



## Safety Concerns Regarding Outdated, Soviet-design Nuclear Power Reactors in Eastern-Europe

There are two nuclear reactors in Bulgaria (Belene) and another two in Slovakia (Mochovce), which are of Soviet design, and the construction of which was halted due to financial reasons during the nineties. Now both countries are planning to restart the construction of these units. The design of the two Slovakian units is more than thirty years old, and as significant construction work has been done, these cannot fit modern safety standards. Safety concerns have arisen for both projects. The Belene site is situated in an earthquake area, where a serious earthquake killed 120 people in 1977 in the nearby town of Svishtov, only 14 km away from the site. Serious damage to buildings occurred also in the nearby towns of Belene (3 km), Nikopol (25 km), Turnu Magurele (Romania, 30 km) and Zimnicea (13 km). In the case of Mochovce, the reactors are not planned to be installed with full pressure containments, which is essential in the case of modern designs, and considered an indispensable feature to protect against outside attacks since the terrorist attacks of 9/11. Modern designs boast a double secondary containment with extra steel lining.

Other units of Soviet design will soon reach their designed lifetime. Four units are located in Hungary (Paks, their lifetime expires between 2012 and 2017), another four in the Czech Republic (Dukovany, 2015-17), and two more in Slovakia (Bohunice, 2014-15). The lifetime of these units is planned to be extended by 20 years each. The problem is obvious. Although during the accession negotiations with the European Union these units – unequally to other units in Slovakia, Bulgaria and Lithuania – were allowed to operate further after joining the Union, it is questionable, whether the prolonged operation of these reactors is in line with the intentions of the Union at that time.

While plans for commissioning new units, finishing previously mothballed ones and extending lifetimes of old reactors appear at the same time in Eastern-Europe, a similar process cannot be observed in the Western countries of the EU. This raises the concern that the democratic deficit of the Eastern countries is among the reasons behind the process. As an example, the Slovakian government does not purpose to launch an Environmental Impact Assessment process in the case of Mochovce, referring to the original licences from 1986 as being still valid.

Assessing the safety of the old, and their lifetime to be extended units and to answer the question whether these could safely serve for further decades is highly problematic without existing European nuclear safety standards. Taking into account the dangers, a common European approach might be justified. As a matter of principle, reactors receiving a life-time extension should pose not larger danger than a new-built reactor.

It is essential to prove, that the plants could operate safely until the end of the extended lifetime. In the case of all safety-related equipments (e.g. reactor pressure vessels, other equipments designed to cope with the high pressure, the confinement, which is supposed to withstand the consequences of a design basis accident) it has to be proven that those will be able to fulfil the prescribed limits, and their performance during tests should be equal to new ones. **All the tests which were carried out before receiving permissions for reaching the first criticality have to be repeated.** In the cases, where the international or national standards have been improved since then the tests must be realised according to the existing ones. Where the prescriptions have not been changed the same kind of tests must be repeated.

Licensing nuclear units the construction of which was halted but are now planned to be finished, must be preceded by reaching a safety level that corresponds to modern standards, and the nuclear units must be provided with the same safety-related equipments that modern plants utilise (e.g. full-pressure containment).