

TWO FOR ONE IN TVET: IS THE PHILIPPINES READY FOR DUAL TRANSITION?

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“Is Philippine TVET ready for Dual Transition? If so, how can it be done?”

Introduction

It is an undeniable fact that the world is undergoing a massive transformation in terms of technology and the environment. Climate change has strengthened the calls for pollution and emission reduction, while the Fourth Industrial Revolution (4IR) has demanded adaptability from the global economy. The 2021 Glasgow Climate Pact has obliged countries to dedicate the next 10 years to reduce the impact they have to the climate at large. Part of this effort is the adoption of more efficient and more sustainable technologies, ergo digitalization that is environmentally-friendly. The pursuit of these two goals leads to the conclusion that the aforementioned transformation by going Digital and going Green could both be achieved at once. Hence, the term **Dual Transition**.

What is Dual Transition?

According to the United Nations Educational, Scientific and Cultural Organization's International Centre for Technical and Vocational Education and Training (UNESCO UNEVOC), “Dual Transition” is the phenomenon where Digital Transition and Green Transition happen at the same time. As a refresher, Digital Transition or Digital Transformation describes the growing prevalence of digital technologies in daily life, revolutionizing the way people live and work. Green Transition, meanwhile, talks about the current push to use technologies to create environmentally sustainable environments and help reduce the negative impacts of climate change and environmental degradation (PIDS 2023). Perhaps “phenomenon” may be a misnomer, however, for TVET experts believe that Dual Transition may actually be becoming the norm for how the world will embrace both Digital and Green Transition - a two for one deal.

In a paper it published in 2023, the Organisation for Economic Co-operation and Development (OECD) said that the push for digitalization across various industries has also incentivized companies to minimize its usage of resources and pave the way for the adoption of green technologies. Oftentimes, the same regions in the world that call for more “digital” jobs are also the same regions where “green” jobs are concentrated (OECD 2023), in contrast to most other areas where the inverse is true. UNESCO UNEVOC argues that with proper management, both Digital and Green Transition can be used to reinforce each other, further incentivizing industries to adopt Dual

Digital and Green Transition can be used to reinforce each other, further incentivizing industries to adopt Dual Transition. And according to the International Labour Organization (ILO), about 100 countries have already pledged to transition into a green and digital economy.

The question is, how can this be done?

What are the Requirements of Dual Transition?

In an article published in June 2022, the European Commission briefly went over the requirements before Dual Transition could take place within a country. For starters, there needs to be wide scale societal acceptance for Dual Transition in the first place, because this phenomenon will cause disruptions in day-to-day life. An example of this is dramatic changes to building regulations, requiring tenants or homeowners to install solar panels on their roofs, which is already practiced in many places in Europe. Unfortunately, not everyone can afford solar panels, which is why governments are obliged to offer taxpayer subsidies as compensation. Without these subsidies, people will be turned away from accepting Dual Transition into their lives.

The Philippines has already seen something similar to this case, specifically related to the transportation sector in the form of the PUV Modernization Program, which was launched on June 19, 2017. The gist of this Program is the modernization of the country's public utility vehicles (PUV) to make them eco-friendlier through the introduction of hybrid engines and the rationalization of transportation routes. While beneficial to society, the Program was met with a lot of pushback from PUV operators and drivers, as the cost of adopting hybrid engines is beyond their means. They also protested against the inevitable job cuts that would happen once the Program was fully implemented, which the Department of Transportation has argued will be offset by the generation of new jobs (i.e. new administrative staff, dispatchers, and mechanics). These issues are recognized by both parties, which is why the government has made it a point to offer incentives and programs to those who will be affected by the Program, such as low interest loans, subsidies, and technical training.

On the other hand, the quality of the technological infrastructure must also be considered before Dual Transition can take place within a society. If Dual Transition will lead to higher internet usage among the public, then it only follows high-quality broadband internet (or the equivalent) must be available to all. And it doesn't end there: ease of internet access will inevitably require a robust and adaptive data security system to protect internet users from malicious entities. Data security, in turn, will require an effective monitoring and auditing system in place, and so on and so forth. It is important to note that technological infrastructure is not necessarily static, as the requirements of Dual Transition may change and grow as usage increases (European Commission, 2022).

Which brings us to the last requirement of Dual Transition: a regulatory framework that would guide how Dual Transition will be implemented on both the economic and political levels. As an example, since Green Transformation demands changes to make technologies more environmentally friendly and sustainable, there needs to be a regulatory framework to identify these new environmental requirements and regulate its adoption by stakeholders, which include proper legal justification on why these changes need to happen. In terms of economics, the European Commission states that a regulatory framework is needed to monitor the speed of technological change relative to the economic benefits that this change may bring. This is needed in order to prevent the nation from falling into the so-called "innovation valley of death", where research and change is undertaken to adopt a new, economically viable technology, but has failed to produce positive results in both the short and long term (European Commission, 2022). A regulatory framework is also necessary to

ensure that all government policies related to Dual Transition remain consistent and complementary, rather than chaotic or redundant.

Current Practices in Dual Transition

In Europe (Brief Overview)

Dual Transition (also colloquially referred to as "twinning") is already being implemented in Europe to various degrees, though admittedly the extent of which still leaves much to be desired. This was tackled by the release of the European Commission's Strategic Foresight Report in June 2022, which gave an update to the status of Dual Transition's adoption throughout the continent. Among the identified areas of contention was the subject of greenhouse gas emissions throughout Europe, which remain an obstacle for the European Union to achieve Dual Transition by 2030. Primary sources of greenhouse gas emissions are said to be agriculture, energy, industry and transport sectors, with the industry sector being singled out as responsible for about 20% of all emissions in the world. The reduction of emissions can only be achieved through the adoption of new technologies, the Report said, which is why the European Union (EU) is advised to focus on its most energy-intensive industries for emission reduction, namely steel, cement, chemicals, and pulp and paper.

Unfortunately, adopting new technologies may also lead to an increase in electronic waste. To put it into perspective, if more and more mobile phone users switch from 5G to 6G, this transition process will lead them to discard their previous devices, thus creating waste. The Report said that only 17.4% of the EU's 75 million tons of electronic waste is being recycled - an amount that increases by 2.5 million tons every year. On top of electronic waste, energy consumption also leads to waste if the sources of energy are not renewable. Google, for instance, has reported that 45% of the electricity it used to power its data centers in 2020 were from conventional sources, and the company aims to achieve 100% clean energy use from by 2030.

Adoption of new technologies will also lead to the rise of water demands in certain industries, as liquid cooling is essential for keeping data centers functional. Microsoft, for example, reportedly used around 1.7 billion gallons of water in 2022, which is about 228% higher than the amount they used in 2017. This enormous consumption of a valuable natural resource is attributed to the cooling needs of Microsoft's artificial learning technologies, which require significant processing power (and therefore, system cooling) to function.

With these in mind, the European Joint Research Center advised that the following areas for action should be the basis for any government's Dual Transition strategies moving forward (in verbatim):

1. Strengthening resilience and open strategic autonomy in sectors critical for the twin transitions via for instance, the work of the EU Observatory of Critical Technologies.
2. Stepping up green and digital diplomacy, by leveraging the EU's regulatory and standardisation power, while promoting EU values and fostering partnerships.
3. Strategically managing supply of critical materials and commodities, by adopting a long-term systemic approach to avoid a new dependency trap.
4. Strengthening economic and social cohesion, by for instance, reinforcing social protection and the welfare state, with regional development strategies and investment also playing an important role.

5. Adapting education and training systems to match a rapidly transforming technological and socio-economic reality as well as supporting labour mobility across sectors.
6. Mobilising additional future-proof investment into new technologies and infrastructures – and particularly into R&I and synergies between human capital and tech –with cross-country projects key to pooling EU, national and private resources.
7. Developing monitoring frameworks for measuring wellbeing beyond GDP and assessing the enabling effects of digitalisation and its overall carbon, energy and environmental footprint.
8. Ensuring a future-proof regulatory framework for the Single Market, conducive to sustainable business models and consumer patterns, for instance, by constantly reducing administrative burdens, updating our state aid policy toolbox or by applying artificial intelligence to support policymaking and citizens' engagement.
9. Stepping up a global approach to standard-setting and benefitting from the EU's first mover advantage in competitive sustainability, centred around a 'reduce, repair, reuse and recycle' principle.
10. Promoting robust cybersecurity and secure data sharing framework to ensure, among other things, that critical entities can prevent, resist and recover from disruptions, and ultimately, to build trust in technologies linked to the twin transitions.

In terms of TVET, Europe is exploring the mechanisms that can be put in place to adopt Dual Transition within technical vocational training. The Bridging Innovation and Learning in TVET (BILT) Project in 2023 aims to do just that in the tourism and hospitality sectors, by bridging together best practices from both Europe and Asia to make a unified strategy for adapting these TVET fields to Dual Transition. The BILT Project, while still an ongoing effort, has so far surmised that whatever strategy they create, it should cover TVET in three levels:

1. Macro-level - Involving the entities mandated to govern TVET, such as official ministries or departments of government
2. Meso-level - Involving groups and organizations that can advocate for TVET, such as trade unions or labor groups
3. Micro-level - Involving those in charge of teaching and administering TVET, such as teachers

In Asia (Brief Overview)

Dual Transition is also an ongoing phenomenon in Asia. Green Transformation is particularly being eyed as the primary strategy for a robust, future-proof energy sector in the region, in addition to the perceived changes to various sectors along the way (Asia Development Bank 2021). The Association of Southeast Asian Nations (ASEAN) has partnered with the EU on November 18, 2021 to help enact significant changes that will help the region adapt to Dual Transition and become the world's first continent to be labelled "climate neutral" by 2050. Figure 1 details some of the programs intended to be financed by this ASEAN-EU partnership.

Figure 1. Proposed initiatives under the EU-ASEAN Green Deal (2021)



Source: EU-ASEAN Cooperation, 2021

Outside of this partnership, Asia has already adopted various technologies to aid in Dual Transition, such as smart manufacturing, artificial intelligence, telemedicine, and smart agriculture. The last of these four is particularly impactful, as smart agriculture has made farmers even more aware of the impact of climate change to their crops. The rise of farmer-to-farmer digital spaces has also taught farmers valuable skills in marketing and distribution. The need for such skills was highlighted by the COVID-19 Pandemic, which led ASEAN to conclude that a robust and resilient agricultural sector is vital for the region's self-sufficiency.

Digital commerce is also eyed as the major reason why countries in Asia are obliged to adapt to Dual Transition, as the region sees a 9% increase in digital transactions annually, which is higher than the 6.8% global average (PIDS 2023). Mobile financial services have seen an uptick as well, like in India where banking processes beyond simple customer-and-bank transactions have been integrated into mobile devices, or in the Philippines where the need to regulate digital payments have led to the creation of the National Retail Payment System.

What is the Impact of Dual Transition?

Regardless if it is in Europe or Asia, Dual Transition is seen as an auspicious change that will benefit society in the long run. All in all, the changes brought about by continuous adaptation to Green and Digital Transformation will lead to more job opportunities, such as AI and machine learning experts (for the digital side), as well as sustainability specialists and renewable energy engineers (for the Green Economy side). Combining these two facets of transition also introduces new applications for existing digital skills, such as data visualization skills for use in clean energy forecasting (PIDS 2023).

That said, Dual Transition may come too fast for certain labor markets to catch up with, resulting in a high demand for certain skills but not enough talented workers to fill the demand quickly enough. The trend being observed worldwide is that those currently engaged in “polluting” industries like mining, smelting, and fuel refining are at the most risk of being negatively impacted by Green Transition, which calls for them to reskill and refocus their talents for more environment-friendly pursuits. Unfortunately, these same people are among the least likely or willing to undergo reskilling, mainly due to their lower economic status (OECD 2023). Public employment services (PESs) are thus vital in helping affected workers transition into a new work environment.

How is Dual Transition done in the Philippines?

What are the Current Trends?

With these things in mind, it only follows that the Philippines should do its best to be at the forefront of Dual Transition, by virtue of the country being one of those most affected by climate change and also having an emerging, growing economy that is slowly being transformed by the Fourth Industrial Revolution (PIDS 2023). Dual Transition is already acknowledged in the country due to various issuances from the relevant government agencies, including (but not limited to):

- 2017 National Broadband Plan by the Department of Information and Communications Technology (DICT)
- Philippine E-Commerce Roadmap 2016-2020
- Philippine Development Plan (PDP) 2023-2028
- National ID System by the Philippine Identification System
- Digital Cities 2025 Program
- Digitaljobsph Project by the DICT

However, PIDS has reported that the extent to which Dual Transition occurs in the Philippines is rather mixed. While it is true that digitalization is embedded in many of the country's current and future development projects, these are impeded by poor infrastructure (particularly IT infrastructure), lack of skills, and a rather low digital adaptability. The latter is explained by the disproportionate distribution of certain digital workers in the Philippines when compared to its peers within the region. For example, in 2023 it was reported that 25% of Filipino digital workers are in clerical and data services, which is about 15% higher than the average in Asia, whereas only 13% of them are into software development, which is 31% lower than in other Asian countries.

On the Green Transformation side of things, the Philippines has already taken significant steps to promote sustainability and eco-friendliness through the Green Jobs Act of 2016. As this Act is meant to generate more green jobs and protect green workers, the Technical Education and Skills Development Authority has since integrated green competencies to at least 7.5% of its technical vocational courses in the country. There is also the National Green Jobs Human Resource Development Plan for 2020-2030 to support such efforts, which also includes those being implemented by other agencies like the Department of Education, the Commission on Higher Education, the Department of Science and Technology (DOST), and the Professional Regulation Commission (PIDS 2023). The Plan specifically outlines smaller plans and strategies to promote green jobs through the following areas:

- Awareness campaigns
- Education and skills development
- Employment facilitation
- Productive workplace
- Social protection
- Industry resilience
- Green financing
- Policy coherence

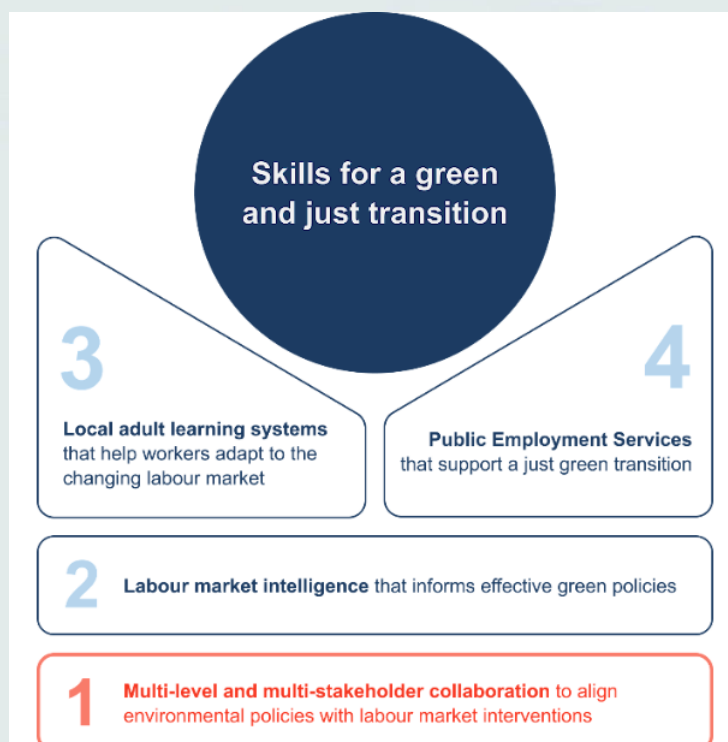
It is worth noting that these areas are similar to the areas of action suggested to by the European Joint Research Center for EU governments to adopt Dual Transition strategies.

What Else can be Done?

Admittedly, there are still areas that need to be improved upon in support of its ongoing Dual Transition strategies. First and foremost is the need to address green skills needs (PIDS 2023), as without enough qualified workers or talent to fill in green jobs, Green Transformation will not be achieved in the Philippines as expediently and effectively as it should be. Even then, adapting to Dual Transition must be done with care, as the opening of new, digital and green jobs will also lead to the closing of old ones (OECD 2023).

Thus, a just and inclusive transition should take place, as it is recommended throughout the world, and therefore to the Philippines as well. OECD emphasized the need to establish multi-level and multi-stakeholder collaboration first so that the relevant skills policymakers will have a grasp on what frameworks should be used to form the basis of Green and Digital Transformation skills. After this, labor market information must be formulated to help inform about the needs of industries vis-a-vis the current green-related and digital-related policies. Next step will be the establishment of support structures in the form of both learning systems and PSEs as stated before, to form the basis of just and effective skills training delivery.

Figure 2. Foundations for Producing Skills for Just and Green Transition



The Philippines should also ensure that its existing strategies and policies for Dual Transition are properly implemented and monitored. The PDP 2023-2028 is particularly useful in this regard as it already recognizes Green and Digital Transformation as crucial components to the country's economic future moving forward. The Plan itself has laid out ways in which all players can contribute to Dual Transformation: farmers are encouraged to adopt crop-specific and location-specific agriculture, communities are obliged to adopt green features and renewable energy for housing, and employment and skills development agencies are enjoined to adopt the National Green Jobs Human Resource Development Plan. The least of which may prove very useful in propping up Philippine TVET to an even greater role in helping the country embrace Dual Transition.

Is Philippine TVET Ready for Dual Transition?

The short answer is yes, by virtue that there are already several frameworks in place to ease Philippine TVET into Dual Transition. The Technical Education and Skills Development Authority (TESDA) is the leading authority for TVET in the Philippines and already has systems for multi-level and multi-stakeholder collaboration, labor market intelligence, and adult learning. These three are the steps needed for green transition, as indicated by OECD in their 2023 paper.

That said, there is still plenty of room for improvement when it comes to implementation and monitoring. Particularly in the first part, where in terms of implementation, the Philippines still needs to have more technical vocational training programs that incorporate green skills. PIDS reported that in 2018, there were only about 20 training regulations offered by TESDA that did just that. However, improvements have since been made in that TESDA now has 89 (as of December 2023) training regulations with green skills integrated into their curricula. These programs are found in the following sectors that they cater to:

- Agriculture, Forestry, and Fisheries (9 training regulations with green skills)
- Automotive and Land Transportation (6)
- Construction (16)
- Creative Sector (4)
- Electrical & Electronics (1)
- Heating, Ventilation, Airconditioning and Refrigeration (4)
- Human Health / Health Care (12)
- Information and Communication Technology (1)
- Logistics (5)
- Metals and Engineering (11)
- Processed Food & Beverages (1)
- Social, Community Development and Other Services (10)
- Tourism (Hotel and Restaurant) (9)

Additional training programs are underway as part of TESDA's adherence to the PDP 2023-2028. In addition to annual targets to increase the number of programs with green skills integrated, TESDA also has plans to increase the certification rate in the country's priority sectors, which adheres to Dual Transition's need for social inclusivity.

Figure 3. TESDA's Legislative Agenda in PDP 2023-2028

INDICATOR	BASELINE	ANNUAL PLAN TARGETS						MEANS OF VERIFICATION	RESPONSIBLE AGENCY/ INTER-AGENCY BODY
		2023	2024	2025	2026	2026	2028		
Technical Education and Skills Development Authority (TESDA) certification rate in priority sectors (%) increased	92 (2021)	92	92.5	93	93.5	94	94.5	TESDA Data	TESDA
Number of training regulations, curricula, and courses with green core competencies ^c increased	81 (2021)	89	98	108	119	131	144	TESDA	TESDA

Source: TESDA (taken from the PDP 2023-2028)

At this point, it may be more prudent for TESDA and other relevant stakeholders and agencies to focus on the infrastructure side of TVET. TESDA must still focus on capacitating trainers to improve their knowledge on green skills, as well as their competencies relative hereto (i.e. researching and anticipating new skills needs). TESDA should also focus on partnering with more groups and individuals that can champion Dual Transition for TVET, not only to expand the agency's own capabilities to engage in Dual Transition, but also to help popularize the concept to the grassroots level, whom are all challenged to be adaptive and flexible enough to meet the challenges brought about by this two for one scenario - Green and Digital Transformations.

Of course, this is not to discount the significant progress that TESDA has already made in this regard. TESDA has the Green Technology Center (GTC) of the National Institute for Technical Education and Skills Development (NITESD), which serves as a hub for green technologies and practices, as well as a center for the development of related TVET programs. Through the efforts of the GTC and other stakeholders, TESDA created the Philippine Green TVET Framework in March 2018 that is designed to help current TVET institutions transition to become "green institutions" for TVET learning.

In terms of specific TVET programs, TESDA has recently established competency standards for e-vehicle in the form of "Pure Battery Propelled Electric Vehicle Servicing Level II", which addresses the need for maintenance of 2-wheeled, 3-wheeled, and 4-wheeled electric vehicles in the country. The development of competency standards for Cold Chain (i.e. logistics and transportation of goods involving cold storage environments) is also underway through working partnerships with certain industry groups and training providers, especially in regards to identifying existing labor needs.

Speaking of which, TESDA has also been rather proactive in building up its labor market information, to ensure that the needs of the industry are met, especially with the ongoing Dual Transition that will cause significant changes at workplaces. TESDA regularly launches the Workplace Skills and Satisfaction Survey (WSSS), aimed at employers to determine if the quality of their labor (in terms of the technical skills they have been equipped with) are up to their standards. Recent WSSSs have emphasized Dual Transition by introducing questions related to green skills and digital skills.

Moving Forward

Dual Transition is an ongoing phenomenon that Philippine TVET is in the position to adapt to. As what was discussed in this paper, there are areas that TESDA and other stakeholders should focus on to make Dual Transition that much easier to embrace. These areas for improvement are based on the foundations for transition presented in Figure 2:

1. **Intensify multi-level and multi-stakeholder collaboration.** Aside from the usual collaborations that TESDA engages in, it is also important for Industry TVET Boards (ITBs) to be involved in all efforts to ease TVET into Dual Transition. TESDA must gauge the awareness of these ITB on the matter of Dual Transition (i.e. do they and TESDA have the same understanding of the concept?) so that their decisions and TESDA's policy changes relative thereto are always in sync.

There are also the more straightforward benefits that come should TESDA intensify and be more agile in its linkages with industry groups in the first place. In particular, the formation of new training regulations and standards should be done as swiftly as possible, to make TVET even more responsive to Dual Transition. This can also lead for the agency to bring in experts from other countries or to send scholars to other countries for learning linkages more often.

2. In relation to the above, collaboration can also be intensified should TESDA **integrate other government strategies into the current TVET strategy.** There are a number of strategies by the Philippine government that may be adapted into the existing TVET strategy; these other strategies tackle Digital or Green Transition in their own ways, and may have space for TVET involvement:

- Pagtanaw 2050 - A DOST initiative that seeks to identify the factors that affect the Philippines' scientific and technological advancement by 2050.
- National Innovation Agenda and Strategy Document - A document from the National Economic Development Authority that outlines the Philippines's goals for both short-term and long-term innovation. The document emphasizes the need for having a clean and sustainable environment for creating an innovative country.
- Philippine Energy Plan 2018-2040 - A plan from the Department of Energy for the country's power generation and consumption within the indicated timespan, which places special emphasis on renewable energy.
- Philippine Export Development Plan 2023-2028 - A plan from the Department of Trade and Industry to establish the Philippines as a prime exporter, with exporters being technologically-driven and environmentally-friendly.

3. **Improve the current labor market information by doing more research on the benefits and challenges of Dual Transition-related skills.** As stated previously, Dual Transition will cause disruptions to industries as much as it will also transform them for the better. Certain jobs and/or job processes will be replaced, thus necessitating skills training and retraining wherever possible. That said, there is also the matter of specific technologies and skills needed to operate them, as these technologies may have unforeseen costs that outweigh the benefits. This can likewise be considered as a component of the area-based skills mapping to ensure its embedment in the priority sectors at the local level. Correlation of the use of digital and green technology shall be defined in the conduct of the Workplace Skills and Satisfaction Survey.

As an example, artificial intelligence is touted as a significant player in the world of work, since it can automate certain tasks normally assigned to human workers, among other things. However, artificial intelligence also requires tremendous processing power to function properly, and this necessitates energy and water consumption that may prove taxing to smaller entities. Research must therefore be undertaken to determine how artificial intelligence and similar technologies be made with a smaller environmental cost (PIDS 2023), and the fruits of such research must be applied to the formation of related skills in TVET.

4. In relation to the previous item, it may be prudent for TESDA to **enhance its metrics for analyzing training regulations by combining both digital and green skills**. After all, the best and most extensive labor market information is rendered useless if it is not properly translated into the appropriate training standards and competencies. Currently, digital and green skills are identified separately during the standards and curriculum development processes. Considering that the premise of Dual Transition is that these skills work in tandem with each other, TVET training programs should have them both under the same category, or at the very least should be viewed under the same lens. This recommendation falls under the purview of TESDA's Qualifications and Standards Office, as well as the Certification Office.
5. **Enhance local adult learning systems for TVET by ensuring the current TVET human resource and infrastructure meet the needs of Dual Transition**. TESDA and other similar agencies should continue to capacitate its trainers and personnel to better understand the impact Dual Transition will have on TVET. The three aforementioned requirements for Dual Transition (i.e. social acceptance, technological acceptance, and regulatory framework) may be taken as a model for what kind of knowledge should be imparted on those involved in Dual Transition-related TVET, at the very least to give them a greater understanding and appreciation of why this phenomenon should be embraced for the betterment of the country.

Additionally, the current TVET manpower and infrastructure may have to be looked into regarding their readiness to adopt digital technologies. Studies done by other international agencies, such as the Southeast Asian Ministers for Education Organization, have discovered the adoption of said technologies in Philippine TVET institutions are generally at a basic-level compared to the rest of Southeast Asia. Improving the adoption should be of paramount concern for TESDA if it wants to ensure that the entire TVET landscape in the country will be responsive to the demands of Dual Transition.

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