Subject: What is the most burning and urgent single energy challenge in today’s world and how do you think governments and businesses should effectively address them?

LEADING PARAMETER OF FUTURE INVESTMENTS: ENERGY

Energy, in its basic definition, is the ability of a system to perform work. If it is thought that “world” is the biggest combined closed system, the most significant relation between “world and energy” is appeared easily. All investment projects should be handled with their most significant parameter as “energy”. This concept also births another subhead of “energy investments projects” with many issues such as; “feasibility of energy production”, “construction of power plants”, “raw material investments”, “production of energy itself”, “management of produced energy”, and “marketing of the energy”. In the light of this information, the working performance of the world could be accepted as the main concern of the global energy market.

The International Environmental Agency predicts at least 37% growth in global energy demands by 2040. Additionally, according to United Nations, the population of the world is predicted 8.7 billion by 2035; energy demand will increase within parallel to population over that period. The reasons of the increase in future’ energy demand mainly can be separated into 3. First reason is effect of non-developed countries: For two billion people from Asia, there is no accessibility to electricity (World Energy Outlook 2013). Despite rising population; non-accessibility to electricity will be decreased at least for the basic demands of daily life. Second and major reason is effect of developing countries: Population growth and increasing life standards of many people in developing countries will cause a highly growth in energy demand. Approximately 70% of the increased energy demand until 2035 is expected by developing countries. Third but minor reason is effect of developed countries: Increment in technological development with the decrement of population, sustainable energy demand will increase in these countries. When we take into consideration all reasons, there occurs a main problem for the current energy market. “In future, dominating energy resources; in other words, fossil fuels (According to BP Statistical Review of World Energy, June 2015; the world’s fossil fuel based primary energy consumption ratio is 87%) won’t be sufficient for energy consumption source with expected energy demand increment”.

The situation above could be considered as future problem regarding energy demand; however, big energy investments are planned, constructed and operated in long term periods. Therefore, an urgent reaction must be gotten as soon as possible. Contrary to popular belief, available and feasible fossil based fuels are not a long-lasting resource when we take into account operational period of power plants. There are two main solutions to resolve this problem. Firstly, especially in the generation of electricity, fossil based power plants should be replaced with nuclear power plants and renewable energy resources. Secondly, governmental authorities should draw a road-map for international agreement with the subject of energy generation sharing like in European Union.

As a start of first solution; electricity generation from power plants is very important especially for developing countries. If fuels of sustainable energy production like coal, natural gas and oil are limited in developing countries (example: Turkey), power plant type choosing is inevitable. In these countries, fossil fuel based power plants should be replaced with nuclear and renewable energy power plants (wind, solar, geothermal etc.) According to Turkish Electricity Transmission Company (2013), although Turkey has limited resources for coal, gas and oil; electricity generation from these sources
has approximately 70% production ratio. If a country doesn’t have sufficient fossil fuel resources, it may encounter big economic and political problems. Additionally, carbon emission problem is another major effect on this issue. There must be a reputable ratio of nuclear power generation as locomotive source, because of several reasons. First, production is cheaper than other sources. Second, uranium (or any other radioactive raw material) has respectively stable market price globally. Last, it is not a limited resource in worldwide like petroleum products. Moreover this locomotive should be supported with the renewable energy (e.g. solar, wind or geothermal energy) production. These alternatives will provide Turkey to use its own local sources as free.

(World Nuclear Association; Renewable Energy and Electricity, 2015)

To understand the first solution in basic forms; above curve diagram for a typical electricity grid indicates that much of the electricity demand is in fact for continuous 7/24 supply (which is specified as Base Load), while some is for a lesser amount of predictable supply for about three quarters of the day, and less still for variable peak demand up to half of the time. General aim of governments and investors should be compensation of base load demand with sustainable energy resources. In all sustainable resources; most effective solutions should be chosen with consideration of cost-efficiency and \( \text{CO}_2 \) emission concerns. In the light of this information dominating type should be chosen as nuclear power plants in all required base load. For the upper demand as Intermediate and Peak Load partitions should be supported with renewable sources more. They should be supported and encouraged for the future benefits. Unfortunately with current technological investigations, accumulation and maintenance of renewable resources like solar and wind is extremely expensive in long-term investments. Therefore these energy generation types could not be satisfied in compensation of base load demand.
As the second and relatively more important solution; governments and politicians have the important role for the compensation of future energy demands. In worldwide economy and policy, generation of own energy source is not the only solution for the countries. Availability of energy from neighbor or allied countries should be another alternative. Inhere there are some significant points to ensure sustainable energy trading. First, infrastructure for energy trading should be ready. Second, multiple and connected alternative trading options should be specified. Finally, trading energy options, conditions and specifications should be protected in international agreements. The most important factor in here is combination of two different perspective of the world. One is experienced in businessesby taking its power from respectively well-educated human resources and traditional investment policy; which is managed by Europe and America. The other one is hungry for investments with its huge human resource quantity by taking its power from new reputable financial power and new global policy; which are managed by Asia, Middle East, Russia and Gulf countries (*interview with Mehmet Ogutcu, 2013*). To illustrate, European Union is now using common electricity policy for all its members. Each member could easily reach other members’ electricity production cost-efficiently with the help of their agreements and infrastructures. Also, in these days European Union countries are trying to have common market for other generation purposes (*Deutsche Welle Türkçe Bernd Riegert, BÖ/AÜ, 2015*). If they are succeeded, roles of the players in the world will completely change. Each member country will compensate the energy deficiency of the other for all purposes of energy consumption. This policy could be a good example for other allied countries from rest of the world. It is not easy to achieve but it is not a utopia. In future, international/regional collaboration will manage the energy policies. Each government should specify their roles in global energy market by communications, negotiations and connectivity. Actually, they need to draw their clear, acceptable and cost-beneficial roadmaps.

World has its own energy generation history. As it is mentioned in this paper, energy investments are long-term organized projects. It is not possible for a country to change its policy both in case of investors and governments in short-time periods, however there must be an action plan to start before it was too late.

References:
- *World Energy Outlook, 2013&2014*
- *BP Statistical Review of World Energy, 2015*
- *Turkish Electricity Transmission Company; Statistics, 2013*
- *World Nuclear Association; Renewable Energy and Electricity, 2015*
- *Deutsche Welle Türkçe Bernd Riegert, BÖ/AÜ, 2015*
- *Interview with Mehmet Ogutcu, 2013*