Green and Digital: Managing the twin transition towards sustainable development

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The world is undergoing...

**Green Transformation**

- 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.
SDGs and Dual Transformation

1. **No Poverty**
   - Digital technologies provide access to social services and sustainable new job opportunities.

2. **Zero Hunger**
   - Optimization of food production and distribution; and reduction of food waste.

3. **Good Health and Well-being**
   - Development of new healthcare solutions; improve air and water quality, reduce exposure to harmful chemicals.

4. **Quality Education**
   - Support distance learning and provide access to educational resources; green skills incorporated in education curriculum.

5. **Gender Equality**
   - Digital technologies can be used to promote gender equality and empower women/girls.

6. **Clean Water and Sanitation**
   - Green transition can promote sustainable use of water resources and reduction of water pollution.

7. **Affordable and Clean Energy**
   - Development and deployment of renewable energy sources; optimization of energy consumption through technology.

8. **Decent Work and Economic Growth**
   - Digital technologies support the development of new green industries and business models.
SDGs and Dual Transformation

**9 Industry, Innovation and Infrastructure**

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

**10 Reduced Inequalities**

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

**11 Sustainable Cities and Communities**

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

**12 Responsible Consumption and Production**

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

**13 Climate Action**

Reduction of greenhouse gas emissions and promotion of renewable energy sources

**14 Life Below Water**

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

**15 Life on Land**

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

**16 Peace, Justice and Strong Institutions**

Digital technologies promote transparency, accountability and participative governance

**17 Partnerships for the Goals**

Strengthening partnerships to support digital transformation and green transition
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
- Development of 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**: businesses using digital technology for all aspects of business processes.
- **Green transition**: designing, building, and scaling products and operations to make them more efficient, more sustainable, and more resilient.
- **Intersection of digitalization and green transition**: 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:

- Need to reform education and training systems to ensure all people are equipped with the knowledge and competencies to support these societal transformations.
- Will require new skill sets and competencies which are currently in short supply in developing countries.
- Green transition will result in the loss of jobs in the "non-green" activities.
- Need to ensure opportunities of green transition are equally available for women, youth, etc.
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
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).
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

**FRAGMENTED**
- Global goals established but few actionable policies
- Fragmented organizational approaches prevent pooling of information
- Sustainability strategies are reactive to address regulatory failures

**LIMITED**
- Climate action plans based on limited data and aimed at improving efficiencies
- Limited synchronization across government agencies and jurisdictions
- Environmental expertise and skills unevenly distributed
- Compliance-driven policies

**REALIZED**
- Joined-up approach across departments and jurisdictions
- Digital technologies seen as essential to the sustainability agenda
- Harmonization of local targets with global goals around clear measures and a standardized methodology
- Governments start to enact plans to reduce their own environmental footprint

**TRANSFORMED**
- Sustainability practices become part of the public sector culture which result in inclusive and climate-first policies and strategies
- Real-time data inform planning and communication
- Green procurement practices embed circular principles into government operations

Source: Microsoft (2023)
Sub-theme 1: Skills Development in the age of green transition and digital transformation

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, environment-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 the wake of the 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?

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?

- 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
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