Green and Digital: Managing the twin transition towards sustainable development

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Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

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
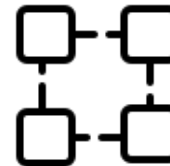- Transition to 'green' economies--shift to smarter production and consumption systems

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.

Use of digital innovations for businesses and economies
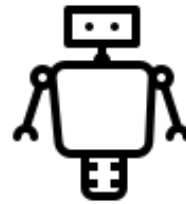
Artificial Intelligence and Machine Learning

Greening of digital technologies

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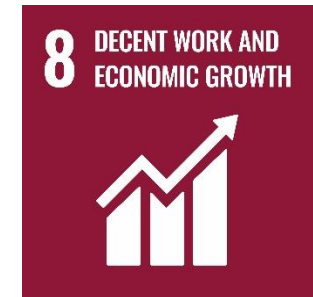
Digital technologies support the development of new green industries and business models

SDGs and Dual Transformation

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

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

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

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

15 LIFE ON LAND

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

10 REDUCED INEQUALITIES

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

13 CLIMATE ACTION

Reduction of greenhouse gas emissions and promotion of renewable energy sources

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Digital technologies promote transparency, accountability and participative governance

11 SUSTAINABLE CITIES AND COMMUNITIES

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

14 LIFE BELOW WATER

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

17 PARTNERSHIPS FOR THE GOALS

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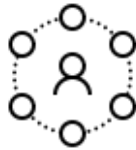
Businesses to be co-located with other industries to promote Industry 4.0 technologies

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

Need to reform education and training systems to ensure all people are equipped with the knowledge and competencies to support these societal transformations

Need to ensure opportunities of green transition are equally available for women youth, etc.

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

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

4 — 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**.

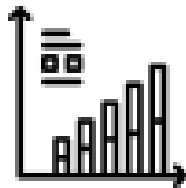# The role of Science & Technology in Dual Transformation

Opportunities?

Governments need to spend more on Research and Development strategically
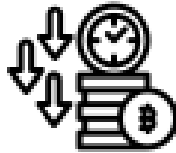
Policies and resources need to point to a strategic goal of sustainable development

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

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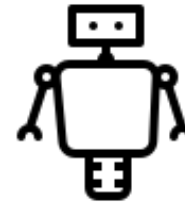
May render some jobs obsolete (e.g. telemarketers, teachers in languages, history, and literature, etc.)

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
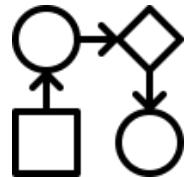
Enable the integration of AI with the workflows of government agencies

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?

The role of Government in the Dual Transformation

FRAGMENTED → **LIMITED** → **REALIZED** → **TRANSFORMED**

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)

Thank you

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