Universität St.Gallen

Animated video serie «Little Green Bags»

The Energy Revolution: How we got here and what's next

Japan, 11 March 2011: An earthquake triggers a tsunami. Three reactors at the nuclear power station at Fukushima, on the Pacific coast, start to melt down. Large quantities of radiation are released. Radioactivity reaches levels that make an area within a 30-km radius uninhabitable. First estimates put the cost of the accident at 45 billion euro, but this is later doubled to 97 billion euro. The operating company TEPCO, previously regarded as a reliable supplier of cheap energy, can no longer survive economically and would collapse without state support.

Change of scene: Far from Fukushima, the accident also triggers a rethink in energy policy in Europe. The governments of Germany and Switzerland react quickly. Half of Germany's nuclear power plants are taken offline within a few weeks, and the other half will be switched off successively between now and 2022. A few months later, the Swiss Parliament also decides to exit nuclear energy, by the year 2034.

Why did an accident 10,000 km away bring about such a fundamental shift in thinking in the energy policies of European countries? There are three main reasons why Fukushima was the proverbial straw that broke the camel's back in Switzerland and Germany: risk, social acceptance and cost.

1. The accident at Fukushima was a dramatic demonstration of how, although the risk of a core meltdown may be small, it can never be eliminated entirely. And if that small risk becomes reality, the damage is enormous. Yet fossil fuel alternatives, like coal and shale gas, are also environmentally risky.
2. In a democracy, social acceptance of a technology is vital. Surveys and polls in Germany and Switzerland even before Fukushima showed that majorities in favour of new nuclear power stations were difficult to find. After Fukushima, deadlock turned almost overnight into a firm three-quarters majority against. The governments of both countries recognised that achieving majority support for new power station projects would be impossible for decades, and they started looking for alternatives.
3. Finally, a third crucial aspect is the opposing cost trends in renewable and non-renewable energies. While wind turbines are becoming ever cheaper, and mass production has helped to more than halve the price of solar cells, the opposite is happening with nuclear power and other non-renewable energy sources. Because safety standards are being tightened and waste must be stored for thousands of years – but also because such large power stations are not suited to mass production – costs are inevitably rising.

So what will take the place of nuclear power stations? With the reactors switched off, are the lights going to go out? Must we choose between the devil of accepting nuclear risk and the

deep blue sea of driving climate change with fossil fuel power stations? No. There is a third way.

Within a few decades, as a study from Stanford University has shown, renewable energy sources like sun, wind and water will be able to cover global demand. In Switzerland, the conditions are particularly favourable. More than half of Swiss power comes from hydro-electricity, and Alpine reservoirs can store energy when solar and wind resources are in surplus and feed it back into the grid later when needed. Other renewable sources like biomass and geothermal energy complete the mix. Switzerland also has a long tradition of energy savings in buildings, and its compact settlement patterns mean short journeys to work and use of one of the world's finest public transport systems.

So a future without oil, uranium and the like is possible. But what do we need in order to achieve it? Three factors are important:

1. Building a renewable energy infrastructure requires investment. In countries like Germany, banks and institutional investors have already recognised this as an opportunity to open up new areas of business. Politicians have an important role to play here in creating the long-term, sustainable conditions upon which investors can rely.
2. What matters is not only where our energy comes from but how much of it we use. The better insulated our houses are, the more easily we can meet our needs with renewable energy. The shorter the distance we need to travel, the quicker we will reach our destination without oil. We can even save energy by thinking about what we eat and sometimes forgoing meat.
3. Securing the future of energy is a momentous task that requires the commitment of every one of us. The sooner we stop just consuming energy without thinking, and instead ask ourselves what we can personally do to contribute, the better for everyone.

Even the longest journey begins with a single step. With this in mind, summoning all our determination and stamina, we begin our journey into a bright energy future.

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