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ENERGY MET ITS ANALYTICS

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IICEC Director Carmine Difulio, who stated that one of the reasons for coming to the office is energy analysis, aims to establish a structure that will be an effective international energy and climate research center.

TURKEY is at the heart of the energy market with its proximity to traditional energy sources and its vibrant renewable energy market. It was a little late in establishing the appropriate institutions in the country. With this in mind, it is possible to see how important the position of Sabancı University Istanbul International Energy and Climate Center (IICEC) is. Carmine Difulio, IICEC Director, gives a good idea about such a center can do many things by listing the advantages Turkey has in becoming an ideal natural gas pricing center. The connection with the Center's Sabancı University undoubtedly benefits from the energy dynamism

of the Sabancı Group, whose CEO is Mehmet Göçmen (used to be the head of energy group).

Güler Sabancı, President of the Board of Trustees of Sabancı University, and Fatih Birol, Executive Director of International Energy Agency, are closely interested in the work of IICEC. He points out that the philosophy that brought young Sabancı University success in a short period of time. The debate about the a natural gas pricing center in Turkey, initiated by Difulio, is far from being a debate within itself. Difulio, who immediately included me in the distribution of the *IICEC Energy Market Newsletter*, is a name that draws attention from the first moment when it seems to have used the past years in the sector to become more dynamic.

Using the motto "Where Global Energy Connects...", the Center seems to have gained considerable strength with Difulio. Difulio served as Deputy Secretary of Energy Policy in the U.S. Department of Energy before his mandate at IICEC. His consultation for the U.S. Energy Minister included a wide range of energy policy issues and his knowledge of technology policies in the International Energy Agency led

Difiglio sitting in this exclusive position. His position at IICEC is very consistent with this past.

"One of the reasons for coming here is to increase our analytical activities and to build a stronger research program. To achieve this, we have multidimensional cooperation with Sabancı University, one of which is to bring projects together in line with our common interests using the expertise of the engineering faculty and secondly making assignments that allow the accumulation of knowledge to be taught in the University." A strong synergy has already formed between Sabancı University and IICEC, which is located in Karaköy.

The center, which is currently working on projects to fight climate change, clean energy technologies and innovative methods of using renewable energy, is expected to conclude these studies in this autumn.

The center's future plans include increasing cooperation with similar public institutions in Europe and taking advantage of research support from the European Commission's Horizon 2020 program.

"We want IICEC to have its own research team, but we intend to do so by acting financially responsible," he said, "We will reach a remarkable point in the next few years by creating research staff and utilizing

research support when conducting research contracts. In doing so, we will not lose our concentration on clean energy and the fight against climate change."

One of the important contributions for IICEC is coming from EnerjiSA. The height of this support is also evidenced by the fact that EnerjiSA is a member of IICEC's Executive Board. He suggests that we will see a more effective example of university-industry collaboration supported by an area-focused research center.

It looks like the global dimension will be more noticeable. Pointing out that the Ministry of Energy has the right focus for Turkey's energy preferences including diversifying and identifying energy sources, Difiglio emphasizes the importance of renewable energy as a growth area in this diversity.

"I think this is a good strategy and will be effective in reducing the carbon footprint, which will provide significant competitive advantage. If you exclude hydroelectric power plants, the renewable energy base is not very large, but has high growth rates. The future is obviously here".

However, reducing the cost of clean energy technologies is an increasingly important agenda item. "One of the issues we are working on in this area is the use of solid oxide fuel cells to generate electricity from natural gas," he said,

"These cells produce pure carbon dioxide emissions as a waste. It removes the cost of separating the other gases with carbon dioxide fossil fuels and solid oxide fuel cells can become a clean energy source by reducing carbon dioxide emissions. If you do this by using hydrogen in natural gas turbines after separating carbon dioxide from natural gas you would make the cost of electricity nearly twice as costly because of the chemical plant you would have to build. "The solid oxide cell produces nothing that has resulted from the reaction other than water and carbon dioxide. "This makes it easier because there is nothing else to deal with," Difioglio says.

Sabancı University is now working to reduce the cost of this technology which is not only used in niche markets. "It looks like we are going to use fossil fuels for a long time despite the excitement on the topic of the renewable energy," says Difioglio, "we've found that there are far more natural gas in the world than people thought 15 years ago"

The widespread use of renewable energy makes it an important issue to store power. The most important storage of power, up to now, was pumped hydropower plants, but it is not possible to consider it as a satisfactory energy storage solution because of the nature of this system which is highly dependent on the height or fall of the water level.

Difioglio says, "Batteries can be a good solution here, and if you can cut down on their costs enough, it might be possible to talk about an interesting battery market, so if you have enough capacity to store electricity, you can get rid of the expense caused by creating too much idle capacity and have a more stable network." Difioglio says that such a solution will enable the night-to-day storage of electricity generated in energy production plants that operate 24-hours, such as nuclear power plants. It seems clear that Difioglio, whose background is reflected as cause-effect relationship in his statements, and is doing a great job at the Center, especially for the word "international".