

HARNESSING FRONTIER TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT

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Outline

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- Frontier technologies
- Ghana's development agenda and STI Policy
- Messages of the Voices
- The Role of UNCTAD and Collaborators
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Introduction – the Premise

Harnessing **frontier technologies** – combined with action to address persistent gaps among developed and developing countries in access and use of existing technologies, and to develop **innovations** (including non-technological and new forms of social innovation) – could be **transformative** in achieving the Sustainable Development Goals and producing more prosperous, **sustainable**, healthy and inclusive societies. (UNCTAD, 2018)

The Frontier Technologies

Technologies with radical potential for change

- **Frontier** technologies
- Biotechnology
- ICT/ Internet of Things (IoT)
- Nanotechnology
- Robotics
- Artificial intelligence
- Energy technologies (e.g. solar, wind, hydrogen fuels)
- The **attributes**
- Pace of advancement (acceleration)
- Disruptive (destructive?)
- Unlimited potential
- Unpredictability
- Still, threat to widening technological gap (between and within nations)
- **Opportunities** for developing countries.

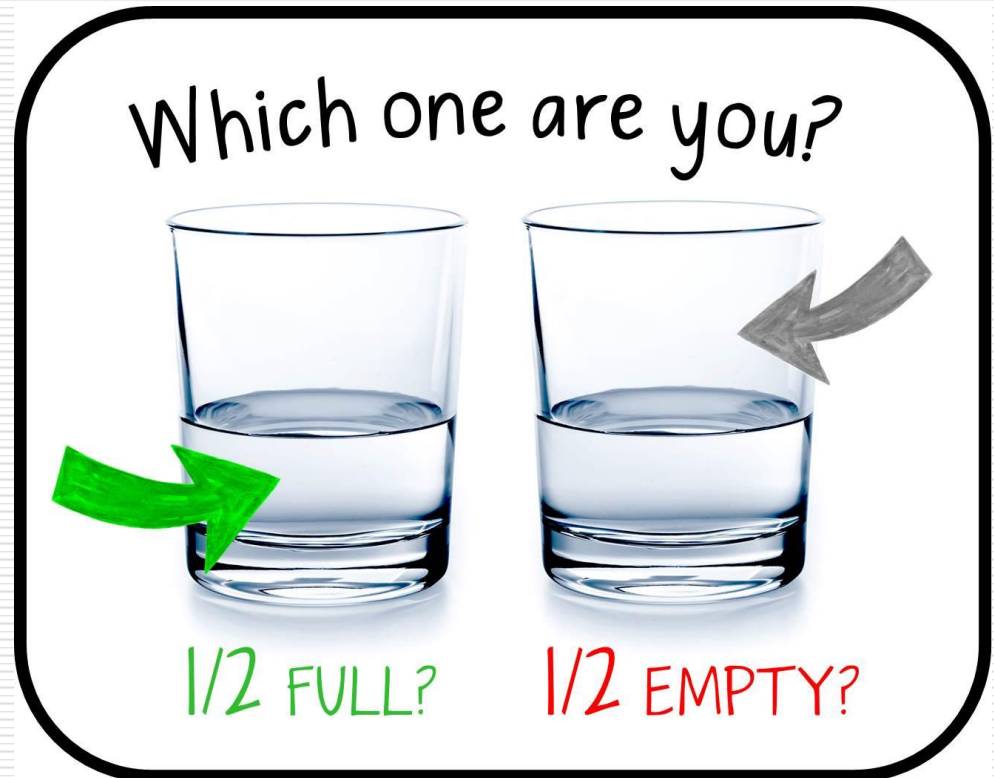


The Policy Challenge in Frontier Technologies

□ How we view the water in the glass

□???

□ 1/2 full. We can be more **optimistic** than pessimistic



Frontier Technologies - Opportunities

□ Opportunities



A



B

A. In Rwanda, drones could complement its existing network of trucks, delivering \$600 million of medical supplies around the country.

B. Drones (<\$900) for aerial photography – **youth entrepreneurship** (social events)!

□ Opportunities



C



D

C – D. The Noor I Concentrated Solar Power plant, a large solar thermal power plant in the Sahara Desert that will supply more than a million **Moroccans** with electricity with excess to export.



Ghana Development Agenda and the National STI Policy

- The National STI Policy, 2017 projects a “vision of Ghana transformed to **a developed country** with STI....to build a strong STI capacity.... for **sustainable transformation...**”
- STI Policy goal is to achieve:
 - **wealth creation,**
 - **poverty reduction,**
 - **enterprise competitiveness,**
 - **sustainable environmental management,**
 - **Industrial growth.**
- => **17 SDGs**



Lessons Learnt since 2010

- Is the National STI Policy **sufficient**? No.
- Lessons since the **2010** STI Policy?
- What has to be done with the realities of frontier technologies **and** SDGs?



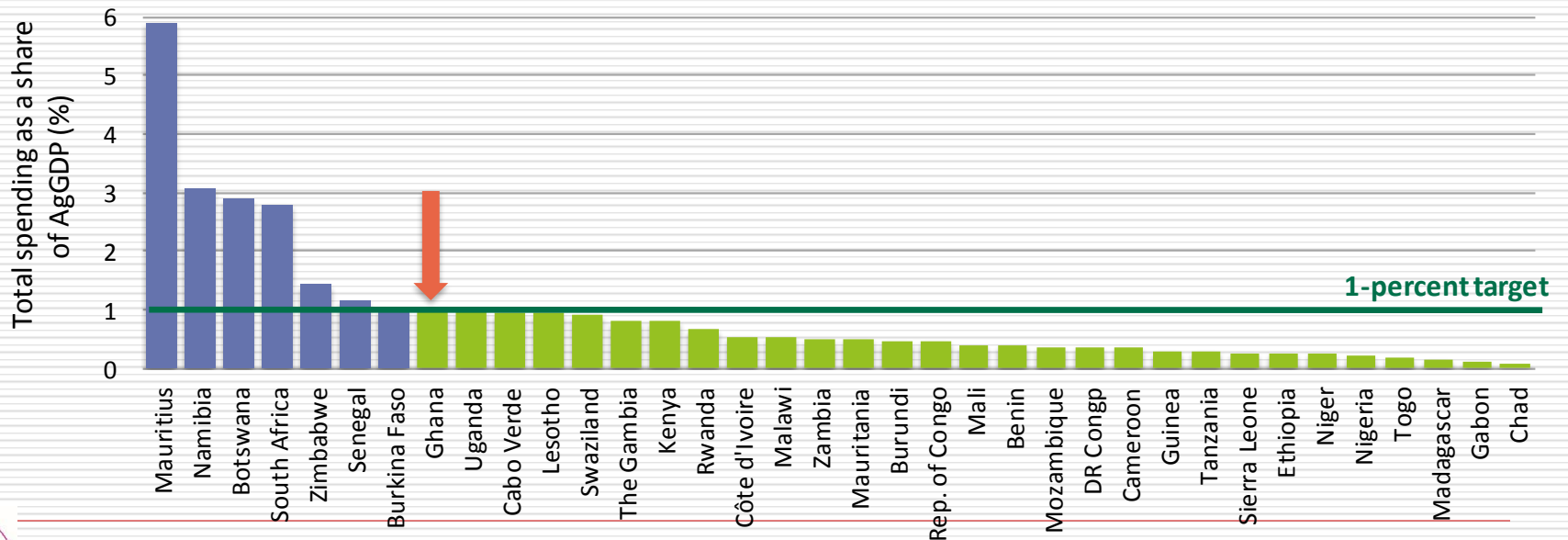
UNCTAD, CSIR-STEPRI, World Bank
STIP Review in **2009**

The Challenges for Developing Countries

- ❑ As we commit to Sustainable Development, the challenges facing the developing world:
 - ❑ The technological divide;
 - ❑ The competing development pressures;
 - ❑ Increasing competitiveness in the international arena – economic, political and socio-cultural;
 - ❑ Policy dysfunctions partly due to limited policy space
- ❑ **Low STI capabilities** – See the case of Agricultural Research and Development; 65% of employment in agriculture)

Agricultural research intensity, 2014

- ▶ Most African countries invest less than 1 percent of their AgGDP in agricultural research, falling short of the minimum investment target set by the African Union and the United Nations. (See IFPRI's ASTI Programme)

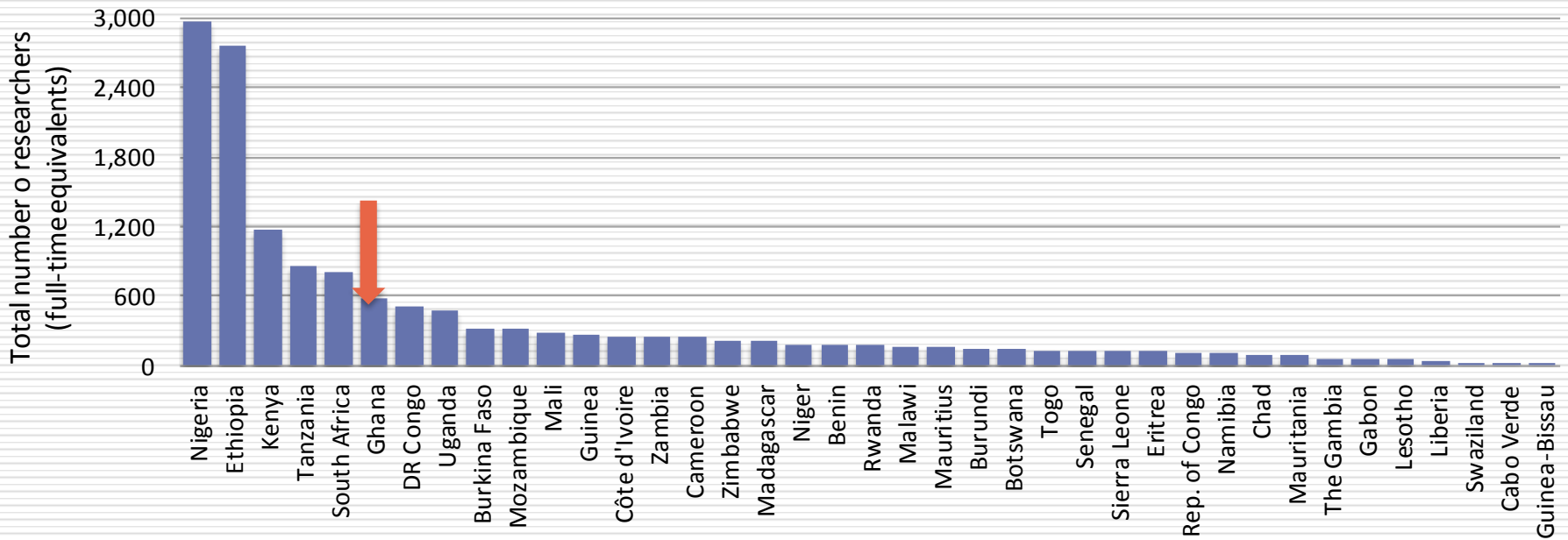


ASTI 2014 data



FTE agricultural researchers, 2014

- ▶ National agricultural research systems in Africa are handicapped in terms of available researchers.



What has to be done?

- ❑ The UN **STI** Forum Frontier (2016/17/18) participants (1,000 in 2018)
 - ✓ Member countries
 - ✓ International organisations
 - ✓ NGOs
 - ✓ Innovators/ entrepreneurs
 - ✓ Other stakeholders
- ❑ Many **voices**... of aspirations and concerns....



Messages of the Voices: Focus Areas Emphasized at STI Forum 2017 and 2018

- **Dr. William Colglazier, Chairman of the 10-Member Group, (2016-17) summarized the focus areas in the preceding STI Forum including the following:**
 - 1. STI capacity building in every country is essential, including building human capacity and strengthening the science advisory ecosystem and the STI policy framework
 - 2. Action plans and roadmaps -- integrating SDGs and the role of STI into national planning efforts -- are essential. These roadmaps incorporate processes that require feedback loops, evaluate what is working and not working, and produce continual revisions that create a real learning environment.
 - 3. Deep dives are needed for each SDG. Action plans and roadmaps are needed for each SDG and even for a number of individual targets.
 - **STI Forum 2018 – Voices loud on frontier technologies** e.g. IoT and the challenge of the digital divide and regulation, AI and the ascendancy of robotics, biotechnology impacts on food and nutrition and health.
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The Role of UNCTAD and Collaborators

UNCTAD's role in harnessing frontier technologies

- The conventional programmes e.g. STIP reviews
- Support the formulation of STI Roadmaps with emphasis on the frontier technologies
- Actually, the robustness of the STI Policy **Cycle** (formulation, implementation, M&E, etc.) is the **game changer**
- Building capacity for the STI policy cycle functions
- Strengthening national **innovation** systems



Conclusion

- ▶ Harnessing STI for the achievement of the SDGs requires concerted action with commitment of all key stakeholders – governments, development partners, civil society and private sector.
- ▶ In the case of **frontier technologies**, there is particular need for focus.
- ▶ STI **Roadmaps** and with particular focus on frontier technologies useful but only as effectively implemented.
- ▶ The principle of leaving no one behind should drive our commitment to the development and application of frontier technologies.



Finally...

- **How** we take advantage of the opportunities of the frontier technologies will enable us attain sustainable development.
- Multi-stakeholder **concerted** action is critical (as in the African Proverb)



▶ **Thanks** for your attention.

