India looks at nuclear technology and nuclear materials primarily as a resource for meeting a part of its requirements for electricity. It considers nuclear power as safe, reliable, affordable and environmentally friendly and is engaged in developing nuclear technologies for deployment. Continuous evolution of the framework for governance of nuclear power including that for nuclear security has been given equal importance. Nuclear industry and research centres in India have internalized security practices in their day-to-day working and have created a strong security culture in their respective organizations. In tune with the security requirements as perceived by India, the nuclear security architecture in the country has been strengthened and India has also participated in strengthening security architecture at the global level. Considering that it is the last nuclear summit in the current format, a consolidated report on nuclear security is presented here.

1. **International Legal Instruments:** India is party to all the 13 universal instruments accepted as benchmarks for a State’s commitments to combat international terrorism. India is party to the Convention on the Physical Protection of Nuclear Materials (CPPNM) and has ratified its 2005 amendment. India looks forward to its early entry into force. India is also party to the International Convention for the Suppression of Acts of Nuclear Terrorism. India supports efforts for promoting the universality of these two conventions.

2. **National Legal and Implementation Framework:** The Indian Atomic Energy Act, 1962 provides the legal framework for all aspects related to development of nuclear and radiation technologies including their security. Rules and guidelines issued under this Act include those related to export controls, which are continuously updated, and include controls on export of related technologies. Guidelines have also been issued to ensure that companies manufacturing nuclear equipment based on any imported technology handle the technology with due sensitivity. India’s export controls list and guidelines have been harmonized with those of Nuclear Suppliers Group (NSG) and India looks forward to strengthening its contribution to shared non-proliferation objectives through membership of the export controls regimes. In 2005, India
enacted the Weapons of Mass Destruction and their Delivery Systems Act, 2005. This gives effect, inter alia, to India's obligations under the United Nations Security Council (UNSC) Resolution 1540.

Institutionally, the security of nuclear and radiological material in India is ensured through robust oversight by India’s Atomic Energy Regulatory Board (AERB), which deploys a large pool of highly trained and specialised manpower for this purpose. IAEA’s peer review mechanisms like the Integrated Regulatory Review Service (IRRS) have acknowledged the strength of AERB’s regulatory practices and capabilities. At the same time, steps are being taken to convert the de facto independence of AERB into de jure autonomy through a Nuclear Safety Regulatory Authority (NSRA), for which a bill is being finalised for introduction in the Indian Parliament. The draft bill has appropriate provisions related to national implementation of nuclear security. The Unlawful Activities (Prevention) Act, 1967 was amended in 2012 to include offences within the scope of, and as defined in several treaties including CPPNM. The National Investigation Agency (NIA) Act, 2008 establishes a central agency, the NIA, which acts as the central counter terrorism law enforcement agency. The schedule of this Act has reference to the Atomic Energy Act, the Unlawful Activities (Prevention) Act and the Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act.

The Nuclear Controls and Planning Wing set up in the Department of Atomic Energy (DAE) in 2013 has taken robust strides towards implementation of India’s commitment related to nuclear safeguards, export controls and nuclear safety and security. Other agencies housed in the DAE and having a role in nuclear security include a Crisis Management Group (CMG) and a Computer Information & Security Advisory Group (CISAG). At the national level, the National Disaster Management Agency (NDMA), an agency with manpower trained to respond to emergencies including radiological emergencies, has been set up through an Act of Parliament.

3. **Setting up of an Inter-ministerial Counter Nuclear Smuggling Team:** To devise a coordinated multi-agency approach to deal with the threat of individuals or group of individuals acquiring nuclear or radioactive material for malicious purposes, India has set up at the national level an institutional mechanism called a Counter Nuclear Smuggling Team. The team has representation from concerned Ministries/ Departments/ Agencies and meets frequently. It also
conducted table top exercises for effective and coordinated response to threats involving use of nuclear and radioactive material for malicious purposes.

4. **Nuclear Material**: The use of Low Enriched Uranium (LEU) instead of High Enriched Uranium (HEU) to preclude the threat from the misuse of HEU is one of the aims of the global nuclear security community. The only reactor in India using HEU has been shut down and the planned replacement reactor will not use HEU. India is setting up a facility for the production of medical grade Mo-99 by the uranium fission route using LEU targets. This will be used for the manufacture of Mo-99/Tc-99m generator for use in hospitals. The LEU targets will be made in India and irradiated in an indigenous research reactor.

Pursuit of a closed fuel cycle and the manner in which India goes about it further ensures security of nuclear materials. India is strictly observing the principle of “reprocess to reuse” whereby reprocessing of the spent fuel and commissioning of fast reactors are being synchronized to preclude any build-up of a plutonium stockpile. Cs-137, a useful isotope, is being recovered from the high level waste arising from reprocessing spent fuel from thermal reactors. This is helping to meet the demand of radioisotopes for various applications. India has submitted proposals in the NSS process on the technology dimension of nuclear security.

5. **Security of Radiation Sources and Facilities**: India’s regulatory agency, the AERB, has instituted very robust regulatory mechanisms to ensure safety and security of radiation sources from ‘cradle to grave’. AERB has published two Guides on: (i) Security of Radioactive Sources and radiation Facilities (AER/RF-RS/RG1) and (ii) Security of Radioactive Material during transport (AERB/NRF-TS/SG-10). In addition, AERB has developed a database of radiation sources utilized in the country and recently instituted a very successful e-LORA (e-licensing of Radiation Applications) platform for complete automation and facilitate end-to-end licensing of facilities using radiation sources. Security of high activity sources during their transport are ensured by implementing elaborate security plan including continuous and real time tracking. AERB is also regularly conducting awareness programmes for various stakeholders/ law enforcement agencies for security of radiation sources throughout the country.

6. **SNM Detection Architecture**: A network of 23 Emergency Response Centres, spread across India has been developed for detecting and responding to any nuclear or radiological emergency, anywhere in the country. All major sea ports and airports of the country are being
equipped with radiation portals & detection equipment to monitor all vehicular, passenger and cargo traffic.

7. **Cyber Security:** Addressing the growing challenges of threats to computer, network and information systems is a national priority. Utilizing the extensive expertise available in the country, a hierarchy of on-site Cyber security architecture has been deployed and also a number of sophisticated products and services like secure network access system (SNAS) have been developed and deployed for protection of the cyber infrastructure in the country.

8. **Strengthening International Cooperation:** India had announced setting up of a Global Centre for Nuclear Energy Partnership (GCNEP) during the NSS 2010 held in Washington D.C. The uniqueness of GCNEP rests on its holistic vision of nuclear energy through its five schools on (i) advanced nuclear energy systems, (ii) nuclear security, (iii) radiological safety, (iv) nuclear material characterization, and (v) applications of radioisotopes and radiation technologies, each specializing in an area that promotes an overarching vision of safe, secure and sustainable nuclear energy for global good. GCNEP has inked MOUs with IAEA, U.S.A., France, Russia and U.K. For more than five years now, GCNEP has been steadily strengthening its portfolio of programmes and has conducted more than 30 international and regional programmes involving more than 300 participants from around 30 countries. Important and emerging nuclear security topics like insider threat, vulnerability assessment, transportation security, cyber security, detection, prevention and response to radiological threats etc. have been covered in these programmes.

International cooperation also includes cooperation at the level of NGOs and a recent example includes a conference on India’s Role in Global Nuclear Governance organized during 24-26 February 2016 jointly by Institute for Defence Studies and Analyses (IDSA) and Peace Research Institute, Oslo (PRIO). Earlier, a workshop on technical aspects of civilian nuclear security was held jointly with the U.S. National Academy of Sciences by the National Institute of Advanced Studies, Bengaluru on October 29-31, 2012.

9. **International Atomic Energy Agency (IAEA):** India has consistently supported the IAEA’s central role in facilitating national efforts and fostering effective international cooperation to further strengthen nuclear security. Indian experts have been participating in various bodies established by the IAEA to draft and review documents related to nuclear
security. India has supported the fifth revision of the document on nuclear security recommendations, INFCIRC/225, and included a reference to it in its nuclear cooperation agreements where applicable. India is a participant in the IAEA’s Incident & Trafficking Database (ITDB) and has voluntarily adopted the provisions of the IAEA Code of Conduct on the Safety and Security of Radioactive Sources.

IAEA has carried out review of Indian Pressurised Heavy Water Reactors under the “Operational Safety Review Teams” (OSART) mission. Additionally IAEA has conducted the “Integrated Regulatory Review Service” (IRRS) review of India's regulatory agency, the AERB. India will propose a workshop on IAEA’s International Physical Protection Advisory Service (IPPAS) with the Agency experts during the year 2016.

India participated at the Ministerial level in the International Conference on Nuclear Security organized by the IAEA in 2013 and plans to participate at the appropriate level in 2016 as well. India also participated in the December 2012 Fukushima Ministerial Conference on Nuclear Safety.

India contributed $1 million to IAEA’s Nuclear Security Fund in 2013 and proposes to contribute a similar amount in 2016 as well. In addition, India made a voluntary contribution of US$ 100,000 in 2015 for the modernization of IAEA’s nuclear applications laboratories in Seibersdorf, Austria under the ReNuAL project.

10. United Nations and other Mechanisms: India fully supports the implementation of UNSC Council Resolution 1540, its extension resolution 1977, and the United Nations Global Counter Terrorism Strategy. India hosted, along with the UN Office for Disarmament Affairs, a 1540 Workshop on Building New Synergies on Nuclear security in New Delhi in 2012. India is a Party to the Global Initiative to Combat Nuclear Terrorism (GICNT) and participates in all three working groups of the GICNT in the areas of Nuclear Detection, Nuclear Forensics, and Response and Mitigation. India has proposed to host a meeting of the working groups of the GICNT in India during 2017. India will join the Joint Statement on Strengthening Nuclear Security Implementation circulated at the IAEA as INFCIRC/869.

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