ADVANCING ENERGY EFFICIENCY IN TÜRKİYE: BARRIERS AND RECOMMENDATIONS

White Paper in collaboration with

ENERJİSA
Energy of Türkiye

AHK
Deutsch-Türkische Industrie- und Handelskammer
Alman-Türk Ticaret ve Sanayi Odası

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Subject:
Advancing Energy Efficiency in Türkiye: Barriers and Recommendations

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Abbreviations

AI: Artificial Intelligence

BOT: Build-Operate-Transfer

CBAM: Carbon Border Adjustment Mechanism

CCS: Carbon Capture and Storage

CO_2: Carbon Dioxide

EEC: Energy Efficiency Consultancy

EJ: Exajoule

EPC: Energy Performance Contract

ESCO: Energy Service Company

ESG: Environmental, Social & Governance

ETS: Emission Trading System

EV: Electric Vehicle

GHG: Greenhouse Gas

IoT: Internet of Things

IP: Intellectual Property

LTS: Long-Term Climate Strategy

M&V: Measurement and Verification

$MtCO_2eq$: Metric Tons of Carbon Dioxide Equivalent

MTOE: Million Tons of Oil Equivalent

NGO: Non-Governmental Organization

OIZ: Organized Industrial Zone

PGP: Productivity Growth Project

PPP: Public-Private Partnership

R&D: Research and Development

SDG: Sustainable Development Goals

SME: Small and Medium Enterprises

V2G: Vehicle-to-Grid

ZEB: Zero-Energy Building

Executive Summary

Executive Summary

Energy efficiency, which involves optimizing energy use, stands as a critical pillar of sustainable development and climate change mitigation, and will be central to achieving Türkiye's 2053 Net Zero goal. Recognizing its strategic importance, Enerjisa Enerji, in partnership with the German-Turkish Chamber of Commerce and Industry (AHK Türkiye), organized a full-day event. The event featured focused workshops comprising three dedicated sessions aimed at exploring opportunities to advance energy efficiency, particularly in fast developing economies like Türkiye. It brought together a diverse group of stakeholders, including private sector leaders, public institutions, academicians, and non-governmental organizations.

The workshops provided a platform for dialogue and knowledge exchange on **emerging mega trends, technological innovations, and the key challenges** surrounding the adoption and scaling of energy efficiency initiatives. The discussions revealed several key bottlenecks, including **challenges to integrating new technologies**, as well as **regulatory, financial, and engagement-related barriers**. Among the most critical barriers identified were scarcity of financing, underdeveloped infrastructure, regulatory misalignments, and insufficient stakeholder awareness and capability, particularly in technical and institutional terms, to implement energy efficiency measures effectively.

Drawing from the insights gathered during the sessions, this **white paper** presents **a targeted, coordinated, and action-oriented set of strategies and models to address these obstacles** and accelerate the deployment of energy efficiency measures. To this end, priority actions include establishing well-structured financing mechanisms that ease access to existing financial instruments and leverage innovative revenue streams; updating regulatory frameworks to promote transparency, long-term alignment, and predictability; expanding awareness campaigns and capacity-building programs, and enhancing stakeholder engagement.

Message from Enerjisa Retail Sales Companies General Manager,

Ersin ESENTÜRK

Dear Readers,

At Enerjisa, we believe that a sustainable future is only possible through bold action and innovative thinking. As the energy landscape evolves at an unprecedented pace, energy efficiency stands at the heart of the transition not just as a solution, but as a responsibility we all share.

With our deep expertise and strong presence across Türkiye, Enerjisa is committed to empowering individuals, businesses, and communities to consume energy smarter, live better, and contribute to a sustainable world. Through innovative services and customer-centric initiatives, we help drive economic prosperity while safeguarding the environment.

The insights compiled in this White Paper reflect the collective ambition and expertise of our partners and stakeholders, and underline the critical role energy efficiency plays in addressing today's most urgent challenges: decarbonization, energy security, affordability, and resilience. We are proud to have realized the Energy Efficiency Day in collaboration with AHK Türkiye, advancing meaningful dialogue and actionable strategies for emerging economies.

At Enerjisa, our mission is clear: we aim to be a leading force in the energy transition by offering innovative and comprehensive energy efficiency solutions, many of which we have already implemented through a wide range of projects, while also providing the guidance and collaboration needed to turn ambition into tangible results.

The time for change is now and energy efficiency is our most powerful catalyst in driving the green transformation.

Enjoy the read.

Message from AHK Türkiye Board Member and Secretary General,

Burkhardt HELLEMANN

At the German-Turkish Chamber of Commerce and Industry (AHK Türkiye), we believe that energy efficiency is not just a technical objective, but a strategic imperative for building a sustainable and resilient future, especially in emerging economies. As the global community accelerates its efforts toward climate neutrality and sustainable development, energy efficiency stands at the crossroads of economic growth, environmental stewardship, and social well-being.

In close collaboration with our Premium Member, Enerjisa Enerji we are proud to have co-organized the Energy Efficiency Day, a platform designed to foster dialogue, share expertise, and drive action across the public and private sectors. By bringing together diverse stakeholders, we aim to support the green transformation through concrete, scalable solutions.

The insights shared throughout this initiative highlight the critical role energy efficiency plays in achieving Net Zero targets, strengthening energy security, and reducing costs for households and businesses. Our panel discussions and workshops—focused on three key thematic areas—made it clear: real progress in this field requires collective commitment from governments, companies, civil society, and individuals alike.

As AHK Türkiye, we remain committed to enable cross-border cooperation between German and Turkish stakeholders and to promote sustainable business practices that align economic development with environmental responsibility.

We extend our sincere appreciation to Enerjisa Enerji for their strong partnership and thank the representatives from the Ministry of Energy and Natural Resources, as well as NGO and private sector participants, and AHK Türkiye members for their valuable contributions. Their engagement underlines the importance of multi-stakeholder collaboration in accelerating the energy transition.

Together, we can make energy efficiency a standard practice and a powerful driver of inclusive and sustainable growth.

Introduction

Introduction

Energy Efficiency: A Business Imperative

In recent years, rising energy costs, growing energy demand, and an intensified focus on sustainability have elevated energy efficiency to a top strategic priority for businesses. **Beyond reducing operational expenses, energy efficiency enhances competitiveness, resilience, and long-term viability in an increasingly dynamic market.** It delivers clear advantages including cost optimization, improved resource utilization, strengthened environmental responsibility, and compliance with evolving regulatory requirements. Companies that integrate energy efficiency into their operations are better positioned to meet stakeholder expectations, achieve decarbonization objectives, and drive sustainable value creation. Hence, energy efficiency has become a strategic lever for businesses seeking both economic and environmental benefits in today's dynamic energy landscape.

Energy Efficiency on the Global Agenda

In 2015, the United Nations adopted the **2030 Sustainable Development Goals**, aiming to foster peace, prosperity, and sustainability through a set of comprehensive targets and measurable indicators. **Energy efficiency is central to this agenda**, serving as a key enabler across multiple goals, including **SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action).** Notably, **SDG 7.3** specifically targets doubling the global rate of improvement in energy efficiency by 2030.

Figure 1: 2030 Sustainable Development Goals[1]

1. United Nations, 2030 Sustainable Development Goals, https://sdgs.un.org/goals.

What do we mean by Energy Efficiency?

Energy efficiency refers to **using less energy to perform the same function or produce the same output, without compromising comfort, productivity, or performance**. This can range from upgrading to LED lighting systems and high-efficiency motors in industrial processes to using building automation systems that optimize heating, cooling, and lighting. Crucially, energy efficiency is not about reducing activity or cutting energy access, but about **eliminating waste and improving system performance**. It is often measured through **energy intensity**, which captures the amount of energy consumed per unit of economic output. **A decrease in energy intensity reflects improved energy productivity, producing more economic value with less energy input.** Good use cases include waste heat recovery in cement plants, smart control systems in commercial buildings, and the replacement of outdated equipment with energy-efficient alternatives. These examples demonstrate how efficiency improvements can reduce emissions, lower costs, and strengthen operational resilience across sectors.

Türkiye's Energy Scene and Energy Efficiency

As a signatory to the 2015 Paris Agreement since 2021 and a committed participant in the Sustainable Development Goals, **Türkiye faces unique energy challenges as an emerging economy, a growing emitter, and a net energy importer**.

With a 2024 GDP of USD 1.32 trillion[2] and an expected growth rate of 2.8% by the end of 2025[3], Türkiye is expanding its economic footprint. However, this growth is accompanied by rising emissions, having produced 606.43 606.43 $MtCO_2eq$ in 2023[4], Türkiye now accounts for 1.15% of total global emissions, reflecting a consistent upward trend. This underscores its dual responsibility; to sustain economic development while actively managing its environmental impact. Encouragingly, recent data reveals a **decoupling between economic growth and energy consumption**, signaling gains in energy productivity and indicating that **Türkiye is generating more economic value per unit of energy used**. Progress in energy efficiency adoption plays a central role in enabling this positive shift.

2. Turkish Statistical Institute, Dönemsel Gayrisafi Yurt İçi Hasıla, IV. Çeyrek: Ekim-Aralık (2024), https://data.tuik.gov.tr/Bulten/Index?p=Donemsel-Gayrisafi-Yurt-Ici-Hasila-IV.-Ceyrek:-Ekim-Aralik,-2024-54163#:~:text=%C3%9Cretim%20y%C3%B6ntemine%20g%C3%B6re%20cari%20fiyatlarla,milyar%20514%20milyon%20TL%20oldu.&text=Ki%C5%9Fi%20ba%C5%9F%C4%B1na%20GSYH%202024%20y%C4%B1l%C4%B1nda,15%20bin%20463%20olarak%20hesapland%C4%B1.
3. European Bank for Reconstruction and Development, EBRD downgrades Türkiye forecast for 2025 (2025), https://www.ebrd.com/home/news-and-events/news/2025/rep-turkiye-may-25.html.
4. European Commission Emissions Database for Global Atmospheric Research, GHG emissions of all world countries (2024), https://edgar.jrc.ec.europa.eu/report_2024.

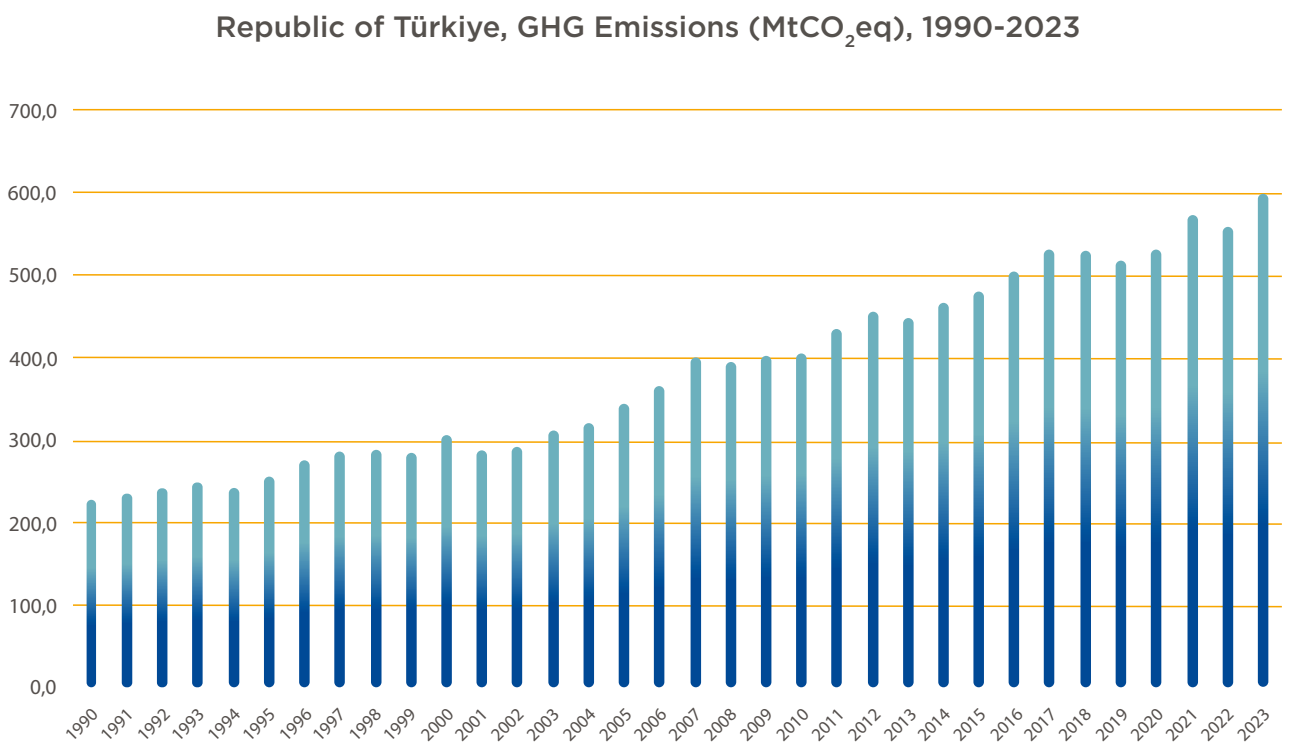

Figure 2: Republic of Türkiye GHG Emissions, 1990-2023[5]

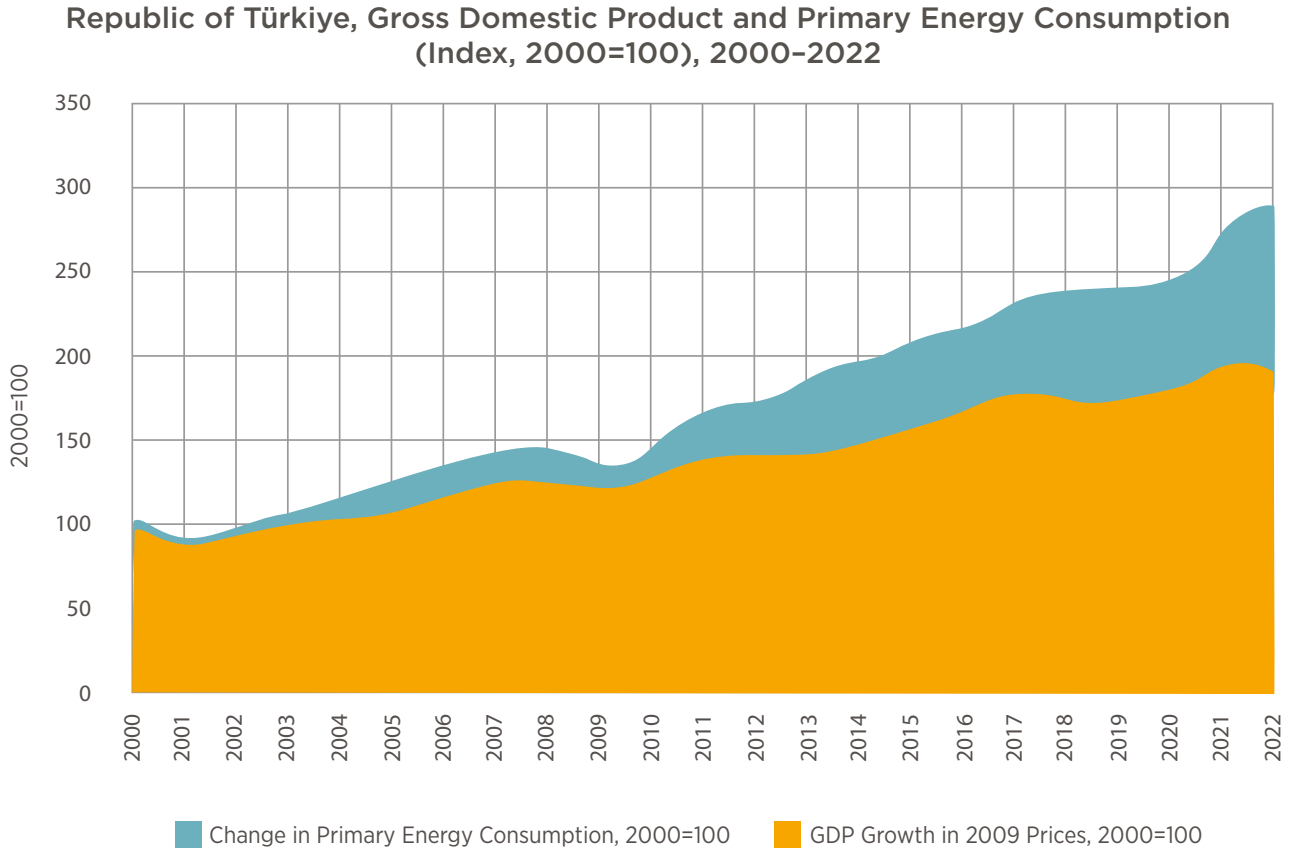

Figure 3: Gross Domestic Product and Primary Energy Consumption, 2000-2022[6]

5. Turkish Statistical Institute, Greenhouse Gas Emissions Statistics, 1990-2022 (2024), https://data.tuik.gov.tr/Bulten/Index?p=Greenhouse-Gas-Emissions-Statistics-1990-2022-53701&dil=2.

6. Republic of Türkiye, Ministry of Energy and Natural Resources, Enerji Verimliliği 2030 Stratejisi ve II. Ulusal Enerji Verimliliği Eylem Planı (2024-2030) (2024), https://enerji.gov.tr/Media/Dizin/BHIM/tr/Duyurular/T%C3%BCrkiyeninEnerjiVerimlili%C 4%9Fi2030StratejisiveIIUlusalEnerjiVerimlili%C4%9FiEylemPlan%C4%B1_202401161407.pdf, 23.

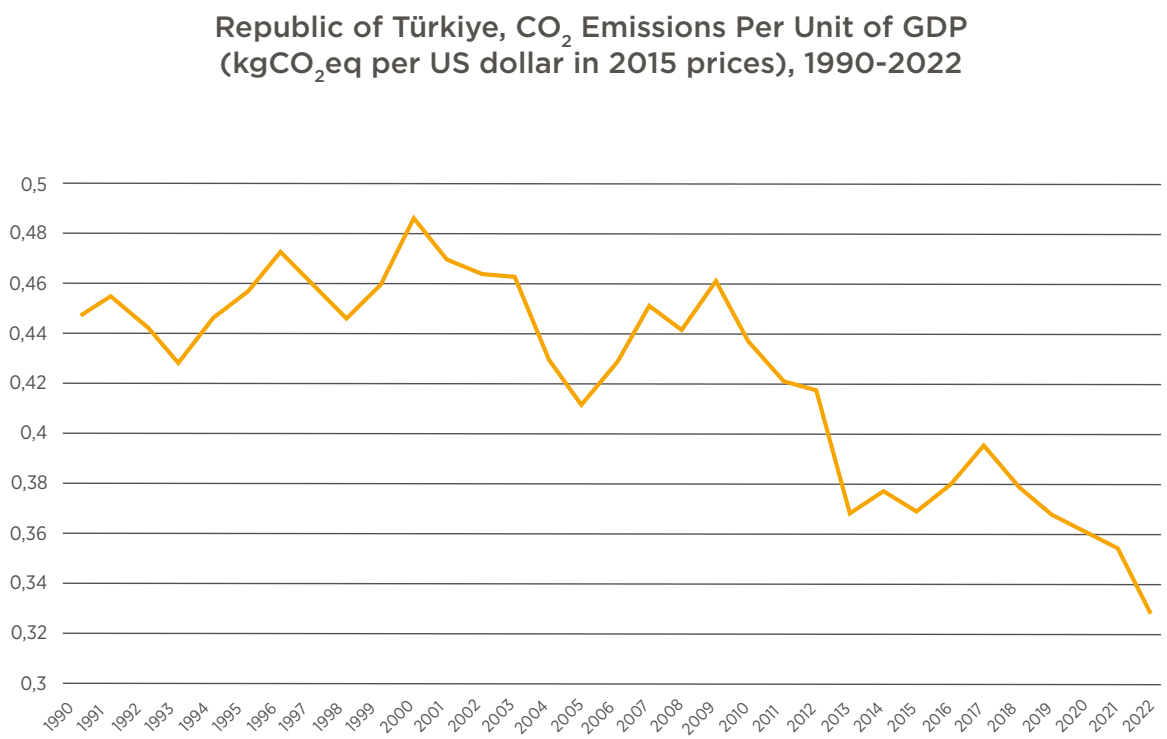

Figure 4: Republic of Türkiye, CO_2 Emissions Per Unit of GDP, 1990-2022[7]

Türkiye's 2053 Net Zero Target

In 2021, Türkiye announced its objective of reaching **carbon neutrality by 2053**, which was reiterated in Türkiye's 2053 Long-Term Climate Strategy[8] released at the 29th Conference of Parties in 2024. **Türkiye aims to reach a peak in greenhouse gas emissions by 2038 at the latest**, after which emissions will gradually decline until reaching net zero in 2053. Supported by the Twelfth Development Plan, the strategy includes structural transformations across all sectors; including agriculture, industry, energy, transportation, and services, and expects Türkiye to become a central hub in global production and trade.

Energy is a key area in the Long-Term Climate Strategy where Türkiye aims to ensure the provision of sustainable, high-quality, secure, uninterrupted, and affordably priced energy supply that is targeted by maximizing the utilization of domestic and renewable energy sources and improving energy efficiency, based on the 2053 target. Expecting the **electricity grid to form the backbone of low-carbon energy systems**, efficiency in energy systems is expected to be enhanced at every stage, from generation to transmission, distribution, and consumption.

7. International Energy Agency, Energy Statistics Data Browser (2023), https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=TUR&fuel=Key%20indicators&indicator=CO2ByGDP.
8. Republic of Türkiye, 2053 Long Term Climate Strategy (2021), https://unfccc.int/sites/default/files/resource/Turkiye_Long_Term_Climate_Strategy.pdf.

As a net energy importer with a 71.7% dependency on external sources to meet its energy demand in 2023[9], **Türkiye remains structurally reliant on foreign supply, making it vulnerable to price volatility, geopolitical tensions, and currency-driven cost fluctuations**. Domestically, the primary energy sources are renewables and coal, which accounted for approximately 37% and 32% of domestic energy production in 2023, respectively. In recent years, the country has taken significant steps to diversify its energy mix, prioritizing renewable sources such as solar and wind. While electricity generation is largely domestic, with less than 1% of electricity imported, its production still relies heavily on imported fuels like natural gas and coal, amplifying external exposure. Import dependency in this context is not merely an economic burden, but also a **strategic vulnerability**, as it poses risks to national energy security, resilience, and autonomy.

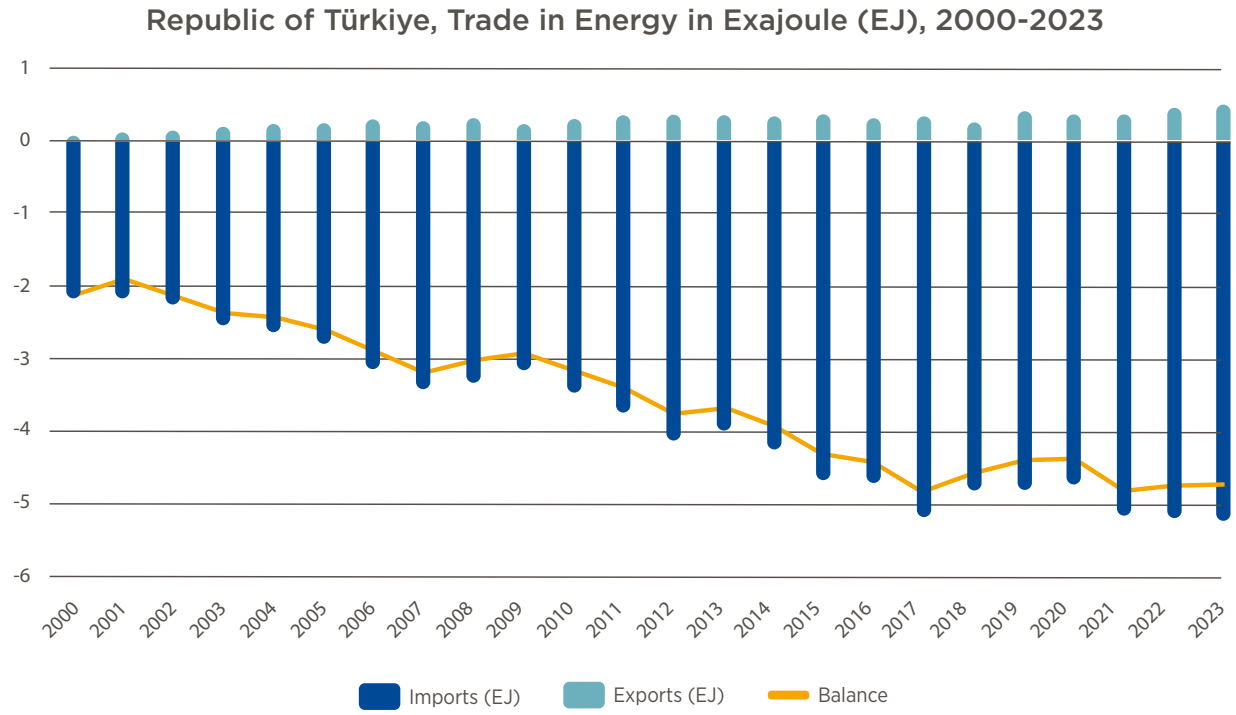

Figure 5: Republic of Türkiye, Trade in Energy, 2000-2023[10]

The economic and regulatory structure of Türkiye's energy market plays a critical role in shaping the country's ability to respond to evolving energy challenges. The **highly regulated nature of the market** continues to present structural constraints. Administered pricing mechanisms and delayed tariff adjustments often prevent real-time cost reflection, placing financial strain on public institutions and private operators alike. **Inflationary pressures**, driven by macroeconomic instability and the depreciation of the Turkish lira, have further amplified input costs, particularly for imported fuels such as natural gas and coal. These challenges are compounded by global energy market volatility, where geopolitical disruptions and price shocks have created uncertainty around supply and affordability.

Against this backdrop, reducing energy intensity through efficiency measures emerges as a critical lever, not only to address the impact of rising domestic energy demand and contain costs, but also to reduce **external energy dependency** and narrow the **current account deficit.** As such, energy efficiency stands at the **intersection of sustainable development and national economic resilience,** enabling Türkiye to decouple growth from emissions and enhance its energy sovereignty.

9. International Energy Agency, Türkiye Energy Mix, https://www.iea.org/countries/turkiye/energy-mix.
10. Türkiye Energy Mix.

Türkiye's Energy Efficiency Policy Milestones

Building on the foundation of the 2007 Energy Efficiency Law, Türkiye introduced its **First National Energy Efficiency Action Plan** in 2012, setting an ambitious target to reduce energy intensity by 20% compared to 2011 levels by 2023. This target was successfully surpassed in 2022, achieving a 20.4% reduction.

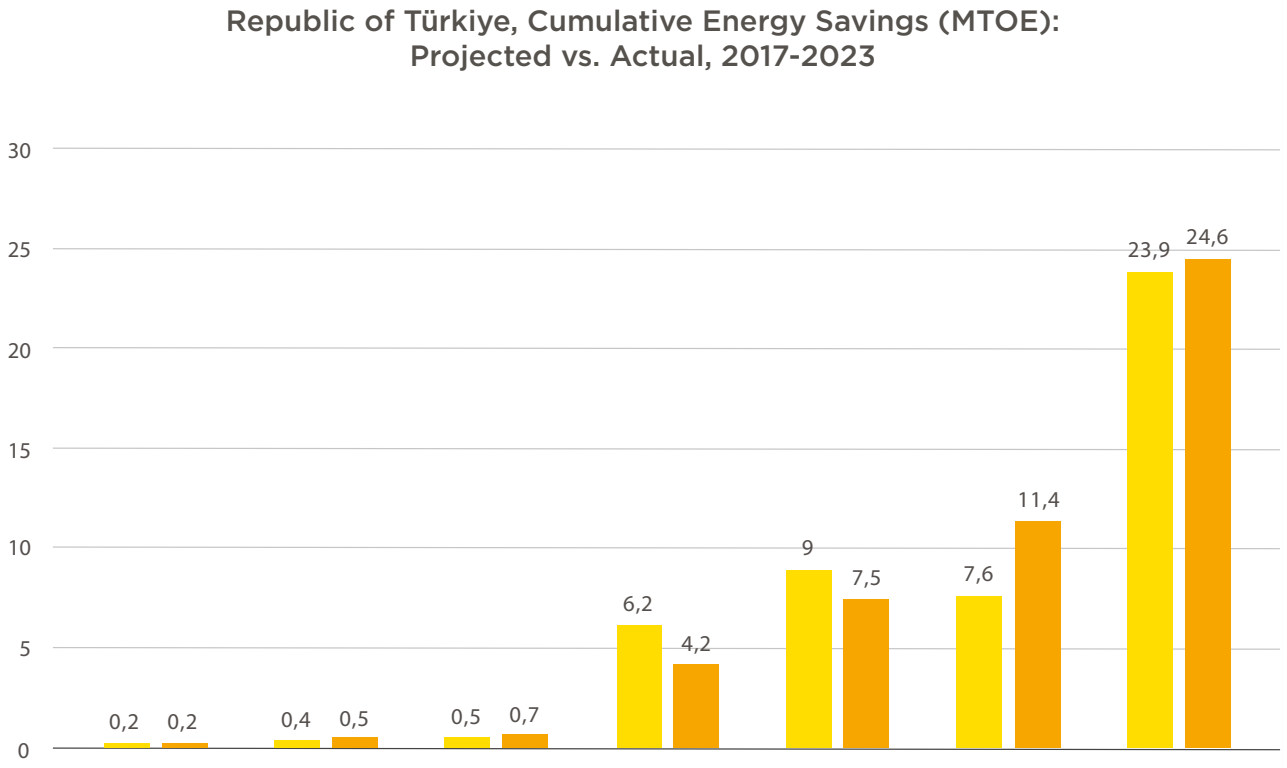

Figure 6: Türkiye Projected and Actual Cumulative Energy Savings, 2017-2023[11]

In 2024, Türkiye advanced its efforts by announcing the **2030 Energy Efficiency Strategy** alongside its **Second National Energy Efficiency Action Plan**. The updated plan outlines 61 initiatives across seven sectors, encompassing measures such as capacity-building programs, regulatory enhancements, and tax incentives. The plan allocates USD 20.2 billion for energy efficiency investments and forecasts cumulative primary energy savings of 37.1 MTOE between 2024 and 2030. Achieving this target, equivalent to a 16% reduction in Türkiye's primary energy consumption over the period, is also expected to yield a reduction of 100 $MtCO_2eq$ greenhouse gas emissions, reinforcing the country's commitment to sustainable growth.[12]

11. Enerji Verimliliği 2030 Stratejisi ve II. Ulusal Enerji Verimliliği Eylem Planı (2024-2030), 26.
12. Enerji Verimliliği 2030 Stratejisi ve II. Ulusal Enerji Verimliliği Eylem Planı (2024-2030), 7-8.

Key Emerging Trends

Key Emerging Trends

In the rapidly evolving macroeconomic, technological, and political landscape, a number of emerging global trends have created unique opportunities to channel attention and financing toward energy efficiency initiatives.

3.1 Challenging Macroeconomic Environment:

Navigating in a complex economic environment, with growth prospects tempered by inflationary pressures, trade uncertainties, policy-induced tariff fluctuations, and stricter fiscal policies has created a push to cut unnecessary energy costs, reduce dependance on energy or raw energy sources imports, and to increase the share of domestically generated energy.

3.2 Climate Crisis, Decarbonization, and Sustainability:

To remain within planetary boundaries and limit global temperature rise to 1.5 – 2˚C as pledged in the 2015 Paris Agreement, notable resources have been allocated to advancing climate action and decarbonization efforts. Mechanisms such as Emissions Trading Systems, carbon taxation, and Environmental, Social & Governance goals were introduced to effectively measure and curtail emissions. The Carbon Border Adjustment Mechanism and Türkiye's own pilot ETS are among locally relevant examples. Within this context, enhancing energy efficiency has been recognized as a fundamental strategy to mitigate avoidable emissions and support global decarbonization goals.

3.3 Energy Security:

Political developments in Europe and Caucasus, specifically the war between Russia and Ukraine, have profoundly reshaped the energy landscape and intensified the discussions on energy security. Amid limited energy sources and soaring prices, mitigating energy waste regained significance.

3.4 Electrification:

Electrification, driven by the rise of e-mobility, renewable energy sources, heat pumps, battery storage, and Power-to-X (P2X) technologies, is transforming the way energy is produced, stored, and consumed. As a result, the need to optimize energy usage has become increasingly critical, both in the design of these technologies and across the broader supply chain.

3.5 Green Hydrogen and Energy Storage:

Fast developing green hydrogen and energy storage technologies support deep decarbonization, renewable energy integration, system flexibility, and energy efficiency across industrial and power sectors through supporting clean fuel substitution, load balancing, long-duration energy storage, and reduced conversion losses.

Energy Storage

Energy storage technologies, such as batteries and thermal storage systems, enable the efficient use of energy by storing excess power and releasing it when needed, supporting grid stability and reducing energy waste. Together, they are emerging as key solutions to enhance energy efficiency, decarbonize hard-to-abate sectors, and enable deeper integration of renewable energy sources.

Green, Blue, and Grey Hydrogen

Green hydrogen is a zero-emission fuel produced by using electricity from renewable sources, such as solar and wind, to split water into hydrogen and oxygen through electrolysis. Unlike grey or blue hydrogen, green hydrogen does not emit carbon during production and can be used as a clean substitute for fossil fuels in energy-intensive sectors. Türkiye's strong renewable energy potential positions it well to become both a producer and user of green hydrogen, contributing to national energy security, industrial decarbonization, and improved energy efficiency.

Blue hydrogen is also derived from fossil fuels, but unlike grey hydrogen, its emissions are captured and stored using carbon capture and storage technologies, making it a lower-emission alternative.

Grey hydrogen is the most widely used form of hydrogen, produced from fossil fuels via steam methane reforming, with carbon emissions released into the atmosphere.

Other Major Trends

3.6 Artificial Intelligence:

In recent years, investment and interest in artificial intelligence have surged, as a wide range of stakeholders have started exploring ways to integrate it into their operations. With its ability to process large volumes of data in real time and predict patterns, AI plays a pivotal role in enhancing energy efficiency by identifying energy waste, optimizing system performance, and enabling data-driven decision-making. Advanced AI approaches such as federated learning, transfer learning, and edge AI further expand these capabilities by improving forecasting accuracy, enabling intelligent load management, and enhancing system responsiveness across various energy-intensive applications.

3.7 Internet of Things:

IoT technologies allow everyday objects to monitor, collect, and transmit real-time data, enabling smarter energy management. By detecting inefficiencies, automating system responses, and optimizing consumption patterns, IoT supports more efficient control of lighting, heating, machinery, and other energy-using systems.

3.8 Digital Twin:

By creating virtual replicas of physical assets, digital twins enable real-time monitoring, simulation, and performance optimization across complex energy processes. This allows operators to detect inefficiencies, test improvement scenarios, and make data-driven decisions without disrupting operations.

3.9 Blockchain:

Blockchain technology enables secure, transparent tracking and verification of energy data, making it especially valuable for performance-based financing and incentive schemes. By ensuring trust and traceability, it supports more efficient implementation and monitoring of energy-saving measures.

3.10 Smart Systems:

Consisting of smart grids, smart meters, and smart appliances among others, smart systems use real-time data and automation to monitor and manage tasks, creating the opportunity to further enhance energy efficiency.

3.11 Electric Vehicles and Vehicle-to-Grid Technologies:

EVs are becoming central to the energy transition, offering not only low-emission mobility but also new tools for improving energy efficiency. V2G technologies enable EVs to store and return electricity to the grid, allowing them to act as mobile storage units that help balance supply and demand.

3.12 Social Media:

The growing use of social media created new opportunities for engagement, awareness-raising and advocacy. Thus, showcasing the merits of energy efficiency and promoting successful green projects have become easier than ever.

KEY CROSS-SECTOR PRIORITIES

Unlocking Behavioral Engagement in Energy Efficiency

Technical solutions and financial incentives are critical to advancing energy efficiency, but they alone are not enough. A significant portion of unrealized energy savings lies in human behavior. From leaving lights on in empty rooms to setting industrial systems on default schedules, inefficiencies often persist not due to lack of technology but due to habits, social norms, or lack of feedback.

Behavioral insights can help close this gap. Strategies grounded in behavioral economics, such as **nudging, real-time feedback, and peer comparisons**, have proven effective in shifting everyday actions. For instance, smart meters that display real-time usage in homes have helped reduce consumption by making invisible energy use more tangible. In office buildings, simple prompts like signage comparing current energy use to the building's weekly average have been shown to influence thermostat settings and lighting choices. For SMEs, initiatives that highlight energy practices of similar-sized peers can normalize efficient behaviors and reduce the psychological barrier of being "the first mover".

Households and SMEs often face distinct informational and motivational challenges. Therefore, behavioral programs must be tailored: while households may benefit from gamified energy-saving apps or social norm campaigns, SMEs might respond better to targeted training with personalized reports showing cost savings and environmental benefits.

Moving forward, integrating these behavioral tools into policy design can significantly increase the impact and inclusiveness of energy efficiency efforts, turning awareness into meaningful, measurable change.

Barriers and Recommendations for Integrating New Technologies

Barriers and Recommendations for Integrating New Technologies

The adoption and scaling of state-of-the-art energy efficiency technologies in emerging economies like Türkiye hold significant value, offering reduced energy costs, improved energy security, and progress toward climate goals. Addressing barriers and gaps through targeted, actor-specific actions is essential to unlocking the full benefits of energy efficiency.

4.1 Barrier:

Lack of Trust in New Technologies

Many stakeholders in emerging economies, particularly Small and Medium Enterprises, are hesitant to adopt innovative energy efficiency solutions due to limited exposure and uncertainty around their performance and return on investment. This slows down the diffusion of high-impact technologies. Moreover, at the societal level, low awareness and misinformation about next-generation energy technologies also contribute to perceptual resistance, slowing down broader public acceptance.

4.1 Recommendation:

To build confidence and accelerate uptake, public institutions and industry leaders are encouraged to showcase successful pilot projects that demonstrate tangible benefits. **Industry-academia partnerships** should be supported to produce credible feasibility studies, while public communication efforts should actively highlight the advantages of these technologies. In parallel, public and private sector actors, along with civil society organizations, are encouraged to develop inclusive **awareness campaigns and locally adapted communication strategies** to counter misinformation and strengthen public trust in emerging technologies.

4.2 Barrier:

Lack of Enabling Infrastructure for Scalability

A key challenge in scaling energy efficiency projects is the limited availability of supporting infrastructure such as communication systems, data platforms, and integrated energy management tools. Without these foundational elements, it becomes difficult to coordinate initiatives, ensure system compatibility, and unlock the full potential of smart technologies. This limits both impact and scalability.

4.2 Recommendation:

Stakeholders, particularly public authorities as well as utilities and technology providers, are recommended to develop a **holistic planning approach** that prioritizes infrastructure compatibility and system-wide integration. Investments should focus on building interoperable systems, such as smart grids and unified digital platforms, that support seamless coordination and real-time optimization. Government institutions and consulting firms are encouraged to deliver targeted training programs and awareness-raising events to promote energy efficiency practices and support broader stakeholder engagement.

4.3 Barrier:

High Cost and Insufficient Market Scale

The adoption of cutting-edge technologies often involves high upfront costs, such as new equipment and specialized infrastructure, while limited demand prevents economies of scale. As a result, many businesses, especially smaller ones, remain priced out, even when long-term savings are clear.

4.3 Recommendation:

Well-structured financial mechanisms are needed to bridge the cost gap and stimulate demand, particularly in energy-intensive sectors where relatively low energy prices and high investment costs reduce the attractiveness of efficiency projects. To address this, governments are encouraged to introduce targeted subsidies, tax incentives, and, where appropriate, stricter enforcement measures to drive improvements in these sectors. Financial institutions are advised to offer low-interest loans and credit guarantees to lower risk and improve access to capital. In parallel, industry associations can support adoption by aggregating SME demand, unlocking economies of scale and reducing costs. Demonstrating long-term savings and financial returns will be key to encouraging broader uptake across the economy.

4.4 Barrier:

Insufficient Technological Literacy and Limited Resources

Many SMEs lack the technical knowledge and capacity to identify, evaluate, and implement energy-efficient technologies. This leaves large portions of the economy under-equipped to benefit from efficiency gains.

4.4 Recommendation:

Public agencies and industry bodies, with the assistance of the academia and NGOs, are encouraged to launch **targeted training programs and advisory services,** and improve **access to basic tools and hardware.** Tailored support will enable SMEs to make informed investment decisions and implement relevant solutions effectively.

4.5 Barrier:

Regulatory Gaps in Integrating Emerging Technologies

Emerging technologies often face delays in adoption not due to lack of innovation, but due to regulatory and planning frameworks that end to evolve more gradually than technological advancements. **The integration of electric vehicles into energy efficiency strategies** illustrates this gap. While EVs are gaining momentum, their contribution to system optimization through solutions like Vehicle-to-Grid remains underutilized due to **limited policy alignment, outdated grid codes, and insufficient infrastructure planning.**

4.5 Recommendation:

Policymakers, municipalities, and energy regulators are encouraged to establish **forward-looking regulatory frameworks** that enable the integration of new technologies into energy efficiency planning. For EVs, this includes revising urban mobility strategies, updating grid codes to allow bidirectional charging, and ensuring charging infrastructure in organized industrial zones and high-demand areas is V2G-compatible. Similar readiness planning should be applied to other emerging solutions to ensure technologies can contribute to efficiency as soon as they become viable.

4.6 Barrier:

Intellectual Property Challenges Related to Commercialization

High costs and complex legal procedures related to intellectual property, such as

patents, trademarks, and licensing, pose a significant barrier for technology suppliers, particularly SMEs. These challenges can make it more difficult for companies to develop or commercialize innovative energy efficiency solutions, potentially slowing market entry and broader adoption.

4.6 Recommendation:

Public sector is recommended to establish a clearer and more **accessible legal framework for intellectual property,** reducing costs and simplifying procedures for technology suppliers. Moreover, public institutions can support innovation by offering IP-related incentives, fast-track patenting for green technologies, and shared licensing platforms.

4.7 Barrier:

Regulatory Ambiguity on Environmental Issues

The adoption of emerging technologies is often slowed by unclear environmental implications and ambiguous alignment with existing environmental legislation. These uncertainties raise the perceived risk for private investors and cause hesitation among public implementers, particularly when environmental approvals or permits are involved. As a result, promising technologies may be delayed or avoided altogether, despite their potential to contribute to energy efficiency goals.

4.7 Recommendation:

Regulators, public institutions, and technology developers are encouraged to strengthen **pre-project environmental impact assessments for new technologies** and provide clearer guidance on regulatory compliance pathways. Updating relevant legislation to reflect the characteristics of emerging solutions, while also offering structured consultations or early-stage screening tools, can reduce uncertainty, increase investment confidence, and support responsible innovation.

4.8 Barrier:

Integration Challenges with Existing Systems

Keeping pace with new technologies is important, but equally critical is the ability to embed energy efficiency into existing systems and infrastructure, including smart grids, urban development, and renewable energy platforms. Without this integration, the impact of efficiency efforts remains fragmented and suboptimal.

4.8 Recommendation:

Public authorities and municipalities are encouraged to adopt the principle of **“energy efficiency as the first fuel”** to guide new investments and embed this approach into building codes, urban planning, and infrastructure development. As part of this effort, high-performance building models, such as **Zero-Energy Buildings (ZEB) and net-positive structures,** should be promoted, as they not only reduce consumption but also generate surplus energy, contributing directly to national targets. Public-private flagship projects can play a vital role in demonstrating feasibility and scaling adoption across the built environment. In parallel, energy regulators and policymakers are advised to create incentives that support the integration of efficiency measures into **smart grids and renewable energy systems.** On the private side, especially among utilities and developers, adopting **integrated energy management approaches** and prioritizing the retrofit of existing infrastructure will be key to aligning with modern efficiency standards. Finally, reducing **electricity losses in transmission and distribution** should remain a strategic priority to unlock system-wide efficiency gains.

	Barriers / Stakeholders	Private Sector	Public Sector	Academia	NGOs and Think Tanks	Local Financial Institutions	International Financial Institutions	Comms Channels
Integrating New Technologies	4.1. Lack of Trust in New Technologies	✓	✓	✓	✓			✓
	4.2. Lack of Enabling Infrastructure for Scalability	✓	✓			✓	✓	✓
	4.3. High Cost and Insufficient Market Scale	✓	✓			✓	✓	✓
	4.4. Insufficient Technological Literacy and Limited Resources	✓	✓	✓	✓			✓
	4.5. Regulatory Gaps in Integrating Emerging Technologies	✓	✓					
	4.6. Intellectual Property Challenges Related to Commercialization	✓	✓					
	4.7. Regulatory Ambiguity on Environmental Issues	✓	✓					✓
	4.8. Integration Challenges with Existing Systems	✓	✓			✓	✓	✓

KEY CROSS-SECTOR PRIORITIES

Safeguarding Energy Efficiency in the Digital Age

The digital transformation of energy systems, driven by technologies such as smart meters, AI-based analytics, and IoT-enabled controls, is unlocking new levels of energy efficiency. These systems help detect waste, optimize consumption in real-time, and enable smarter load management across sectors. However, as these solutions become more connected and data-driven, they also introduce new vulnerabilities.

Cybersecurity risks in digital energy efficiency systems are not abstract concerns; they can lead to **service disruptions, loss of sensitive data, and even physical damage to infrastructure**. For example, an attack on smart grid components or energy management platforms in large industrial facilities could halt operations, cause financial losses, and undermine trust in digital solutions. In sectors like healthcare or public services, where continuity is critical, such vulnerabilities become even more consequential.

Yet, many of these systems are deployed without standardized cybersecurity protocols. SMEs and municipalities, in particular, often lack the resources or awareness to assess cyber risks or respond to emerging threats. This creates an uneven landscape where innovation outpaces security.

To address this, national authorities should develop **clear and enforceable cybersecurity frameworks tailored to energy systems**, covering everything from device-level encryption to secure data sharing practices. These regulations must be accompanied by awareness campaigns and hands-on training for utilities, public institutions, and technology vendors. Several countries, including the United States, Canada, and EU member states, have introduced cybersecurity audit frameworks and regulatory oversight mechanisms for digital infrastructure in critical sectors. This approach could serve as a model for Türkiye to adapt to its own context and ecosystem.

Barriers and Recommendations for Regulatory Framework

Barriers and Recommendations for Regulatory Framework

A strong and predictable regulatory environment is essential to scale energy efficiency initiatives. In emerging markets like Türkiye, where energy is heavily regulated, the role of public authorities is critical in assisting or delaying progress. Without timely permits, clear rules, and accessible support schemes, energy efficiency projects face significant delays, investment risks, and missed economic and environmental benefits. Addressing these regulatory hurdles can unlock private sector investment, accelerate innovation, and deliver measurable reductions in energy consumption and GHG emissions.

5.1 Barrier:

Limited Strategic and Coordinated Planning

While Türkiye has made commendable progress in setting national energy efficiency strategies, such as the 2030 Energy Efficiency Strategy and the Second National Energy Efficiency Action Plan, there remains a gap between planning and **coordinated execution.** Institutional fragmentation, overlapping mandates, and inadequate sectoral alignment limit the effectiveness of these plans in driving tangible outcomes.

5.1 Recommendation:

It is recommended that public authorities move beyond high-level strategy and focus on operationalizing plans through clearly assigned responsibilities and **sector-specific roadmaps that recognize inter-sectoral relationships.** Establishing a central monitoring mechanism to track implementation progress and impact can help translate ambition into action. In addition, embedding **energy efficiency classifications into national taxonomies** will enable more effective financing and regulation. This approach is also critical for building a skilled workforce to support the adoption of new technologies and practices.

5.2 Barrier:

Lack of Regionally Tailored Energy Efficiency Strategies

Current energy efficiency policies are primarily designed at the national level and do not sufficiently reflect the diverse needs and characteristics of different regions and sectors across the country. The **absence of region-specific data and strategic planning tools** limits the ability to design effective measures that respond to local dynamics in industry, agriculture, and services.

5.2 Recommendation:

Public institutions and planning authorities are encouraged to develop **a regionally focused energy efficiency framework** supported by spatial data and sectoral analysis. This should include the creation of a national energy efficiency map that highlights regional consumption profiles, efficiency gaps, and priority areas. Such a tool will provide decision-makers with a strategic foundation to design tailored interventions and guide regional investments more effectively.

5.3 Barrier:

Regulatory Unpredictability Undermining Investor Confidence

While Türkiye has outlined long-term strategies for energy efficiency, many stakeholders still perceive the regulatory

environment as unpredictable. This stems from shortcomings in policy enforcement as well as limited follow-up action and transparency. These factors limit the ability of investors and developers to plan confidently for multi-year projects, especially in capital-intensive sectors.

5.3 Recommendation:

To build investor confidence, public institutions are encouraged not only to publish forward-looking roadmaps but also to establish mechanisms for their **active follow-up** and implementation monitoring. This includes issuing **periodic updates on regulatory processes,** providing **interim progress reports,** and maintaining regular communication on the status of planned changes. Aligning short-term policy adjustments with long-term goals, ensuring consistent enforcement, and engaging stakeholders through transparent consultation processes will further help reduce uncertainty and foster stable, long-term investment in energy efficiency.

5.4 Barrier:

Prolonged Permit and Support Procedures

Complex and slow-moving permit processes, especially for public sector buildings or industrial retrofits, delay implementation and increase project costs.

5.4 Recommendation:

The public sector should **streamline permitting and support procedures** by introducing digital application systems, time-bound approval processes, and single-window access points. These reforms will improve project timelines and reduce administrative burden, especially for SMEs and first-time applicants.

5.5 Barrier:

Legal Constraints on Financing Options

The current regulatory framework imposes legal limitations that restrict the use of flexible, performance-based financing models essential for scaling energy efficiency investments. Existing definitions and procedures often fail to reflect the complexity of these projects, which depend on future energy savings and long-term returns. This prevents financial institutions from accepting savings as collateral and limits the public sector's ability to engage in innovative models such as EPCs. These legal gaps discourage broader private sector participation and slow the development of bankable, scalable project pipelines.

5.5 Recommendation:

Legal frameworks should be updated to recognize **future energy savings as collateral** and expand the use of innovative financing instruments such as **green bonds** for energy efficiency projects. Additionally, **public procurement rules for EPCs** should be revised, allowing easier access to results-driven models that reduce risk and encourage private investment.

5.6 Barrier:

Limited Integration of Social Equity in Energy Efficiency Policy Design

Energy efficiency policies and financing mechanisms often lack a social equity lens, resulting in limited access for low-income households and vulnerable communities. This creates a structural barrier to inclusive participation in the energy transition and risks deepening social inequality, particularly in the areas of housing, heating, and basic energy access.

5.6 Recommendation:

Public institutions and social policymakers are encouraged to embed equity-focused components within energy efficiency frameworks. This includes developing **publicly backed financing models tailored for low-income groups,** and introducing **mandatory energy efficiency standards in social housing programs.** Addressing energy poverty through these targeted measures will enhance the fairness, accessibility, and societal legitimacy of the energy transition process.

	Barriers / Stakeholders	Private Sector	Public Sector	Academia	NGOs and Think Tanks	Local Financial Institutions	International Financial Institutions	Comms Channels
Regulatory Framework	5.1. Limited Strategic and Coordinated Planning	✓	✓	✓	✓	✓	✓	✓
	5.2. Lack of Regionally Tailored Energy Efficiency Strategies	✓	✓					
	5.3. Regulatory Unpredictability Undermining Investor Confidence	✓	✓					✓
	5.4. Prolonged Permit and Support Procedures	✓	✓					
	5.5. Legal Constraints on Financing Options	✓	✓			✓	✓	
	5.6 Limited Integration ofSocial Equity in Energy Efficiency Policy Design	✓	✓		✓			✓

KEY CROSS-SECTOR PRIORITIES

Integrating Circular Economy in Energy Efficiency

Energy efficiency is typically associated with equipment upgrades, digital energy management, and operational improvements. However, one of the most powerful yet underutilized tools lie in circular economy practices which are strategies that reduce energy demand across the full lifecycle of materials and products by minimizing waste, maximizing reuse, and closing resource loops.

The circular economy refers to an economic model centered on the **regeneration and reuse of materials, reducing the need for raw material extraction and minimizing environmental impact.** In the context of energy efficiency, it contributes by lowering energy use in production and capturing energy that would otherwise be wasted.

In Türkiye, circular economy principles are particularly relevant for energy-intensive sectors such as **cement, aluminum, glass, and textiles**, where initiatives like waste heat recovery, material recirculation, and industrial symbiosis can significantly lower overall consumption. For example, reusing aluminum or glass materials requires far less energy than producing them from primary sources. In the construction sector, using reclaimed materials and modular building components helps reduce used energy. Another high-impact application is shared energy systems, such as district heating networks or microgrids that serve clusters of buildings or industrial zones. These systems enhance local energy exchange, reduce redundancy, and optimize the use of both renewable and recovered energy.

Despite their potential, the broader adoption of circular economy strategies in energy efficiency remains limited, often due to insufficient incentives, infrastructure gaps, and low public visibility. Integrating circular approaches into energy policy and investment planning will be essential to drive long-term, systemic efficiency gains and build a more resilient energy future.

To fully realize their potential, public institutions and local governments should integrate circular models into energy efficiency planning. This involves aligning regulations, financing mechanisms, and infrastructure development with circular economy goals. Pilot programs in industrial zones, public procurement requirements for recycled materials, or incentives for collaborative energy-sharing platforms are practical steps toward building a more resilient, energy-smart economy.

Barriers and Recommendations for Project Financing

Barriers and Recommendations for Project Financing

Mobilizing capital is one of the most critical enablers for energy efficiency at scale. While the long-term cost savings of efficiency investments are well established, the up-front financing gap remains a major constraint. In Türkiye, this challenge is compounded by regulatory restrictions that partially limit long-term financing options, alongside limited access to capital, lack of tailored financial instruments, and underdeveloped risk-sharing mechanisms. Overcoming these barriers is essential to unlock broader private sector participation, scale innovation, and reduce long-term public expenditure.

6.1 Barrier:

Scarcity of Financing

The lack of sufficient capital, prevents companies from investing in essential technologies and infrastructure required to enhance energy efficiency, despite the long-term cost savings these investments can offer.

6.1 Recommendation:

To overcome this barrier, robust financing opportunities should be established to stimulate investment and drive sustainable energy solutions. Following measures are recommended to source financing:

- **Performance-based Financing Mechanisms:** The utilization of performance-based financing mechanisms, such as Energy Service Companies and Energy Performance Contracts, is advised to overcome capital barriers in energy efficiency projects since they align payments with achieved results. Instead of requiring full upfront investment, these models allow costs to be repaid from the actual energy savings generated over time. This not only reduces risk for project hosts but also attracts private capital by ensuring accountability and measurable outcomes.[13]
- **Creation of Multiple Financing Streams:** Exploring innovative mechanisms can help create multiple streams of funding needed to boost investments. The following approaches are recommended to support this effort:
  - **Green Leasing** to expand access to energy-efficient equipment, particularly for SMEs, and to increase investment appetite,
  - **Green bonds and insurance products** tailored to domestic market conditions, specifically designed to finance energy efficiency initiatives,
  - Revenue streams generated through carbon **trading mechanisms** (e.g., ETS) and **sustainability-linked financial instruments** (e.g., SDG bonds),
  - **Public-private partnerships**.
- **Integrated Energy Management Approach:** The development of an integrated, consumer-centered energy management approach, encompassing various aspects of the energy transition, is recommended as a key strategy for securing international financing and designing innovative financing mechanisms and models. This approach should go beyond simply combining renewable energy investments with energy efficiency in industry and buildings. Instead, it should enable the creation of comprehensive **investment packages** that integrate new technologies, electrification of transport and heating, and energy efficiency-focused equipment manufacturing. Structuring projects in this holistic manner will make it possible to design tailored **financing packages** that support a broad spectrum of energy transition initiatives.

13. Please see Stakeholder Insights for Enerjisa's EPC mechanism.

Energy Service Companies are specialized firms that design, implement, and often finance energy efficiency projects. Their remuneration is tied to the energy savings they deliver, meaning they assume performance risk and earn returns only if the promised savings are achieved. This model reduces financial and technical burden for project owners, making it especially useful for municipalities and SMEs with limited capacity.

Local use cases include the ESCO-based retrofit of Istanbul Metropolitan Municipality's facilities[14] as well as performance-based energy efficiency programs implemented by Industrial Development Bank of Türkiye (TSKB)[15] and the Investment Bank of Türkiye (TYKB)[16] in collaboration with industrial clients through EPC structures.

Energy Performance Contracts are formal agreements typically used by ESCOs to guarantee specific savings outcomes. Under an EPC, the service provider conducts an energy audit, implements necessary upgrades (such as lighting, insulation, or HVAC improvements), and recovers their investment through a share of the energy savings over an agreed period. This contract structure is results-driven, encouraging quality implementation and transparent verification.

Productivity Growth Project is a grant support program provided to the projects of businesses by the Ministry of Energy and Natural Resources in order to minimize, or prevent altogether, waste energy, energy losses or leakages. The grants are provided for processes such as equipment and system optimization, repair and equipment renewal. The maximum amount of the grant is determined as 1,500,000 TL regardless of the project amount.[17]

Energy Efficiency Consultancies provide consultancy services to organizations in their PGP project applications. All businesses with annual energy consumption of 500 TOE or more and that fulfil the requirements may benefit from the grants by applying with a PGP folder prepared by an Energy Efficiency Consultancy Company (EEC) authorized by the Ministry of Energy and Natural Resources.

14. World Bank Group, International Bank for Reconstruction and Development Project Appraisal Document on a Proposed Loan in the Amount of EUR 219.4 million USD to the Republic of Turkey for a Seismic Resilience and Energy Efficiency in Public Buildings Project (2021), https://documents1.worldbank.org/curated/en/738871623549676664/pdf/Turkey-Seismic-Resilience-and-Energy-Efficiency-in-Public-Buildings-Project.pdf.
15. Renewable Energy Magazine, OPEC provides a €50 million loan to accelerate Türkiye's green transformation (2025), https://www.renewableenergymagazine.com/miscellaneous/opec-fund-provides-a-50-million-euro-20250211.
16. Asian Infrastructure Investment Bank (AIIB), TKYB Renewable Energy and Energy Efficiency On-lending Facility – Project Document (2021), https://www.aiib.org/en/projects/approved/2019/_download/turkey/TKYB-Renewable-Energy-and-Energy-Efficiency-On-lending-Facility.pdf.
17. Enerjisa, Energy Efficiency, https://www.enerjisa.com.tr/tr/isimin-enerjisi/enerji-cozumlerimiz/enerji-verimliligi?gad_source=1&gclid=EAIaIQobChMIhOLZ4aLKjAMV9JmDBx3kghW2EAAYASAAEgIQUvD_BwE.

Green Leasing

Green leasing allows businesses to access energy-efficient equipment without the burden of large upfront capital costs through leasing contracts which retain ownership and maintenance by the leasing company. This model is especially effective for upgrades like LED lighting, efficient motors, or HVAC systems.

In Türkiye, the Turkish Development and Investment Bank has supported green leasing models under its Renewable Energy and Energy Efficiency On-Lending Facility, enabling SMEs to invest in efficiency upgrades via leasing mechanisms.

Green Bonds

Green bonds are structured to finance environmentally beneficial projects, such as retrofitting buildings or deploying energy-efficient infrastructure. These instruments are increasingly paired with insurance products that guarantee energy savings or cover project risks, making them more attractive to investors.

In 2023, the OPEC Fund and TKYB collaborated on a €50 million green bond facility targeting renewable and energy efficiency investments in Türkiye.[18]

Carbon Trading Mechanisms and Sustainability-Linked Financial Instruments

Revenue streams from carbon markets and sustainability-linked instruments present a powerful opportunity to finance energy efficiency initiatives by tying environmental performance to financial returns. As Türkiye moves toward launching a national Emissions Trading System, energy efficiency projects that reduce GHG emissions can generate carbon credits which can later be traded.

At the same time, sustainability-linked bonds and loans, which adjust financial terms based on the achievement of measurable efficiency or emissions targets, offer flexibility and improved access to capital for both public and private actors. These instruments are particularly suited for projects with clear, verifiable outcomes such as reductions in energy intensity.

18. The OPEC Fund for International Development, OPEC Fund provides a €50 million loan to accelerate Türkiye's green transformation (2025), https://opecfund.org/media-center/press-releases/2025/opec-fund-provides-a-50-million-loan-to-accelerate-tuerkiye-s-green-transformation.

6.2 Barrier:

Limited Access to Financing for Small-Scale Projects

Smaller-scale energy efficiency projects, particularly those led by SMEs, often fail to attract financing due to their limited size and the absence of standardized risk assessment tools. Measurement and Verification (M&V) processes remain too complex, limiting the ability of lenders to confidently validate future savings as collateral.

6.2 Recommendation:

Lowering **support limits** for energy efficiency initiatives and **prioritizing high-potential projects,** irrespective of their scale, are key steps in overcoming this barrier. In parallel, financial institutions and regulators should prioritize the development of **standardized, scalable Measurement and Verification (M&V) frameworks.** These frameworks will allow the quantification of actual energy savings achieved through efficiency measures using consistent methodologies and transparent data.

6.3 Barrier:

Inadequate Capacity and Awareness in Financial Institutions

Many financial institutions lack **in-house expertise to assess energy efficiency investments.** Similarly, companies are often unaware of the available funding lines or lack technical knowledge to develop bankable proposals.

6.3 Recommendation:

National, development, and private banks are encouraged to establish dedicated **engineering consultancy units** staffed with technical and financial experts. The successful models implemented by the Industrial Development Bank of Türkiye and the Investment Bank of Türkiye should be expanded across other financial institutions. In parallel, both bank representatives and companies should enhance their understanding of available credit lines and procedures for energy-saving projects, in order to improve awareness and operational efficiency. To support these efforts, NGOs and communication platforms are encouraged to lead awareness campaigns that promote best practices and highlight financing opportunities. This dual capacity-building effort will strengthen both the supply and demand side of financing.

6.4 Barrier:

Lack of Institutional Guidance on Accessing International Finance

Although global financing mechanisms such as the EU Green Deal, IPA funds, UNDP initiatives, and EBRD facilities offer substantial opportunities for energy efficiency investments, many institutions struggle to navigate the application processes. Limited awareness of eligibility criteria, project development requirements, and alignment frameworks often prevents public and private actors from taking full advantage of these resources.

6.4 Recommendation:

Public agencies, development banks, and industry associations are encouraged to develop structured support mechanisms to strengthen institutional capacity. These should include **strategic roadmaps, step-by-step application guides, and training modules** that equip stakeholders with the knowledge and tools needed to access international funding opportunities. Increasing readiness will help unlock valuable resources to support the energy transition in Türkiye.

6.5 Barrier:

Challenges in Scaling Pilot Projects

While pilot energy efficiency projects show strong results, many fail to scale due to limited follow-up investment, fragmented demand, and unclear business models.

6.5 Recommendation:

The public and private sectors should support the development of **aggregation** platforms that bundle similar pilot and small-scale projects into larger, more bankable portfolios. In addition, scaling **local Research and Development projects**

through targeted incentives and expanding technical assistance for both solution providers and end-users will help build strong project pipelines. This approach reduces transaction costs, increases the predictability of financial returns, and promotes the replication of successful models across sectors.

6.6 Barrier:

Insufficient Supportive Financing Structures

The financial ecosystem in Türkiye lacks the structural tools needed to make energy efficiency investments routine, especially for SMEs. Without risk-sharing mechanisms, concessional capital, or incentive alignment, private investment remains limited.

6.6 Recommendation:

It is recommended to expand risk mitigation measures, such as **government-backed guarantees,** to attract greater levels of private investment in energy efficiency projects. In parallel, **tax incentives and concessional financing** should be used to create additional funding streams and reduce financing barriers. Large corporations are also encouraged to promote market-wide standards by offering incentives to energy-efficient suppliers and embedding energy performance criteria into their procurement processes.

6.7 Barrier:

Limited Support for Skills Development and Green Employment

Although support mechanisms for energy efficiency are in place, they currently fall short of **fully activating the sector's green employment potential.** The lack of comprehensive, accessible, and well-targeted training and upskilling programs limits the ability of key workforce segments to contribute effectively to energy efficiency implementation. As the sector becomes more technology-driven and interdisciplinary, the gap between policy ambition and workforce readiness becomes increasingly evident.

6.7 Recommendation:

Public authorities and vocational education institutions are encouraged to **develop and expand incentive-oriented programs that promote participation in certified training schemes,** such as Energy Efficiency Specialization Programs. Expanding access to these programs, particularly for SME employees and technical professionals, will help build a skilled workforce, support job creation, and ensure high-quality implementation across the energy efficiency ecosystem.

	Barriers / Stakeholders	Private Sector	Public Sector	Academia	NGOs and Think Tanks	Local Financial Institutions	International Financial Institutions	Comms Channels
Project Financing	6.1. Scarcity of Financing	✓	✓			✓	✓	
	6.2. Limited Access to Financing for Small-Scale Projects	✓	✓			✓	✓	
	6.3. Inadequate Capacity and Awareness in Financial Institutions	✓	✓		✓	✓	✓	✓
	6.4. Lack of Institutional Guidance on Accessing International Finance	✓	✓			✓	✓	✓
	6.5. Challenges in Scaling Pilot Projects	✓	✓			✓	✓	
	6.6. Insufficient Supportive Financing Structures	✓	✓					✓
	6.7. Limited Support for Skills Development and Green Employment	✓	✓		✓			✓

KEY CROSS-SECTOR PRIORITIES

Bridging Energy Efficiency and Climate Adaptation

Energy efficiency has long been recognized as a cornerstone of climate mitigation, offering one of the most cost-effective ways to reduce greenhouse gas emissions. However, in the face of escalating climate risks, such as heatwaves, floods, and grid stress from peak demand, energy efficiency must also be seen as a powerful tool for **climate adaptation and resilience**.

Currently, most efficiency strategies focus narrowly on emissions reduction, often overlooking their potential to enhance **system durability and preparedness**. This limits the ability to align energy efficiency efforts with broader resilience initiatives, including the development of microgrids, adaptive building designs, distributed generation, and nature-based solutions.

A better integrated approach is essential. For example, microgrids and distributed energy systems, when paired with energy-efficient technologies, can maintain power supply during extreme events. Similarly, green-blue infrastructure, such as permeable pavements and urban greenery, can reduce energy demand by cooling city environments and mitigating flood risks, while also contributing to community well-being.

Global best practices are increasingly demonstrating this convergence. Countries such as the Netherlands and Japan have embedded energy efficiency targets into their urban adaptation plans.

Türkiye has the opportunity to lead in this area. National frameworks such as the **2024–2030 Climate Change Mitigation**[19] and **Adaptation**[20] **Strategy and Action Plans** and the **2053 Long-Term Climate Strategy**[21] already set the stage. By more explicitly linking energy efficiency targets to resilience objectives, particularly in sectors like housing, infrastructure, and local energy systems, Türkiye can simultaneously reduce emissions, build climate-resilient infrastructure, and future-proof its energy systems.

This dual-purpose approach not only enhances energy security and cost-effectiveness but ensures that energy-saving investments remain impactful in a changing climate.

19. Republic of Türkiye, Ministry of Environment, Urbanization and Climate Change, Climate Change Mitigation Strategy and Action Plan (2024-2030) (2021), https://iklim.gov.tr/db/turkce/icerikler/files/CLIMATE%20CHANGE%20MITIGATION%20STRATEGY%20AND%20ACTION%20PLAN%20_EN(1).pdf.
20. Republic of Türkiye, Ministry of Environment, Urbanization and Climate Change, Climate Change Adaptation Strategy and Action Plan (2024-2030) (2023), https://iklim.gov.tr/db/turkce/icerikler/files/Uyum.pdf.
21. 2053 Long Term Climate Strategy.

Barriers and Recommendations for Communication and Stakeholder Engagement

Barriers and Recommendations for Communication and Stakeholder Engagement

Effective communication and stakeholder engagement are critical enablers for accelerating energy efficiency. Building awareness, fostering collaboration, and facilitating the exchange of best practices can dramatically increase adoption across sectors. In Türkiye, the absence of centralized knowledge platforms, limited outreach efforts, and weak multi-stakeholder coordination continue to hinder progress. Addressing these challenges will help unlock faster implementation, strengthen trust in new technologies, and scale impact by aligning efforts across public, private, and civil society actors.

7.1 Barrier:

Lack of Institutionalized Multi-Stakeholder Governance

The success of energy efficiency policies and implementation efforts relies on continuous and coordinated collaboration among public institutions, private sector actors, academia, and civil society. However, where formal, structured governance mechanisms are not yet fully established, inclusive decision-making can be constrained and collective action slowed, particularly at sectoral and regional levels.

7.1 Recommendation:

It is advised to institutionalize multi-stakeholder governance through the establishment of **structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups.** These mechanisms will support more inclusive and transparent policy processes, strengthen alignment across actors, and ensure the long-term effectiveness of energy efficiency initiatives.

7.2 Barrier:

Absence of Streamlined Best Practice Exchange Processes

Many organizations operate without consistently sharing their experiences in energy efficiency, and the limited existing exchange of best practices remains unstructured and informal. When these exchanges are treated as isolated instances rather than part of a broader learning system, they lead to fragmented knowledge and missed opportunities for replication. This gap is particularly significant for SMEs, which often lack access to practical examples, proven business cases, and platforms for peer learning.

7.2 Recommendation:

It is recommended that all stakeholders including public institutions, business associations, financial institutions, and NGOs, establish a **dedicated resource library** for streamlining best practice exchange. These platforms should include case study libraries, practical toolkits, peer learning forums, and sector-specific success stories. Large companies are encouraged to act as **role models** by sharing proven practices across their value chains and supporting smaller partners through mentorship and knowledge transfer to accelerate adoption.

7.3 Barrier:

Limited Implementation Capacity of Local Authorities

Although municipalities are positioned as crucial actors in delivering energy

efficiency policies on the ground, many face institutional, technical, and informational constraints. The absence of tailored guidance, locally relevant best practices, and practical implementation tools limits their ability to take decisive action, particularly in areas such as building retrofits, smart urban systems, and integrated city planning.

7.3 Recommendation:

National authorities and supporting institutions are encouraged to develop **policy guides, practical toolkits, and adaptable incentive models** to strengthen the role of local authorities in energy efficiency. These resources should focus on key areas such as energy performance in public buildings, integration of smart city technologies, and urban-scale planning frameworks. Including case studies and examples of successful local initiatives will support learning, replication, and increased implementation capacity across diverse municipal contexts.

7.4 Barrier:

Insufficient Engagement with NGOs

Non-governmental organizations and research institutions have the capacity to advocate, convene, and communicate, but their potential remains underutilized. Engagement is often limited to awareness campaigns, without follow-up or collaboration on implementation.

7.4 Recommendation:

NGOs are encouraged to play a more active and strategic role in advancing energy efficiency by moving beyond awareness efforts and engaging in long-term collaboration. Their involvement should include:

- Supporting the efforts of key industry players in promoting a **competitive, cost-based market structure** (e.g., fair and sustainable retail tariff adjustments),
- Collaborating with businesses in assessing and addressing **the impacts of Emissions Trading Systems and carbon taxes,**
- Participating in **follow-up actions** that extend beyond message delivery, ensuring continuity, accountability, and meaningful impact in implementation.

	Barriers / Stakeholders	Private Sector	Public Sector	Academia	NGOs and Think Tanks	Local Financial Institutions	International Financial Institutions	Comms Channels
Communication and Engagement	7.1. Lack of Institutionalized Multi-Stakeholder Governance	✓	✓	✓	✓	✓	✓	✓
	7.2. Absence of Streamlined Best Practice Exchange Processes	✓	✓	✓	✓	✓	✓	✓
	7.3. Limited Implementation Capacity of Local Governments	✓	✓					✓
	7.4. Insufficient Engagement with NGOs	✓	✓	✓	✓	✓	✓	✓

Stakeholder insights

Stakeholder Insights

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While renewable energy investments continue to capture much of the public and policy spotlight, energy efficiency remains an equally critical yet often overlooked lever in the energy transition. Many efficiency gains, especially in industrial and commercial settings, can be achieved quickly and at low cost. At Enerjisa Enerji, our Customer Solutions business enables B2B customers to unlock this potential. We not only provide expert guidance and implementation, but also offer financing models in which efficiency gains can repay the investment itself. Building on this foundation, we are now expanding our technology offerings and developing new business models, such as the Build-Operate-Transfer (BOT) approach, to further accelerate impact. We are also looking into energy efficiency products for private households such as PV rooftop installations. By offering integrated solutions that combine efficiency, sustainability, and resilience, we create a win-win-win: for customers, for solution providers, and society, through reduced emissions.

These steps mark the beginning of a broader transformation journey - one where tailored, tech-enabled solutions will play an even greater role. That is why energy efficiency deserves, and will receive, more focused attention going forward. I'm proud that Enerjisa Enerji is positioning itself at the forefront of this effort, contributing to a more sustainable and resilient future for Türkiye.

The Energy Efficiency Day workshop, held in collaboration between Enerjisa Enerji and the German-Turkish Chamber of Commerce and Industry, served as a ground for engagement between stakeholders, shedding light to key trends, blockades, and action points for enhancing energy efficiency.[22] The first breakout group, **Mega Trends and Technology**, was co-chaired by IICEC Director Bora Şekip Güray and Enerjisa Enerji Strategy, M&A, and Business Development Director Oğuzcan Samsun. The second breakout group, **Regulatory Framework and Communication**, was co-chaired by SEFIA Founding Director Bengisu Özenç and Wilo Emerging Markets Strategic Coordinator Serkan Öğüt. Lastly, the third breakout group, **Economic Landscape and Project Financing**, was co-chaired by SHURA Energy Transition Center Director Alkım Bağ Güllü and ESCON CEO Onur Ünlü. The workshop was successfully completed with the attendance of 132 experienced professionals from the field.

Two questionnaires were held during the Energy Efficiency Day prior to the start of the sessions. In the first panel, Future Responsibilities of Public and Private Stakeholders, 174 responses by 71 professionals were compiled. When asked, **"What does energy efficiency mean to you?",** the top three responses were **sustainability, future, and savings**.[23] The same professionals were then asked, **"What do you think are the three most critical success factors for a more energy-efficient future?"**. The four most common responses were **investments and financing, awareness and consciousness, technology and innovation, and political objectives and strategies** respectively.[24]

The second panel, Innovative Technologies that Drive Energy Efficiency, included a questionnaire that received 78 responses from 39 professionals. When asked**, "What do you do in your daily life for energy efficiency?"**, the three most common answers were **using public transportation, recycling, and savings**.[25]

22. See Figure 7 and 8 in the Annex for the full Stakeholder Guidance Mapping and Stakeholder Action Roadmap.
23. See Figure 9 in the Annex for the diagram.
24. See Figure 10 in the Annex for the diagram.
25. See Figure 11 in the Annex for the diagram.

Conclusion and Future Direction

Conclusion and Future Direction

As Türkiye advances its energy transition, energy efficiency stands as an indispensable pillar for achieving both national sustainability targets and long-term economic resilience. The insights and collaborative discussions generated during the workshop highlight not only the immediate benefits of energy efficiency strategies but also their transformative potential across public, private, and societal spheres.

The key takeaways from the workshop underscore the necessity of fostering robust partnerships among a wide range of stakeholders, including policymakers, businesses, technology providers, and financial institutions. **A coordinated, multi-stakeholder approach, underpinned by clear regulatory frameworks and innovative financing mechanisms,** will be essential to address existing barriers and accelerate the widespread adoption of energy efficiency solutions at scale.

Looking ahead, future efforts should mainly focus on:

- **Establishing well-structured financing mechanisms** that both streamline access to existing financial instruments and enable the use of innovative solutions, supported by standardized and scalable Measurement & Verification frameworks;
- **Revising regulatory frameworks** to ensure they are forward-looking, predictable, and regionally adaptable; aligned across sectors; simplified in terms of permitting and support; and inclusive of financing enablers and equity considerations;
- **Expanding awareness campaigns and capacity-building programs** to equip stakeholders including businesses, local governments, financing institutions and end-users with the knowledge and skills needed to implement energy-saving measures;
- **Enhancing stakeholder engagement** by establishing structured, institutionalized governance and knowledge-sharing mechanisms while formalizing the Energy Efficiency Days as a recurring platform to maintain collaboration, track progress, and foster continuous cross-sector exchange;
- **Promoting cost-reflective electricity pricing** to enhance the financial viability of energy efficiency projects, while also **advancing competitive carbon pricing** as a tool to improve project economics and support climate goals.


Annex

Annex

Figure 7 – Stakeholder Guidance Mapping

	Barriers / Stakeholders	Private Sector	Public Sector	Academia	NGOs and Think Tanks	Local Financial Institutions	International Financial Institutions	Comms Channels
Integrating New Technologies	4.1. Lack of Trust in New Technologies	✓	✓	✓	✓			✓
	4.2. Lack of Enabling Infrastructure for Scalability	✓	✓			✓	✓	✓
	4.3. High Cost and Insufficient Market Scale	✓	✓			✓	✓	✓
	4.4. Insufficient Technological Literacy and Limited Resources	✓	✓	✓	✓			✓
	4.5. Regulatory Gaps in Integrating Emerging Technologies	✓	✓					
	4.6. Intellectual Property Challenges Related to Commercialization	✓	✓					
	4.7. Regulatory Ambiguity on Environmental Issues	✓	✓					✓
	4.8. Integration Challenges with Existing Systems	✓	✓			✓	✓	✓
Regulatory Framework	5.1. Limited Strategic and Coordinated Planning	✓	✓	✓	✓	✓	✓	✓
	5.2. Lack of Regionally Tailored Energy Efficiency Strategies	✓	✓					
	5.3. Regulatory Unpredictability Undermining Investor Confidence	✓	✓					✓
	5.4. Prolonged Permit and Support Procedures	✓	✓					
	5.5. Legal Constraints on Financing Options	✓	✓			✓	✓	
	5.6 Limited Integration ofSocial Equity in Energy Efficiency Policy Design	✓	✓		✓			✓
Project Financing	6.1. Scarcity of Financing	✓	✓			✓	✓	
	6.2. Limited Access to Financing for Small-Scale Projects	✓	✓			✓	✓	
	6.3. Inadequate Capacity and Awareness in Financial Institutions	✓	✓		✓	✓	✓	✓
	6.4. Lack of Institutional Guidance on Accessing International Finance	✓	✓			✓	✓	✓
	6.5. Challenges in Scaling Pilot Projects	✓	✓			✓	✓	
	6.6. Insufficient Supportive Financing Structures	✓	✓					✓
	6.7. Limited Support for Skills Development and Green Employment	✓	✓		✓			✓
Comms	7.1. Lack of Institutionalized Multi-Stakeholder Governance	✓	✓	✓	✓	✓	✓	✓
	7.2. Absence of Streamlined Best Practice Exchange Processes	✓	✓	✓	✓	✓	✓	✓
	7.3. Limited Implementation Capacity of Local Governments	✓	✓					✓
	7.4. Insufficient Engagement with NGOs	✓	✓	✓	✓	✓	✓	✓

Figure 8 – Stakeholder Action Roadmap

Stakeholder Action Roadmap

Private Sector

Short Term (0-6 months)

Integrating New Technologies
- **[Lead]** Showcase successful pilot projects that harness new technologies
- **[Support]** Encourage industry-academia partnerships for the creation of credible feasibility studies for new technologies
- **[Support]** Assist the development of inclusive awareness campaigns and locally adapted communication strategies on new technologies in collaboration with the public sector and civil society organizations
- **[Co-lead]** Deliver targeted training programs and awareness-raising events to promote energy efficiency
- **[Lead]** Industry associations to aggregate SME demand, unlocking economies of scale and reducing costs

Regulatory Framework
- **[Support]** Assist the public sector in operationalizing plans through clearly assigned responsibilities and sector-specific roadmaps

Project Financing
- **[Lead]** Utilize performance-based financing mechanisms such as ESCO and EPCs
- **[Co-lead]** Enhance understanding of available credit lines and procedures for energy-saving projects
- **[Lead]** Large corporations to promote market-wide standards by offering incentives to energy-efficient suppliers and embedding energy performance criteria in their procurement processes

Mid Term (6–12 months)

Integrating New Technologies
- **[Support]** Assist the launch of targeted training programs and advisory services for SMEs to allow them to adopt state-of-art technologies, in collaboration with the public sector, academia, and NGOs
- **[Lead]** Strengthen pre-project environmental impact assessment for new technologies

Regulatory Framework
- **[Support]** Assist the public sector in developing a regionally focused energy efficiency framework supported by spatial data and sectoral analysis
- **[Support]** Assist the public sector in establishing a central monitoring mechanism to track implementation progress and impact
- **[Support]** Assist the public sector in establishing mechanisms for active follow-up

Project Financing
- **[Co-lead]** Engage in public-private partnerships for energy efficiency projects
- **[Lead]** Explore innovative mechanisms to generate multiple financing streams for energy efficiency projects
  - Green leasing
  - Green bonds and insurance products
  - Revenue streams generated through carbon trading mechanisms and sustainability-linked financial instruments
  - Public-private partnerships
- **[Support]** Industry associations to support the development of structured support mechanisms, including strategic roadmaps, step-by-step application guides, and training modules, that equip stakeholders to access international funding opportunities

Communication and Stakeholder Engagement
- **[Co-lead]** Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders

Cross-sector Priorities
- **[Support]** Develop nudging strategies, social norm campaigns, and personalized feedback systems to shift user behavior

Long Term (1–2 years)

New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders
- **[Co-lead]** Develop public-private flagship projects to demonstrate feasibility and scale adoption across the built environment
- **[Co-lead]** Adopt integrated energy management approaches and prioritize the retrofit of existing infrastructure
- **[Co-lead]** Focus on reducing electricity losses in transmission and distribution to unlock system-wide efficiency gains

Regulatory Framework
- **[Support]** Assist the public sector in embedding equity-focused components within energy efficiency frameworks

Project Financing
- **[Support]** Support the development of aggregation platforms that bundle similar pilot and small-scale projects into larger, more bankable portfolios

Communication and Stakeholder Engagement
- **[Co-lead]** Institutionalize multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

Cross-sector Priorities
- **[Support]** Promote and support the integration of circular economy practices
- **[Support]** Assist the public sector in adopting an integrated policy approach that positions energy efficiency as both a mitigation and adaptation tool

Public Sector

Short Term (0-6 months)

Integrating New Technologies
- **[Support]** Showcase successful pilot projects that harness new technologies
- **[Co-lead]** Encourage industry-academia partnerships for the creation of credible feasibility studies for new technologies
- **[Lead]** Promote energy efficiency projects that harness cutting-edge technologies through showcasing long-term savings and financial returns
- **[Lead]** Develop inclusive awareness campaigns and locally adapted communication strategies on new technologies in collaboration with the private sector and civil society organizations
- **[Co-lead]** Deliver targeted training programs and awareness-raising events to promote energy efficiency
- **[Lead]** Improve SME access to basic tools and hardware
- **[Lead]** Develop capacity-building initiatives on cybersecurity readiness to raise awareness among stakeholders

Mid Term (6–12 months)

Integrating New Technologies
- **[Lead]** Formulate well-structured mechanisms to bridge the cost gap and stimulate demand by introducing targeted subsidies, tax incentives, and, where appropriate, stricter enforcement measures to lower the cost of adopting cutting-edge technologies
- **[Lead]** Launch targeted training programs and advisory services for SMEs to allow them to adopt state-of-art technologies, in assistance of industry bodies, academia, and NGOs
- **[Lead]** Provide clear guidance on regulatory compliance pathways for the environmental impact requirements of state-of-art technologies
  - Update relevant legislation to reflect the characteristics of emerging solutions
  - Offer structured consultations
  - Offer early-stage screening tools

Regulatory Framework
- **[Lead]** Embed energy efficiency classifications into national taxonomies
- **[Lead]** Develop a regionally focused energy efficiency framework supported by spatial data and sectoral analysis

Long Term (1–2 years)

Integrating New Technologies
- **[Lead]** Develop a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders
- **[Lead]** Adopt the principle of "energy efficiency as the first fuel" when guiding new investments and embed this approach into building codes, urban planning, and infrastructure development
  - Promote high-performance building models, such as Zero-Energy Buildings (ZEB) and net-positive structures
- **[Lead]** Create incentives that support the integration of efficiency measures into smart grids and renewable energy systems
- **[Lead]** Establish forward-looking regulatory frameworks that enable the integration of new technologies into energy efficiency planning, an example being electric vehicles (EVs)
  - Revise urban mobility strategies
  - Update grid codes to allow bidirectional charging
  - Ensure charging infrastructure in organized industrial zones (OIZs) and high-demand areas is V2G-compatible

- **[Lead]** Highlight energy efficiency as a critical lever for national economic resilience and security
- **[Lead]** Frame energy efficiency to include climate change adaptation along with mitigation

Regulatory Framework
- **[Lead]** Focus on operationalizing plans through clearly assigned responsibilities and sector-specific roadmaps
- **[Lead]** Streamline permitting and support procedures by introducing digital application systems, time-bound approval processes, and single-window access points

Project Financing
- **[Co-lead]** Lower support limits for energy efficiency initiatives and prioritize high-potential projects, irrespective of scale, to boost financing for smaller projects
- **[Lead]** Provide tax incentives and concessional financing to reduce financing barriers

- **[Lead]** Establish a central monitoring mechanism to track implementation progress and impact
- **[Lead]** Establish mechanisms for active follow-up
- **[Lead]** Issuing periodic updates on regulatory processes
  - Providing interim progress reports
  - Maintaining regular communication on the status of planned changes

Project Financing
- **[Co-lead]** Engage in public-private partnerships for energy efficiency projects
- **[Co-lead]** Develop standardized, scalable Measurement and Verification (M&V) frameworks suitable for smaller projects, in collaboration with financial institutions
- **[Co-lead]** Develop structured support mechanisms, including strategic roadmaps, step-by-step application guides, and training modules, that equip stakeholders to access international funding opportunities
- **[Lead]** Support the development of aggregation platforms that bundle similar pilot and small-scale projects into larger, more bankable portfolios
- **[Lead]** Develop and expand incentive-oriented programs that promote participation in certified training schemes, such as Energy Efficiency Specialization Programs

Communication and Stakeholder Engagement
- **[Co-lead]** Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders
- **[Lead]** Develop policy guides, practical toolkits, and adaptable incentive models to strengthen the role of local governments in energy efficiency

Cross-sector Priorities
- **[Lead]** Develop nudging strategies, social norm campaigns, and personalized feedback systems to shift user behavior beyond awareness
- **[Lead]** Promote and integrate circular economy practices into effective planning

- **[Lead]** Establish clearer and more accessible legal framework for intellectual property that supports innovation
  - IP-related incentives
  - Fast-track patenting for green technologies
  - Shared licensing platform
- **[Co-lead]** Develop public-private flagship projects to demonstrate feasibility and scale adoption across the built environment
- **[Co-lead]** Focus on reducing electricity losses in transmission and distribution to unlock system-wide efficiency gains

Regulatory Framework
- **[Lead]** Update legal frameworks to recognize future energy savings as collateral and expand the use of innovative financial instruments such as green bonds for energy efficiency projects
- **[Lead]** Embed equity-focused components within energy efficiency frameworks through developing publicly backed financing models tailored for low-income groups and introducing mandatory energy efficiency standards in social housing programs
- **[Lead]** Revise public procurement rules for EPCs

Project Financing
- **[Lead]** Adjust the legal framework to support innovative mechanisms that can generate multiple financing streams for energy efficiency projects
  - Green leasing
  - Green bonds and insurance products
  - Revenue streams generated through carbon trading mechanisms and sustainability-linked financial instruments
- **[Lead]** Develop an integrated, consumer-centered energy management approach that encompasses various aspects of the energy transition
  - Combine renewable energy investments with energy efficiency in industry and buildings
  - Create comprehensive investment packages
  - Design tailored financing packages
- **[Lead]** Form targeted incentives and expand technical assistance for solution providers and end-users to scale local Research and Development (R&D) projects
- **[Lead]** Expand risk mitigation measures, such as government-backed guarantees

Communication and Stakeholder Engagement
- **[Co-lead]** Institutionalize multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

Cross-sector Priorities
- **[Lead]** Develop comprehensive data security strategies that include the establishment of cybersecurity standards and protocols for smart grids, monitoring tools, and connected devices
- **[Lead]** Adopt an integrated policy approach that positions energy efficiency as both a mitigation and adaptation tool through aligning efficiency targets with climate resilience objectives and supporting investments in adaptive infrastructure such as microgrids, distributed energy systems, and green-blue urban infrastructure

Academia

Short Term (0-6 months)

Integrating New Technologies
- **[Co-lead]** Encourage industry-academia partnerships for the creation of credible feasibility studies for new technologies

Mid Term (6–12 months)

Integrating New Technologies
- **[Support]** Assist the launch of targeted training programs and advisory services for SMEs to allow them to adopt state-of-art technologies

Communication and Stakeholder Engagement
- **[Co-lead]** Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders

Long Term (1–2 years)

Integrating New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders

Communication and Stakeholder Engagement
- **[Support]** Assist the institutionalization of multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

NGOs and Think Thanks

Short Term (0-6 months)

Integrating New Technologies
- **[Support]** Assist the development of inclusive awareness campaigns and locally adapted communication strategies on new technologies in collaboration with private and public sector

Project Financing
- [Co-lead] Develop awareness campaigns that showcase effective financing practices and highlight financing opportunities for energy efficiency projects

Mid Term (6–12 months)

Integrating New Technologies
- **[Support]** Assist the launch of targeted training programs and advisory services for SMEs to allow them to adopt state-of-art technologies

Communication and Stakeholder Engagement
- [Co-lead] Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders
- [Lead] Support the efforts of key industry players in promoting a competitive, cost-based market structure
- [Lead] Collaborate with businesses in assessing and addressing the impacts of emissions trading systems and carbon taxes

Long Term (1–2 years)

Integrating New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders

Communication and Stakeholder Engagement
- **[Support]** Assist the institutionalization of multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups
- [Lead] Participate in follow-up actions to ensure continuity, accountability, and meaningful impact in implementation

Local Financial Institutions

Short Term (0-6 months)

Integrating New Technologies
- [Co-lead] Offer low interest loans and credit guarantees to lower risk and improve access to capital for energy efficiency projects that harness cutting-edge technologies

Project Financing
- [Co-lead] Lower support limits for energy efficiency initiatives and prioritize high-potential projects, irrespective of scale, to boost financing for smaller projects
- [Co-lead] Enhance understanding of available credit lines and procedures for energy-saving projects

Mid Term (6–12 months)

Project Financing
- [Co-lead] Develop standardized, scalable Measurement and Verification (M&V) frameworks suitable for smaller projects, in collaboration with the public sector

Communication and Stakeholder Engagement
- **[Support]** Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders

Long Term (1–2 years)

Integrating New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders

Project Financing
- [Lead] Development banks to build structured support mechanisms, including strategic roadmaps, step-by-step application guides, and training modules
- [Lead] Create in-house expertise to assess energy efficiency investments through establishing dedicated engineering consultancy units staffed with technical and financial experts

Communication and Stakeholder Engagement
- **[Support]** Assist the institutionalization of multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

International Financial Institutions

Short Term (0-6 months)

Integrating New Technologies
- [Co-lead] Offer low interest loans and credit guarantees to lower risk and improve access to capital for energy efficiency projects that harness cutting-edge technologies

Project Financing
- [Co-lead] Lower support limits for energy efficiency initiatives and prioritize high-potential projects, irrespective of scale, to boost financing for smaller projects

Mid Term (6–12 months)

Project Financing
- [Co-lead] Develop standardized, scalable Measurement and Verification (M&V) frameworks suitable for smaller projects, in collaboration with the public sector
- [Co-lead] Support the collaborative effort to develop structured support mechanisms, including strategic roadmaps, step-by-step application guides, and training modules, that equip stakeholders to access international funding opportunities

Communication and Stakeholder Engagement
- **[Support]** Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders

Long Term (1–2 years)

Integrating New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders

Communication and Stakeholder Engagement
- **[Support]** Assist the institutionalization of multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

Communication Channels

Short Term (0-6 months)

Integrating New Technologies
- **[Support]** Promote energy efficiency projects that harness cutting-edge technologies through showcasing long-term savings and financial returns
- **[Support]** Highlight energy efficiency as a critical lever for national economic resilience and security

Project Financing
- [Co-lead] Develop awareness campaigns that showcase effective financing practices and highlight financing opportunities for energy efficiency projects

Cross-sector Priorities
- **[Support]** Frame energy efficiency to include climate change adaptation along with mitigation

Mid Term (6–12 months)

Communication and Stakeholder Engagement
- [Co-lead] Establish a dedicated resource library for streamlining best practice exchange in collaboration with all relevant stakeholders

Cross-sector Priorities
- **[Support]** Develop nudging strategies, social norm campaigns, and personalized feedback systems to shift user behavior beyond awareness
- **[Support]** Promote the integration of circular economy practices

Long Term (1–2 years)

Integrating New Technologies
- **[Support]** Assist the development of a holistic planning approach that prioritizes infrastructure compatibility and system-wide integration of energy efficiency measures, in collaboration with all stakeholders

Communication and Stakeholder Engagement
- **[Support]** Assist the institutionalization of multi-stakeholder governance through the establishment of structured platforms such as sectoral advisory boards, regional coordination councils, and cross-sectoral action groups

Figure 9 – Panel 1

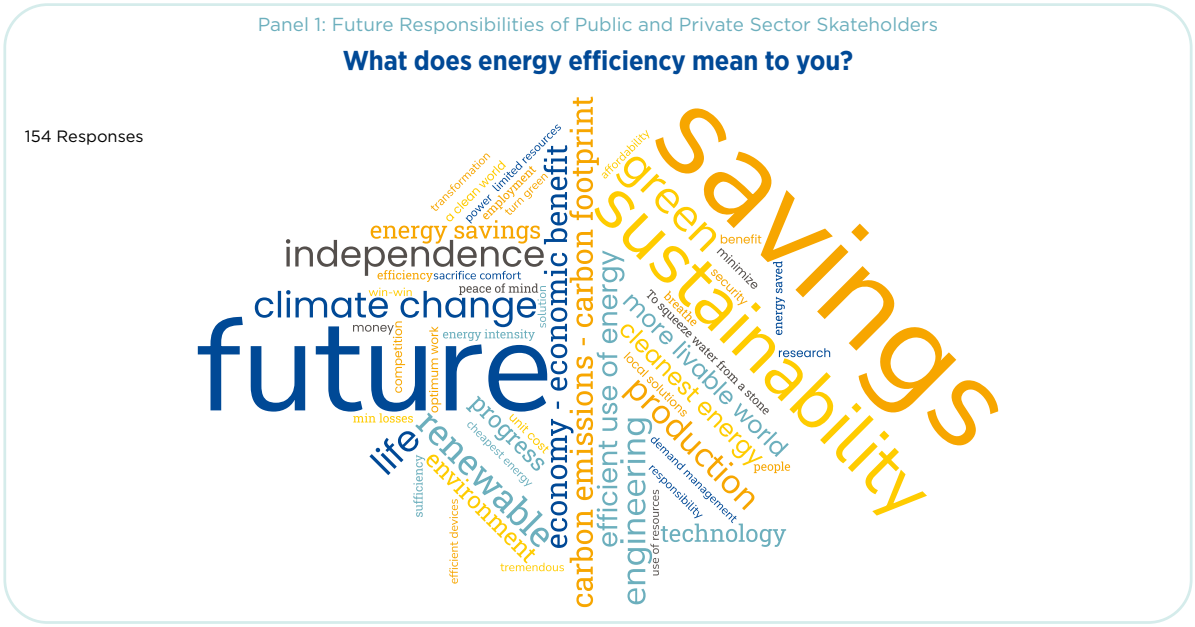


Figure 10 – Panel 1, Question "What do you think are the three most critical success factors for a more energy-efficient future?"

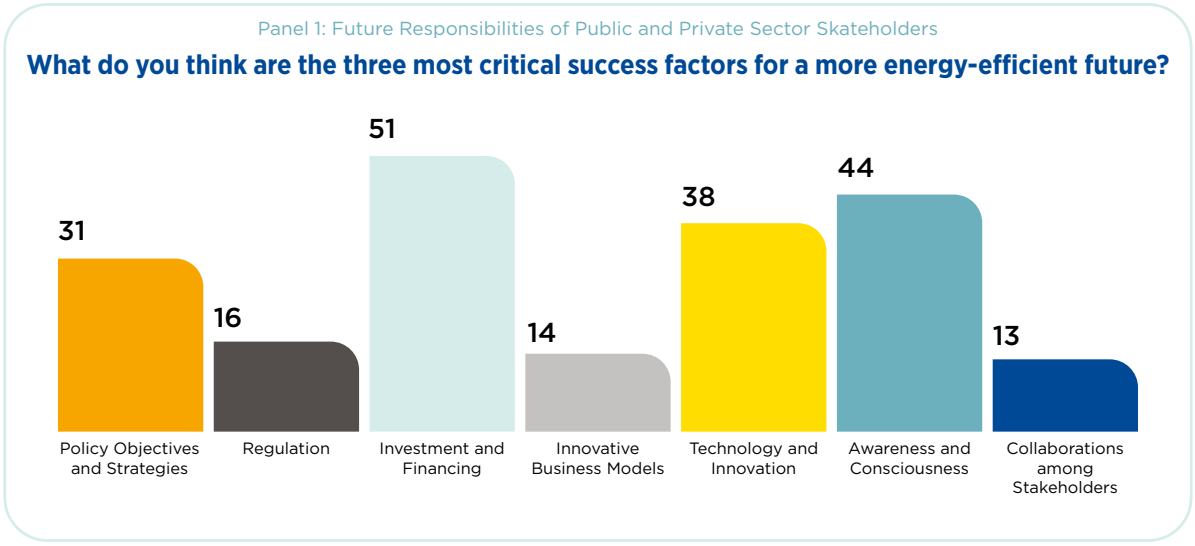
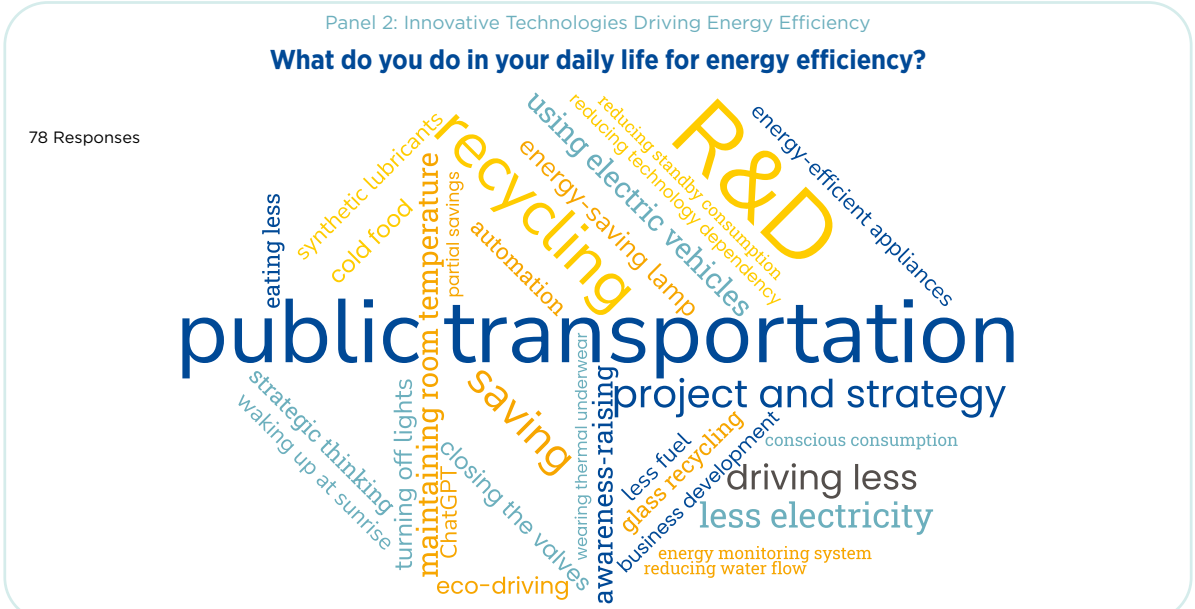


Figure 11 – Panel 2, Question "What do you do in your daily life for energy efficiency?"



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