

Top Tier Impact Energy Roundtable Dinner



Date & Location: October 31st, 2022, Istanbul

Organized by: İlkey Demirdağ, Top Tier Impact Istanbul Ambassador

Meeting Report: Prepared by Sustainfinance (By Ayşe Kaşıkçı, Kübra Koldemir, İlkey Demirdağ)

Attendees:

1. [Alpaslan Serpen](#), [Alarko Holding](#), Chief Strategy & Business Development Officer
2. [Anil Gokcen Korpınar](#), [idacapital](#), Partner
3. [Aygen Ayozger](#), [Aytemiz](#), Executive Board Member
4. [Barış Oluç](#), [Sanko Energy](#), Deputy CEO | Strategy and Business Development
5. [Bırol Ergüven](#), [Limak Group of Companies](#), Executive Board Member
6. [Bora Tokyay](#), [Kavaken](#), Chairman & Founder
7. [Dilek Bil](#), [Aydem Energy](#), Independent Board Member
8. [Emre Erdogan](#), [Enerjisa Production](#), Vice General Manager
9. [Hale Tunaboşlu Yayla](#), [Yapı Kredi](#), Head of Project and Structured Finance
10. [Kayahan Karadas](#), [Isbank AG](#), Energy Banking CEO
11. [Kubra Koldemir](#), [SustainFinance](#), Founder
12. [Metin Salt](#), [Vestel Ventures](#) General Manager
13. [Mehru Aygul](#), [Turkish Entrepreneurship Foundation](#), General Manager
14. [Mustafa UĞUR](#), [Bren Bren Power](#), Account Manager
15. [Osman Sahin Kosker](#), [Kontrolmatik Technologies](#), General Manager
16. [Yesim Akcollu](#), [The World Bank](#) Bank, Senior Energy Sector Leader

¹ “Financing the Energy Transition in Turkey within the Context of the Green New Deal”, Shura Energy Transition Centre

On 7 October 2021, Turkey ratified the Paris Agreement, and committed to a net zero carbon emissions target by 2053. On this axis, in line with the strategic direction taken as the "Green Development Revolution", work began preparing a long-term climate change strategy and action plan, and establishing a road map to reflect the climate goals of Turkey.

Estimates suggest that USD 110 trillion will be required in investments for the energy transition on a global scale by the year 2050. More than 50 percent of that figure would be required in the period 2021-2030.¹



According to the scenarios run by the SHURA Energy Transition Centre, USD 135 billion will be needed in energy transition investments during 2022-2030, while USD 107 billion will be required for financing other than own capital. In this context, the annual investment requirement will double compared to the average amount in the period 2002-2020, whereas the need for financing other than own capital will be 2.5 times higher.

Question: The energy transformation vision for Turkey can be expressed as the transformation from a conventional import-based, carbon-intensive energy mix to an innovative, lower-cost, cleaner, and safer low-carbon energy system. How should Turkey plan to transform its energy sector to reach its Net Zero target?

Under the heading "Planning the energy transformation for Turkey to achieve the Net Zero target"; diversification of generation sources, optimization of resources in individual power generation and energy storage, charging stations, battery technologies, pricing, regulations, and investment financing were the prominent topics.

It was pointed out that the electricity sector should be decarbonized profoundly and radically, efficient technologies should be used in energy efficiency in buildings, electrification in transport, waste management, and water management, the carbon sequestration of forests should be evaluated, use of fossil fuels should be reduced, coal should be abandoned, and decarbonization should be on the focus.

Financing

Although renewable energy investments have gained momentum in Turkey in the last ten years, it was expressed that we are currently in the transition phase to a new system and that a new approach is needed for the next ten years. The idea that financing principles should be determined in energy investments was also shared.

Turkey is one of the countries worldwide where the World Bank invests the most in the energy sector. The World Bank's portfolio in Turkey is around 7 billion USD. Turkey is also ranked among the top 10 out of 55 countries for the Climate Investment Fund's resources and is entitled to use the funds. It was emphasized that access to financing sources would also encourage investors, and investors would provide the necessary transformations.

Since investors want to maximize their investment returns, they prefer resources with more advantageous investment costs. This situation leads to a focus on specific generation sources, making it challenging to ensure diversity in production and the inability to distribute resources.

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Energy Generation

To ensure diversity in energy generation, it was stated that expanding individual electricity generation and selling the generated energy to the distribution system and other users could support the achievement of effective results. It was discussed that the encouragement and commercialization of individual energy generation and individual investments, and the associated tracking of their origin and trade through the use of technologies such as blockchain, will be effective in the long term.

In this context, it was underlined that transformation should be supported and monitored with innovative and appropriate incentives, and environmental and social metrics should be measured in all emission scopes (1-2-3).

Some steps that can be taken were shared with a 360-degree evaluation on the effective use of renewable resources:

- Investments in transmission points,
- Investments in storage capacities and batteries,
- Investments in pumpage-hydro,
- Finding solutions for YEKAs in the form of build-or-transfer.

It was stated that electricity generation costs are one of the most critical problems and that the system does not work effectively, and investments cannot progress due to the reflection of the cost burden on sector players such as producers and distribution companies.

The importance of increasing efficiency in energy use to control the increase in energy demand was emphasized. It was shared that losses and leaks should be monitored and measured for energy efficiency, and even steam leaks make a significant difference of 5-10%.

It was said that consumer habits should also change to achieve net-zero targets, and that users should be informed about electricity usage from renewable sources. It was stated that Generation Z is very open and aware of learning/application in this regard, but since they have yet to learn what they will prefer and what will affect their preferences, these points should be improved.

The entrepreneurship ecosystem can produce highly effective solutions to achieve energy efficiency and net-zero targets. The Turkish Entrepreneurship Foundation has reached approximately 35 million young people in 8 years to support the entrepreneurship ecosystem, and some of the funded start-ups work in the energy field.

Regulation

It was emphasized that long-term planning should be made in cooperation with the private sector, non-governmental organizations, and academia to achieve net-zero targets, and necessary legal regulations should be implemented.

It was emphasized that for the transformation of the energy sector, the bill should be paid by industrial, commercial, and household users, but users do not want this. However, it was stated that users could be included in the system by informing them.

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Question: In addition to the rapid development of renewable energy generation technologies, many technological developments such as digitalization, battery energy storage systems, the use of blockchain & AI and the development of electrolyzers that allow green hydrogen production plays an essential role in the energy transformation. Which technologies are widely used for Turkey's net zero targets, and what are other opportunities?



Current Status:

It was shared that Turkey ranked 5th among G20 countries in solar and wind production in 2021.

It is not easy to predict the amount of energy generation from renewable energy sources, and the variability in weather conditions affects the amount of output, and planning can become difficult. It was stated that technology had gained importance in increasing the use of renewable energy in Turkey.

It was emphasized that Turkey failed to seize the serious opportunities in lithium batteries that emerged 5-10 years ago and that new technologies should be embraced. For this, it was emphasized that R&D investments should be increased, and the start-up ecosystem should be developed and supported.

The World Bank is working on different scenarios for net-zero. According to the CCDD Climate and Development Report prepared for Turkey, a need of 9.6GW has been identified for the battery, a critical technology until 2030. In the most optimized scenarios, an investment of 68 billion USD for 2030 and 165 billion USD for 2040 is required to provide this capacity.

It was emphasized that the following technologies should be used to achieve net-zero targets:

- Predicting renewable energy sources' generation capacity and planning for sudden changes is vital. In addition, when the climate crisis has such dramatic effects, climate scenarios should be included in the planning. Artificial intelligence should be utilized for necessary planning.
- Emphasis should be placed on energy efficiency and optimization focussed IoT and AI based systems, and with blockchain technology, importance should be given to the commercialization of excess energy of individuals at distributed energy points and solutions that will monitor carbon emissions instantly.
- Although hydrogen technology is currently costly for Turkey, investments should start today.
- Consumer habits should be followed, and consumption trends should be modelled.
- Instant production and storage systems should be planned as much as consumption.
- In the new generation wind turbines, 70 terabytes of data flow in 1 year, and data analysis gains importance. Big data should be analyzed with artificial intelligence, and predictions should be made.
- Environmental, social, and governance performance of investments should be measured.
- Physical equipment must be digitized.
- The entire value chain should be made traceable.
- Digitalization should be used in areas such as increasing production and efficiency, predicting failures, reducing imbalance costs, etc.
- Focusing on financing sources, conditions that will improve, facilitate and subsidize the sector should be developed. Measurements should be made, and the performance of good companies should be rewarded.

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- A central planning organization should be established, and a strategic road map should be drawn. The use of technology should be planned accordingly.
- Emissions should be calculated for the entire supply chain.

In summary, besides the widely used technologies, for the future;

- Data spaces,
- Storage,
- Battery
- Artificial intelligence,
- Blockchain,
- Carbon capture and storage,
- Optimization between technologies,
- Green hydrogen,
- SMR (Small modular reactor); and
- Fusion energy was one of the technologies highlighted at the meeting.

It was highlighted that all stakeholders should come together for technology to facilitate the lives of people who use technology, to create scale in this context, and to ensure competitive advantage by learning together and aiming to invest from the bottom to the top of the pyramid.

High prices, rising costs, economic uncertainty, energy security concerns, and climate imperatives amount to a powerful cocktail of factors bearing on global energy investment.

Today's energy investment trends show a world falling short on climate goals and reliable and affordable energy.



Question: While the macroeconomic and geopolitical crises continue, ensuring energy supply security has become a priority issue for countries. Can energy supply security be ensured for Turkey in line with its medium-term climate commitments?

The following data on Turkey's energy sector have been shared:

- The cost of energy per capita in Turkey (all fuels, including fuel oil) is around 7 percent lower than in Europe,
- For economic development and security of supply, not only renewable energy sources but the entire energy supply chain should be addressed,
- While the rate of biofuel use in fuel oil is 7-8% in Europe, it is 0.5% in Turkey. Since there is no free market in Turkey, there is no competition,
- While there are approximately 150 vehicles per thousand people in Turkey, there are about 650 vehicles in Europe,
- The impact of the carbon tax will be high in sectors such as aluminium and iron and steel, which account for 16% of Turkey's exports,
- Turkey's adaptability and elasticity are also higher than in Europe.

It was shared that a country environment with stability, low-interest rates, law, and justice are sought for investment; some banks are trying to leave GFANZ due to net-zero policy difficulties, which creates a dilemma.

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It was shared that there is a need for a capital of 15-20 billion USD until 2030 for energy transformation investments in Turkey, *and that there is a need for a more moderate picture regarding the green funds that can be used to realize the projects.*

It was pointed out that we are now in times when climate shocks (*fires, floods, collapsing basins, etc.*) are more common. It was explained that reducing consumption and transitioning to renewable energy with new technologies and storage can be facilitated.

The following recommendations were listed for the transformation of the energy sector:

- The government should set short, medium, and long-term targets, formulate holistic policies and develop feasible strategies,
- Coordination should be ensured between different stakeholders working on this issue,
- An investment environment where fair competition is ensured should be provided,
- The private sector should be encouraged for investments and investments that will ensure the proper functioning of the market should be continued, while suitable incentive systems should be directed to the right investments,
- Source diversity in electricity generation should be increased,
- The use of renewable energy sources in imports should be supported,
- To reduce external dependency, domestic resources should be used, renewable energy should be emphasized, and exit strategies from domestic coal should be developed,
- A carbon pricing and trade mechanism should be established,
- Financing sources for energy efficiency and energy investments should be made advantageous.

While developing alternative production projects that will ensure energy supply security and meet net-zero targets:

- There should be a medium-term target to eliminate the risk related to the continuity of base power plants,
- On the renewable side, solutions that will contribute to decarbonization, respond to the needs of the world nationally and regionally, and increase the penetration of renewable energy should be produced,
- At the point of establishing a fair system that investors will trust; all stakeholders should lobby intensively for this infrastructure,
- For a long-term change involving all stakeholders, a change in culture must be achieved,
- Goals should be more structured and focused.

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