

## **A Study on the D&IS Programme 2022–2023 for Effective Support of the IAEA Safeguards Implementation**

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### **1. Introduction**

In January 2022, the International Atomic Energy Agency (IAEA) Department of Safeguards (hereafter “the Department”) has presented its new biennial strategic planning document, the Development and Implementation Support (D&IS) Programme for Nuclear Verification for 2022–2023. The D&IS Programme reaches out to the Department’s traditional and non-traditional partners for extrabudgetary support by addressing plans requiring support to implement effective and efficient safeguards activities. These supports are carried out through the Member State Support Programme (MSSP) tasks in the manner of voluntary in-kind and financial resources.

The Republic of Korea (ROK) joined the MSSP in 1997 and is actively collaborating with the Department to support the IAEA’s nuclear verification activities. As of February 2022, 25 tasks are completed through ROK Support Programme (SP), and 21 tasks are ongoing across 8 plans of the D&IS Programme. Several aspects were identified from the D&IS programme 2022–2023 to further continue and broaden the effective contribution of the ROK SP by taking the new aspects into account. The key changes for the upcoming biennium include a shift in a focused area of resource to Information Technology (IT), an additional plan—Occupational Health and Radiation Safety, newly joined Swiss SP, and novel partnerships with non-traditional entities.

### **2. Supporting the IAEA Safeguards Implementation**

#### *2.1 Key Support from the ROK SP*

The ROK continuously pursues to participate in fruitful collaboration with the IAEA Department of Safeguards. Out of currently active 21 tasks of ROK SP across 8 plans of the D&IS Programme—Safeguards Approaches, Training, Analysis Support and NWAL Coordination, Information Analysis, Statistical Analysis, State Declared Information Management, Safeguards Information Systems and System Usability, Instrumentation Technology Foresight, in particular, 7 tasks are ongoing within each Safeguard Approaches and Training. The Safeguard Approaches aims to develop new safeguards concepts and approaches for a growing number of new types of facilities by addressing evolving challenges in terms of safeguards by design,

decommission, and new technologies. The Department focuses on four areas within this plan: State Level Approaches (SLAs), Physical Model, new facility types including small modular reactors, facilities under decommissioning, to be decommissioned and post-accident facilities. With regard to this, the ROK SP supports tasks concerning pyroprocessing and also is greatly engaged with Safeguards by Design for Small Modular Reactors and Update of the Physical Model, both where written outputs are expected in 2022.

The ROK SP’s collaboration within the Department’s Training plan is likewise significant. This plan aims to enhance the capabilities of IAEA safeguards implementation through effective and efficient training opportunities. In the case of the ROK SP, various tasks are in process and a large amount of its budget falls to perform tasks in this plan. For example, the Advanced Comprehensive Inspection Exercise at CANDU and LWR Facilities has been ongoing since 2010, and the Online Course Development Consultation was commenced most recently in 2020. To be precise, the ROK SP successfully developed and improved the e-learning online training course for the State system of accounting for and control of nuclear material (SSACs) as part of the Online Course Development Consultation. The task is critical considering the limited in-person training opportunities due to the COVID-19 pandemic. Aside from tasks of the above two plans—Safeguard Approaches and Training—other major tasks continuing in 2022 include the International Target Values (ITV) 2020 and the Analysis of Environmental Samples Supplied by IAEA along with Support for the 2022 Safeguards Symposium and others.

#### *2.2 Key Changes in the D&IS Programme 2022–2023*

The newly introduced D&IS Programme for 2022–2023 notes that the unfunded budget for the Department is 69.1 million Euro over the biennium in addition to such unfunded in-kind resources as equipment, R&D activities, facilities, and others. This unfunded amount has been notably increasing from the previous biennials—45.7 million Euro over the 2018–2019 biennium and 65.6 million Euro over the 2020–2021 biennium. Concerning this trend, the continuous extrabudgetary support from the MSSP is crucial for the Department in performing nuclear verification. Above all, a significant change in trend highlighted in D&IS Programme 2022–2023 is a relocation of resources shifting largely from safeguards equipment in the past to

IT today. The document indicates that many plans in this biennium involve various IT relevant tasks, therefore, significant contributions from MSSPs are expected in this field in coming years.

Another different feature of the D&IS Programme is a new plan—Occupational Health and Radiation Safety. Accordingly, the D&IS Programme for the present biennium carries 26 plans, up from 25 plans from the past biennium [Table 1]. This new plan aims to enhance occupational health and radiation safety across the Department by acquiring more accurate containment measurement capabilities through the improvement of equipment, technologies, expertise, and others. The plan also targets developing emergency-relevant abilities and organizing a departmental safety policy. The expected extrabudgetary support covers a wide range of areas: financial support, financial support for IT and travel, consultants, cost-free expert (CFE) and junior professional officer (JPO), equipment, facility access, and training.

The Department also developed its partnerships over the last biennium. In November 2021, the new MSSP—Swiss SP—was established after nearly 9 years. The Department, moreover, formed and is actively developing partnerships with non-traditional entities, which include academia, foundations, non-governmental organizations, and corporations, seeking additional and innovative contributions based on support needs. The D&IS Programme, from 2022 to 2023, is supported by the most expanded external support from traditional 22 MSSPs and non-traditional partners.

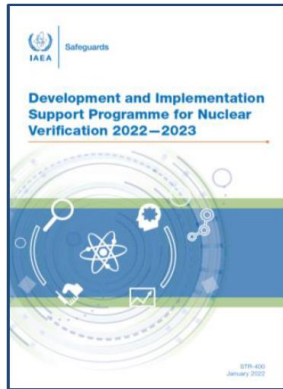


Fig. 1. D&IS Programme 2022–2023

Table I: D&IS Plans for 2022–2023

Plan Title
Overall Safeguards Management and Coordination
Destructive Analysis of Nuclear Materials
Environmental Sample Analysis Techniques
Analysis Support and NWAL Coordination
Safeguards Approaches
Strategic Planning and Partnerships
Quality Management
Training
Satellite Imagery Analysis

Information Analysis
Evaluation of Data from ES and Material Characterization
Statistical Analysis
State Declared Information Management
Information Security and Infrastructure
Safeguards Information Systems and System Usability
Safeguards System for JNFL MOX Fuel Fabrication Plant (J-MOX)
Fukushima Dai-ichi Safeguards
Chornobyl
JCPOA Verification
NDA Techniques
Techniques and Instruments for Sealing and Containment Verification
Surveillance Techniques
Instrumentation Technology Foresight
Unattended Measurements Techniques
Remote Data Transmission and Processing Systems
Occupational Health and Radiation Safety

### 3. Conclusions

As the number of nuclear activities is escalating worldwide, the shortfall of the Department’s budget and thus the demand for extrabudgetary support from the MSSP is growing in order to implement competent nuclear verification activities. The COVID-19 pandemic, furthermore, has been limiting the numbers of verification activities, not to mention access to facilities for training. For the 2022–2023 biennium, the Department presents the new plan, and IT linked projects are flourishing across the Department. For the Department, constructive external support is needed all the more.

Unlike previous publications, the Department’s project managers were asked to openly discuss their interests in the D&IS Programme 2022–2023, thus a variety of topics are specified in this document. The external partners are able to identify more diverse opportunities to collaborate with the Department consequently. This year is particular as a quadrennial Safeguards Symposium will be held in October 2022, which will serve as a venue for stakeholders to discuss and advance the future of safeguards. Together with the Department’s magnified partners, the ROK SP will actively support the Symposium and deliberately provide productive support for ongoing and future tasks in compliance with the new aspects of the Department’s strategies and ultimately accelerate the ROK trust and strengthen national safeguards capabilities.

### REFERENCES

- [1] Development & Implementation Support Program(D&IS) 2022–2023.