Summary report: Energy use and plans in Macedonian industry sectors

6/1/2025

Background

Eko-svest conducted a survey to assess current energy sources used by different industrial sectors in North Macedonia, and their future energy plans. The survey remained open until May 26, 2025, and was designed to gather insights that will inform key national strategic documents under preparation, including the National Energy and Climate Plan (NECP) and the Energy Development Strategy.

A total of 11 companies from diverse industrial sectors participated in the survey.

Key Findings

1. Participating industry sectors

The survey gathered a total of **11 valid responses** from companies across **seven industrial sectors** in North Macedonia, as shown in the Fig. 1. The majority of participants (five) came from the **agriculture and food processing industry**. Other sectors included **energy, mining, oil, textile and leather industry, tobacco products industry** and **metal and electroindustry** — each represented by one company.

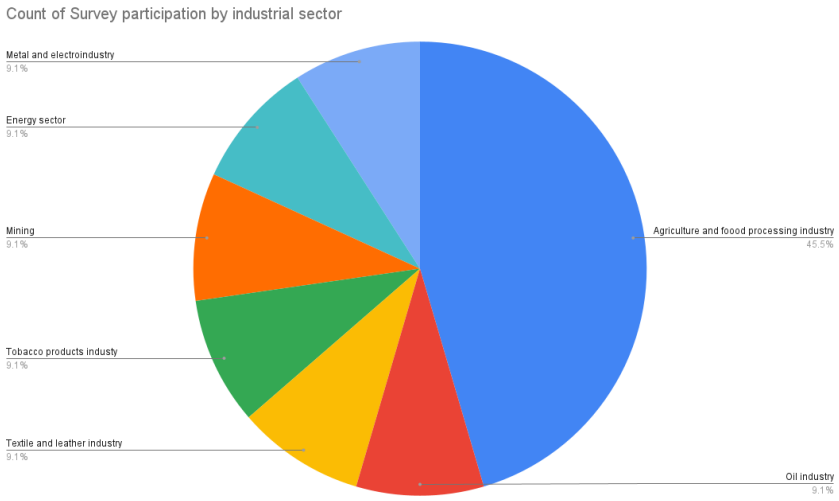

Figure 1: Survey participation by industrial sector

This diversity of respondents provides a balanced overview of how different industries are approaching energy use, production and transition. It highlights the varying degrees of readiness and awareness regarding renewable energy and alternative fuels like hydrogen, while also revealing common challenges such as high investment costs, regulatory complexity and limited access to state support.

2. Current and planned energy sources

The survey responses show that the most commonly used energy source among respondents is solar photovoltaics, mentioned in eight responses. Oil derivatives appear in six responses, indicating a continued significant use of fossil fuels. Coal, lignite, or coke are mentioned in one response, while gas appears in two. Other technologies such as solar thermal energy, biomass/biogas, batteries, hydrogen and wind energy are mentioned only once or not at all. For most of the technologies listed, the majority of responses indicate no plans for future use. These results suggest limited diversity in the energy technologies currently used, as well as modest plans to introduce new low-carbon energy sources. All these findings are illustrated graphically in Fig. 2.

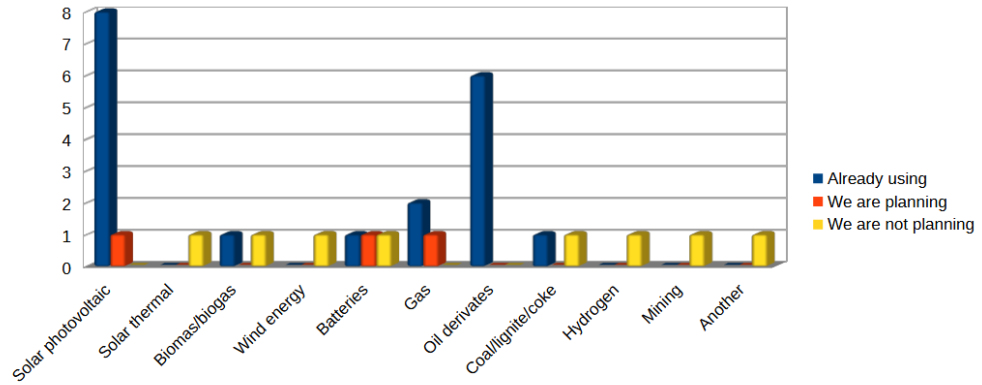

Figure 2: What energy sources do companies use and/or plan to use in the future

3. How regularly companies monitor and analyze energy use

As shown in Figure 3, most of the companies are already keeping an eye on how much energy they use. In fact, 81.8% said they regularly monitor and analyze their energy consumption. A smaller group—18.2%—said they do this only partially. But overall, it's clear that many companies are taking steps in the right direction when it comes to understanding and managing their energy use.

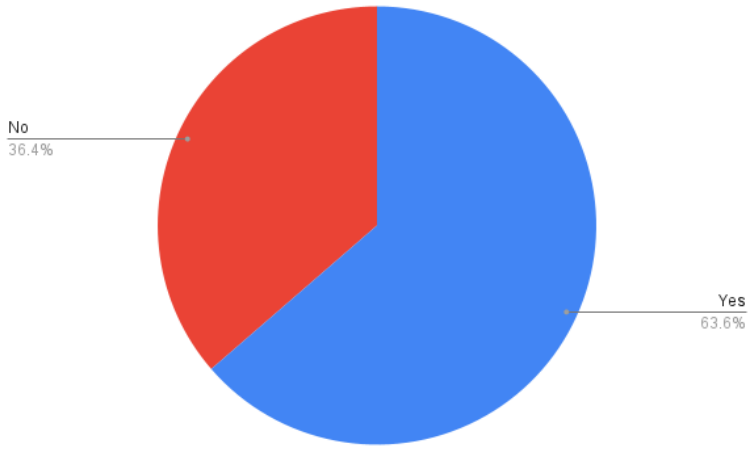

Figure 3: Regular monitoring and analysis of energy consumption by companies

4. Own energy production

As shown in Figure 4, when asked whether they have their own energy production, most companies responded that they do not. Specifically, 63.6% answered “No,” while 36.4% reported having some form of on-site energy generation. This means that while just over a third of the surveyed companies have already taken steps toward producing their own energy—likely through renewable technologies such as solar photovoltaics—there is still significant potential for others to follow suit and move toward greater energy independence.

Among those that do generate their own energy, solar photovoltaics is the most commonly used technology. Respondents reported installed capacities ranging from 360 kW to over 12 MW, reflecting a growing interest in solar energy at various scales. One company highlighted the use of a gas-based cogeneration system with a substantial capacity of 230 MWe and 160 MWt, indicating a different strategy for efficient and combined heat and power generation. Others mentioned biogas thermal power plants with a capacity of 1 MWh and additional PV systems with installations of 2.1 MWh and 2.2 MWp.

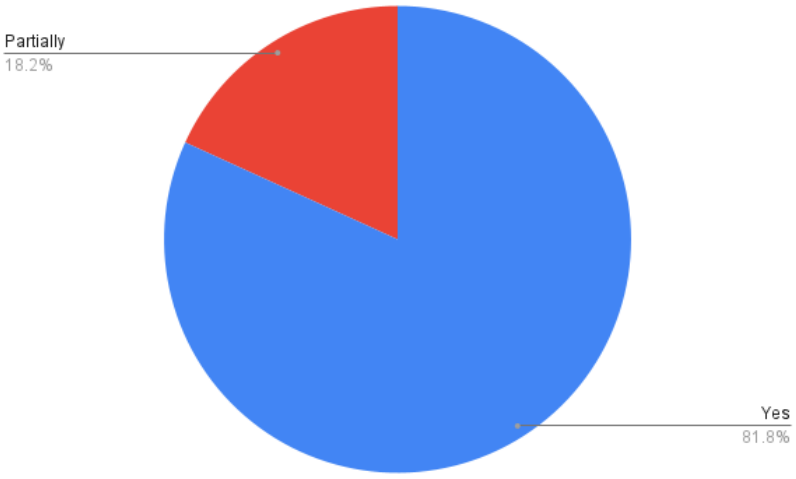

Figure 4: Own energy production

5. Hydrogen energy: awareness and preferences

In response to the question about awareness of plans to introduce hydrogen as an energy source in North Macedonia, the majority of participants indicated they are not aware of such plans. As shown in Figure 5, 55.5% responded “No,” while 45.5% said “Yes.” These results suggest a need for greater transparency and communication regarding national strategies related to hydrogen.

Figure 5: Awareness of hydrogen energy plans

When asked whether hydrogen as an energy source is compatible with their company’s needs and processes, 63.6% of respondents answered “Yes,” indicating a generally positive perception of hydrogen’s potential applicability. A smaller portion, 9.1%, said “No,” while 27.3% responded with “I don’t know,” suggesting some uncertainty or lack of information. As shown in Figure 6, while many companies view hydrogen as a viable option

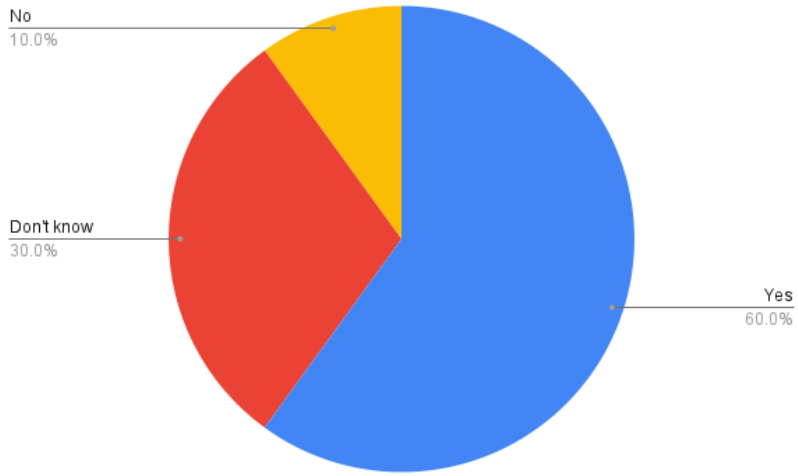

Figure 6: Compatibility of hydrogen with company needs

Furthermore, when considering the introduction of hydrogen as an energy source in the country, the survey revealed varied levels of interest and readiness among respondents (as shown in Figure 7).

Only 9.1% of those already connected to the gas network expressed a willingness to switch to hydrogen. Meanwhile, 36.4% showed interest in connecting to a gas network that supplies hydrogen, and 18.2% were interested in producing their own hydrogen. However, 27.3% were not interested in any of the offered options, and 9.1% reported lacking sufficient information to decide.

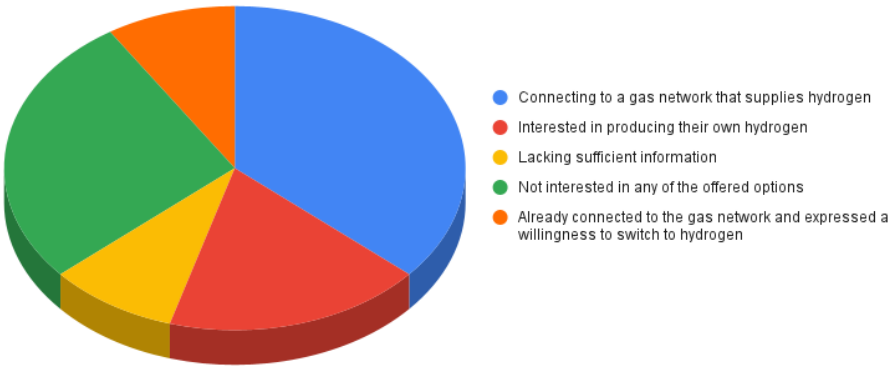

Figure 7: Company preferences for hydrogen as an energy source

6. **Company perspectives on energy costs and efficiency obstacles**

The survey also explored whether companies have conducted detailed calculations of their energy costs and are aware of current energy trends. Out of 11 respondents, 72.7% answered “Yes,” indicating that a majority of companies actively monitor and analyze their energy expenses and stay informed about the evolving energy landscape. Meanwhile, 9.1% responded “No,” suggesting that some companies may lack detailed cost analysis or awareness. Additionally, 18.2% answered “I don’t know,” highlighting a gap in knowledge or communication on this topic, as shown in Figure 8.

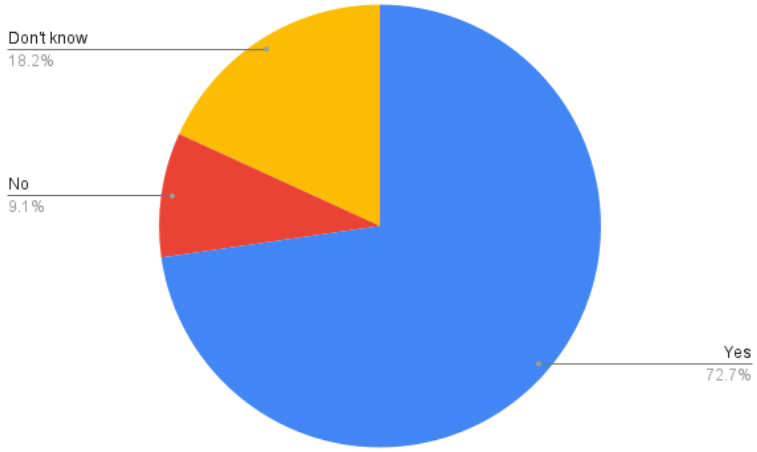

Figure 8: Company awareness of energy costs and trends

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When asked about the main challenges their company faces in efforts to improve energy efficiency (11 responses), the following barriers were identified:

- Market uncertainty and unstable energy prices were the most cited challenge, reported by 63.6% of companies, underscoring the need for stable and predictable market conditions.
- High initial investment costs and complex administrative or regulatory procedures were also significant barriers, each identified by 45.5% of respondents, pointing to financial and bureaucratic obstacles.
- A notable 36.4% of companies indicated insufficient government support or lack of access to grants or subsidies, which impacts their ability to invest in energy efficiency.
- 18.2% mentioned insufficient space or infrastructure for installing energy systems.
- Issues with connection to the electricity distribution network were less common but still present (9.1%).
- Interestingly, none of the companies reported lack of information on available technologies or insufficient technical expertise as a barrier.

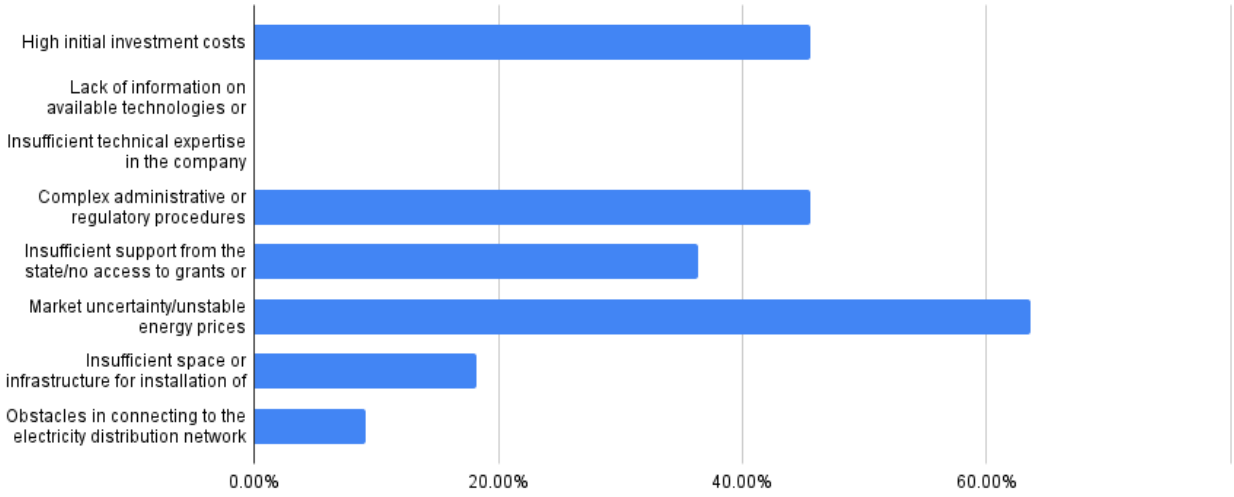

Figure 9: Obstacles to energy efficiency in companies

Conclusion

The survey conducted by Eko-svest offers a snapshot of how companies from **seven industrial sectors** in North Macedonia currently use energy and how they plan for the future. While solar photovoltaics is gaining traction, fossil fuels—particularly oil derivatives—remain widely used, and the overall diversity of energy sources is still limited. Most companies are not planning significant shifts toward newer, low-carbon technologies in the near future.

On a positive note, many companies actively monitor their energy use and are aware of their energy costs, which is an important step toward improving efficiency. However, only about one-third have invested in their own energy production and awareness of national plans for hydrogen remains low, despite relatively strong interest in its future potential.

The main barriers identified—market uncertainty, high investment costs, regulatory complexity and lack of government support—highlight the need for a more enabling environment. Addressing these obstacles through targeted incentives, clearer policies and support mechanisms would accelerate the transition to more sustainable and resilient industrial energy systems in North Macedonia.

Report prepared by Marija Sterjova, Eko-svest