

# Green and Digital: Managing the twin transition towards sustainable development

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The world is undergoing...



## Green Transformation



**UN CLIMATE  
CHANGE  
CONFERENCE  
UK 2021**

IN PARTNERSHIP WITH ITALY

- Countries have agreed to collectively respond to the challenges of climate change
- 2020-2030 as a decade for climate action and support
- Goal: reduce emissions and capping the global average temperature rise to 1.5 degrees
- Transition to 'green' economies--shift to smarter production and consumption systems



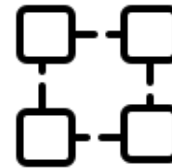
## Digitalization



Digitalization of services and payment systems



Implementation of policies fostering the emergence of a digital economy (i.e. Smart Manufacturing, Fintech, Telemedicine, Smart Agriculture).



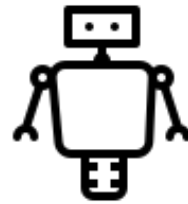
Adoption of advanced technologies (AI and Robotics, big data, IoT, Blockchain Technology)

# What is Dual Transformation?

The dual transformation or twin transition (Gigler 2020; UNESCO 2022) refers to the mutually interdependent transformations of digitalization and adoption of green processes occurring simultaneously across countries. The digital transformation of the economy and society and the shift to a sustainable model of production should be viewed as closely intertwined and simultaneous.



*Use of digital innovations for businesses and economies*



*Artificial Intelligence and Machine Learning*



*Greening of digital technologies*

# SDGs and Dual Transformation



Digital technologies provide access to social services and sustainable new job opportunities



Optimization of food production and distribution; and reduction of food waste



Development of new healthcare solutions; improve air and water quality, reduce exposure to harmful chemicals



Support distance learning and provide access to educational resources; green skills incorporated in education curriculum



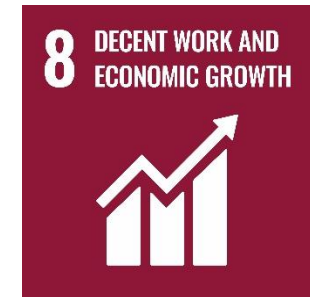
Digital technologies can be used to promote gender equality and empower women/girls



Green transition can promote sustainable use of water resources and reduction of water pollution



Development and deployment of renewable energy sources; optimization of energy consumption through technology



Digital technologies support the development of new green industries and business models

# SDGs and Dual Transformation



Green infrastructure (i.e. green transportation systems); Sustainable infrastructure



Optimization of resource use; reduction of waste and emissions; promotion of sustainable production practices



Promotion of sustainable land use practices; Use of digital technologies to support monitoring and management of natural resources



Digital technologies provide access to services (e.g. education, healthcare, financial services)



Reduction of greenhouse gas emissions and promotion of renewable energy sources



Digital technologies promote transparency, accountability and participative governance



Enable smart and sustainable urbanization; promotion of sustainable transportation and infrastructure



Use of digital technologies to monitor and manage marine resources; support sustainable fishing practices and reduce marine pollution



Strengthening partnerships to support digital transformation and green transition

# Philippine Strategies for Dual Transformation



## Philippine Development Plan 2023-2028

- The 2023-2028 Philippine Development Plan recognizes the environmental forces and digital trends as factors shaping the future of the Philippines. To this end, the underlying theme of “transformation” has been adopted by the PDP.



Promotion of modern technologies for farming



Businesses to be co-located with other industries to promote Industry 4.0 technologies



Develop green technologies and establish facilities for waste recovery and recycling



Adoption of green features in housing and community design



Creation of a database of green jobs



Implementation of Green Jobs Human Resource Development Plan



Integration and mainstreaming of green competencies in TVET and education programs

Aside from the PDP, other government documents have acknowledged the role of technology in the green transition. [Pagtanaw 2050](#) (“looking ahead”) listed the following specific technologies for the Environment and Climate Change operational area

# Effect of Dual Transformation: Local Industries and Work

## ***On Local Industries?***

Accelerate process of industrialization so industries are now undergoing two transformations in parallel:



Digitalization entails businesses using digital technology for all aspects of business process



Green transition entails designing, building, and scaling products and operations so that these become more efficient, more sustainable, and more resilient



Intersection of digitalization and green transition is resulting in opportunities for servicification as well

## ***On Work?***

New technologies and innovations in green energy and sustainable practices require not only the development of new skills



# Human Capital Development in the age of green transition and digital transformation (1)



In developing countries like the Philippines, the dual transition is also occurring at different phases.

Digitalization has more traction in the country since it dovetails with the Fourth Industrial Revolution and the significant advancements in information and communications technology.

Despite digitalization being heavily embedded in the blueprints, roadmaps, and legislative agenda, **much remains to be hurdled in infrastructures**, including poor digital infrastructures, expensive ICT, and few secured internet servers, and in human resources, **including the lack of skills and low digital adaptability**.

Meanwhile, the concept of a green economy and green jobs is relatively nascent.



**Digitalization and a green economy's demand for skills and talent will outpace supply.**

As jobs are created due to the transition, available talents are not enough to take on new roles.

- Lack of skilled IT personnel who will manage and maintain smart systems
- Data Scientists and Researchers (on Big Data) are both in-demand and hard-to-fill jobs



## Human Capital Development in the age of green transition and digital transformation (2)

### Digitalization and a green transition may deepen and widen inequalities along gender and spatial divides.



Female work has a high risk of being automated



Jobs on digital platforms follow gendered patterns observed in non-platform work arrangements (e.g. Women specializing in clerical and support services; Men into STEM and IT jobs)



Clerical work has the fastest declining roles in the workplace



Gendered disparities are also observed in the country's STEM enrollments and Engineering graduates

### Digitalization and a green economy do not necessarily produce decent jobs.



Workers on labor platforms are considered independent contractors. Due to the absence of employment relations, they do not receive benefits or entitlements.

Some scholars observed the similarity of such arrangements to the payment per task and piecemeal work during the early Industrial Revolution (Berg et al. 2018; Churchill and Craig 2019).

# Effect of Dual Transformation: Trade and Investment

## *On International Trade and Investment?*

1

NEW PATTERNS OF CONSUMER BEHAVIOR, DEMAND PREFERENCES, AND CHANGE CONSUMPTION PATTERNS

2

NEW DESIGNS, STANDARDS, AND SPECIFICATIONS ENFORCED IN THE VALUE CHAIN

3

CHANGES IN THE GOVERNANCE REGIME OF THE GVCs WILL CREATE GREEN ENTRY BARRIERS AND GREEN WINDOWS OF OPPORTUNITIES

5

FIRMS WOULD UNDERGO VARIOUS INNOVATIONS TO REDUCE ECOLOGICAL FOOTPRINT

## *Digital Trade and Servicification*

Digital trade and servicification have reshaped international trade and created **opportunities for greater trade participation and firm growth.**

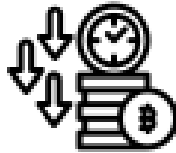
Digital platforms and servicification, which have been important factors in facilitating global value chains (GVCs), would also be affected by the dual transformation. One direct impact would be the development of new tasks related to green transition facilitated by digital technology.

# The role of Science & Technology in Dual Transformation

## Opportunities?



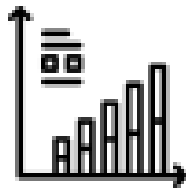
Governments need to spend more on Research and Development strategically



Policies and resources need to point to a strategic goal of sustainable development



Long-term review and alignment of economic, digital, environmental, industrial and agricultural policies



Countries need to raise commitment to Science & Technology and innovation

Recent UNESCO figures show that advanced economies still accounts for majority of research expenditure, researchers, publications and patents. Although research expenditure rose in most regions between 2014 and 2018, 80% of countries still invest less than 1% of GDP in R&D. In some cases, the researcher population has risen faster than related expenditure, leaving less funding available to each researcher (UNESCO ; UNCTAD 2022)

# The role of Government in the Dual Transformation



Source: Microsoft (2023)

## Sub-theme 1: Skills Development in the age of green transition and digital transformation

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The world of work is always at the front and center of major developments, shifting and evolving to adapt to global trends. Meanwhile, the shift towards low-carbon, environmentally friendly economic growth resulted in identifying green sectors, and apprehensions related to skills and employment have been noted. Thus, a discourse on promoting and protecting the country's human capital in the age of dual transition is crucial.

1. How will the age of digital technology and greening reshape the landscape of education and training, social protection, and work and employment in developing countries like the Philippines?
2. What challenges does the dual transition pose to the country's human capital development?
3. What are the global/international best practices and models for promoting and protecting human capital can the country emulate?

## Sub-theme 2: Reducing the disruptions to trade and industry



Despite the Philippines being poised to take advantage of digitalization, there is room to improve its readiness to face the green transition.

1. What are the implications of dual transition on industrial and trade policy?
2. What policies could be pursued by developing countries to accelerate digital transformation and green transition of MSMEs, and ensure the participation of marginalized sectors (e.g., women) in the digital economy?
3. How can digital technologies be exploited to enhance firm and industrial performance and improve their resilience to future shocks?
4. How will servification evolve in in the wake of the dual transformation?

## Sub-theme 3: Opportunities and challenges of Artificial intelligence in a world of dual transformation

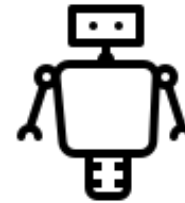


Artificial intelligence refers to the use of big data in machines programmed to simulate human intelligence. AI may have transformational impact by helping countries **unlock the power of innovation** (Sonnebone & Graf 2020).

### Negative Consequences of AI?



Risk widening of the gap between rich and poor countries by shifting more investment to advanced economies where automation is already established



May render some jobs obsolete (e.g. telemarketers, teachers in languages, history, and literature, etc.)

# Sub-theme 3: Opportunities and challenges of Artificial intelligence in a world of dual transformation

How can the country prepare for the advent of AI?



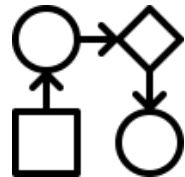
Formulating a clear set of ideas about what they want to accomplish through AI



Begin investing in data and analytics



Prepare an IT architecture



Enable the integration of AI with the workflows of government agencies

1. How can AI be applied to the domestic economy to enhance the green transition and digitalization of various stakeholders?
2. What would be the ethical and social implications of AI and automation and how can these be addressed?
3. What is the readiness of government to utilize AI in its activities related to the dual transformation?





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# Thank you

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