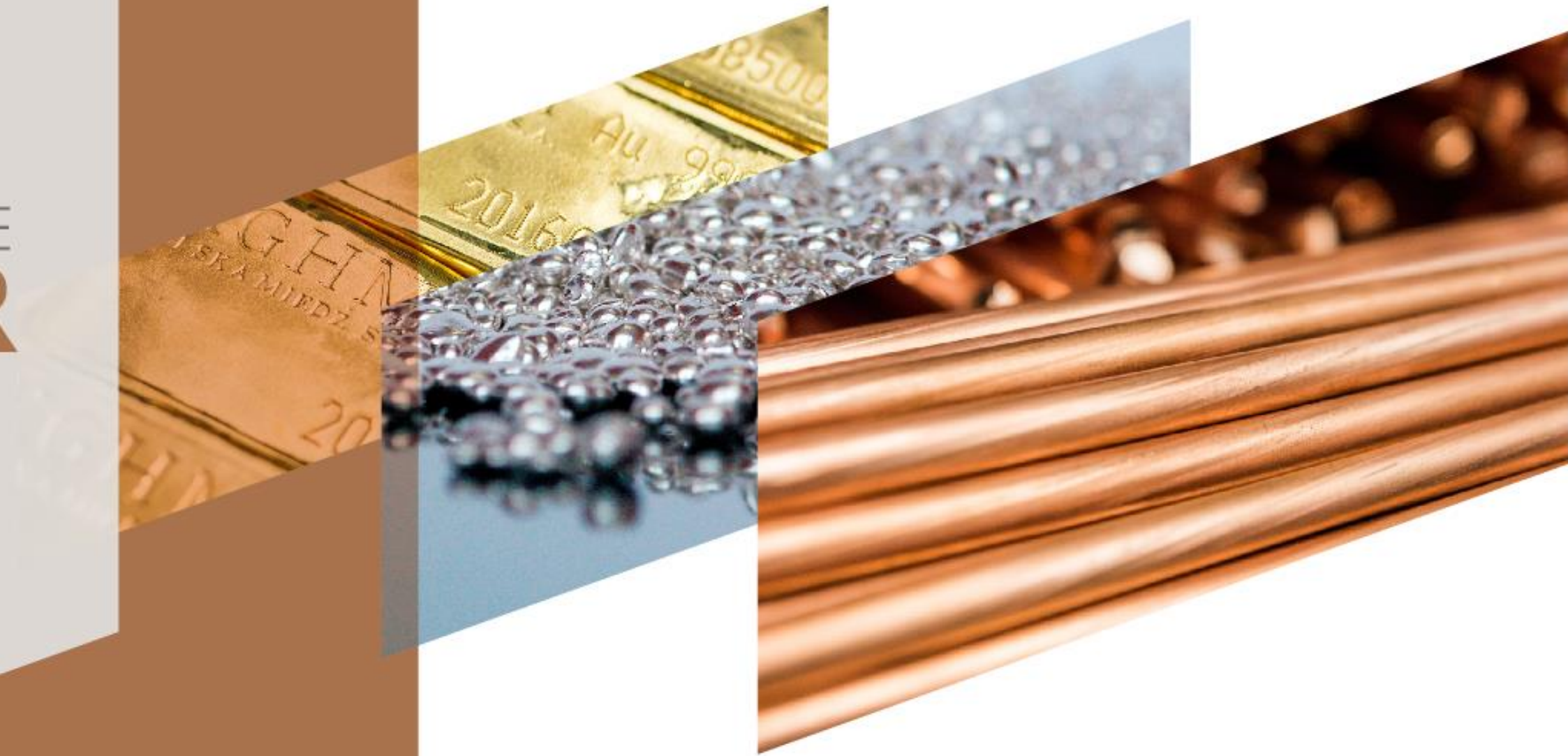


THE FUTURE IS MADE
OF COPPER



PROJECT TO BUILD A SMALL
MODULAR REACTOR (SMR)
IN KGHM

25 September 2023



AGENDA

1

KGHM's activities

2

Site selection procedures

3

Key stages in the investment process

4

Selection of technology

5

Benefits of the investment



KGHM's PLACE IN THE POLISH AND GLOBAL ECONOMIES



WHO ARE WE?



- KGHM Polska Miedź S.A. is one of Poland's most important companies and a **strategic State Treasury company**.
- Based on documented Polish resources (one of the world's largest) we can **continue production** for at least **30-40 years**. We are pursuing further concessions to prolong this period.
- Our revenues in 2022 amounted to **PLN 33.8 billion**.
- KGHM is **one of Poland's largest exporters**.
- **We export** our products **to several dozen countries** including: China, Germany, the United Kingdom, France, Switzerland, Italy, South Korea, the USA, Canada and Australia

FACTS AND NUMBERS



KGHM Polska Miedź S.A. is one of the **leading** companies in the non-ferrous metals mining sector.

700

In 2022 we produced more than **700 thousand tonnes of copper** and more than **1300 tonnes of silver**.

8

We are the **8th-largest copper producer in the world**.

2

And the **2nd-largest silver producer**.

3

We have **operations on three continents** - in Europe, North America and South America.

40

We control **40 million tonnes** of global copper resources.



PROJECT TO BUILD A SMALL MODULAR REACTOR IN KGHM

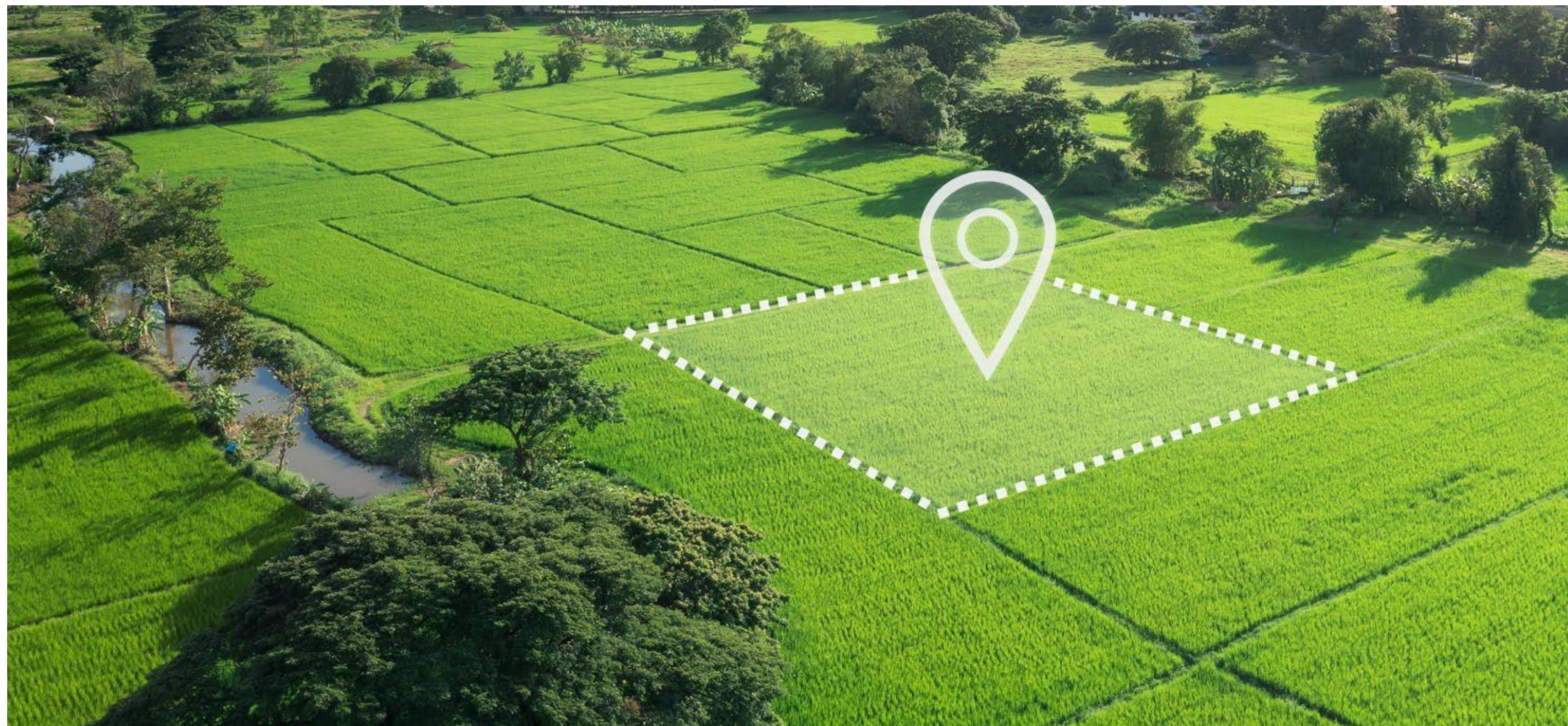


KGHM, as one of the largest industrial consumers of electricity in Poland, adopted an ambitious Climate Policy, calling for the achievement of **climate neutrality by 2050**;

One of the main projects to attain this goal is the construction of a **small modular reactor (SMR)** power plant;

In order to select the optimum site for the power plant, from the point of view of operational safety as well as in terms of social, technological and economic aspects, sites were analysed in the voivodeships of **Lower Silesia and in neighbouring voivodeships.**

SITE SELECTION



SELECTION OF AN APPROPRIATE SITE



1

The selection of a site for the nuclear power plant is a **multi-layered process** and involves the detailed analysis of numerous factors, among others:
Environmental impact, natural conditions, the way in which terrain will be used and the **level of social acceptance**;

2

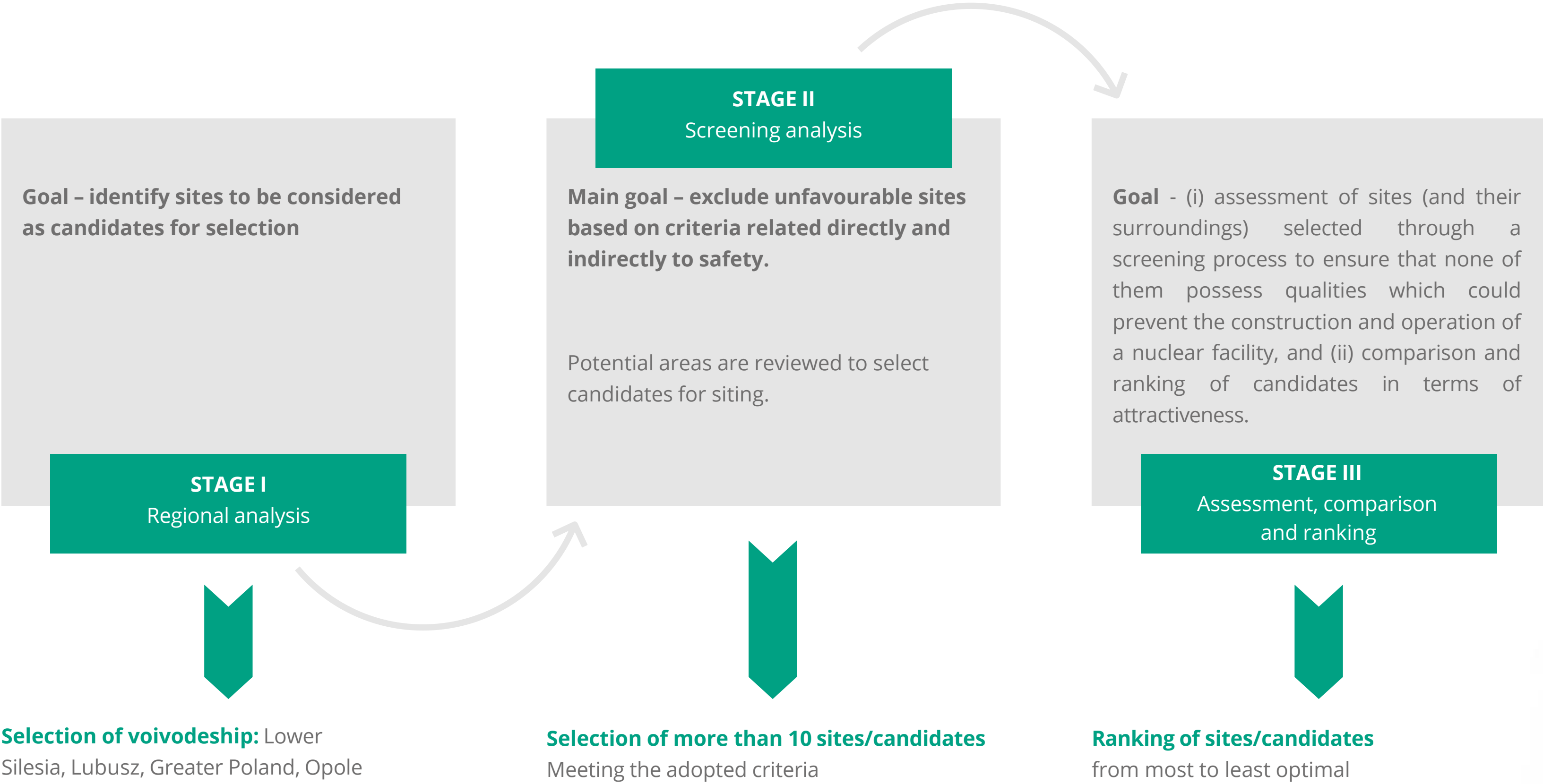
Polish laws were used in the setting of guidelines (so-called **Siting decrees**) as well as recommendations developed by the **International Atomic Energy Agency (IAEA)**;

3

KGHM has identified **several promising sites in the western part of Poland** where an SMR facility could reasonably be built. Fundamental approval was granted to KGHM by the Ministry of Climate and the Environment in July 2023 for two sites (both in the Greater Poland voivodeship) from a list of several identified by the company.



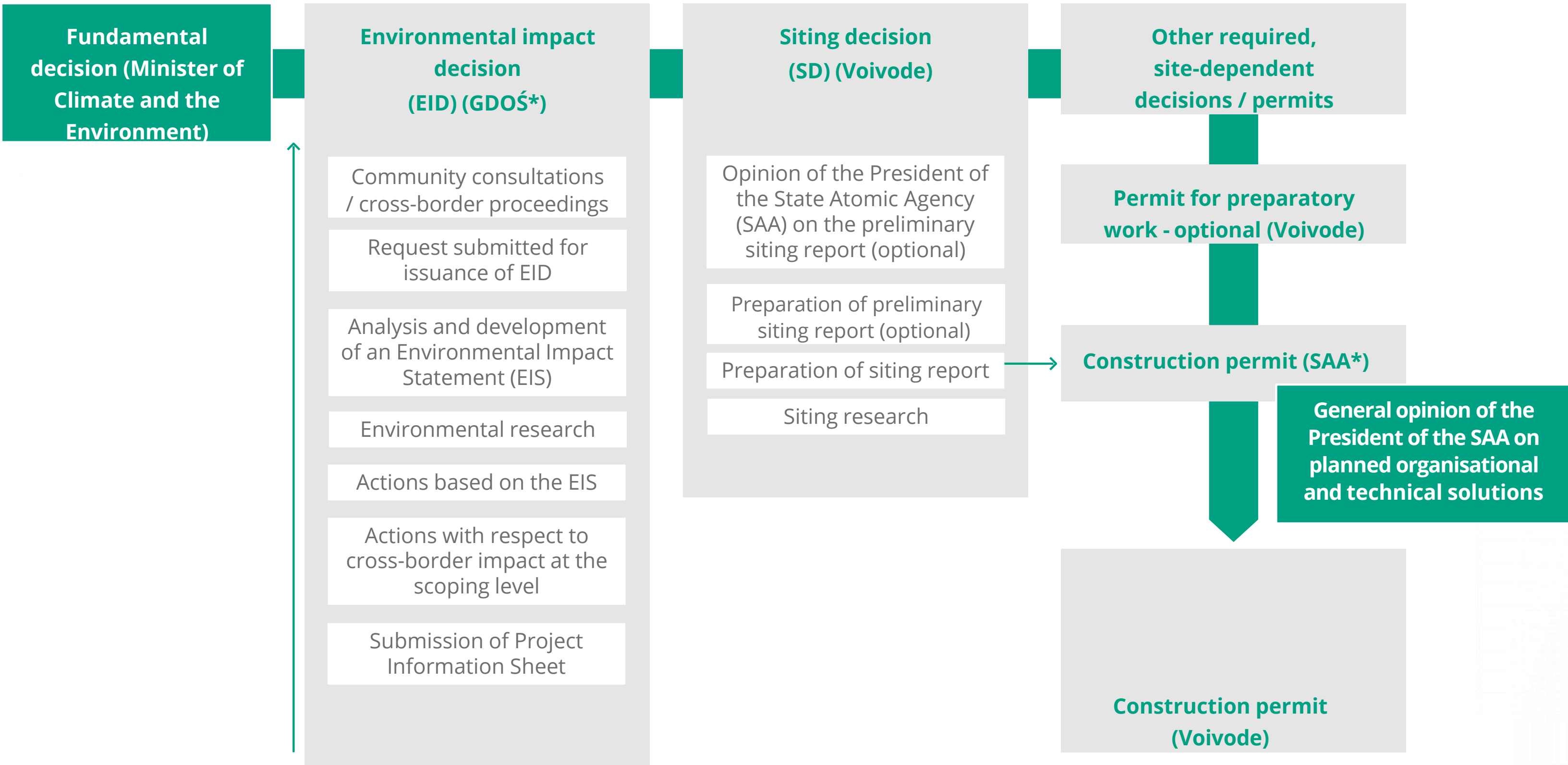
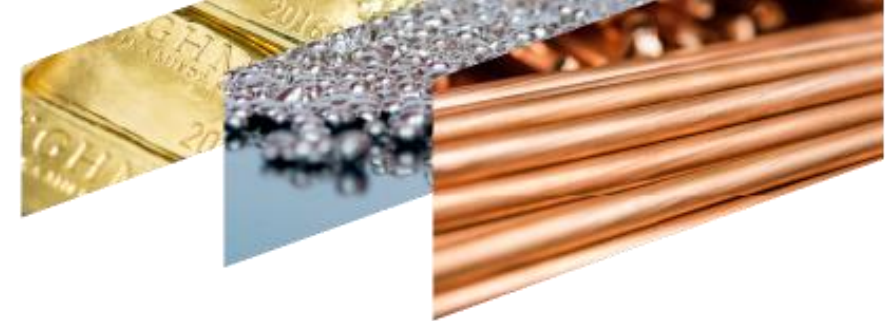
GENERAL APPROACH TO SITE SELECTION



INVESTMENT PROCESS

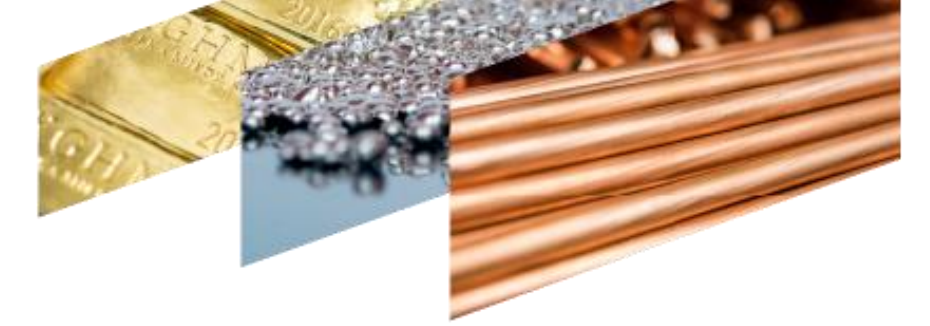


KEY STAGES IN THE INVESTMENT PROCESS



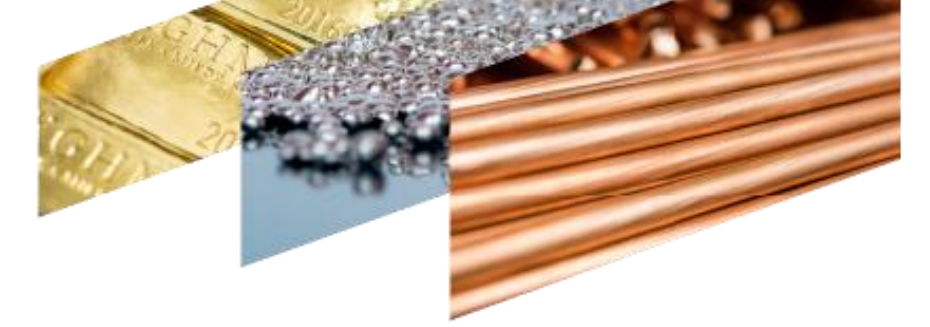
INVESTMENT PROCESS

– WORK IN PROGRESS AND PLANNED



- KGHM applied to the **President of the State Atomic Agency for the issuance of a so-called General Opinion**, which assesses the safety aspects of one of the considered projects – a 6-module NuScale Power plant with total capacity of 462 MWe;
- KGHM also applied to the **Minister of Climate and the Environment for the issuance of a fundamental decision** for two identified sites selected on the basis of a siting study, with indication of the planned reactor technology to be used.
This decision was issued on 12 July 2023.
- One of the subsequent steps, following receipt of the **fundamental decision, is commencement** of environmental and siting research in the identified sites.

INVESTMENT PROCESS – PLANNED WORK



Environmental research

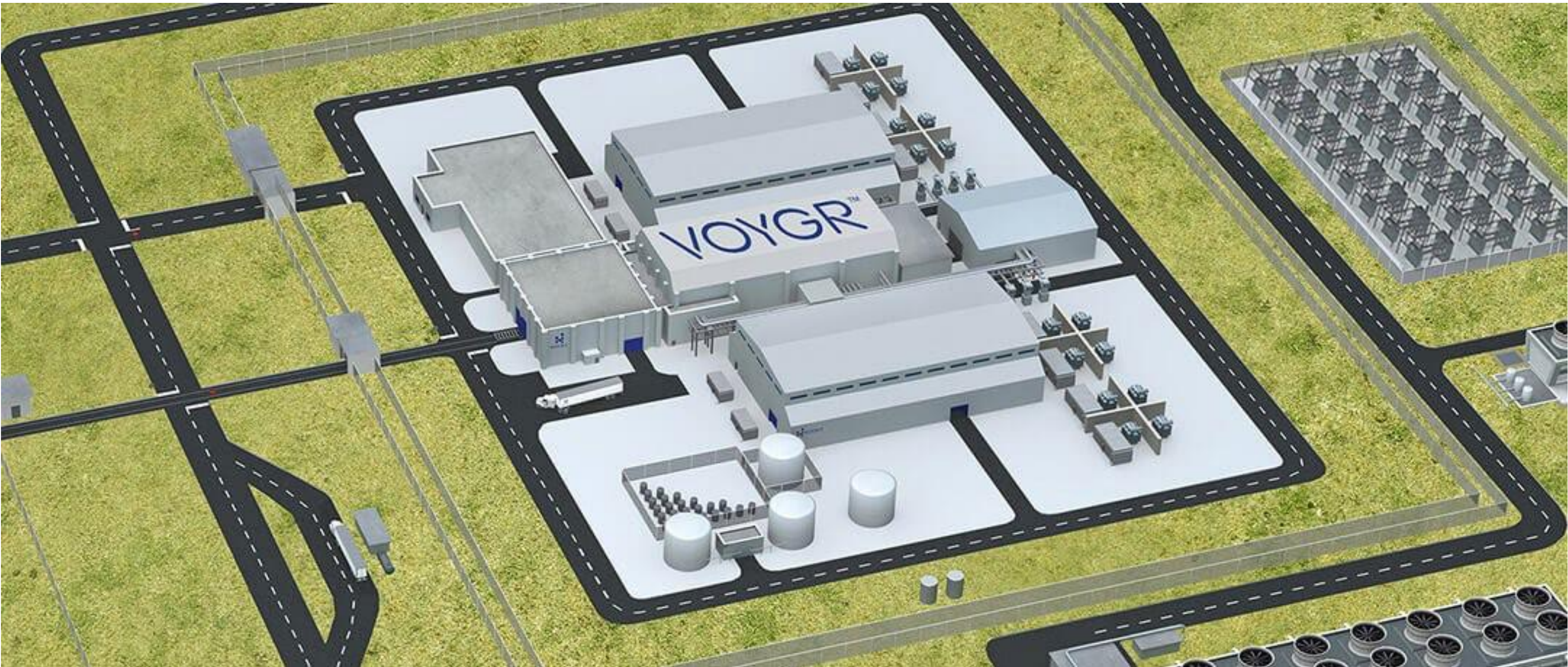
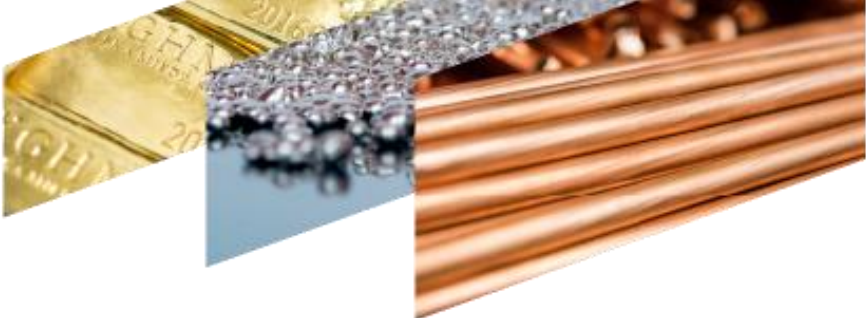
- Environmental research is aimed at confirming that the siting data will be suitable for the nuclear power plant **from the environmental point of view**
- Research into the environmental condition and inventorisation of bio resources will last **a minimum of 12 months**
- **GOAL – obtain an Environmental Impact Decision**

Siting research

- Siting research is aimed at confirming that the siting data will be suitable for the nuclear power plant **from the nuclear safety point of view**
- Meteorological, geotechnical, geophysical, seismic, hydrological and hydrogeological measurements and research will last **a minimum of 24 months**, of which the first year will be conducted simultaneously to the environmental research
- **GOAL – obtain a Siting Decision and prepare the Preliminary Safety Report section**



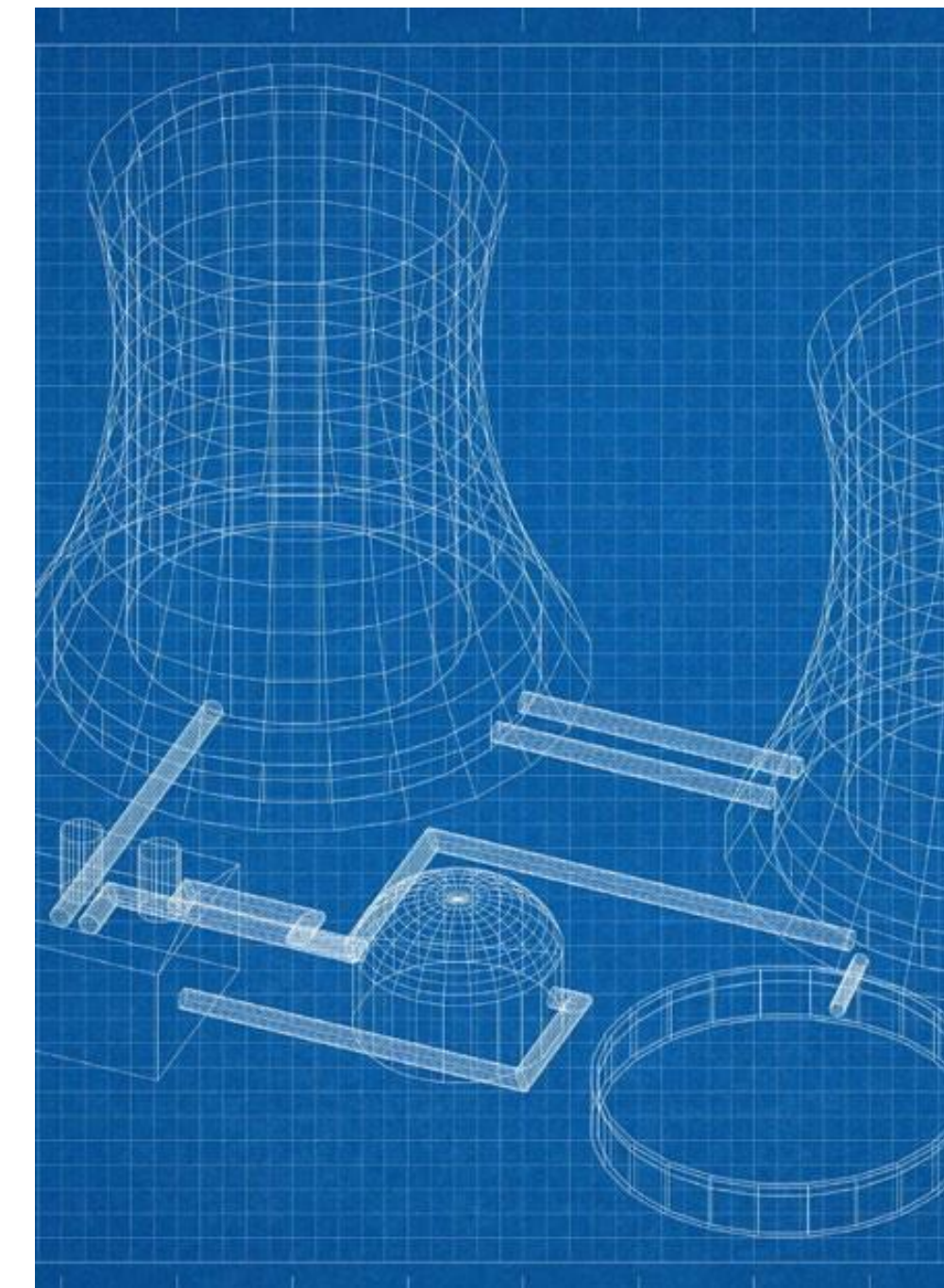
SELECTION OF TECHNOLOGY



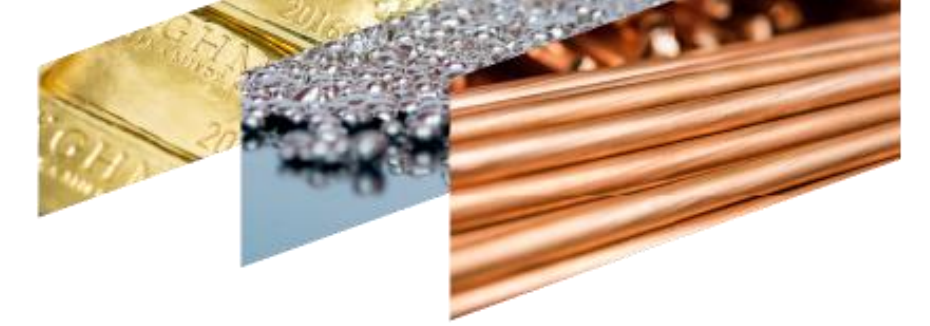
SMALL MODULAR REACTORS



- **SMR projects have a variety of advantages** compared to large nuclear reactors: passive **safety systems**, guaranteeing the safe shutdown and cooling of the reactor in an emergency; **the small area** occupied by the power plant; **the small zone of restricted use** (ending at „the fence”); **flexibility in energy production** (cooperation with renewable sources);
- **Modular construction and factory production** enables reduction of on-site building time -> lower impact on the vicinity during construction;
- **SMR reactors applying Light Water Reactor and Pressurized-Water Reactor technology** are a **safe solution, which have already proven themselves in large-scale nuclear power plants**;
- Leading projects in the **Euro-Atlantic economic sphere** are **VOYGR (NuScale Power)**; SMR-160 (Holtec); Rolls-Royce SMR (Rolls Royce); NUWARD (EDF) – and these projects, among others, are being considered by KGHM.



COOPERATION WITH NUSCALE POWER



1

KGHM commenced cooperation with NuScale Power, whose integrated Pressurized-Water Reactor (iPWR) project is more advanced amongst Light Water Reactor SMRs;

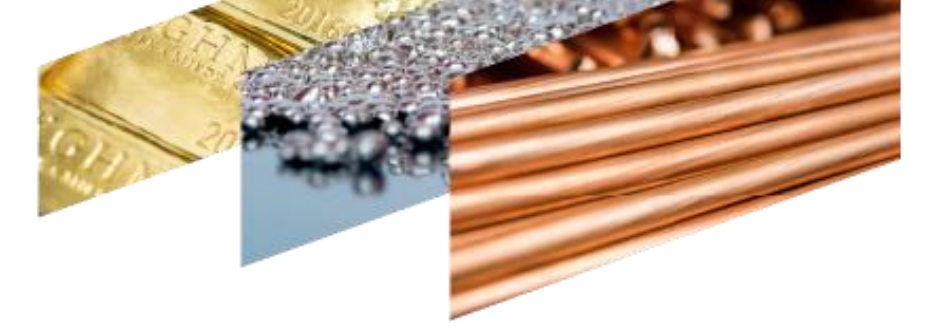
2

A single NuScale modular reactor generates 77 MWe; the configuration being considered involves **6 such reactors (with total power capacity of 462 MWe)**;

3

Information provided by NuScale regarding the project enabled KGHM to apply to the **President of the State Atomic Agency to issue a general opinion on planned organisational-technical solutions in the future activities**, receipt of which is expected in the second half of 2023.

SAMPLE TERRAIN MANAGEMENT PLAN



The supplier of the technology, NuScale, LLC,

initially foresees that:

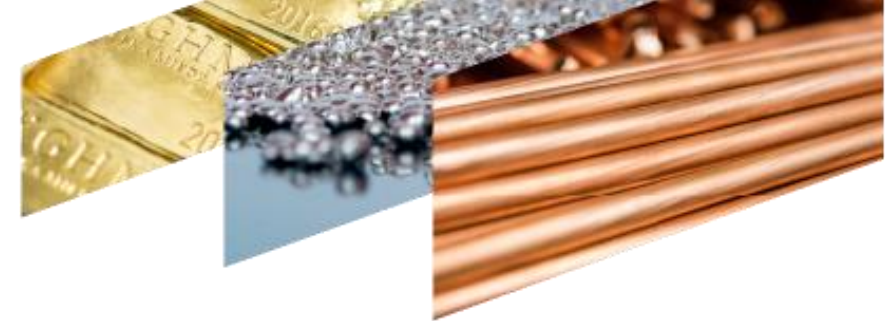
- the area to be controlled by the owner of the power plant will be a maximum of 58.7 ha;
- The general dimensions will be 1100 m x 534 m;

Due to the **high level of safety of the NuScale reactor**, the anticipated border of the area of restricted use will be similar to the border of the power plant;

The plant's normal operations will have no impact on the area outside the plant or on the local communities, while the highest standards of safety mean that the **risk of a serious nuclear accident is minimal**.

Source: <https://www.nuscalepower.com/en>, accessed 17.04.2023

LOCAL BENEFITS OF THE INVESTMENT



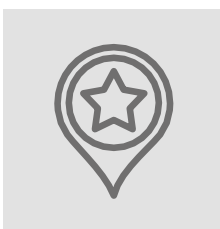
MAIN BENEFITS FOR URBAN AND RURAL MUNICIPALITIES AND THE REGION



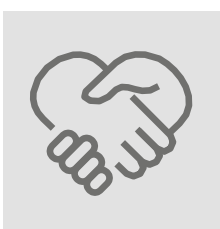
Development of infrastructure in the rural and urban municipalities (access roads, housing, railway lines, etc.)



Additional revenues to the budget of the urban municipality due to taxes and fees.



Creation of a **Local Information Point**
– source of accurate knowledge of the project for local inhabitants.



Advancement of a **Social Initiatives Support Program** (renovation of schools, day-care centers, sports fields, construction of bicycle paths, support of local fire stations, health centers, renovation of local roads depending on local needs).



New jobs – at least 1000 people employed during construction of the plant and at least 200 during its operation*.



Access to **cheap and reliable energy** – nuclear power plants are operational more than 90% of the time, they are also amongst the cheapest sources of power generation in terms of operation.



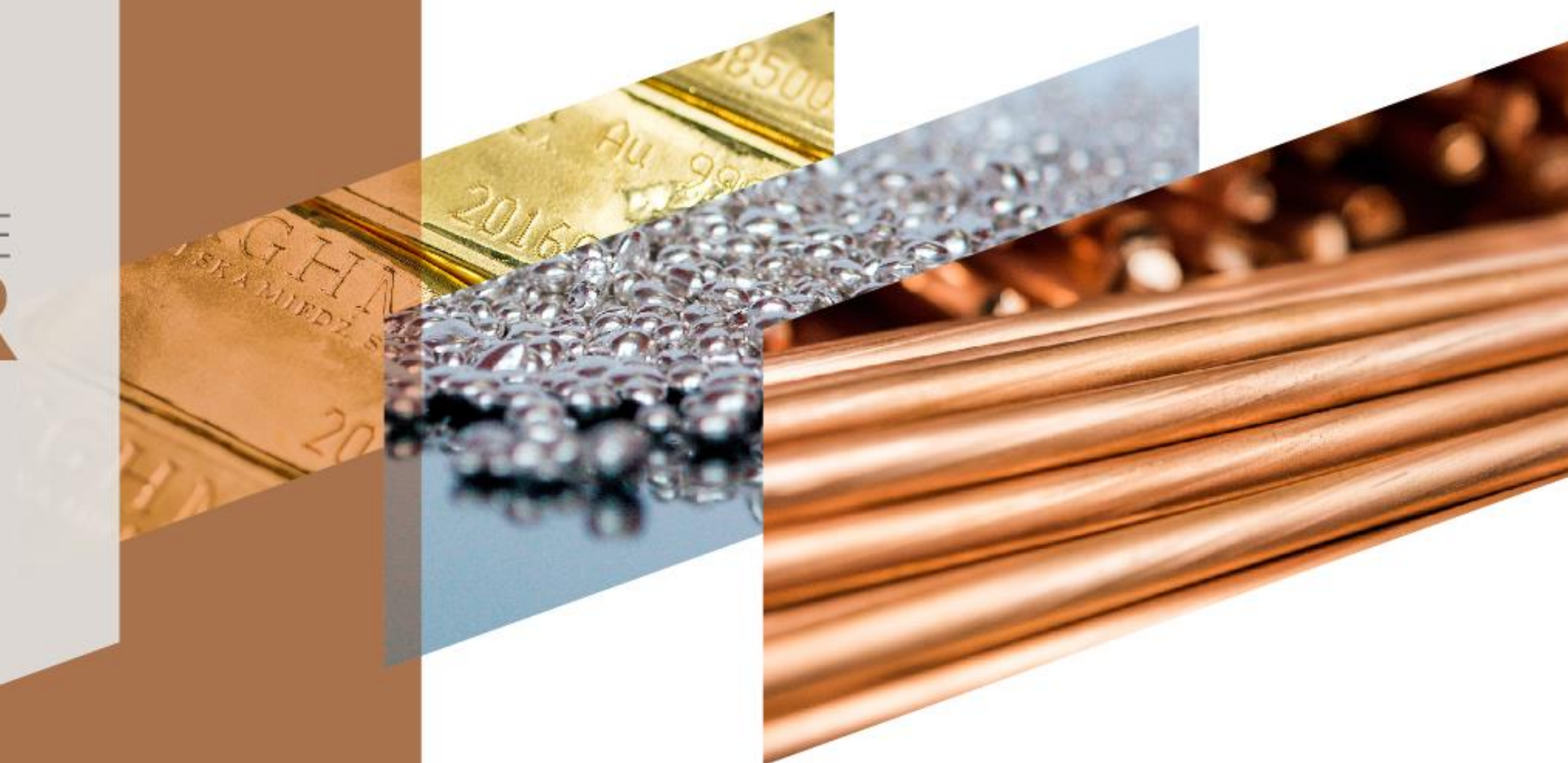
Protection of **clean air and environment** – nuclear power does not create greenhouse gases or harmful airborne particulates; it is therefore a vital element in the transformation to a zero-emissions economy.

*source:

NuScale Power. NuScale SMR Technology. An Ideal Solution for Repurposing U.S. Coal Plant Infrastructure and Revitalizing Communities. 2021;

Boise State University, University of Idaho. Economic Impact Report Construction and Operation of a Small Modular Reactor Electric Power Generation Facility at the Idaho National Laboratory Site, Butte County, Idaho. 2019

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THANK YOU!