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BULLETIN

U.S. Prepares for a "Nuclear Energy Renaissance"

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President Donald Trump's announced "nuclear energy renaissance" is a response to the failure of previous reforms, growing energy demand (driven by AI), his lack of support for renewables, and the weakening U.S. technological position in nuclear energy relative to China and Russia. The changes would focus on reforming nuclear oversight, increasing the role of the Department of Defense, accelerating technology deployment, developing the nuclear workforce, and producing domestic nuclear fuel. Enhanced funding and assertive export diplomacy may encourage new investments in partner countries.

On 23 May, President Trump signed four executive orders aimed at accelerating the development of nuclear energy in the U.S., which aligns with his broader energy policy of supporting the traditional and nuclear sectors while slowing down the expansion of renewables. The enacted legislation is less radical than previously announced, emphasising deregulation alongside increased U.S. financial and organisational engagement. Trump's goal is to increase U.S. nuclear capacity from 98 GW today to 400 GW by 2050, and to regain global technological leadership in the nuclear sector within the next decade, a position that the U.S. has lost to China and Russia in recent years as they rapidly advanced their capabilities.

External Dimension. Despite bipartisan support and reforms pursued by previous administrations to revitalise the nuclear sector, the U.S. has failed to reclaim the lead. Between 2015 and 2024, the U.S. completed only two reactors, while in the same period China built 45, Russia built five, and India built eight (all constructed by Rosatom). The U.S. is not currently constructing any new reactors, while China is building units totalling 33 GW—enough to surpass the U.S. in total nuclear capacity within a decade. Meanwhile, Russia, India, Turkey, and Egypt are building about 5 GW each (again, all Rosatom projects).

Assessing the U.S. technological edge is more complex, but it is clearly diminishing. This can be seen in China's growing contribution to scientific publications, the modernisation of designs such as the CAP1400 reactor, and the development of new technologies like Small Modular Reactors (SMRs). China and Russia claim to have grid-connected SMRs and are developing further designs. In contrast, the U.S.-Japan GE-Hitachi consortium plans to complete its first SMR (BWRX-300) in Ontario, Canada, by 2030. Nevertheless, the U.S. continues to play a pivotal role in establishing safety standards and upgrading and maintaining legacy reactors, including those from the Soviet era.

Global demand for new nuclear capacity is increasing in response to the energy transition, with the COP28 declarations calling for nuclear power to triple by 2050. Currently, 90% of active projects worldwide are led by China or Russia. These countries are expanding their influence by securing new contracts and forming scientific and technical partnerships in the Global South, particularly in Africa. States planning nuclear development, such as Poland, Czechia, and Saudi Arabia, are U.S. allies or partners. However, American companies face stiff competition from France's EDF and Korea's KHNP. Barriers to the U.S. expansion include strict export controls, a lack of competitive financing (unlike Russia) and the degradation of manufacturing capacity, including a shortage of workers. A further challenge is low confidence in the ability of the United States to deliver projects on time and within budget, as exemplified by the Vogtle 3 and 4 reactors in the U.S. state of Georgia, which faced a seven-year delay and cost overruns exceeding 100%.

Internal Dimension. A U.S. nuclear renaissance is economically justified by the rising demand for energy linked

to reindustrialisation and digitalisation, including the growth of datacentres, quantum computing, and AI. The development of these favoured sectors reflects business' expectations of lower emissions and a more reliable energy supply.

The current administration attributes the recent stagnation in the nuclear sector to overregulation, arguing that it has increased investment costs and delayed innovation. It also highlights the limited effectiveness of previous reforms. Public support for nuclear energy is, however, relatively low (around 60% among Republicans and 49% among Democrats), and this is blamed on a crisis of trust in science due to ideological bias and politicisation.

Modernising the sector is crucial, due to the ageing reactor fleet in the U.S. (average age of 45 years versus 11 years in China) and the likely decommissioning of older units in the coming decade. The U.S. depends on foreign uranium supplies and enrichment services, with 99% of its nuclear fuel imported (mainly from Canada, Australia, Kazakhstan, and Russia). Scientific stagnation and workforce erosion have been driven by chronic neglect of education and a long-term decline in demand.

Adopted Changes. The new strategy involves reducing the role of the Nuclear Regulatory Commission (NRC) through deregulation, staff cuts, and reduced funding. The NRC is required to expedite decision-making by imposing maximum time limits for licensing. The regulatory culture is shifting its focus towards the economic and security benefits of innovation and investment, rather than environmental and health protections.

Alongside deregulation, the executive orders foresee substantial subsidies for the nuclear sector. By 2030, this is expected to result in the reactivation, completion, or modernisation of 5 GW of nuclear capacity, as well as the initiation of 10 large reactor projects. Some of these new investments will be located in facilities managed by the Departments of Defense and Energy, with the aim of enhancing both the supply to the civilian grid and defence-related nuclear applications.

The reforms aim to achieve independence in nuclear fuel production by increasing the involvement of the private sector in production and recycling. The Department of Energy has been tasked with increasing nuclear fuel reserves and making better use of fissile materials through recycling. The strategy also envisages expanding the workforce, increasing education funding, and improving access to advanced research infrastructure. Technological progress is to be accelerated through increased R&D funding (especially for startups), streamlined innovation procedures, and the Defence Department's engagement in building advanced reactors, leveraging its technology, infrastructure, and regulatory support.

Export development will be promoted through assertive diplomacy, advocating the conclusion and renegotiation of bilateral agreements ('123 Agreements') and the more aggressive promotion of U.S. projects in partner countries. These efforts will particularly target countries planning investments during Trump's second term (through January 2029). A key change is the planned increase in export financing, which is supported by government agencies and international organisations, such as development banks.

Conclusions and Perspectives. The adopted policies should accelerate growth in the U.S. nuclear sector and strengthen its export position, mainly at the expense of Western competitors, through a greater financial commitment and political pressure on partners. However, the announced strategy alone will not be enough to overcome Rosatom's dominance or halt China's ambitious expansion in the short term. A key challenge in rebuilding the necessary U.S. industrial capacity will be closing the workforce gap and halting the loss of expertise, efforts which may be hindered by the Trump administration's already restrictive immigration policies affecting students and scientists.

While the reforms reflect bipartisan support for nuclear development, they could undermine public trust, particularly among Democratic voters, due to the weakening of regulatory oversight. It has already drawn criticism from progressive politicians and their constituents. This could lead to further polarisation regarding administrative reform and restrict the deployment of nuclear energy within the U.S.

Efforts to curtail the NRC's authority may diminish its global reputation, reducing nuclear safety in third countries due to its reduced involvement in shaping international standards and providing regulatory and training support. Conversely, shortening U.S. licensing procedures could lower costs and accelerate foreign investment, including in the Choczewo nuclear project in Poland and future SMR deployments. These changes could also prompt necessary debates about reform of the often highly regulated nuclear oversight systems in EU member states, including Poland.