Ministry of Information Technology
& Telecommunication

DIGITAL PAKISTAN

National Artificial Intelligence Policy

Acknowledgments

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The contributions and collaborative efforts of these esteemed members have been instrumental in shaping a policy framework that positions Pakistan as a leader in AI innovation and application, ensuring socio-economic development and digital transformation.

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Acronyms:

ACRONYM	ABBREVIATION
AI	Artificial Intelligence
AD	AI Directorate
NAIF	National Artificial Intelligence Fund
MoITT	Ministry of Information Technology and Telecom
NADRA	National Database and Registration Authority
NCPDP	National Commission for Personal Data Protection
NTC	National Telecom Corporation
NITB	National Information Technology Board
R&D	Research and Development
SDGs	Sustainable Development Goals (UN)
FPCCI	Federation of Pakistan Chamber of Commerce and Industry
CoE	Center of Excellence
PoC	Proof of Concept
IoT	Internet of Things
NAVTTC	National Vocational and Technical Training Commission
NDA	Non-Disclosure Agreements

Foreword:

Through its continued efforts toward the early realization of the Digital Pakistan vision of the Government of Pakistan, the Ministry of IT & Telecom is committed to providing citizens with timely and equal access to opportunities by stimulating a culture of innovation through an overarching developmental agenda orchestrated to embrace cutting-edge technologies such as Artificial Intelligence efficiently and responsibly.

In this regard, the **Artificial Intelligence (AI) Policy 2025** is a pivotal milestone for transforming Pakistan into a knowledge-based economy as it spells out a national strategy to establish an ecosystem necessary for AI adoption by harnessing an agile framework for addressing different aspects of unique user journeys encompassing different market horizontals and industry verticals by ensuring responsible and ethical use of AI.

Furthermore, the policy aims to go beyond the meagre approach of adopting technology to fundamentally rethink AI adoption in the local context so that new growth areas can be identified and intervened in considering the existing job market's relevance while empathizing with the country's growing population. This policy takes into account the "AI for Good" initiative by the International Telecommunication Union and the Sustainable Development Goals set forth by the United Nations.

Considering the disruptive nature of AI and allied technologies and how they are re-ordering the socio-economic construct of the world in which we desire to live. Therefore, it is essential to harness this opportunity responsibly while keeping the interests of a common person foremost. Therefore, to survive and thrive, Pakistan aims to revitalize its resolve toward digitalization, which will involve processing personal data through AI. To this end, this policy coherently interlaces with the draft Personal Data Protection Act, Pakistan Cloud First Policy, Digital Pakistan Policy, and Digital Nation Pakistan Act, and most importantly with Uraan Pakistan – the National Economic Transformation Plan 2024-29, among others.

Preamble:

Pakistan has a unique opportunity to harness digital disruption by educating an eager young population that can potentially propel the nation onto a growth trajectory to sustain our future national competitiveness and improve the lives of citizens. Artificial Intelligence (AI) represents the next frontier of technological opportunities. It has been widely proven and understood that collecting, processing, using, and exchanging data through automated/intelligent means would drive the entire society into the next stage of its evolution, which is unprecedented and requires a progressive yet careful approach. So, after a thorough analysis of the global perspective and based on the evidence collected through more extensive consultations with the stakeholders, the Ministry of IT & Telecom (MOITT) has come to a much-desired conclusion that it needs to chalk out a developmental roadmap for better, faster and responsible adoption of AI in the country. For that, this National AI Policy is put in place to reap long-term and sustainable benefits for its people.

The Policy offers a wide range of developmental initiatives necessary for awareness and adoption, reimagining the transparent and fair use of personal data using AI and stimulating innovation through industry-academia collaborations and investments in AI-led initiatives. The National AI Policy is crafted to focus on the equitable distribution of opportunity and its responsible use, having the following defining attributes.

- Evidence-Based and Target Oriented
- User-Centric and Forward-Looking
- Objective and Overarching

The AI Policy further aims to augment AI and allied technologies through balanced demand and supply-side interventions, as briefly described below.

- **AI Innovation Ecosystem:** Establishment of research and innovation centres in AI for developing, test-bedding, deploying, and scaling AI solutions, including learning how to improve governance and manage the impact of AI.
- **Awareness and Readiness:** Pakistan shall increase awareness and understanding of AI and its benefits; our workforce would be equipped with the necessary competencies to participate in the global AI economy
- **Secure AI Ecosystem:** Responsible and ethical adoption of AI to generate economic gains and improve public services. In addition, AI will enhance the government's capability to deliver more efficient and effective public services.
- **Transformation and Evolution:** Transformation of sectors and industries towards effective use of AI, facilitated by national and provincial IT boards, and other public sector entities through creating awareness and offering training programs through sectoral cooperation.
- **AI Infrastructure:** Establishing a national AI compute grid in consultation with all the stakeholders. This would involve a network of high-performance computing (HPC) centers equipped with powerful GPUs and specialized AI hardware, as well as industry driven data centers offering AI compute to support AI research & development, innovation, and adoption.
- **International Partnerships and Collaborations:** International collaboration in AI policy involves establishing and supporting bilateral and multilateral partnerships with global AI leaders, such as international organizations, AI Investors, etc, to share knowledge, conduct joint research, and develop innovative AI solutions. This cooperation improves Pakistan's AI capabilities and ensures alignment with global standards.

As allied technologies and AI keep developing, the strategy must also meet the challenges and risks of adopting AI, which must be according to global standards. An integrated approach incorporating workforce development, institutional modernization, and ethical AI governance will help Pakistan maintain future national competitiveness and enhance citizens' overall quality of life.

Vision:

This policy envisions a robust AI ecosystem where artificial intelligence is used responsibly and ethically to protect individuals, strengthen local innovation and industries, address local challenges, and drive inclusive growth for national prosperity while preserving human rights and the rule of law.

Objectives:

The National AI Policy seeks to achieve the following:

Development Objectives (Driving Development through AI):

- **a.** To boost economic and technological growth by promoting an innovation-driven AI ecosystem that strengthens industry, enhances public service delivery and addresses socio-economic challenges.
- **b.** To integrate AI education into national curricula and develop specialized training programs to prepare a skilled workforce capable of driving AI innovation.
- **c.** To build domestic AI capabilities, AI infrastructure, including computational resources, local talent, and innovation ecosystems.
- **d.** To facilitate the alignment of IP laws to support AI-related patents and protect locally developed technologies.
- **e.** To promote research, development, and commercialization of indigenous AI solutions to reduce dependency on imported technologies.
- **f.** To provide comprehensive fiscal and non-fiscal support to AI startups investing in AI-based technologies.
- **g.** To create an enabling ecosystem for AI experimentation and innovation, including sandbox environments and agile regulatory arrangements.
- **h.** To strengthen international collaborations with global AI leaders to exchange knowledge, conduct joint research, and ensure global competitiveness.

Ethical Objectives (Ensuring Ethical and Responsible Use of AI):

- **a.** To ensure the ethical and responsible development and use of AI technologies through fairness, transparency, and accountability.
- **b.** To protect personal data, privacy and security, and to uphold human rights and the rule of law in AI applications.
- **c.** To increase public awareness and literacy in AI technologies for the promotion of responsible and inclusive adoption of AI across all levels of society.
- **d.** To preserve Pakistan's cultural identity by leveraging AI in context-sensitive ways that empower communities and promote local narratives.
- **e.** To ensure the development and use of AI technology in line with internationally agreed social, political, environmental, educational, scientific and economic sustainability objectives, such as the United Nations Sustainable Development Goals, and UNESCO's Recommendations on the Ethics of AI.

1. First Pillar: AI Innovation Ecosystem

Governments worldwide are increasingly supporting the innovative use of AI technologies to enhance productivity and solve complex problems. In Pakistan, a young and ambitious population coupled with emerging digital infrastructure, provides a strong foundation for AI-driven innovation. However, realizing this potential demands more than a young demographic—it requires an ecosystem that nurtures ideas, connects research with commercialization, and ensures access to the resources needed for success.

This pillar focuses on creating the foundational support needed for startups, researchers, and industries to experiment, innovate, and scale AI-driven solutions. This will be accomplished through sustainable funding mechanisms that provide access to resources for transformative projects alongside Centers of Excellence in AI (CoE-AI) that will act as hubs for collaboration, research, and entrepreneurial growth.

To this end, the government will undertake the following policy measures:

1.1 National Artificial Intelligence Fund (NAIF):

a. Establish a National AI Fund (NAIF) to support research, development, and commercialization of AI and allied technologies, utilizing existing resources under Ignite's Research and Development (R&D) Fund.

b. Allocate at least 30% of Ignite's R&D Fund on a perpetual basis, as stipulated in the Telecommunication Reorganization Act 1996 (amended 2006), to the NAIF to support research, development and commercialization of AI-focused initiatives.

c. Form a National AI Fund Committee within two months of the policy's enactment to oversee fund utilization, align projects with national priorities, and ensure compliance with the policy's directives.

d. Prioritize funding for R&D in academia and industry with potential for commercialization, spin-offs from established IT companies, and startups in the AI ecosystem.

e. Create a thematic and pooled Innovation Fund under the CoE-AI to finance AI-driven solutions that address priority areas of national interest under calls for innovation.

f. Strengthen industry-academia linkages by supporting AI research and engaging scholars in providing innovative solutions to societal challenges.

g. Support pilot projects, precise testing, and scaling of innovations, with an equal focus on financial support and capacity building.

1.2 Centres of Excellence in Artificial Intelligence (CoE-AI)

a. Establish a nationwide network of Centres of Excellence in Artificial Intelligence (CoE-AI), with primary centers in Islamabad, Karachi, and Lahore, supported by auxiliary centers in Peshawar, Quetta, Faisalabad, and Hyderabad.

b. Operate the CoE-AI under a two-tiered model, with primary centers in major cities and auxiliary centers supporting region-specific needs and opportunities.

c. The CoE-AI shall receive direct funding from the NAIF and will be mandated to execute the following core functions:

- Facilitate demand-driven research and development in AI and allied technologies that align with national priorities and are relevant and beneficial to citizens.
- Provide access to state-of-the-art computing infrastructure, AI labs, and test-beds to support advanced research and development, in line the goal of environmental and ecosystem protection and sustainable development.
- Support academic research in collaboration with HEC and provincial higher education departments.
- Nurture the growth of local startups by providing incubation and acceleration programs and facilitating connections with public and private sector stakeholders to promote the commercialization of AI-driven products and solutions.

- Collaborate with federal and provincial educational boards to integrate AI curricula into primary, secondary, and higher education.
- Facilitate training programs and internships for certified individuals in collaboration with public and private institutions.
- Assist regulators in organizing sandboxes and other regulatory measures for the responsible and ethical use of AI.

1.3 Innovation Fund:

a. Create a thematic and pooled Innovation Fund under the CoE-AI to finance AI-driven solutions that address priority areas of national interest under calls for innovation.

b. Strengthen industry-academia linkages by supporting AI research and engaging scholars in providing innovative solutions to societal challenges.

c. Support pilot projects, precise testing, and scaling of innovations, with an equal focus on financial support and capacity building.

1.4 Venture Fund:

a. Establish a venture fund to address the gap in post-seed financing and support the scaling of AI startups.

b. Provide advisory services, trainings, management support, and access to research facilities and capital to aspiring founders to enhance the chances of startup success.

c. Incentivize venture capital investment in AI startups to enhance innovation and job creation.

1.5 Data Standards:

a. Maintain data standards that are aligned with the industry and academia's needs and implement quality assurance and control mechanisms.

b. Creating centralized, high-quality datasets for training AI models.

1.6 Leverage Pakistan's Diaspora:

Consider establishing programs to engage the global Pakistani AI community to contribute expertise and investment.

1.7 Include Success Stories:

Consider showcasing examples of countries with similar demographics and challenges that have built thriving AI ecosystems, providing aspirational benchmarks.

1.8 Regular Monitoring and Reporting:

Propose biannual reports on the progress of this pillar, ensuring accountability and course correction where necessary.

2. Second Pillar: Awareness and Readiness

To successfully prepare Pakistan for the AI-future, this pillar is to ensure that the people are endowed with the knowledge, skills, and tools needed to engage with AI responsibly. Encouragement of ethical and responsible AI use, with fairness, transparency, and accountability being part of AI applications, is one of the central aspects of this readiness. Having independent bodies of oversight, including an AI ethics board, can guarantee that international norms are adhered to while public trust is built. Further, protection of personal data and privacy in AI use must be assured through the establishment of robust data protection and privacy practices and training of concerned actors.

Public campaigns and educational initiatives will be tailored to reach a variety of groups so that access to AI literacy can be made equitable. Engagement with schools, mass media, and community groups will be pivotal in the success of this mission. Furthermore, AI use will be utilized to enhance cultural identity so that technology is in harmony with local stories and values. Bundling of initiatives in training, skill acquisition, and internships will render the policy simpler to execute and optimize impact. Finally, this pillar will strive to position Pakistan as a world leader in AI readiness by 2035 so that the overall national AI plan is harmonized with all endeavour.

The Government of Pakistan will implement the following policy measures to enhance awareness and preparedness regarding AI among its private sector, academia, government officials and citizens:

2.1 National Awareness Program:

The Ministry of IT & Telecom will collaborate with the Ministry of Information & Broadcasting, and other stakeholders to create a national awareness program centred on AI. This program will simplify complex AI concepts, promote ethical AI practices and empower citizens to make informed choices about their data and interactions with AI technologies. The content will be disseminated in national and regional languages to ensure broad accessibility, and it will cater to diverse audience needs, including Persons with Disabilities (PWDs).

- **a.** Local/international private sector entities offering AI-led tools and services for data controlling and processing shall be provided with necessary instructions/guidelines concerning data organization. Introduce AI-focused programs in schools, colleges, and universities to address the gap in AI-related education.
- **b.** Launch targeted initiatives to train the youth in analytical skills and move beyond rote learning to prepare for AI ecosystem development.
- **c.** Expand DigiSkills.pk and other capacity building initiatives to include AI courses targeted at marginalized communities to ensure inclusivity.

The Center of Excellence in Artificial Intelligence (CoE-AI) is envisioned in Pakistan's National AI Policy to bridge the gap between AI research and industrial applications, thus promoting innovation and technological advancement. The center will be a hub for the creation of AI-related capabilities, ensuring that the workforce is equipped with cutting-edge expertise through specialized training programs. The CoE-AI will also promote the ethical and responsible use of AI technologies, developing regulatory frameworks and compliance policies to meet international standards. Through funding, mentorship, and incubation facilities, it will promote the development of local AI startups, thus reducing reliance on imported technology. The initiative will also seek to establish a national AI infrastructure, boosting computational power and enabling large-scale experimentation in AI. Finally, the CoE-AI will promote international collaborations, enabling knowledge transfer and making Pakistan a central hub in the global AI ecosystem.

- **a.** Launch a National AI Skill Development Program, in collaboration with NAVTTC, Provincial govts, Ministry of Education, and private sector organizations to train 200,000 individuals annually in AI including AI ethics and allied technologies through hybrid learning mechanisms (online and onsite).

b. Ensure the National AI Skill Development Program provides trainees access to the latest coursework, tools, state-of-the-art labs, and global AI resources and infrastructure to develop best-in-class applied skillsets.

c. Launch a "Train the Trainer" initiative to prepare 10,000 trainers by 2027, ensuring sustainable delivery of high-quality training programs. d

d. Internships and Job Readiness the CoE-AI shall.

e. Launch a National High-Tech Internship Program, in collaboration with public sector organization including provincial govt and local and international private sector organizations to offer 20,000 stipend-based internships annually.

f. Ensure the internships offer measurable outcomes, including skill demonstrations and mandatory certifications issued upon completion of an evaluation process by CoE-AI.

2.1.1 Training & Upskilling Workforce:

The CoE-AI, in their capacity as hubs for research and development, shall:

a. Fund at least 400 AI projects annually in academia and the private sector, ensuring that they reach the prototyping stage and become commercially viable for attracting investments.

b. Provide comprehensive support, including mentorship and fiscal support of up to PKR 1 million per project, or any other agreed amount based on the prescribed criteria.

c. Prioritize projects that focus on addressing socio-economic issues and the identified priority sectors in this policy.

d. Fund at least 200 AI theses and research materials annually, ensuring that findings are published and disseminated in recognized international journals and platforms.

e. Provide fiscal support of up to PKR 200,000 per research project, to facilitate the development of new AI concepts and models.

f. Implement a monitoring and evaluation framework to assess the effectiveness and impact of funded projects and research.

2.1.2 Higher Education Scholarships and Financing Schemes:

The CoE-AI shall:

a. Launch a scholarship program, in collaboration with the Higher Education Commission (HEC) and the private sector, to offer 3,000 scholarships annually for postgraduate and doctoral programs in AI including AI ethics and allied technologies.

b. Launch an interest-free education financing scheme, in collaboration with HEC and the State Bank of Pakistan (SBP), to support 15,000 students annually pursuing high-tech certifications, training, and degrees in AI.

c. Conduct an annual review to evaluate the impact and need for more scholarships in the identified high-tech fields.

2.1.3 Skill Development of Marginalized Women and PWDs:

The CoE-AI shall undertake the following interventions for the marginalized sections of society:

a. Incorporate a transversal gender perspective to ensure the potential of AI systems to advance the achievement of gender equality is realized; that the gender digital divide and gender wage gap are not exacerbated; and that AI systems are not developed with gender biases.

b. Develop a specialized offshoot of the National AI Skill Development Program designed for marginalized women and PWDs through special coursework and online means of imparting education to ensure inclusivity and access.

c. Collaborate with Bait-ul-Maal and Ehsaas Program to implement the program.

d. Leverage DigiSkills.pk to extend training opportunities to remote areas, ensuring nationwide

inclusivity.

e. Monitor and evaluate the program regularly to assess impact and ensure sustainable and equitable access to learning and earning opportunities.

f. Encourage female entrepreneurship, participation and engagement in all stages of an AI system life cycle by offering and promoting economic, regulatory incentives, among other incentives and support schemes, as well as policies that aim at a balanced gender participation in AI research in academia, gender representation on digital and AI companies' top management positions, boards of directors and research teams.

2.2 Public Sector Awareness and Readiness:

The CoE-AI shall:

a. Develop and operationalize a specialized curriculum for public servants on AI basics, ethical use, data governance and personal data protection, in collaboration with the Establishment Division.

b. Ensure 100% of public servants receive training on the basics of AI and personal data protection by 2027 to enable informed decision-making and improved service delivery.

2.3 Collaboration for Intellectual Property Law Reform:

a. Establish a collaborative mechanism between the Ministry of IT, Ministry of Commerce, Intellectual Property Organization Pakistan (IPO-Pakistan), and legal experts to identify gaps in the current patent laws that hinder AI-related patents and propose necessary amendments.

b. Align IP laws with international frameworks, such as the WIPO AI and Intellectual Property (IP) policy, to ensure Pakistan remains competitive and compliant with global standards.

c. Provide fiscal, legal, and technical support through CoE-AI for encouraging local innovation and registering 400 patents annually in AI and allied technologies.

3. Third Pillar: Secure AI Ecosystem

As governments and communities around the world compete to adopt AI, its ability to drive progress is matched by concerns around ethical use, security and unintended impacts. Governments worldwide face the complex task of balancing the opportunities AI offers with risks it poses—ranging from cyber threats and data misuse to biases in decision-making and unintended consequences in high-stake applications. A secure ecosystem is essential to ensure AI serves the public good, freedom of information, protects individual rights, and aligns with national priorities.

To address these challenges, the Government of Pakistan will implement the following policy/strategies: measures:

3.1 AI-Based Cybersecurity Solutions:

- **a.** Develop AI-integrated security guidelines for end-to-end protection during the development and deployment of AI systems.
- **b.** Deploy AI-driven threat detection systems to monitor and respond to security breaches in real-time.
- **c.** Establish collaborative defense mechanisms to enable secure threat intelligence sharing among national AI infrastructure and institutions. These protocols must incorporate advanced AI capabilities to counter intelligent attacks and risks.
- **d.** Implement AI-driven cybersecurity protocols with strict measures for secure data storage, transmission, Access to knowledge acts and protection against evolving threats. These protocols will be regularly updated based on sandbox testing and stakeholder feedback.
- **e.** Mandate the avoidance, addressing, prevention, and elimination of unwanted harms and vulnerabilities to attack throughout the life cycle of AI systems to ensure human, environmental, and ecosystem safety and security.

3.2 Transparency and Human Oversight:

- **a.** Ensure implementation of human oversight mechanisms for critical AI operations, particularly in high-risk scenarios.
- **b.** Mandate transparency and disclosure of the use of AI systems, including through the publishing of public sector AI systems in a public register.
- **c.** Mandate lifecycle evaluations and impact assessments of high-impact AI systems, like advanced models, to ensure compliance with evolving standards and address emerging risks promptly.
- **d.** Conduct regular audits to ensure compliance with ethical and security standards and best practices. Define a robust legal framework with clear penalties for non-compliance and incentives for adopting advanced security measures.
- **e.** Implement a framework for auditing AI decision-making, as well as transparency and algorithmic accountability, to be used by third-party auditors, with mechanisms for auditing and redress in cases of unwarranted outcomes.
- **f.** Collaborate with researchers and other stakeholders to investigate, prevent and mitigate any potentially malicious uses of AI systems.

3.3 National Data Security:

Devise a national data security policy that will include:

- **a.** An outline of the overall level of security required.
- **b.** The security standards, including auditing and monitoring strategies.
- **c.** Definitions of training and processes to maintain security.

A defense-in-depth strategy for securing the national data assets to be devised. It may include perimeter defense, network defense, host defense, application defense and data & resources defense etc.

3.4 National Authority Trust and Identity Management Policy:

This will provide a policy for Authentication of users prior to accessing data services which would provide accountability for the transactions/activities performed in the digital domain.

3.5 Privacy and Security Mechanisms for Accessing Data:

A privacy and security mechanisms to be devised which would reflect approach to data/information privacy that addresses internal and external aspects of best privacy practices in AI systems. It may require separate security policies for each of the shared database from different applications/sectors.

Specialized data security protocols would be Implement to protect against unique AI-related vulnerabilities, including using AI-powered simulations to anticipate and counteract emerging threats to data storage and transmission systems.

To ensure the integrity of AI systems, robust Identity and Access Management (IAM) protocols would be implemented to adapt to evolving security needs. The following measures would be taken to ensure authorized access such as:

Enhanced Authentication: Implement multi-factor authentication and role-based access controls to secure access to AI systems.

Regular Security Audits: Conduct periodic reviews and audits of access controls and privileges to maintain robust protection in the face of changing security landscapes.

3.6 Open-source AI Governance Framework:

a. Establish an Open-source AI Governance Framework with enforceable rules and standards for open-source AI frameworks that prioritize data security concerns.

b. Ensure the framework includes mechanisms for controlled data sharing and collaborative innovation among national institutions while protecting sensitive personal, organizational and national data.

c. Establish a mechanism to monitor compliance, oversee the secure use of open-source AI frameworks. and audit the use of open-source frameworks in data-sensitive organizations (e.g., banks, security agencies).

d. Formulate compliance standards for open-source AI intellectual property.

3.7 Generative AI:

The proposed, AI Directorate, along with CoE-AI, shall address the opportunities and challenges of generative AI in the following ways:

a. AI Directorate shall provide regulatory guidelines to address the possible spread of disinformation, data privacy breaches and fake news.

b. The CoE-AI shall support indigenous research innovation with respect to Generative AI and, in this regard, engage with the global AI platforms and allocate a special quota for startups/R&D institutions/companies working in this space.

c. The CoE-AI shall collaborate with the stakeholders to develop best-practice guidelines for the ethical use of generative AI in academia, including necessary updates in curricula and evaluation methods to address educational risks.

The AI Directorate will put in place measures to avoid copyright infringement to ensure that Generative AI

tools are in line with intellectual property (IP) legislation. This involves encouraging the use of licensed datasets, attribution mechanisms, and content verification tools to safeguard creators' rights.

3.8 Sandboxes for AI Deployment:

Ensure that at least 20 enterprises benefit from the regulatory sandbox by 2027, enabling agile and inclusive legal harmonization through testing and dialogue on ethical and legal scenarios.

4. Fourth Pillar: Transformation and Evolution

The IT boards, in collaboration with the COE AI, shall design roadmaps for the transformation in various sectors and industries based on their awareness and readiness for AI adoption with the following priority areas:

- **a.** Education including edtech and use of AI in education sector.
- **b.** Healthcare including medical record digitization & telemedicine.
- **c.** Record digitization including infrastructure, medical, irrigation, and land records.
- **d.** Governance through policing, equal access to justice and information, disaster management, quick decision making in ministries and among civil servants, guidelines for legislation and policymaking, ensuring rule of law.
- **e.** Agricultural development inter alia pesticide and fertilizer management, irrigation management, yield estimation, import/export decisions, food security.
- **f.** Manufacturing industry while focusing on quality assurance, condition-based maintenance, supply chain management.
- **g.** Decision support in generative AI scenarios.
- **h.** Energy management through supporting the adoption and development of sustainable energy sources.
- **i.** Climate change mitigation by recognizing, protecting, and promoting environmental and ecosystem flourishing throughout the AI system lifecycle.
- **j.** Pakistan's cultural identity preservation

These roadmaps should start rolling out to the respective sectors in 2025-2026 so that the structural and competency transformation towards effective AI adoption in various sectors, especially public institutions, can be expedited.

IT boards should become facilitators in designing and providing specialized training courses and certifications to prepare trained and skilled human capital with skills tailored to sectoral requirements. These training programs may be initiated as early as 2026 to accelerate compliance with AI adoption needs and requirements and prepare a skilled workforce to bear the torch of AI adoption and help Pakistan move forward.

By 2026, implement the AI maturity model and project management guidelines in at least 50 institutions and organizations to ensure adherence to international auditing and accountability standards for AI-supported platforms.

4.1 Ranking Management System (RMS):

- **a.** Develop a Ranking Management System (RMS) to evaluate AI solutions and assist users in selecting appropriate technologies.
- **b.** Establish a government oversight body to manage the RMS and maintain public trust through transparency, regular updates, and an annual trust index survey.

4.2 Industrial Transformation:

For industrial transformation, a network model approach will be adopted where Integration of all stakeholders is required. Life cycle support with a complete ecosystem would be taken care of for all public and private industries. Industrialization plan would include AI for innovation, automation and predictions.

Strong legal protections will be established to protect intellectual property (IP) pertaining to AI such that creators, researchers, and companies can obtain copyrights, patents, and trademarks for their AI-driven innovations.

- **a.** Promote the integration of AI and IoT technologies in industries to enhance industrial productivity, energy conservation, predictive maintenance, and quality control.

b. Launch awareness campaigns, workshops, and training programs to encourage industrial adoption of AI.

c. Support local industries through subsidies and tax exemptions for AI adoption, while prioritizing locally developed AI solutions over imported alternatives and considering the impact and influence on the market.

d. Establish a life-cycle support model for industries, ensuring seamless integration of AI technologies across public and private sectors.

4.3 Public/Private Sector Evolution

a. The COE-AI and AI Directorate shall collaborate to streamline AI adoption in public and private sectors by ensuring technical, regulatory, computational and financial assistance.

b. Utilize the National Artificial Intelligence Fund (NAIF) to fuel research and innovative endeavor that aim to integrate AI into Pakistan's industrial fabric.

5. Fifth Pillar: AI Infrastructure

Pakistan's AI ambitions rest on a solid digital foundation. The AI Infrastructure pillar will ensure the country's AI ecosystem has the compute, data, and connectivity backbone it needs. Pillar IV will focus on establishing a national AI compute grid in consultation with all the stakeholders. This would involve a network of High-Performance Computing (HPC) centers with specialized AI hardware, as well as industry driven data centers offering AI compute to support AI research & development, innovation, and adoption. The pillar will also focus on mobilizing public–private partnerships for building AI infrastructure in-line with best global practices. These measures will reinforce Pakistan's AI-driven innovation and will strategize the infrastructure accordingly. To achieve these objectives, the following measures will be implemented:

5.1 Compute Infrastructure

High-performance computing (HPC) resources: Pakistan will establish a nationwide AI infrastructure to boost computational power for large-scale experimentation, processing large datasets, and trainings AI models. Access to datasets and computing resources across the country will be provided to at least 100 academic institutions for AI R&D.

5.2 Data Infrastructure and Open Data

Centralized AI datasets: It will centralize high-quality datasets for AI training. It mandates data standards aligned with industry and academia and the centralization of key datasets to fuel model development and support R&D.

National/sectoral data repositories: A key measure is to establish a National and Provincial AI Data Repository. This includes upgrading existing public-sector data centers with HPC capabilities to allow AI access and analysis. Sector-specific data is will be focused to provide sectoral data and infrastructure for local AI model testing and training.

5.3 AI Hubs (Institutional Infrastructure)

AI Hubs: A nationwide network of AI Hubs will be established with major cities across the country. The Hubs will be explicitly designed to serve regional needs and nurture an AI innovation ecosystem. These Hubs in collaboration with CoE's will also bridge academia and industry gap.

5.4 Cloud and Shared AI Resources

Public cloud and open-source AI platforms: The policy encourages the use of cloud services and open AI resources. It instructs industry to leverage open-source AI infrastructure and public cloud platforms, by making data available to train AI models on the public cloud. This aligns with the broader approach of Cloud First Policy 2022.

National AI models and platforms: To substitute shared AI assets, the policy emphasises on partnerships with global AI initiatives. It specifically directs engagement with open AI forums and aims to contribute about 50 new AI models per year to open platforms. Such measures are meant to position Pakistan in global AI communities and ensure domestic data/models can be broadly accessed or benchmarked.

5.5 Sandboxes and Testing Environments

Regulatory sandboxes: AI sandboxes to be established for testing innovative applications. The sandboxes to be created in an integrated manner with focus on data control and processing, enabling agile regulatory harmonization. The CoE's will be explicitly tasked with assisting regulators to organize these sandboxes. By 2027 at least 50 enterprises should benefit from the AI regulatory sandbox. This is intended to allow companies to experiment with AI use-cases in a controlled environment.

Sixth Pillar: International partnerships and collaborations

AI has become a key driver of global technological progress, and it is increasingly impacting economic growth and public service delivery across the world. Many countries have emerged as leaders in AI research, development and deployment, yet Pakistan remains in the early stages of this critical journey. In this competitive global environment, international partnerships offer Pakistan a strategic opportunity for Pakistan to integrate into the global AI ecosystem and position itself as a trusted partner in innovation. While adopting AI governance strategies in line with existing international legal obligations and with a view to fostering global cooperation. Collaborations with international experts, institutions, and governments as well as international organizations will facilitate the upgradation of Pakistan's technological infrastructure, development of advanced technological solutions, alignment with international standards and meaningful contribution to the global AI landscape.

To achieve these objectives, the Government of Pakistan shall implement the following policy measures:

6.1 Bilateral and Multilateral Agreements:

a. Establish and strengthen bilateral and multilateral agreements with countries excelling in AI research and development to facilitate knowledge exchange, joint research projects, and co-development of AI technologies.

b. Engage in international AI groups and initiatives to stay abreast of global trends, standards, and best practices in AI.

6.2 Participation in Global AI Forums:

a. Actively participate in global AI forums, conferences, and workshops to share Pakistan's advancements, learn from international experiences, and forge strategic alliances.

b. Encourage Pakistani researchers, industry experts, and policymakers to contribute to and attend international AI discussions and policymaking events.

6.3 Collaborative Research and Development:

a. Facilitate the establishment of joint AI research centres in Pakistan with international partners, fostering an environment of innovation and excellence.

6.4 Cross-Border AI Projects:

a. Develop and support cross-border AI projects that leverage diverse expertise and resources to enhance the capacity of Pakistani institutions and provide practical solutions to complex problems.

b. Encourage the exchange of researchers and AI professionals between Pakistan and its international partners to build a global network of AI talent.

6.5 Adoption of International Standards:

a. Align Pakistan's AI regulations and standards with international best practices to ensure interoperability, data privacy, and security.

b. Implement globally recognized AI ethical guidelines to promote responsible AI development and use.

6.6 International Investment and Funding:

a. Attract international investment in Pakistan's AI sector by creating a favorable environment for foreign direct investment (FDI) in AI startups and ventures.

b. Collaborate with international funding bodies and financial institutions to secure grants and funds for AI research and infrastructure development.

6.7 Capacity Building and Talent Exchange:

a. Develop exchange programs and scholarships in collaboration with international universities to train Pakistani students and professionals in advanced AI technologies.

b. Organize international AI workshops, seminars, and training programs in Pakistan, inviting global experts to share their knowledge and experience.

6.8 Leveraging AI for Global Trade Promotion:

a. Enhance the competitiveness of Pakistani exports by leveraging AI to improve product quality, optimize supply chains, and meet international standards.

b. Identify and tap into new global markets for Pakistani products and services by leveraging AI-driven insights.

Policy Implementation Mechanism:

Following the enactment of the National AI Policy, a structured implementation mechanism will be established to guide and oversee its implementation. This mechanism will unify federal and provincial efforts and engage both public and private sectors to ensure transparency, accountability and collaboration in the implementation process. It will remain responsive to the evolving nature of AI while holding ethical oversight and ensuring alignment with national priorities.

To guarantee responsible, inclusive, and ethical AI development, the policy on AI shall implement a multi-stakeholder governance framework, engaging diverse actors in AI innovation, research, and implementation. The AI Directorate will work with government policymakers, legal specialists, and regulatory bodies to create open AI governance frameworks in line with global best practices. Collaboration with academia, research institutions, and think tanks will make AI policies science and inter-disciplinary knowledge based. The private sector, comprising tech companies, startups, and AI-driven companies, will be central to the development of sustainable AI innovation models in accordance with ethical and legal requirements. The policy will also promote public and civil society participation through citizen engagement, community discussions, and public consultations so that AI policies are aligned with societal needs and ethical values.

AI Council:

The AI Council will be the apex body responsible for providing strategic direction and overseeing the policy implementation process.

The AI Council shall comprise of:

- Chair: Federal Minister for IT and Telecom
- Members:
    - Secretary MoITT
    - Secretary MoST
    - Secretary MOPDSI
    - Chairman HEC
    - Chairman PDA
    - Provincial Chief Secretaries
    - One Expert each from academia, industry, civil society and citizen advocacy groups
    - Representatives from sectors such as healthcare, agriculture, etc.
    - Member Digital & Emerging Tech, MoITT
- Review progress of the policy implementation
- Facilitate collaboration across federal and provincial levels
- Provide strategic direction for resource allocation from the National AI Fund for key initiatives.
- Provide guidelines for ensuring ethical oversight and adherence to human-centric principles.

Policy Implementation Cell:

The Policy Implementation Cell will operate under the purview of the Ministry of Information Technology and Telecommunication (MoITT) and will perform the following functions:

- Manage day-to-day activities necessary for implementing the policy guidelines.
- Provide operational support to the AI Council and any working groups formed by the AI Council.
- Work closely with stakeholders to track the progress of policy implementation and provide recommendations to streamline the process

- Administrative reporting to Member D&ET

Key Performance Indicators (KPIs) for Tracking Progress Across AI Policy Pillars:

To track progress in each pillar, the following KPIs can help identify areas for improvement and inform data-driven decisions.

1st Pillar – AI Innovation Ecosystem	• Number of startups/SMEs leveraging AI tech. • Increase in AI-based jobs and job postings. • Percentage of industries adopting AI solutions (e.g. smart cities, healthcare, agriculture. • Growth in AI-related investments and funding
2nd Pillar – Awareness and Readiness	• Number of research papers published on AI topics • Increase in AI-related patent applications • Funding allocated to AI-focused research grants and initiatives
3rd Pillar – Secure AI Ecosystem	• Reduction in data breaches and cyber-attacks • Implementation rate of data standardization and accessibility measures • Number of organizations adopting ethical AI practices and frameworks. • Public awareness campaigns on responsible AI use. • A mechanism is devised to digitize and synch all existing systems/infra (like WAPDA, FBR, Health Sector, NADRA, Education, Ministries, etc.) to accrue maximum benefits through real-time data sharing/gathering.
4th Pillar– Transformation and Evolution	• Sector-wise roadmap implementation progress (e.g. healthcare, education, governance, R&D setups. • Increase in AI adoption rates across various sectors • Number of industrial transformation initiatives • Establishment of a sandbox environment for testing AI solutions
5th Pillar – AI Infrastructure	• National AI compute capacity • Consolidation of nationwide HPC clusters • Number of AI Hubs created nationwide • AI datasets available for R&D and startups • Local Large Language Models

6th Pillar – International Partnerships and Collaborations	• Number of partnerships established with global A leaders • Joint research projects and collaboration initiatives • Participation in international AI credence and forums

AI Policy Action Matrix:

S.No	Area	Pillar	Objective	Target	Description	Current State	Desired State	Timeline	Lead Stakeholder	Term
1	Capacity Building/Training	Awareness and Readiness	Knowledge-Economy	Public Awareness of AI & Allied Technologies	A comprehensive program to achieve widespread awareness of AI among 90% of the public with internet access.	Low awareness of AI applications.	90% awareness among the public with internet access.	By 2026	Ministry of IT & Telecom	Medium-Term
2	Capacity Building/Training	Awareness and Readiness	Awareness Proliferation	Developing Skilled Human Capital	Train 1 million new and existing IT graduates in AI & Allied Technologies using sustainable models and 10,000 new trainers.	Less than 10% of the workforce is skilled in AI.	1 million trained in AI and 10,000 new trainers.	By 2027	CoE-AI, Virtual University	Long-Term
3	Capacity Building/Training	Awareness and Readiness	Workforce Upskilling	On-Job Training Opportunities	Initiate a program for on-job training for IT professionals, aiming to equip 60% of IT graduates annually.	Limited on-job training programs for IT professionals.	60% of IT graduates are equipped with the latest technologies annually.	By 2026	Ministry of IT & Telecom	Medium-Term
4	Capacity Building/Training	Awareness and Readiness	Higher Education	Higher Education Scholarships	Increase AI and allied technologies scholarships by 30% annually through partnerships with industry and international partners.	Limited focus on AI in current scholarships.	30% increase in AI scholarships annually.	By 2026	Higher Education Commission (HEC)	Medium-Term
5	Capacity Building/Training	Awareness and Readiness	Public Sector Upskilling	Public Sector Awareness & Upskilling	Develop awareness and skill programs for civil servants, judicial and parliamentarians in AI applications.	No current programs for public sector awareness of AI.	Train at least 70% of existing employees and 100% of new inductees in AI.	By 2026	Establishment Division	Medium-Term
6	Applications of AI	Awareness and Readiness	Research and Development	R&D Initiatives in AI	Support at least 1,000 AI-led R&D initiatives in academia and the private sector with fiscal and non-fiscal support.	Limited funding for AI-led R&D initiatives.	Fund 1,000 AI-led R&D initiatives.	By 2026	CoE-AI, Private Sector	Medium-Term
7	Applications of AI	Awareness and Readiness	Applied Research	Applied Research/Thesis Support in AI	Provide funding support for AI research students to publish in high-impact journals and conferences.	Limited linkage between AI research and international recognition.	30% year-on-year growth in published research.	By 2026	CoE-AI, HEC	Short-Term
8	Applications of AI	Awareness and Readiness	Intellectual Property	Intellectual Property Registration	Facilitate the registration of over 2,000 patents in AI-led products and solutions.	Limited patents registered in AI from Pakistan.	Register 1,000 patents in AI.	By 2026	Intellectual Property Organization	Medium-Term
9	Capacity Building/Training	Awareness and Readiness	Curriculum Development	Algorithms, Data Science,	Integrate Data Science and AI into the STEM curriculum at all levels of education.	AI education limited to undergraduate	Incorporate AI and Data Science in basic education.	By 2026	Ministry of Education	Short-Term

				and AI in Basic Education		and postgraduate levels.				
10	Capacity Building/Training	Awareness and Readiness	Inclusive Education	Special Program for Marginalized Sections	Develop special curriculums and launch programs in AI and Data Science for marginalized women and PWDs through platforms like DigiSkills.pk.	Limited courses for marginalized sections.	Inclusive AI and Data Science programs for marginalized groups.	By 2025	Bait-ul-Maal, Ehsaas Program	Short-Term
11	Governance and Oversight	AI Innovation Ecosystem/ AI Infrastructure	Entrepreneurship and Startup Culture	National AI Fund	Establish a National AI Fund to support high-tech AI initiatives and startups.	No special provision for AI and allied technologies.	Establish a National AI Fund.	By 2026	Ignite Technology Fund	Short-Term
12	Governance and Oversight	AI Innovation Ecosystem/ AI Infrastructure	Innovation and Technology Transfer	Center of Excellence in AI	Develop Centers of Excellence in AI in major cities with auxiliary centres to support AI research and development.	Existing AI centers in select institutions.	Establish centers in Karachi, Lahore, Islamabad, and auxiliary centers elsewhere.	By 2026	CoE-AI	Medium-Term
13	Data Governance	AI Innovation Ecosystem/ AI Infrastructure	Compute Infrastructure	Compute Infrastructure	Develop HCI infrastructure at all CoEs and auxiliary centers nationwide with distributed access connected to global AI infrastructure.	Limited HCI facilities for AI.	Establish HCI infrastructure nationwide.	By 2026	CoE-AI	Short-Term
14	Applications of AI	AI Innovation Ecosystem/ AI Infrastructure	Civic and Social AI Projects	Special National Scale Applied Projects	Support at least 50 AI initiatives for civic and social projects using AI and Allied Technologies.	Limited use of AI for civic and social applications.	Support 50 civic and social AI projects.	By 2026	Ministry of IT & Telecom	Medium-Term
15	Privacy & Cyber Security	Secure AI Ecosystem	Data Protection	Proliferating AI Responsibly	Establish an AI Directorate under NCPDP for the responsible use of AI.	No provision for AI regulation currently.	Establish AI Directorate for ethical AI use.	By 2026	National Commission for Data Protection (NCPDP)	Short-Term
16	Privacy & Cyber Security	Secure AI Ecosystem	Ethical AI Use	Agile Regulatory Ecosystem	Create a regulatory sandbox for AI initiatives focusing on data control and processing.	SECP has a regulatory sandbox for certain AI applications.	Establish an integrated regulatory sandbox for AI.	By 2026	SECP	Short-Term
17	International Collaboration	International Partnerships and Collaborations	Global Partnerships	Harnessing AI through Global Best Practices	Engage in partnerships with international AI programs and platforms to adopt global best practices and facilitate bilateral/multilateral AI partnerships.	No documented commercial partnerships for AI.	Establish international AI partnerships and collaborations.	By 2026	Ministry of IT & Telecom, Ministry of Foreign Affairs	Short-Term

18	Applications of AI	Secure AI Ecosystem	Open Groups and Trained Models	Access to Open Groups and Trained Models	Partner with Open-AI forums to engage industry and academia in AI development, contributing 50 new AI models annually.	Engagement with Open-AI forums by the private sector only.	Contribute 50 new AI models to Open-AI platforms annually.	By 2026	CoE-AI	Short-Term
19	Governance and Oversight	Transformation & Evolution	Sectoral Roadmaps	Transforming Public Sector through AI	Establish a National/Provincial Data Repository and upgrade existing data centers to HCI for AI application access and analysis.	Limited AI integration in public sector operations.	Transform public sector operations through AI.	By 2026	National IT Board	Short-Term
20	Capacity Building/Trainings	Transformation & Evolution	Academic Enablement	Enabling Academia through AI	Provide access to datasets and computational resources to at least 150 academic institutions for AI research and development.	No central hub for academia to practice and apply AI models.	Support 150 academic institutions in AI research and development.	By 2025	CoE-AI	Short-Term
21	Applications of AI	Transformation & Evolution	Industrial Transformation	AI Awareness campaigns	Run awareness campaigns for attracting 200 beneficiary end user and decision makers annually.	No real awareness outside AI developer community	Reach 200 beneficiary end user and decision makers annually.	By 2025	CoE-AI	Short-Term
22	Applications of AI	Transformation & Evolution	Industrial Transformation	Sectoral Support via AI	Provide sectoral data and infrastructure for AI model testing and training, with IP registration support for 100 commercial models annually.	Industry uses open-source AI infrastructure and public cloud	Make Pakistani data available for 100 commercial models annually to be trained on public cloud	By 2026	National Commission for Data Protection (NCPDP)	Medium-Term
23	Applications of AI	AI Infrastructure	Testing and Innovation	Sandbox Participation	Enable at least 50 enterprises to benefit from AI regulatory sandbox by 2027.	Limited access to regulated environments for experimentation.	Widespread access to supervised AI sandboxes for private and public sector.	By 2027	SECP, CoE-AI	Medium-Term
24	Data Governance	AI Infrastructure	Cloud and Shared Platforms	AI Model Platforms and APIs	Launch national AI platforms including model repositories and shared APIs.	Lack of national-scale AI model sharing infrastructure.	Operational shared AI platforms fostering innovation and reuse.	By 2027	CoE-AI	Medium-Term
25	Data Governance	AI Infrastructure	Academic and Research Access	Compute Access for 100 Institutions	Provide datasets and computing resources to 150 academic institutions.	Limited institutional access to AI compute and training data.	Robust academic AI infrastructure supporting research at scale.	By 2026	CoE-AI	Short-Term
26	Infrastructure	AI Infrastructure	Data Center Expansion	Network of Data Center Network	Expand and interlink national data centers and deploy edge nodes with HPC capability.	Limited data center footprint for AI workloads.	High-availability data infrastructure to support real-time AI applications.	By 2027	Ministry of IT & Telecom	Medium-Term