

Video 15

The Clean Energy Renaissance

Hello. Today I would like to give you some good news. Some *really* good news.

Beginning back in the 1970s in Denmark, a group of visionaries in that small country planted the seed of what has become not only a major industry in the 21st Century, but a transformation in our way of thinking. While the rest of the world bumbled and stumbled and staggered along in its old, dirty, stupid way of thinking, little Denmark planted the seed of a Renaissance.

Way back in 1898, an enterprising Dane named Hans Smith Hansen bought a blacksmith shop in Lem, on the west coast of Denmark, which he ran as a family business. If you wanted your anchor fixed, you took it to Hansen.

Following the devastation of World War Two, Hansen's son Peder took over and expanded the business. Vestas, as the company was now called, manufactured household appliances such as food mixers and kitchen scales; in 1950, the company began to make agriculture equipment for local farmers. In 1956, Vestas built cooling units for refrigerated transportation; and in 1968, Vestas built hydraulic cranes.

Then during the 1970s, the ever innovative Peder Hansen hired an engineer, Birger Madsen, who wanted to develop the technology that could turn power from the wind into electricity. Hansen also hired two inventors, Karl Erik Jørgensen and Henrik Stiesdal, who had developed a wind turbine with three blades, but did not have the money for commercial production.

Careful to avoid ridicule from their customers, the team at Vestas developed their wind turbine in secret. Meanwhile, they sold kitchen appliances, farm plows, refrigeration units for transporting milk, and hydraulic cranes for trucks.

Then, in 1979, Vestas sold and installed its first wind turbine, with three blades, able to produce 30 kilowatts per hour. The seed was planted, and it would begin to grow.

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Meanwhile, what was happening out in the world? The usual madness.

On October 6, 1973, Egypt and Syria attacked Israel on the Jewish holy day of Yom Kippur, starting the 1973 Arab-Israeli War. On the night of October 8, Israel went on nuclear alert, ready to retaliate with an unknown number of nuclear bombs.

On October 12, American President Richard Nixon ordered an airlift to provide weapons and supplies to Israel. The Soviet Union responded by supplying weapons and equipment to its Arab allies. The regional conflict had rapidly expanded into a global confrontation involving the two superpowers and their nuclear arsenals.

On October 16, six oil-producing countries—Saudi Arabia, Iran, Iraq, Abu Dhabi, Kuwait, and Qatar—in retaliation for the American support for Israel, announced that they were going to both increase the price for their oil, and cut back on oil production. This was the beginning of the “oil embargo” which disrupted the entire global economy, especially in the United States, where cars waited in long lines at gas stations to fill their tanks with gas.

On October 26, the Yom Kippur war ended, but the oil embargo continued until March 17, 1974.

The American response to this oil crisis was to increase domestic production of oil, especially in Alaska. People bought smaller cars, but these cars continued to burn oil. Norway had recently discovered oil in the North Sea; the Norwegians were suddenly blessed with an abundant product which they could sell at a good price to an eager international market.

The 1973 oil crisis was followed six years later by the 1979 oil crisis, caused by the upheaval of the Iranian Revolution. The mutual slaughter of the Iran-Iraq War during the 1980s further disrupted the oil market. Despite its invasion of Afghanistan in 1979 and the ten years of war that followed, the Soviet Union became the leading producer of oil in the world.

Decade after decade, the evil twins, oil and war, continued to dominate world events. No one, except a few quiet Danes designing wind turbine blades and gear boxes in their factories by the windy Atlantic, seemed to see a need for doing things any differently.

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Today in 2019, forty years after the first Vestas wind turbine spun its three blades in the abundant and inexhaustible wind, Vestas Wind Systems is the largest wind turbine company in the world. Vestas operates manufacturing plants—plants which provide thousands of jobs—in Denmark, Germany, India, Italy, Romania, the United Kingdom, Spain, Sweden, Norway, Australia, China, and the United States. Vestas employs 24,400 people around the world, people who earn an excellent salary while they help to bring clean energy to a planet which has been severely damaged by oil.

On February 10, 2019, 21.6% of Europe’s electricity was produced by wind turbines, both onshore and offshore. Valiant Denmark produced 104% of the electricity which she needs, a surplus of 4% which she sold to her neighbors at a profit.

Germany produced 66% of its electricity on that day from the wind. *Two-thirds!*

The Netherlands produced 33%. *One-third!*

Two small Baltic nations, which became independent as recently as 1991, have achieved heroic progress: Lithuania produced 26%, and Estonia produced 22%.

Poland, despite political upheavals since its independence in 1989, produced 22%, and is now about to build its first offshore wind turbines.

And though Russia is not listed, I will add that Vestas and Russia are working together to launch the wind turbine industry in a country which has been slow to give up its reliance on oil. In 2018, Vestas opened a nacelle assembly factory in Nizhny Novgorod, where imported parts will be assembled for turbines which will spin in the Russian winds.

In December of 2018, Vestas opened a rotor blade plant in the Ulyanovsk region, where blades 62 meters long will be manufactured for imported Vestas turbines, which will operate in Russia’s first wind turbine parks. The contract specifies that turbines must include “65% local content”, which encourages the Russian manufacture of wind turbine components. The factory is 51% owned by Vestas, and 49% by Russian partners.

From a certain perspective, one could conclude that visionary Denmark . . . won the Cold War.

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Young People of the World, on one hand, you have been born at a time of impending disaster on planet Earth. An appalling mess has been dumped into your laps.

On the other hand, you have been blessed by being born in the early years of a new epoch in human history, an epoch of enormous potential. International investors are now pouring increasing amounts of money into renewable energy. During the next five years, 2019 to 2024, investors will allocate an anticipated 210 billion dollars to rapidly growing clean energy industries. While the coal and oil industries are laying off workers, clean energy industries are hiring freshly educated workers by the tens of thousands.

China is the world leader in wind power generation, followed by the European Union, the United States, and India. Even industry experts have been amazed at how rapidly the prices of wind and solar energy have dropped during the past two decades, making them competitive with coal and oil. Rapid progress in battery technology has enabled companies to combine energy production with energy storage, making solar energy available at night, and wind energy available when the winds diminish.

Young People of the World, the boom is just beginning. Invite the sun and the wind into your classrooms. They have been waiting for a long, long time to go to work with you.

Thank you, thank you, for the beautiful new world that you are going to build.

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John Slade

Tuesday-Wednesday
February 12-13, 2019
10:10.

