

# GREEN DEAL UKRAÏNA PROJECT



Presentation, 30.01.2026

1/30/2026

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Federal Ministry  
of Research, Technology  
and Space

## GDU – a Trilateral Project

### A future-proof energy system in Ukraine, through:

1. Energy security, resilience, and short-term support
2. Sustainability and decarbonisation
3. Full energy market integration, competitiveness and innovation
4. EU Integration: Successful accession to the EU

BERLIN



KYIV



WARSAW



...and a strong connection to Brussels: EU Commission, European Parliament, and Council.



# GDU – a Trilateral Project

## Main Partners:



# Advisory Council



**CHAIR:  
JANUSZ REITER**

Former Poland  
Ambassador to US and  
Germany



**ARTUR  
LORKOWSKI**

Energy Community  
Secretariat Director



**BERND RECH**

Scientific Director of  
HZB



**CHRISTIAN  
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Director of ACER



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Susanne-Henle  
Foundation Board  
Member



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CEO of PSE, TSO in  
Poland



**INNA SOVSUN**

Member of the  
Parliament, Ukraine



**JEAN-MICHEL  
GLACHANT**

IAEE President, FSR  
Former Director



**LAURENCE  
TUBIANA**

President and CEO of  
European Climate  
Foundation (ECF)



**MICHAL KURTYKA**

Former Minister of  
Climate, Energy and  
Environment in Poland,  
COP24 President



**MONIKA  
MORAWIECKA**

Senior Advisor  
Regulatory Assistance  
Project



**OTTMAR  
EDENHOFER**

Director of Potsdam  
Institute for Climate  
Impact Research (PIK)



**ROBERT  
SCHLÖGL**

President of Alexander  
von Humboldt Stiftung



**STEFAN  
KAPFERER**

CEO of 50Hertz,  
TSO in Germany



**VOLODYMYR  
KUDRYTSKYI**

CEO Negen



**VITALII  
ZAICHENKO**

CEO of Ukrenergo,  
TSO in Ukraine



**YURI  
KUBRUSHKO**

Founding Partner of  
IMEPOWER



**STEFAN  
MÜLLER**

Head of the  
Department  
“Foresight – Research  
for Fundamentals  
and Sustainable  
Development”,  
Federal Ministry for  
Research, Technology  
and Space (BMFTR)



**CHRISTIANE  
PYKA**

Division for Energy  
and Hydrogen  
Technologies, Federal  
Ministry for Research,  
Technology and Space  
(BMFTR)



**TOBIAS  
SONTHEIMER**

Head of the Strategy  
Department Energy  
and Information of the  
Helmholtz-Zentrum  
Berlin, HZB



**ALEXANDER  
LINN**

Head of Renewable  
Energies Industrial  
Processes, Project  
Management Jülich



## HZB and NaUKMA Established Joint Center in Energy and Climate (KECLab)

### Strategic goals of cooperation:

- Establishment of a joint research laboratory in the field of energy and climate.
- Joint research on energy and climate, including the development of solutions supporting Ukraine's accession to the European Union.
- Joint scientific and academic activities, including participation in conferences and the preparation and publication of joint scientific outputs.
- Academic exchanges, including visits by researchers, lecturers, and students for lectures, internships, and exchange of expertise.





# Kyiv Energy and Climate (KECLab)



## Goals of the Lab

- Promote academic excellence in energy and climate research in Ukraine;
- Conduct scientific research and provide recommendations for UA and EU policymakers, experts, and the general public on Ukraine's path to the EU;
- Prepare a new generation of scientists and experts: Master's program in Energy and Climate, PhD program and certificate programs.

## Activities of the Lab:



Research and analysis



Education and capacity building



Independent consulting on policy issues



Publications and data



International partnerships and Networking



Knowledge sharing and educational activities

## Three Work Streams

### DATA AND MODELLING

Established in-house PyPSA model of Ukraine's power system (with the option of including the neighboring countries and the rest of the EU).

### POLICY ANALYSIS AND ADVICE

Driving fact-based research and advance debates in the energy and climate field, and proposing actionable solutions.

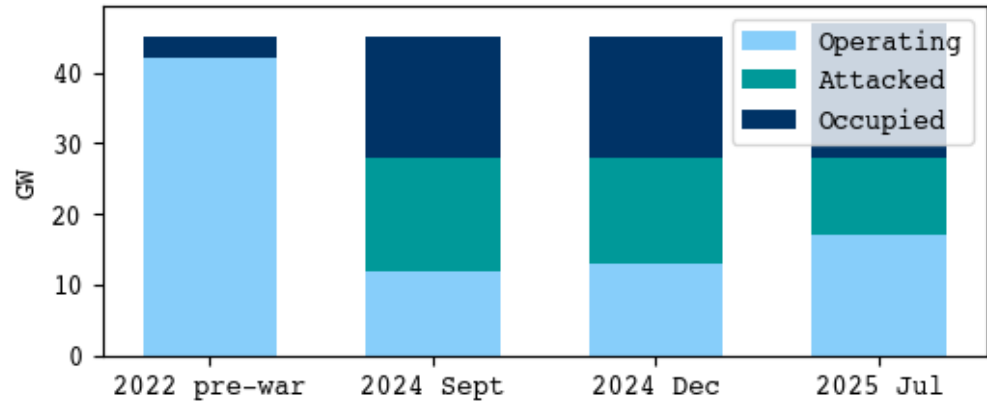
### CAPACITY BUILDING

Empowering future energy and climate leaders through targeted programs, from the #ProGreenDeal series to tailored government training and self-paced climate course.

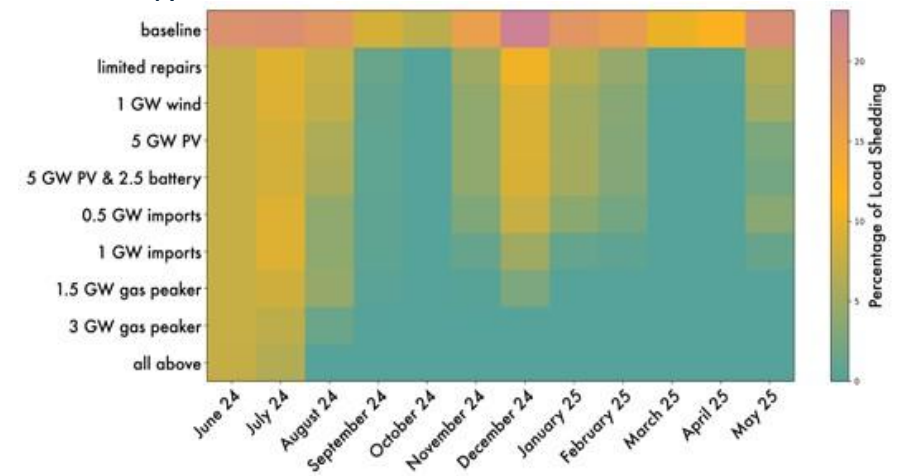
# Results: Data and Modelling through PyPSA

Continuous analysis of the power deficit with modelling and collection of official outage schedules

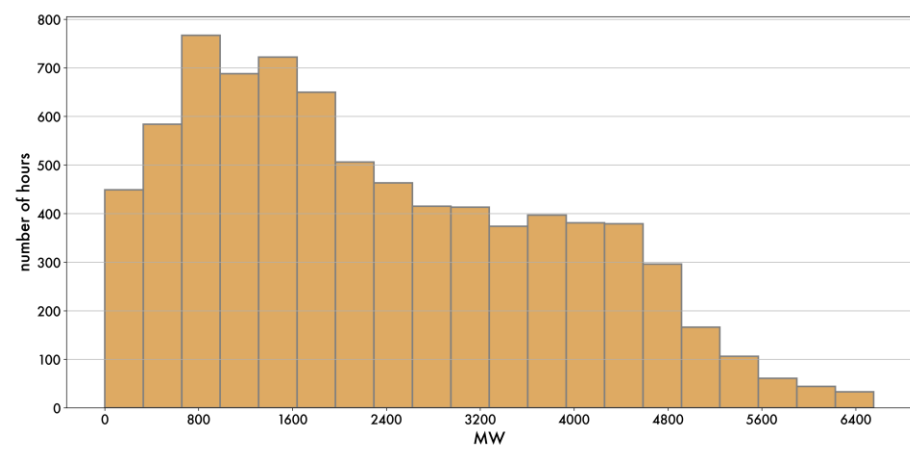
Regularly updated capacity status via media/satellite data



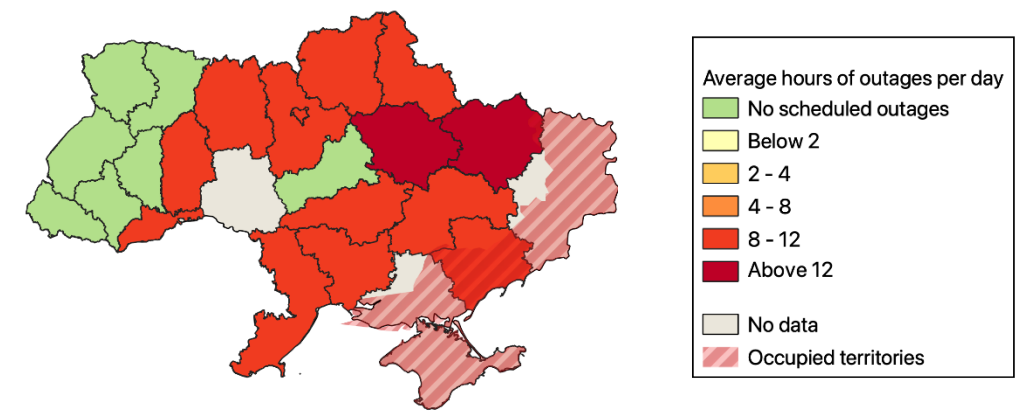
**2024 - 25** | Analysis of investments to reduce load shedding



**2024 - 25** | Total load shedding ~18 TWh in ~7900 hours



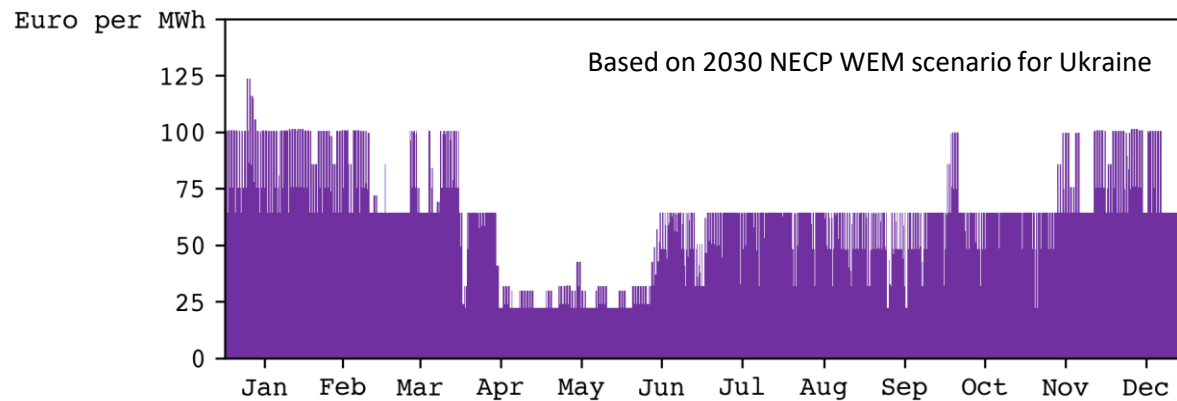
**Nov 2025** | Scheduled power outages for household consumers



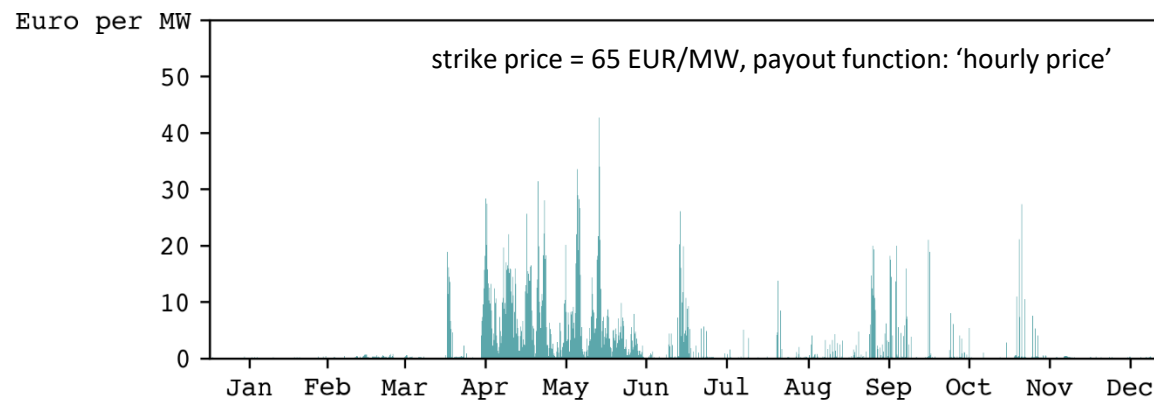
# Results: Data and Modelling through PyPSA

## Price Guarantee Fund payouts and assessment of impacts of CBAM on EU-UA market integration

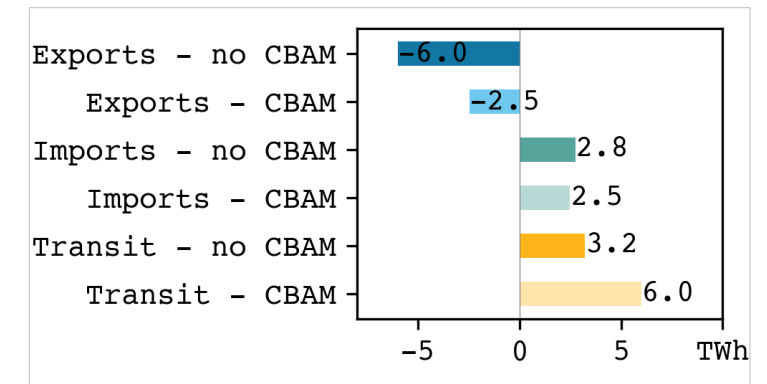
### 1] Determination of hourly electricity prices for the year 2030



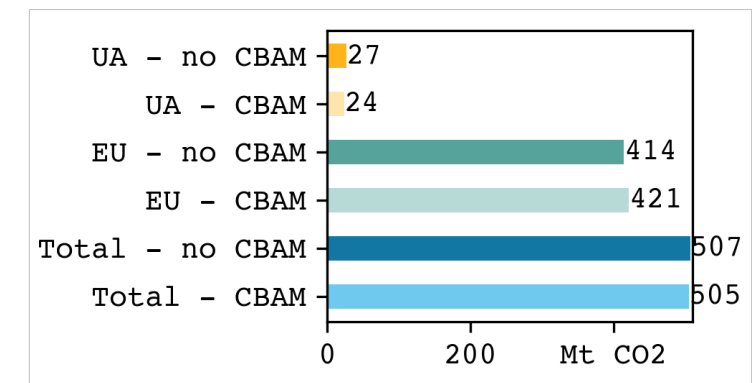
### 2] Determination of fund payout



### 3] UA cross-border trade with/without CBAM



### 4] Power sector emissions with/without CBAM



## Policy Analysis in Action

### EU Accession and Energy Negotiations

- ❑ Support the Ukrainian government in EU accession preparation on energy and climate (mock sessions)
- ❑ Scientific reports
- ❑ Kyiv workshop with government, March 2025



### De-risking Renewable Investments in Ukraine

- ❑ GDU with the EUEA and UWEA contributed to the development of the Ukraine Renewable Energy Risk Mitigation Mechanism (URMM) of EBRD and European Commission
- ❑ Launched June 2025 at URC
- ❑ Discussion with key stakeholders, November 2025




# Examples of Recent Work

**Policy Report** green deal UKRAINA

## Ukraine cross-border electricity trade: From short-term security of supply imperatives to flow-based market coupling

Berlin/Kyiv, October 2025




Susanne Nies, Rouven Stubbe, Ihor Pidbunnyi, Marius Schrade, Georg Zachmann

Bundesministerium für Forschung, Technologie und Raumfahrt HZB Helmholtz Zentrum Berlin

**Policy Report** green deal UKRAINA

## Building Nuclear Transparency: Governance and Oversight Challenges in Energoatom

Berlin/Kyiv, November 2025



Mattia Nelles, Inna Nelles<sup>1</sup>


<sup>1</sup>Opinions expressed in this publication are those of the author(s) alone. They do not necessarily reflect the views of Helmholtz-Zentrum Berlin or the Green Deal Ukraine project.

Bundesministerium für Forschung, Technologie und Raumfahrt HZB Helmholtz Zentrum Berlin

**Slide Deck** green deal UKRAINA

## Electricity and gas supply in Ukraine: Winter 2025/26 Security of supply analysis following the November 2025 attacks

Berlin/Kyiv, November 2025




Carr, Meissner, Mikhnych

Bundesministerium für Forschung, Technologie und Raumfahrt HZB Helmholtz Zentrum Berlin

**Slide Deck** green deal UKRAINA

## Managing load shedding in Ukraine: rationing rules, imports and demand response

Berlin/Kyiv, November 2025




Carr, Mikhnych, Uebele, Zachmann

Bundesministerium für Forschung, Technologie und Raumfahrt HZB Helmholtz Zentrum Berlin

**Slide Deck** green deal UKRAINA

## Distribution system operators in Ukraine: gatekeepers of a decentralised energy system

Berlin/Kyiv, November 2025



Bondarenko, Mikhnych, Zachmann

Bundesministerium für Forschung, Technologie und Raumfahrt HZB Helmholtz Zentrum Berlin

## first peer-reviewed publication

Energy Strategy Reviews 59 (2025) 101724

Contents lists available at ScienceDirect

ELSEVIER Energy Strategy Reviews journal homepage: [www.elsevier.com/locate/esr](http://www.elsevier.com/locate/esr)

Case study

### Mitigating Ukraine's looming electricity crisis

Georg Zachmann<sup>a,b,c,1</sup>, Frank Meissner<sup>b,1</sup>, Iegor Riepin<sup>c,1</sup>

<sup>a</sup>Bruegel, Belgium  
<sup>b</sup>Helmholtz-Zentrum Berlin, Germany  
<sup>c</sup>Technical University of Berlin, Germany

ARTICLE INFO ABSTRACT

**Keywords:** Energy crisis, Energy security, Electricity infrastructure

The ongoing Russian attacks on Ukraine's energy infrastructure are causing massive power outages. Ukraine's electricity system is on the brink of collapse, with approximately 70% of its pre-war power generation capacity lost. Model projections indicate that over the course of 12 months from summer 2024 on, load shedding will be required for 7,900 of the 8,760 h in the year (90% of time), with deficits exceeding 4,000 MW for more than 1,000 h and peak shortfalls reaching up to 6,500 MW—about one-third of national peak demand. Technical solutions to address this crisis exist; however, their rapid implementation requires substantial resources and a high level of coordination. Our analysis shows that restoring half of the damaged capacity, enhancing cross-border transfer capacity – specifically by adding an additional 500 MW from Poland – and installing quickly deployable, decentralized generation capacities could drastically reduce load shedding. To achieve these rapid improvements, we propose establishing an “energy situation room” to centralize real-time data, streamline coordination among domestic and international stakeholders, and facilitate targeted investments by local and private actors. This coordinated approach is essential to mitigate the impending energy crisis and bolster Ukraine's energy resilience ahead of the critical winter period.

**1. Ukraine faces national energy catastrophe**

Between June 2024 and May 2025, every Ukrainian consumer will face power outages lasting several hours almost every day. Russia is destroying Ukraine's electricity infrastructure with the aim of starving the population and economy of energy. The initial attacks in 2022 were aimed at the transmission system. With this failing to bring down the Ukrainian electricity system, Russia began attacking conventional power plants [2]. The resulting damage to power plants, has placed immense strain on the grid as well as socio-economic, health and ecological consequences [3]. Ukraine has lost about 70% of its pre-war operating production capacity. Approximately 35% has been partially or completely destroyed, and another 35% is located in occupied territories.

The result is a large electricity supply deficit, and scheduled rolling power cuts have been necessary since spring 2024. The situation will worsen in the winter as the demand for electricity will rise, while electricity generation from solar and hydropower will decline. Necessary and lengthy maintenance and refueling work at the remaining 7500 megawatt (MW) of nuclear capacity constrain supply ahead of winter. These power cuts are significant. Electricity demand has already fallen by a fifth compared to the pre-war period due to a decline in economic activity and the loss of land through occupation. Current conditions imply that 20% of the remaining demand cannot be met in the coming months [4].

As a consequence, load shedding, i.e. the curtailment of demand, will have to take place on a scale that is more typical for developing countries or in case of natural disasters [6,7]. In about 7900 out of 8760 h for the coming 12 month some load shedding will be required, or 90% of the time. In more than 1000 h load shedding will be more than 4000 MW, and at peak times it will reach 6500 MW—an equivalent of one-third of the expected national peak load (Fig. 1). Every electricity consumer will be affected by several hours of power cuts almost every day over the next 12 months.<sup>2</sup> Corresponding cuts cause significant harm for households, companies and public services [8–10].

## Training Programs in Energy and Climate

For decision-makers on national and local levels in Ukraine and Moldova  
#ProGreenDeal training programs on:

- EU Accession
- Energy and Climate policies
- Local Energy Plans
- PyPSA Modelling

### High Engagement and Strategic Impact:

**Exceptional Demand:** 2,5 applications for each available seat; up to 300 participants

**High-Level Participation:** senior representatives from government, regulator, Ukrainian and Moldovan Parliaments and expert lecturers from leading European institutions



# Training Programs in Energy and Climate

## Launch of new e-learning course “Integration of Climate Policies in Ukraine”

- ❑ Unique e-learning course on climate policy mainstreaming for Ukrainian public officials.
- ❑ Training mandatory for all government officials.
- ❑ Partners: Ukrainian Climate Office (UCO) & GIZ



### THE COURSE “INTEGRATION OF CLIMATE POLICIES IN UKRAINE”

**970**

learners have registered

**349**

certificates have been issued

**8.92** out of **10**

is the average course rating



## Expanding GDU Impact to Eastern Europe

- ❑ Launch of the Modelling of the Moldovan Electricity System (ModELSys) project.
- ❑ Strengthen Moldova’s innovation potential and governance through PyPSA.
- ❑ Develop capacities on energy system modelling



# Broad International Network



## Impact: Selected Events

- ❑ G7+ Ukraine Energy Coordination Group principals meeting
- ❑ GDU annual high-level conferences in Kyiv since 2023
- ❑ Ukraine Recovery Conferences (URC): London, Berlin, Rome; forthcoming Gdansk
- ❑ IEA workshops
- ❑ Regular round tables and webinars on research results





# High Visibility

Deutschlandfunk

## Ukraine: Folgen des Gaslieferstopps, Interview mit Georg Zachmann

Moritz, Sebastian | 02. Januar 2025, 17:16 Uhr

Hören 08:57 Audio herunterladen

Abonnieren

Wirtschaft und Gesellschaft

TAGESSPIEGEL BRIEFINGS

## CBAM: Warum die EU ihre Klimapolitik für die Ukraine neu denken muss




Der europäische CO<sub>2</sub>-Grenzsteuerausgleich CBAM soll die Dekarbonisierung im Ausland ankurbeln, in der Ukraine wird er sein Ziel aber wohl verfehlen. Wenn die EU und die neue Bundesregierung den grünen Wiederaufbau nach dem Krieg ernst meinen, müssen sie mehr tun – etwa in Form eines gemeinsamen Transformationsfonds.

No room for blind spots: why Europe needs smarter energy modelling now

Martino De Mori with Susanne Nies

YOURIS.com

EUROPEAN RESEARCH MEDIA CENTER

TAGESSPIEGEL BACKGROUND



STROMMARKT  
**Susanne Nies**

Leiterin des Projekts „Green Deal Ukraina“ am Helmholtz-Zentrum für Energie

Dozentin, Strommarktexpertin, Osteuropakennin  
Nies trägt viele Gewänder. Heute macht sie sich

SPIEGEL Wirtschaft

## Wo Russlands Angriffe den Strom in der Ukraine verknappen

### Ausfälle bis zu 13 Stunden am Tag

#### Wachsende Belastung

Planmäßige Stromabschaltungen in der Ukraine\* je Oblast, in Stunden am Tag

27.10. bis 2.11.2025 10. bis 16.11.2025

- keine Daten
- 0 bis 3
- über 3 bis 6
- über 6 bis 9
- über 9 bis 12
- über 12 Stunden

von Russland besetzt



\* Durchschnitt der geplanten und den Endkunden vorher angekündigten Abschaltungen. An einzelnen Tagen kann es besser oder schlechter sein.

• Quellen: GreenDealUkraina, Helmholtz-Zentrum Berlin, Institute for the Study of War, AEI's Critical Threats Project; Stand: 26.11.2025

EXPRO CONSULTING

## Сюзанне Ніс: Якщо ринок електроенергії не працює – інтерконектори не допоможуть

Український ринок електроенергії стоїть перед серйозними викликами: війна, трансформація структури генерації, необхідність модернізації інфраструктури та гармонізації правил із європейськими. У центрі уваги – інтеграція з ринком ЄС, розвиток транскордонної торгівлі, децентралізація та цифровізація.

Про технічні обмеження та потенціал інтерконекторів, бар'єри для експорту та імпорту, вплив прайс-кепі, а також про те, чому важлива співпраця з Молдовою і яку роль може відіграти ENTSO-E – в ExPro Electricity поговорили з Сюзанне Ніс, керівницею Green Deal Ukraina та провідною

interfax-UKRAINE

Home Facts Economy Sport Investments Diplomacy Regions Projects

Special Topics: Red Cross Restoration of Ukraine War Energy

Interview



Georg Zachmann, Scientific Lead, Green Deal Ukraina, told Interfax-Ukraine about the assessment of the impact of the CBAM implementation on the structure of the Ukrainian economy.

TAGESSPIEGEL BACKGROUND

## Klima- und Energieinstitut mit Fokus Ukraine gegründet

Kyiv Energy and Climate Lab

ЕНЕРГОРЕФОРМА

## Лабораторія з питань енергетики та клімату від НЗВ та НАУКМА розпочала свою роботу в Києві

01.12.2025 09:54 електроенергія, ВДЕ

JOINT KYIV ENERGY AND CLIMATE LAB BY HZB AND NAUKMA GOES LIVE

Науковий центр "Київська лабораторія з питань енергетики та клімату" (KECLab), заснований Берлінським центром матеріалів та енергії ім. Гельмгольца (HZB) та НУ "Києво-Могилянська академія" (НАУКМА), розпочала свою роботу в Києві, передає Енергореформа.

Як зазначається в релізі проекту HZB Green Deal Ukraina, вчена рада НАУКМА затвердила створення KECLab 27 листопада.

Enlit

## The EU Energy Projects Podcast: What's next for the EU's Green Deal

Areti Ntaradimou  
10 September 2025

THE EU ENERGY PROJECTS PODCAST

TAGESSPIEGEL BACKGROUND

## CBAM darf kein Hindernis für Europas Strommarktintegration werden



Rouven Stubbe, Helmholtz-Zentrum Berlin für Materialien und Energie, Green Deal Ukraina FOTO: PRIVAT

## Mit dem CO<sub>2</sub>-Grenzausgleich will die EU Klimaschutz und Wettbewerbsfähigkeit verbinden. Doch im Stromsektor droht der CBAM, die Strommarktintegration der EU-

green deal  
**UKRAINA**



**HZB** Helmholtz  
Zentrum Berlin

 **Forum  
Energii**  
Analizy i dialog

 **dixigroup**

**екодія**  
ecoaction.org.ua