WORLD’S EMERGING ISSUE ABOUT ENERGY

Today on earth there exist several global and local challenges that need to be addressed by governments. But there is one emerging challenge seems to be affecting all other issues, cost of energy or cost of power. A decrease in cost of power will create a surplus which can be allocated to health, education and food security. A decrease in cost of power will eventually abolish wars among countries. Thereafter a butterfly effect will arise and humanity might be able to allocate monetary and intellectual resources even to launch out of solar system. Let’s dispense this proposition.

There exists a market for every commodity on earth. Suppliers and demanders meet in the market to exchange commodities. Whenever the value of commodity increases more suppliers become willing to enter the market. As long as there is room for new comers trade continues without an intervention. The point where new comers started to steal existing suppliers’ customers, real competition begins. First motive of the market is to drop the value of commodity. Suppliers who cannot overcome value decrease focus on the cost of commodity. Cost of commodity can be reduced either by decreasing upstream or midstream costs or both at the same time. This picture summarizes today’s energy market on earth where each country is a supplier and all of them want to control energy resources. Controlling energy resources is another meaning of independency for a certain country. For the sake of independency a country might decide to enter a war with another or some others. Wars cause deaths of people, poverty, health problems and lack of education, waste of resources and pollution of natural resources, oceans, forests, soil and extinction of species and consequently extinction of humanity.

Therefore decreasing cost of power can be considered as the most crucial emerging issue for governments and companies. Decreasing cost of power, enhancing level of access to power, decreasing power utilization in industry and higher level of efficiency can be listed as main goals. Diversification of power resources and champion investment to new and cleaner technologies, optimization in transmission and distribution infrastructure promoting distributed generation, well organized regulations, integrated digital infrastructure and maximum level of user knowledge can be listed as sub goals. Governments and companies should focus on reaching these goals keeping in mind that these processes should last forever and while reaching these goals environmental issues should not be neglected.

Most common energy types are electrical energy (will be referred as power) and fuel oils. Power is generated from fossil fuels, nuclear elements and renewable resources. Fuel oils are mostly refined from petroleum and a slight portion is obtained from bio wastes.

Today, power is almost essential as air for humanity. In daily life nearly all of the tools are either consuming power or produced via power using machineries. Power is generated 24/7 since power is consumed somewhere around us in every second. All the information is generated, transferred and stored via power using devices. So power can be referred to as blood of technology.

Second essential energy type for humans is fuel oils. Ranging from needles to massive devices all goods are transported via marine vessels, land freight vehicles or aircrafts. All these vehicles are consuming fuel oils. Without fuel oil, one cannot even find bread at the bakery. Flour is
carried by cars from local stores, it is carried by trucks to local stores from flour mills, wheat is carried by vehicles to flour mills from fields and wheat is harvested via combine harvester in the fields. All these vehicles consume fuel oils.

Although today two main energy sources are considered, according to researches in 50 – 60 years’ time, fossil fuels’ stocks on earth will run out. Therefore in less than a half century, power will be the only primary source of energy. Fuel consuming large vehicles will generate their own power from nuclear energy, other vehicles and devices will be consuming power from their composite batteries. So a picture from 70 years now will include no fossil oils or derivatives but nuclear power plants, renewable power plants and tiny batteries that can even feed massive devices. Nuclear power may be the source of base load and renewables will supply rest of the demand. More than a hundred years later even nuclear generation might disappear with the rise of solar power storage batteries.

Renewables are hydro, wind, solar, geothermal, bio wastes and other unconventional methods like waves, streams, tide moves etc. Except solar energy all of these sources are originated from earth itself. Although they are renewable and they can generate power infinitely, they are limited in terms of location and geographical constraints. Solar power plants also necessitates large fields to install photo voltaic panels and those fields are limited in practice however solar power contains hundred times more potential than other renewable resources. This ratio can be improved by technological developments. Governments should provide a stable and predictable environment to encourage long term investment on these power generation types. By establishing public private partnerships companies should focus on long term non-monetary benefits rather than short term profits.

Compared to the competition to capture fossil fuel resources renewable supply is better distributed on earth. It is proved that renewable power is cheaper than thermic power in the long run. Only odds for renewable is high installation costs compared to thermic power plants however it decreased considerably in the last decade and will decrease more with the contribution of new technology. Besides there is no proven disruptive outcome of renewable power generation to the nature exist.

Increasing renewable power generation will deliver another issue; power storage. Today a passenger has at most 500 miles range with a power battery. Besides it is not very common to find charging points on the drive way. Therefore environment friendly vehicles are hybrid for now. However developing long life and high power battery will enable most of the vehicles to travel long distances and carry heavy cargos with only electrical energy. Also several devices will able to be used in places far from power supply. Even aircrafts might be charged at the airports and fly overseas. The biggest obstacle on this issue is storing mass amounts of energy in small volumes. For the short run these devices will need to be charged frequently so authorities should build charging corners for these devices. Hopefully in the long run, capacity of those batteries will be large enough to launch space ships. Then charging for the devices on earth will not be a concern. This development will also enable us to capture solar power on day time clear skies and use it during other times. Thereafter we can truly make benefit of solar power and might even become independent of nuclear power. Further phases can lead to human spaceflight out of solar system.

Above picture shows us that in future power supply will be nuclear plants and renewable sources and power storages will be as common as cell phones of today. By only managing these

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1 Ham petrol ve doğal gaz raporu – Türkiye Petrolleri – 2014
2 WBGU 2008 (Greenpeace/EREC 2008)
issues will decrease cost of power and consequently decrease wars. Therefore governments and companies should heavily invest on research and development.

Managing above issues will lead another obstacle; transmission of power. Smart grid infrastructures and transmission systems can be considered as one of the very developed hi-tech fields. Since power cannot be stored in mass amounts and devices run in different voltages transmission and distribution of power is a crucial case which affects all humanity and necessitates high level of technological information. In other words, today transmission losses reach to three percent; even a rapid improvement in the percentage of transmission losses will save up to three percent equivalent to 25 billion dollars per year. Allocating this budget to education or health sector might support humanity a lot. Approximately 1,1 billion people do not have access to reliable energy. Governments should mitigate price volatility and promote adequate and appropriate investment environment.

Wherever there is energy generation and consumption efficiency finds room for itself. While technological improvements on generation systems and methods and optimized transmission systems decrease cost of power, efficient consumption will also decrease demand and lead low power prices. Consequently the proportion of power costs in total spending will decrease. Power usage for heating should be supported with good isolation, heaters should be run dynamic and be receptive to fluctuating demand. Governments should truly focus on training people about power usage, methods of efficiency and the size of effect in terms of reduced global carbon emissions. Creating energy efficiency guidance standards in the main energy consuming sectors should be prioritized by governments and companies.

Environmental pollution and harm on wild life is another side effect of fossil fuel power generation. In the long term, due to greenhouse effect caused by carbon emission might lead global temperature to increase 2,5 ° degree till the end of this century and side effects might be destructive for civilization. In the short run pollution will decrease flora and fauna diversity. Our food resources are becoming more polluted and younger generations will be more affected. This situation will cause more spending on health care; by the way some nations might not even be able to overcome these health problems and be forced to suffer a lot, despite not being responsible of pollution like the ones using fossil fuels.

All optimist propositions listed above will need manpower both in terms of labor and intelligence. Increasing population brings unemployment problem which is one of the main concerns of governments. Decreasing cost of power will contribute to solve unemployment problem.

To sum up from a global perspective governments and companies champion investing in renewable energy resources, to achieve this especially governments should mitigate uncertainty and price volatility to foster investments and make energy supply sustainable and secure. Authorities should support energy efficiency polices including regulations to reduce carbon emissions and decrease other distortions. Basic right of all accessing power should be maintained by enhancing energy security, improving transmission and distribution framework. To enable these proposal governments and companies should tighten investment barriers. Finally every government should support research and development investments focusing on energy storage technologies, besides should establish institutes within its organization. Implementing and integrating above proposal will
enable power to be accessed by billions of people with affordable budgets and will stimulate humanity economic growth leading prosperity for every human being.