

Input to the HLPF discussions on STI

This paper is in response to the recent call by the President of ECOSOC for online consultations in preparation for the STI components of the HLPF

## **Title: Achieving the SDGs with the help of technological transformations**

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### **1. Background**

In September 2015, a new blueprint to guide the global community onto a more resilient, equitable and sustainable development path, Agenda 2030 for Sustainable Development, was adopted by Heads of State within the United Nations framework. Under Agenda 2030, the UN Technology Facilitation Mechanism (TFM) was launched to support the implementation of the Sustainable Development Goals (SDGs). The objective of the TFM is to “harness the contribution of science, technology and innovation for achieving the 2030 Agenda and the 17 Sustainable Development Goals (SDGs)”.

The TFM has four components: a United Nations Interagency Task Team on Science, Technology and Innovation for the SDGs (IATT), combining the expertise of 42 UN agencies, the World Bank Group (WBG), and representatives of the academic, business and NGO communities; a 10-Member Group of representatives from civil society, the private sector and the scientific community; the annual Multi-stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum); and the TFM online platform for sharing information on existing science, technology and innovation initiatives, mechanisms and programs. The latter serves as a one-stop-shop for information on science, technology and innovation that can contribute to achieving the SDGs, as well as for building partnerships and matchmaking. (Ref: TFM: review of progress to date and next steps, The UN Technology Facilitation Mechanism (2015-2019)).

Since 2016, the TFM has contributed to shifting the international dialogue away from technology transfer and its financing to the broader focus of how technology can help achieve the SDGs. Amidst the rapid uptake of digital technologies by society and economic sectors that has fundamentally transformed the way we live and work, technological transformations are now being valued as one of the critical components of the transition to more sustainable, resilient and equitable economic and social development models. Box 1 illustrates some of the benefits and perils defined through the work of the IATT.

*Box Science, Technology and Innovation (STI) for SDGs Roadmaps, BACKGROUND PAPER: International STI collaboration and investment for Sustainable Development Goals Version of 26 May*

## **2. The purpose of the paper**

This paper highlights and provides some further insights into four critical components of the IATT work on STI under the TFM – critical components that in the opinion of the authors require greater attention. It proposes four areas in which to advance the work of the TFM. It is based on experience distilled from the work that many organisations, representing all walks of life and all economic sectors, are undertaking in the field of technology in response to Agenda 2030 and its SDGs – in short the field of “Tech for the SDGs”.

Indeed, since 2015/2016, a plethora of programmes, initiatives, publications, databases, conferences, platforms, etc. have emerged aiming to identify technological solutions to help societies and economies transition to more sustainable development patterns. Challenges, awards programmes, and hackathons are organised to entice students and researchers to develop innovative solutions and distil those with the potential to enter the market. These trends are now amplified amid the global quest to bring the Covid 19 pandemic under control.

## **3. STI insights that require greater policy attention**

### **3.1. The need to differentiate between Science, Technology, and Innovation**

Within the national and international context, and in the framework of Agenda 2030 and the TFM, Science, Technology, and Innovation (STI) are mostly treated as one single area of inquiry and action. This framing is incorrect, giving rise to a number of challenges: lumping STI together in research work, capacity building efforts and recommendations to national governments on how to better achieve the SDGs through the application of STI, leads to confusion, unclear policy guidance, and addressing diverse audiences with the messages not directly relevant to them. Science is indeed mainly practiced in academic institutes, paid for by public money, while technology is mainly the realm of the private sector, driven by market forces.

As outlined in the IATT Guidebook on STI roadmaps for the SDGs (see illustration in box 2 below), Science and Technology pertain to different actors and institutional set-ups and therefore require different approaches.

*Box 2. Concepts and Definitions (see IATT Guidebook on STI roadmaps for the SDGs)*

*Science, technology, and innovation are three different domains, each affiliated with a distinct*

The remainder of this article focuses on the technological innovation component of STI.

### **3.2 The need for business un-usual technological innovations.**

Applying best available technological solutions that are currently in the market, world-wide, will not suffice to achieve the SDGs by 2030. Drastic changes are needed of which technological changes represent one critical element.

Incremental improvements of existing technologies will simply not be sufficient. Variations or small improvements in existing technologies will only give us marginal efficiency benefits. Systemic changes and fundamentally new ways of producing and consuming are needed, coupled with profound and business-unusual technological changes, new management approaches, and new financing models. Deep technological innovations offer great opportunities to transform current production and consumption processes and to realize a worldwide transition to sustainability that can open doors to opportunities for all. This requires that innovative technological solutions be brought to the market at scale; it also requires breaking down institutional barriers, revisiting established paradigms, including relevant policies and behaviours. Technological innovations need to be combined with new business models across the value chains and bold approaches that overhaul current production and consumption processes.

### **3.3 The need to separate the wheat from the chaff**

Waves of technological innovation are coming ever faster at us. Technology is changing people's lives everywhere, especially transforming the day-to-day reality for many young people.

Letting a thousand flowers bloom is one approach to manage this outburst of creativity and entrepreneurship. However, the need to achieve the SDGs by 2030 calls for a deliberate attempt to separate the wheat from the chaff. Technologies that are incremental improvements of existing technologies must be differentiated from those that are truly transformative.

### **3.4 Integrating technological innovations into systemic models to transition to sustainability.**

The identification of innovative technological solutions is only one component of a holistic approach necessary for systemic and disruptive technological change. Real-world technological solutions are context specific, and require a combination of policy, behavioral change, financing, capacity building, social empowerment, institutional adjustments, and innovative business models. Furthermore, technical solutions are seldom composed of just one technology but rather are often combination of multiple technologies, including smart technologies.

Within the framework of the TFM the need for a holistic approach and the many facets of innovation are already recognized as illustrate in box 3. Further steps are suggested below.

*Box 3 Innovation is Diverse: The Main Faces of Innovation for the SDGs*

**Product and service innovation**

- *Innovative technologies serving particular economic or social needs*

**4. Suggestions for steps**

**4.1 Establishing the STI consolidating efforts to**

Many initiatives, publications and the SDGs” exist. They are There are no agreed criteria

technological solutions, nor to assess their potential to substantially contribute to the SDGs. Every effort has its own rules and regulations, assessment criteria, etc. This leads to a lot of misdirected efforts, waste of resources and energy, confusion, and unnecessary competition. Time, money, and effort the global community can and should not waste considering the health and environmental crises we face and the need to achieve the SDGs by 2030.

The yearly STI Forum could strengthen its outreach to those “Tech for SDGs” programmes and provide a forum for greater cooperation and coordination.

**4.2 The TFM on-line platform as a living library of market-ready transformative technological solutions**

Identifying market-ready innovative technological solutions that could make a major contribution to the achievement of the SDGs, is, and should be, an ongoing process. It can, however, not be a comprehensive process. There are just too many technological innovations and too many locally relevant conditions to consider. The selection of technologies is context specific - what works in one country might not work in another countries. For the same reason, a living library of solutions cannot be a prioritized listing. Living libraries can however give an indication and illustration how integrated, innovative technological solutions, cutting across different industrial sectors and disciplines, can transform the economy, using the market forces to deploy them at scale. The major purposes of the living library are to (1) illustrate that

- *Changes in value proposition and product-service systems of companies (e.g. circular economy business models, including product sharing and functional sales)*

**forward**

**forum as a platform for identify “Tech for SDGs”:**

conferences, awards, databases, programmes related to “Tech for uncoordinated and haphazard. to identify integrated

transformative transitions based on the wide deployment of integrated technological solutions is possible and can contribute to the achievements of the SDGs and climate goals, and (2) to sensitize public and private sector policy makers at all levels to the urgent need to- and possibilities offered by use transformative, business-unusual technological solutions that cut across industrial sectors.

The online platform under the TFM could provide a home for such a living library. It could serve as a one-stop-shop for collecting, reviewing, and publicizing the many “Tech for SDGs” solutions being developed.

#### **4.3 IATT to address the confusing terminology surrounding “new” technologies.**

Every group dealing with “new” technology seems to use their own classification and nomenclature. This greatly confuses the discussion and makes policy action less than optimal. All sorts of terms are currently used to describe “new” technologies such as emerging technologies, frontier technologies, biotechnology, nano technology, digital technology, soft technology, etc.

When formulating policy, which by definition is technology specific, it should be clear to which group of technologies these pertain. For example, policy development for blockchain technology might be of little relevance to carbon capture and use in industrial applications. Furthermore, different clusters of technological innovations have different impacts and repercussions on society – genetic engineering might warrant different impact studies than state-of-the-art desalinization plants. Policies geared towards addressing the possible negative impacts of genetic engineering might not be relevant to desalination technologies.

The IATT could develop and propose an international agreed nomenclature and classification system for “Tech for the SDGs”.

#### **4.4. STI roadmaps for the SDGs complement supply driven approaches with demand driven approaches**

Identifying innovative technological solutions to support the implementation of the SDGs is a supply driven approach. This is useful for global policy and norm setting and for providing global guidance to national processes and champion countries. However when it comes to applications on the ground, the supply driven approach might need to be complemented with a demand driven approach, assessing how technology can help address specific problems and/or how technology can help implementing national or local legislation or achieve public or private sector targets.

The supply driven approach of the STI for SDGs roadmaps Guidebook could be supplemented with exercises at the local, national or regional level that take a demand driven approach and identify innovative technological solutions in function of specific policy, economic or social problems governments might wish to address.

**In conclusion**, since the adoption of Agenda 2030 in 2015 substantive progress has been made to identify and promote the crucial role of technology in achieving the SDGs. Now it is time to learn from the many ongoing relevant efforts and provide a platform for greater cooperation and coordination to better achieve the SDGs.