

The World in 2056

It is hard to imagine what our earth will look like in 2056, how people will live, what their standard of living will be, and, most importantly, if they will have solved today's environmental problems, that are mostly connected to our energy use.

Today's problems are manifold; we are dealing with energy shortages because of higher and higher energy needs caused by economic overgrowth that is today's definition of success, and a system of energy production that cannot keep up with that. We are depending on a few, unsustainable energy sources such as oil, coal, and nuclear power for our fuel and electricity needs. To create electricity, we use coal or uranium to fire huge, mostly old and inefficient power plants that will have to be closed in a foreseeable future. From these power plants we transport our energy over huge distances in an outdated network of transmission lines that is very costly and wastes a lot of the electricity on the way. The energy sources we use are also non-renewable and very dangerous for our environment.

To fuel our cars, the main method of transportation in the U.S. and most parts of the world, we use oil, a non-renewable, unsustainable and environmentally costly and dangerous energy source. That adds CO₂ to the atmosphere and speeds up the greenhouse effect. Today we are still not able to predict in detail what kinds of impact the greenhouse effect will have on our planet!

Other problems of oil are that our oil reserves are shrinking faster and faster. We already know that we will run out of this resource in the next 100 years if we keep our consumption at present level, or a lot earlier at the increased consumption projected for this century.

We also have the issue that our oil needs are highly based on imports which causes more problems, because a lot of oil producing countries are in an unstable political situation, and therefore shortages in oil production appear rather frequently, which leads to high prices. High oil prices currently have a very big and negative effect on the U.S. economy as well as on the economies of most developed countries.

Let's look into the future now: It's the academic year of 2055/56 at Northfield Mount Hermon School, and life has changed, since I went to high school here. I'm not talking about the buildings – they are still the same, I'm not talking about the people - of course most of them have changed – I'm talking about the general way of life.

In the last 30 years, our country, the whole world has gone through major changes. In about 2015 the oil price finally hit the \$100/ barrel mark. This happened because of the

increase in oil demands in China and India and the shortages in production, caused by wars and other political instabilities in a lot of oil producing countries. Last but not least, it was also a result of the shrinking of the resources. The government of the United States finally recognized that it was necessary to establish a reform and shift the American economy from a high energy consumption economy based on traditional, non-renewable energy sources to an “energy efficient” economy based on the new, sustainable energy sources.

The first step the government undertook was launching a big advertising campaign to make people more aware of the issues of global warming and the shortages of oil. This was quite successful, and decreased the use of oil per person in the U.S., but still didn't quite decrease the consumption to European levels, where the living standards are almost the same as in the U.S., but the oil consumption is considerably lower.

Then the government established a number of new bills introducing taxation privileges and subsidies for sustainable energy sources such as wind power, solar energy and hydropower to support the producers of the windmills and solar panels and the private and commercial owners of windmills and solar panels. These bills were also introduced to decrease the prices for electricity from these energy sources making them highly competitive, in fact even cheaper than electricity from “old” energy sources.

The government also introduced more and more benefits for producers of more efficiently created “traditional” energy produced from oil, coal, and, of course, liquefied natural gas.

The money to fund these taxation benefits and subsidies was mostly taken from the military budget. This was easily possible since a major part of this budget had gone to fund the engagement in Iraq in previous years, and the last soldier from Iraq had just returned home in January 2015.

Most of the electricity generated by the commercial producers of this renewable energy was used to solve what appeared to be the most precious problem of the day: the oil shortages.

At that point in time the hydrogen fuel cell technology had recently become ready for commercial use on a big scale, and now, with the big amounts of surpluses in electricity production, it became increasingly easier and cheaper to produce hydrogen. To support this movement, the government started subsidizing cars using the new hydrogen technology and putting stricter emission requirements on traditional cars using gasoline as their energy source and putting high taxes on cars that couldn't meet these requirements. This made it economically more attractive to buy hydrogen cars.

Those were a lot of steps in the right direction: over the next 10 years, the amount of cars using clean hydrogen fuel increased drastically, by 2025, renewable energy sources

produced almost 30% of the highly increased electricity demands in the U.S., due to the high electricity needs to produce the hydrogen for the cars. The U.S. almost lost their dependency on oversea imports of oil entirely. This was very positive because it resulted in fewer economic threats from international political instabilities and less need for involvement in those. This reduced the need for a high military budget, which freed up more funds to spend on the energy shift.

But there were still a lot of problems to solve: The biggest one was that the government still hadn't found a good way to shift the heat production from traditional to renewable energy sources. A lot of alternatives, like biomass, active-solar, passive-solar and geothermal had been tried, but all of them were either not really sustainable, or not yet ready for commercial use or both.

Though the oil use in the heating sector had been cut considerably, most of the consumers had shifted from oil to the cleaner, but still un-sustainable energy source natural gas. This caused natural gas to get more and more expensive because the demands were higher than the production. Now, although the problems of "traditional" energy sources, like pollution and international dependency were not as big as they were 10 years earlier anymore, they were still real.

We also had another problem that was getting more and more severe: even though the U.S. cut their emissions drastically, worldwide CO₂ emissions were still increasing year after year. This increase was mainly caused by the new industrial nation of China and the new emergent nation of India, where we had not been able to introduce electricity and transportation from renewable resources and where people were using more and more electricity and drove more and more (traditionally fueled) cars.

This led to major new, unexpected problems caused by global warming. We were having more and more severe storms, each of them causing more and more damage. One big issue was, and still is, hurricanes in the gulf coast area, where New Orleans and the surrounding areas have been severely damaged about once in every 10 years over the last 50 years since 2005. We were getting a drier and drier climate in a lot of parts of the country, especially in the Midwest, where we are facing regular crop shortages due to damages from droughts and beginning desertification. In Las Vegas, located in the desert of Nevada, we face a severe lack of water. Las Vegas experienced the highest population growth in the United States up until about 2030, and has lost most of its people in the last 25 years, because it simply ran out of water and was not able to supply its whole population with water anymore.

Because of these problems, the state of our environment in the whole world, and also in the United States is worse than it was 50 years ago. Even though we personally changed our lives a lot over the past 50 years, became a mostly sustainable economy, and used our great power, technological knowledge and intelligence to become a more peaceful and sustainable country that can look forward to a better and cleaner future, the problems that we had 50

years ago have not really gone away. They only shifted. 50 years ago we were causing those problems ourselves, today, in the year 2056; the problems are caused by new powers that are currently at the economic, technological and social stage where we were 50 years ago. In one way we were really successful: we were able to achieve something that no one could have ever imagined 50 years ago: An almost complete switch from unsustainable to sustainable resources in two major energy sectors within only 50 years and almost complete independence from imports of resources!

In another way we completely failed: we were not able to look over our borders and we didn't try to convince other parts of the world to go on the same path as we did. We didn't try to help China and India to become sustainable economies when it would have been easy to build a lot of windmills, solar panels, etc., instead of big coal and nuclear power plants at low extra cost.

Our duty now as citizens of the United States of America in the year 2056 is to help to solve those problems, make right what has been done wrong and to make sure that the achievements we made in our own country will be made everywhere in the world. This is the only way to make sure that life on earth as we know it will still exist in another 50 years.

Afterword:

This story is a story about our energy policies over the next 50 years, and it describes one path our country could take in terms of energy. This story is highly optimistic, it describes the, in my opinion, best solution to our current problems. I got the ideas for this story from readings and research on energy topics in general and specifically on renewable energy, mostly on wind energy. This story is not necessarily realistic, but all the energy solutions mentioned are technically possible already, the predictions made about China and India are widely accepted as facts, and the ideas about the “energy revolution” in the United States could become true, given engagement by the government through the right policy and financial investment and the help of the economy picking up on the opportunities that such an engagement would offer.

I am not saying that I really think or believe that this story is where America is heading, especially not with its current government, but I am strongly hoping, that America will be able to change its government and start going on the right path, because the only way to ensure our grandchildren, or even our children, the same life standards as we enjoy today, is starting to shift to a more sustainable life as individuals and as a nation, and every little thing will make a difference for this movement.