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ENERGY FOR A JUST AND GREEN RECOVERY DEAL: THE ROLE OF INDUSTRIAL RELATIONS IN THE ENERGY SECTOR FOR A RESILIENT EUROPE

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REJENERAXION:
National baseline report: Hungary

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Table of Contents

REJEnerAXION National baseline report: Hungary

Abstract

This research report, prepared as a part of the project "REJEnerAXion - Energy for a just and green recovery deal: the role of the industrial relations in the energy sector for a resilient Europe", a European Union co-funded research project (101052341/SOCPL-2021-IND-REL), investigates Hungary's energy sector transformation within the framework of a just transition. The analysis emphasises key findings related to social dialogue, industrial relations, and collective bargaining in the context of the energy transition.

Multi-actor institutional involvement characterises the energy transition in Hungary along with a very high level of (informal) centralisation, that results in non-transparent governance. The high dependency on Russian fuel and technology and the high turbulence in energy production and consumption, especially since the start of the war in Ukraine, have created new uncertainties about the timing and nature of the phase-out of coal.

Collective bargaining in Hungary is highly decentralised, with decreasing coverage rates and falling union membership. The energy sector stands out as a regulated sector with high coverage and relatively high union density rates, so far attempting to resisting the negative trends. Sectoral and company-level collective agreements were pivotal in managing property transformation and state ownership changes in the last decades, and provide both an institutional legacy and know-how for sectoral trade unions to deal with the challenges of the green transition. While there is social dialogue within a recently established regional coal commission, the absence of a comprehensive tripartite institution covering the entire workforce hinders effective policy inclusion. Expert informants pointed out that the Hungarian energy transition is fragile as it is a centralised system, which is both driven by and dependent on available financialization and EU regulation and conditionality. The country's energy transition has a top-down, increasingly centralised characteristic, which lacks transparency and clear, responsive timetable. Trade unions in energy and mining are active in the process emphasise just transition principles, while employer organisations are less vocal. Trade unions do not support unconditionally the transition towards renewables, but advocate alternative solutions.

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energy sector, social dialogue, employment, Hungary, just transition

List of Abbreviations

BDSZ	*Mining, Energy and Industrial Workers' Union*
EIT	*Energy Innovation Council*
EPSU	*The European Federation of Public Service Unions*
ESR	*Effort Sharing Regulation*
EU ETS	*The European Union´s Emissions Trading System*
EVDSZ	*United Electricity Workers' Federation*
EWC	*European Works Council*
FIDESZ	*Political party Fidesz – Hungarian Civic Alliance*
GDP	*Gross Domestic Product*
GHG	*Greenhouse gas*
GSZSZ	*Gas Industry Trade Union Federation*
HUF	*Hungarian Forint – Hungarian currency*
IEA	*International Energy Agency*
ITM	*Ministry for Innovation and Technology*
JTF	*Just Transition Fund*
KGOE	*Kilograms of oil equivalent*
KSH	*Hungarian Central Statistical Office*
kWh	*Kilowatt-hour*
LIGA	*Democratic League of Independent Trade Unions*
MASZSZ	*Hungarian Trade Union Confederation*
MAVIR	*Hungarian Electricity Transmission System Management Company*
MEKH	*Hungarian Energy and Public Utility Regulatory Authority*
METÁR	*Hungarian Renewable Support System*
MGE	*Hungarian Natural Gas Association*
MOL	*Hungarian Oil and Gas Public Limited Company*
Mtoe	*Million tonnes of oil equivalent*
MTVSZ	*Hungarian National Society of Conservationists*

MVM	*Hungarian Electricity Works, Public Limited Company*
MW	*Megawatt*
NEKT	*Hungarian National Energy and Climate Plan*
NES	*Hungarian National Energy Strategy 2030*
NGTT	*Hungarian National Economic and Social Council*
OHS	*Occupational Health and Safety*
PJ	*Petajoule*
PM	*Prime Minister*
PSI	*Public Sector International*
PV	*Photovoltaics*
RES	*Renewable Energy Sources*
SOE	*State-Owned Enterprises*
SZTFH	*Supervisory Authority for Regulated Activities*
TIM	*The Ministry of Technology and Industry*
VAPB	*Social Dialogue Committee for Electricity Energy Subsector*
VDSZ	*Hungarian Chemical, Energy and Related Sectoral Workers Trade Union*
VKF	*Standing Consultative Forum for the Competitive Sphere and the Government*
VTMSZ	*Employers' Association of Electricity Companies*

THE HUNGARIAN ENERGY SECTOR[1]

1. AN INTRODUCTION

Hungary is one of the most energy dependent countries in Central and Eastern Europe. Its energy transition is highly dependent on external EU funding. Whereas on the surface Hungary made some progress, and established legal and institutional means, strategies to deal with the demands of energy transition, a careful examination highlights fragility of its commitments, including uncertainties in terms of increasing the share of renewables in its energy mix.

After the introduction (Section 1) the report has 3 further sections. Section 2 outlines the institutional and policy framework of the country. As Hungary's green transition depends on external EU funding, governmental policies (formally), and legal framework are aligned with EU policy. Practical policy making, however, is full of contradictions. There is a multi-actor institutional involvement but a very high level of (informal) centralisation that results in non-transparent governance; energy policy aims to accommodate political gains - keeping energy prices low for household and/or industrial consumption, with political decisions aimed to secure both investments and funds, but also raw energy supply at favourable prices.

Hungary is highly dependent on Russian fuel imports, but also on technology and investment, maintenance and increase of capacities of nuclear based power plants. The geopolitical component is especially visible, making the country's position difficult and fragile, which the government attempts to outmanoeuvre, combining populist governance and constant changes in the institutional infrastructure and personnel. Increased consumption stemming from reindustrialisation which has been unfolding since 2010 poses a new challenge as government representatives stressed in their communication that GDP growth must accompany the green transition. A problem is that GDP growth is pegged to great extent on reindustrialisation that occurred after 2012, and CO_2 emissions have also increased since 2015.

Section 3 portrays the main features of the energy system, and changes implemented in line with the green transition. We highlight high turbulence in energy production and consumption, especially since the start of the war in Ukraine. This fact, as well as the energy dependency on Russia causes visible problems, which are having direct impact on the energy transition in the country. The second main feature presented in this section is the employment trend of the energy

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[1] This paper is part of the project "REJEnerAXion - Energy for a just and green recovery deal: the role of the industrial relations in the energy sector for a resilient Europe", a European Union co-funded research project (101052341/SOCPL-2021-IND-REL) aimed at analysing and strengthening the role of innovative industrial relations structures, including social dialogue, to respond in a socially fair and balanced way to the main challenges and opportunities offered by a clean-energy transition at national and European level.

The project partners are: Fondazione Di Vittorio (Italy, project coordinator); Federazione Italiana Lavoratori Chimica Tessile Energia Manifatturo – FILCTEM CGIL (Italy); Fundacion 1° de Mayo (Spain); Association travail emploi Europe société-ASTREES (France); wmp consult – Wilke Maack (Germany); Laboratoire d'Etudes sur les Nouvelles formes de Travail, l'Innovation et le Changement, LENTIC, Université de Liège (Belgium); Instytut Spraw Publicznych (Poland); Central European Labour Studies Institute CELSI (Slovakia (and Hungary). Supporters are: European Federation of Public Service Unions- EPSU (EU); European Trade Union Institute – ETUI (EU). Website: https://www.rejeneraxion.com/

The aim of the paper is to provide the main results of research reports at a national level based on desk analysis and qualitative research (in-depth interviews with stakeholders) considering the transformations taking place in the energy sector oriented towards clean energy and their impacts on the world of work and the role of industrial relations and social dialogue for a just transition.

sector, which, according to the official available data, is responding to the energy transition in a limited way. The total number of workers changed insignificantly in the last decade. Qualified, middle aged and older, male employees dominate the workforce. Thus, longer term labour reproduction might be a challenge to solve in the mid-term already. Finally, the section reflects on the actual drivers, barriers, and dilemmas related to the Hungarian energy transition. In this part we focused on external and internal factors that shape the country's transition, as well as obstacles and challenges it faces.

As Section 4 unpacks, social dialogue, industrial relations and collective bargaining are undergoing a rather unfavourable development in Hungary since 2006, exemplified in changes in legislation and political-economic developments negatively affecting all employees. Energy is an exceptionally well-regulated sector, especially the electricity sector. Both trade union and employer organisations have high membership density, compared to Hungarian average. Collective bargaining occurs at plant and sectoral level. There is no evidence that there is extensive and intensive social dialogue related to green transition. Most likely, the social dialogue committee dealt dominantly with employment and remuneration related matters. Employers' organisations are silent on the issue of decarbonisation and green transition, and trade unions are occasionally vocal. Both unions call for adequate stress on the social component, i.e. adequate attention and treatment of social rights of employees for successful green transition, especially in keeping employment and income levels. Both trade unions called for social dialogue, in line with EU recommendations, but stressed that national specificities need to be considered, opposed import of electricity (created below environmental standards) and utilisation of new technologies, for example for energy derived from coal. We located only one concrete initiative, a project on phasing out of lignite for a power plant, in which both a trade union federation and employers participated.

2. HUNGARY'S POLITICAL FRAMEWORK FOR ENERGY TRANSITION

2.1. Overview of relevant policy and legal framework

In terms of energy sector regulation, Hungary has a thorough legislative framework. This framework is harmonised with the EU Directive.[2] There are several institutions in charge for the Hungarian energy transition:

- Ministry of Energy, including Deputy Secretaries of State for Energy and for Climate Policy (direct successor of the Ministry of Technology and Industry (TIM)) [3],
- Department for Strategic Planning and Programming,
- National Research, Development, and Innovation Office,
- Energy Innovation Council (EIT),
- Ministry of Foreign Affairs and Trade,
- Ministry of Agriculture,
- Hungarian Energy and Public Utility Regulatory Authority (MEKH),
- Supervisory Authority for Regulated Activities (SZTFH).

As aptly summarised by Szabó and colleagues at a time when ITM was still in charge:

Energy governance is highly fragmented in Hungary, with influence over policy and market developments divided between multiple ministries and private actors. In theory, the Ministry of Innovation and Technology is at the centre of energy policy, but competences are split with other ministries, while PM Orbán and his office have the last say in prominent issues (Szabó et al 2020: 10-11).

[2] **Most important legislation is the following:**
[1] Electricity Act (EIA). Act LXXXVI of 2007 on Electricity. [2] Electricity Act Implementing Decree. Government Decree 273/2007 (X. 19.) on the Implementation of Certain Provisions of Act LXXXVI of 2007 on Electricity.
[3] Electricity Construction Licensing. Government Decree No 382/2007 (XII. 23.) on the procedures for the granting of building permits by the electricity industry. [4] Gas Act (GET). Act XL of 2008 on the Supply of Natural Gas
[5] Environmental Protection Act. Act LIII of 1995 on General Rules for the Protection of the Environment
[6] Regulation on Renewable Energy (METÁR). 165/2016 (VI. 23.) of the Government Decree on the compulsory purchase and premium support of electricity produced from renewable energy sources.
FROM THE EU REGULATION:
[1] EU Energy Efficiency Directive (EED) Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency

[3] The ***Ministry of Energy*** was established on 1st December 2022 as a direct successor of the ***Ministry of Technology and Industry (TIM)*** (its predecessor was the ***Ministry for Innovation and Technology – ITM***, until March 2022)

Civil and academic initiatives are also present, such as the Energiaklub (Energy Club), National Society of Conservationists – Friends of the Earth Hungary, or Greenpeace Hungary. Their position is marginalised, but transparent and well communicated (Szabó at al. 2020: 13).

Up until autumn 2022, the ITM was at the forefront and in charge of the energy agenda, and it also stood behind Hungary's National Energy Strategy (ITM: 2020), in which full commitment to adjustment to climate change was proclaimed. Scholars comment that in practice several actors have great influence, especially the Ministry of Foreign Affairs and Trade, which is responsible for maintaining of the Paks nuclear power (also in charge of laying off, main decisions, etc.), while the Ministry of Energy is in the background of maintaining the MVM Group, a state-owned behemoth – under which nationalisation of some companies occurred in recent years. The Russian full-scale invasion of Ukraine reinforced this malleable constellation. In December 2022, a few months after the general elections, reorganisation of ministries occurred, and energy came under the responsibility of the Ministry of Technology and Industry (TIM). The minister who also stood behind Hungary's commitment to green transition, resigned.[4] At the end of the same year, the TIM was terminated and replaced by the newly established Ministry of Energy.

Decision-making is highly centralised in Hungary in territorial sence, meaning that there are no regional actors with significant competencies. The Paks nuclear power plant in South of Hungary as well as the lignite-fired Mátra Power Plant is also in state ownership and operate within the MVM Group. Although the share of decentralised, household-based solar energy production is increasing, PV stations cannot channel and sell the produced energy via the national energy distribution network. The drive of centralisation, and less transparency further increased since 2022.

2.2. Institutional initiatives to support a just energy transition

The general approach that the Hungarian government is taking to address the energy transition, including reducing the environmental impact of the national energy sector, shows a dual feature. On the formal side, there is institutional support as a precondition along with relevant policy framework to tackle the complex issue. Yet, on the more substantive level of implementation, the picture is more problematic. The general approach is to support energy transition if it is securing available and affordable raw materials for electricity and energy production, securing both population support for the ruling government but also businesses, i.e., accompanied by GDP growth.

In terms of financing its green transition, Hungary greatly relies on external funding, i.e., the EU Cohesion Fund. Formally, in its strategic documents at least, it is not surprising that Hungary complies with EU policies and indicators. There are several national strategies adopted, and recent agreements concluded, which are formally ensuring Hungary's green energy transition.

[4]The ITM minister resigned after it was aired that the Ministry's competencies will shrink, and areas including agendas of general energy policy, environmental protection, transition to circular economy, waste management, supervision of utility services, as well as the national mining policy will move under the competency of TIM, available at: https://hirlevel.egov.hu/2022/11/27/ket-uj-miniszterium-is-lesz-atalakul-a-kormany/

Since 2008, Hungary has adopted 5 major action plans, in line with EU requirements. The *First National Climate Change Action Plan* (I. Éghajlatváltozási Cselekvési Terv, duration: 2008-2020) set the aim to reduce emissions by 40 per cent in comparison with the 1990 level until 2030, as well as the fulfilments stated in the EU ETS and ESR strategies. The *Second National Climate Change Strategy* (Második Nemzeti Éghajlatváltozási Stratégia) adopted in 2018 under the ITM, adapted to the 13 per cent threshold. The *National Energy and Climate Plan* (Nemzeti Energia- és Klímaterv – NEKT**)** was fully in line with EC set indicators and goals of energy and climate policy in the member states: decarbonization (decreasing of the GHG emissions by 40 per cent in comparison with the 1990 level until 2030) and defining a renewable energy policy, energy efficiency, energy security, internal energy market, and the research, innovation, and competitiveness. Adopted almost simultaneously with NEKT, the *National Energy Strategy 2030* (Nemzeti Energia Stratégia NES) was adopted as an instrument to implement changes, also in line with EU requirements: 90 per cent share of carbon-free electricity energy production, fulfilment of 6,000 MW photovoltaic capacity until 2030 and 12,000 MW capacity until 2040, reach lower than 70 per cent gas import until 2040, and to level-down the GHG emissions output below 40 per cent (in comparison with 1990). Finally, within the 2022 *National Recovery and Resilience Facility Plan of Hungary***,** there is also an energy strategy. Here funds for the green transition represents 21 per cent of all the allocated finances, circular energy implementation 2 per cent, and green transportation 24 per cent of the total approx. €6 billion. Most recently, in December 2022 the Hungarian government and the European Commission concluded a partnership agreement on investments from the EU cohesion funds for the period of 2021-2027, in the value of €22 billion. From this amount €6.7 billion EUR will be allocated to the investments related to the improvement of energy efficiency of public and private buildings and to the increasing of renewable energy production. From the Just Transition Fund (JTF) approx. €250 million will be allocated to support regions on which the phasing out of the coal and lignite-fired Mátra Power Plant will have a direct and high effect (European Commission, 2022).

In 2017, Hungary established a unified and centralised renewable energy support system, called METÁR (Megújuló Támogatási Rendszer – Renewable Support System). The METÁR operates on two pillars. First, in continuation of the earlier support scheme, METÁR is providing financial subsidies for the operation of energy power plants, which are using renewable energy sources.[5] Second, the new system supports consumer enterprises in terms of both increased use of renewable energy, as well as its integration into the energy system for increased consumption. The METÁR supports mixed-fuel based and waste combustion-based power plants, and the support is limited to covering costs of the renewable energy component of their energy production (ITM, 2020:80; MEKH, 2022b, IEA, 2022:71-72).

Beyond formal compliance, critical commentators add that the Hungarian energy policy adopts EU initiatives selectively, and the greatest area of conflict is in increasing the shares of renewables and non-ETS administrative measures. Pegging GHG emissions to the 1990 level is very conservative, since Hungarian deindustrialisation in the 1990s mask greatly the rise of emissions due to reindustrialisation, especially since 2015 (e.g. Szabó et al. 2020: 6, ITM 2020). The Hungarian position strongly insists and also defends the legitimate use of nuclear energy generation. NEKT has been criticised for vague implementation logic, for instance insisting on energy sovereignty while increasing the dependency on the nuclear power plant that depends on Russian fuel and

[5]The KÁT system is a compulsory purchase scheme in place to increase the electricity energy production.

technology sources, the utility cost reduction programme as a barrier to changes in consumer behaviour, the projected rise and not decline in consumption, and very modest emission reduction plans, especially in terms of limited use of renewable energy sources (Munkácsy et al 2020). Similarly, the Hungarian Recovery and Resilience Plan has been heavily criticised from non-governmental green organisations for failing in both introduction of biodiversity measures and assisting households in the transition (Dömsz-Kovács and Botár 2021).

For households the so-called Green House Programme is aa loan based system, provided by the National Bank, limited to the building or buying of new, energetically efficient buildings. There is also the KEHOP Plusz programme, that has been also developed for the period 2021-27, targeting energy efficiency of households. Its financialization depends on the support from JTF, the European Regional Development Fund, and the Cohesion Fund, covering 85 percent of the programme budget (MTVSZ, 2022b; palyazat.gov.hu, 2023).

2.3 Geopolitical implications for energy transition

Energy dependency of Hungary is very high, especially if we consider the dependency of the existing nuclear power plants Paks 1 and Paks 2 from Russian fuel and technology, but also as ongoing investment in case of Paks 2 (see section 3, also Szabó et al 2020). Hungary greatly relies on raw material imports for electricity production, natural gas, oil, especially from Russia. With plans to phase out the domestic lignite, such dependency seems to remain or even increase. High geopolitical stakes have translated into special ministerial roles in charge of energy policy. For example, the Minister of Foreign Affairs and Trade is responsible for the Paks nuclear power plant.

Securing affordable energy (prices) from imports was key in both for political partisan gain but also competitiveness of industrial production. After February 2022, the Russian full-scale invasion of Ukraine, war and the EU sanctions against Russia, geopolitical stakes increased for Hungary. Maintaining friendly relations with Russia remained a key issue fortifying the lack of transparency and high-level centralisation in decision making.

More recently, there are minor changes in energy mix diversification. Temporarily, as already mentioned, Hungary increased the use of its own supply resources for energy generation, also lignite, which contradicts the goals. In late summer 2022, the government decided to partially withdraw its price protection policy and allow a radical increase in the electricity and gas prices. The measure led to radical decrease in consumption, especially in private households, but also affected some sectors of the economy.

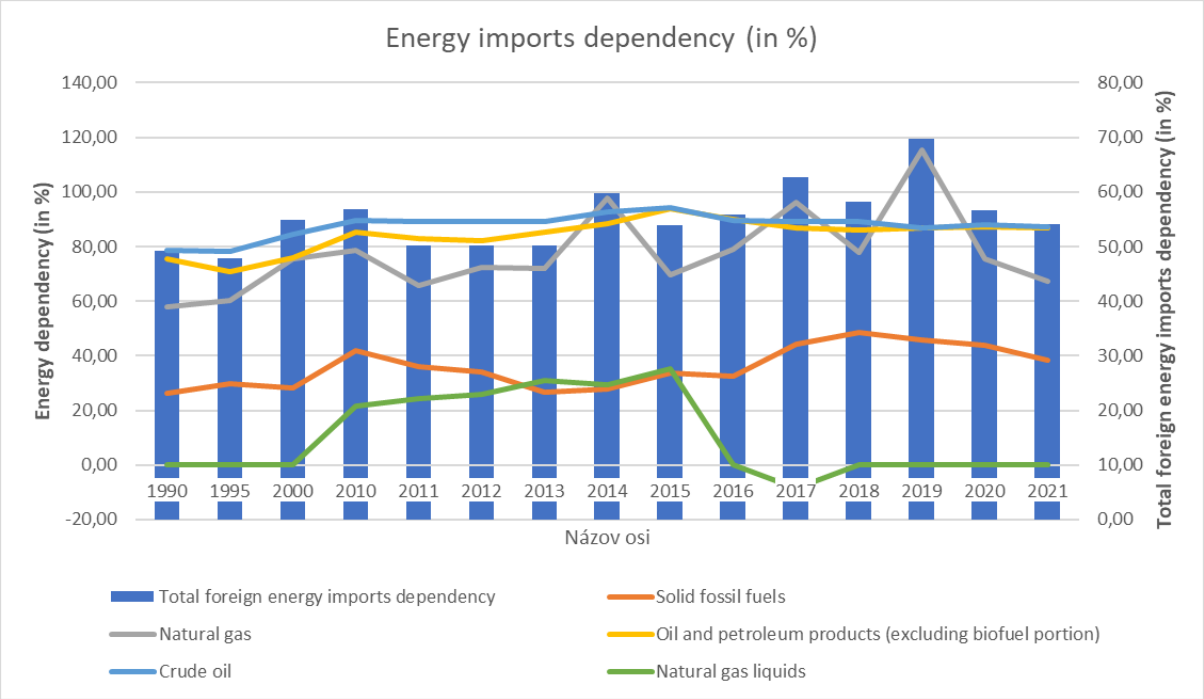
3. MAJOR TRENDS IN THE HUNGARIAN ENERGY SECTOR

3.1. Main characteristics of the country's energy system

Hungary, similarly to other Central European countries, is strongly dependent on the import of energy sources, especially of natural gas, but also on the Russian nuclear fuel supply, necessary for the energy production in the only one nuclear power plant. According to the data from the Hungarian Central Statistical Office (KSH) in 2019 almost 70 per cent of the raw materials necessary for producing Hungarian energy was imported. Long-term data show that energy import is also above the EU-average and has increased by 15 per cent since 2000. The total volume of energy distribution increased significantly in the last three decades. According to the annual dataset of the KSH, between 1990 and 2021 the supplied amount of electricity increased from 32 billion kWh (households represented just 9 billion kWh from this amount) in 1990 to almost 40 billion kWh (12 billion for households) in 2021. Similar increase has been in the total number of energy consumers, as well as of the total annual energy consumption by households (KSH, 2023).

As visualised in Figure 1., the dependence on foreign energy supply was constantly high since 1990 in the case of crude oil and oil and petroleum products (cca. 80 per cent). Other energy supplies had a more changing share, especially since 2014-2015. The dependence oscillated between 50 and 70 per cent in the 2010-2021 period. Dependency is the highest, rather constant for crude oil and oil and petroleum products. It is similarly very high but more turbulent in the case of natural gas. Since 2015 the imports of natural gas liquids were altogether minimal, but instead dependency on solid fossil fuels increased (Eurostat, 2023). Furthermore, electricity import has been substantial, around 30 per cent in 2020, with plans to radically decrease it by 2030, due to the construction of a new nuclear power plant (Weiner 2021: 215).

Figure 1.: Dependence on foreign energy supplies: imports' share of total production, Hungary 1990-2021 (%, year)



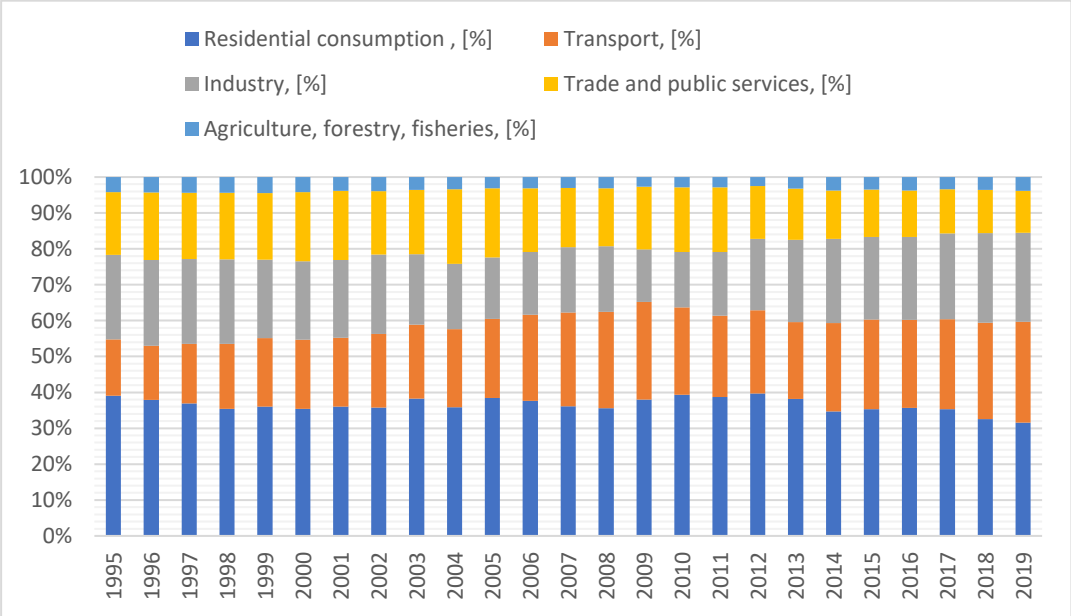
Source: Eurostat, 2023 (code NRG_IND_ID)

In 2021, the total primary energy consumption represented 24.9 Mtoe (Eurostat, 2023). In 2022 the primary energy consumption structure consisted mostly of petroleum and petroleum products (31.7%), natural gas (30.3%), and nuclear energy sources (15.8%). The smallest share of primary energy consumption is hydro power (0.1%), wind power (0.2%), and other non-combustible renewables (2.2%) (KSH, 2023). In line with the just transition requirements, Hungary has increasingly relied on renewable energy sources, mostly biomass, photovoltaic energy, and to a limited extent on hydro, and wind power. (Weiner, 2021).

The Odyssee-Mure research shows that the energy efficiency improved between 2000 and 2018 by 1.6 percent annually. Looking at the total energy consumption in the same period, there is visible an increase by 13.8 per cent – in 2000 the final energy consumption was represented by 16.5 Mtoe, while in 2018 was on the level of 18.8 Mtoe. The energy consumption increase was measured mostly in the residential, industry and transport sectors (Odysee-Mure, 2021).

In terms of **energy intensity,** since 1995, the Hungarian economy shows a decreasing trend in the intensity of energy consumption. Altogether, between 2000 and 2019 the energy intensity decreased by 34 per cent, caused by the deindustrialisation and transformation of the national economy, but also an increasing efficiency of the energy production and consumption. Still, in 2019 Hungary had the seventh highest energy intensity in the EU-28. In comparison with the EU-28 average, in 2019, energy intensity, measured in KGOE per thousand euro, was 80% higher. As visualised in Figure 2, energy consumption has the highest share among residents (general population). The *relative* energy consumption of the transport sector almost doubled since 1995 (from 15.7 to 28.1 per cent), the industry sector, after a visible decreasing trend, measured between 2003 and 2010, started to increase again, while in 2014 reached the 1995 level. A long-term intensity decrease is measurable only in the trade and public services sector, while the energy intensity of the agriculture, forestry and fisheries shows has been constantly low (approximately 3.5 to 4 per cent in the last almost three decades) (KSH, 2021).

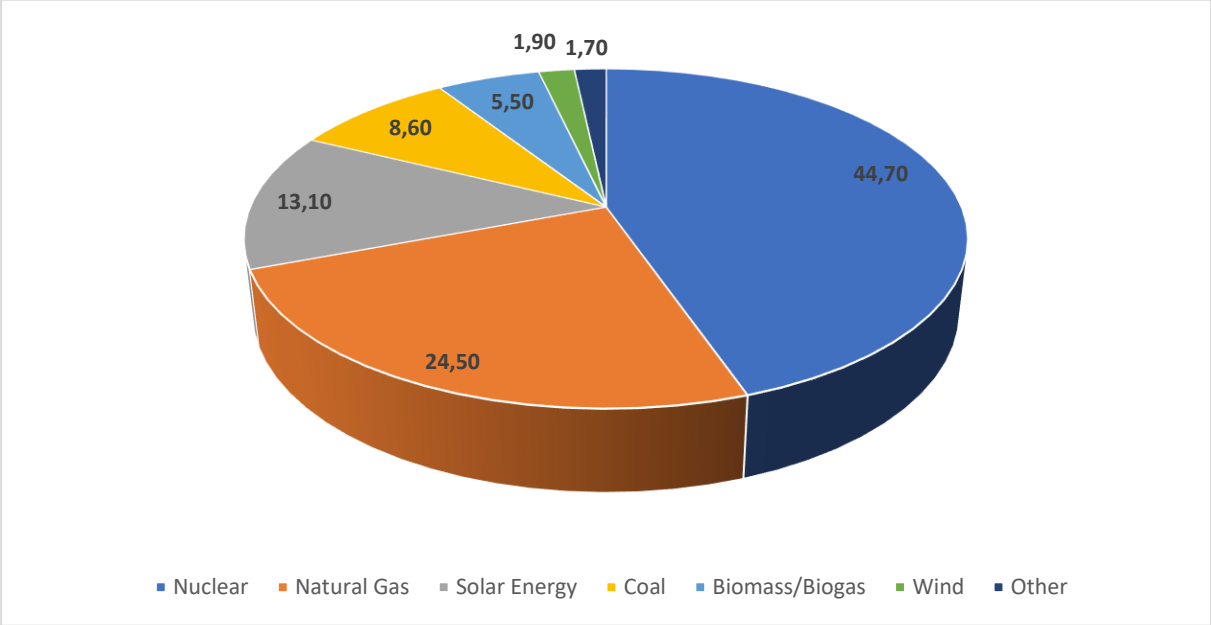
Figure 2.: Energy consumption by sectors (year, %).



Source: KSH, 2021

According to the KSH data, the **national primary energy production** decreased by 5.2 per cent between 2000 and 2019. The statistical office explains this tendency with the constant exhaustion of the available natural energy supply on the territory of the country. This has a direct impact also on the national electricity mix (Figure 3.). In 2022, nuclear energy had a dominant role (44.7 per cent) in electricity generation, followed by fossil fuels (33.1 per cent - natural gas 24.5 and coal 8.6 per cent), renewable energy sources (solar energy by 13.1, biomass by 5.5 and wind by 1.9 per cent), and other energy sources by 1.7 per cent (MEKH, 2023a). The economy thus relies heavily on nuclear energy for production of electricity, but electricity is also generated from renewables of natural gas and biomass. Especially due to a high share of nuclear energy, in 2018, the share of domestic low-carbon electricity generation represented 61.2 per cent of the entire electricity generation mix. The plan has been to phase out coal completely by 2040 and increase the share of nuclear but also solar energy in electricity production (Weiner, 2021: 215-231; 234-235). Due to the governmental decision the household-based PV stations could not channel the produced energy to the national energy distribution network, that leads to a more limited use of the potential.

Figure 3.: The Hungarian electricity mix in 2022, as share by main energy sources in %



Source: MEKH, 2023c

Most of the **domestic electricity production** is covered by two main power plants: the nuclear power plant in Paks, and by the Mátra Power Plant. According to the available dataset from 2017, Paks provided 53 per cent of the entire national energy production, while Mátra is producing 21 percent of it. Power plants represented another 10 per cent - most of these plants are in the surrounding area of the capital city, and along the Danube and the Tisza rivers. The rest, approximately 16 per cent of the energy production is covered by small household power plants, a category including the wind and solar power plants, operated by the households (MAVIR, 2016), representing at least 140,000 active power plants (MEKH, 2022c – visualised in Figure 4.). These numbers changed in the last couple of years. The decreasing production trend is especially visible in case of the Paks power plant and its nuclear energy production - note that the MAVIR data from

2022 shows a share of 46.93 per cent, as well as of the Mátra power plant, where the share of coal and lignite in the total electricity production represented 9.21 per cent (MAVIR, 2022).

Figure 4.: Number of small household power plants and installed capacity

Source: MEKH, 2022c

Hungary has been among EU member states with the lowest share of renewable energy sources for electricity generation (Weiner 2021: 212). In terms of sustainability, Hungary features critically, given the low support for decentralised local energy and fragmented systems, and insistence on baseload power provided by nuclear power plants. For several years the main renewable energy source was biomass, while there was a halt to increase in energy generation by wind power (Weiner 2021: 218). Namely, in 2016 the government adopted a decree according to which wind turbines cannot be built within a radius of 12 km from the border of municipalities and practically it is impossible to find suitable locations for the building of wind turbines (Ballai, 2022). This regulation is likely to change in 2024 (Brückner, 2023). In the last decade there were no investments into this energy source, and only older wind turbines are generating electricity, approximately 324 MW, or 3.8 per cent of the total electricity production (Major, 2021). Hydropower capacity stood only at 58 MW in 2018 (MEKH-Mavir 2019; cf. Weiner 2021). In the last three years, the photovoltaic energy became a popular and leading renewable energy source in Hungary. According to the newest datasets, two-thirds of the total photovoltaic energy production in Hungary, crossing the line of 5,500 MW as a total energy production, is covered by larger, industry-scale power plants with capacity over 50 kW, while the rest one-third is covered by small household power plants until 50 kW capacity (MAVIR, 2022; MAVIR, 2023).

Hungarian Energy Value Chains

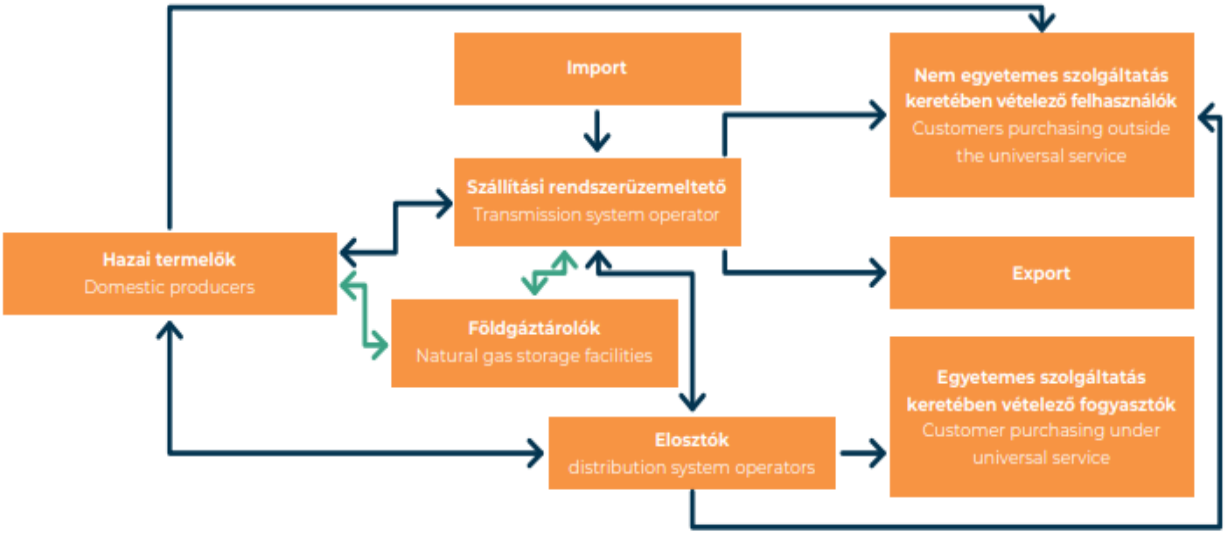
In the absence of more precise, disaggregated data and employment and map of the Hungarian corporate value chain ecosystem, in the following we present the main features of energy production and distribution.

Oil & Natural Gas

Domestic production of crude oil is on the level of 17 kb/d (thousand barrels per day), that is representing 14 per cent increase of domestic production in comparison with the 2010 level. Net import level stood at 123 kb/d in 2020. Crude oil represents 27 per cent of the total energy supply and has a 10 per cent share in the national energy production system. The biggest consumers of crude oil are transport (55 per cent) and industry sector (42 per cent) (IEA, 2022: 145). Within crude oil production the main and only refinery company is the MOL company, which has a dominant position in the domestic crude oil value chain. MOL operates national, as well as foreign refineries. In Hungary there is one refinery site in Százhalombatta, and there are foreign refineries in Bratislava, Slovakia and in Rijeka, Croatia. Bitumen production is organised in Zalaegerszeg. The total storage capacity for oil products and crude oil was on the level of 15.79 million barrels in 2020 (IEA, 2022: 151-153; MOL Group, 2022). Crude oil storage sites are scattered in various Hungarian towns: Győr, Komárom, Vép, Zala, Pécs, around Budapest, Kecskemét, Szolnok, Eger, Debrecen, and Szeged. two oil pipelines are crossing through the territory of the country, the Adria, in north-east – south-west direction, and the Druzhba pipeline from east (IEA, 2022: 152).

Natural gas is an important part of the energy system. The Hungarian energy sector relies on imported-based natural gas while domestic production has a relatively low and further declining share. The total domestic production of natural gas was 1.7 bcm (Billion cubic metres of natural gas) in 2020, produced from five gas storages local in the country, while the import reached almost 8 bcm in the same year. There are two key companies on the gas market: the already mentioned MOL, which is responsible for 80 per cent of the domestic production, and the MVM company, which has a dominant role in the supply, import and distribution. From imports, Hungary is mostly dependent on the Russian gas imports, which represents 95 per cent of the entire import need of the country, according to the IEA national report. Gas import is realised based on a long-time contract between the MVM and the Russian Gazprom company. The total gas network is 5,889 km long and has 400 delivery points. Hungary has interconnection points, connecting the country with all its neighbours. The regulatory control of the gas market is under a state authority, called MEKH (Hungarian Energy and Public Utility Regulatory Authority – Magyar Energetikai és Közmű Szabályozási Hivatal). In the market distribution of natural gas the largest is the state-owned MVM company and its subsidiaries, but also other, mostly multinational companies, like the E.On or Eni are also present (IEA, 2022: 131-139; MEKH, 2023b).

Figure 6: Operational Model of the Hungarian Natural Gas Sector



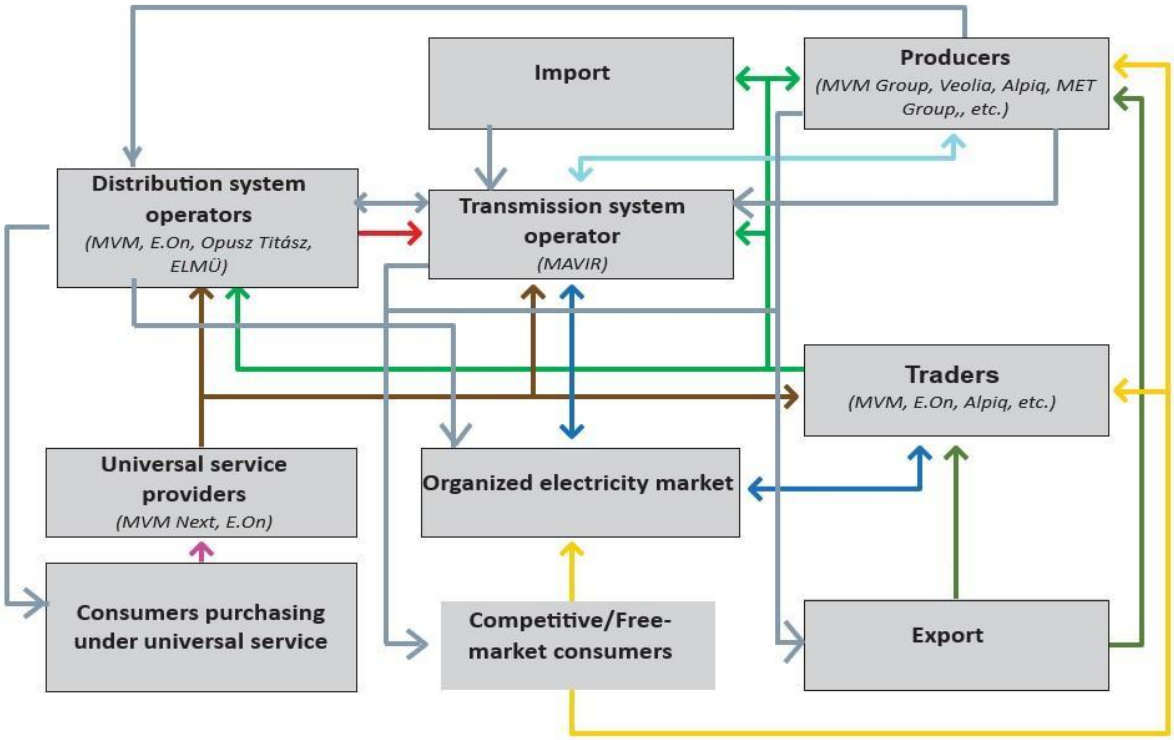
Source: MEKH, 2023b

Electric and renewable energy

Hungarian electricity production is based on several energy sources. In 2022, in electricity generation, nuclear energy has the highest share (46 per cent), then natural gas (21.5 per cent), coal (11.6 per cent), others (0.8 per cent), oil (0.2%), and renewable energy sources represents 20.2 per cent. Within the renewable energy sources, solar energy has the highest share (approximately 61 per cent), biomass 25.6 per cent, wind power 5.3 per cent and waste 1.9 per cent share in generating electricity (MEKH, 2022a: 7-8). The Hungarian electricity market is a complex but increasingly centralised multi-level and multi-actor system, in which key actors perform both production, distribution, and trading functions. Main companies, for example MVM Group (in state ownership) or the private E.On, or even some smaller actors, like Alpiq are simultaneously active in the production, distribution, as well as in trading. Some actors also play a crucial role in facilitating the functioning of the electricity market. MAVIR Zrt. serves as the Transmission System Operator (TSO), responsible for transmitting large volumes of high voltage electricity power over long distances. TSO's main responsibilities include ensuring grid stability, maintaining the network, managing power plant reserves, and analysing and reporting network data. Distribution Network Operators (DNOs) focus on delivering electricity to consumers. According to the data from 2023, 6 DNOs operate under a licence. These 6 DNOs are divided between 4 main energy distribution companies – MVM, E.On, Opusz Titász and ELMŰ (parlament.hu, 2022). The operating model of the electricity market is visualised on Figure 7.) The most important players are the state owned *MVM Group*, employing more than 10.000 workers, and uniting companies in energy production (MVM Paks Nuclear Power plant, Vértesi Power Plant, Mátra Energy Holding), transmission system (Mavir Zrt.) and energy trade (e.g. MVM Trade Villamosenergia Kereskedelmi Zrt), *E.On Hungaria Zrt.*, which is active in distribution of natural gas and electricity, but also in energy production; the Opus Titász Company, active in the electricity distribution, and finally, the

Hungarian owned multinational *MOL Group*, engaged mostly in oil and natural gas production and distribution.

Figure 7.: Operating Model of the Hungarian Electricity Market (Physical and Financial Flow)[6]



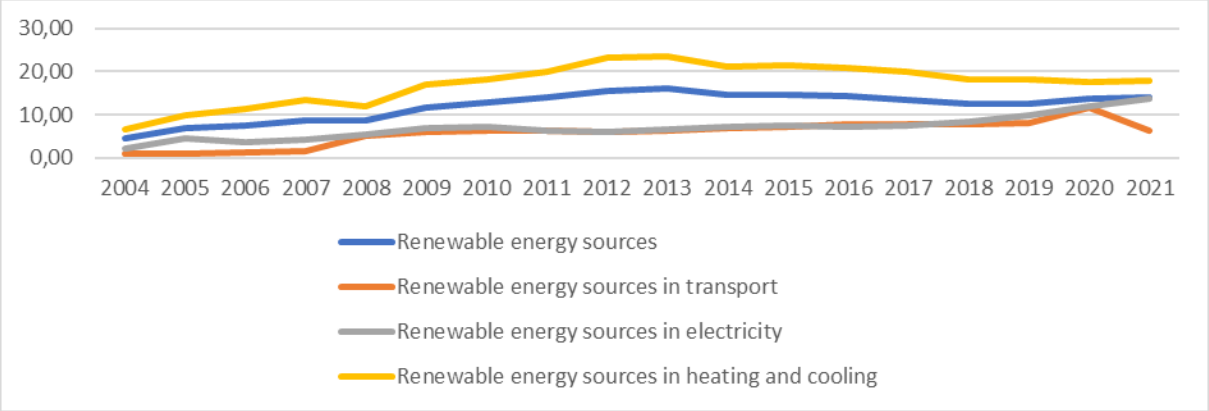
Source: MEKH, 2023a (own compilation of the authors)

Domestic production of electric energy does not meet the domestic demand. In 2020 the import share reached 30 per cent. (Weiner 2021: 216) As in the case of the natural gas market, the electricity market is also liberalised. In both cases, however, the MVM, as a giant company, is the main player in both areas of production and distribution. Looking at the electricity producers, the Hungarian electricity system is concentrated on a small number of big producers. The nuclear energy produced in Hungary is coming from one existing power plant Paks, located in the southern region of the country (IEA, 2022: 93-109). Similar is the situation in case of coal-based energy production. Here the only coal-fired power plant is the Mátra Power Plant, which is producing approximately 10 per cent of the overall Hungarian electricity. According to the national energy strategies, and the IEA report, the Mátra Power Plant might be phased out from the energy system by 2025 (IEA, 2022: 107). Due to the energy supply-related problems, caused by the Russian-Ukrainian conflict, the Hungarian government decided about the extension of the service period at least until 2029. This decision will also have a negative impact on the level of GHG emissions, which had a decreasing trend in the last couple of years, especially during the first waves of the Covid-19 pandemic (Szabó, 2022: 6-7). Conversely, the Mátra Power Plant holds strategic significance in the national energy

[6] Each colour indicates a different financial connection; the physical flow of electricity is illustrated by the grey arrows.

production and distribution system. Representatives from trade unions, as well as various sources, have noted that the current post February 2022 conditions make the implementation of the phase-out mechanism for the power plant unrealistic and practically impossible. This is so, since the power plant plays a crucial role in maintaining the stability of the national energy distribution system (Magyar Közlöny, 2023; hvg.hu, 2023; igazsagosatmenet.eu, 2023b). Moreover, the conditions for an alternative, gas-powered energy generation is not fulfilled: there is both a gas-supply and financialisation bottleneck preventing it.

Figure 8.: Annual share of renewable energy sources in gross final energy consumption in Hungary (in %).



Source: Eurostat, 2023 (code SDG_07_40)

The Hungarian renewable energy system is diversified to all forms and sources of a renewable energy production, but some energy sources are more used. The primary renewable energy sources and municipal wastes represent approximately 12 percent of the primary energy consumption. From this perspective the main renewable energy source in Hungary is biomass. In 2022, the total amount of renewable energy consumption was on a level of 133.6.2 PJ, out of which biomass was at the level of 86.8 PJ, solar energy at 17.5 PJ, biofuels at 12.4 PJ, biogas at 4.1. PJ, communal waste at 3.3 PJ, wind power at 2.2 PJ, and hydro power at 0.6 PJ. Geothermal energy represents 6.7 PJ of the primary renewable energy consumption in Hungary (MEKH, 2023a).

3.2. Environmental trends in the energy sector

As it was already mentioned, energy production and consumption of nuclear and fossil energy sources is dominant. The GHG intensity, (shown in Table 1.), has a declining trend in the country. Among economic sectors, the biggest producers of GHG are the electricity, gas, steam supply and the manufacturing sector (these two sectors represent one third of the total national GHG intensity (KSH, 2023). As shown in Table 1. greenhouse gas intensity in Hungary is somewhat more favourable than in EU average, but since 2015 there is no to minimal change in the positive direction.

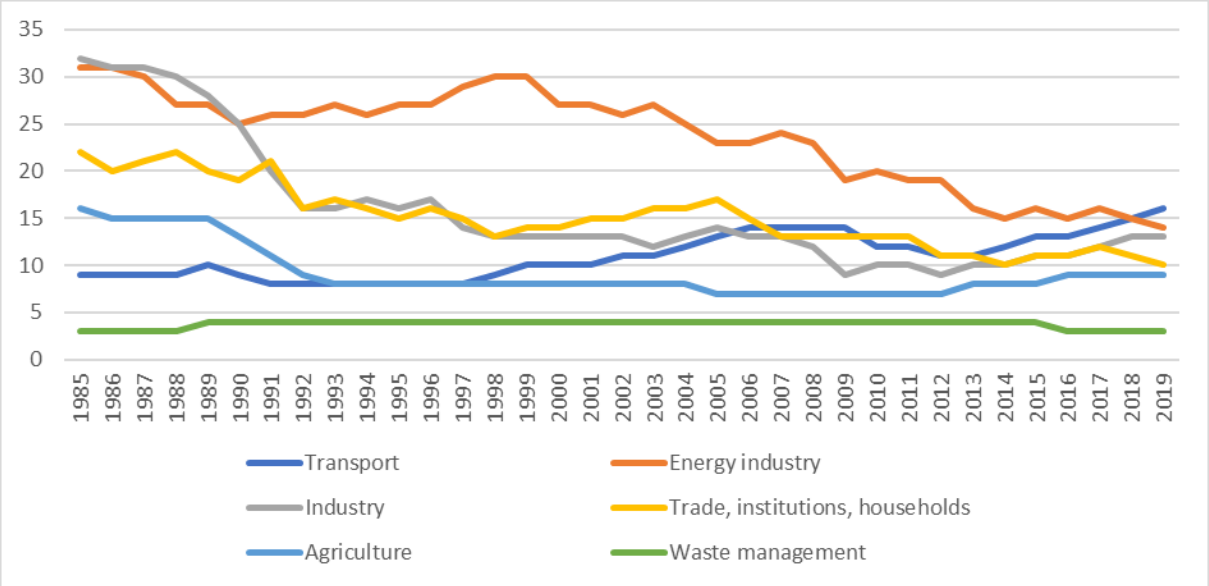
Table 1.: Greenhouse gas intensity of Hungarian energy consumption (in %, comparison with EU-28 average)

Years	2000	2005	2010	2015	2016	2017	2018	2019
Hungary [%]	100.00	89.90	83.90	78.50	79.00	78.40	77.80	77.30
EU-28 [%]	100.00	96.80	92.60	88.80	87.80	86.50	85.00	82.60

Source: KSH, 2023

The GHG emissions decreased by 47 million tons of CO_2 between 1985 and 2019. The main decrease (shown in Figure 9.) is visible in the case of the energy sector. According to the KSH datasets, this trend was due to improved energy efficiency in the main industrial sub-sectors, e.g., mining, metal, and machine manufacturing industry. In most sectors, GHG emissions decreased, except for the case of transport, industry, and waste management. In the case of the former, between 1985 and 2019 was visible an increase by 79 per cent, while in case of industrial production, the increasing trend reversed in 2012, due to reindustrialisation process (KSH, 2023).

Figure 9.: GHG emissions in Hungary (by sectors, Million tons of CO_2)



Source: KSH, 2023

3.3. Economic trends in the energy sector

Within the total national economy, the energy sector has a small share in terms of gross value added to the GDP of the country. Total energy production, consisting of two economic sectors – 1. mining and quarrying; and 2. the electricity, gas, steam, supply sector, contribute by just 0.3 and 1.4 per cent to the total gross value added of the country (KSH, 2023).

Box 1.: The energy sector during the pandemic

Hungary's export-oriented economy and energy sector were both affected by the Covid-19 crisis. Hungary's TES in 2020 was 26 million tonnes of oil equivalent (Mtoe), which is a 2% decrease when compared to the 2019 TES. The pandemic impacted on the demand for transportation fuels, leading to a drop of 8% in demand from 2019 to 2020. During the pandemic the gas consumption decreased in a visible way in both the service sector (by 22 per cent) and in the industry sector (5 per cent). On the other hand, gas consumption increased in case of electricity and heat generation, as well as in the case of residential buildings – defined as the final consumers of energy sources (IEA, 2022:18).

Looking at the GHG emissions, the IEA report shows a decrease by 32 per cent, mentioning that from 2017 until 2019 the GHG emissions levels had a stable tendency. Due to the pandemic, in 2020 the country´s GHG emissions stayed below the 10 per cent emission increase, allowed outside of the EU ETS. The IEA report states that keeping this level was possible because of the emissions level decreasing, not thanks to any form of the structural changes in the national emissions level system (IEA, 2022: 33).

Box 2.: The energy sector during the war in Ukraine

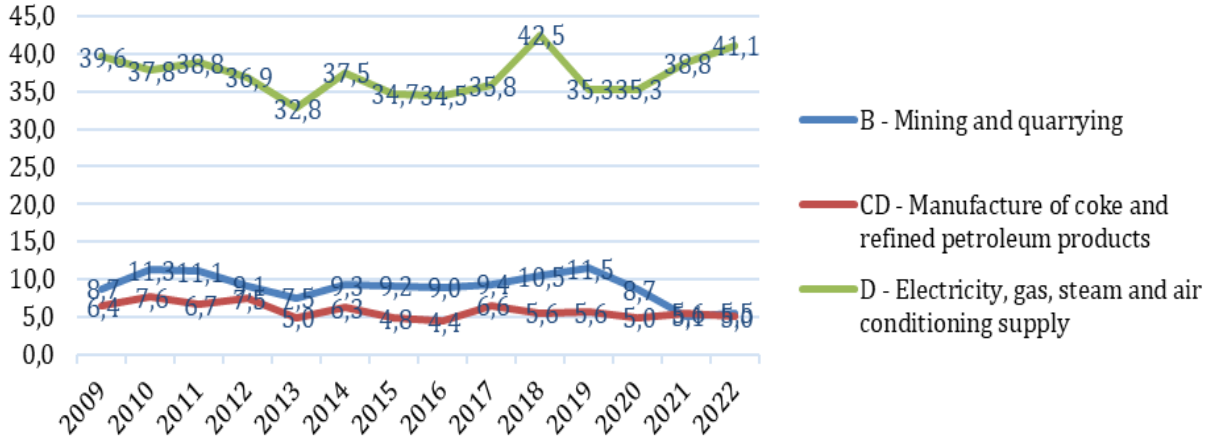
The ongoing war conflict between Ukraine and Russia has a direct impact on Hungary, which shares common borders with Ukraine and several energy transit routes interconnect the two countries. The main visible activity of the Hungarian government since February 2022 is related to maintaining control over its own energy sources and strengthening the independence of the country from foreign energy imports. Within Hungary this effort is visible in a form of capacity maximisation, related to the energy production from domestic sources. Within this plan the two, already mentioned, power plants are key sources – the nuclear power plant in Paks and the Mátra heat power plant. In July the government established a state of energy emergency, within which focused on the increase of the domestic coal and gas production, but in relation with the problematic situation on the energy market the government also decided on the capping of the petrol prices.

3.4. Employment trends in the energy sector

Figure 10. shows the distribution in terms of aggregated employment by main statistical categories in the last decade. At the bottom of Hungarian value chain is mining of energy sources: mining and quarrying of fossil fuels, lignite, as well as natural gas and crude oil, but also logging for biomass (latter not included). Employment in mining and quarrying has stagnated around 10 thousand employees between 2009 and 2019 and halved to 5 thousand by 2022. Manufacture of coke and petroleum products has mostly concentrated at the domestic, but multinational giant corporation MOL, which also distributes and trades its petroleum products across its petrol station chains and has 25 thousand employees internationally. Finally, electricity, gas, steam, and air conditioning include all economic activities of electric power generation, transmission, distribution, and trade, and could be analysed as a separate value chain. The state-owned MVM related companies are the

most significant players of both natural gas distribution, energy production from natural gas, and electric energy distribution.

Figure 10.: Employment by main groups of economic activity - NACE, 2009-2022 (per year, in thousands of employees)



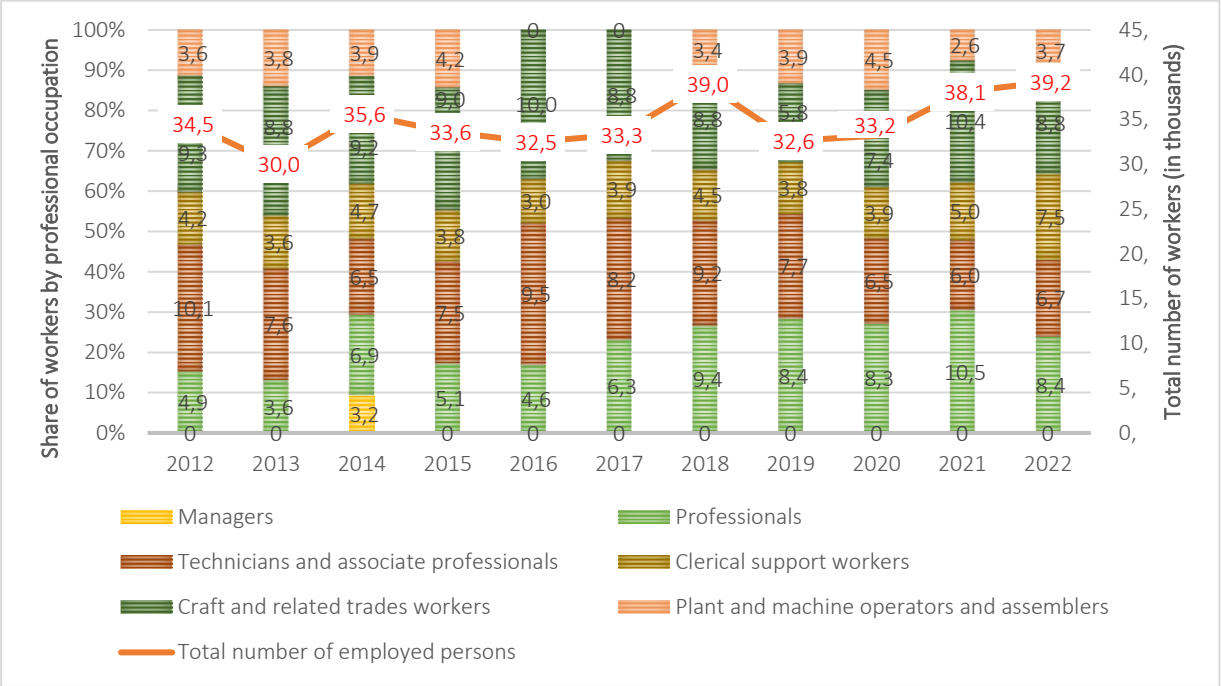
Source: KSH, 2023

As Figure 11. shows, in Hungary there has been an increase in the total number of employees in the last years, but not without turbulence and changes in employment structure by qualifications. Since 2012 the total number of employees in the Nace D35 sector (electricity, gas, steam, and air conditioning supply) increased from 32 to 38,1 thousand in 2021. Employment growth was not even as there was significant turbulence, annual rise, and decline. According to the dataset, two occupational groups have a small share within the energy sector: plant and machine operators, as well as managers. Here it is important to mention, that for both occupational groups is available a smaller amount of reliable data, causing that only for a concrete year are available numbers, in case of managers, this dataset is limited to 2014 as the only year with reliable data (Eurostat, 2023).

Energy is a male dominated sector. The total number of employed male workforce is representing about three quarters of the total workforce in 2021 (KSH 2023). According to the IEA Gender and Energy Data Explorer database, in 2018 the employment gap for women was at the level of -76.1 percent. Dominantly, employees fall under the 40-59 years-old age group (22,600), and only a third belong to the younger 15-39 age group cohort (12,700). Nevertheless, currently at the Electricity, gas, steam, and air conditioning supply group, there are few vacant positions (KSH, 2023).

Skilled workers dominate the employment structure of the Hungarian energy sector. Two educational groups dominate: professionals and craft and related trades workers. As shown in Figure 11., these two occupational groups represented almost one third of the entire labour force in the sector. Income levels in the energy industry are comparatively high, which also stems from premia for hazardous work, overtime, as well as flexible working conditions, including, for some, outdoor work for electricians and distribution network workers. The industry necessitates a dedicated professional approach to work, and there is an advanced level of training requirement. Besides brief media portrays on problems in mines and thermoelectric power plants, there are no available studies on working conditions, quality of work and occupational health and safety at various points of the value chain.

Figure 11.: Employment by professional occupation in energy sector (NACE D sector – in thousands of employees).



Source: Eurostat, 2023 (code LFSA_EISN2)

The territorial and regional impacts of the energy transition

According to the expertise of the MTVSZ (National Society of Conservationists – Magyar Természetvédők Szövetsége), the phasing-out process, related to banning of coal mining in Hungary will have a direct impact on employment in three less developed regions (counties), Borsod-Abaúj-Zemplén, Baranya, and Heves County. The transition, or rather the closing of the coal mining areas, as well as of the heat power plans, using coal to generate electricity will have both direct and indirect impact on the employment of more than 17,000 employees in these regions. As it is stated in the document, the EU´s Just Transition Fund is supporting these three counties by 104 million HUF to help in the energy transition in these regions (MTVSZ, 2022a: 9). Within the North Hungary in Transition project (LIFE-IP North-HU-Trans), co-financed via the EU LIFE programme, a Coal Region Committee for the macro region of North Hungary was established in March 2021 as a permanent consultative forum on coal transition. Until the end of 2023, the committee held 8 sessions. Besides the general description of the topic of the sessions, there are no publicly available reports on the website (igazsagosatmenet.eu, 2023a).[7]

[7] Available at: https://igazsagosatmenet.eu/bemutatkozas/

3.5. Drivers, barriers and dilemmas to the energy transition

In Hungary, the main driver for the energy transition is the compliance with the EU standards. As it was already stated in Section 2.2, Hungary is strongly dependent on the external financing of its own activities. The same is true for the development of the energy sector, as well as for the just and green transition of the country, where the EU funds are crucial for the implementation and realisation of national strategies. However, this is also interconnected with the main energy transition related barriers and dilemmas because these problems are related mostly to a selective adoption of the required measurements, as well as to the lack of institutional or structural changes, interconnected with several internal, as well as external factors. Due to a non-transparent decision-making and mounting short term pressures, dilemmas related to the energy transition are not tabled and these are not discussed in the public space or with sufficient and timely information sharing and involvement of relevant stakeholders.

The share of renewable energy within the national energy production has a declining tendency. Hungary reached its EU-stated threshold of 13 per cent share in 2013, and even reached its own threshold. However, since 2013 the share has stagnated rather than increased and is moving away from the EU-average. This situation is mostly interconnected with the reindustrialisation occurring since 2010, that increased both energy demand and consumption, relying more on traditional fossil fuels energy sources, rather than of the renewable ones.

Hungary has an enormous usage of nuclear energy, and still relies on the mining of lignite, which is needed especially for the energy production in the Mátra power plant. In mid-autumn of 2022, the government suspended the possibility of back-feeding to the electricity system from plugged solar PV stations (portfolio.hu, 2022). The impact on the environment seems to be of secondary concern, including the fulfilment of the aims stated in the energy strategies. In the case of nuclear energy, it is also causing a direct dependency on the Russian nuclear fuel supplies, which is, since February 2022, more difficult to maintain and justify from the standpoint of national security and energy sovereignty.

4. SOCIAL DIALOGUE, INDUSTRIAL RELATIONS AND INNOVATIVE PRACTICES IN SUPPORT OF THE ENERGY TRANSITION. INDUSTRIAL RELATIONS AND COLLECTIVE BARGAINING

Social dialogue, industrial relations and collective bargaining are undergoing a rather unfavourable development in Hungary since 2006, exemplified in changes in legislation and political-economic developments negatively affecting all employees. While the 2012 labour code has been termed the most flexible labour legislation in the world by some experts (Gyulavári and Kártyás 2015), a similarly alarming development is that labour legislation is becoming increasingly fragmented, and in general, the importance of labour law is weakening. Especially during the Covid-19 crisis, labour law was radically weakened. Social dialogue is limited in both scope and issues covered, while the position and influence of trade unions and employer organisations have been altogether weakened.

Since the introduction of the 2012 Labour Code (Laki et al. 2013) trade union's bargaining position on the company and establishment levels is weaker, but restrictions on the right to strike and

collective bargaining have also unfolded increasingly over time, especially in recent crisis periods (Laki et al. 2013; Horváth and Kártyás 2021; Meszmann and Szabó 2023). It is also important to note that since 2021, in companies in state ownership, trade unions have a more constrained agenda in terms of collective bargaining, as they cannot bargain for better non-wage supplements than envisioned in the Labour Code.

Traditionally, the most important level of social dialogue is the national. National level social dialogue had revolved around minimum wage setting and consultations over labour related legislation. Regional or municipal levels have been unevenly developed, greatly depending also on government and local political parties in power. To many Central Eastern European states similarly, the sectoral level social dialogue has been the weakest. Sectoral social dialogue committees (Ágazati Párbeszéd Bizottság) were set up typically only after Hungary's EU accession. These bodies were established only in some sectors, in which trade unions and employer organisations showed interest and proved their representativity.

Since 2010, social dialogue has been marginalised. Legislation introduced in 2010 radically weakened tripartite institutions to the status of symbolic bodies of social dialogue. Backed by an absolute two third majority in the parliament, the centre-right wing FIDESZ has been governing in Hungary for the fourth term in a highly centralised fashion. In 2011, the tripartite social body was abolished by the government and replaced with a tripartite body, the Standing Consultative Forum for the Competitive Sphere, and the Government (VKF, Versenyszféra és a Kormány Állandó Konzultációs Fóruma), which is restricted to the private sector and with only a consultative role on minimum wages and average wage increases. Its agreements are not binding in a legal sense. Since 2010, there has been no tripartite institution covering the entire workforce. The National Economic and Social Council (NGTT, Nemzeti Gazdasági és Társadalmi Tanács), established in 2011, is a purely advisory body with broad participation from civil society, the church and academia, without governmental representatives (Szabó 2013). Many scholars have pointed out, that channels of bipartite and tripartite social dialogue do not allow for the appropriate and real inclusion of social partners in the creation and implementation of relevant policies and reforms, or in implementing country specific EU recommendations (e.g., Szabó 2013; Neumann and Tóth 2017; Nagy 2018; Árendás and Hungler 2019; cf: Meszmann and Szabó 2023).

Instead, under the FIDESZ government "direct" consultation takes place with citizens, in a form of survey on issues which the government considers to be of key importance. Surveys are not free of suggestive questions, in line with governmental propaganda. Altogether there is unilateral decision making and very little space and open avenues for social dialogue, open communication, and exchange between social partners.

Collective bargaining in Hungary is typically highly decentralised at the company and establishment level. Employer organisations rarely engage in sectoral or multi-employer collective bargaining. Coverage rates are decreasing and are estimated to be somewhat above 20 per cent (Neumann 2018).

Trade unions have falling membership. In early 2020 the union density in the entire economy stood at 7.2 per cent. The trade union movement is highly fragmented but also divided along political and sectoral lines (Meszmann and Szabó 2023). As it will be presented below, the energy sector

stands out as an exceptionally regulated sector, relatively high union density, and collective agreement coverage, which is attempting to withstand such negative developments.

4.1. Industrial relations in the Hungarian energy sector

In terms of sectoral social dialogue, in Hungary the most relevant sub-sector of energy is electricity, but social actors in gas and mining are also present. The most regulated sector is electricity. The existing sectoral social dialogue, the extended sectoral collective agreement, two-tier collective bargaining, high union, and employer organisation density all contribute to this outcome.

Social dialogue and collective bargaining take place within the Social Dialogue Committee for Electricity Energy Subsector (VAPB – Villamosenergia-ipari Alágazati Párbeszéd Bizottság) covering economic activities for the sub sector classified under „electricity generation, supply and distribution". VAPB was established in 2004 and due to legislative changes, reestablished in 2010. There is one representative employer, and two representative trade unions entitled to participating at the work of the sectoral body. The employer organisation taking part in the committee is the Employers' Association of Electricity Companies (Villamosenergia-ipari Társaságok Munkaadói Szövetsége – VTMSZ). The employees' side is represented by the United Electricity Workers' Federation (EVDSZ – Egyesült Villamosenergia-ipari Dolgozók Szakszervezeti Szövetsége) and the Mining, Energy and Industrial Workers' Union (BDSZ – Bánya- Energia- és Ipari Dolgozók Szakszervezete). In terms of social dialogue, social partners have the possibility to deal with, taking stances on and adapt the agenda and agreements to EU directives.

Besides social dialogue, collective bargaining also takes place in the framework of the VAPB. The basic aim of the sectoral body is to improve the working and living conditions of employees, as justified by economic results, and to promote "labour peace" (*munkabéke*) in the electricity industry. It is responsible for negotiating and concluding wage agreements as well as working conditions of employees, i.e., on all issues in which representative trade unions are entitled to represent employees under the Labour Code, in particular regarding the collective agreement for the electricity sector (Szilágyi and Tóth 2019: 22-23). Wage bargaining occurs annually, whereas there is also a sectoral collective agreement in place since 1995 and the updated, still valid sectoral collective agreement was signed in 2008. The sectoral collective agreement was extended by the Ministry to the entire sector.

The conclusion of the sectoral and company level collective agreements as well as collective wage agreements entails a two-tiered collective bargaining process and reconciliation of interests. If the parties fail to reach agreement at the local level, the interest reconciliation occurs at the sector level. Traditionally, the aim of preservation of jobs and securing employment levels featured very high on the agenda. (Szilágyi and Tóth 2019: 15) Besides tariff system, working conditions, benefits etc. a main issue on the agenda for sectoral collective bargaining and social dialogue were related to property transformation of relevant companies– privatisation in the 1990s, around the EU accession, including closing of mines, triggering social programme for redundant employees, but also co-ownership arrangements. More recently, extension of state ownership in the energy sector also triggered social dialogue, as employees in state-owned enterprises are not entitled to higher non-wage benefits than envisioned in the Labour Code of 2012.

Annual wage agreements have been concluded with few exceptions, as in 2016, when the parties could not reach an agreement. In these circumstances, trade unions, especially EVDSZ were ready

to launch protests and strikes, but also to engage in court appeals. Nevertheless, collective bargaining occurs regularly. Wage and income levels are high in the sector, about 50 per cent higher than the average for the total economy, which puts the sector in the group of high paid sectors in Hungary (KSH, 2023). The old age structure underlines trade union standpoints and worries about labour power reproduction, and insistence on high wages and good working conditions, to attract younger generations. Trade unions thus insist on high wages to attract cohorts of younger workers and secure labour power reproduction. In terms of wages, the IEA database shows a minimal gender wage gap in the energy sector. Overall, it is on the level of 2 per cent positive wage gap for women, but gender wage gap conditional on skills shows a negative gap for women on average of 5.6 per cent in 2018 (IEA, 2023). The issue of gender did not appear in public, communicated trade union positions.

In the framework of the social dialogue, social partners have the chance to raise issues and the possibility of adapting EU directives. In 2014, an agreement was reached on the procedure for the adaptation of the EU Directive on OHS education in the Hungarian electricity industry. As a result of the negotiations, the parties agreed on a recommendation for the industry in 2016 (Szilágyi and Tóth 2019: 22-23).

The employers' organisation, the Employers' Association of Electricity Companies (VTMSZ) was established in 2002 and took its current name in 2014. It gathers 19 companies or economic entities registered in Hungary whose activities are directly linked to the country's electricity system. Via its members, it covers about 80 per cent of all employed (2018 data – Szilágyi and Tóth 2019:7). According to its statute, it is representing its member companies in social dialogue and collective bargaining, i.e., related to labour and employment issues, but also its members at employer umbrella organisations (Szilágyi and Tóth 2019: 21).

The largest trade union, EVDSZ, has 25 affiliated trade unions scattered around the country. Member unions work independently but are actively involved in the work and decisions of the union federation. As of 2019, the reported density rate was "close to 50 per cent", or about 9,500 members (Szilágyi and Tóth 2019: 11, Neumann 2018), and belong to the strongest unions in Hungary. Trade unions affiliated to EVDSZ participate at European Work Councils. EVDSZ is an active member of relevant EU level union organisations: IndustriAll, EPSU, but also the global organisation Public Sector International (PSI). As a member of EPSU, EVDSZ takes part on the EU level social level dialogue committee.

The Mining, Energy, and Industrial Workers Trade Union (BDSZ - Bánya-energia és ipari dolgozók szakszervezete) is a more complex, broader intersectoral trade union federation, as it is uniting member unions in not only coal mine companies, but also in different sectors of leather and textile. We do not have data on density rates, but at mining it seems very high. BDSZ is a member of Global IndustriAll, as well as the IndustriAll European Trade Union, in which the union actively participates. These two sectoral union federations are members of different Hungarian confederations. EVDSZ of LIGA and BDSZ of MASZSZ.

Led by the MVM state owned company group, nationalisation, state ownership is growing in the energy sector. Trade unions, especially EVDSZ recognized the relevance and importance of collective bargaining at this state-owned company group. Thus, a union federation for companies belonging to this SOE was established (MVM Társaságcsoporti Szakszervezeti Szövetség). The

MVM union federation strongly cooperates with EVDSZ. In 2016 a collective agreement at the MVM state owned giant was signed.

Finally, gas mining and production used to have a separate sub-sectoral social committee but it ceized to exist till 2012 due to lack of interest-engagement on the employer's side. The employer organisation, the Hungarian Natural Gas Association (Magyar Gázipari Egyesülés - MGE), gathered 16 natural gas producing companies, but it seems to be inactive since 2016. In this subsector, there are two (three) trade unions and one umbrella intersectoral federation is also active: the Trade union federation in Gas industry (GSZSZ) affiliated to intersectoral federation Hungarian Chemical, Energy and Related Sectoral Workers Trade union (Magyar Vegyipari, Energiaipari, és Rokon Szakmákban Dolgozók Szakszervezeti Szövetsége - VDSZ). VDSZ appears also as a separate union federation involved in social dialogue, as well as the Mol Bányász trade union.

Whereas VDSZ is an umbrella sectoral, intersectoral trade union confederation with centralised leadership, GSZSZ as an affiliated member to VDSZ. GSZSZ has 11 trade union member organisations. Its domain are natural gas and olefin gas distribution companies in the gas industry - public utility gas supply companies. It is also engaging in international activity. Its regional cooperation with regional trade unions is strong. GSZSZ member unions also have representation at EWC (VDSZ, 2023).

The Mol Bányász (MOL Miner) trade union has 8 basic union organisations at 8 gas mining plant units. It is the trade union that organises exclusively in the domain of the state-owned natural gas and oil mining company MOL, which employs a few thousand workers. The MOL Miners' Union is a signatory of 8 collective agreements and wage agreements in its area of organisation, mostly as the sole employee signatory (molbanyasz.hu, 2023).

4.2. Position of social partners with regard to the energy transition

The Employer organisation in the electricity sector (VTMSZ) is not vocal in expressing openly their view related to broader changes, and it seems that it follows a narrow agenda. A website of the organisation could not be located.

In contrast, trade union federations, especially EVDSZ, but also BDSZ, and GSZSZ are quite active in publishing occasionally their positions. Especially EVDSZ and BDSZ are active. The main line for both EVDSZ and BDSZ is a general support for IndustriAll Europe's position related to green transition. Thus, both unions recognize the necessity of change, but also draw attention that changes should incorporate the social aspect, keeping in mind interests and rights of employees.

As it also stands on its website, EVDSZ monitors developments in the Hungarian energy policy, but also international developments, including union initiatives and debates. It published its major position paper on energy policy in November 2014 (Szilágyi and Tóth 2019: 11) The union is aware of the common stance that the energy sector has to be in public ownership, free of profit maximisation. Indirectly EVDSZ supports the separation of prices in gas and electricity. It also acknowledges the fact that transition to RES advocated by the EU is harder than expected, and that the agenda of just transition is halted as in many places lignite-based power plants are reinstalled (vd.hu, 2022). More specifically to Hungary, EVDSZ position also supports the use of nuclear energy, and allies with trade unions from EU with similar positions (vd.hu, 2021a).

EVDSZ published the IndustriAll letter and the translated press release on its website, which calls for "new measures or significant resources to ensure that workers are guaranteed a Just Transition while accelerating the EU's decarbonisation." (IndustriAll, 2021; vd.hu, 2021b)[8] Similarly, in late 2017, in their joint open letter reacting to the EU energy transition, both unions called for adequate stress on the social component, i.e. adequate attention and treatment of social rights of employees for successful green transition, especially in keeping employment and income levels. Both trade unions called for social dialogue, in line with EU recommendations, but stressed that national specificities need to be taken into account, opposed import of electricity (created below environmental standards) and utilisation of new technologies, for example for energy derived from coal (banyasz.hu, 2017).

In its most recent congress programme, BDSZ recognises the importance and legitimacy of EU's decarbonisation drive and the reduction of greenhouse gas emissions but that local specificities need to be taken into account, and national-local higher self-sufficiency, in terms of all energy carriers, installed capacity, natural resources, and human resources. For Hungary, use of greater energy mix is supported, and lignite is recognised as a local asset. BDSZ thus supports modernisation of the power plants, and promotion of the use of clean coal technologies, but not the phasing out of lignite – also as it has employment significance. BDSZ also supports creation of conditions for long-term, sustainable, and stable energy supply and competitive price guarantees. In line with IndustriAll Europe, BDSZ also calls attention that achieving a European Energy Union requires a just economic and social transition, creating synergies between European ambitions in terms of competitiveness, energy security of supply, global warming mitigation and quality employment. In addition,

BDSZ advocates for:

- *transformation in the spirit of technological neutrality in coal-fired power generation; prevention of imports of 'dirty electricity' from outside Europe (unfair market competition);*
- *creation of a European coal platform, with a support system to facilitate the transition to new market solutions;*
- *The establishment of a system of collective regulation at European level Regular social dialogue on all levels regarding energy policy decisions. The burden of the radical transformation of the mining and energy industries should not be passed on to the workers;*
- *Calls for coherent, well-coordinated policies at both European and Member State levels;*
- *electricity should be affordable and accessible to all, a human right* (BDSZ, 2019).[9]

[8]'A green deal can only be successful if it will also be a social deal'. Press release Fit for 55 package: not yet fit for Europe's industrial workers 14 July 2021. Available at:

- https://www.vd.hu/documents/16269567841291207Press%20release%20-%20Fit%20for%2055%20package%20not%20yet%20fit%20for%20Europe's%20industrial%20workers%20-%20EN.pdf

[9]Programme of BDSZ accepted on 36th Congress 2019-2024. Available at:

The sectoral trade union traditionally relied on passive labour market policies in the past in cases of mine closures, most importantly early retirement also for surface miners.

The Gas Industry Trade Union Federation (GSZSZ) acknowledges the political load of energy, especially the natural gas industry, especially since 2010, and 2014, when centralisation via state ownership increasingly occurred. GSZSZ also laments over fluctuations in prices which caused significant losses for suppliers, culminating in dire situations for workers. GSZSZ is constantly initiating negotiations with the owners and political decision-makers to ensure that changes in the ownership structure affect the employees with the least possible loss. Their focus is on revising the sectoral collective agreement with the representatives of the new owners and revitalisation of sectoral social dialogue and collective bargaining at sectoral level.

4.3 The role of Hungarian sectoral social dialogue in support of a socially just energy transition

The sectoral social dialogue committee for electricity mostly deals with employment and social rights of employees, The body is in charge to secure space for bargaining and concluding agreements on matters affecting the world of work in which the Labour Code, the medium-level and representative trade unions can take stances. Although the social dialogue committee is active, only very sporadically are there publicly available information about its agenda and deliberations.

Instead of social dialogue, there is social consultation, but a survey of citizen preferences. The last „national consultation" took place in late 2022 and concentrated on energy related sanctions, mostly involving energy trade with Russia, on which Hungary depends. Survey questions were vaguely formulated and suggestive[10]. The government has summarised and communicated the results of the national consultation on January 19, 2023, to all its citizen: 97 per cent of Hungarian citizens rejected „sanctions of Brussels" with populistic overtones[11]. Not pronounced was the fact that only a minority of citizens took part in the survey (less than quarter of eligible), despite full scale propaganda, marketing support, and suspicions about its regularity[12]. Furthermore, Eurobarometer showed quite different results in Hungarian citizens' opinion related to the war in Ukraine.[13]

Trade unions participate in several projects dealing with just transition. Most importantly, both BDSZ and EVDSZ participate, together with companies belonging to the state owned MVM

https://www.banyasz.hu/images/Letoltes/BDSZ_XXXVI_Kongresszuson_elfogadott_5eves_program.pdf

[10]The nine questions were the following: 1. Do you agree with the Brussels oil sanctions? 2 Do you agree with the gas sanctions? 3. Do you agree with the sanctions on raw materials? 4. Do you agree with the nuclear fuel sanctions? 5. Do you agree that the Paks investment should be covered by the sanctions? 6. Do you agree with the sanctions involving restrictions on tourism? 7. Do you agree with the sanctions causing an increase in food prices?

[11] "(Hungarians) said no to oil sanctions, no to planned gas sanctions, and no to restrictions on nuclear energy. They also rejected sanctions that would further increase food prices or put additional burdens on European tourism."

[12]„Rosszul áll a nemzeti konzultáció, a Megafon tízmilliót trombitált el a népszerűsítésére" Telex. December 1 2022. https://telex.hu/belfold/2022/12/01/nemzeti-konzultacio-energiavalsag-szankcio-megafon-hirdetes

[13]EP Autumn 2022 Survey: Parlemeter - December 2022 - - Eurobarometer survey (europa.eu) See also: Szurovecz Illés "Egy uniós felmérés szerint a magyarok nem utálják annyira a szankciókat, mint a kormány szeretné" 444. January 18 2023. https://444.hu/2023/01/18/egy-unios-felmeres-szerint-a-magyarok-nem-utaljak-annyira-a-szankciokat-mint-a-kormany-szeretne

group, in the "North Hungary in Transition" project, which deals with economic and social impacts of the lignite phase-out that supplies the Mátra power plant.[14]

ANNEX TO THE HUNGARIAN NATIONAL REPORT – QUALITATIVE SURVEY

The Hungarian national report outlined not only the significant energy dependency of the country, that increased further with the Russian invasion of Ukraine, but also the issue of conditionality and great dependency of the energy transition on external EU regulation, funding and investment. The report could not find sufficiently disaggregated data on employment by subsectors and the role of social partners in energy transformation. Besides validating some results, the current annex seeks to remedy these deficiencies, but it also dwelled more deeply into the regional component of the just transition.

The annex is based on 12 (mostly, 11 online) interviews with a government representative, sectoral trade union representatives (3), leaders of professional associations (2), experts - both economic actors-advisors and analysts (3), civil society and social movement representatives (2). Interviews were conducted between March and June 5 2023. An additional interview is scheduled for the end of June. Interviews were structured along four main issues – changes in employment, social dialogue and collective bargaining, regional restructuring and developments, and evaluation of relevant policies addressing and drives of energy transition in general and more particularly, just transition. As some interviewees had greater knowledge in some areas and more limited expertise in others, interviews had an uneven character in terms of the extent and intensity of topics and areas covered. During some interviews the overall evaluation of changes in the energy sector was more in focus, while in several others, a special focus was on developments in relevant subsectors. Thus, besides an overview, subsectors of mining, traditional domestic electricity generation (nuclear and gas), renewables (solar energy), but also newly appearing, related industries and subsectors, such as construction, but also automotive industry and battery production were also covered. Interviews lasted between 50 minutes and 2 hours and 53 minutes, in average cca 90 minutes. Interviewees´ assessment not only helped to validate the major statements of the national report, but also to deepen the available knowledge, especially related to employment numbers and characteristics in the (emerging) subsectors but were also extremely useful in understanding key developments as they offered a critical evaluation of general processes, either from the ground or stemming from informed panoramic insights accumulated over years of work and information gathering.

The annex of the report is structured as follows. The next section provides an assessment of developments in employment and labour market in the energy sector – both projected and real. Besides inquiring about general changes in the number of jobs in various subsectors, we include an assessment of specific jobs that are especially at risk as well as qualifications that are in high need. We also summarise changes related to job and employment quality in subsectors, from wages and work conditions, to changes stemming from digitalisation, automatization, and labour process optimisation, in line with new technologies and workplace divisions of labour. The section

[14]See the project website: https://igazsagosatmenet.eu/en/home-2/

concludes with an assessment of the weight of the energy sector in the total economy. Section 2 provides an evaluation of key actors, drivers and barriers to energy transformation and just transition, and section 3 continues with regional level developments, especially in the regions in which the main project related to just transition is located. The final, section 4 illustrates the role of social dialogue in following just transition requirements.

1. Employment

Changes in employment. Interviewees agreed that employment in the energy sector - understood both broadly (including e.g., automotives, industrial production) and narrowly - is undergoing major changes. There were differences in projected numbers, forecasts by subsectors and actually occurring changes. Overall, interviewees anticipated either a net significant increase on the medium run (until 2050) or a stagnation in the total number of employed in the energy sector, but with major changes occurring among subsectors. Experts were somewhat more optimistic, and trade union respondents estimated minimal to no employment growth in the projected positive scenario. The macro projection, shared by all experts was that there will be a significant employment increase by up to 20 percent in the sector in the medium run until 2050, including battery production and infrastructure development

According to plans, 2,000 jobs in coal mining and between 5,000-7,000 jobs in the chain would be affected and cease to exist. Governmental estimates say that up to 10,000 people would be affected. Due to optimisation of gas-based energy, electricity distribution, etc., some job losses were projected, affecting especially some blue-collar jobs, such as maintenance in these subsectors. In construction, due to cement mining automation there would be job losses, but significant growth is projected for the construction industry, based on new materials and insulation needs of buildings. Employment growth without losses is expected to occur in nuclear energy production as well as solar energy. Among related sectors, automotives, especially battery production plants are expected to hire thousands of workers. Most interviewees mentioned that employment loss due to decarbonisation is less dramatic in Hungary than elsewhere in the region, as most coal mines have been closed already decades ago.

In reality, insecurity and non-transparency plagues changes in employment, including the timing of changes. Thus, employment change occurs at a slower pace and it is associated with many risks. In coal mining alone, due to the war and increased energy demand, instead of job cuts, employment could actually increase in the short run, and currently a labour hiring is communicated there. In oil and gas companies, the employment levels might have slightly decreased in recent years: in these companies the employment levels are already at the minimum required. Among renewables, according to an estimate of employers' association (communicated via an expert) about 10,000 jobs in the solar subsector have been established, with further possibilities of growth. There are no estimates for construction, as the industry deals with acute labour shortages for both highly educated specialists and blue-collar workers. Employees at nuclear power plants, and to a lesser extent electricity companies have an increasingly ageing workforce. Thus, mid- and long-term labour reproduction of highly skilled workers already poses a challenge, let alone hiring for new blocks or plants. Labour shortages might also affect battery production.

Educational attainment and labour market needs. Interviewees estimated that blue collar workers with maximum secondary education are at the highest risk of job loss, especially in mining,

to lesser extent in oil, gas, and electricity industry. In the latter two, two experts estimated job losses or job change due to higher automatization and digitalisation as well as reorganisation of work. As mentioned, in nuclear energy production as well as gas, oil industry, and some smaller segments of renewable industry there is a demand for a highly skilled workers, including IT specialists and engineers, but skill requirements are also increasing. As a specialist commented, the threshold of basic skills is increasing and it is also appearing along with greater qualitative flexibility - increased need to understand more processes, in order to operate different technological and process control systems. In contrast, the bulk of new jobs in renewables seem to have lower skill requirements, and more limited value added: this is the case for the construction of solar panels, installation of heat pumps, and air conditioning.

Labour market policies. Besides the LIFE project, the Hungarian labour market policies per se did not tackle just transition of employees from the coal sector or requalification or adjustment of employees to the needs of the new economy. A particular problem especially stressed by union representatives was the rigid retirement system in place since the 2010s, that does not allow any groups of employees a retirement before the age of 65. The problem was further amplified by the fact that EU funds did not allow passive labour market policies and that the companies that were in highest need to fund early retirement (Mátra) did not have sufficient funds to finance such a move.

Dual education system, established especially for the needs of automotive companies, was running on contracts and programmes between vocational schools and concrete employers. Contracts between universities and employers also existed. In total, such a cooperation was more sporadic in energy. There are several programmes as well as the LIFE project that deals with qualification and requalification. Interviewees mentioned a programme to train air conditioning workers able to deal with F-gas. Large energy companies invested in skill development of their own employees, financing additional education. Some experts as well as industry association specialists were more critical of the education system, highlighting that programmes were both late coming and not forward looking. There were also some inconsistencies. For the education of nuclear energy engineers there are no available programmes. For mining engineers, a university programme was introduced due to the sudden need appearing after February 2022, irrespective of the insecure future.

Qualitative changes in work and employment. Trade unionist respondents rather bitterly commented that as the workare model is more prevalent in Hungary, the principle of fair pay for fair work is not applied across the board in the country, also not in the energy sector. However, at least in large energy companies, as an industry specialist assessed the situation, the need for good, quality work is very important, safety is extremely important. Furthermore, it is a key sector in a very important industry, with very expensive systems, very costly processes, and that is why workers expect the wage level to match, otherwise they will move away. Wages were high across the board, but working conditions were rather poor in the mining sector and older power plants. Finally, as an expert commented, not only in nuclear but also in gas, electricity etc., large companies attempt to attract high wages and good working conditions. Health and safety measures were reported as problematic in some battery production plants. In renewable sectors the issue of quality employment did not appear. Here, small, and medium sized companies still seem to struggle for

their survival, and informal or shady employment contracting might be prevalent. Trade unions are by and large absent from Hungarian SMEs, that could monitor employment quality.

2. Drivers for, barriers to and key players in the energy transition

According to interviewees, the Hungarian energy transition is driven by available financialization and EU regulation and conditionality. Thus, the country's energy transition has a top-down characteristic, where the primary activities and actions are driven by Hungarian dependency on foreign finances, both private FDI and EU funding, especially RRF (Recovery and Resilience Facility Plan) and the JTF (Just Transition Fund) and loans. Financialization and domestic regulation is expected to impact on the development, both success and speed, of new subsectors, such as construction or solar energy, but also of some traditional subsectors in state ownership, such as nuclear and the transition of a coal-based to gas-based thermoelectric power plant. Respondents also mentioned both fragmented and centralised nature of the energy transition, in which competing large companies (some in state ownership) centralise into concerns and make decisions also on research and development (R&D). These business entities adjust more cautiously, both in terms of investments, changing product market, and employment, and take into account insecurities related to investment in renewables. Large electricity companies, and large energy consumers too are also forced to invest, as they are subject to penalties if they fail to adjust their energy efficiency. The governmental representative stressed that no domestic or Central Eastern European companies could win major R&D projects from the ETS-related Innovation Fund or Horizon Europe as leaders of consortiums, and only very few could participate successfully as co-applicants in such programmes. Such a constellation puts Hungary into a peripheral position when it comes to pioneering change.

Interviewees disagreed to some extent on the quality and importance of policies, but the majority considered relevant policies guiding both the energy transformation and just transition of rather poor quality, and in relation to key economic decisions their detached, artificial, and secondary character. Several respondents mentioned poor coordination and transparency related to structural changes, especially related to timing and rationality of investments, but also related to local and regional needs and opportunities. Important, but smaller initiatives supporting the green transition, organic in nature have been happening on the local level, but as these depended on external funding, these developments could neither be certain of their sustainability let alone grow to their full potential, due to lacking financial and institutional guarantees and backup. Their growth was conditional, dependent on current regulation, and more certain only in the case of new localised investments of large companies.

Already visible in the contradictory and conditional nature of the main drivers, interviewees mentioned several obstacles to both energy transition and just transition. Most importantly, several respondents highlighted the contrast between projected plans and real developments. As an expert critically noted, Hungary is currently not moving on the 1.5-degree path. The likely prolongation of the coal-based operation of the thermoelectric plant was indicative of such a development, but small progress in infrastructure development, ranging from construction to energy storage. Some also observed that reindustrialisation and attracting FDI is not or it is only partially in line with energy transition objectives: respondents differed on the sudden rise of and importance attached to the lithium-ion based battery production within the green transition. Most critically, some respondents noted that the transformation of the energy sector is subordinated to investments in manufacturing, to which it has to adjust locally, as it is the case with battery production. Insecurities stemming from domestic regulation and financialization translated into poor timing and little

transparency of structural changes. Large business behaviour also did not support the green transition, as they adjusted their products more cautiously, taking into account both profitability and available state support. Respondents disagreed on investment priorities, thus indirectly confirming the patchy, insecure and non-transparent character of the Hungarian energy transition, with no clear and full information on timing and dilemmas. Last but not least, there was insufficient social support for the green transition. As a trade union representative summarised, gaining social support was key for the success.

"[First], it should be a compact, well thought-out, socially supported programme. This has only been partially achieved and in different ways in different regions of the country. The second is that it should be clear exactly what resources are available to support the transition and how these can be used in a transparent way, and who has what competences. And this should not be done through a closed decision-making chain. And the third thing … there is need for an industrial policy plan, which takes into account the challenges of the green transition, with different target dates from cars to zero carbon emissions by 2050, then the creation of new jobs can be aligned with this programme, the creation of sustainable green transitional jobs. Then, vocational training can be adapted to this, so that if social players, families and young people can see more clearly which these new employers will be, and if they are prepared for this, supported by the EU programme for wage development"

Not surprisingly respondents agreed that the energy and just transition in Hungary is strongly centralised, and state actors are the key players in it. The government plays multiple roles in the transition as a regulator, but also appears in the energy value chain as an influential employer and investor in large state-owned companies. Such centralisation contrasted greatly to the limited growth and potential of SMEs - irrespectively of their potential to stimulate and drive decarbonisation, but contrasted also to the most devoted civil initiatives to the cause.

Although it improved after rewriting, most respondents felt that the national RRP is barely or still insufficiently in line with the European Commission's priorities. Targets were also defined as shallow and strongly project and region-based, indicating a lack of organic agenda.

3. Structural changes in the regions

Just transition narrows down to an understanding - prevalent especially in the governmental discourse - related to closing the remaining few coal mines and socioeconomic effects of phasing out lignite-based energy production. Therefore, it has a strong regional anchor. Due to the three mines present and still to be closed or restructured, two coal mines and a cement mine, there are three NUTS 3 regions (counties) in Hungary that are selected as regions that would be mostly affected by decarbonisation: *Heves, Baranya, and Borsod-Abaúj-Zemplén*. These regions are in the economically more depressed South and East of Hungary, with relatively high numbers of unemployed, public employment programme participants, poor citizens with lower educational attainment, and a small number of SMEs. There were no targeted investments yet in these regions, especially not in the sense of energy projects. To tackle negative employment effects, the government has a default strategy in attracting FDI, mostly in manufacturing, to these regions, which is successful in the case of Heves and to a more limited extent in the other two counties.

Besides the directly affected sectors - coal mining and coal-based energy production - the Hungarian just transition plan also tackles sectors indirectly affected by decarbonisation: chemical

industry, metal processing industry and automotive industry. In these indirectly affected, transforming sectors, in the three counties 13,798 affected jobs have been identified, and in the declining sector (coal mining, coal-based electricity generation, oil and gas extraction) 4,194 affected jobs were identified, as reported by the governmental interviewee. Moreover, direct, indirect and induced impact of restructuring have been assessed for the 3 regions, with the following distribution: directly affected jobs – 9,575, indirect – 6,414 (with a potential loss or restructuring of suppliers and other jobs) and induced effects on nearly 20,000 (defined as potential loss or restructuring of jobs in industries producing goods and services related to main jobs and employee incomes lost). Just transition envisions labour market educational activities concentrated at county-level vocational educational centres, that simultaneously aim to address labour shortages in line with employer needs, and skill development for new industries. Informants mentioned that regional employment and socioeconomic development face the high risks of high outmigration from these regions. As closing or downsizing of main polluters overlap with some dominant employers, these affect also revenues of local governments and local economies, that might quickly deteriorate both in public services and infrastructure.

In selected regions and directly affected industries, a project was launched based on the Just Transition Fund. The LIFE-IP North-HU-Trans project mostly centres on the restructuring effects of the Mátra Power Plant, as well as on Bükkrábrány and Visonta coal mines, and the cement mine in Baranya. The project aims to address not only employees, but also support suppliers, subcontractors, creating conditions for the recyclability of materials from mining, incorporating vision of poor households and their inclusion into a new economy, as well as empowering local self-governments in supporting new economic sectors and activities.

According to critic informants, the project is not developing in line with the plans, most importantly, problems manifest in implementation: there is no coordination and clear timing between various phases.[15]

Respondents evaluated the Just Transition Fund to have a very important function, in adjusting the most affected local and regional economies to undergoing structural changes. At the same time, they also voiced the concern, that the allocated amount seems insufficient. Such a state of the play meant that the smart, socially just and efficient use was all the more important. Yet, doubts appeared about its efficient and socially just use. A union representative found it questionable to what extent the funds are in line with the interests of workers employed in coal mines and the power plant. The miners' unions proposed to open tender and funding opportunities to SMEs to establish a circular economy and production based on mining waste materials, but there is insecurity whether such a proposal would manifest in real action. Positive experiences from the past, as in the restructuring of coal-based economy of other regions (e.g., Komárom-Esztergom County) could have been taken into account.

The union representative of energy generation suggested that there is a great need for regional investments as there are opportunities for concrete industry development already in the energy sector, where governmental involvement and investment would be necessary. Interviewees also agreed that the role of smaller regional actors and coordinators, starting from regional representatives of employers and trade unions, would need to increase the chances of a successful

[15] https://igazsagosatmenet.eu/en/coal-commission/

change and organic development. Unions representatives and experts stated that the concept and dynamics related to the just transition in the regions are not well defined and there is a lack of cooperation and consultation between the partners, both on the national as well as on the regional level.

Interviewees all considered the Just Transition Fund to be extremely important. It was lamented that the fund had less resources than the original plan. The merit and potential of the fund was to strengthen the regional development, offering funds to adjust to some shocks and imbalances – an issue that was not in tune with the more centralised system of decision making in Hungary. Social partners', and especially trade union and other actor s' involvement (universities, NGOs) was and could have been even more pronounced at regional and local levels, anchored in concrete projects and initiatives – if such a role had been institutionalised beyond involvement in formal projects. The Miners' trade union did extensive research on labour market developments, employment needs of both workers and employers in the chain – beyond major companies (GINOP project) and prepared another project in cooperation with municipalities in the area of the only operating coal mines. Such knowledge and background material have not been sufficiently utilised, according to an expert. A pressing issue for the miners' union is to find a solution to the situation of the elderly in the coal mine and power plant Mátra – but there are obstacles already on the level of finding negotiation partners. In the case of these redundancies, in the environment of rigid retirement legislation, the miners' union proposed to keep employees on the payroll until they reached retirement age at Mátra, but the dialogue with the ministry consisted of publishing a proposal on the relevant website, but the union did not receive any substantial response.

On a larger scale, two experts contended that the concept of just transition is misunderstood and not incorporated as an important element in key economic and social decision-making. Geographically, Just Transition Funds are limited instrumentally to the three regions, but even here changes are not organic, and their timing is highly problematic. Simultaneously, the capital city and some key university-towns could be organic drivers of just transition, as here such a transition enjoys higher social and research and entrepreneurial support via innovative ideas. The support SMEs receive is, however, insufficient, and not coordinated with other actors.

4. Role of social dialogue in supporting a socially just transition

Most respondents, especially some experts, association leaders and trade union respondents evaluated social dialogue related to just transition in general as rudimentary, formalistic and of poor quality. Partial exception of social dialogue was its concentration on concrete project-centred activities. Most experts, association leaders could not evaluate the role of social partners in just transition, as these actors were rather invisible to them. *Although mostly invisible to other expert and NGO actors, both trade unions formulated clear principles when it comes to just transition, and also cooperated both nationally and transnationally, at EU level via IndustriAll and EPSU. Related to just transition, the energy trade union representative formulated a three-tier system of requests:*

- *Providing training for workers in jobs that are being made redundant.*
- *Early retirement benefits for people who are close to retirement age.*
- *Workers who remain in jobs that have been restructured should be guaranteed wages and benefits necessary for a decent standard of living.*

Trade union representatives from mining and energy highlighted that a major institutional condition was not fulfilled, that would enable sufficient participation of social partners in social dialogue. In the case of just transition and energy transformation, as a trade union representative said, *"there is a sense that unions should do something",* but inclusion is only sporadic and at best, project based. The process is designed in a top-down way that does not allow organic inclusion. The just transition arrives from the EU level via regulation and allocated funds, and in the second step, the Hungarian government adjusts its strategy to it. Only from then on can trade unions and employers adjust, but are not sufficiently informed, let alone involved in developing national strategies related to social and labour market effects of decarbonisation. Trade union representatives and some experts were especially vocal in highlighting that in general, in terms of inclusion the current institutional mechanisms securing social dialogue were artificial, formal and not substantial. Union representatives criticised the combination of government run, mass survey based „national consultation" with suggestive questions to gain legitimacy for governmental policy decisions and priorities. Also, the highly problematic channels of consultation with citizens, social groups and organisations came under criticism as *„certain laws and … policy positions are published on a government website and that there are three to five days to express your views"* [without governmental obligation to take those into account]. Trade unions were additional bitter, due to their historical legacy in restructuring role, accumulated knowledge and experience they gathered over the last decades of decarbonisation that came from deindustrialisation in the 1980-2010 period - to the extent that some interviewees commented that a major decarbonisation with deindustrialisation ended already by 2010. More concretely, Hungary has had a major experience in closing down mines as well as restructuring and privatisation in the last decades. The completion of these processes was successful because of the significant role played by both regional and local authorities, but also sector-level social partners were involved in major structural decisions and their implementation. Such knowledge and experience were barely or sporadically asked within new projects and initiatives.

In such an institutional context, it is not surprising that trade unions reported no meaningful dialogue between social partners and external actors either at regional or national levels related to energy transformation and green transition. Trade unions were especially vocal in their assessment that policies are made at the government level, with very little possibility to participate in prior consultation, and if so, such a consultation have a more informal character. Appearance of new regulatory bodies (the Regulatory Activities Supervisory Authority) adds to the institutional strains trade unions and social partners are coping with.

When it comes to change in the industry, both major trade unions had clearly formulated priorities and recommendations, starting from supporting increased nuclear energy capacities and employment, to supporting European-level solar development and production. Some experts considered the extension, investment and attention devoted to the nuclear power generation as an obstacle to potentials stemming from renewables, while others, union representatives included, insisted more on modernisation investments in available energy infrastructure, change from gas to hydrogen, and expansion of nuclear power generation. Sectoral employer organisations on their part were not visible, and made no public statements related to green transition.

The issue of decarbonisation as such and broader social and environmental issues related to the energy transition have not featured in sectoral social dialogue, neither in the mining nor in the

energy generation sectors. At best, sectoral trade unions, especially in the energy generation sector, organised conferences with concrete subjects, so as to keep and deepen dialogue and information exchange also of broader, but relevant matters. Not surprisingly, collective bargaining did not tackle the issue of just transition. At best, at large company levels, the issue of requalification was on the table, but not related to just transition. At company level, at least in companies undergoing reconstruction as in Mátra, the bargaining position of the trade union is weakened also due to employer offensive and determination to cut wages – which then, creates an obstacle also to raise and engage in other than short-term bread and butter topics.

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