



UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT



CSTD 28th Session
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Technology Foresight and Technology Assessment for Sustainable Development





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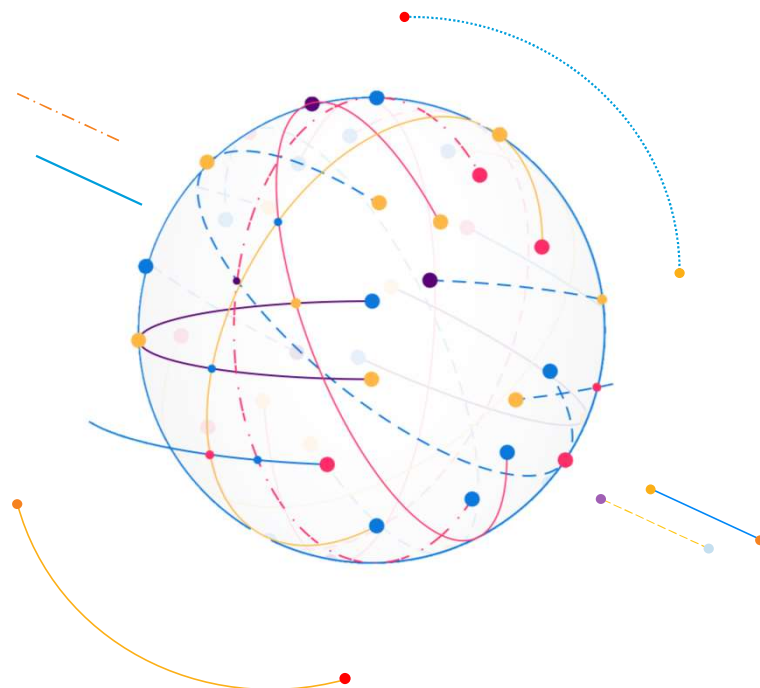
➤ UN General Assembly (GA) and ECOSOC Resolutions



United Nations
General Assembly

UN GA Resolution A/RES/78/160 on Science, Technology and Innovation for Sustainable Development:

Encourages all stakeholders to explore ways and means of conducting inclusive national, regional and international **technology assessment and foresight exercises** on existing, new and emerging technologies to help to evaluate their development potential and mitigate possible negative effects and risks.



United Nations
Socio-Economic
Council (ECOSOC)

ECOSOC Resolution E/RES/2023/4 on Science, Technology and Innovation for Development:

Conduct TA/TF exercises **as a process to encourage structured debate** among all stakeholders towards creating a shared understanding of the implications of **rapid technological change**;

Undertake strategic foresight initiatives on global and regional challenges at regular intervals and cooperate towards the establishment of **a mapping system to review and share technology foresight outcomes**;

CSTD to explore ways and means of conducting international technology assessments and foresight exercises

➤ Defining TF and TA



Technology Foresight (TF): TF involves a systematic process for anticipating technological changes over the long term. **ForSTI** looks at STI more broadly. **Strategic foresight** is broader, anticipating future scenarios in diverse areas.



Technology Assessment (TA): TA is focused on evaluating the **short-to medium-term** impacts of the development or adoption of technologies. It aims to contribute to public dialogue, provide policy advice and/or shape technologies.



➤ Defining TF and TA



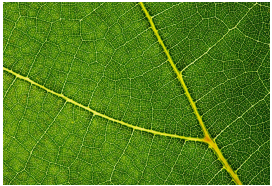
Differences and complementarity: While **TF** focuses on long-term strategic planning, **TA** addresses primarily short-term to medium-term impacts of emerging and new technologies. Together, they provide a comprehensive *strategic intelligence* framework for ***anticipatory technology governance***.

➤ Roles of TF and TA

- ▶ **Policy Guidance for Rapid Technological Change:** TF and TA provide policy frameworks that can identify benefits and risks.
- ▶ **Addressing Societal Concerns:** Stakeholder inclusion through TA and TF allows for broader societal perspectives, and more inclusive and evidence-based decision making.
- ▶ **Identification of Out-of-the-box Solutions:** TA/TF can challenge existing visions of the future and offer alternative forward-looking perspectives.



➤ Examples of TA/TF



- ▶ The **Fossil Free Sweden** is a **TF exercise** guiding Sweden's transition to carbon neutrality by 2045. It unites stakeholders to create sector-specific roadmaps, such as **green steel production and energy-efficient building** practices. These roadmaps tackle technological, financial, and regulatory challenges, and through scenario planning, the initiative ensures Sweden's strategies are resilient and adaptable to future changes.



- ▶ The **NASA Asteroid Initiative** is an example of **participatory Technology Assessment (pTA)**, conducted in collaboration with the **Expert and Citizen Assessment of Science and Technology (ECAST)** network. This participatory approach provided valuable insights from the public, helping NASA better understand societal perspectives on space hazards and guide its policy on **asteroid detection and planetary defense**.



- ▶ **UNCTAD's Technology Assessment in African Countries:** UNCTAD has piloted **TA projects** in Seychelles, South Africa and Zambia, focusing on energy and agriculture. The assessments evaluated the impacts of a technology new to each country using a **new TA methodology** developed by UNCTAD for developing countries. It has been updated and is available for reference by other developing countries.

➤ Challenges in TF and TA implementation





The adoption of **Technology Assessment (TA)** and **Technology Foresight (TF)** is widespread in developed countries, but significantly lower in developing countries in **Asia-Pacific**, **Latin America and the Caribbean**, and lowest in **Africa**.

There is an urgent need for increased support to **build TA/TF capacity in Africa**.



RECOMMENDATIONS

➤ Recommendations for policy-makers

- #1** Establish or Enhance TA/TF Centres
Initiate or strengthen dedicated **TA/TF centres**
- #2** Find Project Champions
Identify champions to advocate for TF or TA initiatives, ensuring cross-government collaboration and implementation of results
- #3** Ensure Independence of TA/TF Teams
Maintain **independence to prevent bias** in assessments
- #4** Localize TA/TF Processes
Adapt TA/TF to **national and sub-national contexts** to ensure relevance and effectiveness in addressing local challenges.
- #5** Foster Cross-Sectoral Collaboration
address complex issues, increase efficiency and coordination in STI
- #6** Promote Regional and International Collaboration
Explore collaborations across national and regional borders to pool resources and address shared challenges

➤ Recommendations for practitioners

- #1

Ensure Methodological Diversity

Utilize a mix of **data-driven forecasting** and **creative approaches**, combining **quantitative** and **qualitative** methods.
- #2

Build Local Expertise

Engage local institutions and provide training to develop local **TA/TF** capacity.
- #3

Address Social Inequalities

Ensure sensitivity to **gender, ethnicity, and social factors** in the assessment process to promote equitable and inclusive outcomes.
- #4

Promote Futures Literacy and Set Realistic Expectations

Highlight **the value of foresight in navigating potential futures**, rather than predicting the future, to ensure realistic expectations.
- #5

Engage with policymakers

Shape policy impact by keeping policymakers informed about progress.

Recommendations for international cooperation



- #1

Mobilize Resources and Promote Best Practices

Identify and mobilizing resources for TF/TA exercises and help countries leverage **successful TA/TF models**.
- #2

Develop International Standards and Tools

Establish **common methodological standards for TA/TF at the international level**.
- #3

Build National Capabilities for Autonomy

Build **national capabilities** in countries to conduct TA/TF projects independently, reducing reliance on external expertise.
- #4

Establish a Global TA/TF Support Mechanism

Create a global framework to provide **technical assistance, funding, and knowledge-sharing** for countries developing TA/TF capabilities
- #5

Harness the CSTD's role

Harness the CSTD's role as a forum for **strategic planning**, sharing lessons learned and best practices in TA/TF exercises.

➤ Conclusion

- ▶ **TA/TF: Not Cheap or Easy, but Critical:** While costly and complex, TA and TF are vital for shaping technology choices.
- ▶ **Addressing Grand Challenges:** TA/TF can help tackle global issues like the energy transition and align STI with SDGs through strategic planning.
- ▶ **Both TA and TF are Crucial:** Countries should develop capabilities in both for **strategic planning** and **anticipatory technology governance**.



Thank you

