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Report from the IICEC 8th International Energy & Climate Forum, 13 October 2017 Istanbul

The 8th International Energy and Climate Forum by the Sabancı University Istanbul International Center for Energy and Climate was held on Friday, October 13, 2017 under the theme "Global Energy Investments: What's Next?". The keynote speakers included Republic of Turkey's Minister for Energy and Natural Resources, **HE Berat Albayrak**. Delivering introductory remarks of the Forum, Sabancı University Founding Chairman of the Board of

Trustees **Güler Sabancı** provided the opening address along with IICEC Director, **Prof. Carmine Difiglio**, and Executive Director of the International Energy Agency and IICEC Honorary Chairman, **Dr. Fatih Birol**. The key policy messages provided in these opening addresses were as follows:

About IICEC

- IICEC is a research institute that combines think-tank analysis with business realities.
- IICEC is pursuing this mission with in-house analysis, a new research paper series, our energy market newsletter and by growing our expert network.

- IIEEC is a growing energy institute with global reach.



Energy and Economy

- Energy is the backbone of economic growth and technological development.
- Energy is linked with many industries, geopolitics and everyday needs of consumers.
- Progress in energy needed for prosperity and well-being of societies.

Investments

- Sustainable energy investments should return value in an increasingly competitive global energy market.
- Most energy investment is financed from the private sector.
- Global energy investment fell in 2016 mainly in the oil, gas and coal sectors.
- China leads worldwide energy investment.
- Among the energy sectors, renewable energy and energy efficiency investments showed the greatest growth.

Sustainable Energy Policies

- Government policies will not achieve sound energy outcomes unless they are supported by sustainable actions by industry.
- Consumers want clean energy: but, at affordable prices.
- The most successful clean energy technologies will be competitive.

Energy Security

- National policies also need to improve energy security through increased use of

domestic resources, especially renewable energy, and by diversifying sources of imported energy.

Renewable Energy

- As renewable energy costs decline, renewable energy growth is exceeding all other energy sources combined.
- Technological progress and commercial experience are causing the rapid decline in renewable energy costs.
- In 2020, solar costs will be one-quarter of what they were in 2014 and wind will be half.
- Renewables will be closing the gap with coal and expected to achieve over 8,000 TWh generation by 2022 (80% of coal),



Energy Efficiency

- Technology has a complex effect on energy efficiency as it creates many new ways to use electricity, usually in small amounts that add up.
- Efficiency standards have been very effective to improve energy efficiency with negligible effect on the cost of consumer goods.
- There are more opportunities to improve efficiency. It may be the most important unexploited energy opportunity.
- Energy efficiency is a form of energy supply since it avoids the need to build as many power plants or import as much oil.
- Underpricing energy is the enemy of energy efficiency.
- The share of global energy use covered by efficiency mandates has increased to 75%

for lighting, 55% for autos, 35% for appliances but only 15% for trucks.

- Trucks account for the same growth in oil consumption as cars. However, trucks are the forgotten oil use.



Technological Progress

- Technological progress can solve the dilemma of having a cleaner and more secure energy system without increasing the cost of energy services.
- While technological progress is bringing down the costs of wind and solar power, it is also increasing our proven reserves of petroleum and bringing down oil prices.
- Digitalization having a profound impact on the energy sector causing significant technological progress in each energy sector.

Minister of Energy and Natural Resources Berat Albayrak

Minister of Energy and Natural Resources Berat Albayrak said that the global demand for energy would double by 2050, and steps taken towards meeting this demand led to comprehensive shifts in energy balances recently. Minister Albayrak continued: "New technologies, persistent innovation and the emergence of new energy resources as a result of access to fields that used to be beyond reach enabled some countries that had been net importers of energy become exporters.

The demand for energy is rapidly shifting from the West to the East due to economic growth. The growth targets set and achieved by China,

India, and economies in the Middle East and Southeast Asia, and the diversification they sought in order to achieve their development targets and provide for the needs of their growing industries bear weight in the energy market."



Minister Albayrak stated that affordable energy was critical to sustainable growth in countries heavily dependent on imported energy, like Turkey, and continued: "Since 2002, the Turkish economy has grown by 6% almost every year. Naturally, the growth in the economy brought growth in the need for energy as well. The medium- and long-term energy projections for Turkey are set to ensure security of supply while mitigating our carbon footprint at meaningful levels. In 2016, renewable energy resources accounted for 55% of the new additions to Turkey's installed capacity. A further 64% of the power plants commissioned in the first 8 months of this year were also based on renewables. Turkey was 7th in the world and 3rd in Europe in terms of commissioned wind energy capacity in 2016."

Global Energy Policies

Two panels held during the forum discussed "Global Energy Policies" and "Technological Future of Energy." Speakers in the "Global Energy Policies" panel were Christian Berger, Ambassador of the European Union to Turkey; Prof. Jason Bordoff, Founding Director, Center on Global Energy Policy, Columbia University;

Ladislav Paszkiewicz, Senior VP Strategy & Climate, TOTAL; Dev Sanyal, Executive Vice President of Regions and Chief Executive of Alternative Energy, BP; and Dr. Vitaliy Yermakov, Head of Center for Energy Policy Research, Energy Institute of Higher School of Economics, Russia. The moderator of the panel was International Energy Agency Executive Director and IICEC Honorary Chair Dr. Fatih Birol.



Ambassador Christian Berger noted that security of supply and availability of sustainable energy were key priorities for the EU, emphasizing the importance of renewable energy resources and the need to reduce the consumption of fossil fuels. Berger also said that they would achieve their greenhouse gas emission reduction targets by 2020. Renewable energy would have a share of 27% in global energy by 2030 compared to only 8% in 2005, said Berger.

Prof. Jason Bordoff, Founding Director, Center on Global Energy Policy, Columbia University, said that the energy market was prone to undergo great changes in the next decade. Bordoff explained that regulation in energy was not an easy process, and stated that while coal was in structural decline in the U.S., changes in regulations can affect U.S. emissions. Ladislav Paszkiewicz, Senior VP Strategy & Climate, TOTAL, said, "TOTAL's main purpose is to make affordable, sustainable and clean energy available to as many people as possible."

Also speaking in the panel was Dev Sanyal, Executive Vice President of Regions and Chief Executive of Alternative Energy, BP, who said

that energy continued to be a vital part of economic welfare. Sanyal said that security of supply and affordability were as important as sustainability, predicting that 70% of the world's population would be living in urban areas by 2050. Sanyal also said that technologies accounted for 99% of the reduction in the cost of solar energy over the last 40 years.

Dr. Vitaliy Yermakov, Head of Center for Energy Policy Research, Energy Institute of Higher School of Economics, Russia, said that the reserves, production and export of natural gas in Russia were significant. Explaining that gas revenues was a major input to the federal budget, Yermakov continued that Russia had begun to take steps towards reducing hydrocarbon dependency due to oil and gas prices. Discussing U.S. sanctions on Russia, Yermakov remarked that this had compelled them to focus on Asian countries, agreements with India and China being examples.



Technological Future of Energy

The "Technological Future of Energy" panel was moderated by IICEC Director Prof. Carmine Difulio, while speakers were Luay Al-Khatteeb, Executive Director, Iraq Energy Institute; Dr. Tareq Emtairah, Director of the Energy Department, United Nations Industrial Development Organization; Hans Jørgen Koch, CEO, Nordic Energy Research; Paddy Padmanathan, President and CEO, ACWA Power; and Dr. Hans-Holger Rogner, Senior Scientist, International Institute for Applied Systems Analysis (IIASA).

Luay Al-Khatteeb, Executive Director, Iraq

Energy Institute, said that the demand for oil would continue into the foreseeable future, and noted the importance of diversity in the energy sector. He linked the rise of the U.S. to prominence in production to developments in technology and renewable resources.

Dr. Tareq Emtairah, Director of the Energy Department, United Nations Industrial Development Organization, emphasized the importance of energy for industrial development, and said that clean energy was the backbone of development in underdeveloped countries. Reminding the great need for energy in the agricultural sector, Emtairah said, "The private sector takes aversion to certain risks due to economic reasons. As a development organization, we reach out to these markets and make technology meaningful within a certain context."

Hans Jørgen Koch, CEO, Nordic Energy Research, discussed the advanced research in

insulation in the cold climate of Nordic countries. Koch said, "We need to increase energy efficiency in buildings by a factor of three if we are to achieve our targets. We need carbon scrubbing and storage technologies." Mr. Koch also discussed how the Nordic Electricity Market benefited from advanced technologies.

Also speaking in the panel, Paddy Padmanathan, President and CEO, ACWA Power, emphasized the impact of technology on the energy industry, while Dr. Hans-Holger Rogner, Senior Scientist, International Institute for Applied Systems Analysis (IIASA), said that industrialized nations played an operational role in the nuclear energy sector. Dr. Rogner also discussed the economic problems facing nuclear power and the opportunity for modular nuclear reactors to be more competitive.

