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National Regulatory Requirements and Practices for Radioactive Waste Management, Decommissioning and Environmental Protection – Ensuring Safety and Enabling Sustainability

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Abstract: Despite significant global contribution of nuclear power in achieving safe, reliable, and low-carbon energy needs, challenges pertaining to ensuring safety and enabling sustainability in radioactive waste management, decommissioning and environmental protection are not insignificant. On behalf of Government of Pakistan, Pakistan Nuclear Regulatory Authority (PNRA) promulgated “National Policy on Safe Management of Radioactive Waste, Decommissioning and Spent Nuclear Fuel in Islamic Republic of Pakistan”, in 2018. This policy outlines responsibilities of Government of Pakistan, nuclear power program owner i.e., Pakistan Atomic Energy Commission (PAEC) and nuclear regulator i.e. PNRA in areas of radioactive waste management, decommissioning and spent nuclear fuel management. In addition to national policy, PNRA has also issued national regulations on Decommissioning of Facilities using Radioactive Material i.e., PAK/930 which delineates general requirements applicable to decommissioning and covers specific requirements such as strategy, planning, funding, conduct and completion of decommissioning. This paper discusses Pakistan national regulatory framework, requirements, policies and strategies pertaining to radioactive waste management, decommissioning, spent nuclear fuel management and environmental protection and how combined efforts and practices in these areas contribute towards sustainability, now and for future. National policy, adopted strategies and national regulations are discussed to draw interrelationships between safety and sustainability by considering factors such as social, economic and intergenerational repercussions and environmental impact.