



# Transformative Leapfrogging for Africa

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*Source: Leapfrogging picture, The Economist*

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# 1. The global context

## 1.1 Moments of social transformation

- ▶ Humanity has gone through major **socio-economic revolutions** that resulted in global transformative changes
- ▶ The **agricultural** and **industrial** revolutions are the two transformative processes of a global scale in human history
- ▶ **Environmental scarcity and constraints** have been one of the key drivers for the agricultural and industrial revolutions
- ▶ These transformations have **redefined the relationships** within society & between society and nature in a fundamental way
- ▶ Humanity is currently faced with yet another **major sets of environmental and socio-economic constraints** that require social transformation of a global proportion



## 1.2 The vital signs

- i. **Nine out of ten** of the hottest years in recorded history are registered during the years since 2000 (IPCC, 2015).
- ii. Annual **extraction of natural resources** grew from 7 billion tons in 1900 to 60 billion tons in 2010 and this is projected to reach 140 billion tons by 2050 under BAU (UNEP-IRP, 2014).
- iii. The global Living Planet Index (LPI) shows an overall **decline of species by 52%** between 1970 and 2010 (WWF, 2014).
- iv. The number of natural disasters such as droughts, floods, hurricanes and cyclones reported within the last four decades grew by almost five fold, **from 743 to 3,496** reported disasters (WMO, 2014).
- v. Countries across the world are finding it difficult to create jobs for their population and incidence of vulnerable employment accounts for **1.5 billion people** or over 46 percent of the total employment (ILO 2016)



## 1.3. Global innovation trajectories

- **Digitalization of the global economy** (Industry 4.0)
  - The exponential development in application of ICT and Artificial Intelligence creates huge opportunities and threats that would require new forms of innovative application
- **Global energy transition**
  - The unprecedented progress made in renewable energy technologies provide new set of opportunities that have huge distributional impacts
- **Distributed manufacturing systems**
  - Recent development in modular manufacturing technologies coupled with sustainable value chains provides new opportunities for job creation and value addition at local level



## 2. Key features of leapfrogging

- ▶ Leapfrogging represents the process of jumping from one physical state to a **significantly different state**
- ▶ Leapfrogging in society could take different forms with **technological leapfrogging** being the dominant determinant
- ▶ Most of the leapfrogging observed in history are **incidental leapfrogging (IL)** largely driven by external factors
- ▶ Incidental leapfrogging is characterized by technologies that are **transplanted from outside** with limited roots in the specific socio-economic context
- ▶ Incidental leapfrogging provides limited benefit at best while having high **potential negative impacts**



## 2.1 Possible negative impacts of incidental leapfrogging

- ▶ The following are some of the major negative impacts of incidental leapfrogging that is externally driven by technological progress
  - ▶ It **undermines** the potential for local capacity building due to its transplanted nature of the process
  - ▶ It **disempowers** people by making them more dependent on the outputs and services that are of limited context-relevance
  - ▶ It is **more exclusionary** thereby contributing to social tensions as the benefits of the technology do not reach out to the large majority of the population
  - ▶ It **propagates** the currently dominant unsustainable production and consumption patterns across countries



## 2.2. Transformative leapfrogging (TL)

- ▶ Transformative leapfrogging is rooted in a **context-specific demand-driven** process that builds upon local knowledge systems
- ▶ Focuses more on developing and implementing **socio-technological regimes** that have strong dimension of social innovations
- ▶ Builds upon incremental changes but mainly aims for **transformational outcomes** that have society-wide impacts
- ▶ **Enhances empowerment** of people and society as one of its key outcomes as a result of its inclusive process
- ▶ Propagates more sustainable consumption and production as it focuses on **systemic efficiency**

## 2.3 Comparative analysis between TL & IL

	Key features	Incidental leapfrogging (IL)	Transformative leapfrogging (TL)
1.	Dominant mechanism	Diffusion of new technologies	Development of new Socio-technological regimes
2.	Driving factors	Mostly supply driven by external push factors	Contextually defined and demand driven by internal pull factors
3.	Level of impact	At best segmented and incremental in its impact	Leads to society-wide and transformative impacts
4.	Innovation	Exclusively focused on technological innovation	Has a strong dimension of social innovation
5.	Empowering potential	Higher potential of disempowering people	Provides more empowerment to society

*Source: Mebratu D., Africa's Transformative Leapfrogging Opportunity, In Retooling development pathways for sustainable transition in Africa, Edited by D. Mebratu & M. Swilling, STIAS Book Series, 2019*



## 3. Transformative leapfrogging for Africa

### 3.1 State and trends in Africa

- ▶ **Two in every three** people (around 621 million people in total) have no access to electricity (APP 2015) and **more than 25%** of the population still lives under extreme poverty (AfDB 2016).
- ▶ The ecological footprint of the region **increased by 240%** between 1961 to 2008 while the overall carbon footprint of the region **increased by eight fold** during the same period (AfDB & WWF, 2013)
- ▶ A region with the fastest economic growth over the last decade and touted as **the next frontier** for global economic growth and faster industrialization
- ▶ Current population of 1 billion is projected to go **above 2 billion** by 2050 with the largest percentage of youth
- ▶ Triple dimension of structural, demographic and urban transitions requiring **retooling of development pathways** in Africa

## 3.2 Factors favouring transformative leapfrogging in Africa

- **Low lock-in inertia:** due to low level of development of physical and institutional infrastructure that is unsustainable
- **Technology beneficiary:** availability of matured, efficient and sustainable technologies (hard and soft)
- **Resilient natural system:** as fragile as it is, Africa's ecological systems have proven to have higher resilience potential compared to others
- **Resource endowment:** higher per capita resource endowment, including renewable energy resource, that is yet to be developed
- **Better affinity to sustainability:** due to a culture of living in harmony with nature & collaborative spirit of UBUNTU: *"I am because of who you are"*

## 3.3 Seeds of transformative leapfrogging

### ➤ The case of **M-PESA**

- M-Pesa has transformatively utilized the spread of mobile technology for financial transaction
- M-Pesa platform has been a massive enabler of informal commerce and remittances that served as a lifeline for the unbanked millions

### ➤ The case of **AFRILABS**

- AfriLabs is an umbrella organization serving 40 tech hubs that have proliferated in 20 different countries
- Various IT applications are being developed by more than 200 tech hubs in the region and build an African tech ecosystem

### ➤ The case of **Sole-Rebel**

- Started with locally available and recyclable materials to produce fashionable shoes to be sold on online market
- Currently a globally recognized brand with outlets in major developed countries

- **Renewable energy Kiosks:** various local community based decentralized energy service providers based on pay-as-you-go systems are sprouting across the region



## 3.4 Strategic considerations for Africa

- ▶ Commit to continuously **enhance the transformational impact** of regional and national policies, strategies, development plans and budgeting processes
- ▶ Avoid **unsustainable infrastructure lock-in** by giving priority for public investment on transformative energy, transport, industry and urban infrastructure
- ▶ Focus on maximum utilization of the **transformative and distributional impacts** of the deployment of ICT and renewable energy technologies
- ▶ Promote the development of **Distributed Renewable Economies (DRE)** driven by decentralized renewable energy systems with a specific focus on value addition and job creation at the local level
- ▶ Invest on developing the required **knowledge and skill sets** for transformative leapfrogging by reorienting the education system and investing in **transformative institutional capacity** building



# Concluding points

- ▶ Humanity stand at yet another **moment of major social transformation** that is proportional to the agricultural and industrial revolution
- ▶ African countries have a **unique leapfrogging opportunity** to an inclusive, low-carbon and resource efficient society through a transformative process
- ▶ Africa's possibility for transformative leapfrogging is dependent on its ability to **build transformative infrastructure** that is responsive to the specific context of resource and needs of its people
- ▶ Development partners and international organizations need to support Africa on this effort as it makes **major contribution to global sustainability** and provides the best path for achieving SDGs and the aspirations of Agenda 2063



“It always seems impossible until it is done”

Nelson Mandela

**THANK YOU**

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