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COVID-19 Impacts and Sustainability Strategies for Regional Recovery in Southeast Asia: Challenges and Opportunities

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Abstract: The COVID-19 pandemic crisis is threatening our progressive social, ecological and economic development toward achieving the United Nations Sustainable Development Goals (UN SDGs). Studies of its impacts on sustainable development in emerging economies and on fast-growing regional development, such as Southeast Asia or the Association of Southeast Asia Nations (ASEAN), are scarce to date. This paper aims to investigate the COVID-19 impacts and identify challenges and opportunities for possible sustainable recovery solutions with respect to the UN SDGs. We employed a qualitative research method through analytical literature reviews and in-depth interviews with 33 organizations. Our results reveal various pandemic effects, challenges and opportunities for cooperative regional sustainability development and recovery strategies, such as intra-trade strategy, green economy and public–private–people partnerships. The findings provide practical guidance on policy implications for transformative regional sustainability and innovative recovery strategies to achieve the sustainable development agendas (i.e., ASEAN Community Vision 2025 and UN 2030 Agenda). Overall, the paper contributes to advance our limited understanding in this realm and benefits diverse stakeholders toward our sustainable futures.



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Keywords: COVID-19; impacts; sustainability; development; recovery; strategy; policy; SDGs; Southeast Asia; ASEAN

1. Introduction

The Coronavirus Disease 2019 (COVID-19) pandemic has adversely affected our world. The unprecedented COVID-19 crisis has compromised all walks of life at all levels of our society thus far. It has become the massive global health and development crisis that has prompted all governments to apply health and safety measures such as lockdowns, shelter in place, social distancing and limited foreign entries to prevent populations from the infection. As of 15 May 2021, the World Health Organization reported an astonishing increase in numbers of more than 160 million confirmed cases of COVID-19 infection around the world with more than three million deaths [1]. The pandemic has not only affected health but also had severe socio-economic and environmental impacts, globally, regionally and domestically [2]. The COVID-19 pandemic has indeed become a global catastrophe and a development challenge for all nations [3,4]. Additionally, its impacts have severely affected our progress toward the United Nations Sustainable Development Goals (UN SDGs) or the 2030 Vision for sustainable development to different degrees [5].

To date, numerous studies (e.g., [4,6–8]) have largely presented general conceptual arguments, strategies and analyses on COVID-19 pandemic impacts at a macro-level with the global-oriented viewpoints. In fact, developing countries have been highly vulnerable to the COVID-19 pandemic [9,10]. The pandemic has badly hit developing countries, and many emerging economies have been experiencing weaker growth [11,12]. The impacts have yet to be measured deeply as countries, regions, communities and locals have different shares of the adversities.

Limited studies on the pandemic impacts have been conducted within the sustainable development context in developing countries [9,13,14]. Additionally, empirical research on the effects of the COVID-19 pandemic on sustainable development in developing countries and emerging economies at a regional context, such as Southeast Asia, is scarce as yet. In particular, our paper addresses the critical research inquiries: what the COVID-19 pandemic impacts, challenges and opportunities are, and how we can recover from the pandemic and forge ahead toward progression of the UN SDGs, or UN Vision 2030, in Southeast Asia. This paper aims to address the literature gaps and respond to the scholastic calls. The key objectives are twofold: (1) to expand the currently-limited knowledge and understanding about the impacts of the COVID-19 crisis on economic, social, ecological complexities in the region, and (2) to propose post-pandemic transformative recovery directions for advancing the regional sustainability development. This paper intends to provide qualitative research insights with evidence from multi-lateral stakeholder perspectives about the pandemic impacts on sustainable development in the fast-developing regional development of Southeast Asia. The region is also known as the Association of Southeast Asia Nations [15].

Found in 1967, ASEAN was initially originated by the emerging economies of Thailand, Singapore, Indonesia, the Philippines, and Malaysia, and today the region include Brunei, Cambodia, Laos, Myanmar, and Vietnam [16]. With a total of 10 member states, the fast-developing region has gained its economic, social and political significance as a global player. The region has the third largest population in the World with 650 million people and the fifth largest economy with a GDP of USD 2.8 trillion [17]. Inescapably, ASEAN has been challenged by the COVID-19 pandemic. As of 15 May 2021, there are over 3.61 million confirmed cases of COVID-19 infection with over 71,000 deaths in Southeast Asia. During the heavy COVID-19 outbreak, various governmental measures, such as limited travel restrictions, foreign entries and lockdown measures, were announced and implemented to keep the people safe with the least infections [18]. As a result of these stringent policies and implementation, the endeavor for attaining the UN SDGs or Agenda 2030 for sustainable development in Southeast Asia has been unpleasantly disrupted.

In total, our study aspires to answer the critical inquiries about to what extent the COVID-19 pandemic has impacts on the regional development and progression toward the UN SDGs, which has not yet been analytically and empirically studied. Importantly, this paper also intends to explore how the region can thrive to achieve sustainable development and respond to calls for possible transformative sustainability recovery directions toward policy implications. Lastly, we hope to advance the inadequate understanding about the COVID-19 effects on the economic, environmental, social aspects of the sustainability pillars in the emerging regional economy of Southeast Asia. This paper significantly contributes to advancing the existing literature and benefits diverse stakeholders toward sustainable futures.

2. Literature Review

2.1. Overview of COVID-19 Impacts on Sustainable Development

The topic of COVID-19 impacts on sustainable development has gained much interest in the recent literature. It has become a mantra for worldwide scholars, practitioners and policy makers. Since the presence of the COVID-19 pandemic in 2019, several researchers have attempted to investigate the subject. This section intends to provide an overview of the most relevant and recent literature on the COVID-19 effects and sustainable development, fitting the context of our study. Table 1 presents a summary of the most relevant recent literature review on the focal theme of this paper. The table provides our short-listed examples of the latest research, regarding the COVID-19 impacts on sustainable development and/or any links the UN SDGs, to varying degrees. Our listed articles mainly comes from the related literature with high-quality journals (Q1–Q2). Our review offers the following insights.

First, our review of the latest relevant literature suggests that most research largely explores the pandemic impacts at the macro-level perspectives. They vary in terms of the

objective, scale of the study and geographic scope, as illustrated in Table 1. The review table also shows that their research results and discussions are dispersed with diverse contextual applications. The review also identifies various articles with emphasis on different sustainability pillars (i.e., economic, environmental and social dimensions [9,13,19]. Additionally, only few studies analyze the pandemic effects on all three sustainability pillars, based on the holistic framework of the UN SDGs [7,8,10,14]. Additionally, the existing literature lacks inclusive research on the pandemic impacts on attaining the targets of the UN SDGs [14].

Second, several studies primarily reported the pandemic effects on the global context with the general conceptual arguments and analyses [3,4,7,8,20]. In 2020, the early literature about the pandemic impacts tended to provide typical viewpoints or comments on the COVID-19 and sustainable development. For example, Lambert et al. [3] looked at the pandemic crisis as a global challenge. Additionally, Oldekop et al. [4] discussed the implications of the COVID-19 pandemic across four themes (i.e., global value chains, digitalization, debt and climate change) and tried to link to the UN SDGs. Leal Filho et al. [7] further assessed the impacts of the COVID-19 on progress toward the UN SDGs. Later, more researchers (i.e., [8,10]) focused on advancing the knowledge base in the domain using a systematic review, meta-analysis or bibliometric techniques.

Third, the previous meta-analysis also implied that the current literature in developed countries was still dominant [10]. Additionally, related research on the COVID-19 effects in other contexts, such as developing countries, was still lacking [9,10]. As such, additional studies in various settings or regions would be much needed to expand our limited knowledge in this field. Furthermore, the literature called for future studies to investigate transformative responses, solutions or innovative policy mechanisms to achieve the global sustainable development agenda [3,4].

Forth, diverse articles appeared to study the subject at the country level with specific contexts, as depicted in Table 1. The former literature also argued that the pandemic badly hit many emerging economies with weaker growth more than the developed nations [11,12]. In truth, the COVID-19 crisis posted more sustainability challenges in the developing countries, and they could highly be vulnerable to the pandemic and possibly lack adequate international support toward attaining the UN SDGs [9,10]. Yet, more recent scholars targeted their research in the developing countries, such as India [13], Iran [14], Vietnam [21], and Bangladesh [22].

Overall, our review of the most recent literature implies a similar conclusion that the COVID-19 crisis has challenged everyone and vulnerable populations [7–10]. In sum, the crisis has demoted our good-health and well-being; slowed down the productivity; increased the inequality gaps; intensified the poverty problem; and degraded our livelihood. The pandemic has put much pressure on our progressive social, economic and political development toward collective sustainable futures [20]. It has greatly disrupted our advancement toward the 2030 Agenda for sustainable development. A previous study also specified that the pandemic would adversely affect 12 of the 17 goals [9]. Additionally, 28 poor countries would be unlikely to attain multiple SDGs, such as SDG 1–4, 6 and 7 by 2030 [23].

In fact, the COVID-19 crisis is forcing us to rethink development. Scholars demand that our World needs a paradigm shift toward sustainable development after the post-pandemic era [3,4]. Further analysis should move beyond social-theory traditions as well as rethink development [20,24]. Future research should consider the multi-faceted ecological, social, economic and political systems and processes to reflect complexity, uncertainty, contingency and context-specificity for radical transformations [20,24]. Moreover, the rethinking toward future transformations, resilience and sustainable development would require leadership for sustainability [25]. A strategic foresight and strategic management for sustainability would also be needed to balance the traditional economic-social-environmental triad and integrate holistic systems and processes toward sustainability at all levels of the society [26].

Table 1. Summary of most relevant recent literature review.

Reference	Objective	Scale of Study	Geographical Scope	SGDs	Sustainability Dimension		
					Economic	Environment	Social
Barbier and Burgess (2020) [9]	To study COVID-19 impacts and identify innovative policy mechanisms to ensure progress toward the SDGs	Economic grouping countries	Developing countries	✓	✓	✓	✓
Bherwani et al., (2021) [13]	To conduct qualitative and quantitative analyses of COVID-19 effect on the SDGs in Indian subcontinent with a focus on air quality	Country	India	✓	-	✓	-
La et al., (2020) [21]	To investigate policy response, social media, and science journalism amid the COVID-19 crisis in Vietnam	Country	Vietnam	-	✓	-	✓
Lambert et al., (2020) [3]	To provide a general viewpoint on COVID-19 as a global challenge and highlight emerging potential consequences for achieving sustainable development	Global	Global	-	✓	✓	✓
Leach et al., (2021) [20]	To discuss how and why COVID-19 requires us to rethink development and explore post-pandemic transformations	Global	Global	-	✓	✓	✓
Leal Filho et al., (2020) [7]	To examine the impact of the COVID-19 on progress toward the UN SDGs	Global	Global	✓	✓	✓	✓
Oldekop et al. (2020) [4]	To present a global development paradigm by examining the implications of the COVID-19 pandemic across four themes: global value chains, digitalization, debt, and climate change	Global	Global	-	✓	✓	✓
Ranjbari et al., (2021) [8]	To provide a systematic review of the three pillars of sustainability and future research agenda	Global	Global	✓	✓	✓	✓
Ranjbari et al., (2021) [14]	To study the post COVID-19 recovery agenda with a fuzzy action priority surface for sustainable development to support the 2030 Agenda in Iran	Country	Iran	✓	✓	✓	✓
Taqi et al., (2020) [22]	To identify impacts of the COVID-19 outbreak on supply chains and propose strategies in the context of the readymade garment industry	Country	Bangladesh	-	✓	-	✓
Wang and Huang (2021) [10]	To review publications related to the impact of COVID-19 on sustainability in the Web of Science database using the bibliometrics techniques and meta-analysis approach	Global	Global	✓	✓	✓	✓
Winchester et al., (2021) [19]	To research impact of COVID-19 social distancing policies on traffic congestion, mobility and NO ₂ pollution	Country	USA	-	-	✓	✓

In light of our most relevant recent review of the literature, we address the research gaps and respond to the scholastic calls for more related studies. We also put forward the importance of the research in this limited domain. As a result, our paper proposes to investigate the pandemic crisis beyond the traditional literature review and advance our limited knowledge and understanding about the regional sustainability by adopting an empirical qualitative research approach. Importantly, our study seeks out to analyze various effects of the COVID-19 pandemic on sustainable development in multiple perspectives, using interconnected regional and global sustainability agendas for sustainable development, as discussed next.

2.2. The Interconnected Regional and Global Agendas for Sustainable Development—The ASEAN Complementarities Roadmap and the UN SDGs

Since September 2015, 193 member states of the United Nations (UN) have adopted the 2030 agenda for sustainable development. The agenda contains a set of global goals, called Sustainable Development Goals (SDGs), comprising 17 goals and 169 targets [27]. These goals and targets of the UN SDGs cover three pillars of sustainability, namely people (social goals), prosperity (economic goals), and planet (environmental goals) dimensions, plus the other two cross-cutting pillars, specifically peace and partnership [27]. The UN 2030 agenda aims to eradicate poverty, reduce inequality, decouple economic growth and environmental degradation, and deal with climate change and its impacts, to create a better world for future generations [27]. The SDGs are set to be universal goals or targets for sustainable development and transformative improvement for all countries to work together to achieve these common goals.

The Association of Southeast Asian Nation (ASEAN) shared this aspiration and mainstreamed the 2030 agenda into the ASEAN Community Vision 2025. As a result, the ASEAN Community Vision 2025 was established in 2015 at the 27th ASEAN Summit in Kuala Lumpur, Malaysia [28]. The Vision was built upon the prior aspirations and commitments of ASEAN to be an integrated, peaceful and stable community with shared prosperity [28]. It was also envisioned that ASEAN would be a rules-based, people-centered community for peace, stability and resilience with the emphasis on ASEAN centrality [28]. The ASEAN Community Vision 2025 also confirms its complementarity with the UN 2030 Agenda for sustainable development.

To implement both the 2030 Agenda and the ASEAN Community Vision 2025, UN-ESCAP, in collaboration with Ministry of Foreign Affairs of Thailand and the Secretariat of ASEAN, produced a document: “*Complementarities between the ASEAN Community Vision 2025 and the United Nations 2030 Agenda for Sustainable Development: Framework for Action*” [28]. In general, the document identifies five targeted priorities as the “*Complementarities Roadmap*” for sustainable development in the Southeast Asian region. The ASEAN Complementarities Roadmap lays a groundwork for future sustainability actions and strategies in the fast-developing regional development. The focal developmental areas aim for: (1) poverty eradication, (2) infrastructure and connectivity, (3) sustainable management of natural resources, (4) sustainable production and consumption, and (5) resilience [28]. These development areas advocate an integrated and inclusive approach for sustainability-oriented actions and collaborative partnership for ASEAN. The document sets a framework to forge ahead a path to achieve both the regional ASEAN Community Vision 2025 and the global UN 2030 Agenda. Such the approach becomes increasingly necessary for the acceleration of the achievement of the SDGs [29].

In addition to the literature, this paper proposes to employ an integrated, complementary sustainability research framework, based on the above-mentioned ASEAN Complementarities Roadmap and the UN SDGs, in this study. The integrated framework includes the three pillars of sustainability (i.e., economic, environmental and social dimensions) or the sustainability triad of the UN SDGs. It provides the multi-dimensional aspects about sustainable development at both regional and global levels. Therefore, we propose to undertake the interconnected regional and global agendas for sustainable development

(i.e., the ASEAN Complementarities Roadmap and the UN SDGs) as our basic integrated research framework for further sustainability assessment and analysis in the study.

3. Research Methodology

Our study employs a qualitative research approach with a cross-sectional empirical research design for data collection, analysis and synthesis. Specifically, the qualitative method in this study is regarded as appropriate to gather evidence and provide insightful information [30]. The method is suitable to address the main research inquiries in this study: (1) what are COVID-19 pandemic impacts, challenges and opportunities for the Southeast Asia region or ASEAN?, and (2) how should we recover from the pandemic and forge ahead toward progression of the regional and global agendas (i.e., the ASEAN Complementarities Roadmap and the UN SDGs) for sustainable development? In general, the qualitative research approach is aimed to uncover insightful, analytical findings using the three-pillar sustainability framework (i.e., economic, ecological, social dimensions) and mapping with our proposed integrated, harmonized regional and global sustainability research framework for further analysis and synthesis.

Overall, it enables us to understand the current COVID-19 situations/challenges as well as assess future opportunities for regional growth and sustainability in Southeast Asia for further policy implications. Figure 1 outlines a graphical diagram of the overview of the qualitative methodology used in this study. Details of the qualitative research approach and steps for data collection and analysis are elaborated in sequence.

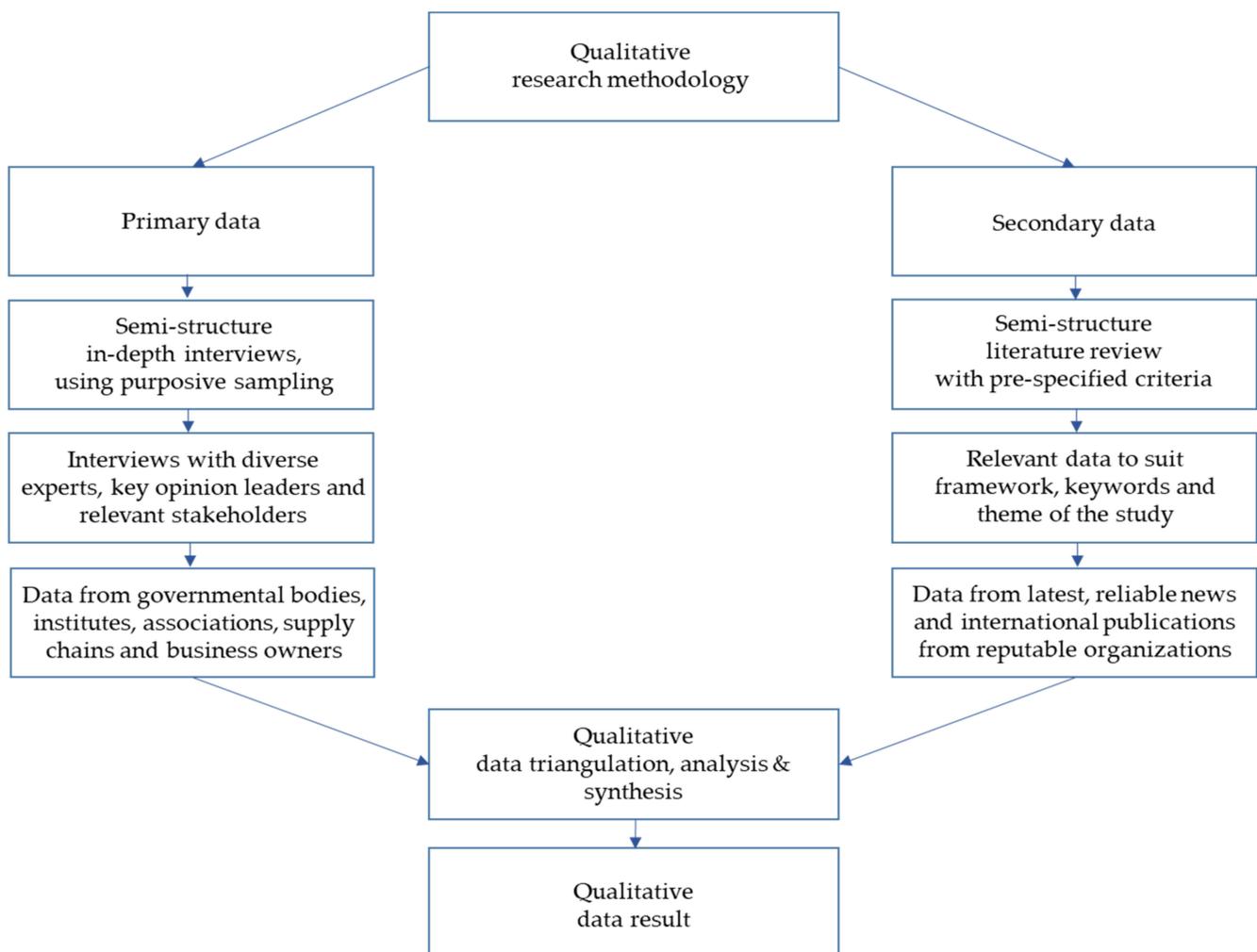


Figure 1. Graphical overview of qualitative research methodology (source: leading author).

To answer the research inquiries, we apply a semi-structure interview approach with probing techniques [30] to gather empirical evidence and better understand the COVID-19 phenomena. The semi-structure interview centers on the following key strategic questions:

- (1) What are challenges and opportunities from COVID-19 impacts on sustainable development, regarding economic, environmental and social aspects, in Southeast Asia?
- (2) What are suggested recovery directions, resolution and/or sustainability policy implications to move ASEAN forward for further collaboration and partnership?
- (3) How can the resulting suggestions correspond to and harmonize with the international sustainable development/sustainability policies (i.e., the ASEAN Complementarities Roadmap and the UN SDGs).

Our data collection includes both primary and secondary data. Both data sources were collected to assess the up-to-date current situations and understanding various perspectives, regarding COVID-19 impacts and future outlooks toward sustainable development/sustainability in Southeast Asia. In total, the data were collected from multiple in-depth interviews with multi-lateral parties, and together with relevant literature and published information about the COVID-19 crisis, ASEAN regional insights and relevant sustainable development/sustainability knowledge. After collecting both primary and secondary data, we validated and triangulated our data for further analysis with rigor and quality of the research study. Notably, the research study was ethically conducted during the severe pandemic crisis in late 2020. Additionally, all data from the key voluntary informants were kept private and confidential, according to the highest international ethical standard, approved by Mahidol University Central Institutional Review Board.

In particular, the primary data were collected from 33 organizations to gain better understanding about the macro-level impacts of COVID-19 pandemic on the sustainability issues with economic, environmental and social aspects. The study adopted a non-probability, purposive sampling, or also called judgment sampling, as a purposeful method of data collection in qualitative research [31]. The sampling allowed the researchers to identify and select individuals or groups of individuals that were proficient and well-informed with a phenomenon of interest [32]. It permitted us to deliberately recruit our participants due to their relevant expertise, experiences and/or associations with related organizations for the in-depth interviews. The interviews included diverse key opinion leaders, experts and various stakeholders (e.g., national and international associations, institutes, organizations, governmental bodies, expert reviews/comments, and related parties in the supply chains).

More specifically, the interviews comprised various high-level governmental bodies and reputable ASEAN institutes (i.e., ASEAN Strategy and Cooperation Division, Ministry of Foreign Affairs; International Economic Relation, ASEAN and East Asian Economic Integration, Thailand Development Research Institute; Digital Industry Club of Industrial Promotion and Support Department; International Economics and Integration; ASEAN Studies Center, Chulalongkorn University; International Relations Theory, International Security, the Politics System and Electoral system in Southeast Asia, Faculty of Social Sciences and Humanities, Mahidol University; Office of Agricultural Economics; Rice Department; Office of Board of Investment in Thailand). Our interview list also involved multiple associations in Thailand, a leading co-founder of ASEAN, such as Agriculturist Association; Tapioca Association; Rubber Association; Information Technology Industry Club; Auto Parts Manufacturers Association). These primary data generally helped us to understand the macro-level impacts of the pandemic on the global value chains (GVCs), production and agriculture—the backbone of this regional growth. We further expanded the list to include several business owners, entrepreneurs, agriculturists, farmers, and traders to gain insightful evidence about various effects of the COVID-19 crisis on diverse sectors for further situational analysis in real-life settings.

For the secondary data, we employed a semi-systematic literature review approach [33]. We adopted the approach with pre-specified inclusion criteria, as shown in Table 2. It helped us uncover the board sustainability issues and understand the multi-dimensional

situations of the pre- and post-pandemic recovery. Thus, it was highly effective way to cover more areas and broader topics than the systematic approach [33], fitting our existing study.

Table 2. Pre-specified inclusion criteria for semi-systematic literature review approach.

Item	Details
Aspects of the Three Pillars of the Sustainability Framework, based on the UN SDGs	<ul style="list-style-type: none"> • Economic dimension • Environmental dimension • Social dimension
Key/Relative words and Issues	<ul style="list-style-type: none"> • COVID-19 • Complementarities Roadmap • ASEAN Community Vision 2025 • Agenda 2030 • UN SDGs • High Level Dialogue on ASEAN • Poverty (state pre/post COVID-19) • Infrastructure (state pre/post COVID-19) • Connectivity (state pre/post COVID-19)
Themes of Content	<ul style="list-style-type: none"> • Commonality in the global and ASEAN contexts • COVID-19 effects (included Pre- and post-COVID-19 pandemic) • Indicator/index/measurement for 5 priority areas for complementarities roadmap (i.e., (1) Poverty Eradication, (2) Infrastructure and Connectivity, (3) Sustainable Management of Natural Resources, (4) Sustainable Consumption and Production, and (5) Resilience) • SDGs progress and impacts from COVID-19 on the five priority areas • Recommendations and Implication of recovery post-COVID-19

Its objectives aim to: (1) understand potentially relevant literatures and research studies that could have implications for the study, (2) overview and track development of evidence, and (3) integrate data from different perspectives and develop recommendations and implications with regard to the ASEAN Complementarities Roadmap and the UN SDGs. Subsequently, the evidences were synthesized and used to support the identified key issues and the regional sustainability policy recommendations. The secondary data included the latest relevant literature, credible and reliable publications from reputable organizations to ensure validity, reliability and quality of the data sources, such as ASEAN, UN, UNESCAP, World Bank, OECD, ADB, WTO, UNWTO, TDRI, and ASEAN+3 Macroeconomic Research Office.

Above all, the research methodology was employed to gain more comprehensive knowledge and better understanding about the COVID impacts on sustainable development in Southeast Asia. The data provided the macro-level analysis of the macro-view of relevant pandemic situations, outlooks, effects and policies. Additionally, our data from diverse stakeholders helped provide insights on diverse COVID-19 effects in various sectors in the actual situations. At the end, the resultant data can be used to suggest any possible regional sustainability strategies for recovery directions and policy implications toward the ASEAN Community Vision 2025 and the Agenda 2030 for sustainable development.

4. Assessment of Progress toward the UN SDGs in Southeast Asia

This section provides an analytical overview and assessment of the ASEAN regional progress toward the UN SDGs. It is based on our analytical literature review, regarding the UN SDGs or the 2030 Agenda for sustainable development in the emerging economies of

Southeast Asia or the fast developing region of ASEAN. The assessment helps to project advancement and regression toward the UN SDGs in Southeast Asia.

The UN SDGs for sustainable development are important to Southeast Asia in several ways. Firstly, the 2030 Agenda has become the shared norm for the ASEAN nations, as the UN member states since 2015, to commit and achieve the common goals altogether by 2030. Secondly, the global goals benefits the ASEAN member states, especially least developed and developing countries in the region (e.g., Cambodia, Laos PDR, Myanmar and Vietnam) for granting Official Development Assistance and other kinds of funding supports [18]. Thirdly, aligning the ASEAN Community Vision 2025 to the 2030 Agenda help increase possibilities for further collaboration with the member states within or outside the region. Lastly, the framework of the UN SDGs can provide a unified, systematic sustainable development structure for examining the progress toward the common goals.

In 2019, the Global Sustainable Development Report (GSDR) identified six priority areas. The report covered several goals and targets that are similar to the five areas in the ASEAN Complementarities Roadmap. These areas include human well-being and capabilities; sustainable and fair economies; food systems and nutrition patterns; energy decarbonization with universal access; urban and semi-urban development; and global environmental commons [29]. To effectively tackle these areas, it suggests that means of implementation, or “levers”, have to be designed and operated in combinations to fit with an individual country’s context. The four levers comprise: (1) governance, (2) economy and finance, (3) individual and collective actions, and (4) science and technology [29].

At the regional level, a report from UNESCAP [34] indicates that the Southeast Asian countries anticipate somewhat satisfactory SDGs progress with certain accelerated indicators, however, certain indicators go in the reversed order with inadequate supported data. Figure 2 depicts a progress dashboard of the UN SDGs in the ASEAN region [34].

South-East Asia

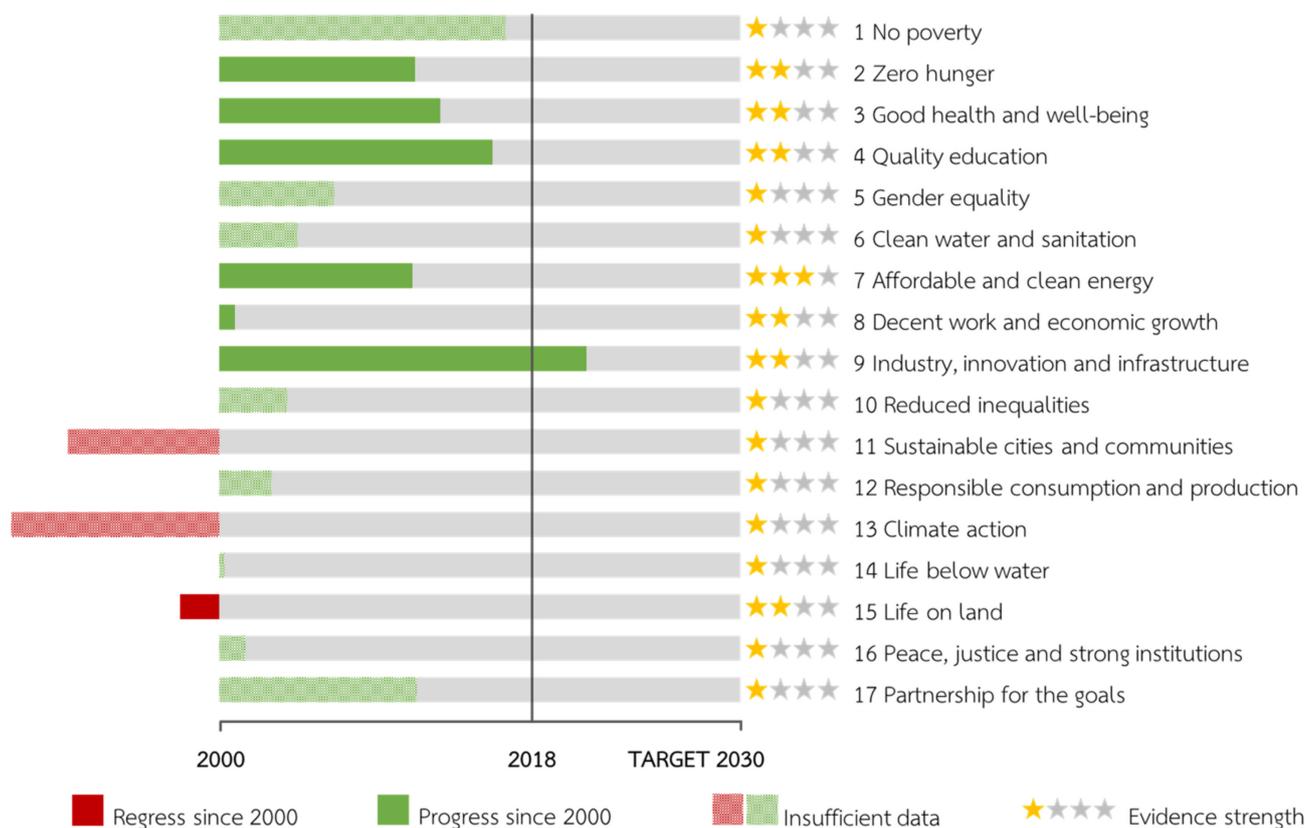


Figure 2. Dashboard of anticipated SDGs progress in Southeast Asia.

The ASEAN region demonstrates general satisfactory progress since 2000, particularly in six areas. They are affordable and clean energy (SDG 7), industry innovation and infrastructure (SDG 9), quality education (SDG 4), good health and well-being (SDG 3), zero hunger (SDG 2) and life on land (SDG 15), respectively. The evidence also shows that affordable and clean energy (SDG 7) and industry innovation and infrastructure (SDG 9) perform well with high evidence strength since 2018. Somewhat progress with lacking data can be found in the following specific SDG indicators. They include no poverty (SDG 1), sustainable cities and communities (SDG 11), partnership for the goal (SDG 17), gender equality (SDG 5), clean water and sanitation (SDG 6), reduce inequality (SDG 10) and life below water (SDG15), respectively. However, the report also presents reversion with strong evidence strength in decent work and economic growth (SDG 8), along with climate action (SDG 14) and peace, justice and strong institutions with insufficient data. In sum, the dashboard of the anticipated UN SDGs can provide an essential summary of the progression and regression toward the UN SDGs. It can further suggest areas for improvement toward sustainable futures in Southeast Asia.

By and large, the unprecedented COVID-19 pandemic has compromised ASEAN Community's human security and social, environmental and economic development [35]. It also poses several profound challenges to the progress toward advancing all of the 17 SDGs in the region. The endeavor for the 2030 Agenda and the Vision 2025 has been disrupted by the pandemic, but to what extent is still questioning. Therefore, this study intends to analyze overall regional sustainability impacts of the pandemic as well as propose alternative recovery directions toward our common goals.

5. Analysis of COVID-19 Impacts on Economic–Environmental–Social Triad in Southeast Asia

The effects of the COVID-19 crisis and related measures are far-reaching and affecting all ASEAN countries. The impacts are not only exacerbating economic problems but also intensifying social issues especially poverty and inequality. This section offers an analytical overview and responds to our first research inquiry, regarding the impacts and challenges of the COVID-19 pandemic toward sustainable development in Southeast Asia. In this section, we employed the UN SDGs framework for analysis to examine the COVID-19 effects on the triadic sustainability pillars (i.e., economic, environmental and social dimensions) in Southeast Asia. The diagnostic results with empirical evidence are derived from both primary and secondary data analysis. Table 3 summarizes the COVID-19 impacts on all three sustainability pillars with links to various SDGs.

Table 3. Summary table of COVID-19 impacts on economic–environmental–social triad for sustainable development in Southeast Asia.

Sustainability Pillar	Effect	Brief Description	Links to SDGs
Economy	Negative (-)	<ul style="list-style-type: none"> - The impact of the COVID-19 crisis and related measures has had negative impacts on the macro-economy of Southeast Asia. All economic forecasts have been downgraded: - The regional GDP growth declined −0.6 percentage points in March 2020 compared to November 2019 [35]. - According to ASEAN+3 Macroeconomic Research Office, the ASEAN economic growth could drop from 4.6% to −2.6% due to the impact of the pandemic [36]. - Asian Development Bank revised downward its growth forecasts for the ASEAN countries from 4.4% in 2019 to 1% in 2020 [37]. - IMF projected the significant drop in the region, ranging from −8.0% to less than 7.0% [38]. - When disaggregating ASEAN into individual member countries, Thailand, Malaysia, the Philippines, and Singapore were hit the hardest with projected negative GDP growth in 2020 to be −7.7, −3.8, −3.6, −3.5 respectively, according to Centre for Strategic and International Studies [39]. - The interview evidence also supports the data from the literature and affirms that the COVID-19 crisis has severely impacted the economic dimension from diverse disrupted economic activities due to the strict governmental measures in the ASEAN countries. - “The crisis hardly hit the economic growth in all Southeast Asian nations, due to the stringent governmental measures (i.e., the lockdowns and travel bans). It has adversely affected the global supply chains and disrupted our global manufacturing productions in Southeast Asia. The crisis has badly damaged the tourism sector due to the limited international travels and the significant decrease in numbers of foreign tourists to many popular ASEAN destinations. The impacts were severe since the crisis hit the economic backbone of the region.” (Senior Researcher from Faculty of Social Sciences and Humanities at Mahidol University). - International Economics Relations at Thailand Development Research Institute expresses: “The limited movement of goods and services would definitely disrupt the regional and global supply chains. It has also affected the cross-boarder trades (both imports and exports). As a result, it can lead to higher prices of goods for suppliers, customers, and consumers due to limited supplies during the pandemic”. 	SDG 8
	Positive (+)	<p>The COVID-19 pandemic has mixed effects, both positive and negative, on the environment.</p> <ul style="list-style-type: none"> + The better air quality became the positive impact of the pandemic on the environment due to the reduction of economic activities in ASEAN and worldwide. + The emission of greenhouse gas, aerosols (AOD, PM10, PM2.5) and air pollutants (NO2, CO) decreased due to the lockdowns and transportation restrictions, contributing to the reduction of air pollution, especially in urban and industrial areas [40]. 	SDG 13
Environment	Negative (-)	<p>The COVID-19 pandemic contributed to at least two negative environmental impacts.</p> <ul style="list-style-type: none"> - (1) The rise in volumes of diverse waste: <ul style="list-style-type: none"> - Bio-hazardous waste from the daily usage of single-use or discarded face masks and surgical masks. - Food waste from organic waste and excessive stockpile. - Single-use plastics from packaging during the stay-at-home period as the consumers increased the consumption of take-away food. - (2) The lockdown measure and transportation restrictions might cause weakening law enforcement and environmental regulations/protection efforts, which might cause wildlife crime, overfishing and other illegal activities (e.g., illegal logging) [41]. - Moreover, data from the interviews revealed that a great concern was on the increasing volumes of waste from foods and single-use plastic bags/utensils due to the growing demands of food deliveries from the lockdowns. For instance, Director of ASEAN Studies Center, Chulalongkorn University, mentioned: “The COVID-19 measures negatively affected our environment with the mounting wastes from leftover foods and plastics. The adverse impact regressed our environmental efforts on reducing the uses of plastics”. 	DG 11, 12, 14, 15
	Negative (-)	<ul style="list-style-type: none"> - The pandemic has intensified the existing social challenges on the health, social welfare and other societal dimensions. These challenges include food security and nutrition, migrant refugees and stateless persons, gender inequality, and education—all of which are decelerating the progress toward the UN SDGs. - Loss of income and employment pushed people in the informal sector (e.g., street vendors) and marginalised groups into poverty and less likely to afford nourishing foods [42]. - The pandemic also disrupted education since schools and universities were closed. The sudden change and implementation of distance education programs affected those who were not well-equipped with technologies and connectivity for distance learning, especially the poor and marginalised groups with limited capacities and accesses. [43]. - The impact of the COVID-19 pandemic has affected each gender unequally. In comparison, women and girls have experienced with more job losses or decrease in paid work hours when comparing with men. Additionally, increasing cases of domestic violence were reported across the Asia-Pacific region, and the record has been tripling after the lockdowns in diverse cases [44]. 	
Society	Negative (-)	<ul style="list-style-type: none"> - The pandemic also exacerbated problems experienced by migrants, refugees, asylum seekers, and stateless persons in Southeast Asia from the prematurely contract ending and their limited access on any social security supports [45]. - The evidence from the interview data (e.g., ASEAN Studies Center, Chulalongkorn University and ASEAN Strategy and Cooperation Division, Ministry of Foreign Affairs in Thailand) also suggested that the COVID-19 pandemic adversely affected the society and many people’s lives in the region. - “People in all age groups and every sector, specifically in the service sector, have been severely hit. Specifically, the elders who are in their early 50–60s since they are likely to get fired or forced to accept early retirement plans. Sadly, these people in the middle- to lower-income group would be economically paralyzed due to the job loss and inabilities to manage on-going loans/debts”. (Director of the ASEAN Studies Center) - The crisis has made the poor become poorer. In particular, the vulnerable marginalized groups may be badly hit the most from poor health issues, restricted accessibility to nutritious food and limited access to the social security support. In particular, the lockdowns and travel restrictions have put the cross-boarder labors or migrant workers from the CLMV countries (i.e., Cambodia, Laos, Malaysia and Vietnam) at risk. - In total, the COVID-19 crisis has put people and the society in jeopardy. 	SDG 1, 2, 3, 4, 5, 8, 10, 16

5.1. Economic Dimension

The COVID-19 pandemic crisis has created “the worst human and economic crisis of our lifetimes” [46]. The World Bank announced that the crisis has led to a global recession and called it—“the deepest global recession in decades” [47]. The World Bank also forecasted a 5.2% GDP contraction of the global economy in 2020, albeit the noteworthy governmental efforts to offset the weakening fiscal and monetary policy support [47].

The crisis and related measures has severely had negative impacts on the macro-economy of Southeast Asia. The adverse effects directly link to the decelerating progression toward SDG 8 for decent work and economic growth. UNESCAP [35] estimated that the regional GDP growth declined -0.6 percentage points in March 2020 compared to November 2019. The estimation was aligned with ASEAN+3 Macroeconomic Research Office, who estimated that ASEAN economic growth could drop from 4.6% to -2.6% due to the impact of the pandemic [36]. In early April, the Asian Development Bank reduced its growth forecasts for the ASEAN countries from 4.4% in 2019 to 1% in 2020 [37].

When comparing the economic data with the latest IMF’s 2021 economic projection for Southeast Asia, the on-going pandemic has made the situation worse than the previous forecasts. The regional economic growth has been continuously plummeted. IMF has recently downgraded the GDP forecast in the ASEAN countries. It projected the significant drop from its previous forecast from slightly positive growth about 3.0% to nearly 8% to the current negative downward trend from -8.0% to less than 7.0% [38]. In particular, IMF expected Indonesia, Malaysia, the Philippines, Thailand and Vietnam to grow collectively by 4.9% in 2021, down from its previous projection of 5.2% [38]. When disaggregating ASEAN into individual member countries, each ASEAN economy was affected at different degrees, according to the GDP growth rate projections from Centre for Strategic and International Studies [39]. In 2020, the hardest-hit economies were Thailand, Malaysia, the Philippines, and Singapore, with the contracted GDP growth rates, i.e., -7.7 , -3.8 , -3.6 , -3.5 , respectively [39].

In general, the COVID-19 pandemic and related measures have severely disturbed the regional economic growth from the sluggish global trade and decreasing demands. ASEAN has been the regional economy that depended heavily on international trades and tourism, thus the region was adversely affected more than the others [48]. As this region relies vastly on exports and the global supply chain, the lockdown and quarantine measures also disrupted the global value chains (GVCs) and economic production, resulting in increasing unemployment and weakening domestic demand [42].

Furthermore, the evidence from the interview data supported the aforementioned argument and affirmed that the COVID-19 crisis severely impacted the economic dimension in the ASEAN region. For example, Senior Researcher on International Relations Theory, International Security, The Politics and Electoral System in Southeast Asia from Faculty of Social Sciences and Humanities at Mahidol University expressed: “The crisis hardly hit the economic growth in all Southeast Asian nations, due to the stringent governmental measures (i.e., the lockdowns and travel bans). It has adversely affected the global supply chains and disrupted our global manufacturing productions in Southeast Asia. The crisis has badly damaged the tourism sector due to the limited international travels and the significant decrease in numbers of foreign tourists to many popular ASEAN destinations. The impacts were severe since the crisis hit the economic backbone of the region”. Additionally, an interview with International Economics Relations at Thailand Development Research Institute asserted: “The limited movement of goods and services would definitely disrupt the regional and global supply chains. It has harshly affected the cross-border trades (both imports and exports). As a result, it can lead to higher prices, which in turn might lead to higher prices of goods for suppliers, customers, and consumers due to limited supplies during the pandemic”. Overall, the COVID-19 crisis has downgraded the progression toward the UN SDGs, affecting SDG 8 for decent work and economic growth.

5.2. Environmental Dimension

The COVID-19 pandemic has mixed effects on the environmental dimension. The positive impact of the pandemic on the environment has evidenced from the better air quality due to the reduction of economic activities worldwide, supporting the progress toward SDG 13 for climate change. The recent research also supports the positive impact [19,40,49]. As economic production temporarily stopped, the emission of greenhouse gas and aerosols decreased. Travel bans, lockdowns, and transportation restrictions also contributed to the reduction of air pollution. Kanniah et al. [40] found the decreasing trends of aerosols (AOD, PM10, PM2.5) and air pollutants (NO₂, CO) due to the COVID-19 lockdowns, especially in urban and industrial areas of the Southeast Asian region.

Geographically, Kanniah et al. [40] also found that the reduction in the aerosols was observed over the southern part of the ASEAN region, namely, in Singapore, Brunei, Malaysia, and the Philippines. However, in the northern part of the peninsular, the aerosols remained very high during the lockdown period due to extensive agricultural burning and related forest fires, intensifying NO₂ concentrations. This could be an indication of how the pandemic affects diverse sectors differently. The phenomenon was not only unique to the region, but also found in other places (i.e., China, Japan, and India), as indicated by Economic Research Institute for ASEAN and East Asia [50]. According to UNCTAD [49], the reduction in factory and road traffic emissions, and in global air traffic contributed to better air quality levels in the world's major cities.

The COVID-19 pandemic has caused at least two negative environmental impacts. The undesirable effects are directly related to the slackening development toward the UN SDGs, particularly SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 14 (life below water), and SDG 15 (life on land). The first undesirable outcome is the rise in the high volume of waste. Different kinds of waste mounted for different reasons. Bio-hazardous waste multiplied due to the daily usage of single-use or discarded face masks and surgical masks. For example, last year, the medical waste increased substantially and might exceed one ton per day in Bangkok Thailand [51]. Food waste also led to the generation of large quantities of organic waste due to the lockdowns, travel restrictions and severe cuts in agricultural and fishery exports since most of them were not storable [49]. Lastly, single-use plastics from packaging were dramatically amassed during the stay-at-home period since the consumers increased their consumption of the take-away foods. The Thailand Environmental Institute (TEI) found that the volume of household waste associated with the growing consumption of take-away food in the stay-at-home period rose by 15 percent to 6300 tons a day in Thailand alone [51].

The evidence from the interviews also highlights the negative impacts. The data show that a great environmental concern is put on the increasing volumes of waste from foods and single-use plastics due to the growing demands of food deliveries from the lockdowns. For instance, Director of ASEAN Studies Center, Chulalongkorn University, mentioned: "The strict COVID-19 measures negatively affected our environment from the mounting wastes that came from our leftover foods and plastics. The adverse impact regressed our environmental efforts on reducing the uses of plastics".

The second adverse effect from the COVID-19 pandemic is that the lockdown measure and transportation restrictions may cause weakening law enforcement of environmental regulations. The COVID-19 measures required everyone to stay at home including environmental protection workers at national parks, and land and marine conservation zones. Hence, wildlife crime, overfishing and other illegal activities (e.g., illegal logging) were less likely to be detected [41].

In sum, the pandemic has not only challenged us, but also projected the positive outlook regarding its impacts on the environmental dimension. This paper would thus call for greater supports and efforts on the environmental protection and care for the ongoing pandemic and post-crisis toward achieving the UN SDGs.

5.3. Social Dimension

Most ASEAN member states are developing countries with varied social difficulties even before the COVID-19 pandemic. In fact, the pandemic has intensified the existing social challenges on the health, social welfare and other societal dimensions. It has hardly hit everyone in the society, particularly the vulnerable populations and marginalized groups. It has adversely challenged our food security and nutrition, migrant refugees and stateless persons, gender inequality, and education—all of which has decelerated the progress toward the Vision 2030 for sustainable development. The adverse impacts could be directly linked to various SDGs, such as SDG 1 (no poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 4 (quality education), SDG 5 (gender equality), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), and SDG 16 (peace, justice and strong institutions).

According to UNESCAP [42], the undernourished people in the ASEAN region are estimated to be approximately 61 million people, with increasing numbers following the pandemic. Most of these people are in the informal sectors, which have been hit the hardest by the pandemic as their informal jobs could not be shifted online. Loss of income and employment has pushed them into further poverty, and they have been unlikely to afford nourishing foods. During the lockdowns, people were forced to stay-at-home. The measure badly affected the informal street vendors that the poor relied on as the food source since they were not allowed to operate and sell cheap food to them. As a result the poor would be compelled to rely on unaffordable, higher-priced supermarkets and formally registered markets [42]. Thus, the adverse impact regressed our progress toward SDG 1 (no poverty), SDG 2 (zero hunger), and SDG 3 (good health and well-being).

The pandemic crisis also disrupted education [43]. Most schools and universities were closed due to the lockdown and travel restrictions. As a result, distance education programs were instead implemented as an adaptation strategy for the traditional education system. This sudden change affects those who were not well-equipped with technologies and connectivity, using smartphones, tablets, or laptop computers for distance learning, especially the poor and marginalized groups with limited capacities and accesses [43]. The pandemic resulted in decelerating our effort toward the advancement of SDG 4 for quality education.

The COVID-19 pandemic has affected each gender unequally, especially women and girls [42]. A survey of UN women in April 2020 reported the following impacts. First, females in certain Southeast Asia countries (i.e., the Philippines and Thailand) were more likely to experience job losses or decreases in paid work hours for formal employment since the spread of COVID-19, when comparing with men. Additionally, for informal employment, the evidence in Cambodia and Thailand also suggested that female workers experienced job losses and a decrease in paid work more than men. Increasing cases of domestic violence were also reported across the Asia-Pacific region. The record was tripling after the lockdown in diverse cases due to the intense pressure and stress from job losses and poverty [44]. The crisis also degraded the progress toward SDG 5 for gender equality.

The pandemic also exacerbated problems experienced by migrants, refugees, asylum seekers, and stateless persons in Southeast Asia. The International Labor Organization found that 89 percent of its survey respondents were still employed in destination countries, and 16 percent of returning respondents reported that employers prematurely ended their contract [45]. And yet, the majority of the unemployed (97%) had no accesses to any social security supports [45]. Moreover, refugees and asylum seekers were experiencing the same problems as they lacked access to the national health, social welfare, economic assistance, and recovery programs. The situation could increase the risks of refoulement of these groups of people [42]. These findings could imply that migrant workers could be one of the most impacted groups as they were not fully protected by the destination countries' social protection mechanisms. As such, the problem could slow our development toward SDG 10 for reduced inequalities.

In addition, our data analysis from the in-depth interviews (e.g., ASEAN Studies Center, Chulalongkorn University and ASEAN Strategy and Cooperation Division, Ministry of Foreign Affairs in Thailand) indicates that the COVID-19 pandemic has adversely affected the society and many lives in the region. The data affirms that the crisis has made the poor become poorer. In particular, the vulnerable marginalized groups may be hit the most, concerning the poor health issues, restricted accessibility to nutritious food and limited access to the social security support. The lockdown and travel restrictions have also put the cross-border labors or migrant workers from the CLMV countries (i.e., Cambodia, Laos, Malaysia and Vietnam) at risk. Overall, the COVID-19 crisis has put people and the society in jeopardy. Director of the ASEAN Studies Center also asserted: “People in all age groups and every sector, specifically in the service sector, have been severely hit. Specifically, the elders who are in their early 50–60s since they are likely to get fired or forced to accept early retirement plans. Sadly, these people in the middle- to lower-income group would be economically paralyzed due to the job loss and inabilities to manage on-going loans/debts”.

In conclusion, the COVID-19 crisis has severely disrupted our society, affected our environment, and put our regional economic growth to a halt. It greatly impacted all three sustainability pillars or the economic–environmental–social triad, as discussed previously. Indeed, the crisis has been a ringing bell for us to rethink differently, redesign the development plans, processes and systems strategically to take greater responsibilities to make changes for future transformations as well as balance the needs among the triad paradoxes of environmental protection, social responsibility, and economic performance. The pandemic has posted many challenges, but several opportunities for sustainable futures also arise. Next, we look for new opportunities that may help transform and direct us toward regional recovery and sustainability strategies in the region.

6. Opportunities for Transformative Recovery and Regional Sustainability Strategies

Building our preceding analysis and discussion, this paper proposes diverse balancing recovery directions for policy implications to effectively respond to the COVID crisis. Despite the challenges, our proposed recommendations may shed new lights for new opportunities to create more transformative regional sustainability strategies in ASEAN for post-COVID pandemic. It is important to remark that the 10 ASEAN member states have certain similarities and diversities with contextual differences. The resulting proposed regional sustainability strategies from our analytical study are also consistent with the literature, such as the statement of President of ERIA [52], the 26th ASEAN Economic Ministers (AEM) discussion in Vietnam [53] and the OECD [18]. Importantly, this part responds to the research second inquiry: what are suggested balancing recovery directions, resolution and/or sustainability policy implications to move Southeast Asian nations forward for further collaboration and partnership? The analytical results and proposed strategies are derived from the empirical evidence from various in-depth interviews and the secondary data sources.

6.1. Seeking New Opportunities for Cooperative Regional Sustainability Development

Our evidence and analysis suggests that the ASEAN region should reinforce its strengths, lessen all weaknesses, mitigate possible risky threats and challenges from any shocks and seek for feasible future opportunities. Many ASEAN countries indeed share several co-existing commonalities, strengths and challenges. Therefore, further collaborations for cooperative ASEAN regional sustainability strategies are required to support the sustainable regional growth.

For years, ASEAN has enjoyed being one of the fastest-developing economy in the world. It has a strategic geographical advantage with adjacent distances to multiple emergent economies. The region has also benefited from the growing regional market potentials with more than 600 million local consumers, relatively low labor costs, attractive foreign direct investment (FDI) policies and prospering GDPs [54]. One key strength of ASEAN

centers on its expanding industrial sector. ASEAN also responds to the current industrial trend toward the global economic development, so-called the fourth industrial revolution or Industry 4.0, for sustainable manufacturing [55]. Its economic growth can sustainably grow by incorporating digital technologies and fostering investments in advanced R&D to gain competitive edge. The regional trade and investment facilitation is also essential for inclusiveness of recovery and growth and very much depends heavily on the digital economy of ASEAN [16]. ASEAN can therefore take the advantage of its strength in being a manufacturing hub in the supply chain for the world, particularly for the key industrial sectors, such as automobile and electronics productions.

Hence, the future lies in further collaboration among the ASEAN members to jointly capture the opportunities from attracting more foreign direct investments (FDIs) and multinational corporations (MNCs) to the region. Moreover, the region can strategically and collaboratively work to grow investments in the high potential markets, such as electronic vehicles (EV) and electrical healthcare-related productions. The evidence from the interviews with Investment Promotion Officers at Office of the Board of Investment in Thailand also support our proposition: “More FDIs are coming with the interests in electronic vehicles (EV). We need to think about EV promotion and support the infrastructure to capture the upcoming opportunity”.

Inevitably, the COVID-19 pandemic has negatively produced setbacks and decelerated progressing development. The heavy reliance on the international trades, global value chains, and tourism has weakened the regional economy. These factors have thus made the ASEAN region vulnerable from any interrelated global shocks and disruptions. Therefore, now is an opportunity to strengthen the regional cooperation, reorient toward more transformative regional sustainability strategies, particularly in the field of innovation, digital transformations and infrastructure connectivity.

The evidence from various interviews indicates that ASEAN should move toward further collaboration for the regional digitalization. Director of ASEAN Studies Center, Chulalongkorn University, asserted: “The COVID-19 crisis becomes a catalyst for building connectivity and infrastructure across Southeast Asia, based on the information from the ASEAN Digital Ministers’ Meeting”. Another interview from Senior Advisor of International Economic Relations at Thailand Development Research Institute also supports our proposition on the need for cooperative regional sustainability for future digital transformations toward Industry 4.0: “The future opportunities will rely on the digital transformations and innovation, together with upskilling and reskilling labors to fit the forth industrial revolution . . . We also need to balance the digital and technological advancement as well as educational development for capacity-building to serve the industrial changes”. Office of Board Investment further highlights the importance of capacity-building for people development to serve innovation and technological advancement in the region: “We should not forget that sustainable economy and growth is driven by people. The ASEAN region can be competitive by focusing on a development of a more balanced ecological system. It means that we will need to not only focus on the advanced technology and innovation aspects, but also develop well-equipped human capitals to serve the high-value industries, such as digitalization and automation”. Overall, to respond to the future transformations, our evidence suggests that ASEAN should put much emphasis on the social investments for enabling digital literacy and capacity-building development or educational trainings for the people. Derived from the preceding discussion and data analysis, our study proposes that the cooperative regional sustainability development in Southeast Asia is much needed for post-COVID pandemic recovery in order to achieve the ASEAN 2025 Vision and the UN 2030 Agenda for sustainable development.

6.2. Fostering a Cooperative Intra-ASEAN Trade Strategy

The study indicates that the ASEAN countries have advantageously played the significant role, as the major global producers of diverse essential products, in the world market with high exporting values. In reality, the region is the dominant midstream hub of

various agricultural and industrial products in the global value chains, such as the food supplies (i.e., rice, rubber and cassava) and a variety of manufacturing productions (i.e., electrical appliances, electronics, and automobile). As such, further collaboration for an intra-ASEAN trade strategy of these products becomes essential for the regional growth. The regional intra-trade has actually existed with the free flow of goods within the regional supply chains, based on the multinational investments within the ASEAN countries. This proposed strategy highlights the importance of the more advanced and unified economic cooperation and supply chain connectivity in the region for a sustainable post-pandemic recovery.

The data from the interviews strongly support the proposed regional strategy. For example, an interview with a prominent researcher at International Economics Relations, Thailand Development Research Institute, elaborated: “This region has a good opportunity to move forward with the intra-ASEAN trade regional strategy, in which all nations can jointly remove unnecessary trade barriers and collaborate to build a strong regional supply chains for supplying and trading goods/services within the member states. The focused industries should include clothing, machinery and electronics from upstream to downstream within the region”. Additionally, Director of ASEAN Strategy and Cooperation Division, Ministry of Foreign Affairs of Thailand, also put emphasis on the importance of the intra-ASEAN trade promotion: “The promotion of the intra-ASEAN trade promotion can help stimulate optimal utilization of resources across borders and strengthen the regional trades and supply chains”.

Moreover, the ASEAN member states have sound opportunities for growing intra-ASEAN trade agreements and investments in a variety of industries. Director of ASEAN Studies Center, Chulalongkorn University, suggested: “The opportunities for the intra-ASEAN trade should focus on the regional strength as the key global suppliers and worldwide manufacturing hubs for the automobile, electronics and agricultural food processing industries”. As ASEAN is the key global player in the automotive industry, advancing further cooperative agreements among the ASEAN countries toward building a strong FDI partnership with the private sector for the future EV productions and investments may be a starting-point.

To push forward with the intra-ASEAN trade, the ASEAN governments must cooperate with multinational companies. They should also work collaboratively to harmonize rules and regulations to support and facilitate the regional supply chains. Importantly, we propose that a cooperative unification of the intra-trade policy among the ASEAN members may be a more sustainable recovery approach for the post-pandemic crisis and any future shocks.

6.3. Building ASEAN-BCG Strategy toward ASEAN Green Economy

The study also unveils an alternative, innovative sustainable business model, called ‘BCG model’, referring to the ‘Bio-Economy’, ‘Circular Economy’, and ‘Green Economy’, for ASEAN. The key purpose of the ‘BCG model’ is to advance the environmental protection and eco-economic decoupling in the region. Responding to the global movement toward the new industrial revolution, this paper suggests that the ASEAN members should move forward the sustainable industrial and manufacturing strategy for developing the regional green economy. Our proposed strategy is in-line with the global trend toward the development of ‘Bio-Economy’, ‘Circular Economy’, and ‘Green Economy’ [56–60]. Since ASEAN is located in one of the most biodiversity-rich regions, it is thus sensible to strengthen this favorable competitive advantage. Therefore, we would like to propose that ASEAN should move forward the ‘BCG model’ to build the ASEAN green economy—an alternative model for more sustainable development approach in the region. Notably, the literature supports the development of the ‘Bio-economy’ [58,59]. It aims to advance biodiversity and technologies that improve agricultural products with high-value biodiversity-based products, while alleviating farmer poverty reduction and inequality. Bio-economy products generally covers a wide range of products, from bioenergy, biochemistry, food, animal food,

and biopharmaceuticals. Therefore, the bio-products could promote various aspects of sustainable development from food security, to good health and well-being, to sustainable energy. The 'Bio-Economy' also supports the non-linear economic system of the 'Circular Economy' in a sense that bio-products could be more environmentally friendly and more easily degradable and compostable [56,58]. The combination of the 'Bio-Economy' and 'Circular Economy' can result in the 'Green Economy' for cleaner and more sustainable production.

The 'Green Economy' [57,60] can become the innovative, economic redesign model that leads ASEAN to achieve long-term sustainable development. The data from the interviews also advocate that the promotion of renewable energy is considered a key stimulant for regional growth. Thus, investment promotion should be based on developing the high environmental commitment and building the green or digital infrastructure. According to the interview data from Office of the Board of Investment, the Investment Promotion Officers affirm: "Our economy can be sustained with a new transformative model that focuses on Bio-Circular and Green Economy. We need more investments in this area to achieve the regional sustainability".

Furthermore, the region can actually underpin current initiatives, such as the ASEAN Power Grid and ASEAN Smart Cities Network in congruent with low-carbon emissions, as stated by ASEAN Studies Centre and the Climate Change in Southeast Asia Programme [61]. The ASEAN states still have low-to-moderate shares of renewables in power capacity among Asian countries. Therefore, the region should attract more investment opportunities and development to grow sustainability in this realm. Developing the green infrastructure, such as renewable and energy efficiency technologies, can thus accelerate economic growth. Overall, the 'BCG model' strategy is thus proposed as the new future economic development model for greening ASEAN. The proposed strategy acts in response to a more balancing recovery response and future direction for harmonizing the economic–environmental–social triad in concert.

6.4. Enabling Public–Private–People (PPP) Partnership

Our study proposes a strategic development of public–private–people (PPP) partnership. The strategy focuses on further cross-agency collaboration across the region to optimize utilization of the pool resources and enhance synergistic cooperation for future transformative development. Our interview data from International Economic Relations at Thailand Development Research Institute also support our proposition on the need for the PPP cooperative partnership toward future regional sustainability. Its Senior Advisor asserted: "The ASEAN member states should continue to further collaborate and create synergy with diverse multi-lateral parties from the public and private sectors for future transformations, although ASEAN has the regional sectoral bodies to support information sharing and exchange". The paper also highlights the importance of building strong PPP partnership development in ASEAN. Our proposed strategy aims at tighten the regional alliance as well as contribute to further ASEAN collaborative efforts and confident partnership toward the ASEAN Complementarities Roadmap and the UN SDGs.

The general government and the public sector may play a central role, as the initiator and coordinator, to promote the foregoing proposed regional strategies toward the PPP partnership. The evidence from an interview with Chairman of the Digital Industry Club of Industrial Promotion and Support Department also affirms the importance of the PPP partnership and collaboration among diverse parties to support the regional growth. He indicated: "If we want growth and recover fast, we need multi-lateral collaboration from the public to private sectors and work together with education institutes for R&D . . . We has already started to join hands among diverse governmental bodies and the private sector to create a new initiative, called "National Digital Trade Platform (NDTP)" in the CLMV countries [i.e., Cambodia, Laos, Malaysia and Vietnam] to support digitalization of the intra-regional trade and e-commerce". The Permanent Secretary, Ministry of industry, also advocates the importance of the PPP partnership for the regional growth.

To grow the region sustainably, diverse sectors need to cooperate and partner together, particularly to encourage additional investments in the green infrastructure and connectivity in ASEAN. With advanced technological know-hows and investments from all ASEAN economic partners, the member states can drive further economic growth by building interdependent and green infrastructure toward sustainable development. The strategy is thus in-line with the ASEAN Community Vision 2025 and the UN Agenda 2030. In sum, the ASEAN-oriented strategic development policy for the PPP partnership is required for further collaboration and progressive partnership in ASEAN. The region can gain economic prosperity, support environmental protection and enhance social security toward paving a strong collaborative sustainability path and achieving our common sustainable development goals.

7. Strategic Links toward Harmonizing Regional and Global Sustainability Policies

This section provides the concluding analysis, responding to the last research inquiry. In a nutshell, it details how the resulting policy suggestions or implications may correspond to and harmonize with the international sustainable development and sustainability policies (i.e., the ASEAN Complementarities Roadmap and the UN SDGs).

In the past two decades, ASEAN has successfully reduced poverty and undernourishment of the people, as addressed in the Complementarities Report and linked to the UN SDGs. However, the COVID-19 pandemic has decelerated the progress toward sustainable development to varying degrees, as aforementioned. The following discussion focuses on linking the overall COVID-19 impacts on the sustainability pillars and our proposed regional sustainability strategies to the international sustainable development/sustainability policies (i.e., the ASEAN Complementarities and the UN SDGs). The COVID-19 impacts are related to the progress toward the regional agenda and are associated with all 17 goals of the UN Agenda 2030. The ASEAN Complementarities Report identifies five priority areas that are resonated with the UN SDGs to certain degrees. Figure 3 illustrates the strategic links between the COVID-19 impacts on sustainable development and both regional and global sustainability goals (i.e., the ASEAN Complementarities Roadmap and the UN SDGs). The highlighted colors represent the strategic complementarities and both interconnected sustainability agendas. Details about the harmonized international policies and our proposed transformative recovery strategies for policy implications are elaborated in turn.

7.1. Priority Area 1: Poverty Eradication

The COVID-19 pandemic adversely affects the economic dimension in connection with the first priority area. The disruption of the economy contribute to the loss of income and employment, especially the informal workers and the poor. It can directly exacerbate the poverty problem, linking to SDG 1. Moreover, the poverty issue is considered as multi-dimensional, as such the COVID-19 crisis can also negatively challenge our sustainability progress on food security (SDG 2), health (SDG 3) and education (SDG 4). To achieve the poverty eradication, we need to support those who may have badly been hit by the crisis. They include the vulnerable and marginalized groups (i.e., women, informal workers, migrant workers, and asylum seekers) due to their inferior political or legal status and the lack of access to many social protection mechanisms.

Furthermore, our proposed cooperative intra-ASEAN trade strategy can reinforce the poverty eradication—the first priority area of the ASEAN Complementarities and Vision 2025. The intra-ASEAN trade strategy can also strengthen the regional value chains in various sectors, specifically the agricultural and industrial sectors—the economic and social backbones of ASEAN. The proposed unification of the intra-regional trade policy can economically and socially benefit a variety of stakeholders (i.e., small farmers, workers, entrepreneurs, SMEs and large corporations). The proposed sustainability strategy is also consistent with the UN 2030 Vision and diverse SDGs. In particular, our proposed strategy can help eradicate the regional poverty (SDG 1); improve food security within

ASEAN (SDG 2); enhance the people's livelihood through good health well-being (SDG 3); promote quality education (SDG 4); advance work and economic growth (SDG 8); and reduce inequalities (SDG 10). Lastly, we would like to put forward that the most important emphasis should be put on SDG 17 by creating synergy and partnership to support the first priority area and achieve the overall global goals.

UN SDG		ASEAN Complementarities Roadmap				
		Priority 1	Priority 2	Priority 3	Priority 4	Priority 5
		Poverty eradication	Infrastructure and connectivity	Sustainable management of natural resources	Sustainable consumption and production	Resilience
1	No poverty					
2	Zero hunger					
3	Good health and well-being					
4	Quality education					
5	Gender equality					
6	Clean water and sanitation					
7	Affordable and clean energy					
8	Decent work and economic growth					
9	Industry, innovation and infrastructure					
10	Reduce inequalities					
11	Sustainable cities and communities					
12	Responsible consumption and production					
13	Climate action					
14	Life below water					
15	Life on land					
16	Peace and justice					
17	Partnerships for the goals					

Figure 3. Strategic links toward harmonizing regional and global sustainability agendas (i.e., ASEAN Complementarities Roadmap and UN SDGS for Sustainable Development) (source: leading author).

7.2. Priority Area 2: Infrastructure and Connectivity

Prior the COVID-19 pandemic, the ASEAN region is generally improved regarding the infrastructure, communication and connectivity, according to an analysis addressed in the Complementarities Report. However, the COVID-19 outbreak is testing our effectiveness in managing the second priority area. The high-level of mobile phone subscriptions in almost all ASEAN countries had made communication and connectivity among people at ease. This priority area indicates an opportunity for enhance the regional interconnectivity through digitalization in Southeast Asia.

Our data analysis implies that the COVID-19 pandemic has become a catalyst for digital transformations and growing need for infrastructure and connectivity in Southeast Asia. An interview with Ministry of Industry in Thailand provides a positive view

from the COVID-19 impact on related industries for improvements. He addressed: “The COVID-19 crisis has positively affected on the health-related manufacturing productions from the higher demands. We also experienced increasing demands for electronic connectivity devices, IT gadgets, and mobile applications due to the strict governmental measures, such as lockdowns, work-from-home policy and social distancing”. Hence, for the post-pandemic recovery direction, the data revealed that the more sustainable strategy for the government spending should also focus on the long-term regional infrastructure investments from healthcare to digital infrastructure improvements and better internet connectivity. International Economic Relations, Thailand Development Research Institute also affirms our proposition: “One opportunity lies in the regional synergy and more investments to further expand the regional infrastructure and interconnectivity among the ASEAN member states”. In addition, the region should consider expanding infrastructure investments on further advancing effectiveness of the regional health and social protection systems. Largely, our data analysis also suggests that the ASEAN people’s livelihood can be improved with better infrastructure. Specifically, the improvement areas should center on clean water and sanitation, foster affordable and clean energy, promote good health/well-being in sustainable cities and communities, and create sustainable industry, innovation and infrastructure for future transformations. These suggested improvements are also consistent with the UN 2030 Agenda (SDG 6–7, 9, 11). To achieve all interdependent systems, the study further asserts that our proposed public–private–people (PPP) partnership resolution strategy is crucial to create collaborative transformations and resilience for advancing regional sustainability.

7.3. Priority Area 3: Sustainable Management of Natural Resources

The foregoing proposed regional recovery strategies also put forward that ASEAN should pay attention to improve the regional sustainable management of natural resources. The COVID-19 measures required everyone to stay at home from the lockdowns for months. Having clean water and sanitation (SDG 13) has been much needed during the crisis. The pandemic has also interrupted surveillance operations of our environmental protection workers at national parks, and land and marine conservation zones. It implied that the illegal activities (i.e., wildlife crime or overfishing) in the conservation areas might be conducted without being detected, subsequently disturbing the balance of the life below water and life on land (SDG 14–15). Tree cutting and logging may affect the climate change, therefore this paper calls for further sustainable climate action (SDG 13). In fact, we hope that our proposed ASEAN-BCG strategy through the development of ‘Bio-economy’, ‘Circular Economy’, and ‘Green Economy’ in the region can help save the biodiversity, support the long-term waste management and optimize our resources and energy-saving. Consequently, the ASEAN-BCG strategy may promote the progress toward the responsible consumption and production (SDG 12). In total, caring for sustainable management of natural resources can help the region balance the eco-economic decoupling and grow sustainability. Overall, the proposed regional strategy can enhance sustainable development in the ASEAN ecosystem and help move forward the ASEAN Community Vision 2025 and the UN 2030 Goals.

7.4. Priority Area 4: Sustainable Consumption and Production

The forth priority area is directly link to UN SDG 12. The stringent measures, such as the lockdowns, closure of varied businesses (e.g., hotels, shopping malls, restaurants and markets), plus international travel restriction, have negatively caused the irregularly high demands from stockpile and production during the virus outbreak. The increasing volume of bio-hazardous waste from our daily discarded face and surgical masks, and other kinds of waste (i.e., medical waste, organic food waste and single-use plastic waste from take-away food packaging) are causing unsustainable problems in consumption and production, as explained previously. We also propose that future policies in this realm need to move forward sustainable production and manufacturing in the era of Industry 4.0. To

achieve sustainability, we also put forward that the proposed ASEAN-BCG strategy toward the radical and transformative development of the 'Bio-economy', 'Circular Economy', and 'Green Economy' or the 'BCG' model, is thus vital for further policy planning in the region. Diverse interviews with high-level officials, such as Office of the Board of Investment and Thai Auto Parts Manufacturers Association, also affirm that the 'ASEAN-BCG model' can be the crucial policy for the future of the greener and cleaner ASEAN. This strategic model can help enhance economic prosperity, environment protection and social equity to leave no one behind and achieve all three sustainability pillars. We hope that the proposed strategy can directly and indirectly help mitigate harms and damages, and also forge ahead the sustainable goals, specifically the climate action, life on land and life on water (SDG 13–15).

7.5. Priority Area 5: Resilience

The ASEAN Complementarities Roadmap addressed the important of resilience in its vision and guiding view of the future: "a resilient community with enhanced capacity and capability to adapt and respond to social and economic vulnerabilities, disasters, climate change as well as emerging threats and challenges" ([62], p. 3). Both the ASEAN and UN Agendas affirmed the complementarity of resilience. The resilience should be focused on the contexts of sustainable infrastructure, communities, agriculture systems, biodiversity, climate change, natural disasters, and social and economic systems. It should aim to uplift the people's good health, well-being, living standards and equality, resonating with the UN SDGs. In the time of crisis, such as the COVID-19 pandemic, resilience is much necessitated than ever before. To quickly revive from the crisis and prosper in the long run, our research suggests that the ASEAN community needs to take the priority on the people-centered and inclusive values and principles through adaptive capacity-building for resilience, linking to transforming quality education (SDG 4). To resolve the crisis, the transformative capacity-building strategy is much in demand for the unemployed and vulnerable groups, as discussed previously. These individuals need to develop necessary skills and competencies (i.e., adaptability, agility and resilience) to deal with uncertainties from job losses, disruptions and digital transformation through both formal and informal education and trainings. Importantly, the ASEAN people would need to reorient their thinking, behaviors and actions toward sustainable development to ensure no poverty (SDG 1) and no more hunger (SDG 2). They would need to be equipped with knowledge and understanding about the new normal businesses and operations during and post-COVID crisis.

This study also puts emphasis on the interconnecting roles of governments, businesses and various associated stakeholders through implementing the proposed strategic PPP partnership policy, echoing SDG 16–17. The PPP partnership policy would thus require careful strategic plans and transformative actions to improve human capacities and human capitals by fostering adaptability and resilience. The proposed strategy should holistically incorporate all economic, environmental and social dimensions into meaningful processes and ecological systems. As a result, the regional economy can be more resilient, inclusive, and sustainable to withstand any shocks or adverse impacts in the future.

8. Discussion

Overall, the unprecedented COVID-19 pandemic has posed several profound challenges to the progress of advancing all of the 17 SDGs in the Southeast Asian region. The endeavor for the UN 2030 Agenda and the ASEAN Community Vision 2025 has been disrupted by the pandemic. Responding to the pandemic crisis, our study intends to investigate the COVID-19 impacts and identify challenges and opportunities for possible sustainable recovery solutions in the ASEAN region, with respect to the UN SDGs. The paper offers a comprehensive analytical literature review and empirical investigation that provides the multi-dimensional perspectives of the ongoing COVID-19 pandemic situations and impacts on sustainable development in the region. It also broadens our

currently-limited understanding about the COVID-19 impacts on progress toward the regional ASEAN 2025 Vision (i.e., ASEAN Complementarities Roadmap) and the global 2030 Agenda (i.e., UN SDGs). In sum, the analytical findings contribute to advance the inadequate theoretical and practical knowledge about the COVID-19 impacts on the regional sustainability development in Southeast Asia. Next, we summarize our concluding findings from the data analysis and our discussion.

First, our latest relevant literature review advances the knowledge base and scholarship about the COVID-19 impacts on sustainable development, as discussed in 2.1. The review result reveals that the existing studies are mostly limited to general overviews, conceptual arguments and analyses of the pandemic effects at the macro-level perspectives with the global or country-specific contexts [3,4,8,21]. Additionally, more research is needed to further study in the context of developing countries [9,13,14]. Hence, our paper responds to the literature call by expanding the insufficient knowledge in this domain, specifically in the developing countries and emerging economies at the regional context of Southeast Asia.

Second, only few previous studies examined the pandemic impacts on all three sustainability pillars of the UN SDGs [7,8,10,14]. Our current study thus addresses the literature gap. Moreover, the previous scholars urged that we should rethink development and need a paradigm shift toward sustainable development for post-pandemic directions [3,4]. Additionally, future research should consider the multi-faceted ecological, social, economic and political systems and processes to reflect complexity, uncertainty, contingency and context-specificity for radical transformations [20,24]. Therefore, our study expands the limited knowledge by proposing and employing the integrated sustainability research framework, based on the frameworks of the ASEAN Complementarities Roadmap and the UN SDGs, as explained in Section 2.2. Our integrated research framework serves as the basic multi-dimensional assessment of the sustainability pillars (i.e., economic, environment and social dimensions) and the analytical tool toward harmonizing the regional and global agendas for sustainable development.

Third, this paper answers all of the critical research inquiries that it originally set out to investigate. The resultant analysis reports various pandemic effects, challenges and opportunities on sustainable development in ASEAN. The findings from the evidence indicate several adverse impacts on the economic and social dimensions toward sustainable development, affecting various SDGs (i.e., SDG 1–5, 8, 10, 16). Additionally, it reveals that the pandemic has produced both positive and negative effects on the environment aspect, linking to varied SDGs (i.e., SDG 11–15). The summary table (Table 3) presents our outline of the concluding impacts on the economic–environmental–social triad for sustainable development in Southeast Asia.

Furthermore, our paper proposes the balancing recovery directions for policy implications to effectively respond to the COVID crisis in ASEAN. We suggest four transformative regional sustainability strategies for the post-COVID pandemic, as discussed previously (see Section 6). They included the following: (1) seeking new opportunities for cooperative regional sustainability development, (2) fostering a cooperative Intra-ASEAN trade strategy, (3) building ASEAN-BCG strategy toward the ASEAN green economy, and (4) enabling public–private–people (PPP) partnership.

In conclusion, our analytical study demonstrates that all four proposed regional sustainability strategies can be strategically linked with the five priority areas of the ASEAN Complementarities Agenda (i.e., (1) poverty eradication, (2) infrastructure and connectivity, (3) sustainable management of natural resources, (4) sustainable consumption and production, and (5) resilience). The regional agenda is purposefully corresponded to and harmonized with the global goals of the UN SDGs for sustainable development. We also exhibit how the proposed regional sustainability strategies and all suggested sustainability domains are strategically interrelated, as aforementioned and illustrated in Figure 4. Figure 4 depicts an infographic summary of the strategic links among the proposed regional sustainability strategies for transformative COVID-19 directions and policy implications to-

ward the harmonized international sustainability policies (i.e., ASEAN Complementarities Roadmap and UN SDGs).

COVID-19 Impacts on Sustainable Development in Southeast Asia
Proposed Transformative COVID-19 Recovery Toward Harmonized Sustainable Development Policies
(i.e. ASEAN Complementarities Roadmap and UN SDG)



Figure 4. Infographic summary of links among the regional sustainability strategies for transformative COVID-19 recovery toward harmonized international sustainability policies. (source: leading author).

In practice, the findings from our paper can contribute to advanced theoretical knowledge and practical implications. Our study can benefit diverse stakeholders as follows. To development practitioners and organizational leaders, the study may be used as a pragmatic guideline for transformative directions and strategic plans for COVID-19 recovery toward resilience and sustainability in the fast-growing regional development of ASEAN. The results implied that we should put sustainability as the top priority and reorient our efforts and investments toward sustainable actions for better futures. To the academics, the study addresses several literature gaps and provides the comprehensive analytical literature review and qualitative research with empirical evidence. The results can advance the theoretical knowledge and expand our currently-limited understanding about the COVID-19 effects on sustainable development in Southeast Asia. Finally, to policy-makers, the findings present the critical overview of the pandemic impacts and suggested regional transformative sustainability strategies for policy implications toward our common goals.

Lastly, it is noteworthy to highlight that all of our proposed regional sustainability strategies requires well-planned strategies and innovative redesign of processes and ecological systems for sustainable development and transformations. The aggregated success requires a cumulative synergy and commonly shared vision from all stakeholders. Forging ahead together, our study calls for further strategic partnership and collective actions to successfully manage and tackle the COVID-19 pandemic crisis.

9. Limitations and Directions for Future Research

This study strove for the highest quality to respond to the research objectives and questions that it originally set out to investigate. The research was conducted last year in the late 2020 during the severe COVID-19 pandemic in Southeast Asia. Thus, publicly available

information and readily data about the ASEAN region, were restricted and somewhat outdated. We resolved the limitation by collecting both the primary data from in-depth interviews with the most relevant multi-lateral parties and the secondary data from the latest news and publication from reliable international organizations. The data sources helped to assess the current situations and understand diverse perspectives, regarding COVID-19 impacts and future outlooks toward sustainable development in ASEAN.

Additional studies are required for more insights about the actual pandemic impacts and post-COVID recovery resolutions for the region. Future research may conduct studies that provide in-depth recommendations for possible COVID-19 recovery responses on the individual countries in the region. Additional cross-country or cross-region comparisons are advised for upcoming research. It is also suggested that more studies should be conducted to broaden our knowledge and understanding about the pandemic impacts on each individual key sector (i.e., agriculture, industry and tourism) in depth. The study can be a starting-point for more related research in Southeast Asia and other region.

10. Conclusions

The impacts of the COVID-19 pandemic have posted so many challenges to everyone on many levels of the society. The crisis has severely affected diverse sectors and adversely disrupted our world. Indeed, the pandemic has been the immense alarming wake-up call for future transformations, sustainable actions and resilience to attain the UN SDGs and the 2030 Agenda. All in all, this empirical study offers the insightful analysis, fruitful information, and constructive suggestions for policy implications about the COVID-19 impacts and recovery directions toward the regional sustainability development in the post-pandemic era. It can help provide a practical guidance on economic, environmental and social policy implications about what we should do to resolve the crisis and how to forge ahead our transformative regional sustainability strategies toward our common goals. The paper thus advances our currently-limited knowledge and understanding about the COVID-19 impacts on sustainable development in Southeast Asia, contributing to all ASEAN member states and our sustainable society. It is hope that our proposed recovery strategies and international policy implications can further correspond to the eco-economic decoupling for economic growth and environmental degradation toward a more sustainable and integrated economy. Lastly, we hope that the proposed strategic directions may help pave a more balanced, transformative regional sustainability growth and progress toward the harmonized agendas (i.e., ASEAN 2025 Community Vision 2025 and the UN 2030 Vision) for resilience and sustainable futures.

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