Poland returns to nuclear power

An airplane crash in April took the lives of 100 Polish politicians, including the Solidarity co-founder and Polish president Lech Kaczyński. In 2009, Poland announced plans to build Żarnowiec 2. Construction of Poland’s first nuclear reactor at Żarnowiec was stopped in 1989, partly by the power of Poland’s dominant coal industry, expressed through its famous Solidarity movement. By Dariusz Witold Kulczyński.

It was thirty years ago when Poland’s Solidarity (Solidarność) was born and gave the country its five minutes of fame. On 10 April 2010, a tragic airplane crash killed almost a hundred VIPs, including President Lech Kaczyński and put Poland in the spotlight once again. Lech Kaczyński organized independent trade unions in Poland and was a co-founder of Solidarity along with its famous leader Lech Wałęsa. In 1980-1981 the almost 10 million strong Solidarity Trade Union initiated the strikes in the Eastern Bloc and ultimately led to its collapse. The Solidarity movement also caused the demise of Poland’s nuclear programme in 1989.

In August 1980 massive strikes began in Polish shipyards that spread all over the country and led to the formation of the Independent Self-Governed Labour Union—Solidarity—that sought democratic reforms. On 13 December 1981 general Wojciech Jaruzelski imposed Martial Law and imprisoned tens of thousands of Solidarity activists. On 18 January 1982, just over a month after the imposition of Martial Law, the government decided to start construction of the Żarnowiec Nuclear Power Plant, on Poland’s north coast near Gdańsk. The decision was doomed to be unpopular with the Poles, just like everything that the hated Jaruzelski regime did. On the other hand the Żarnowiec Nuclear Power Plant had every chance to be a successful project. It was to be a 4 x 440 MW generating station with Russian designed VVER-440 units. These units operate successfully in power plants such as Loviisa in Finland, Dukovany in the Czech Republic, Bohunice and Močovce in Slovakia, Paks in Hungary, Rivne in Ukraine and more.

The Żarnowiec project was carefully planned and a superb infrastructure developed in the area. The reactor vessels were manufactured in a Skoda factory in Czechoslovakia while the turbines and generators were made in Poland. Polish boiler factory Rafako built the Steam Generators. In 1986, the Atomic Energy Act was passed by the Polish Parliament (the Sejm) making it possible to begin construction and operation of nuclear power plants. After the Chernobyl disaster, the Żarnowiec Safety System design was to be enhanced with state-of-the-art Western technology.

In 1989, after the first partially-free Parliamentary election and as freedom and democracy spread, the Polish population wanted to express themselves in the same manner as their counterparts in the West. The anti-nuclear movement flourished. On the wake of Chernobyl, they started calling Żarnowiec Nuclear Power Plant “Żarnobyl” to incite public fear. Local anti-nuclear organizations such as the Franciscan Ecological Movement, and the Gdańsk Economic Forum, organized various lectures and demonstrations in Gdańsk, Gdynia and Sopot (Tricity). The nationwide “Ruch Wolności i Pokoju” (Peace and Freedom Movement) organized roadblocks to prevent access to the Żarnowiec site and engaged the station would be less viable economically than conventional coal-burning power plants. Before entering politics, Tadeusz Syryjczyk was a professor of Information Technology at the AGH Engineering University of Kraków (originally the Academy of Mining). The Żarnowiec decision was not reversed by the succeeding cabinet of Jan Krzysztof Bielecki.

Twenty years later

Twenty years later Poland’s nuclear programme is back. The country of 38.6 million is a member of NATO and the European Union. Before the recession it ranked as the 24th largest economy in the world with a 2008 GDP of $450.6 billion according to the International Monetary Fund. In 2007, Business Monitor International was forecasting Polish real GDP growth averaging 4.96% per annum between 2007 and 2012. The country’s power consumption was expected to increase from 141.7 TWh in 2007 to 176.4 TWh in 2012. While the global recession has put a downward correction on these forecasts, Poland still needs to replace nearly 50% of its aging generating capacity (that is, up to 18 GW) by the year 2025. In 2008, Poland’s electricity consumption per capita was the fifth lowest in Europe (after Latvia, Lithuania, Romania and Turkey). The overall energy usage per capita in Poland does not differ drastically from other OECD countries because a large proportion of Poland’s energy need comes from burning coal for heating purposes.

As the country modernizes, its electricity consumption will rise. Since 2007 Poland has...
been ruled by the conservative government of Donald Tusk. The coalition is composed of Civic Platform and Polish Farmers’ Party (Platforma Obywatelska, PO, and Polskie Stronnictwo Ludowe, PSL). The PO party is very nuclear-friendly. The junior coalition partner PSL is less enthusiastic but not opposed to nuclear power.

On 6 December 2007 the author spoke to Bronisław Komorowski, member of Parliament, and speaker of the house (Sejm). Komorowski belongs to the PO party, and is currently acting president of Poland. He spoke supportively about nuclear power generation: “The possible implementation of nuclear power generation in Poland would constitute an indication of economic freedom. We must have the courage to admit that a debate about electricity generation was blocked for political reasons by my beloved Solidarity. After 1989 the necessary debate was destroyed and the construction of the nuclear power plant was cancelled."

“Of course each generation and each great social movement has the right to formulate its own opinions. I was not involved in formulating policies in this particular area, but today I am convinced that the great Solidarity movement contributed to halting the debate on development of nuclear power in Poland, also in its ecological dimension. This is a fact. The more freedom we exercise, the more chances exist for implementing modern technologies. In Poland this means freedom to ask the following question: ‘What is the best and the cheapest way to generate electricity in Poland, the traditional coal-fired power stations or nuclear power plants?’ This is a question about freedom.”

While the coal lobby is still powerful in Poland, there are no viable political forces that could impose strict anti-nuclear policies. The previously-ruling PiS (Law and Justice) Party was quite nuclear-friendly too; they wanted to invest in the Lithuanian Ignalina before embarking on a nuclear power plant in Poland. Many Poles expect that nuclear power generation will provide cheaper electricity.

In today’s era of climate change awareness, coal is at a major disadvantage to nuclear. Currently Poland generates over 94% of its electricity by burning coal. At the end of the Poznan Climate Conference in late 2008, the EU agreed to a ‘climate package’ for Poland. Until 2020 Poland’s existing power plants would be charged at reduced rates for CO₂ emissions but new power plants would be subject to full charges on commissioning. By 2020, Poland will have received PLN 60 billion (EUR 15 billion) in European transfer payments to assist in power sector modernization.

Notwithstanding this support, the European Union confirmed its tough stand on mandatory reductions by 20% of the 2005 CO₂ emission levels by 2020 for all of its member states.

On 13 January 2009, the Polish Government approved a directive on implementation of the nuclear programme in Poland to be led by PGE (Polska Grupa Energetyczna) with various foreign investors. PGE employs over 40,000 people to produce some 54 TWh of electricity annually, 40% of the country’s output. Its installed capacity is more than 12,000 MW. PGE is among the largest companies in central and eastern Europe. PGE is still state-owned but has been issuing and selling minority shares on the Warsaw Stock Exchange.

In July 2009, Hanna Trojanowska, the Commissioner for Nuclear Power, revealed that Żarnowiec had the best chance to be the site of Poland’s first nuclear power plant. In March 2010, it was announced that Żarnowiec II would be built at a cost of EUR10 billion by approximately 2020. The project will be handled by an international consortium established by PGE. AREVA/EDF, General Electric and Westinghouse have expressed interest in supplying their PWR technology to Poland. In academic circles there is also some interest in Canada’s natural uranium-fuelled PHWR (CANDU) technology due to the flexibility of its fuel cycle (including UO₂, thorium and spent PWR fuel). When Poland converts its state atomic agency (Państwowa Agencja Atomistyki) to a fully-fledged nuclear power regulator, investors and operators will be able to seek authorization to build new power plants in accordance with Directive 2003/54/EC of the European Parliament and the European Council (chapter 6). The authorization process, rather than request for tenders, is the preferred way to introduce new generators in the EU. This could make it possible for multiple nuclear technologies to be implemented in Poland. Waldemar Pawlak, deputy prime minister and economy minister, declared that there was room for two leading nuclear technologies. He mentioned considerable incidence of PIMBY (Please in My Backyard) amongst Polish municipalities. The population of Poland is no longer naïve like it was back in 1989. Poles now realize that economic growth is essential for their well-being, and the construction of nuclear facilities offers prospects of employment.

Short of any significant nuclear accidents abroad, the greatest barrier to development of nuclear power is its economics. Everything depends on how well the first nuclear power plant project goes. If it mirrors the fiasco of Olkiluoto 3 in Finland, the anti-nuclear forces in Poland may once again prevail.