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Nuclear Power in the XXI Century

Nuclear power, which accounts for about 10 percent of the world's electricity supply, is currently the only technology with a secure base-load electricity supply and no greenhouse gas emissions that has the potential to expand at a large scale and effectively replace fossil fuels. However, after the 2011 Fukushima accident some countries, particularly in Europe, decided to slow down further expansion of nuclear power or even to shut down existing nuclear power plants, pointing out to potential safety risks, unresolved issues with nuclear spent fuel disposal, high construction prices, and public/political opposition. More "desirable" renewable solar and wind or other non-nuclear/non-fossil power sources are on the table. Will this approach work - having in mind that about one-third of the world's population still does not have access to electricity, and that underdeveloped and developing countries mostly use fossil fuels as the major source of energy? This presentation analyzes the current situation in the world, with examples of the countries that decided to phase out nuclear power, as well as the countries that decided to rapidly increase nuclear power. The presentation will also cover recent innovations in reactor designs, and advantages of small modular reactors and floating nuclear platforms. The last part of the presentation will focus on the challenges facing countries in the Balkans that would like to have nuclear power, but do not have required regulatory framework, nuclear infrastructure, financial support and expertise.

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