

FOREWORD by Aviel Verbruggen¹

When you read these words, you have found the way to the world's unique source of knowledge about the nuclear industry. The independent 'coordinating lead authors'², Mycle Schneider and Antony Froggatt, compose the WNISR annually since 2007. Their rigorous, perseverant work has grown the scope and impact. The yearly editions provide the essential statistical series for a reliable assessment of the industry's status, complemented with chapters exploring topical issues.

Consistent and transparent data series, updated until mid-2022, gives us a comprehensive and longitudinal perspective of the global industry. As usual, the text is illustrated with tables and figures, making the contents more accessible in shorter time, with reading even more pleasant. After the status of the global industry, we as readers are spoiled with a richness of information about the status of the nuclear industry in various nations and from various angles. The ten focus countries got a specific analysis in relation to the specific issues affecting their nuclear businesses. For example, for France, a specific section on "Nuclear Unavailability" provides all information you would like to assess the gravity of this problem. In addition to the ten focus countries, WNISR2022 holds a 75 pages Annex 1 with an Overview by Region and by Country. None escape from the scrutiny of the WNISR team. Further, the topical chapters cover, on the one hand, two thorny issues (Fukushima Status, and Decommissioning Status), on the other hand, two anticipatory issues (Potential Newcomer Countries, and Small Modular Reactors). The sobering approach of the issues by the WNISR team is enormously welcome in a world overridden by flawed and deceiving news.

In 2022, for the first time, there is a chapter on "Nuclear Power and War", prompted by the war in Ukraine. First, the authors painstakingly discuss higher loss-of-coolant risks in nuclear reactors and in spent fuel ponds. Invading and defending combatants likely increase the probability of such loss and hinder fast and full emergency interventions. Second, the situation in Ukraine is documented by a selection of official statements by the International Atomic Energy Agency (IAEA) and the State Nuclear Regulatory Inspectorate of Ukraine, chronologically over the period 24 February–13 September 2022. Timely, yet frightening, information. The authors refrain from any comments on these statements, acknowledging that either source is not unbiased, and that truly independent sources of information on the situation at the Ukrainian nuclear facilities simply do not exist.

Valuable academic research depends on accurate data, unbiased information, and on the independent disposition of the researcher. For issues of global importance, such as climate change and related energy use, the worldwide involvement of scientists enhances diversity and quality of the research and its products. *Free access* to data and documents is vital for the participation of scientists who do not enjoy wealthy college privileges. In my energy research, I use BP Statistical Reviews, IRENA reports, and WNISRs, for data and information about respectively fossil fuels, renewable energy sources and technologies, and nuclear affairs. The three are open access. BP is a superrich oil major. IRENA is financed by national governments.

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WNISR thrives by the seemingly inexhaustible energy of the coordinating lead authors, boosted by contributions from several independent scientists and a few sponsors. The WNISR is in good hands, guaranteeing ever improving reports. However, the longevity of the nuclear industry, and certainly of its legacy, encourages the consideration of a more robust WNISR financing and/or a stable institutional framework.

One of the observed flaws in the international regulation of the nuclear sector, is the double mission of the IAEA: on the one hand, reduce the proliferation of nuclear weaponry, and on the other hand, promote the proliferation of nuclear power generation. Once, a nation acquires the knowledge and technologies of nuclear power, it is capable of building atomic bombs. I support the recommendation that the governments of the world categorically dissolve the IAEA's double role and limit IAEA tasks to control and enforcement of the Non-Proliferation Treaty, and to care for the nuclear legacy. A multiple win: finally, the IAEA would fully focus on minimizing proliferation; the high spending on propaganda for nuclear power would be reduced; and the Intergovernmental Panel on Climate Change (IPCC)³ Working Group 3 (WG3) "nuclear-gate" would be closed.

The IPCC assessment reports⁴ encompass three volumes, realized by three WGs. WG1 is phenomenal in assessing all available climate science. WG2 is less comprehensive because climate change impacts it assesses are many, diverse, and not fully inventoried. WG3 covers mitigation options, and it is problematic because of the influence of neoclassical economics, neoliberal viewpoints, incumbent interests. A salient case is how WG3 assesses the literature on nuclear power. The nuclear sections⁵ are skipping most of the peer-reviewed literature on nuclear performance, on its degree of sustainability, its compatibility with renewable power from sun and wind. The sections depend on nuclear sector non-peer reviewed literature of the IAEA, the Nuclear Energy Agency (NEA), and similar. The lopsided treatment of such an important subject means a grave infliction on the "Principles Governing IPCC Work, Section 4.3.3", requesting full assessment of the available literature, and "clearly identify disparate views for which there is significant scientific or technical support, together with the relevant arguments". A balanced assessment of the literature on nuclear power would be a formidable challenge for IAEA's nuclear advocacy. It would help to dissolve the juxtaposition "*renewables, nuclear, carbon capture and storage*" as mitigation options.⁶ This deceiving triptych mantra retards the transformation of the global energy systems to 100% renewable energy supplies, the substrate for a genuine common future as spelled out in the Brundtland report (1987).

WNISRs are vital reality checks of the nuclear industry's performance. Every yearly report is a barrier against utopian fantasies and wishful thinking, a tool to connect with reality. We count on the perseverance of the WNISR coordinating lead authors, contributing authors, and the entire team.

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² Phraseology used by the Intergovernmental Panel on Climate Change

³ The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

⁴ See IPCC, "Reports" <https://www.ipcc.ch/reports/>

⁵ For example: See IPCC (2019) Global warming of 1.5°C, Ch.4 (section 4.3.1.3, p. 325); IPCC (2022). Sixth Assessment Report WG3, Ch. 6 (section 6.4.2.4, p.6-34 to 6-36)

⁶ More detail is available in Aviel Verbruggen, "[Pricing Carbon Emissions—Economic Reality and Utopia](#)", 2021, pp.93-97, and pp.106-111