

Session 8: Nuclear Safeguard System

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Summary

The system of nuclear safeguards administered by the International Atomic Energy Agency (IAEA) in cooperation with member states has evolved to improve efficacy and efficiency in response to several global and regional challenges. Independent verification of states' declarations of nuclear activities was largely based on nuclear material accountancy (NMA) with containment and surveillance (C/S) as complementary measures. After operating for decades with minimal difficulties, several challenges to this quantitative classical safeguard approach focused on verifying the correctness of a state's declaration emerged following the discovery of the clandestine Iraqi nuclear weapons program, the North Korean weapons program, the dissolution of the Soviet Union, and the South African weapons program. Today, the safeguards regime faces additional challenges arising from the expansion of nuclear programs, the legitimate and clandestine acquisition of nuclear fuel cycle technology, the development of novel technologies, and the possibility of new verification missions on the horizon (e.g. FMCT, disarmament). Integrated, more information driven safeguards approaches combine state declarations and open sources augmented by additional inspection powers (e.g. the Additional Protocols) and technologies (e.g. satellite imagery, environmental sampling) to assess the correctness and completeness of a state's declaration and "bend" the safeguards cost curve by better allocating scarce safeguards resources. Significant cost savings have yet to emerge, with much of the burden shifting from the IAEA to the state's system of accountability and control (SSAC). Though significant reductions in IAEA inspection efforts have been achieved, particularly at more easily safeguarded item counting facilities, the workload on SSAC's has increased. Additional funding mechanisms, possibly based on a nuclear fuel use tax, may further strengthen nuclear safeguards.

Regional approaches to safeguards provide important benefits by building strong partnerships, improving transparency, and building confidence. In addition to existing regional arrangements such as EURATOM and ABAAC, the potential for new regional arrangements amongst states seeking additional confidence building measures. The Fukushima accident as highlighted the regional and global repercussions of a major accident, possibly opening a window of opportunity and the momentum to promote regional cooperation on nuclear issues, possibly resurrecting the ASIATOM concept.

In addition to safeguards, the nonproliferation regime benefits from a system of export controls (e.g. Nuclear Supplier Group (NSG), corporate restraints on technology transfer), the structure and conditions of nuclear cooperation agreements (e.g. 123 Agreements), commitments to physical security against non-state actors (e.g. UNSCR 1540), and the Proliferation Security Initiative. However, restraining a state's freedom of action requires compensation and negotiating the tension in the NPT. Some states, such as the United Arab Emirates, have been willing to accept extensive constraints (e.g. forgoing sensitive fuel cycle technologies, cradle to grave supply assurances) that may be too onerous for others, the viability of similar arrangements for other states.

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