

Pakistan's Engagement with the International Nuclear Order



Introduction

Pakistan's nuclear program has evolved significantly since its first public nuclear test in May 1998. Beyond the strategic imperatives that drive nuclear deterrence, Pakistan has demonstrated an increasing commitment to responsible nuclear stewardship through the development of comprehensive legal frameworks and active engagement with international nuclear security norms. This engagement reflects a recognition that nuclear weapons states bear special responsibilities to the international community in maintaining strategic stability and ensuring the highest standards of safety, security, and non-proliferation.

This factsheet examines two critical dimensions of Pakistan's engagement with the international nuclear order. First, it analyzes the domestic legal instruments that form the foundation of Pakistan's nuclear governance, focusing on three key pieces of legislation that establish regulatory oversight, export controls, and command authority. Second, it assesses Pakistan's performance as evaluated by the Nuclear Threat Initiative's Nuclear Security Index, highlighting both achievements and areas requiring continued attention.

Pakistan's Nuclear Legal Framework

Pakistan's approach to nuclear governance is grounded in a comprehensive legal architecture that addresses multiple facets of nuclear stewardship. Three instruments stand out as particularly significant in establishing Pakistan's commitment to responsible nuclear conduct.

Pakistan Nuclear Regulatory Authority Ordinance, 2001



The Pakistan Nuclear Regulatory Authority Ordinance of 2001 represents Pakistan's institutional response to the need for independent regulatory oversight of nuclear activities. Passed in the aftermath of Pakistan's 1998 nuclear tests, the ordinance established the Pakistan Nuclear Regulatory Authority as an autonomous body responsible for regulating nuclear safety and radiation protection. The timing was significant, coming when Pakistan faced intense international scrutiny following UN Security Council Resolution 1172, which condemned the South Asian nuclear tests and called for enhanced nuclear safety measures.

The ordinance provides a comprehensive definition of nuclear damage that extends beyond immediate physical harm to encompass loss of life, personal injury, and damage to property resulting from nuclear incidents. This expansive understanding reflects international best practices and demonstrates Pakistan's commitment to accountability for the full range of potential consequences flowing from nuclear activities.

The ordinance's provisions on international cooperation are particularly noteworthy, as they demonstrate Pakistan's willingness to engage with global nuclear safety and security norms. This openness to cooperation has enabled Pakistan to participate in peer review missions, benefit from technical assistance programs, and contribute to the development of international standards.



Regulation of radioactive safety across all nuclear installations and activities, ensuring that operations meet international standards



Development of comprehensive reporting procedures for nuclear incidents, creating transparency mechanisms that enable timely responses to safety concerns



Authority to engage in environmental surveillance and develop radiation emergency response plans, preparing for potential nuclear incidents through comprehensive planning



Establishment of a licensing regime for trade and exchange of nuclear materials, ensuring that all transfers are properly authorized, documented, and subject to safeguards



Regulation of radioactive safety across all nuclear installations and activities, ensuring that operations meet international standards

Export Control on Goods, Technologies, Material and Equipment Related to Nuclear and Biological Weapons and Their Delivery Systems Act, 2004

The 2004 Export Control Act represents Pakistan's commitment to robust non-proliferation controls through comprehensive export control mechanisms. The act establishes a framework that addresses multiple dimensions of proliferation risk, empowering the federal government to maintain and regularly update control lists of sensitive goods, technologies, materials, and equipment.



This dynamic approach recognizes that proliferation risks evolve as technologies advance and new pathways for weapons development emerge.

The act's effectiveness depends on regular updates to control lists and consistent enforcement. Pakistan has demonstrated its commitment to keeping pace with evolving international standards through periodic revisions. Most recently, in April 2022, Pakistan notified revised control lists that align with international export control regimes, demonstrating continued engagement with global non-proliferation frameworks.



A robust licensing mechanism that requires government authorization for all exports of controlled items, with licenses granted only after thorough review of end-users, intended applications, and diversion risks



Mandatory reporting obligations for exporters who become aware of or suspect that controlled goods may be intended for weapons-related purposes, creating a system of vigilance



Comprehensive record-keeping requirements applicable to exporters, government agencies, and departments, ensuring that all transfers of controlled items can be tracked and audited



Strict penalties for violations, including substantial fines and imprisonment for individuals and entities that circumvent export controls







Authority for the government to impose trade restrictions on individuals and entities found to have intentionally violated export licensing requirements

National Command Authority Act, 2010



While the PNRA Ordinance and Export Control Act address regulatory oversight and non-proliferation, the National Command Authority Act of 2010 establishes the institutional architecture for nuclear command and control. The NCA, chaired by the Prime Minister, provides unified strategic direction over all aspects of Pakistan's nuclear program, including policy formulation, operational control, and resource allocation. The act formalizes civilian control over nuclear weapons through a clear chain of command that ensures political leadership retains ultimate decision-making authority while benefiting from professional military and technical advice.

The NCA's institutional structure includes specialized committees that address strategic planning, development and acquisition, arms control and non-proliferation, and security. This compartmentalized approach ensures that complex technical, strategic, and policy issues receive focused attention while maintaining coherent overall direction.

-  The NCA Act represents Pakistan's legislative response to UNSC Resolution 1540, demonstrating complete legal authority over all aspects of its nuclear program
-  Originally established in 2000 through an administrative measure, the NCA was given enhanced statutory status through an ordinance in 2007. Adopted by Parliament as the NCA Act in 2010
-  Headed by the Prime Minister with members including the Ministers of Foreign Affairs, Defence, Finance, and Interior, along with the Chairman Joint Chiefs of Staff Committee and the service chiefs
-  Incorporates the concept of strategic organizations, bringing both statutory entities like PAEC and non-statutory organizations under the NCA's direct administrative control

Pakistan's Performance on the Nuclear Threat Initiative Index

Beyond domestic legal frameworks, Pakistan's engagement with the international nuclear order can be assessed through its performance on internationally recognized metrics of nuclear security. The Nuclear Threat Initiative's Nuclear Security Index provides comparative analysis of nuclear security conditions across countries with weapons-usable nuclear materials and nuclear facilities.

Understanding the Nuclear Security Index

The NTI Nuclear Security Index is a biennial assessment that evaluates countries across five major categories: quantities and sites of nuclear materials, security and control measures, global norms commitments, domestic legal frameworks and institutional capacity, and the risk environment. The index distinguishes between countries with weapons-usable nuclear materials and those with only nuclear facilities. For countries like Pakistan that possess weapons-usable materials, the index provides separate theft and sabotage assessments.

Pakistan's 2023 Rankings and Scores

In the 2023 NTI Nuclear Security Index, Pakistan ranked 19th among countries assessed for theft risks, with an overall score of 49 out of 100. For sabotage risks, Pakistan ranked 32nd with a score of 61. While these rankings place Pakistan in the middle tier, they represent significant improvements from earlier assessments. Most notably, Pakistan was recognized in the 2020 index as the most improved country globally, reflecting sustained efforts to enhance nuclear security practices and align with international standards.

Pakistan's performance varies significantly across the five major assessment categories. The country achieves perfect or near-perfect scores in domestic commitments and capacity, scoring 100 out of 100 in the 2023 assessment. This reflects Pakistan's comprehensive legal framework, including UNSCR 1540 implementation, strong domestic nuclear security legislation, and the presence of an independent regulatory authority.

In security and control measures, Pakistan scores moderately well, with 57 points for theft risks and 56 for sabotage risks. The country demonstrates particular strength in response capabilities and physical security during transport, both scoring 100. However, there is room for improvement in areas such as insider threat prevention (27), cybersecurity (38), and security culture (50).

Threat: Secure Materials

2023 RANK	2023 SCORE	CHANGE SINCE 2020
19	49	+3



Quantities and Sites	19	0
Quantities of Nuclear Materials	38	0
Sites and Transportation	13	0
Material Production/Elimination Trends	0	0
Security and Control Measures	57	0
On-Site Physical Protection	60	0
Control and Accounting Procedures	40	0
Insider Threat Prevention	27	0
Physical Security During Transport	100	0
Response Capabilities	100	0
Cybersecurity	38	0
Security Culture	50	0
Global Norms	44	-1
International Legal Commitments	43	0
Voluntary Commitments	83	0
International Assurances	28	-5
Nuclear Security INFCIRCs	20	0
Domestic Commitments and Capacity	100	+11
UNSCR 1540 Implementation	100	0
Domestic Nuclear Security Legislation	100	+33
Independent Regulatory Agency	100	0
Risk Environment	21	+8
Political Stability	25	+10
Effective Governance	13	0
Pervasiveness of Corruption	25	0
Illicit Activities by Non-State Actors	20	+20

Key Improvements and Areas of Progress

Pakistan's recognition as the most improved country in the 2020 NTI Index reflects concrete steps taken to enhance nuclear security. Between 2020 and 2023, Pakistan improved its overall theft score by 3 points and sabotage score by 4 points, with particularly notable progress in domestic commitments and the risk environment.

The improvements in domestic commitments derive largely from enhancements to nuclear security legislation, which increased by 33 points between 2020 and 2023. This dramatic improvement reflects amendments and new regulations that strengthen the legal foundation for nuclear security, including measures to address insider threats, enhance personnel vetting, and improve coordination between regulatory bodies.

Pakistan has also made progress in addressing risk environment factors, with the political stability score increasing by 10 points and illicit activities by non-state actors improving by 20 points. These improvements reflect broader governance and security gains that create more favorable conditions for nuclear security.

In the area of voluntary commitments to global nuclear security initiatives, Pakistan scores well, achieving 83 out of 100 points. The country is a member of the Global Initiative to Combat Nuclear Terrorism, participates in IAEA nuclear security conferences at the ministerial level, contributes to the IAEA's Incident and Trafficking Database, and operates a Center of Excellence to provide nuclear security training.

Sabotage: Protect Facilities

2023 RANK

2023 SCORE

CHANGE SINCE 2020

32

61

+1



Number of Sites	80	0
Security and Control Measures	56	0
On-Site Physical Protection	60	0
Control and Accounting Procedures	75	0
Insider Threat Prevention	27	0
Response Capabilities	100	0
Cybersecurity	38	0
Security Culture	50	0
Global Norms	57	-2
International Legal Commitments	71	0
Voluntary Commitments	83	0
International Assurances	42	-8
Nuclear Security INFCIRCs	20	0
Domestic Commitments and Capacity	100	+11
UNSCR 1540 Implementation	100	0
Domestic Nuclear Security Legislation	100	+33
Independent Regulatory Agency	100	0
Risk Environment	21	+8
Political Stability	25	+10
Effective Governance	13	0
Pervasiveness of Corruption	25	0
Illicit Activities by Non-State Actors	20	+20

Remaining Challenges and Opportunities

Despite significant progress, the NTI Index identifies several areas where Pakistan could further strengthen its nuclear security posture. The most significant opportunities for improvement lie in global norms, particularly international assurances and subscriptions to Nuclear Security Information Circulars.

Pakistan scores only 20 out of 100 on subscriptions to nuclear security INFCIRCs. These information circulars represent voluntary commitments to specific nuclear security practices. Subscribing to INFCIRCs such as INFCIRC/869 on strengthening nuclear security implementation and INFCIRC/908 on mitigating insider threats would signal Pakistan's support for these standards.

In international assurances, Pakistan scores 28 for theft risks and 42 for sabotage risks. This category assesses transparency measures such as public release of nuclear security regulations and hosting of peer review missions. While there are legitimate sensitivities surrounding military nuclear programs, Pakistan could potentially enhance confidence through selective transparency measures.

Cybersecurity, where Pakistan scores 38 out of 100, represents another area for continued attention. As nuclear facilities become increasingly digitized, cyber threats grow more severe. Strengthening measures would include requiring facilities to protect sensitive digital assets, considering cyber threats in national assessments, mandating regular testing, and requiring incident response plans.

Similarly, insider threat prevention offers opportunities for enhancement. The relatively low score of 27 suggests room for progress. Comprehensive insider threat programs require drug testing and psychological screening for personnel with access to sensitive areas, frequent vetting at two-year intervals, mandatory reporting of suspicious behavior, and constant surveillance.

Conclusion

Pakistan's engagement with the international nuclear order demonstrates a serious commitment to responsible nuclear stewardship backed by comprehensive legal frameworks and measurable improvements in nuclear security practices. The three legal instruments examined—the PNRA Ordinance, the Export Control Act, and the National Command Authority Act—establish robust institutional foundations for nuclear governance, regulatory oversight, and non-proliferation controls.

Pakistan's performance on the NTI Nuclear Security Index validates the effectiveness of these legal foundations while identifying opportunities for continued progress. The country's recognition as the most improved nation in 2020, combined with continued enhancements in subsequent assessments, reflects sustained efforts to align with international standards. Perfect scores in domestic commitments and capacity demonstrate that Pakistan has established the legal and institutional infrastructure necessary for effective nuclear security.

Looking forward, Pakistan's continued improvement will require sustained attention to emerging challenges such as cybersecurity and insider threats, enhanced engagement with voluntary international commitments including nuclear security INFCIRCs, and selective transparency measures that build international confidence. As the global nuclear landscape evolves with new technologies and proliferation pathways, Pakistan's legal frameworks must adapt to address emerging risks while maintaining its standing as a responsible nuclear weapons state.