

Introductory remarks by Mr. Costis Stambolis, Executive Director of IENE

Dear Ms. Gusilov

Dear Speakers,

Dear Delegates,

I am more than happy to be in Bucharest today, representing IENE which in partnership with the Romanian Energy Centre (ROEC) is organizing this event. In order to examine once again the Nuclear Option for SE Europe. As a matter of record I must note that IENE organized a similar conference in Sofia in May 2009(<http://www.iene.gr/page.asp?pid=3698&lng=1>). I shall not waste any of your valuable time to explain the advantages of nuclear power generation, since speaking to the converted such benefits are more than obvious. However, before elaborating on a some key facts relevant to our region I wish to make a number of general observations:

- (1) Over the past decades in our geographical area of SE Europe nuclear power generation has proved that it can be an integral , cost effective, safe and strategic part of the energy mix, and more specifically of the electricity mix as it has been clearly demonstrating by few countries in the region including our host, Romania, Bulgaria and Slovenia /Croatia.
- (2) Today, there are ample margins in the energy system of most countries in the region for further nuclear power generation and an increase of its stake in the overall energy mix.
- (3) Nuclear power could prove to be the best option in transforming the energy mix of the region, especially by providing much needed base load which can only be beneficial for large scales RES development and penetration. In this

respect nuclear power has a strategic role to play in strengthening the energy security of the region and minimizing its dependence on imported coal, oil and gas.

- (4) The nuclear option is the only reliable and predictable way, in conjunction with other clean fuels, in mitigating justifiable fears and threats of further environmental degradation resulting from Climate Change considerations.

In discussing the nuclear option for SE Europe we must point out that nuclear power faces big challenges with respect to the economics and financing of new builds. With high upfront investment costs and long construction periods for new reactors, this is especially true in competitive markets where utilities face significant market and regulatory risks. Nuclear power also faces intense public scrutiny about a wide range of issues that could undermine prospects if they are not adequately addressed at an early stage. Safety is the dominant concern – in operating plants, managing radioactive waste and preventing the spread of nuclear weapons. The scale of these issues is such that, ultimately, only governments can determine the future of nuclear power. Individual countries, taking into account their own situation and priorities, assess the costs involved and the anticipated benefits and intervene with appropriate policy action. Policies may be more or less stringent: they may set an explicit course either to obstruct the introduction of nuclear power or support nuclear power or even phase it out in the case where nuclear power is already contributing to power, generation (e.g. Germany). Such policies may also affect nuclear power more generally by determining the structure of electricity markets.

Today in SE Europe a small number of countries including Bulgaria, Romania and Slovenia/Croatia have developed effectively nuclear power generation with substantial benefits to their economies and increased energy security as part of their diverse energy mix. Turkey is the newcomer in SE Europe's nuclear sector and indeed a new player in the global scene, having planned, and already executing, a very ambitious nuclear power programme.

According to latest IEA figures today (2014) there are 434 reactors in operation, i.e. 17 less in number than their peak in 2002, while, the total installed capacity peaked at 392 GWe. Annual nuclear electricity generation reached a maximum in 2006 at 2,660 TWh, then dropped to 2,346 TWh in 2012 (down 7 percent compared to 2011, and down 12 percent from 2006). About three-quarters of this decline is due to the situation in Japan, but 16 other countries, including the top five nuclear generators, decreased their nuclear generation too. The key IEA statistics on nuclear power generation as of the end of 2013 shown in the attached table.

Key nuclear power statistics by region, end-2013

	Operational reactors	Installed capacity (GW)	Electricity generation (TWh)*	Share of electricity generation*	Under construction (GW)**
OECD	324	315	1 961	18%	20
United States	100	105	822	19%	6.2
France	58	66	424	74%	1.7
Japan***	48	44	9	1%	2.8
Korea	23	22	139	26%	6.6
Canada	19	14	103	16%	0
Germany	9	13	97	15%	0
United Kingdom	16	11	71	20%	0
Other	51	41	297	11%	2.7
Non-OECD	110	78	517	4%	56
Russia	33	25	171	16%	9.1
China	20	17	117	2%	32
Ukraine	15	14	83	44%	2.0
India	21	5.8	32	3%	4.3
Other	21	16	113	2%	9.5
World	434	392	2 478	11%	76

* Electricity generation data are the latest available estimates for 2013. ** Differences in the definition of the start of construction may lead to discrepancies between the figures here and those in other sources. The *World Energy Outlook* uses the IAEA definition, which specifies the start of construction as the date of the first major placing of concrete, usually for the base mat of the reactor building. *** While Japan's nuclear reactors are operable, they have largely been idled since the accident at Fukushima Daiichi in March 2011. Notes: GW = gigawatts; TWh = terawatt-hours.

Sources: IAEA Power Reactor Information System (PRIS); IEA databases.

The nuclear share in the world's power generation has declined steadily from a historic peak of 17 percent in 1993 to about 10 percent in 2012. Nuclear power's share of global commercial primary energy production plunged to 4.5 percent, a level last seen in 1984. Only one country, the Czech Republic, reached its record nuclear contribution to the electricity mix in 2012.

In 2013, the world's 392 gigawatts (GW) of installed nuclear capacity contributed 11% of global electricity generation. This share has declined steadily since 1996, when it reached almost 18%, as the rate of new nuclear additions (and output growth) was outpaced by the expansion of other technologies. After hydropower, nuclear is the second-largest source of low-carbon electricity generation worldwide and the largest in OECD countries. Globally, its output is estimated to be nearly four-times greater than that of wind power and 18 times that of solar photovoltaics (PV) (though these ratios are declining quickly because of the fast growth of renewables). Some 80% of operational capacity is in OECD countries; However, it is non-OECD countries that are presently driving new construction. Of the 76 GW of nuclear capacity being built at the end of 2013, three-quarters was in non-OECD countries (and 40% in China). This reflects the need to add large increments of baseload capacity to meet fast-growing electricity demand, and to diversify the power mix, while emitting fewer air pollutants. The average age of nuclear capacity worldwide is 27 years, while expected technical lifetimes for reactors are 30-60 years, depending on the reactor type and location. More than three-quarters of the fleet in OECD countries is over 25 years old, posing big questions in the medium term about the schedule for retirements and how such a large tranche of capacity might be replaced. By contrast, around half of the capacity in non-OECD countries (excluding Russia) is less than 15 years old.

With the above in mind we as organizers have put together a rather challenging programme with the aim of covering latest developments in the region on the nuclear power generation front.



SE Europe's existing and planned Nuclear Power plants

In addressing nuclear power generation issues in S. Europe one should keep in mind the region's ⁽¹⁾ high import dependency on coal, oil and n. gas. In the case of oil this exceeds 90% while for n. gas it stands at 83%. With almost 4,0GW of nuclear power plant capacity installed and in operation in Bulgaria, Slovenia and Romania (see map), nuclear is already contributing a stable electricity base load not only in the above three countries but also, thanks to electricity exports, to the broader region. In this sense nuclear power generation in SE Europe is already playing an important role in the diversification of the energy mix, in combating greenhouse gas emissions and in enhancing energy security.

With Turkey's huge nuclear power generation programme now fast unfolding (estimated to add some 9.0 GW of new electricity capacity by 2022/2024) it is anticipated that the contribution of nuclear power will be further expanded with

beneficial effects to the stability of the electricity system and the formation of competitive electricity prices.

Let us hope that by the end of the day we shall all be a little wiser on the role that nuclear power could play in the further transformation of our region's energy system.

May I take this opportunity, at the very start of the conference to thank Romania's National nuclear power company Nuclearelectrica for their valuable support to IENE and ROEC in organizing this event.

I now wish to give the floor to Ms. Eugenia Gusilov, the Director of ROEC.

(1) The region comprises the 13 countries which IENE monitors on a regular basis and include the following: Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, FYROM, Greece, Kosovo, Montenegro, Romania, Serbia, Slovenia, Turkey