Frontier Technologies: Innovation with Equity?

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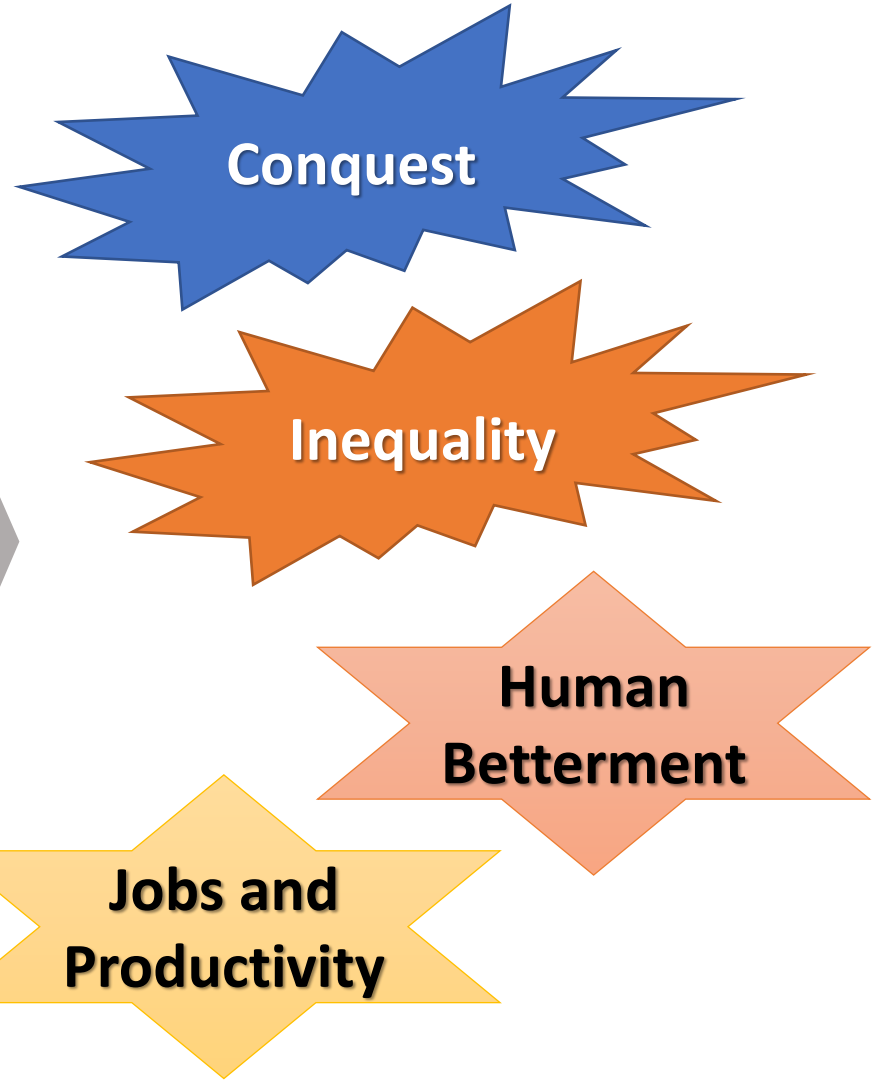
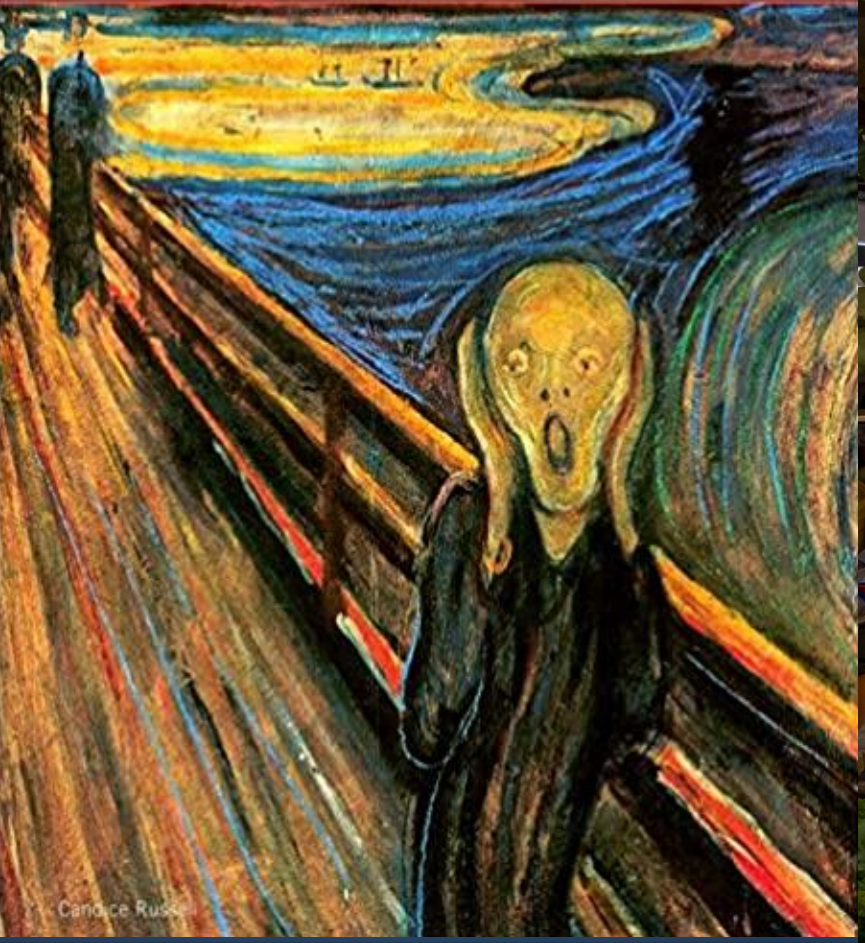
1. Technology is neither good nor bad

Fire and stone tools

AI
Robotics
3D printing
IoT
New Materials
Genomics
ICT
Nanotech
Big Data
Solar PV





Fear vs. Opportunity

Option 1

- **Fall further behind**
- **Technological change won't slow down just because you have concerns about adverse impacts!!**

[T]he rest of the world is moving fast. They're moving ahead. They're not waiting for the United States of America. Government, labor, industry — working together — have to step up.

https://www.whitehouse.gov/briefing-room/speeches-remarks/2021/05/18/remarks-by-president-biden-on-a-future-made-in-america/

Remarks by President Biden on a Future Made in America
MAY 18, 2021
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SPEECHES AND REMARKS
Ford Rouge Electric Vehicle Center
Dearborn, Michigan

Option 2: The only pragmatic option!!

- **Be cognizant of risks**
- **Embrace change**
- **Learn to harness and scale frontier and non-frontier technologies to solve problems and promote inclusive, sustainable development**

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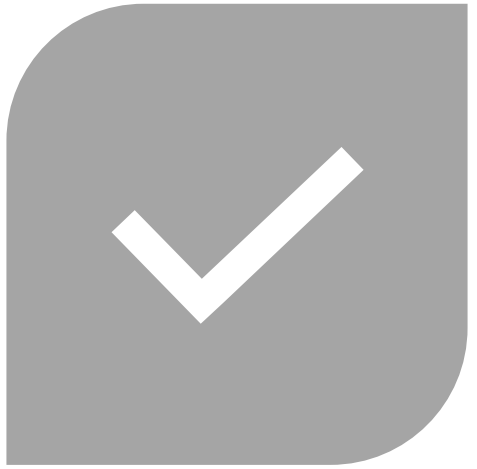


MEGA CHALLENGES **=** **MEGA OPPORTUNITIES**

SMALL SCALE, DISTRIBUTED SOLUTIONS

Scaling Frontier Technology: An Urbanization Perspective

Africa will have 24 million more people living in cities <u>each year</u> between 2020 and 2045


Energy
Water
Transport
Sanitation
Challenges
Jobs
Health
Food
Housing

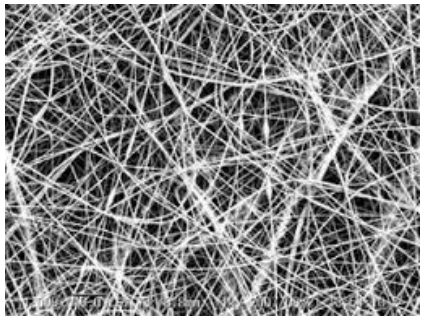
3. Frontier technology is an essential part of the solution; but it is not the entire solution

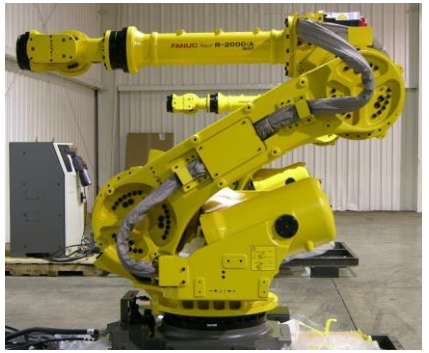
A technology is not a product

A product is not a business

A business is not necessarily an environmentally, operationally, and financially sustainable solution to a problem!!

What is the Primary Development Challenge? Frontier technologies or deploying sustainable development solutions at scale?





Despite the increased affordability and ubiquity of new technologies and "despite considerable efforts these past four years, we are not on track to achieve the Sustainable Development Goals by 2030."

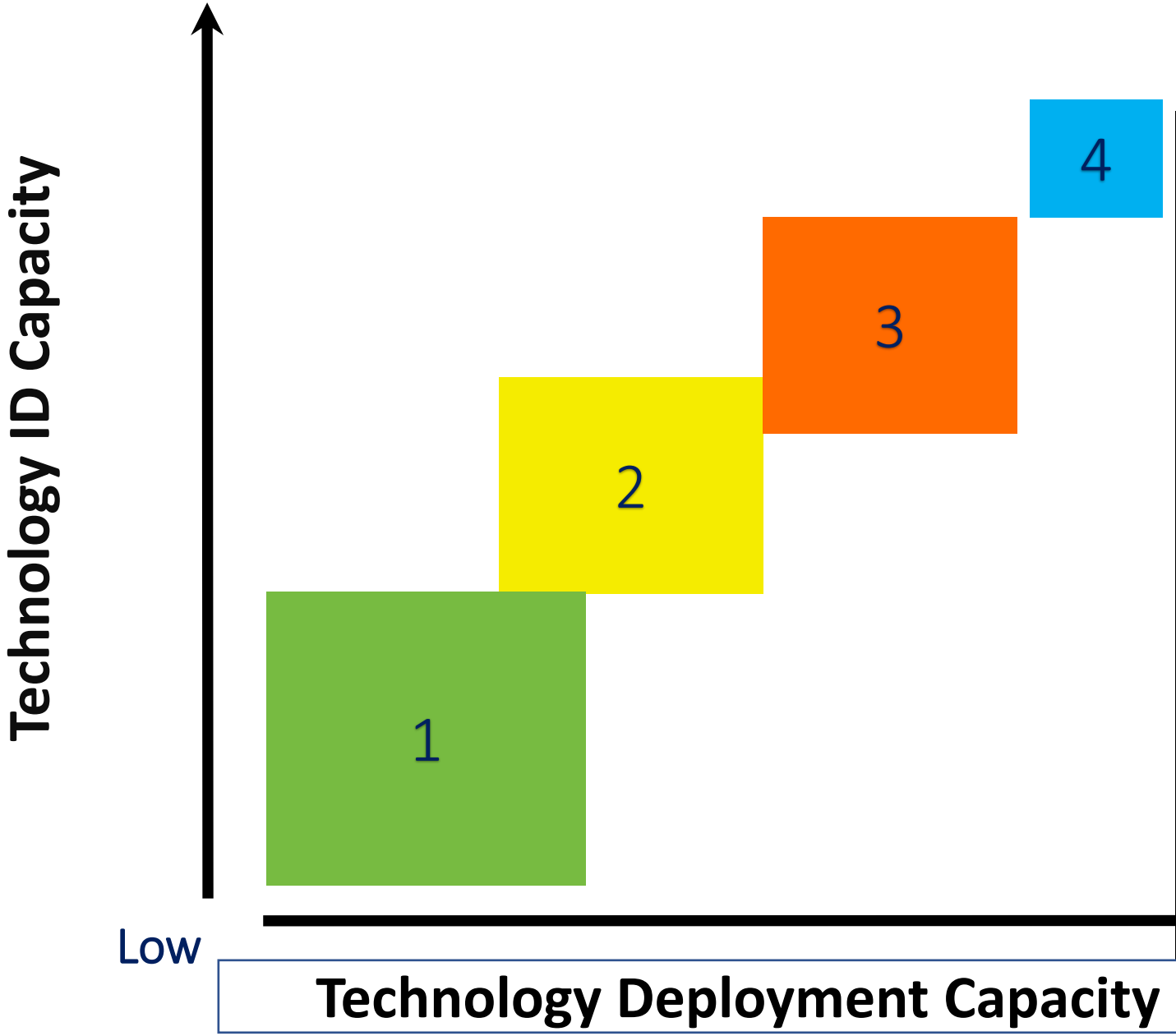
Antonio Gutteres, UN Secretary General

"Technologies to achieve Africa's green revolution exist. For the most part, they are all just sitting on the shelves."

Akinwume Adesina, President of the African Development Bank

4. Technology Upgrading, Catching Up, Latecomer Advantage, Leapfrogging, and Supplier Development:

"Anyone can buy a sophisticated machine. Not everyone can use it to produce a globally competitive product."



Company Innovation Categories

Do local firms have the capacity to identify weaknesses, deploy solutions, and move up the technology ladder?

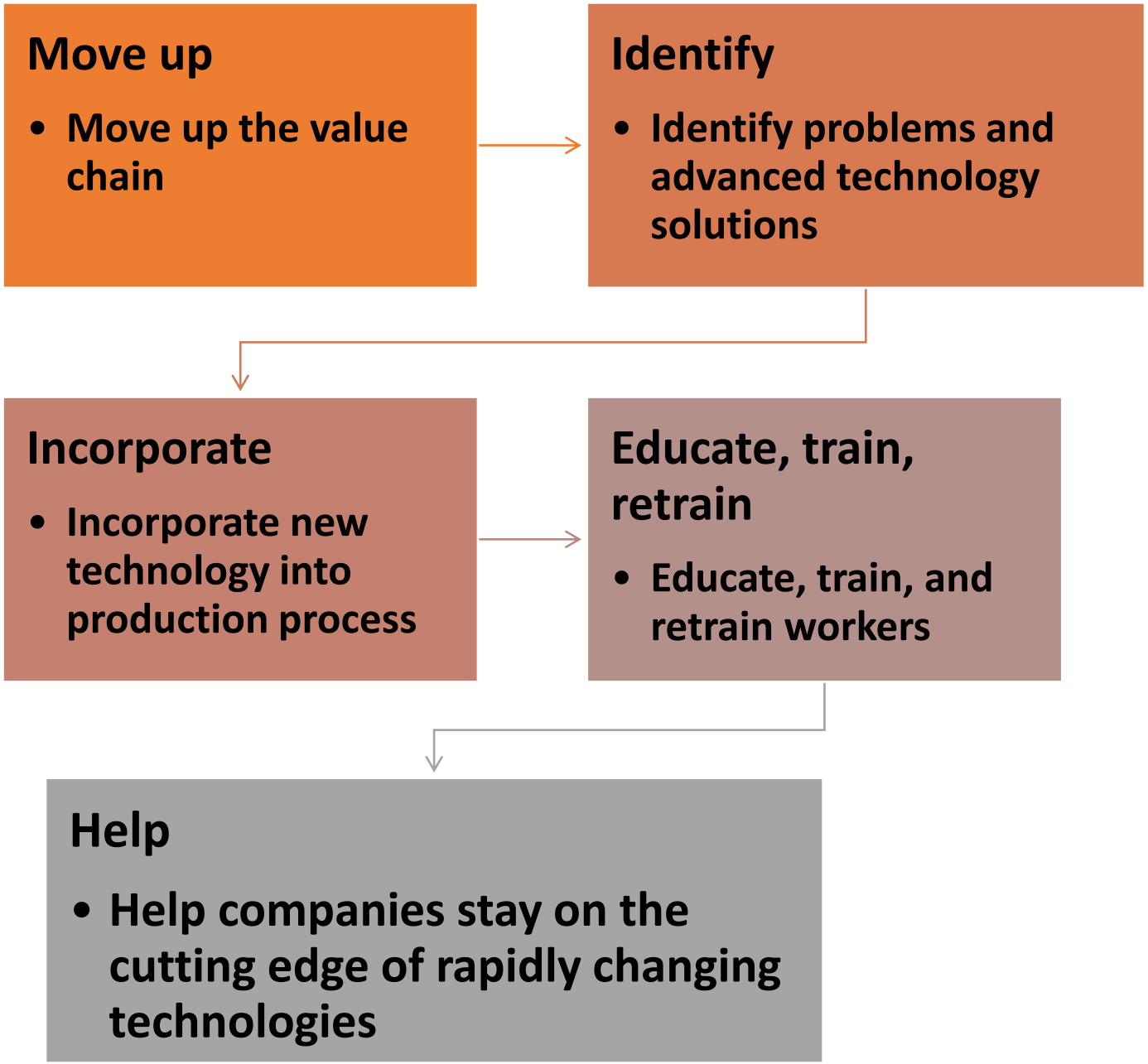
Can non-smart second or third tier suppliers coexist in the same value chain with smart factories?

- Technology scouting
- Technology foresight
- Technology assessment
- Needs assessment and action plan – available, useful, useable
- Deployment

5. Capacity Building: From assessment to deployment at scale?

6. Technology Upgrading and Catching Up:

Supplier development programs can help companies



7. Needs Assessments: A Critical Piece of the Puzzle

- **Not merely an inventory of sector specific frontier technologies**
- **Participatory; not top down**
- **Multidimensional solution: not technology alone, not one problem in isolation, and not one technology by itself**
- **Define a problem; then identify a package of technologies and other interventions that will solve the problem**

Potable drinking water

Smarter suppliers for smart factories

Enhance smallholder farmer livelihoods

1. **Identify the widest possible range of local stakeholders**
2. **Define a specific project or problem via workshops and continuous dialogue with the community, local NGOs, government and private sector officials, potential financiers, and other relevant stakeholders**
3. **Establish a Technology Working Group (TWG) from local and national universities, research institutes, and business community.**
4. **Conduct a Needs Assessment**
5. **Develop a comprehensive roadmap to meet each objective – package of technologies, business plan, etc.**
6. **Calls for Proposals via Grand Challenges**

Final Random Thoughts

- **Public procurement**
- **Curated matchmaking, etc.**
- **Design competitions**
- **Deployment start up weekends**
- **Entrepreneurship support**
- **Deployment grants**
- **Know-how transfer grants**
- **Designing, assessing, and deploying a technology are not identical processes**

THANK YOU!!

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