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An overview of Vietnam's research activities on emerging technologies for Nuclear Security in the digital age: current opportunities, future outlook and the IAEA support

The list and the fields of emerging technologies in the digital age may have endless applications, but it can be categorized into several major workforces, such as the Internet of Things (IoT), big data, machine learning(ML)/ artificial intelligence (AI), encryption and communication technologies. Undergone more than 10 years in the development of nuclear security regime, Vietnam is one of the Member States which actively collaborated with the IAEA and other countries to equip the technology in the field of nuclear security. Entered in the fourth generation of the industrial revolution, like many other developing countries, Vietnam has faced a number of opportunities and challenges in sustaining and strengthening the national nuclear security regimes. In the last few years, Vietnam has conducted several research projects and international collaboration program in the subject of new science and technology for nuclear security concerns, especially the IAEA Coordinated Research Project (CRP) code J02005, entitled: "improved assessment of initial alarms from radiation detection instruments"and the CRP code J02012, entitled: "advancing radiation detection equipment for detecting nuclear and other radioactive out of material out of regulatory control". This paper presents an overview picture of Vietnam on-going research and development activities on emerging technology in the digital age for nuclear security concerns, including: joint efforts to the IAEA and other partner countries in building big data for border detection, machine learning for support the front line officer's decision making, communication technologies for radiation detection equipment and physical protection system, potential blockchain for the national integrated nuclear security network . The existing infrastructure, opportunities and desired future developments will be shared and discussed. A primary objective of this paper is to foster for using science and technology to sustain and strengthen the nuclear security regime in Vietnam as well as the other Member States, with the IAEA coordination and assistance.

Gender

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State

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