**Technical Workshop**

**Replacing coal with renewables in Poland: the role of different storage technologies for RE development and a low carbon economy**

**November 15, 2022 // ADN Conference Center, Warsaw**

**Background**

The World Bank, financed by DG Energy, is supporting the Government of Poland to position for a transition to a low-carbon economy. This is taking place while:

* prices of different energy commodities are changing rapidly,
* the security of supply of imported energy is very uncertain, especially after the Russian invasion of Ukraine,
* costs of renewable energy technologies are changing very rapidly,

At the same time, all these factors are changing much faster than countries have been accustomed to in the past.

In this context, there are two main pathways that the countries can follow:

* Persist with the existing set of technologies.
* Rethink future energy mix and engage with a more dynamic planning to follow a new pathway.

Recent energy shortages, especially on the European continent, resulted in many governments thinking about the short-term more than the medium/long-term. However, the countries that can do both might become the new energy and industrial development champions. Countries need to decide how fast to move out of coal, how fast to transition through natural gas (if at all), how quickly to adopt variable renewables such as solar and wind and when to invest in different types of flexibility resources on the network, including energy storage to enable high penetration levels of variable renewables.

Based on the above, the World Bank is now pursuing further brainstorming on the concept of repowering the energy sector and how to best replace "baseload" coal, including through re-using of the existing coal assets. During this brainstorming period, a critical set of stakeholders to consult are the private operators and regulatory authorities operating and governing the power sector and the stakeholders impacted by the coal phase-out.

**Workshop Objective**

Anchored in the most up-to-date vision for energy transition in Poland, incorporating current European markets circumstances, to determine whether the use of storage in its diverse forms deserves consideration to help renewables in replacing coal.

**Desired Outcomes**

* Generate technical discussion on the options for transition in the energy sector, including for energy storage.
* Based on the technical feedback received, achieve a common understanding of the next steps required.
* Discuss potential emblematic projects that could arise out of retirement and repurposing of coal plants—projects that could be submitted for government consideration and financing.

**Participants**

Fifty participants comprising technical leads and senior management from the Central Government, the Regional Stakeholders, Energy Sector Agencies, Companies, Academic/research institutions, Financing institutions and partners and NGOs.

**Agenda**

**8:30 – 9:00 Welcome, registration and coffee**

9:00 -9:10 Introduction (Wolfhart Pohl, World Bank Lead Specialist for Environment and Geosciences, Task Team Leader of Support to Energy Transition in Coal Regions of Poland)

9:10-9:20 Introduction of the Objectives of the Workshop (Jonathan Walters, Consultant for the World Bank)

**RES in Poland: Potential and challenges**

9:20-9:35 Development of renewable energy sources in Poland and the related needs of the grid (Andrzej Kaźmierski – Director, Department of Low Emission Economies, Ministry of Development and Technology)

9:35- 9:50 Overview of flexibility options in power sectors with increasing penetration of variable renewables and the role of energy storage (Zuzana Dobrotková, Senior Energy Specialist, World Bank)

**9:50-10:00 Coffee break**

**Role of storage in providing system flexibility for variable RES in the short, medium and long term**

10:00- 10:15 Role of the private sector in the RE and energy storage deployment in Poland (Mariusz Bednarski – Senior Energy Storage Expert, Counselling Board of National Chamber of Energy Clusters (KIKE), Poland)

10:15 – 10:30 Energy storage as a building block of Poland's energy security and economic growth: legal framework, market sizing, forecasts and presentation of the report “Impact of the expansion of energy storage infrastructure on the economic development of Poland – a 2040 outlook” (Barbara Adamska- President of the Management Board of the Polish Energy Storage Association)

10:30-10:45 Current situation, prospects and implementation examples of energy storage technologies in Poland (Krzysztof Kochanowski, Deputy President and Director General of Energy Storage and Electromobility Association PIME, Poland)

10:45- 11:00 What is long-duration energy storage, and why is it important? (Michael Geyer, Co-president of Long Duration Energy Storage Council, Senior Advisor at Deutsches Zentrum für Luft- und Raumfahrt (DLR))

11:00 -11:15 Heat storage facilities – a key tool for the transition of Poland’s energy and heat sectors (Grzegorz Wiśniewski, President of the Renewable Energy Institute IEO, Poland)

11:15-11:30 Q&As

**11:30 - 11:45 Coffee break**

**Reconfiguring existing coal assets in an innovative way to support energy transition**

11:45 – 11:55 Coal Plant Repurposing for Ageing Coal Fleets (Zuzana Dobrotková, Senior Energy Specialist, World Bank)

11:55-12:10 Repurposing coal power plants during energy transition project: Overview of technologies and feedback from the coal sector (Stanislaw Tokarski, Associate Professor of Polish Central Mining Institute GIG; Alicja Krzemień, Associate Professor, GIG)

12:10 – 12:25 Presentation on decarbonization by converting coal-fired power plants to thermal plants with storage for dispatch of renewable power – the potential in Poland (Michael Geyer, Co-president of Long Duration Energy Storage Council, Senior Advisor at Deutsches Zentrum für Luft- und Raumfahrt (DLR))

12:25 – 12:40 Presentation on constructing pump-storage projects in mine areas; the Western Macedonia case (Alexandros Soumelidis, Director of New Production Activities at Public Power Corporation S.A., Greece)

12:40 – 12:55 Q&As

**12:55 - 13:40 Light lunch**

**Future role of green hydrogen in energy systems**

13:40-13:45 A remote statement from Jorgo Chatzimarkakis, CEO of Hydrogen Europe

13:45- 13:55 Green Hydrogen Potential for Poland (Tomoho Umeda, CEO of Hynfra Energy Storage, leader of the Hydrogen Technologies Committee at the KIG economic chamber, Poland)

13:55-14:05 Presentation on the decarbonization of power plants and industrial facilities using green hydrogen (Ertan Yilmaz, Portfolio Manager Hydrogen & Green Fuels of Siemens Energy, USA)

14:05-14:15 Presentation on the role of green hydrogen in delivering clean, safe and affordable heat with zero emissions and its uses (Matthew Hingerty, Deputy Chair and Deputy CEO of Star Scientific, Australia)

14:15 – 14:30 Q&As

14:30-15:00 Wrap up and open discussion (facilitated by Zuzana Dobrotková and Jonathan Walters)

**\*The working language will be English and Polish, with simultaneous translation**

**Venue**

The workshop will take place at the ADN Conference Center Warsaw (ul. Grzybowska 56, entrance A). The venue is easily connected with the rest of the city through public transportation, in the proximity of “Rondo Daszyńskiego” and “Rondo ONZ” M2 metro stations.

