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Contribution by Oman

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1. *What are the specific challenges your economy is facing to develop or adapt frontier technologies and AI?*

Oman has made significant progress in adopting frontier technologies, but several challenges remain as the country works to fully integrate AI and other advanced technologies into its economy:

- **Workforce development:** There is a recognized need to further enhance local expertise in AI, data science, and other emerging technologies. While the government has introduced initiatives to build a more digitally skilled workforce such as **Makeen** initiative to upskill 10,000 young talents in advanced digital skills, but closing the gap between current capabilities and the demand of a high-tech economy requires continuous investment in education and training.
- **Digital infrastructure and connectivity:** Oman has invested heavily in improving its ICT infrastructure, but there are still areas, particularly rural regions, that lack sufficient connectivity and fibre optic connectivity has proven to be prohibitively expensive to reach these areas. Expanding high-speed internet access nationwide is critical to ensuring equal opportunities for all regions to participate in the digital economy. Oman is deploying remedies such as granting license to Space X's Starlink to provide Satellite Internet connectivity in Oman; as well as constant work with telcos to rapidly expand the coverage of 5G networks.
- **Security and privacy concerns:** A significant challenge Oman faces is managing data privacy and security in a world where data sovereignty is crucial. Due to privacy concerns and regulatory requirements, Oman does not permit storing sensitive data on cloud platforms hosted outside the country. This necessitates attracting global data centres into Oman as well as investment in local data centres and secure infrastructure.
- **Cloud infrastructure and hyper-scalers:** Oman has been working to attract major cloud hyper-scalers like Google, Microsoft, and Amazon to establish local data centres within the country, but progress has been slower than expected. While there is interest in developing cloud capabilities locally, attracting these large providers is essential for enabling greater cloud adoption, which would support AI applications, data analytics, and innovation across sectors.
- **Private sector engagement:** The private sector in Oman is gradually embracing digital transformation, but there is still room for stronger collaboration between public institutions, private companies, and startups to drive technology adoption on a larger scale.

These challenges, though significant, are being actively addressed through ongoing reforms and investment in digital infrastructure and talent development. With the right strategic partnerships and policy frameworks, Oman is poised to overcome these hurdles and accelerate its transition into a technology-driven economy.

2. Can you provide successful examples of AI and other frontier technologies uptake in your country?

Oman has successfully integrated AI and other advanced technologies across multiple sectors, demonstrating its commitment to digital transformation:

- **Healthcare:** AI-powered tools are being used in Oman's healthcare sector, especially for diagnostics and telemedicine. During the COVID-19 pandemic, AI-assisted remote consultations and virtual patient management systems became key components of healthcare delivery, improving accessibility and efficiency.
- **Elections:** A major recent success story is Oman's 2023 **Shura Council elections**, where AI played a crucial role in ensuring transparency and efficiency. For the first time, Oman used an electronic voting system via the **Antakhib mobile app**, which incorporated **AI-powered biometric verification**. Over **750,000 voters** were verified using AI-based facial recognition and liveness detection, ensuring secure and remote voting for both domestic and overseas voters. This system allowed voters to securely scan their biometric ID cards using smartphones, simplifying the voting process and reducing costs. Additionally, generative AI technology was used to relay real-time election results via custom avatars, delivering the results in multiple languages to citizens throughout the day. This use of AI marked a pioneering moment in the world of digital governance, positioning Oman at the forefront of technological innovation.
- **Smart City Projects:** In cities like Muscat, AI and Internet of Things (IoT) technologies are being implemented to optimize urban services, including traffic management, energy consumption, and public safety. These initiatives contribute to Oman's vision of developing sustainable, smart cities.
- **Education:** AI is also transforming education in Oman, particularly through the use of smart classrooms and personalized learning platforms that adapt to students' needs. These digital tools enhance engagement and learning outcomes, equipping the younger generation with the skills needed for the future workforce.

3. *Has your country put in place inclusive policies for innovation and economic diversification specifically tailored to diffusion of digital technologies and AI?*

Yes, Oman has implemented comprehensive policies aimed at promoting innovation and economic diversification, with a strong focus on AI and digital technologies. A major step in this direction is the launch of the **National Program for Artificial Intelligence and Advanced Digital Technologies (2024-2026)**. This programme, aligned with **Oman Vision 2040**, seeks to position digital technologies as a cornerstone of the national economy by fostering the adoption of AI across multiple sectors.

Key aspects of the programme include:

- **Economic Integration of AI:** The programme focuses on integrating AI into key sectors such as logistics, manufacturing, tourism, and food security. AI is being used to enhance efficiency, reduce costs, and improve productivity across these industries.
- **National Open Data Platform:** This platform aims to make data more accessible to entrepreneurs, investors, and researchers, fostering innovation and supporting decision-making across sectors.
- **Localizing AI Technologies:** To build local capacity, Oman is encouraging public-private partnerships and developing AI research and development centres. This includes establishing an **AI Studio** to connect AI specialists with companies seeking advanced digital solutions.
- **AI Governance and Ethics:** The programme emphasizes the creation of robust governance frameworks to ensure the ethical use of AI and protect data privacy.
- **Education and Workforce Development:** The initiative also includes training programmes to enhance digital skills among Omani youth, preparing the next generation to lead in AI and other digital technologies.

Through these policies, Oman is fostering an inclusive environment for innovation, positioning itself as a regional leader in AI and ensuring that the benefits of digital transformation are widespread and accessible to all sectors of society. These efforts contribute significantly to Oman's economic diversification strategy, helping to reduce its reliance on oil while preparing the country for future technological advancements.

4. Do you have examples of policy instruments in place to favor the diffusion of frontier technologies in the economy and targeting specific sectors?

Yes, Oman has developed several important policy instruments to support the adoption of AI and other frontier technologies:

- **AI Policy for Government Use (2021):** Issued by the Ministry of Transport, Communications, and Information Technology (MTCIT), this policy provides guidelines for the responsible use of AI within government entities. It emphasizes six key principles: inclusiveness, human-centered design, transparency, accountability, fairness, and security. Government units are required to conduct risk assessments for AI systems and ensure that AI systems are free from bias, while also complying with open data policies
- **National AI Policy (Upcoming):** Oman is preparing to release its **National AI Policy**, which will create a comprehensive governance framework for the development and deployment of AI across both public and private sectors. This policy aims to ensure ethical and transparent use of AI while protecting individual rights. It will set standards for data protection, human oversight of AI decision-making, and transparency
- **AI Ethics Charter (Upcoming):** Alongside the National AI Policy, Oman will also introduce an **AI Ethics Charter**, which will lay down ethical guidelines for AI developers and users. This will help ensure that AI technologies are used responsibly, with an emphasis on minimizing risks and maintaining public trust.

These policies align with Oman's broader goals under **Oman Vision 2040**, which seeks to integrate AI and digital technologies into various sectors of the economy, such as logistics, healthcare, and manufacturing. By establishing a strong regulatory and ethical foundation, these policies will help ensure that frontier technologies contribute to economic growth while adhering to ethical standards.

5. Has your country put in place mechanisms to strengthen industrial capabilities through partnerships among different stakeholders (e.g., university-industry, or private-public)?

Yes, Oman has implemented several significant mechanisms, largely driven by public-private partnerships (PPP), to strengthen its industrial capabilities, particularly in telecommunications and digital infrastructure:

- **Fibre-to-the-Home (FTTH) Broadband Expansion:** Oman Broadband, a government entity, has initiated the **first PPP-based FTTH project** in Oman, inviting private investors to participate in expanding high-speed broadband services. Under this model, private partners finance, build, and operate the fiber-optic networks, with a focus on underserved areas. This project supports Oman's national broadband goals and is crucial for achieving its digital transformation ambitions
- **5G Infrastructure Development:** Oman has collaborated with global tech leaders to accelerate the deployment of **5G networks** across the country. These partnerships not only involve building the necessary infrastructure but also providing training programs to upskill local talent. The rollout of 5G is expected to revolutionize sectors such as logistics, energy, and transportation, supporting Oman's broader economic diversification efforts under **Oman Vision 2040**
- **Development of a National Large Language Model (LLM):** Oman is developing its own national **LLM** through partnerships between the government, private sector, and academic institutions. This initiative will digitize Omani cultural and heritage data, allowing the model to support sectors such as education and tourism while preserving Omani identity
- **Unified Open Data Platform:** Oman is set to launch a **Unified Open Data Platform** by the end of 2024. This platform will provide public access to government data, fostering innovation, transparency, and research. The initiative is part of Oman's broader efforts to support a data-driven economy and enhance digital transformation
- **AI Makers Initiative:** Launched through a partnership between **Ministry of Transport, Communications and Information Technology** and the **University of Technology and Applied Sciences (UTAS)**, this initiative promotes AI innovation by supporting research and providing platforms for collaboration between students, researchers, and industries. It aims to build local AI capabilities and strengthen Oman's position as a regional leader in AI technologies

6. How can international cooperation support the uptake of new technologies and the development of technological capabilities in your country and ensure that industrial policies will benefit all and do not worsen inequality?

International cooperation is essential for Oman's technological advancement, providing access to expertise, resources, and global best practices that can support an inclusive digital transformation. Oman's active partnerships with global organizations, including the **Digital**

Cooperation Organization (DCO), ICESCO, and UNESCO, demonstrate the country's commitment to fostering technological growth in a responsible and equitable manner.

- **Digital Cooperation Organization (DCO):** As a founding member, Oman collaborates on initiatives that improve **data governance**, enable **SMEs** to access new markets, and promote **digital skills development**. These efforts help build a robust digital economy while ensuring equitable access to digital opportunities
- **ICESCO Partnership:** Oman's collaboration with **ICESCO** includes the **AI Ethics Chair**, established at University of Technology and Applied Sciences (UTAS), which focuses on promoting responsible AI development. This partnership also explores the use of AI in education and the preservation of Islamic cultural heritage, ensuring that technology supports social values and ethical standards
- **UNESCO Chair on AI Ethics:** In collaboration with UNESCO, Oman has established an **AI Ethics Chair** at Sultan Qaboos University (SQU), positioning the country as a leader in **AI governance**. The chair focuses on ensuring that AI technologies align with ethical standards while promoting innovation. Oman also participates in UNESCO initiatives aimed at leveraging AI for education and sustainable development

These collaborations help Oman overcome barriers to technology access, build local capacity, and ensure that the digital economy's benefits are distributed fairly across society, preventing the deepening of inequalities.

7. What can the UN CSTD do to support an economic transformation that enhances your country's productive capabilities and foster an inclusive digital transformation?

The UN CSTD can play a critical role in supporting Oman's economic transformation by addressing several challenges related to technology access, capacity-building, and ethical AI development:

- **Facilitating Access to AI Technologies:** One of the significant challenges Oman faces is limited access to advanced AI infrastructure, which is often expensive or restricted. The UN CSTD could advocate for better global access to cutting-edge AI technologies, ensuring that developing nations like Oman can acquire the necessary hardware and tools for innovation at more accessible prices. This would accelerate the adoption of AI technologies across key sectors in Oman.
- **Supporting Capacity Building in AI:** The UN CSTD can promote capacity-building initiatives focused on AI, data science, and emerging technologies in Oman. By offering training programs, workshops, and international collaborations, the CSTD

can help Omani professionals develop the skills needed to drive the digital economy and support technological innovation.

- **Promoting AI Ethics and Responsible Innovation:** Oman's role as a regional leader in AI ethics, supported by the **UNESCO Chair on AI Ethics** and **ICESCO collaborations**, provides a foundation for ethical AI governance. The UN CSTD can assist by fostering global cooperation on AI ethics, ensuring that AI systems are designed and deployed responsibly, aligning with international ethical standards
- **Encouraging International Cooperation for Inclusive Growth:** The CSTD can facilitate stronger international collaborations, helping Oman expand its public-private partnerships (PPPs) and ensuring that digital transformation benefits all sectors of society. These efforts would help reduce inequality and ensure that the economic gains from AI and digital technologies are widely shared.

By focusing on these areas, the UN CSTD can help Oman and many countries overcome their technological challenges and support a more inclusive, sustainable digital economy.