



**“Battery Energy Storage Options for Türkiye” Report Released August 2024**

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The global push to reduce greenhouse gas emissions, a key driver of climate change, has spurred a significant shift in energy policies. This transition, rooted in energy efficiency, electrification, and renewable energy sources, is critical not only for achieving climate goals but also for the security of energy supplies and affordable access to energy, and made possible by technological advances and declining costs.

As a result, transforming energy systems to incorporate sustainable energy sources has become a priority for governments and international organizations worldwide. Achieving ambitious renewable energy targets requires increased flexibility in electricity systems, ensuring a balance between supply and demand. The large-scale adoption of battery energy storage systems is expected to play a pivotal role in this balancing process.

Different electrochemical materials used in battery energy storage technologies each offer distinct advantages and disadvantages, depending on their applications. Therefore, it is essential to plan and design battery energy storage systems tailored to regional needs and specific purposes- be it energy arbitrage, managing generation imbalances, frequency regulation, or other services.

In this context, SHURA's "Battery Energy Storage Options for Türkiye" [report](#) aims to analyse the spatial distribution of battery technologies across Türkiye, identify the services that can benefit most from their use, and evaluate their impact on the transmission grid. This analysis aims to ensure the efficient use of battery storage as a tool for flexibility in a wider effort to maximise the potential of renewable energy in Türkiye.



## **"Transportation Sector Transformation: Integrating Electric Vehicles into Türkiye's Distribution Grids" Report Released**

**July 2024**

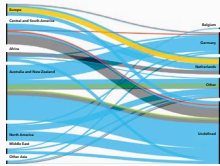
The electrification of Türkiye's transportation sector with renewable energy sources is set to play a crucial role in achieving the country's net-zero emission targets for 2053. According to SHURA's Net Zero 2053 study, electrification in the transportation sector is projected to reach 58% by 2053, underscoring that decarbonization can be achieved through a transition to electric vehicles (EVs) and the adoption of clean fuels.

In 2019, SHURA's report, Transport Sector Transformation: Integrating Electric Vehicles into Türkiye's Distribution Grids, showed that by 2030, 2.5 million EVs could be integrated into Türkiye's distribution grids with minimal additional investment and a limited impact on network operations. Building on this groundwork, SHURA Energy Transition Center has now released a follow-up [report](#), "Transportation Sector Transformation: Integrating Electric Vehicles into Türkiye's Distribution Grids," which examines the impacts of EV integration on Türkiye's electricity distribution grids.

The new study explores the additional investment requirements due to e-mobility by analysing two major electricity distribution grids. It highlights countermeasures such as smart charging mechanisms that can facilitate EV integration and offers policy recommendations for the seamless incorporation of e-mobility into the Turkish power system. The report provides a comprehensive analysis of the integration of electric vehicles and light-duty vehicles (LDVs) into Türkiye's distribution grid, projecting trends and needs up to 2035. It also addresses the impact of increased e-mobility on grid infrastructure and proposes strategic solutions to mitigate potential challenges.

According to analyses conducted by the International Energy Agency (IEA), low-emission hydrogen is crucial for countries to achieve their energy and climate goals by transitioning to a net-zero emissions economy in the latter half of the 21st century.

**Estimated low-emission hydrogen trade potential considering the announced projects (2020)**



Based on global projects on the trade of hydrogen and its derivatives, IEA estimates that by 2030, potentially to reduce the total of hydrogen-equivalent fuel could be circulated around the world. However, almost three-quarters of such export-oriented projects are still in the early stages of development.

By 2030, almost one-third of the relevant projects have identified potential buyers, though only a few have concluded agreements. The remaining two-thirds of potential export capacity are expected to account for three-quarters of global hydrogen imports by that time.

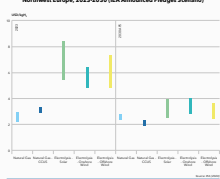
Northwestern Europe accounts for almost half of the total hydrogen demand in Europe. The region is considered advantageous due to its proximity to the North Sea, which has high renewable energy and carbon storage potential. The region also stands out with its well-developed and internationally connected natural gas grid, which can potentially be adapted for low-emission hydrogen use. In addition to capacity, Northwestern European countries aim to install 30-40 gigawatts (GW) of electrolyzer capacity by 2030 to produce their own low-emission hydrogen.



According to the IEA, all the projects in Northwestern Europe focused on producing low-emission hydrogen. However, technological improvements are needed to make low-emission and renewable energy-based hydrogen production more cost-effective.

The price of hydrogen produced through renewable energy-based electrolysis is estimated to be approximately three times the landed cost of natural gas-based hydrogen. Therefore, technological improvements are needed to make low-emission and renewable energy-based hydrogen production more cost-effective.

**Levelized cost of hydrogen for selected technologies in Northwestern Europe, 2020-2030 (IEA Announced Projects Scenario)**



To accelerate the global production of low-emission hydrogen and ensure timely operationalization of related projects, a hydrogen market needs to be established for this purpose, countries can take the following steps:

- Implementing and defining strategies that involve national and regional hydrogen markets
- Promoting legal regulations for the development and trading of hydrogen markets
- Encouraging demand security for low-emission hydrogen by creating a pipeline of projects by defining procurement rules
- Creating effective regulatory frameworks and policies to support the development of low-emission hydrogen
- Developing hydrogen infrastructure and ensuring its interoperability with existing natural gas infrastructure

In addition to reducing emissions in the hard-to-abate sectors, low-emission hydrogen will also lower fuel inputs, enhancing energy security. The integration of low-emission hydrogen into the system requires specific regulatory and institutional arrangements. The 'Hydrogen Technology Strategy and Roadmap of Türkiye' published in 2023 is expected to be followed by a related legal framework that includes standards for hydrogen production, storage, transportation, and use.

Türkiye, which has a high potential for renewable energy, plans to install 2 GW of electrolyzer capacity by 2030 and increase this to 70 GW by 2050.

With its high renewable energy potential and developed natural gas production and port infrastructure, Türkiye has significant prospects for low-emission hydrogen production and international trade. To ensure the operational efficiency strategies for hydrogen production and export should be developed taking into account demand.

Türkiye should monitor developments in high-potential hydrogen markets, such as Northwestern Europe, and define its role within its own geographic region.

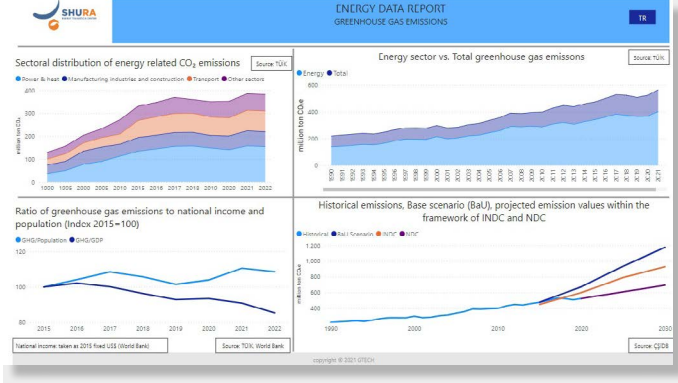
According to the results of SHURA's energy carbon roadmap, the shares of a fully green hydrogen in industry and transportation are set to increase significantly by 2050, despite the expected technological developments, decreasing costs, and the acceptance of such technologies in the world as well as in Türkiye. In the analysis, the share of green hydrogen and other fuels in the total energy demand of Türkiye in 2050 corresponds to approximately 15%.

# SHURASTAT ISSUE 40 PUBLISHED September 2024

SHURASTAT [Issue 40](#) explores the targets for low-emission hydrogen and the key strategies for developing a hydrogen market in Northwestern Europe. It also highlights the importance for Türkiye to design effective strategies and legislation to unlock its substantial hydrogen potential.

Key insights from Issue 40 include:

- **The Role of Low-Emission Hydrogen:** According to analyses by the International Energy Agency (IEA), low-emission hydrogen is essential for countries to achieve their energy and climate goals in the transition to a net-zero emission economy. It plays a pivotal role in the decarbonization of the global energy sector.
- **Global Hydrogen Trade Projections:** Based on global projects related to the trade of hydrogen and its derivatives, it is estimated that by 2030, around 16 million tons (Mt) of hydrogen-equivalent fuel could be circulated worldwide.
- **Northwestern Europe's Ambitious Targets:** Countries in Northwestern Europe aim to install 30-40 gigawatts (GW) of electrolyzer capacity by 2030 to produce low-emission hydrogen domestically.
- **The Need for a Hydrogen Market:** To boost global production of low-emission hydrogen and ensure the timely launch of related projects, establishing a robust hydrogen market is crucial. For this purpose, Türkiye, among other countries, must take key steps toward developing its hydrogen sector.



## Greenhouse Gas Data Added to SHURA Database/ July 2024

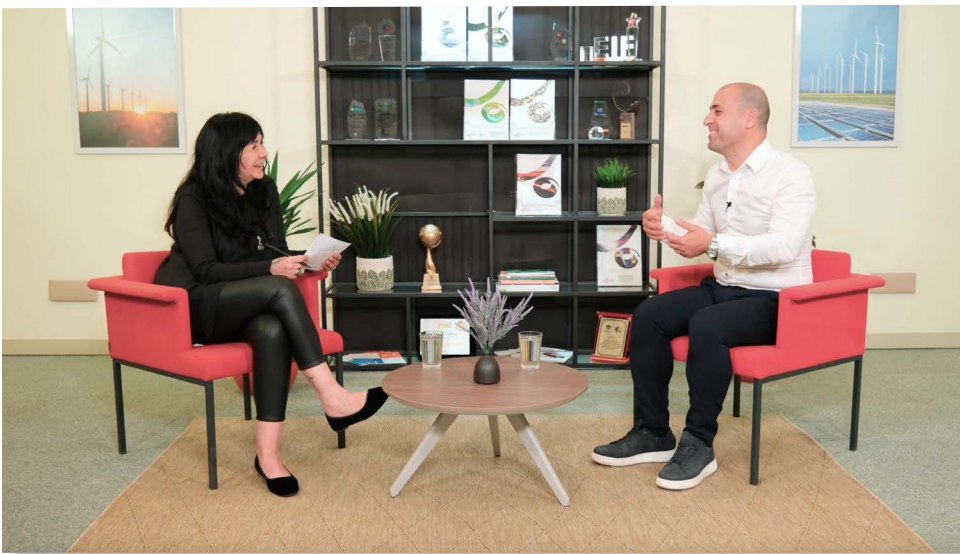
The [SHURA database](#), a comprehensive resource containing up-to-date information on the energy sector, has been enhanced with the addition of Türkiye's actual greenhouse gas emissions data. This update aims to provide stakeholders with accurate and timely data to support informed decision-making in the context of Türkiye's energy transition and climate goal.

## New Episodes of "Energy Transition Agenda" Are Online

Presented by SHURA, the new [program series](#) "Energy Transition Agenda" explores all aspects of the energy transition. Available on SHURA's YouTube channel, Spotify Podcasts, and Apple Podcasts, the series is hosted by Economy Newspaper Coordinator Didem Eryar Ünlü. The program comprehensively covers key topics of the energy transition, from renewable energy and energy efficiency to green hydrogen and Türkiye's net-zero target, along with discussions on just transition, featuring expert guests in each episode.



The [third episode](#) of the program, released on July 12, featured Berkan Bayram, the President of the Turkish Electric and Hybrid Vehicles Association (TEHAD). The conversation focused on the transformation of the transportation sector amid Türkiye's transition to a net-zero emission economy, discussing the development of electric vehicles in Türkiye, charging infrastructure, and the additional load on the grid.



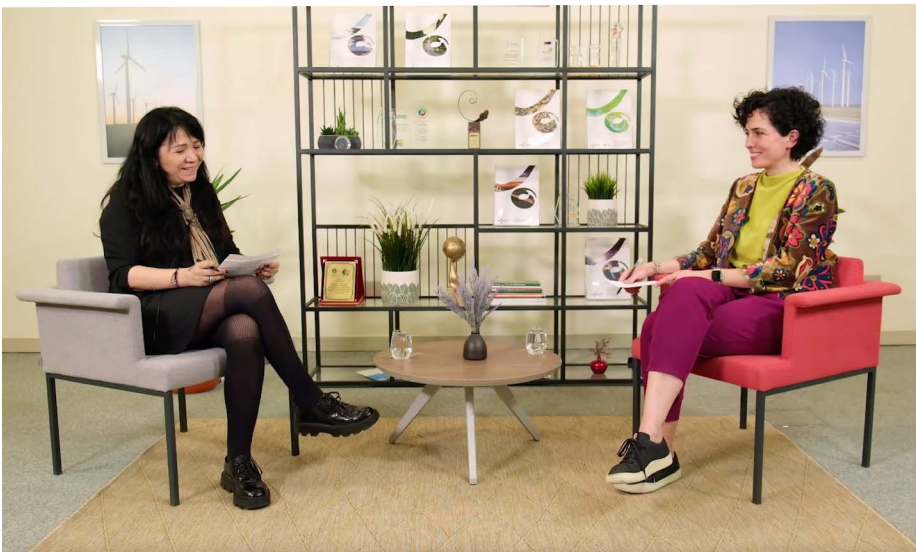
The [fourth episode](#), released on August 2, welcomed Associate Professor Dr. Muhsin Mazman, Director of TDinamik Energy Storage Unit. This episode explored the role of battery technologies in integrating renewable energy into the electricity system, their impact on grid flexibility, advancements in battery technologies and costs, battery investments in Türkiye, and policy recommendations for the sector.



The [fifth episode](#), released on August 23, featured Onur Ünlü, President of the Energy Efficiency and Management Association (EYODER), Vice President of TÜRKONFED, and Chairman of the Green Transformation Commission. The discussion centered on priorities in energy efficiency, the state of energy efficiency in Türkiye, planning for energy efficiency investments, new technologies, investment areas, financing, and policy recommendations.



Canan Özsoy, Independent Board Member and Board Advisor, was the guest of the [sixth episode](#), released on September 13. The conversation focused on the requirements for achieving decarbonization in the industrial sector, analyzing the strengths and weaknesses of Türkiye's current industrial structure concerning sustainable development and decarbonization. It also addressed the steps needed to ensure a just transition in the industry, particularly for the development of SMEs.

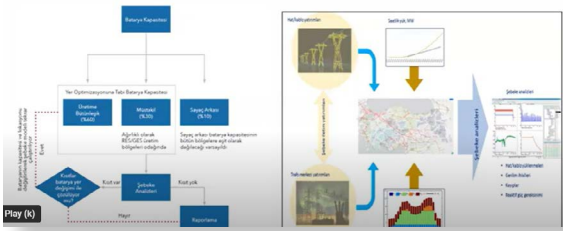


The [seventh episode](#), released on September 27, featured Bengisu Özenç, Director of SEFİA. The discussion highlighted the planning of a socially and economically just transition to a low-carbon economy, potential risks and suitable roadmaps, financing models to support the transition, and examples of practices in this field.

## SHURA EVENTS

### “Battery Energy Storage Options for Türkiye” Report Launch and Panel August 2024

#### BATARYALARIN KONUMLANDIRILMASI - METODOLOJİ



On August 1, SHURA announced its report titled “Battery Energy Storage Options for Türkiye” through an [online launch event](#).

The event featured a welcome address by SHURA Director Alkım Bağ Güllü, followed by a report presentation by SHURA Senior Energy Analyst Dr. Sena Serhadlıoğlu. The presentation was succeeded by a panel session, moderated by SHURA Head of Research Hasan Aksoy.

The panel included the following speakers:

- Prof. Dr. Kamil Çağatay Bayındır, President of the Energy Storage Systems Association (EDSİS)
- Dr. Alper Terciyanlı, Partner and CEO at EGS
- Can Tokcan, Chairman of the Board of the Energy Storage Industries Association
- Haluk Özgün, General Manager at SOLEX
- Mevlüt Akdeniz, Power Systems Engineer at MRC Türkiye

The discussion focused on Türkiye’s potential for battery energy storage, investment opportunities, and strategic insights for developing this crucial sector.



### “Transportation Sector Transformation: Integrating Electric Vehicles into Türkiye’s Distribution Grids” Report Launch and Panel / July 2024

On July 10, SHURA launched its report titled “Transportation Sector Transformation: Integrating Electric Vehicles into Türkiye’s Distribution Grids” through an [online event](#).

The event featured a welcome address by SHURA Director Alkım Bağ Güllü, followed by a report presentation by SHURA Head of Research Hasan Aksoy. This was succeeded by a panel session.

The panel included the following speakers:

- Dr. Oğuzcan Samsun, Head of Strategy, Business Development, M&A, and Innovation at Enerjisa
- Dr. Julia Hildermeier, Senior Associate at RAP (Regulatory Assistance Project) EU Programme
- Berkay Somalı, CEO of Voltrun and Board Member of E-MOD
- Dr. Saeed Teimourzadeh, Energy R&D Director at EPRA

The discussion focused on the integration of electric vehicles into Türkiye’s distribution grids, addressing challenges, opportunities, and strategies for a successful transition in the transportation sector.

## EVENTS AND PROGRAMS ATTENDED BY SHURA



### September 13

Dr. Sena Serhadlıoğlu, Senior Energy Analyst at SHURA Energy Transition Center, participated in the 14th Green Economy Conference organized by the Green Thought Association at Istanbul Postane. During the Policies session of the conference, Serhadlıoğlu delivered a speech titled "The Role of Policies and Incentives in Accelerating the Development of Renewable Energy."

### September 12

Yael Taranto was a panelist at the INETTT conference titled "Many Pathways, One Goal: How to Achieve a Just Transition Locally and Globally" in Poland.



### August 2

SHURA Senior Energy Analyst Dr. Sena Serhadlıoğlu was a guest at Çetin Ünsalan's "İş'te Gündem" live radio programme at ST Endüstri Radyo. Serhadlıoğlu commented on SHURA report titled "Battery Energy Storage Options for Türkiye".

### July 11

SHURA Senior Energy Analyst Yael Taranto was a guest on the İklim Habercileri [program](#) prepared by Bulut Bagatır and Barış Doğru on Açık Radyo. The program discussed SHURA's report "Just Transition and Regional Employment: Policy Options for Türkiye".

### July 11

SHURA Head of Research Hasan Aksoy was a guest at Çetin Ünsalan's "İş'te Gündem" live radio programme at ST Endüstri Radyo. Aksoy commented on SHURA's report titled "Transportation Sector Transformation: Integrating Electric Vehicles into Türkiye's Distribution Grids".



### July 10

SHURA Director Alkım Bağ Güllü was a guest on the [program](#) "Energy with Altuğ Karataş" prepared and presented by Altuğ Karataş on ST Endüstri Radyo. The program focused on the energy transition in Türkiye.

## UPCOMING REPORTS FROM SHURA

- Net Zero 2053: The Socioeconomic Impact of Transitioning to Carbon-Free Energy in Türkiye
- Application Areas of Green Hydrogen in Türkiye
- Assessment of the Sector-specific and Interactive Impact of the EU CBAM on the Turkish Industrial Sector
- Renewable Power Purchase Agreements

## BASINDA SHURA

**2.08.2024**

[Energy imports can be lowered by storage](#)

**2.08.2024**

[Türkiye's energy imports could be lowered by the battery energy storage systems](#)

**1.08.2024**

[By 2035, Turkey could prevent \\$369 million in gas imports through battery energy storage systems](#)

**1.08.2024**

[Storage systems could lower energy imports](#)

**1.08.2024**

[Battery energy storage systems could lower Türkiye's energy imports](#)

**16.07.2024**

[Türkiye's energy transition focuses on two key agendas](#)

**15.07.2024**

[Türkiye's electricity grid should be ready for 11 million vehicles in 11 years](#)

**10.07.2024**

[SHURA predicts that transitioning to electric vehicles could reduce emissions by 41% by 2035](#)

**10.07.2024**

[Electric vehicles are projected to require a 12% increase in grid investment](#)



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Web sitesi üzerinden kayıt olarak SHURA'nın e-bültenine üye olabilir  
ayrıca Twitter, Facebook, Instagram ve LinkedIn sosyal medya hesapları  
üzerinden de SHURA'yı takip edebilirsiniz.

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