

Valorisation of mineral resources



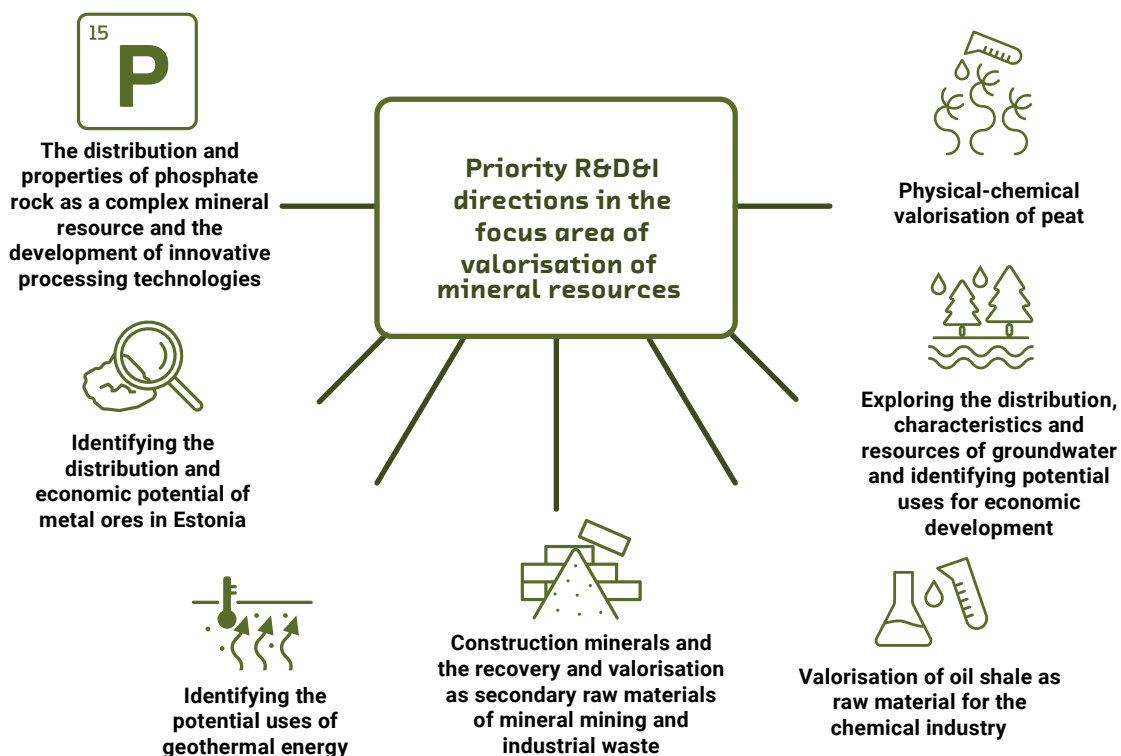
One of the starting points of the Estonian Research and Development, Innovation and Entrepreneurship Strategy is the need to make smart choices and to concentrate activities and funding in those areas that can best contribute to **creating solutions to society's challenges, based on research results and cooperation between different actors**. To this end, the Strategy identifies priority areas for development and increased financial support.

One such area is the valorisation of mineral resources. The aim of resource valorisation is to develop, in partnership between research and business community, solutions that enable the sustainable use of local resources, creating added value while boosting the circular economy. The circular economy enables the efficient use of resources, from production and consumption to waste management and recycling, creating more value from available resources while generating less waste. In the area of local resources, particular attention is paid to **mineral resources**.

In order to best support the valorisation of mineral resources, a roadmap was drawn up in cooperation with researchers, business community, government agencies, and other partners. In the roadmap, the parties agreed on the priority needs for the development of the area of the valorisation of mineral resources in cooperation between research and business community, and what is needed to

ensure that the Estonian economy and society benefit most from the development of the focus area.

Phosphate rock exploration is one of the major developments, as phosphate rock is important for the production of rare earth metals. It is equally important to identify the distribution and potential uses of **metal ores**, as there is a high potential for the occurrence of several battery and precious metals in Estonia. It is important to support the **uptake of oil shale resources by the chemical industry**, in particular as a raw material for high value-added fine chemical products, e.g. for the pharmaceutical and electronics industries. The **physical-chemical valorisation of peat** is important, e.g. for the development and production of carbon materials synthesised from peat. We must determine whether and how **geothermal energy** can be used in Estonia. The need to reuse and valorise industrial waste, such as **mineral waste from mining and industry, and construction waste, such as sand, gravel and dolomite**, is becoming increasingly important. The exploitation of all mineral resources has a significant impact on **groundwater**, which is the main source of potable water in Estonia, so it is important to study its distribution, properties and resources. It is important to focus on solutions that conserve raw materials and the environment when extracting and refining mineral resources.



In order to find appropriate research-based solutions to the needs identified, it was agreed in the roadmap that the most important support for the valorisation of mineral resources is to support the **development of the focus area's research capacity**, e.g. basic and applied research and the development of research directions. It is equally important to support the **uptake of research results and the technologies developed**, e.g. through joint activities involving business communities and researchers, the mutual sharing of knowledge and experience between researchers and business communities, the development and provision of R&D services, international cooperation, etc. We also need to develop **the capabilities and environments for assessing and testing** the solutions we create, so that the solutions generated through R&D and product development can be tested outside the laboratory on a larger (industrial) scale and in real-life environments. Ensuring the **next generation of researchers and engineers** in the focus area is crucial. There is also a need to foster **broader cooperation** between research institutions, business communities and the public focus area. In this context, it is important to develop industrial symbiosis, whereby by-products from one industry are used as raw materials by another. We also need to boost **investment and exports**.

The **roadmap is approved for a period of 3–4 years**, after which it will be updated to take account of changes in the field. The development of the focus area will be regularly monitored and assessed to allow changes to be made to the roadmap and to the focus area's activities and funding. On the basis of the roadmap,



support measures for the development of the area of valorisation of mineral resources will be designed by the Ministry of Education and Research and the Ministry of Economic Affairs and Communications, alongside general research and business community funding measures such as research grants, research infrastructure grants, business community grants, etc., for which there are no priority areas. On the basis of the roadmap, **support measures** for the development of the area of valorisation of mineral resources will be designed by the Ministry of Education and Research and the Ministry of Economic Affairs and Communications, alongside general research and business community funding measures such as research grants, research infrastructure grants, business community grants, etc., for which there are no priority areas.

