

Powering sustainability: comparing ESG strategies of Hungary's leading energy companies

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Abstract. This paper delves into the sustainability strategies of Hungary's four major energy companies—E.ON, MVM, MOL, and Opus Global—analyzing their motivations, comparative positioning, and distinctive approaches. By exploring these companies' ESG (Environmental, Social, Governance) goals and performance in depth, the study identifies best practices that transcend regulatory compliance and align with enduring business objectives. The analysis also contextualizes Hungary's energy sector within global sustainability and digitalization trends, and provides actionable insights into dynamic, transparent, and impactful sustainability metrics, including the potential application of KPI-driven methodologies such as the Balanced Scorecard. Primary data from executive interviews are integrated to shed light on how these firms implement sustainability and digital innovation in practice, and how they measure and communicate progress through KPIs.

Key words. ESG, sustainable business strategies, digitalization, performance management, Balanced Scorecard, energy companies, Hungary.

1. Introduction

The performance of companies can be evaluated in many ways. In addition to traditional economic metrics, companies increasingly disclose non-financial performance through sustainability or ESG reports. ESG stands for Environmental, Social, and Governance, encompassing the criteria investors consider in evaluating corporate behavior. An ESG report is essentially a summary of a company's non-financial risks and performance, helping investors avoid companies that pose outsized financial risks due to poor environmental practices or social and governance shortcomings. Analysis of ESG factors the view of a company's long-term value and risk profile. Based on the literature, the majority of investors use ESG information primarily for financial

reasons (risk management and value creation) [1,2], rather than purely ethical motives. For example, a global that investors often leverage ESG data to meet client demands or for product development, as seen in the rise of green bonds whose proceeds fund environmental projects. [2] According to a PwC report surveying 325 investors worldwide, 79% of asset managers said that considering important role in investment decisions, and 75% believe companies should address ESG issues even at the expense of short-term profitability. [2] Regulatory frameworks have rapidly evolved to support this investor shift. The European Union now has one of the most comprehensive ESG regulatory regimes. Initiatives like the EU Sustainable Finance Taxonomy and the Corporate Sustainability Reporting Directive (CSRD) [4,15] are raising the bar for corporate transparency and accountability. The EU's Green Deal and climate policies (e.g. the "Fit for 55" package aiming for 55% emissions reduction by 2030) [16] underscore a commitment neutrality by 2050. Hungary has aligned with these ambitions: a Climate Law adopted in 2020 commits Hungary to achieve net-zero emissions by 2050, mirroring the EU goal. [16,18] Global agreements over the past decades – from the 1992 Earth Summit to the 2015 Paris Agreement [18] – have further catalyzed corporate sustainability efforts, making it clear that companies must broaden their focus beyond short-term financials to include environmental and social value. Energy companies, in particular, are at the forefront of this transformation due to their significant carbon footprint and central role in economic development. Historically, Hungarian companies (like many worldwide) focused primarily on financial performance and shareholder value. However, growing awareness of environmental dependencies, and governance lapses has driven a broader perspective on corporate responsibility. Research on Hungarian firm strategies reflects this shift:

for instance, Csete & Horváth (2012) found that sustainability and green development goals began appearing in urban and regional policies and strategies, indicating an early integration of environmental considerations into strategic planning. [8] More recent studies show that even traditionally conservative sectors have ... have started to integrate climate considerations into their business strategies; for example, Biró & Csete (2021) found that agribusiness companies in Hungary now pursue climate-related initiatives as part of their corporate social responsibility, demonstrating the widening scope of ESG across industries. [6] In this context, our study examines how four major Hungarian energy companies – E.ON Hungária, MVM Group, MOL Group, and Opus Global – formulate and implement ESG strategies. We compare their sustainability goals, initiatives (including the use of digital technologies), and performance management approaches. Using a combination of document analysis and insights from in-depth interviews with company sustainability executives, we identify each company’s motivations, strengths, and challenges in ESG integration. The goal is to highlight best practices that go beyond compliance and to provide lessons on align with long-term sustainable value. The following sections provide background on global and local energy sector trends, profile the four companies, analyze their ESG efforts (with a focus on digital innovation and KPI-driven management), and finally discuss findings and future directions.

2. Background

Global trends shaping Hungary’s energy landscape: Global energy markets are undergoing rapid transformation, driven by decarbonization goals, and shifting stakeholder expectations. The transition to renewable energy sources and the rise of “prosumers” (energy consumers who also produce energy) are redefining utility business models. At the same time, the digitalization of energy systems is accelerating, enabling smarter grids and more efficient resource management. According to the International Energy Agency [10], integrating large shares of variable solar and wind generation requires more sophisticated grid management; digital technologies and data analytics hold tremendous potential to forecast and balance supply and demand in real-time, thereby cutting costs, improving efficiency and resilience, and reducing emission. Advances in connectivity, IoT devices, and artificial intelligence are thus important enablers of clean energy transitions. Indeed, recent research on Central Europe highlights that digital transformation and sustainability go hand-in-hand, [5,7] as countries leverage innovation to meet climate targets. Meanwhile, stakeholder pressure for transparency is rising globally – initiatives like the Global Reporting Initiative (GRI) standards [19] have become de facto frameworks for sustainability reporting, and the World Economic Forum has advocated for common ESG metrics across industries. [17]Local dynamics in Hungary: Hungary’s energy policy balances security of supply, affordability, and sustainability. The national energy mix includes a strong nuclear component (the Paks Nuclear Power Plant), a legacy of fossil fuels (including reliance on imported natural gas), and a growing share of renewables (especially

solar PV). The government’s National Energy Strategy 2030 and climate commitments (net-zero by 2050) investments in renewable capacity and energy efficiency. Solar power has boomed in recent years, with Hungary exceeding 5.8 GW of installed PV capacity by the end of 2023 – a tenfold increase over the past decade. However, challenges persist in integrating this rapid renewable growth: grid infrastructure needs modernization and expanded flexibility to handle intermittent sources. To address this, Hungary is deploying smarter grid solutions and energy storage, often with support from EU funds. Digitalization plays a key role here as well – for instance, the electric grid operator is introducing smart metering and grid automation to better forecast demand and accommodate distributed generation. Hungary’s adoption of EU ESG regulations (transposing the CSRD into national law through Act CVIII of 2023) is also forcing companies to improve disclosure and governance of sustainability issues. [15] As of 2024, not only public-interest entities but all large enterprises in Hungary must report on ESG performance, facing more detailed and standardized requirements. This regulatory push compels even previously reluctant companies to treat sustainability as a strategic priority. Within this evolving context, Hungarian energy companies face both external pressures and internal incentives to embrace ESG. Global climate objectives and EU directives set clear targets, while technological trends provide new tools to achieve them. The next subsections profile four key players in Hungary’s energy sector and illustrate how each is responding to these global and local drivers.

1. Table Summary of Key Players’ ESG focus

Company	Key ESG Focus Areas
E.ON Hungária	Aligns with E.ON's sustainability goals, focusing on grid modernization, renewable integration, and digitalization.
MVM Group	Shifts towards a "green transition" strategy, expanding renewables, modernizing plants, and seeking green financing while balancing public service obligations.
MOL Group	Pursues a pragmatic sustainability approach, focusing on emission reduction and leveraging its strengths to transition from oil and gas, while advocating for balanced energy policies.
Opus Global	Is rapidly developing its ESG framework due to regulatory requirements, focusing on emissions reduction in its gas infrastructure and exploring renewable energy options.

E.ON Hungária, as part of the multinational E.ON Group, is deeply integrated into the group’s sustainability strategy, focusing on grid modernization, renewable integration, and embedding ESG into internal processes, including executive compensation. MVM Group, Hungary’s largest state-owned energy company, has recently aligned its strategy with green transition goals, investing in renewables, modernizing plants, and engaging in green financing under regulatory and market

pressures. MOL, a Central European oil and gas company, is pursuing a pragmatic approach to sustainability by redefining what counts as “green” internally, investing heavily in carbon-reduction technologies, and balancing ambition with affordability. Opus Global, a diversified holding with traditional energy assets, began ESG integration only recently due to new EU reporting requirements, initiating internal education, governance reforms, and early-stage emission-reduction efforts. Together, these four companies illustrate different pathways toward sustainability, shaped by corporate culture, regulatory pressure, financial strategy, and levels of maturity in ESG adoption.

3. The importance of ESG reporting in the energy sector

ESG reporting is a critical tool for assessing and communicating sustainability performance, particularly in the energy industry. Transparent reporting provides stakeholders – investors, regulators, customers, and the public – with insight into a company’s environmental and social impacts, and the governance structures in place to manage them. In the context of Hungary’s energy sector, improving ESG reporting has been essential for fostering trust and meeting EU compliance obligations. The EU Taxonomy and CSRD mentioned earlier mandate detailed disclosures, ensuring greater comparability and accountability among companies. Robust ESG reporting can demonstrate that a company is proactively managing a wide range of risks and opportunities, from climate change and board diversity. Beyond compliance, the practice of ESG reporting drives internal benefits. [3] It forces organizations to measure what matters and set targets for improvement. For example, if a power generation company consistently scores poorly on emissions or has repeated environmental incidents, ESG reports will highlight these issues, prompt factors to ask what corrective actions are being taken. [12] By conducting thorough ESG risk assessments, investors can decide whether a company’s sustainability risks outweigh its investment case or if, conversely, strong ESG performance might indicate superior long-term. In essence, ESG reporting adds a layer of foresight to corporate evaluations: it tries to identify potential large losses (e.g. from a mine closure or a major spill) before they materialize by examining how well a company is. This is particularly important in the energy sector, where environmental externalities and social impacts are pronounced. If an energy company causes negative externalities (such as pollution or community disruption), it faces stakeholder regulatory penalties, litigation costs, and remediation expenses – all of which can erode financial performance. Proactive ESG management and reporting help mitigate these risks by encouraging companies to internalize those externalities (through better controls, community engagement, etc.) before they result in crises. A key aspect of ESG reporting is the use of Key Performance Indicators (KPIs) to quantify performance. KPIs are metrics that organizations use to monitor, measure, and analyze specific aspects of their operations. In financial reporting, KPIs might include profitability or liquidity ratios. In ESG

reporting, KPIs cover areas like carbon emissions, safety incident rates, employee turnover, and so on. Defining relevant sustainability KPIs is the backbone of effective ESG disclosure and management. Common environmental and social KPIs in the energy sector include:

- Greenhouse gas emissions (Scope 1, 2, 3): Measuring direct emissions from operations, indirect emissions from purchased energy, and value-chain emissions, respectively. These indicate a company’s carbon footprint and climate impact. All four companies profiled track their Scope 1 and 2 emissions closely, and as seen with Opus Global, even newcomers to ESG are now calculating Scope 3 emissions for the first time.
- Renewable energy share: Tracking the proportion of energy generated or consumed from renewable sources. This KPI reflects the progress of utilities like MVM and E.ON in shifting their generation mix towards clean energy (for instance, what percentage of their total capacity is solar, wind, hydro, etc.). A rising renewable share is often a positive signal for alignment with climate goals.
- Energy efficiency and loss reduction: In network operations, companies like E.ON monitor grid efficiency (e.g. percentage of electricity lost in transmission and distribution). E.ON Hungária, for example, reports the annual network loss percentage and strives to reduce it through grid upgrades. Improving energy efficiency in operations (generation heat rates, building efficiencies) is another important KPI across the board.
- Safety and labor KPIs: Such as the number of workplace accidents (lost time injury frequency), training hours, or employee engagement scores. These reflect the “Social” aspect of ESG, ensuring companies maintain safe operations and invest in human capital. MVM and MOL both emphasize safety metrics given the industrial risks in power plants and refineries.
- Innovation and digitalization metrics: e.g. number of smart meters deployed, R&D expenditure on clean tech, or pilots of new technologies. These indicate how well companies are preparing for the future. E.ON’s rollout of smart grid technologies and investments in new energy solutions can be captured by such KPIs. [13]
- Governance metrics: For instance, board diversity, frequency of ESG topics in board meetings, or presence of an independent sustainability committee. These show the extent of oversight and commitment at the leadership level.

Through the interviews, we found that all four companies use a variety of ESG-related KPIs internally, but none yet employs a comprehensive Balanced Scorecard specifically for sustainability. [9,11] The Balanced Score Card is a strategic management framework that traditionally includes four perspectives (financial, customer, internal processes, learning & growth); it can be adapted to integrate ESG goals either as a separate perspective or woven into the existing ones. Currently, the approaches differ: MVM tracks a set of individual

sustainability KPIs (e.g. how many EV charging stations deployed, how much renewable capacity added, emissions reduced by a project) in an ad-hoc manner, and managers acknowledged the potential benefit of a more structured BSC approach to connect these metrics with strategic objectives. E.ON Hungária [13] has effectively integrated ESG metrics into its core corporate KPI system (for example, monitoring grid loss, CO₂ emissions, green energy procurement share annually) and into management incentives, which resembles a Balanced Scorecard philosophy [9,11] even if not labeled as such. MOL [14] has a very detailed internal KPI dashboard (dozens of KPIs across environmental and social dimensions) and incorporates a sustainability scoring in project decisions, but it does not use the formal language of BSC either. Opus Global is in the process of developing its sustainability KPI framework – initially focusing on setting output-based targets (e.g. upgrading X km of pipeline next year for efficiency) and then measuring the outcomes (e.g. Y tons CO₂ saved). This underscores a general trend: while the Balanced Scorecard concept is not uniformly implemented, the underlying idea of linking ESG metrics to strategy is gaining traction in all companies. Ultimately, effective ESG reporting – supported by meaningful KPIs – enables companies to demonstrate progress and build credibility. It shifts conversations from vague commitments to measurable outcomes. In the next section, we present a comparative analysis of the four companies' ESG focus areas, followed by a SWOT analysis to summarize their relative positions.

2. Table Comparative analysis of the four companies

Aspect	E.ON	Alteo	MVM	MOL
Renewable Integration	Advanced solar and wind projects	Biogas, virtual power plants	Major solar investments	Green hydrogen, waste-to-energy
Emissions Reduction	27% Scope 1 reduction	Sustainalytics risk rating drop	50% GHG reduction goal by 2035	Carbon neutrality by 2050
Innovation Focus	Smart grids, digital solutions	Circular economy innovations	Nuclear modernization, green finance	Circular economy, mobility tech
Governance & Reporting	Robust ESG metrics	Enhanced transparency	Comprehensive strategy updates	Long-term diversification plan

In comparing these companies, some common strengths and weaknesses, as well as opportunities and threats, can be distilled:

Strengths: All four have now established sustainability agendas with clear high-level commitments (net-zero targets by 2050 for MVM and MOL, and earlier for E.ON). Established renewable energy portfolios are a strength for E.ON (distribution-side) [13] and MVM (generation-side), and even MOL is investing heavily in alternative energy. There is strong alignment with regulatory trends – each firm's strategy acknowledges EU climate goals, which positions them favorably for compliance and for accessing green financing. Governance structures for ESG clarity and accountability.

Weaknesses: Legacy factors weigh on each company. E.ON and MVM still rely on significant imported energy (natural gas) and centralized generation which can limit

agility. MOL's core business remains carbon-intensive (refining and petrochemicals), and its transition, while funded, is complex and not guaranteed success. Opus Global, as a late mover, faces a steep learning curve and currently lacks the depth of experience and culture in sustainability that the others have. Generally, data management and cross-company coordination are challenging areas – for instance, compiling reliable Scope 3 emissions or supplier ESG data is a work in progress for all four.

Opportunities: The energy transition presents growth opportunities that these companies can seize. All four could benefit from emerging technologies storage, and digital energy solutions (AI for grid management, IoT for efficiency). There is substantial EU funding available for projects in renewable energy and innovation – leveraging these funds can accelerate their transitions is regional leadership: by pioneering ESG practices in Hungary/Central Europe, these firms can shape standards and possibly export their know-how to other markets or sectors. Incorporating sustainability into branding and customer relations (especially for E.ON and MVM in retail markets) can also yield competitive advantage as public awareness rises.

Threats: Geopolitical and macroeconomic factors (such as the war in Ukraine driving up gas prices) pose threats by testing the resilience of these companies' strategies – in 2022, sustainable investors saw challenges when high oil/gas prices temporarily made fossil-focused investments lucrative. Regulatory risk is also present: the cost of compliance with ever-tightening EU rules (for example, stricter taxonomy criteria or carbon pricing mechanisms) could strain resources, especially for companies like Opus that must invest significantly just to meet reporting requirements. Market demand uncertainties – fluctuations in energy demand or customer adoption of green solutions – could affect the payoff of certain ESG investments. Lastly, each company faces the risk of stakeholder skepticism: if they do not show credible progress (i.e. if ESG efforts are perceived as greenwashing), they could incur reputational damage and lose the trust of investors, regulators, or the public.

We see an investor-owned utility (E.ON) and a state-owned utility (MVM) aggressively expanding renewables and digital innovations; a regional oil company (MOL) pivoting to align its business with climate imperatives; and a diversified holding (Opus) rapidly catching up under regulatory pressure. These dynamics illustrate how different starting positions and incentives shape ESG strategy, yet all roads are leading toward a more sustainable and transparent energy industry.

4. Conclusion and insights

The comparative analysis reveals that despite differences in scale and ownership, Hungarian companies are converging in recognizing sustainability as a core business issue. Each company's journey offers insights. E.ON Hungária demonstrates the value of integrating sustainability into corporate DNA – leveraging digital tech and stakeholder engagement to drive both innovation and ESG performance. MVM shows how a

strong mandate and stakeholder pressure (from government and investors alike) can reposition even a traditional utility towards green goals, given leadership commitment and the right governance structures. MOL's experience underlines the importance of pragmatism: ambitious sustainability investments must be balanced with maintaining financial stability and energy security, especially for an incumbent fossil-based business. Opus Global highlights the pivotal role of regulation in spurring action – it transformed from an ESG laggard to a company making tangible strides once disclosure became mandatory. A key insight is that digitalization and sustainability go hand-in-hand. Companies that lead in renewable energy integration (like E.ON and to an extent MVM) also tend to be leaders in digital innovation, because managing distributed energy resources and improving efficiency requires advanced IT solutions. Digital tools – from smart sensors to AI analytics – are enabling these firms to optimize operations and unlock new business models (such as E.ON's customer-centric services or MVM's potential in flexibility markets). This synergy suggests that investing in digital capabilities is an investment in sustainability, and vice versa. Policymakers and company boards should thus view digital infrastructure as part of their ESG strategy. Another insight is the growing importance of KPI-based performance management for sustainability. All four companies have moved beyond vague pledges to establishing concrete metrics and targets (see Table 1). This shift to data-driven sustainability management is crucial for accountability and continuous improvement. However, as our interviews indicated, there is room to better align these metrics with strategic objectives. Currently, each company is measuring the challenge is to synthesize them into an actionable framework that guides decision-making. For instance, MOL's internal system of scoring projects on sustainability impact is a good step to ensure that ESG considerations directly influence capital allocation. E.ON's practice of tying ESG outcomes to management compensation creates clear accountability. Opus's initial focus on output-based targets, then linking them to outcomes, is a sensible approach for a company building capabilities. Going forward, a more balanced, structured scorecard could help all four organizations keep track of sustainability alongside financial and customer objectives in a unified way. In terms of industry collaboration and national policy, these companies would benefit from sharing best practices and perhaps coordinating on certain initiatives (for example, developing standards for supplier ESG requirements or co-investing in education and training programs to build the green workforce). Such cooperation can amplify their individual efforts and help overcome common hurdles (like the shortage of ESG expertise, or the need for grid enhancements to integrate renewables). The Hungarian Energy Association and other forums might serve as platforms for this knowledge exchange. Furthermore, active engagement with regulators can ensure that emerging policies (e.g. incentive mechanisms for energy storage or green hydrogen) are designed in consultation with industry, aligning public goals with business practicalities.

3 Table Recommendations for Enhancing ESG in Hungary's Energy Sector

Stakeholder	Recommendation	Description
Hungarian Energy Companies	Develop and Implement Comprehensive Balanced Scorecards for ESG	Adopt a structured Balanced Scorecard framework to integrate ESG goals with financial, customer, and internal process objectives, ensuring sustainability drives strategic decisions.
Hungarian Energy Companies	Enhance Collaboration on ESG Initiatives	Actively pursue opportunities to share best practices and coordinate on initiatives such as developing common ESG supply chain standards, joint workforce training, and collaborative R&D for sustainable technologies.
Policymakers in Hungary	Ensure Policy Alignment with Industry Practicalities	Engage in close consultation with energy sector stakeholders during policy design and implementation to balance ambitious sustainability goals with the technological and economic realities of the industry.

In conclusion, the Hungarian case reinforces a broader lesson: sustainability and profitability are not mutually exclusive, but achieving both requires strategic integration. When ESG is embedded into corporate strategy – supported by leadership, enabled by digital innovation, and tracked through clear KPIs – companies can create synergies between financial performance and societal value. Each of Hungary's leading energy companies has started down this path, with varying approaches that reflect their unique contexts. As they continue to implement and refine their ESG strategies, they will not only contribute to national and global climate objectives but also enhance their own resilience and future readiness.

5. Outcome and future directions

To further advance sustainability in the energy sector, a KPI-driven Balanced Scorecard approach is recommended for these companies. The Balanced Scorecard is a flexible framework that can be tailored to include ESG perspectives alongside traditional financial metrics. By mapping sustainability objectives into the core strategic management system, companies can ensure that ESG targets receive continuous attention and resources. For example, a sustainability-focused scorecard for an energy company could include metrics such as:

Renewable capacity expansion: e.g. annual growth in MW of renewable energy capacity added (solar, wind, etc.). This measure ties into the learning/internal process perspective of the BSC, reflecting innovation and operational shifts. It encourages firms to steadily increase clean energy production, which is directly aligned with decarbonization strategy.

Emissions reduction: e.g. percentage decrease in Scope 1 and 2 emissions year-over-year, and progress toward longer-term GHG targets. This would fall under the outcome perspective (and also internal process efficiency). Monitoring this KPI keeps the company accountable to its climate goals (such as MOL's 2030 target or MVM's 2035 target) and can drive initiatives like fuel switching or efficiency upgrades.

Stakeholder engagement: e.g. number of community consultations or sustainability-related stakeholder meetings held, and improvements in stakeholder satisfaction indices. This links to the customer/community perspective of the BSC. Given the social importance of energy projects, tracking engagement quality ensures the "Social" in ESG is not overlooked. Similarly, one could include employee-related KPIs here (like sustainability training hours, as Opus is implementing, or employee sustainability suggestions received) to gauge internal culture change.

Innovation and digitalization: e.g. R&D spending on sustainable technologies as a percentage of revenue, or count of digital solutions deployed that contribute to ESG outcomes (such as smart grid modules, AI optimizations). This forward-looking KPI fits the learning and growth perspective, signalling how well the company is investing in future capabilities.

By incorporating such metrics, a Balanced Scorecard would help balance short-term financial performance with long-term sustainability performance, offering a more comprehensive view of success. It would also facilitate communication: executives could convey to stakeholders how each sustainability initiative drives value across multiple dimensions (financial returns, customer trust, risk reduction, innovation, etc.). Future research and efforts will focus on refining these metrics and frameworks. One area of interest is developing sector-specific benchmarks – for instance, what constitutes "leading performance" vs "lagging performance" for a mid-size utility in terms of CO₂ per MWh, or for an integrated oil company in terms of renewable investment ratio. Establishing such benchmarks (potentially through industry associations or academic collaborations) can motivate companies to aim for best-in-class ESG performance. Cross-sector collaboration is also a promising avenue: energy companies can partner with technology firms or start-ups to accelerate digital solutions for sustainability (such as predictive maintenance systems that reduce waste and

downtime). Another future direction is deeper integration of ESG into financial planning and reporting. As frameworks like the Task Force on Climate-related Financial Disclosures (TCFD) and new EU sustainability standards take hold, [4,15,16] companies will need to quantify the financial impact of ESG risks and opportunities. Developing internal capacity to perform scenario analysis (e.g. how a \$50/ton carbon price by 2030 would affect the business) and to monetize benefits of sustainability (like the cost savings from energy efficiency or the risk premium reduction from good governance) will be invaluable. In summary, the momentum in Hungary's energy sector is clearly toward more dynamic, transparent, and integrated sustainability management. By embracing tools like the Balanced Scorecard and continuing to innovate both technologically and organizationally, these companies can not only comply with emerging requirements but actually shape the future of energy in a way that secures both corporate and societal outcomes. The lessons from their experiences can inform other industries and countries navigating similar transitions.

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