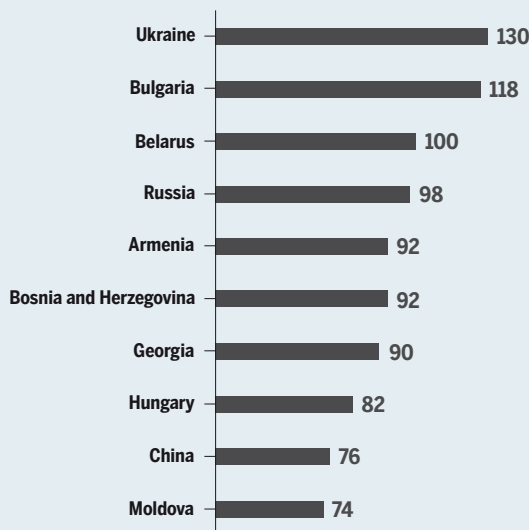


Graph 5: Age of nuclear reactors in Ukraine

Source: Ecoaction

Population pays a very high bill on health and environment

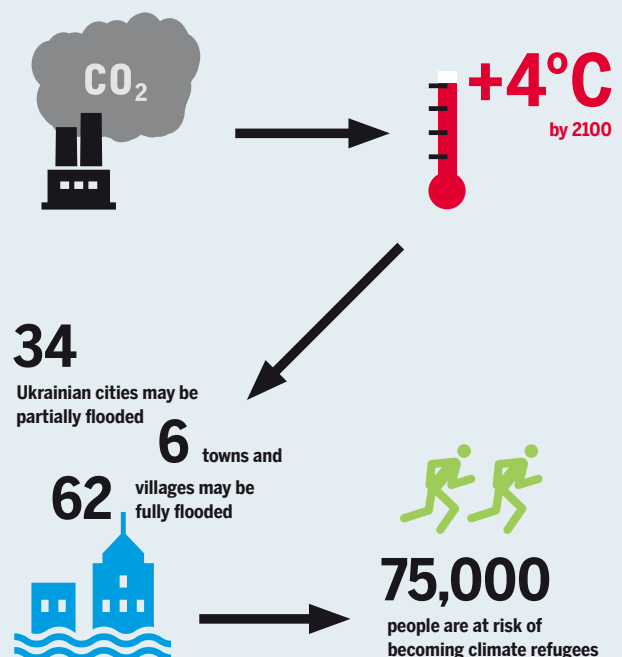
The mining and burning of coal causes air pollution. Six out of the ten largest stationary air polluters in Ukraine are coal facilities.⁶ In 2016, **Ukraine had the highest mortality rates from air pollution per capita worldwide,** according to the WHO data.⁷ Annually up to 66,000 people die because of air pollution in Ukraine. The health and mortality costs stemming from air pollution constitute a multi-billion dollar burden for the national economy.⁸



Graph 6: Countries with highest number of annual deaths from air pollution per 100,000 inhabitants 2012

Source: Statista/WHO

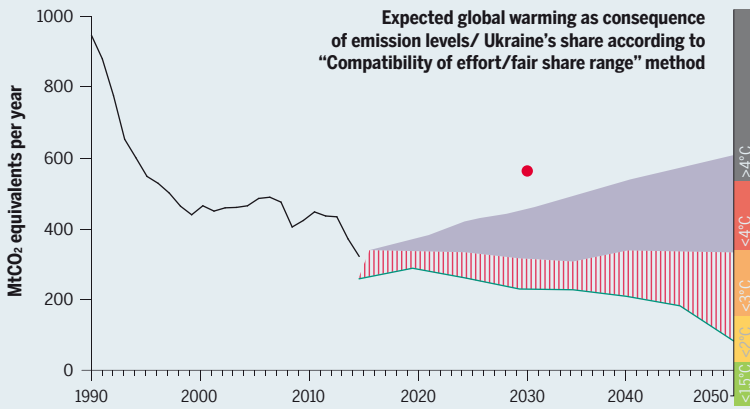
Consequences of climate change: The mining and burning of fossil fuels exacerbates the effects of climate change in Ukraine, such as heat waves, extreme weather events (storms, floods and droughts), sea level rise, forest fires, loss of biodiversity, land and water degradation, as well as agricultural crop reduction, leading to food insecurity. Due to sea-level rise, **coastal areas of Ukraine are under risk of full or partial flooding.**



Graph 7: Flood risks for coastal areas of Ukraine due to sea level rise

Source: Ecoaction

Boost climate and energy action



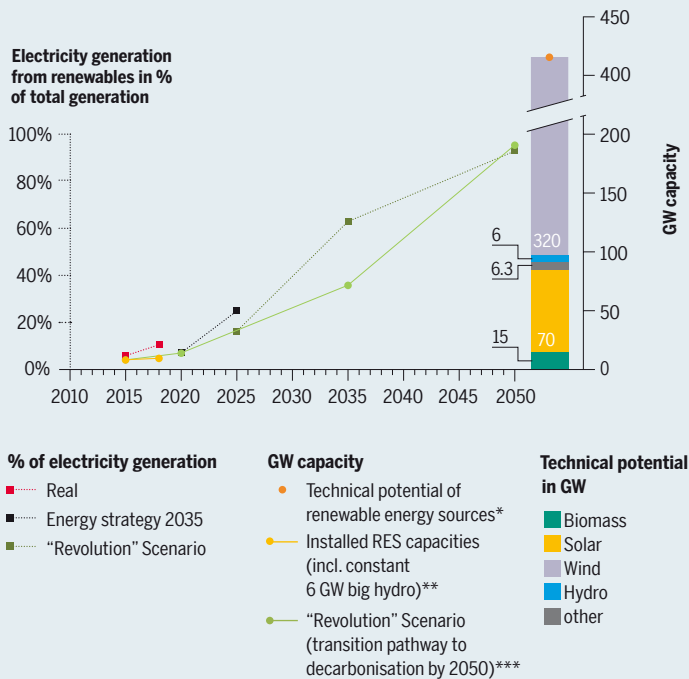
Graph 8: Ukraine's historical and projected CO₂ emissions

Source: Climate Action Tracker/Heinrich Böll Foundation

Under the Paris Climate Agreement, Ukraine has pledged to cut its GHG emissions by 2030 by at least 40% of the 1990 levels.⁹ However, emissions have already declined by 64% due to the economic collapse following the break-up of the Soviet Union.¹⁰ Thus, based on present levels, the current climate target allows for a nearly twofold increase of GHG emissions until 2030. More ambitious targets for 2030 and 2050 will create the necessary incentives for sustainable investment. Strong commitment consistent with the Paris Climate Agreement will prevent stranded assets and ensure energy security, competitive business, prosperity and a clean environment.

Accelerate transition to renewables

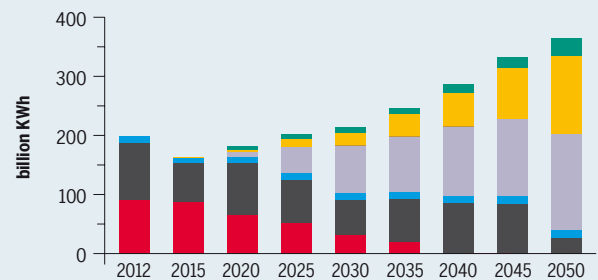
Ukraine has a vast potential for renewable energy that remains largely untapped. By the end of 2018, the share of renewable energy in electricity production reached only 2%, excluding hydro (an additional 8%). The government's target is an 11% share of renewables (including hydro-power) in electricity generation by 2020, and 25% share by 2035.



Graph 9: Calculated growth paths for renewables

Source: *SAEE/**IRENA 2017/***Heinrich Böll Foundation

Ukraine can switch to renewable energy sources much faster. If renewables replace outdated coal and nuclear capacities, considerable savings can be made by reducing the import of energy carriers. Technically feasible and economically viable is a 63% share of renewable electricity generation by 2035, and 93% share by 2050.¹¹ Wind and solar power plants already today require only approx. 1,700 EUR/KW, compared with costs for new nuclear power of around 6,500 EUR/KW.¹² Prices for renewables and storage continue to fall.

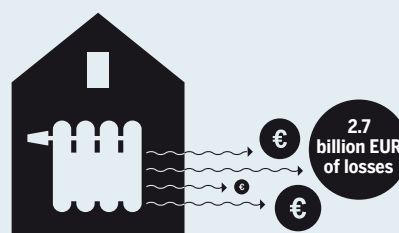


Graph 10: Electricity generation according to the Heinrich Böll Foundation's "Revolution" Scenario

Source: Heinrich Böll Foundation

Energy efficiency measures are key to energy transition

Energy and carbon intensity of GDP in Ukraine is three times higher than the OECD and EU average.¹³ Industry and the residential sector consume the largest share of the total final energy.¹⁴ According to expert estimates, inefficient energy consumption for heating in Ukraine causes EUR 2.7 billion of losses annually (or 3% of the country's GDP).¹⁵



Graph 11: Annual losses due to inefficient heating

Source: Gov.ua

Benefits of decarbonisation: Renewable energy and energy efficiency measures strengthen energy security, reduce energy losses and costs, improve air quality, mitigate energy poverty, boost economic development and jobs, foster decentralisation and demonopolisation by offering business opportunities to small enterprises, communities and citizens.

Scale up successes and best practices

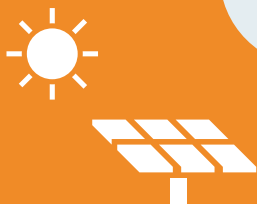
In 2018, four Ukrainian cities, Zhytomyr, Chortkiv, Lviv, and Kamianets Podilskyi, announced their plans to shift to 100% renewable energy by 2050.



In 2019, six coal mining towns of Ukraine's Donetsk region have established a Platform for Sustainable Development.¹⁶



Developing practice of community energy: Revolving Fund in Slavuta, Energy co-operatives in Berezdiv and Slavutich, 11,800 private photovoltaic installations connected to public grid (06/2019).¹⁷



In 2018, the Energy Efficiency Fund, which is worth more than 100 million EUR in EU and German government funds, was set up to finance energy efficient renovation of multi-apartment houses in Ukraine.



Developing an EU-Ukraine decarbonisation partnership to foster a clean and secure energy future

Since 2011 Ukraine is a member of the **Energy Community**. In 2014, it signed the **EU Association Agreement**. These agreements are a major driver for the country's reforms in the energy sector. However, stronger high-level political support and commitment is necessary to ensure successful implementation.

The EU and Ukraine should establish a decarbonisation partnership

The EU can help Ukraine to foster the transition process to renewables by sharing its experience and know-how. A decarbonisation partnership should provide long-term support to Ukraine on:

- De-risking mechanisms for investments in small and medium-scale renewable energy installations;
- Know-how transfer for the development of related business sectors;
- Enabling decentral community and citizen energy projects
- Focused financial and technical support for flagship programmes, for example on modernisation of railways, urban public transportation and organic agriculture.

The EU should support Ukraine in aligning its climate targets with the Paris Agreement

The EU should not only support Ukraine in setting up more ambitious climate targets and action plans but ensure the availability of the necessary financial and technical instruments for their implementation. The revision of Ukraine's Nationally Determined Contribution (NDC) to the Paris process and the finalisation and realisation of the National Energy and Climate Plan (NECP) needs particular attention.

The EU should support a just transition in Ukraine's mono-industrial regions, including in Donbas

The EU will have to increase its strategic engagement in Ukraine's regions, in order to support inclusive stakeholder dialogues on regional development and help with transition projects, as well as with vocational training and the formation of new business clusters.

Footnotes: ¹ Kasatka media, ² IEA, ³ Gov.ua, ⁴ Ecoaction 2018 – 1, Bankwatch 2016, ⁵ Ecoaction 2018 – 2, ⁶ Ministry of Environment of Ukraine, 2018, ⁷ Guardian, 2016, ⁸ WHO 2015, ⁹ Climate Action Tracker, ¹⁰ Reuters, 2018, ¹¹ Heinrich Böll Foundation, 2017; EWG/ LUT 2017 concludes that in 2050 even 100% renewables are viable, ¹² Heinrich Böll Foundation, 2017, ¹³ Heinrich Böll Foundation, 2017, ¹⁴ UNECE/REN21, 2017, ¹⁵ Gov.ua, ¹⁶ Ecoaction 2019, ¹⁷ SAAE

Sources: For complete weblinks to data sources please access the online version of the Fact Sheet – www.boell.de/ukraine-energy