20-Year Country Reporting Template

I. Executive Summary

Provide a brief overview of the country's achievements, challenges, and future priorities related to the implementation of WSIS outcomes over the last 20 years.

Over the past two decades, Greece has made significant strides in advancing its digital ecosystem in alignment with the WSIS Action Lines, achieving the acceleration of the SDGs of Agenda 2030. The country has developed robust national and cross-border digital infrastructures, promoted cybersecurity and expanded access to ICT education and public digital services. These achievements have been driven by coordinated efforts led by the Ministry of Digital Governance and are closely aligned with the EU Digital Decade targets. Key milestones include the launch of the DAEDALUS supercomputer under the EuroHPC initiative, the ongoing implementation of the Pharos AI Factory to boost AI innovation and language technologies, and the development under the EuroQCI initiative of the HellasQCI-Greece's national quantum communication infrastructure, which protects sensitive data and critical infrastructures. Strategic investments have also been directed toward expanding the development of Digital Infrastructures and more specifically expanding broadband infrastructure in rural areas and deploying 5G networks and submarine cable infrastructures. Additionally, the implementation of the National Small Satellite Programme aims to deploy a constellation of Earth observation microsatellites by 2026, contributing to the implementation of WSIS Action Lines for the Environment (C6). Complementary national strategies address broader priorities on human-centric policies, such as the protection of children from online addiction, the ethics of sustainable emerging technologies, and the enhancement of digital skills and capacity building. Despite ongoing challenges in SME digitalization, skills gaps, and ICT workforce retention, Greece is committed to inclusive and secure digital transformation. Its forward-looking agenda includes strengthening digital sovereignty, advancing quantum and AI capabilities, and ensuring resilience through interconnected and future-proof infrastructures.

II. Progress on WSIS Action Lines

Please provide a summary of progress on the WSIS Action Lines over the last 20 years, detailing national initiatives and the integration of digital policies. For each of the following action lines, kindly indicate the key achievements, challenges, and future priorities. Please elaborate with success stories for each Action Line.

1. Action Line C1: The role of governments and stakeholders in ICT for development

- *Achievements:* Establishment of a centralized governance model under the Ministry of Digital Governance; creation of national roadmaps aligned with the EU Digital Decade, as detailed in the revision of the Digital Transformation Bible 2020–2025 and its upcoming 2026–2030 update.

- *Challenges:* Cross-ministerial coordination for the implementation of sector-specific digital strategies.
- *Future priorities:* Strengthen partnerships, multi-stakeholder collaboration frameworks and support decentralized innovation ecosystems.

2. Action Line C2: Information and communication infrastructure

- *Achievements:* Deployment of Very High Capacity Networks (VHCN), Fiber to the Premises (FTTP), submarine cables and 5G networks; completion of the 50mil€ "Superfast Broadband-SFBB" project submitted to P2C (pledge ID 259) and presented at WTDC21, presently implementing the 700mil€ "Ultrafast Broadband-UFBB" project submitted to P2C (pledge ID341) and presented at WTDC21, launch of broadband projects like the 80mil€ "Gigabit Voucher", the 100mil€ "Smart Readiness", and CEF project "SEA-SPINE" for submarince cables. Major national ICT infrastructures such as the new DAEDALUS supercomputer (EuroHPC), the HellasQCI (EuroQCI) quantum-secure network, the national satellite programme for Earth observation, the Pharos AI Factory are under implementation.
- *Challenges:* Connectivity gaps in remote and rural areas; ensuring equitable access to high-speed internet for all. Additional infrastructure development is needed in innovative fields such as artificial intelligence, high-performance computing, and quantum communications to support emerging applications and foster national competitiveness.
- *Future priorities:* Accelerate 5G SA rollout, edge cloud integration, and submarine cable investments. Further investments to support large-scale, secure, and intelligent infrastructures such as the DAEDALUS supercomputer, the Pharos AI Factory, and the HellasQCI quantum communication network, including its cross-border extensions for both terrestial and space connectivity. A key future objective is also the development of a national quantum computing infrastructure to enable advanced simulations, scientific research, and innovation in quantum technologies. These infrastructures are essential for ensuring Greece's long-term competitiveness and resilience in the digital era.

3. Action Line C3: Access to information and knowledge

- *Achievements:* Gov.gr platform, parco.gov.gr and KidsWallet.gr for age verification, e-prescription services, eIDAS integration efforts, and cloud adoption in the public sector. Notable national infrastructures such as the Pharos AI Factory and the DAEDALUS supercomputer are being developed to support AI innovation, language technologies, scientific computing, and data-intensive public services. Alongside the HellasQCI quantum communication network, they form the backbone of Greece's strategy for secure, high-performance digital services and knowledge access.
- *Challenges:* Full integration of AI in public services, confront insufficient multilingual support for digital platforms, and limited awareness of secure digital tools among smaller institutions.
- *Future priorities:* Expand open data initiatives, improve multilingual digital services, and leverage national infrastructures to secure access to information.

4. Action Line C4: Capacity building

- *Achievements:* National Digital Skills Academy, Oracle Academy, Competence Labs, and large-scale upskilling and reskilling programs such as those run by the Public Employment Service of Greece (DYPA). Key education initiatives include teacher training, STEM and

robotics programs for schools, the development of open digital curricula, and pilot projects for advanced ICT certification in cooperation with universities and industry.

- *Challenges:* Increase graduation rates in ICT fields, confront regional disparities in training availability, and limited pathways for non-traditional learners to transition into digital professions.
- *Future priorities:* Expand vocational and tertiary digital education, integrate practical training through Centers of Excellence and EDIHs. Establishing a National Quantum Competence Center will be essential to coordinate education, research, and innovation activities in quantum technologies across academic and industrial sectors.

5. Action Line C5: Building confidence and security in ICT use

- *Achievements:* Implementation of the EU NIS2 Directive; application of the 5G Security Toolbox for network resilience; deployment of the HellasQCI infrastructure for quantum-safe communications. HellasQCI incorporates advanced Quantum Key Distribution (QKD) and Post-Quantum Cryptography (PQC) technologies to safeguard sensitive governmental data and protect critical infrastructure.
- *Challenges:* Addressing supply chain cybersecurity risks, ensuring SME awareness of cyber threats, and adapting to the evolving cybersecurity landscape amid quantum-era risks.
- *Future priorities:* Expand the deployment of Quantum Communication Infrastructure (QCI) technologies and Security Operations Centers (SOCs) across the public sector. A national priority is the continued expansion of the HellasQCI network—both within Greece and through cross-border links via space and terrestrial domains.

6. Action Line C6: Enabling environment

- *Achievements:* Greece has enacted major legislative and regulatory reforms to promote a favorable environment for digital transformation. Key developments include the establishment of digital identity frameworks (new eID cards, Gov.gr Wallet and KidsWallet.gr), the transposition of the NIS2 directive, spectrum regulation for 5G and private networks, and strong alignment with EU-level digital strategies and frameworks. Regulatory support has also facilitated public-private partnerships for major infrastructure projects including data centers, cloud services, and submarine connectivity.
- *Challenges:* Rapid evolution of emerging technologies such as AI and quantum computing outpaces regulatory readiness. Fragmented implementation at the local level and the need for simplification of administrative procedures can hinder digital service deployment.
- *Future priorities:* Finalize the implementation of the eIDAS 2.0-compliant eID and associated trust services; enhance interoperability frameworks for public services; promote regulatory sandboxes for AI and quantum technology applications; and ensure inclusive, future-proof legislation that supports secure, sovereign digital ecosystems across sectors.

7. Action Line C7: ICT applications: E-government, e-business, e-learning, e-health, etc.

- *Achievements:* Greece has actively contributed to the development of international frameworks for smart, digital, and resilient public services. As a member of the Thematic Group "City Platforms" (WG6) of the United for Smart Sustainable Cities (U4SSC) initiative, Greece supported the drafting of key deliverables such as the forthcoming report on Data and API requirements for decentralized smart city platforms, the 2024 report on Data and API requirements for centralized smart city platforms (link), and the 2022

publication on Smart public health emergency management and ICT implementation (link). In parallel, Greece co-chaired the ITU Focus Group on Metaverse (FG-MV) and its Working Group 1 (General), contributing to key international publications such as the official ITU Definition of the Metaverse (FGMV-20), the technical analysis Metaverse: An analysis of definitions (FGMV-02), and the exploratory report Exploring the Metaverse: Opportunities and Challenges (FGMV-01). These contributions highlight Greece's leadership in shaping global ICT applications and standards, with a focus on digital governance, smart city interoperability, and emerging virtual environments.

- *Challenges:* Greece has recognized the critical need for data flow homogenization and governance across smart cities and communities. The development of the aforementioned U4SSC reports reflects the country's commitment to advancing data sovereignty and empowering local authorities with greater control over the generation, collection, and delivery of standardized data. At the same time, Greece has acknowledged the growing significance of virtual environments and their implications for public governance. Through its contributions to the ITU Focus Group on Metaverse, Greece has supported efforts to define the concepts of the metaverse and citiverse, clarifying their scope and potential value creation for future city ecosystems. These challenges underline the importance of both regulatory frameworks and technological capacity to ensure that digital transformation in cities remains secure, inclusive, and human-centric.
- *Future priorities:* Greece will prioritize the national adoption of interoperable smart city platforms based on U4SSC standards, expand digital public services across key sectors, and explore practical applications of the metaverse in governance and urban planning. The country is also advancing work on circular city models through its membership in ITU SG5, having completed recommendations for Key Performance Indicators for Circular Cities and currently developing a circular city architecture framework. Emphasis will be placed on secure, citizen-centric design, ethical use of emerging technologies, and building local capacity to ensure inclusive digital transformation.

- **E-Government**
  - *Achievements:* The Gov.gr portal now integrates over 1,500 digital services, offering seamless, secure transactions for citizens and businesses. The Gov.gr Wallet has been deployed to host eID, driver's license, and other official documents.
  - *Challenges:* Ensuring full service interoperability, citizen uptake, and coverage of all public services.
  - *Future priorities:* Complete the rollout of eIDAS 2.0-compliant digital identity and expand automation and AI-enabled services across government platforms.
- **E-Business**
  - *Achievements:* Over 46,000 SMEs have received support through the "Digital Tools for SMEs" programme. Uptake of cloud, ERP, and CRM systems is growing.
  - *Challenges:* Low digital maturity among micro-enterprises and slow uptake of advanced technologies like AI and data analytics.
  - *Future priorities:* Continue targeted subsidy programmes and foster innovation ecosystems around EDIHs and AI/Cloud infrastructures such as Pharos and NOUS.
- **E-Learning**
  - *Achievements:* Major updates to national digital curricula, rollout of robotics kits to schools, creation of open digital textbooks, and ICT skills workshops (e.g., Competence Labs).

    - *Challenges:* Digital divide among schools and limited integration of advanced digital tools.
    - *Future priorities:* Expand AI-assisted learning, strengthen teacher training, and connect education with national infrastructures.
- **E-Health**
    - *Achievements:* Deployment of RIS/PACS systems in hospitals; expansion of ePrescription and AIFI platforms; development of the National Electronic Health Record (EHRF). Greece also contributed to international standards by proposing and developing the ITU-T Recommendation Y.4233: Framework for smart public health emergency management in smart and sustainable cities. This framework integrates technologies such as IoT, AI, and digital platforms into public health emergency responses, enabling smart cities to manage epidemics and pandemics more effectively through early detection and coordinated action.
    - *Challenges:* Variations in digital infrastructure maturity across regions and the need to further raise public awareness and engagement with available e-health services.
    - *Future priorities:* Consolidate national health data systems, ensure compliance with EU accessibility and data sharing standards, and integrate secure communications.
- **E-Employment**
    - *Achievements:* DYPA launched major upskilling programmes focused on digital skills and reskilling for ICT roles.
    - *Challenges:* Low digital literacy in older populations; skills mismatch with market demands.
    - *Future priorities:* Expand career orientation for youth, promote certifications in AI and cybersecurity, and align training with national digital transformation projects.
- **E-Environment**
    - *Achievements:* Participation in FORTESIE and deployment of energy-saving infrastructure in government facilities; promotion of green-certified data centers. Greece actively contributes to international standardization in sustainable digital development. Under ITU Study Group 5 (Environment, Climate Change and Circular Economy), it has developed key Recommendations such as L.1604 on bioeconomy in cities, L.1610 on city science applications, and L.1620, a guide to circular cities. As part of U4SSC's WG4 on "Digital Transformation for People-Centered Cities", Greece contributed to deliverables including a forthcoming methodology for assessing net-zero progress and guidelines for achieving carbon neutrality through digital transformation. Within ITU's FG-AI4EE, Greece also served as editor of L.1317 guidelines on energy-efficient blockchain systems and the report on energy efficiency models using AI and big data.
    - *Challenges:* Greece acknowledges the environmental impact of digital transformation and is committed to mitigating it through international engagement and the continuous development of sustainable ICT standards.
    - *Future priorities:* Greece has finalized the Recommendation on Key Performance Indicators for Circular Cities and is developing a Circular City Architecture Framework, both under its continued involvement in ITU SG5.
- **E-Agriculture**
    - *Achievements:* EDIH DigiAgriFood supported digitalisation pilots in precision farming and food supply chain management.
    - *Challenges:* Limited connectivity in rural areas; low ICT uptake among farmers.

    - *Future priorities:* Expand broadband access to rural regions and promote agri-data platforms through CAP-linked funding mechanisms.
- **E-Science**
    - *Achievements:* Greece hosts the EuroHPC DAEDALUS supercomputer, supports quantum research through the National Quantum Communication Infrastructure HellasQCI, and actively participates in European projects like NOSTRADAMUS and PETRUS (part of the EuroQCI initiative).
    - *Challenges:* Limited industry-academia integration and lack of national-level scientific data policies.
    - *Future priorities:* Strengthen national research infrastructures, promote FAIR and open science standards, and foster cross-border collaboration in AI, HPC, and quantum technologies.

8. Action Line C8: Cultural and liguistic diversity

- *Achievements:* Greece has made substantial efforts to support cultural and linguistic diversity through digitization of cultural heritage, promotion of Greek language technologies, and local content creation. Major public digitization initiatives (e.g. Digital Culture Project) have made historical archives, museums, and audiovisual content accessible online. The Pharos AI Factory also supports innovation in language processing for the Greek language, facilitating AI-driven tools in education, culture, and governance. Public broadcasting and the national digital library further promote linguistic and cultural expression in Greek.
- *Challenges:* Ensuring the availability and accessibility of multilingual digital services remains a challenge, especially for minorities and non-native speakers. There is limited systematic investment in Greek language technologies, and low commercial incentives for private sector development of local content.
- *Future priorities:* Promote further R&D in AI-based Greek language technologies through infrastructures such as Pharos; ensure inclusive access to cultural content across all regions and languages; support community-based and open content platforms; and increase support for digitizing and disseminating Greece's diverse intangible cultural heritage.

9. Action Line C9: Media

- *Achievements:* Greece has advanced in digitizing media archives, notably through public broadcasters like ERT, the National Library of Greece, and the Athens News Agency. These efforts preserve cultural heritage and improve access to historical audiovisual content. Initiatives have also supported the modernization of journalism practices and the promotion of media literacy.
- *Challenges:* The growing spread of disinformation, especially on digital platforms, and the limited availability of fact-checking tools and media literacy resources in the Greek language.
- *Future priorities:* Promote responsible digital journalism by supporting AI-based fact-checking tools in Greek; enhance media pluralism and transparency; strengthen collaboration with the EU Code of Practice on Disinformation; and support education campaigns on digital ethics and media consumption, particularly for youth.

10. Action Line C10: Ethics in the Information Society

- *Achievements:* Greece has implemented legal and educational measures to foster ethical ICT use, including laws protecting minors online, anti-bullying awareness initiatives, and the introduction of digital ethics in school curricula. The Digital Transformation Bible emphasizes ethical technology deployment across public and private sectors.
- *Challenges:* Ensuring ethical design and deployment of AI systems, improving algorithmic transparency, and addressing bias in data-driven systems. There is also a need to better protect vulnerable users from harmful content and addictive online behaviors.
- *Future priorities:* Develop national guidelines for ethical AI aligned with EU and UNESCO principles; expand digital citizenship and ethics education across all age groups; promote public consultation and stakeholder engagement in technology regulation; and strengthen regulatory oversight to protect human rights in digital environments.

11. Action Line C11: International and regional cooperation

- *Achievements:* Greece has demonstrated strong engagement in international and regional digital cooperation frameworks. It is an active contributor to the EuroHPC Joint Undertaking through the DAEDALUS supercomputer and the Pharos AI Factory, enhancing Europe's capabilities in high-performance computing and AI. Greece also participates in the European Open Science Cloud (EOSC), promoting open and FAIR data practices. Furthermore, it plays a key role in the European Quantum Communication Infrastructure (EuroQCI), coordinating the HellasQCI project and contributing to cross-border initiatives. Greece is also engaged in EU-level cloud, AI, and cybersecurity initiatives, and has signed bilateral MoUs with countries such as the UAE and strategic partnerships with major technology providers.
- *Challenges:* Harmonising infrastructure deployment, data protection rules, and technology standards across borders remains complex. Sustaining coordinated engagement across multiple regional initiatives also requires long-term planning and investment.
- *Future priorities:* Expand cross-border collaborations in HPC, AI, quantum technologies, and submarine connectivity. Enhance regional cooperation on ethical technology governance and cybersecurity standards. Align national digital priorities with the WSIS+20 vision and the EU's global digital strategy through active engagement with ITU and other international fora.

III. National Strategies and Policy Documents

Please provide details on national strategies, policies, and frameworks that have been implemented to achieve WSIS goals over the last 20 years, including:

National Digital Strategy/Policy

Greece's overarching framework for digital transformation is articulated in the Digital Transformation Bible 2020–2025, which outlines strategic pillars such as connectivity, digital skills, secure digital government, digital economy, and innovation ecosystems. This strategy is currently being revised and expanded into the 2026–2030 period to incorporate new priorities including green digital infrastructure, post-quantum cryptography, and artificial intelligence integration.

Strategic Documents/Plans

Key national reports and strategic plans that align with WSIS Action Lines include the *Digital Transformation Bible 2020–2025*, the *National Cybersecurity Strategy* (aligned with the NIS2 Directive and the 5G Toolbox), and the *National Broadband Plan 2021–2027*. Additionally,

Greece has adopted *A Blueprint for Greece's AI Transformation* (2024), is preparing a *Revised Digital Transformation Strategy 2026–2030*, and is developing a *National Strategy on Quantum Technologies*, all of which support the country's long-term digital priorities in line with WSIS goals.

Implementation of WSIS Mandates

Greece has systematically integrated WSIS mandates into its national digital strategies by aligning them with EU frameworks such as the Digital Decade, EuroQCI, EuroHPC, and EOSC. Through projects like HellasQCI *(ongoing)*, DAEDALUS, Pharos *(ongoing)*, and the Greek National Satellite Space Project (*ongoing*), Greece ensures its digital development is secure, inclusive, and future-ready. Policies promote universal access to information, capacity building, ethics in digital environments, and cross-border cooperation. Furthermore, national monitoring frameworks ensure continuous assessment of digital progress across WSIS-aligned domains.

IV. Key Indicators of Progress

Provide key data or indicators that demonstrate the country's progress toward achieving WSIS goals (e.g. percentage of the population with internet access, mobile penetration, percentage of government services available online, number of broadband connections, cybersecurity initiatives, digital skills training, etc.)

- 50% national Very High Capacity Networks (VHCN) coverage (2024), with full Gigabit target by 2030
- Over 1 million citizens issued digital IDs and Gov.gr Wallet credentials
- 46,000 SMEs supported via Digital Tools voucher program
- 650 km of quantum-secure optical fiber deployed (HellasQCI)
- 75 hospitals equipped with RIS/PACS (2024), 110 targeted by 2025
- 90,000 tertiary students enrolled in ICT/STEM fields; ~1,650 ICT graduates per year
- 33,000 digital skills courses delivered via public platforms
- ~1,500 e-government services integrated on Gov.gr
- Participation in key pan-European initiatives: EuroHPC (DAEDALUS, Pharos), EuroQCI (HellasQCI).
- Active cybersecurity measures aligned with NIS2, including SOCs and QCI(QKD/PQC) pilot deployments.

V. Challenges and Gaps

Please identify key barriers or challenges the country has faced in implementing WSIS mandates and achieving desired outcomes.

- **ICT talent retention (brain drain):** Persistent outflow of skilled professionals seeking better opportunities abroad.
- **Regional and demographic disparities in digital skills:** Gaps remain, particularly among older populations and in rural or underserved areas.
- **Low digital maturity of micro-enterprises:** With 91% of Greek companies classified as micro-enterprises, many struggle to adopt advanced digital tools and practices.
- **Slow adoption of 5G SA and private networks:** Deployment of standalone 5G infrastructure and private enterprise networks remains limited.

- **Limited availability of Greek-language AI resources:** Shortage of training datasets and tools tailored to the Greek language affects local innovation.

VI. Future Directions and Areas for Collaboration and Vision Beyond 2025

Please outline the country's vision for the future of WSIS beyond 2025 and identify areas where collaboration with stakeholders could further accelerate progress.

Greece's digital transformation agenda beyond 2025 focuses on advancing strategic autonomy, fostering innovation, and ensuring inclusive and secure digital ecosystems. Key priorities include:

- **Strengthening Greece's leadership** in quantum-safe, high-performance, and green digital infrastructures.
- **Completing the rollout** of the eIDAS 2.0-compliant digital identity and Gov Wallet to enhance trust and accessibility in public services.
- **Expanding the HellasQCI network** across Greece to connect critical infrastructures, while enhancing cross-border integration through terrestrial and satellite QKD links.
- **Operationalizing key infrastructures**, including the DAEDALUS supercomputer and the Pharos AI Factory, to support AI, language technologies, and compute-intensive services.
- **Establishing a national competence center** for quantum technologies to coordinate research, innovation, training, and industrial collaboration.
- **Developing national quantum computing capabilities**, including the design and deployment of quantum computing infrastructure aligned with EU initiatives.
- **Boosting ICT talent development** by reforming curricula, expanding vocational and tertiary training, and aligning with market demands.
- **Fostering public-private partnerships** to accelerate innovation and deployment in emerging technologies such as edge computing, AI, and quantum communications.

Areas for Collaboration

- **Broaden collaboration with ITU and international organizations**: Enhance engagement in global ICT development efforts, standards setting, capacity building, and knowledge exchange through partnerships with the International Telecommunication Union and other relevant bodies.
- **Advance ICT education and workforce development**: Reform curricula and expand vocational training to boost the number of ICT graduates and upskill professionals in emerging technologies.
- **Encourage public-private partnerships**: Support innovation ecosystems around edge computing, AI, quantum, and green ICT through coordinated collaboration with industry and academia.
- **Enhance international collaboration**: Work with EU and global partners to co-develop interoperable infrastructure, share policy best practices, and align regulations on ethical tech deployment.
