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SYNERGY

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Energy Policy Research Center

Early Electricity Developments in the Turkish Republic

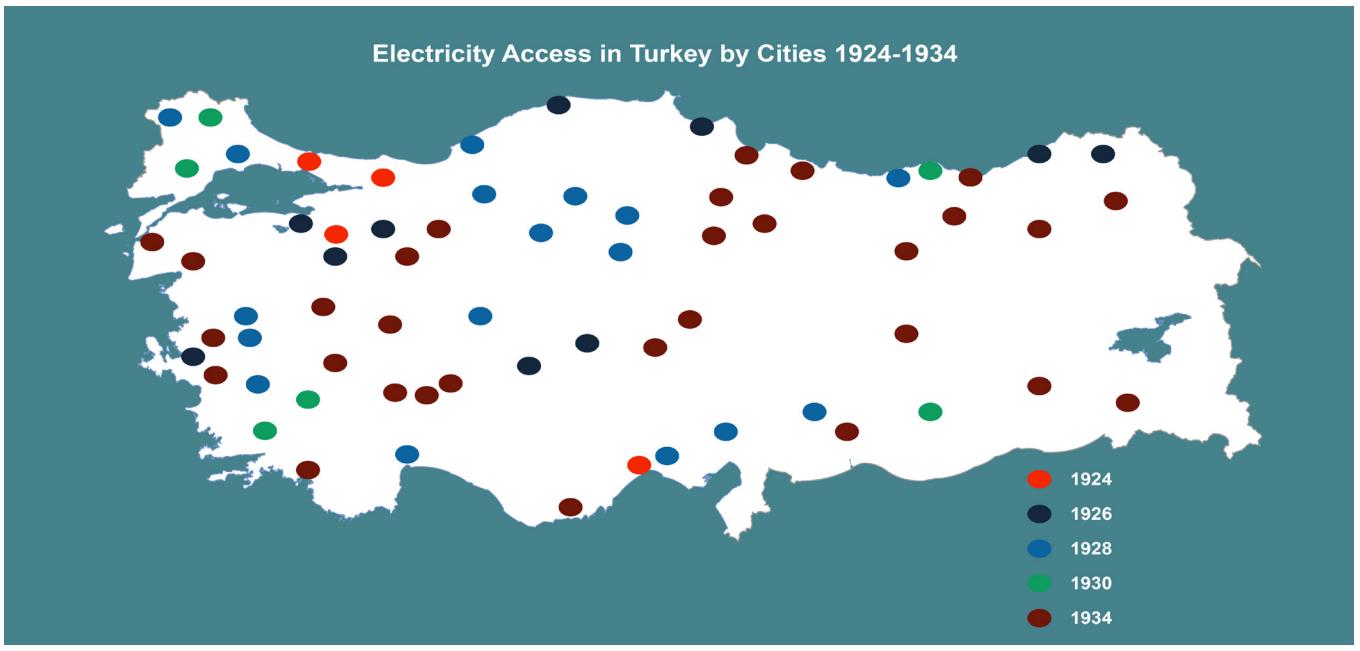
On the 29th of October 1923, Turkiye, as a republic, has been founded by Mustafa Kemal Atatürk and his friends. There was a separate parliament established in 1920, but now it was time to change the regime of the country. This regime change has brought rapid industrialization and consequent changes in the Anatolia and Tracia. One of the significant changes was how electricity policy has evolved.

Ottomans were not less innovative. But it was a little too late and a bit too narrow. The early innovative edge of the Ottomans was Imperial Navy. From the records, we can see that there was an "electricity factory" in the Navy. Since power competition was much visible across the seas, the Navy had to adopt. Records show that despite using relatively modern equipment, they could not build a domestic boiler for the ships.

The history of electricity in Anatolia has been claimed to start in 1902 with a small hydro turbine in Tarsus. It is to be challenged in IETT's book "Electricity in Istanbul." The book claims Yıldız Palace has some electric installations and appliances. The electrical workforce during that time was primarily based on telegraph technicians. The generators and other equipment were mostly imported from some other countries. The major engineers were educated abroad. This tradition was visible in the early managers of EİEİ (Electricity Survey and Development Administration) up until the 1950s.

The primary power plant of the Republic was Silahtarağa close to the Golden Horn. During the Ottoman time, this region was known with shipyard and coal depots. In his booklet "Electrified Turkey" Hasan Halet used the picture of Silahtarağa on the cover page as a symbol perhaps. On the next page, there are maps of electricity plants across Turkiye for several years or intervals. You can see the pace increasing after 1924. But the interconnection of all the power plants took several decades.

Electricity as a service has started in the form of concessions. Ottoman or Turkish public electricity companies were the concession holders. In that sense, Kayseri's electricity company is unique and the only company that survives to this date. From what we understand so far, these concessions can either be given to foreigners or entrepreneurs.



The concession regime was not enough for the early republic. Most of the investors were aiming for petroleum based generators to produce electricity. It was not sustainable in the long run. During that time, there were municipality power plants, industrial power plants, and others. All these separate facilities were an inefficient way to supply electricity. There needs to be coordination and centralization.

First of all, the domestic resources of the country have to be mobilized. The primary local resource of the time was the hard coal of Zonguldak. But there are lots of resources to be found and utilized. I believe the significant change came with the establishment of several institutions in 1935. EİEİ, MTA(GD for Mineral Research and Exploration), and Etibank were the early energy institutions that shaped our contemporary energy institutions. The logic was straightforward. There were domestic resources like coal and hydro. MTA will find the mining reserves, EİEİ will survey hydro reserves, prepare and implement the electrification projects. Etibank will provide finance for such projects. Later on, these roles were mutated with the addition of DSİ (State Water Works) in 1953.

The crown jewel of these institutions is Keban Dam. Keban Dam may be the first major grand project of the Republic. Starting with surveys in the late 1930s, it was not an easy way. But one can see how late Ottoman thinking became a youthful, dynamic Turkish development. The fear of grand projects, the fear of failing has been gradually turned into a thirst for major projects and grand development.

One of my favorite questions about the early development of the Turkish Republic is "what has changed?". The first engineers of the young Republic were Ottoman citizens, educated in the old regime. They were well aware of the need to electrify the country. When they became Turkish citizens, the development pace has increased enormously.

It is the point we see the genius of Mustafa Kemal Atatürk. The first difference is the determination of direction. The whole state structure has been rotated to rapid modernization and industrialization. They thought the survival of the regime does not rest on the life of a person or his family but economic and industrial independence. The second one was dynamism and self-correction of the regime. When concessions were not enough for the development aims, new institutions, new regimes have been implemented. The third one was how arts and science have pushed to the front lines of the development agenda. The laws of that time were not heavy with legal jargon but carry a pragmatism of an engineering state and the room for improvisation if things do not abide by the plans.

Today, we are thankful to our founding fathers for the modernization efforts they envisage and coordinate. What makes them different is hard to understand from today's perspective. But at that time, the only victory was the establishment of the Republic. Building the pillars of the young republic on industrialization and economic growth enabled rapid electrifications in major cities. When this wasn't enough, a centralized policy has been established. It was a progressive journey in the right direction with well-aimed destinations. As time passes by, we understand this more deeply.

Barış Sanlı

Atatürk's Energy Policies

Tomorrow, we will be celebrating the 96th anniversary of the Turkish Republic. We are grateful to Mustafa Kemal Atatürk and the people who sacrificed their lives for our independence. After the end of the Independence War in 1922, the new administration began working on repairing the economy immediately.

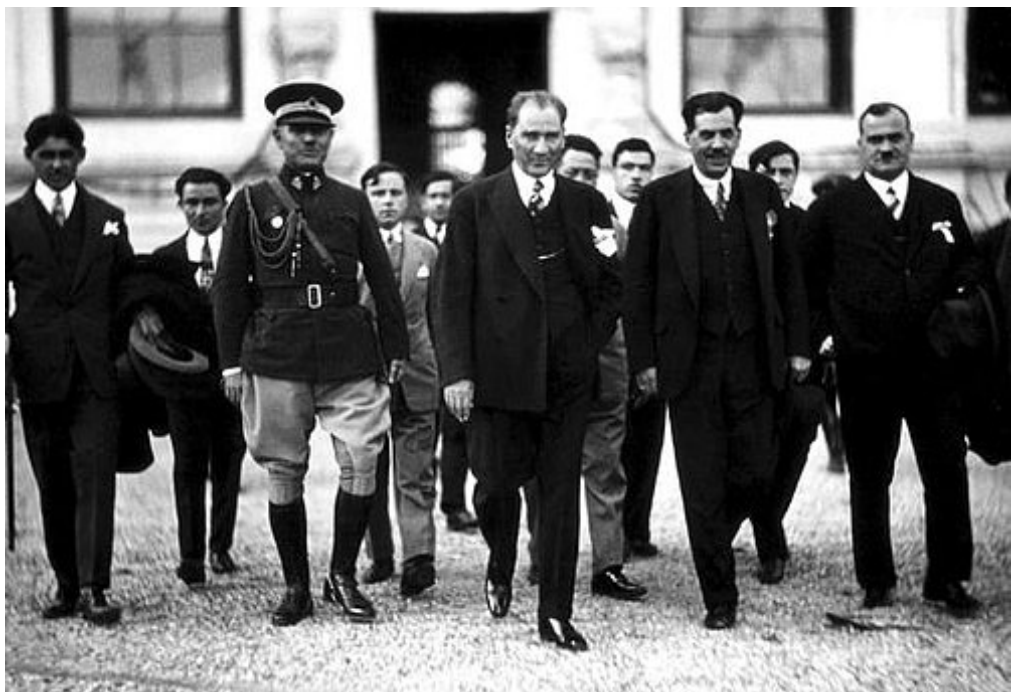
Of course, it was not easy to change the economic structure that consisted of many capitulations, policies against development, and financial constraints. In the Atatürk era, the officials made several pieces of research, organized meetings, and prepared plans for the new Republic to solve its problems by using its resources.

In 1922, primary energy sources were wood and turd that were roughly 80% of the energy sector. Electricity was only available in İstanbul, Adapazarı, and Tarsus. The mining sector was under the control of foreign firms. The companies that operated the electricity terminals had several privileges. In cities, they were using a higher quality type of coal named anthracite. We were importing it from other countries. It was also used in railroads and by the navy. Overall, Turkey had a limited capacity for energy resources and considerably high costs on energy imports.

Starting from the Turkish Economic Congress at İzmir in 1922, the government began to implement the energy policies one by one. First, they worked on the coal mines located in the Zonguldak region. The main aim was to increase production capacity. To achieve this goal, the critical infrastructure in the area developed. Investments in the railroads and ports attracted new investors to the city. With the support of the İş Bankası, national companies, Türkiş, Kömüriş, Kilimli Kömürleri began operations in the area. They build power plants and facilities, and the coal production process becomes more industrialized. In 1924, a mining school in Zonguldak opened and began to educate students. In 1925, with a new law, only the companies that had a minimum 51% share of Turkish citizens were allowed to operate. In 1935, Etibank established for financing the state companies. With this money, starting from 1936, the government bought the foreign shares, and by 1940, the region becomes wholly nationalized.

With dedicatedly following these policies, Turkey managed to increase the lignite production from 9,000 tonnes in 1930 to 185,000 tonnes in 1939; the coal production doubled in the same period, chromium production increased from 28,000 tonnes to 170,000 tonnes. Also, Turkey began to produce iron in the Karabük region with a facility that was started to build in 1936. Overall, there was a 232% increase in the production of the mining sector between 1930 and 1940.

Among the mining sector, there were also policies in the oil sector as well. Compared to the mining sector, Turkey had less human capital for developing an oil sector in the preceding years of the Republic. The government focused on political and economic independence during these years and restricted any different activities within the borders. By implementing a law in 1926, only the state companies were allowed to search and extract oil. In this period, Turkey received help from the foreign consultants and opened 76 wells between 1926-1954. The total production was 160,000 tonnes.



In the electricity sector, there were only three regions that had access in 1923, which were İstanbul, Adapazarı, and Tarsus. With new investments, the number of cities that has access to electricity increased rapidly throughout the following years. By 1930, 15% of the total population had access to power.

Besides these policies, an exciting development happened in 1934. In the Atatürk Orman Çiftliği, Turkey managed to become the first country that produced biodiesel. According to the thesis of Emrah Hatunoğlu from the Turkish State Planning Agency, Atatürk ordered the officials to research the usage of agricultural oils as a fuel. The evidence shows that the research was successful, and during that period, biodiesel was used in tractors. The developed countries of the day, on the other hand, managed to produce a similar type of fuel in the 1950s. It was an excellent example of Atatürk's approach to finding internal solutions to dependence.

Overall, the Turkish government in Atatürk's era managed to overcome the economic problems by carefully establishing policies and patiently following them. The industrial plans also supported with improved education institutions. Some policies aimed to create awareness in public towards the energy sector. The systematic actions produced fruitful results, and the dependence on external resources declined significantly in this period.

Gökberk Bilgin

BRENT OIL	61.52 $/BL	GASOLINE	6.94 ₺/LT
USD/TRY	5.73	DIESEL	6.57 ₺/LT
EUR/TRY	6.36	FUEL OIL	3.81 ₺

Global Effects of Recourse Curse, Petro-States and International Conflicts

Resource curse does not only affect resource-rich states by causing them to experience intrastate conflicts, but it also affects the international system. Whenever a recourse prosperous country, more specifically, petro-state experience an intrastate conflict, the extraction of the good and maintain its transportation security becomes harder. Thus the price of that commodity increases. For the rare-earth minerals, such changes in the price may not affect other states intensively. On the other hand, due to its wide usage area and dependency, even a slight shift in oil prices or delayed delivery of oil causes severe problems in the international arena by affecting all the states.

Jeff Colgan defines that petrostates as the countries in which revenues from net oil exports constitute at least 10% of GDP. I think the petrostate definition can be done regardless of the net oil export contribution percentage to GDP in that sense 10% threshold is useless. If we want to talk about petro-state caused international strains instead of talking percentage of constituencies in states GDP, states domestic structures should be taken in to account. As Colgan's research shows, petro-states are far more frequently involved in international conflicts than non-petrostates. Petro-states like Iraq, Iran, Venezuela, Sudan, and Libya are more fully understood as aggressive actors in foreign affairs than as passive targets of conquest. After seeing so many examples of aggressive, non-democratic (in compare to western democratic understanding where institutions, court, right, and regulations are strong enough to ensure the checks and balances in domestic politics) oils rich states, international community be prejudiced against the all petro-states by assuming that they all prowl to expand their power.

Petro-states can use their oil income every sector, but in general, due to the instabilities in their regions, they invest a certain amount of their income to finance their military capabilities and campaigns. For some states, such investment can cause expansion on the petro-state's opportunities for aggression. Nevertheless, that may not be the intention of the petro-state. Because of the enduring inter and intrastate conflicts, to secure the state resources or protect the power that they hold, statesman continually invests in the military. When a state expands, it's military spending, and it's naturally disturbing the regional states primarily than to the international community. Considering that rules can never be so sure of other states' intentions, a defensive based investment may be perceived as a preparation for offensive action. We can think of this misinterpretation of the effects, intentions problem as the classic security dilemma problem in international relations. That's why I prefer to use a small oil-rich country in which institutions are weak; wealth and power are concentrated in the hands of few, which causes less democratic, more authoritarian government structures definition to explain petro-states. Because regardless of their oil export percentages, all of these resource-rich countries carry the potential of triggering a regional or international security dilemma.

Some scholars argue that oil income can generate an enormous financial incentive to avoid any international conflict as long as it does not directly affect petro-states domestic politics. Even though I am not rejecting that idea, I do not agree with those scholars too. I think foreign politics and internal policies can never be separated from each other, and one always influences the other. In that sense, in the case of international conflict, the petro-state also gets affected by that. It can be either a positive or negative effect. Let's say that a non-petro-state Y declared an oil embargo to petro-state X due to state X's position in international conflict, and many other states support this embargo. In that case, petro-state X's economy and domestic politics will be negatively affected. States can only decrease their oil consumption to a certain degree when they declare an oil embargo to one of the oil providers they need to either replace petro-state X with another petro-state or they have to increase the amount of oil they purchase from other petro-states. In such an environment, since the dependency of the international community increases to other petro-states, their domestic policies and incomes expand.

As a result, these states may start to show more authoritarian tendencies. In a nutshell, positively or negatively, all of the petro-states get affected by international conflicts. Interaction of oil income and revolutionary government structure can create incentives for international conflict because, global community, at least some of the influential states in the international arena, tries to keep the transformation of petro-states under their control. As long as petro-states leaders get along with great powers, as long as their interests do not contradict excellent skills will support the existing internal structure of the petro-states. This mutual relationship will benefit authoritarian leaders of the petro-states by ensuring their powers while helping great powers by guaranteeing the secure access of oil and natural resources securely, whenever they want. To change the existing structure, Petro-revolutionary states have to engage in different types of aggressive behaviors. Even though states only show this aggression within its domestic policies, other countries cannot predict the upcoming moves. As we see on the Saddam Hussein example, with the fear of emerge of a potential aggressor state, the international community responds to the aggressive behaviors of revolutionary Petro states with economic sanctions. Sanctions, by causing cooperation and conflict among countries, and non-state actors sanctions reshapes states alienation behaviors, the balance of power in the global arena.

Cox and Drury's study indicates that "Economic sanctions are commonly conceptualized as a response to provocative state behavior that serves as an alternative to military conflict." Due to their economic dependencies on oil, Petro-revolutionary states are more likely to be targeted for economic sanctions. Non-petrostates may hope to restrain some petro-states, which started to come unreliable due to their leaders and authoritarian structure. Instead of settling petro-states, such sanctions can create the exact opposite impact, by leading speed-up on the authoritarianism of states or causing states to form alliances with non-state actors. Once petro-states internalize under which circumstances external powers set economic sanctions, Petro-revolutionary states can set their strategy accordingly. They can divert their income sources and form dangerous alliances with non-state actors. As a result, the likelihood of occurrence of a wide range of regional or international conflict increases.

In either case, we are facing inevitable catastrophic consequences for the sake of international energy security reliability and stability of petro-states plays a crucial role. Due to different petro-states are dealing with inter and international conflicts within their regions, and most of them bear the characteristics of authoritarian state structures. The income of the oil, foreign dependency on petroleum and natural resources forces international actors to cooperate with the autocratic leaders. If they don't collaborate with these leaders in the case of a revolution, the upcoming leader of state structure may cause broader security concerns and problems for the other states. Because of such fear, with the support that they receive from the other countries, authoritarian leaders expand their powers. If a revolutionary government were to emerge in petro-states like Saudi Arabia or Iraq, it could have disastrous consequences.

On the contrary, a robust one-man rule states also possess treat. Non-petrostates are vulnerable against petro-states. If they cannot meet their oil and gas demand, it can cause severe effects on non-petro-states domestic policies. On the other hand, one should not forget that petro-states also remain vulnerable to its buyers if a petro-state cannot sell its oil and gas than, economically, they will be stuck in a difficult situation in their domestic politics as well. To sum, we can say that both oil importer and exporter states are dependent and vulnerable against each other.

Yüksel Yasemin Altıntaş

A Different Dimension of Protectionism: Maritime Insurance

In 2008, the world faced one of the biggest financial crisis in its history. Some of the biggest economies recorded negative growth rates at that time, and they are still trying to recover from the effects of this shock. As a part of this effort, governments started to become more protectionist in both politics and trade. Today's trade war is nothing but the most important result of this approach. The energy sector is naturally a part of this war, perhaps the most important.

An increase in shale oil and shale gas production made the U.S. one of the biggest producers in the world. In the environment of the trade war, brought energy trades to the table. In the beginning, it was about decreasing oil prices and harm other producers' economies. As the U.S. shifting from a buyer to a producer, they changed their energy strategy. In the later steps they took, they started to impose sanctions on oil producers like Iran and Venezuela. These sanctions were not only about harm their economies but also gained new customers. However, these sanctions do not only affect the mentioned countries but the whole world and a sector: insurance.

According to the International Maritime Organization (IMO) data, about 90% of the world trade is carried by sea, and it is, by far, the most cost-effective way to move en masse goods and raw materials around the world. Decreased oil prices made sea trade easier and favorable. On the other hand, usually, taxes on imports are not being implemented because of the potential reaction from the trading partner. Despite these two reasons in favor of maritime trade, there are inherent risks that occurred in recent days. For example, a few oil tankers had been attacked in the Middle East, which may affect world trade through different channels like insurance.

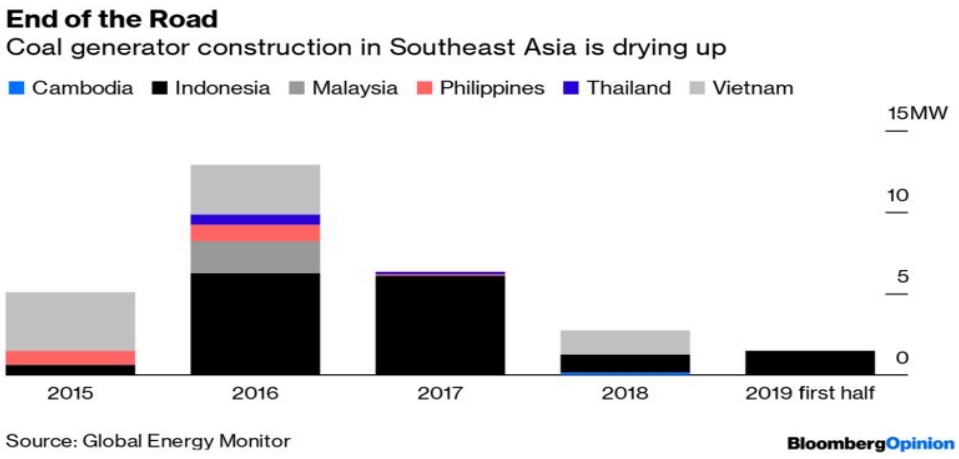
Ships carrying oil and other types of cargo have to buy specific insurances. Potential risks mentioned above will make sea trade more expensive due to high insurance premiums. They will negatively affect the world trade while increasing the effectiveness and profitability of insurance companies and insurers.

As a part of the trade war, the U.S. imposed a series of sanctions on the Chinese shipping company Cosco, which is one of the biggest in the world. The figure below shows Very Large Crude Carrier (VLCC) rates after these sanctions. A spike in geopolitical risk in the Middle East also helped this situation. The attack on the Iranian ship has added to risk premiums that were already high following the attack in Saudi Arabia last month.

It is a significant example of the adverse effects of a trade war. Recent attacks, sanctions, and increasing political tension between the sides of this trade war made insurance premiums explode. It also implies trade war will spread to the different sectors and directions in addition to oil, gas, technology. The whole world needs sea trade and insurances. Insurance rates will play an essential role in the era of a trade war.

Oğuzhan Öztürk

Coal is Dying and We are in for A Treat



The world is experiencing an interesting energy transition, maybe the fastest one yet. Partially because of increasing demand in renewables, green politics and the harsh economic truth coal has started loose its popularity. From America's coal-rich Powder River Basin, to Germany's coal plants the demand for coal is decreasing drastically. Even in the Southeast Asia, where the largest coal exporter Indonesia is located, coal generator construction is going down consistently since 2017. In the world it is expected to decrease even more in 2020.

According to Moody's Investors Service report, America's coal-rich region is distressed. The report also suggested that production from the region will drop in 2020 42% within a decade. The change happened also during when coal was still a cheaper option. Now the tables have turned and the renewables are in trend.

As well as the drop happening in the US, Southeast Asia is experiencing an end of an era in terms of coal. Although coal plant construction are long-term projects and there are yet to come, the question of increase in demand has occurred. As Australia suggests to have growth potential, the Institute for Energy Economics and Financial Analysis claims that the suggestions can be misleading while the plant closures increasing approximately 30%. Across the region, 53.4 gigawatts are mentioned as pre-constructed, and yet 69.4 gigawatts have been cancelled since 2015 and this number is expected to increase in the future.

A similar change is going on in Europe too. The think tank Carbon Tracker Initiative reported that the German power firm faced nearly 1 billion euros of losses because of its coal plants this year. German dark spreads indicates that for two years the profit on coal generations have been negative. Although RWE AG, a Germany-based company engaged in generation of electricity and gas, have denied the numbers.

The RWE spokesman claimed that the assumptions do not stand up to the facts and that if they would not be covering their costs they would not run the plants. RWE AG can stretch their margins by utilizing carbon credits acquired in former years but the stocks will run out eventually. And German government's goal to end coal generations by 2038 is likely to happen earlier.

The world is experiencing a great energy transition, but still it happens at the very surface. Renewables became a cheaper alternative to coal, but the renewable in itself raises a question about its sustainability. And that is why coal will still be in need due to provide stable energy supply since renewable energy is considered unreliable and intermittent. Still the decreasing cost of renewable energy creating a competitive environment against coal. Finally, we have an alternative to coal in accessible terms.

İrem Ayça Aykın

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