

Bioenergy 2019- 21st Century technology renaissance a driven impacting factor for Future Energy, Economy, Ecommerce, Education, or any other E-Technologies- Bahman Zohuri- Golden Gate University

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Abstract

The human race has always innovated, and in a relatively short time went from building fires and making stone-tipped arrows to creating smartphone apps and autonomous robots. Today, technological progress will undoubtedly continue to change the way we work, live, and survive in the coming decades. Since the beginning of the new millennium, the world has witnessed the emergence of social media, smartphones, self-driving cars, and autonomous flying vehicles. There have also been huge leaps in energy storage, artificial intelligence, and medical science. We are facing immense challenges in global warming and food security, among many other issues. While human innovation has contributed to many of the problems we are facing, it is also human innovation and ingenuity that can help humanity deal with these issues

“New directions in science are launched by new tools much more often than by new concepts. The effect of a concept-driven revolution is to explain old things in new ways. The effect of a tool-driven revolution is to discover new things that have to be explained”. (F. Dyson, 1997)

In this article, we review the impact of technology as evolving at beginning of 21st Century on future prospect of Energy demand either renewable or non-renewable form, Economy, to Ecommerce, Education and any other E-related of Modern Technology.

Keywords: Modern Technology, Traditional Technology, Technology Renaissance, E-Banking, Ecommerce, Education, Energy, Economy and Other E-Technologies, Artificial Intelligence, Business Intelligence.

Introduction

The history of human technology began when he discovered how to design a tool and draw on the stone or the cave wall . This goes back about 2.5 million years ago. Tools made in this way have been found in Africa (the earliest known examples have been discovered at Gona, in the Awash Valley in Ethiopia). Gradually, over the millennia, in an extremely slow version of an industrial revolution, new and improved techniques are developed for striking off slivers of stone. The next most important discovery of humans was the taming of fire. “This probably happens some 500,000 years ago in China,

where the caves occupied by Peking men contain what appear to be hearths. Some experts believe there is evidence of the use of fire much earlier in South Africa.

Another important discovery was the plough and draught animals which go back to 3,000 BC. “The plough is almost certainly the first implement for which humans use a source of power other than their own muscles.” More recent inventions go back to 200 BC, when builders in Greek cities on the coast of Turkey (and in particular Pergamum) evolve cement in about 200 BC as a structural material, in place of weaker mortars such as gypsum plaster (used in Egypt) or bitumen (in Mesopotamia). The secret of the new material is the lime which binds sand, water and clay. The Romans subsequently use finely ground volcanic lava in place of clay, deriving it mainly from the region of Pozzuoli.

“Part of the purpose of the Roman roads was the speed of communication, so there were posthouses with fresh horses every 10 miles along the route and lodgings for travelers every 25 miles. By the 2nd century AD, the network spreads all-round the Mediterranean and throughout Europe up to the Danube, the Rhine, and northern England, amounting in all to 50,000 miles. This far outdoes even the very impressive achievement of the Persian roads. Travelers on foot or horseback have rarely been so well provided for”.

As time passed, human ingenuity further evolved, and less than 2000 years later not only conquered the earth but landed on the Moon and now reaching planet Mars.

Future Energy Production Demand

As part of technology renaissance, while we are evolving from traditional technology of past centuries to 21st century and going forward is involved with reduction of green effects and global warming that as human we are facing.

Ensuring an ongoing supply of power in a low carbon economy is one of the major national and international challenges that almost every country faces. Investments in alternative and renewable and non-renewable energy technologies have risen steadily over the last decade, particularly since the ratification of the 2016 Paris Agreement.

As new technology thriving for better knowledge due to new information learned from our past historical data, drives to a better power of decision making, when it comes to production of electricity from a new source of energy (i.e. either renewable or non-renewable source).

While reasonable progress has been made as a result of this, even the most developed renewable energy technologies, for example solar, wind and hydro, cannot satisfy the rapidly growing energy demand of the world. Arguably a non-renewable energy source, nuclear energy may be one clean energy answer for the future. More specifically, small scale nuclear energy holds considerable potential. Such potential exists in the form of Small Modular Reactors (SMRs) with thermal output of 15-60 MW or Nuclear Micro Reactors (NMRs) with thermal output of 1 to 3 MW.

SMRS as new generation or GEN-IV are not a new idea (i.e. have been used by U.S. Navy over 60 years ago as new propulsion system), yet appeal very safe from operation point of view in respect to its previous generation namely GEN-III, while NMRs are very mobile and can be used in space explorations as well as military applications and they are newer breed of generation IV or GEN-IV.

Since the Paris Agreement was ratified in 2016, the aim of the Paris Agreement is to limit the global temperature increase to below 2 degrees Celsius, with a preference to keep the warming below 1.5 degrees Celsius. Significant changes will have to be implemented to achieve this goal. While there has been a minimal number of large projects executed since the agreement due to time frame challenges, a large variety of sustainable and renewable energy projects have been put into motion all over

the world. Global energy demands are expected to increase rapidly as more people transition out of poverty. Owing to a range of issues such as intermittent energy production, cost feasibility and scaling limitations there are inherent difficulties in transitioning to a grid system where most of the electricity is supplied by renewables. This is worrisome, considering that it is predicted that the world market for electricity generation is expected to increase by 80% over the next 25 years.

While these renewable energy systems are continually improving, baseload power generation must be achieved by alternative means. The solution may just be nuclear energy, specifically through the utilization and optimization of Small Modular Reactors (SMRs) and Nuclear Micro Reactors (NMRs).

In summary, the global market leaders of SMR and NMR development and implementation include GEN-IV Energy.

Nuclear power plants generate flexible, continuous and reliable energy with zero carbon emissions. Approximately 11% of the world's energy demand is met using nuclear power. In some countries, up to 70% of the power requirement is achieved using nuclear power.

Bear in mind that, climate change is one of energy production variables and a change in the usual weather in a place or spot around the world as well. This will impact a change in how much rain a place usually gets in a year. Or it could be a change in a place's usual temperature for a month or season. Climate change is also a change in Earth's climate. The other impacts that can be seen due to global warming is effect that is known as "Permafrost" phenomena.