# APPLYING THE STRATEGIC VISION APPROACH (FORESIGHT) IN SETTING PRIORITIES IN AGRICULTURE AND ENERGY IN VIETNAM[1]

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***Summary:***

*Addressing the challenges of inclusivity and sustainability in the context of the 2030 Agenda for Sustainable Development requires: (a) to broaden the strategic focus of science, technology and innovation (STI) policy to mainstream social challenges into the core of the Program; (b) to mainstream the direct and indirect contributions of innovations to the economic, social and environmental aspects of sustainable development; and (c) to promote transformative innovations with the potential to replace existing unsustainable systems and practices (UNCTAD, 2019). The article provides international experience in the application of the strategic vision approach (foresight) to select priorities in agriculture and energy, toward sustainable development. Based on analyzing the status of the application of the Strategic Vision approach in Vietnam and international experiences, the article proposes some initial solutions for the application of the Strategic Vision approach in selecting priorities in agriculture and energy toward sustainable development in Vietnam.*

***Keywords:*** *Strategic vision (foresight); STI policy; Agriculture; Energy; Sustainable development.*

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## 1. Foresight approach in priority setting

Currently, the development theories based on value chain and industrial cluster[3] are laying the foundation for a shift in the perspective of priority setting from "product" to "capabilities." Additionally, priority selection criteria based on: (i) generating high added value; (ii) creating competitive capabilities for the future; (iii) having high connectivity, are no longer suitable and even infeasible in the context of rapid and unpredictable changes *(Vu Thanh Tu Anh, 2022)*. Therefore, there is a need to change the methods and criteria for priority selection towards value chain and industrial

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[3] According to Michael Porter, an industrial cluster is "a geographic concentration of firms, suppliers, and affiliated businesses as well as of companies in related industries and supporting institutions (for example: universities, standards bureaus, trade associations, etc.) in some specific fields, both competing and cooperating with each other".

cluster[4]. The application of foresight in selecting priority areas is considered an appropriate approach that has been implemented in some developed countries such as Germany *(Cuhls, K., 2003),* Finland *(Prime-minister Office of Finland, 2014),* as well as developing countries like Thailand.

Foresight began as a planning tool for investing in science and technology and was initially seen as Technology Foresight (TF) *(Tegart, G, 2001).* While TF is crucial for future vision, technology is now viewed as one of many factors influencing society. Hence, TF is just a part of Foresight. Foresight is currently being more widely used, reflecting a global trend. It has become prevalent in Europe and is now happening on every continent worldwide. Foresight has been successfully used to address social, cultural, and economic issues *(EU, 2020)*.

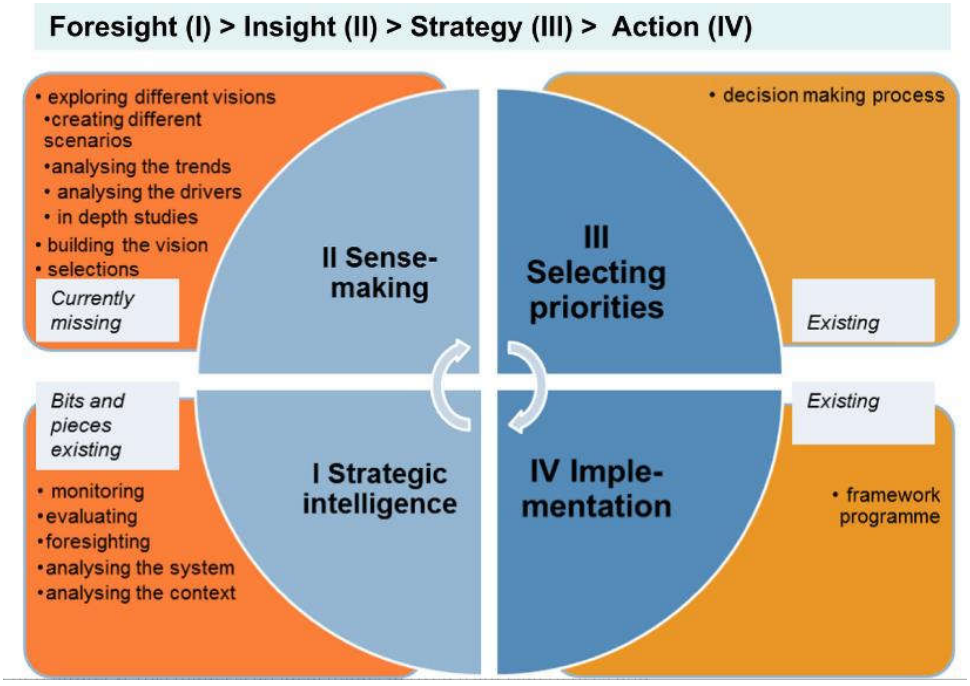
Foresight is described as "not forecasting the future but considering different plausible future choices and the opportunities as well as challenges they may bring" *(EU, 2020).* According to this definition, Foresight differs from forecasting. While forecasting attempts to predict a "correct" future version based on data from the past, evidence, and probability (e.g., mathematical models), foresight uses various reasonable/future alternative choices based on a reasonable combination of influential factors (economic, social, technological, environmental, and political). Thus, it identifies risks and challenges in the future characterized by uncertainty. Besides prominent features such as systemic thinking and stakeholder involvement, gathering intelligence about the future, Foresight is more quality-oriented, aiming at building mid and long-term visions for current decisions and actions *(Gavigan et al., 2001)*. This definition emphasizes the interaction of many actors participating in the knowledge creation process by Foresight, surpassing individual biases and institutional perceptions about future awareness and assumptions *(Rosa et al., 2021).*

Foresight is a continuous dynamic process that looks forward to actively prepare for changes in the future. Foresight does not focus on daily "activities," although it can provide important insights into how activities can be changed to manage efficiently in a rapidly changing and unpredictable world. Foresight does not rely on extrapolation from past and current activities but recognizes that the future is uncertain, and serious events may occur. Most importantly, the goal of Foresight is *not only to*

[4] Today's global competition is competition along value chains and industrial clusters (also known as industrial clusters). This means that if Vietnamese businesses do not participate in the value chain or global production network, it means excluding themselves from the global playing field. But even when participating in the value chain and global production network, but only occupying low value-added stages (processing or exporting raw resources), the development prospects are not bright.

*prepare well for the future* but also to leverage every opportunity *to shape and construct the future* in the desired direction *of priority choices in the future*.

The Foresight cycle consists of four stages: (1) Strategy determination - Future orientation (horizon scanning) to identify weak signals of change in society, technology, economy, ecology, and politics (Social, Technology, Economy, Ecology, and Politics - STEEP); (2) In-depth understanding and implementation activities to reflect the impact between trends and forces, simultaneously building a series of reasonable and desired future scenarios and visions; (3) Priority setting - Developing a strategy by analyzing scenarios, strengths and weaknesses, or gaps between necessary actions and current strategies. Particularly, in some contexts, in the strategic vision of Foresight for organizations, the fourth stage may be supplemented - that is (4) Implementation to start actions, which can be outlined in a roadmap or strategic plan, and monitor its results *(Cuhls et al., 2015)*; see Figure 1.




*Source: Cuhls et al. 2015.*

**Fig. 1.** Foresight cycle in priority setting

## 2. Current state of foresight application in priority setting

### *2.1. Worldwide*

In the APEC and ASEAN regions, Foresight capabilities have been developed since the early 2000s with technical support from the APEC

Technology Foresight Centre, established within the framework of the APEC Industrial Science and Technology Working Group (ISTWG) led by the National Science and Technology Development Agency of Thailand (NSTDA), now under the auspices of the National Research Council for Policy and Strategy (NRCP) in Thailand. Until now, Foresight has been applied in the fields of energy/environment, health, technology, and society[5].

**Table 1.** Foresight organizations in the governments of ASEAN member countries

| | **Country** | **Website** |
|---|---|---|
| Center for Strategic Futures | Singapore | https://www.csf.gov.sg/ |
| Center for Strategic and Policy Research - Brunei Future Initiative | Brunei | http://www.csps.org.bn/csps-brunei-futures-initiative/ |
| Innovation Foresight Institute (IFI) | Thailand | https://ifi.nia.or.th/ |
| Academy of Sciences Malaysian (Foreseeing Science and Technology) | Malaysia | https://www.akademisains.gov.my/ |
| Malaysian Industry-Government Group for High Technology (Vision and Future Studies) | Malaysia | https://www.might.org.my/ |
| Office of the National Council for Higher Education, Science, Research and Innovation Policy (NXPO) | Thailand | http://thaist.sti.or.th/ http://www.apecctf.org |

*Source: Cameron et al., 2022*

ASEAN member countries such as Malaysia, Singapore, Thailand, the Philippines, and Vietnam regularly issue 5 or 10-year socio-economic development plans and long-term plans for specific industries or sectors. However, these related processes have not yet been considered as foresight activities with specific structures and processes, along with factors like future orientation (horizon scanning), scenario planning for multiple futures, identification of major trends, potential shocks, and recovery measures *(Cameron et al., 2022).* Brunei Darussalam, Malaysia, Singapore, and Thailand have long recognized and identified foresight as an area to structure and provide information for the future planning of the government and foresight organizations established or sponsored by the government (see Table 1).

[5] http://www.apecctf.org/index.php/research.html

### *2.2. Vietnam*

In Vietnam, the concept/approach of Foresight, tentatively translated as "strategic vision", was first introduced at the specialized workshop "Technology Foresight for Development". This workshop was organized by the National Institute for Policy and Strategy Studies (NISTPASS) under the Ministry of Science, Technology, and Environment (MOSTE), in collaboration with the APEC Secretariat during the 20th meeting of the APEC Industrial Science and Technology Working Group (ISTWG APEC) in Hanoi on April 23rd, 2001. The purpose of the workshop was to introduce the foresight approach to technology as a new supporting tool to identify R&D priorities in both developed and developing countries[6]. During this workshop, for the first time, participants, including policy planners, managers, and the science and technology community, had the opportunity to approach the Foresight methodology and learn from the experiences of APEC member economies related to the application of Foresight in decision-making to choose development strategies at various levels. The practical benefits and expectations of the Foresight approach and application were also introduced. Among them, the most significant outcome of the workshop was the commitment of the Ministry of Science and Technology to financially support NISTPASS in organizing two additional training workshops for Vietnamese experts on Foresight, with technical support from the APEC Center for Technology Foresight (APEC-CTF) for determining science and technology priorities in the post-harvest processing and tea industry *(Bach Tan Sinh, 2019; NISTPASS, 2001).*

From a research perspective, several studies related to Technology Foresight (TF) were initiated by NISTPASS from 2000, primarily elucidating TF theories with experimental applications in the post-harvest processing and tea industry *(Nguyen Manh Quan, 2002).* Additionally, the project "Policy Advisory for the Science, Technology, and Innovation (STI) Strategy 2011-2020 and Implementation of the High Technology Law" led by NISTPASS in coordination with management units within the Ministry of Science and Technology was implemented over two years (2010-2011). This project was sponsored and technically supported by the United Nations Industrial Development Organization (UNIDO). The project aimed to: (1) Enhance the capacity of relevant stakeholders in Vietnam to formulate science, technology, and innovation policies and strategies aligned with the country's

[6] The content of the Workshop presented by experts from the APEC Technology Foresight Center (TFC) includes Methodology and situation of Foresight research in the world [Prof. G. Tegart]; Thailand's Foresight experience in agricultural projects [Dr. Sutat, Thailand]; Science and technology policy and technological vision in Japan [Dr. Kuwahara, Japan]; Expected benefits of applying technology vision [Dr. Chatri Sripaipan, Thailand].

economic and social objectives; (2) Support the development of the STI Strategy for the 2011-2020 period by determining key science, technology, and innovation policy priorities, either by topic (e.g., key scientific areas, key technology areas, and major application areas) or by structure (e.g., persistent deficits or gaps in the STI system); (3) Assist in identifying and implementing priorities, interventions, and future directions of Vietnam's science, technology, and innovation policies and strategies by developing a consensus vision of the future through strategic foresight activities.

The 3rd International Workshop "Integrated Foresight for Sustainable Economic Development and Environmental Adaptation in ASEAN Countries" was jointly organized by APEC-CTF and NISTPASS with the support of the Rockefeller Foundation and the National Science Technology and Innovation Policy Office, Thailand, in Hanoi on April 4-5, 2013. The workshop aimed to apply the Integrated Foresight approach along with sustainable economic and ecological options to develop policies, strategies, and actions to promote science, technology, and innovation for the equitable development of ASEAN countries, in line with the consensus vision of the ASEAN Krabi Initiative by ASEAN leaders, promoting "Science, technology, and innovation for a competitive, sustainable, and integrated ASEAN"[7].

More recently, the foresight approach has also been applied in Vietnam within the framework of the Vietnam-Australia Innovation Partnership Program (Aus4Innovation) sponsored by the Australian Government. The program aims to develop four scenarios for Vietnam's digital economy in the future[8] *(Cameron et al., 2019 and 2018)*.

**Box 1 - Applying Foresight Approach to Build Four Scenarios for Vietnam's Digital Economy by 2030 and Vision until 2040**

The Foresight approach was applied within the framework of the "Future of Vietnam's Digital Economy" project, a collaborative innovation project between the Ministry of Science and Technology of Vietnam and Data61|CSIRO of Australia. The project aimed to identify dominant trends, key driving forces for change, forecast scenarios, and action plans to guide Vietnamese policymakers in keeping pace with the next wave of digital

[7] This workshop was conducted within the framework of the Project "Integrated Vision for Sustainable Economic Development and Environmental Resilience in ASEAN Countries" chaired by APEC TFC and funded by the Rockefeller Foundation. The completion of the project will establish a model for using Foresight technology to support sustainable development across ASEAN member states. The results of the Project can be used to form new insights into what might happen in 2020 following the formation of the ASEAN Economic Community in 2015 under conditions of stable, productive employment prospects. efficiency and innovation in emerging ASEAN economies.

[8] Details on applying the foresight approach in building four scenarios for the economy in Vietnam until 2030 and a vision to 2040 are presented in Box 1 in this article.

innovation and industrial transformation. This report begins by analyzing the macroeconomic situation and Vietnam's digital economy from early 2019, with a primary focus on agriculture and manufacturing. The report also analyzes the trends that will impact the digital economic development of Vietnam until 2045, examining the degree of digital transformation that could generate four scenarios for the future digital economy of Vietnam.

From these analyses, the research team developed a roadmap to help the Vietnamese government minimize risks and develop the digital economy in all scenarios. The content of this report is the contribution of Vietnamese experts and citizens: delegates participating in workshops, providing data interviewees, and experts providing detailed feedback on the research team's analyses.

This box describes the implementation steps of Foresight along with the applied methods and results of each specific step:

**Step 1 - Identifying trends in the macroeconomic and digital economy:** Applies methods such as horizon scanning, document overview, and issue identification. Output - "Future of Vietnam's Digital Economy Report" - updated report *(Cameron et al., 2018)*.

**Step 2 - Scenario building for the future digital economy of Vietnam by 2045:** Applies methods such as workshops, interviews, and primary data analysis to develop four scenarios suitable for Vietnam's economy by 2045 based on different levels of digital transformation. The four scenarios are: (i) Traditional (low digital transformation and small-scale IT operations); (ii) Digital Transformation (digital transformation process taking place in all industries and public services, with rapid growth in the export of IT&C services). This scenario is like the model South Korea is pursuing; (iii) Digital Export (slow industrial transformation but rapid expenditure in the IT&C sector, with foreign companies utilizing cheap IT&C labor). This model is like what India is pursuing; and (iv) Digital Consumption (broad industrial transformation across all sectors, although the IT&C sector is not a significant component of Vietnam's export revenue). This model is like what Australia is pursuing.

**Step 3 - Exemplary research:** Focuses on the agriculture and manufacturing sectors, applying methods such as surveys of leaders and businesses to provide data for creating indices on the awareness and readiness to participate in Industry 4.0 in the agriculture and manufacturing sectors of Vietnam.

**Step 4 - Conclusion and policy recommendations:** Applies discussion methods for the final results. The specialized workshop provides policy suggestions and action plans for the future. The result of this step is the "Future of Vietnam's Digital Economy Report - Final Report 2019" *(Cameron et al. 2019)*.

Experience in applying Foresight in developing strategies and policies for the digital economic foundation with four scenarios for the future digital economy until 2045, specifically outlined in the agriculture and manufacturing sectors, along with recommendations for strategies, policies, and action plans for the future in Vietnam, can be referenced for applying foresight tools to prioritize sustainable development in agriculture and energy in Vietnam.

Although before the application of foresight in developing strategies and policies for the digital economic development, there were some research topics on the role of strategic foresight approaches or tools in formulating science and technology policies and strategies. However, the research results have predominantly only reached an academic and theoretical level, lacking practical testing in the policy and science and technology strategy formulation in Vietnam. The following presentation will provide initial research on the application of foresight to prioritize agriculture and energy in Vietnam.

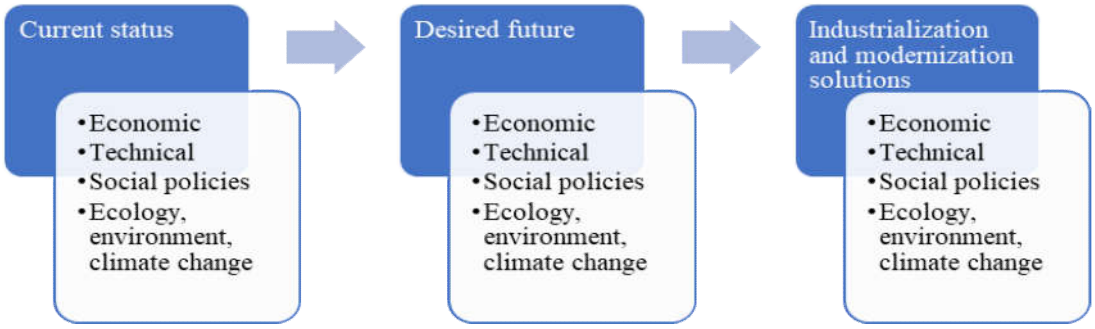
## 3. Applying foresight in prioritizing sustainable development in agriculture and energy

### *3.1. Framework for applying foresight in prioritizing sustainable development*

Based on the Foresight approach, the author's team conducted the assessment of the current state of agriculture and energy, identified the desired future, and proposed prioritized solutions to promote sustainable development in agriculture and energy. As discussed earlier, the Foresight approach is not about prediction but a method of identifying various visions/scenarios (whether they may occur or not). From these scenarios, a preferable future is chosen, and solutions are proposed to achieve that vision. This approach has advantages in conditions of high uncertainty, where many factors influence the future of a system, and forecasting using computational models may lack accuracy *(Hallegatte, 2009).* This approach has been widely applied in environmental change assessments, land-use changes, or climate change adaptation. Various methods have been employed, ranging from constructing story-driven scenarios based on historical trends *(Lempert et al., 2013; Bach S 2020, 2018, Rounsevell & Metzger, 2010)* to developing and discussing future scenarios with the involvement of relevant stakeholders *(Foran et al., 2013; Lempert et al., 2013)*. Plans such as the Mekong Delta Plan (2013) also rely on this approach, constructing and analyzing multiple scenarios concerning socio-economic development levels, policies, sea-level rise, climate change impacts, etc. Many factors influence the transformation in agricultural systems, often classified at different levels (such as the level of a cultivation system/farm, to the local/regional/national and international levels) or according to key aspects (in economic, technical, social policy, environmental areas) *(Nguyen, TB et al., 2023; Hazell & Wood, 2008).*

This paper analyzes the current state and desired futures based on analyzing key aspects, thereby proposing recommendations for each area. The proposed solutions are based on comparing the desired future with the current state of the industry/sector, thus determining solutions to achieve the goals. The analytical framework is presented in the following diagram:

**Table 2.** Foresight application framework for prioritizing sustainable development in the industry/sector




*Source: Authors*

### *3.2. Agriculture and energy towards sustainable development*

#### *3.2.1. Agricultural sector*

The research team applied the analytical framework above to analyze the current state, desired future, and solutions for the agricultural sector. The current state of agriculture and energy is assessed based on technical, economic, and socio-policy aspects at low/medium/high levels. The desired future reflects the aspirations/scenarios the sector aims for, considered based on the current state and trends of relevant factors. The identified levels (low/medium/high) are qualitative, based on relevant reference materials and the team's assessments. Subsequently, solutions are proposed for examination and analysis. The Foresight application framework for prioritizing sustainable development in agriculture and energy is presented in Table 3.

**Table 3.** Foresight Application Framework for Prioritizing Sustainable Development in Agriculture

| | Current status | Desired future | Industrialization and modernization solutions |
|---|---|---|---|
| Techique | Agricultural communication and mechanization are at a relative level | High-tech, automation, smart farming agriculture | - Robotics<br>- High-tech machinery, automatic control<br>- New varieties, adapted to climate change<br>- Apply biotechnology in fertilizer and food production<br>- IT and digital transformation<br>- Improve production efficiency, utilize by-products, process and preserve<br>- Development of new materials |
| Economy | Nông nghiệp phát triển tương đối, thị trường dịch vụ, nông nghiệp thấp, tài chính thấp | Agricultural services, financial market development, improved market connectivity | - Linking and connecting supply and demand<br>- Financial support<br>- Socialize |
| Social policy | Relative knowledge and awareness | High level of knowledge, awareness, and production skills, policies to support science and technology development | - New forms of communication and training<br>- The participation of many stakeholders (institutes, schools)<br>- Develop solutions to encourage research and transfer of science and technology |
| Ecology, environment, climate change | Environmental pollution, natural resource degradation, weather impacts + climate change | Reduce pollution, restore and regenerate ecosystems; The impact of climate change is well controlled | - Enhance forecasting<br>- Apply IT in connecting and providing information<br>- Strengthen research activities |

*Source: Authors*

Assessment of the current state of agriculture, *in terms of technology*, mechanization in agricultural production is relatively low, with a gradual increase in the number of small-scale machineries. However, the level of modernization in machinery is not high, and the machinery structure predominantly leans towards smaller sizes, resulting in low operational efficiency and limited versatility of power machinery *(Bach Quoc Khang, 2020).* The application of biotechnology is limited in certain areas (such as seed selection, fertilization, and processing).

*Economically,* the financial market for agricultural production and related sectors is not fully developed, particularly for aquaculture, forestry, and ecotourism. Role of supportive services for agricultural activities are undervalued, facing obstacles related to cost, quality, and support policies *(Nam and Dai, 2012).* The market for agricultural and aquaculture products (both inputs and outputs) has generally developed relatively well, especially in the fields of rice cultivation and aquaculture.

*From a societal perspective*, people's knowledge of agricultural cultivation and more sustainable farming practices has improved due to various communication programs in recent years. The negative impacts of weather and climate change are considerable in the fields of cultivation, aquaculture, relatively low in forestry and ecotourism. Climate change also affects the development of biotechnological sectors, such as the introduction of new varieties, materials, and techniques adapted to climate change *(Arndt et al., 2015).*

*In terms of technology,* the desired future is a high-tech agriculture sector that demands advanced technological solutions such as automate and precise farming (machine-seeded sowing, laser-leveling of fields, drones, field information monitoring, etc.), robotics, genetic technology, and high-level application of information technology in production (supply chain connectivity, source traceability). This also includes advanced processing and preservation activities, maximizing the value of agricultural product development.

*Economically,* the focus should be on transforming agriculture into a service-oriented sector through solutions that link production and consumption, improve transportation and information infrastructure. Financial markets should develop based on support from the state and other socialized sources. Agricultural service markets and S&T markets should grow to meet the application needs of S&T for various population segments. People's knowledge and awareness of the role of S&T, as well as their skills in receiving and applying S&T information, need to be enhanced. The impacts of climate change are effectively controlled through forecasting efforts, information connectivity, and research.

*3.2.2. Energy sector*

According to the study by Smith et al. (2022), they have identified the driving forces for the development and efficient use of energy in the industry, encompassing economic aspects (technology, operational costs, finances), organizational aspects (structure, management, capacity), market aspects (market forces, ownership, information networks), and policy aspects (policies and regulations). Using the foresight analysis framework, the research team evaluates and determines the current state, future scenarios, and solutions for the energy industry by analyzing resolutions, policy documents, Party and State action programs on energy; scientific documents; and interviews with energy experts. Additionally, three assessment scales (high, medium, and low) are employed to examine the current state.

Regarding the current state of Vietnam's energy industry, in terms of economic dynamics, high technology associated with cost optimization is rated as average. However, current financial conditions are highly praised by experts because enterprises can access funds from three sources: investment funds, state budget (public investment), and capital from the companies themselves. Concerning organizational dynamics, experts assess the current structure, management, and capacity of enterprises in the industry as low. In terms of market dynamics, market forces and information networks are evaluated as average since electricity price information is publicly available, and private companies in the industry operate directly. Policies and regulations have not been effective, especially regarding global trends in new energy development.

**Table 4.** Foresight application framework for identifying energy priorities towards sustainable development

| | **Driver Forces** | | | |
|---|---|---|---|---|
| | **Economic** | **Organizational** | **Market** | **Policy** |
| | *Technology, operational cost, finance* | *Organizational structure, management, capability* | *Market forces, ownership rights, information network* | *Policies and regulations* |
| **Current Status** | 1. Technology: **average**<br>2. Optimal operational cost: **low**<br>3. Finance: **high**<br>- Investment fund.<br>- Company's capital source.<br>- State budget. | 1. Organizational structure: **low**<br>- Bulky and ineffective.<br>2. Management: **average**<br>3. Capability: **low**<br>- Lack of expertise and ineffective strategies.<br>- Infrastructure miscalculations. | 1. Market forces: **average**<br>- Not high for the power grid.<br>- B2B (direct cooperation between businesses) will have separate agreements.<br>2. Ownership rights: **low**<br>- Almost a state monopoly.<br>3. Information network: **average**<br>- Price information is publicly available. | 1. Policies and regulations: **low**<br>- Unstable<br>- Unable to control uncertainty. |
| **Future** | -Technology: high-productivity technology, cost reduction, cost-effective; green | Streamlined organizational apparatus, enhanced specialization/capability, strong, professional management | - Increase private sector involvement in energy planning, especially renewable energy.<br>- Innovate mechanisms, policies, develop a | - Policies encouraging the use of renewable energy.<br>- Encourage businesses to invest in |

| | | | | |
|---|---|---|---|---|
| | technology.<br>- Finance: green finance supporting and investing in clean energy projects. | team. | synchronized, interconnected, modern, and efficient energy market. | projects and use green energy. |
| **Solutions** | - Collect, develop, store, analyze big, accurate data to develop appropriate, efficient technology.<br>- Establish linkage mechanisms between research workforces and businesses and educational institutions. | - Develop new forms of training.<br>- Restructure, innovate, and improve the efficiency of state-owned enterprises in the energy sector. | - Develop a transparent, competitive market information network (e.g., open source...).<br>- Encourage private economic participation in the socialization of energy development. | - Participation of various stakeholders (institutes, schools, businesses) in policy planning. |

In conjunction with this, Resolution No. 55-NQ/TW dated 11/02/2020 by the Politburo on "Orientation for the National Energy Development Strategy of Vietnam by 2030, vision to 2045" has outlined specific targets such as: "The proportion of renewable energy sources in the total primary energy supply reaches about 15-20% by 2030; 25-30% by 2045"; "Energy savings account for about 7% of the total final energy consumption compared to the normal development scenario by 2030 and about 14% by 2045"; "Greenhouse gas emissions from energy activities compared to the normal development scenario decrease by 15% by 2030, and 20% by 2045". In the main tasks and solutions, Resolution No. 55-NQ/TW also emphasizes the establishment of breakthrough mechanisms and policies to encourage and promote the strong development of renewable energy sources (wind, solar, biomass electricity, waste, and solid waste) to maximize the replacement of fossil energy sources, in tandem with circular economic development. On October 2$^{nd}$, 2020, Government Resolution No. 140/NQ-CP was issued,

approving the Action Program of the Government to implement Resolution No. 55-NQ/TW dated February 11th, 2020 by the Politburo on the National Energy Development Strategy of Vietnam by 2030, vision to 2045.

For the future, experts aspire to steer the development direction of Vietnam's energy industry towards a green and sustainable path through the advancement of high technology, streamlined organizational structure, and the development of policies encouraging businesses to invest in and utilize renewable energy.

## 4. Conclusion

We are currently facing a severe global crisis in finance, energy, food, and water shortages, as well as unpredictable widespread infectious diseases like Covid-19. In dealing with these crises, Foresight is considered a systematic and appropriate approach with active and proactive participation from stakeholders to plan strategies and policies for low-carbon, environmentally friendly, and sustainable development in the medium-term and long-term future.

Based on the analysis of the current application of Foresight in Vietnam and international experience, the article proposes some initial solutions to further promote the application of Foresight in Vietnam. This is happening in the context as Vietnam endeavours to transition to a green and circular economic model, particularly in agriculture and energy, involving economic, policy, technical, and environmental solutions, all on the platform of industrialization and modernization of the country by 2030 with a vision toward 2045.

Below are some preliminary suggestive proposals for activities promoting the application of Foresight in prioritizing certain key socio-economic sectors, including agriculture and energy in Vietnam: *Firstly, Enhancing Awareness:* Increase awareness at all levels regarding the role of applying Foresight approaches/tools in formulating policies and strategies for socio-economic development, particularly strategic policies, science, technology, and innovation policies, in the context of change, uncertainty, and unpredictability. *Secondly, Building Research and Application Capabilities:* Develop research and application capabilities of Foresight in some domestic research and training institutions through bilateral and multilateral cooperation with European countries (such as Germany, Finland), APEC and ASEAN member states, including the APEC Technology Foresight Center currently located at the National University of Education Policy and Research Office (NXPO), Thailand. This plan can be implemented through coordinating domestic and international workshops, project topics, and applying foresight approaches./.

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