

INNOVATION THAILAND

CRAFTING INNOVATION
IN TIME OF CRISIS



February 2021





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EXECUTIVE SUMMARY

In the world that spins round through unpredictable incidents, every nation needs to be responsive to uncertainties and changes energetically. In the past, Thailand's vision is to be the rising star of Asia until it faced 1998 financial crisis, which turned the table of economic and social development, when the competitiveness and innovation capacity deteriorated. These impacts prolonged and took a decade to recover the normal. Rising and falling again, COVID-19 make a tremendous impact more than crisis ever. The Domino effects starting from the disruption of the global value chain, will collapse each sector one by one. To avoid unwanted scenarios, innovation takes place. This paper elaborates the recommendation of policy development under the times of crisis. The recommendation consists of 7 dimensions; namely business mode, area-based, social, public-sector, data-driven, paradigm and aesthetic innovation.

These seven dimensions of innovation were proposed as the main categories for innovation development. Most of those given the specific value to their cluster whereas some of them could cut across the borderline. And the major implementation were described in a brief. Thus, with this high commitment and embroidered solution. They could profoundly help Thailand ascend their current dilemmas and move towards being the innovation-driven country



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FROM THE PAST TO THE PRESENT

THAILAND INNOVATION IN A NUTSHELL

Same as most of countries in Southeast Asia, middle income trap is a Thailand's development dilemma, while disparities in various development aspects remain growing. Imperatively, innovation becomes key strategy to leapfrog into a higher stage of development. At the turning point of the new millennium, Thailand experiences tremendous social and economic challenges from the past three decades, from 1997 financial crisis, known as Tom Yam Kung crisis, to an on-going unprecedented political reform and economic slowdown in the beginning of 2010s, and current COVID-19 pandemic situation. This long-wave of transformation leads the country to urgently and seriously strengthen the innovation system to be most effective in responding to series of new normals, stemmed from the aforementioned phenomena. To promote an evolution of Thailand innovation system to be effective and responsive, there are six development aspects that challenge the current innovation policy and system.

1 MACRO ECONOMY IN A CROSSROAD

Thailand is the 25th largest economy in the world, the 2nd among ASEAN, and one of the most diversified economies reflecting by the Economic Complexity Index (ECI) ranking. The country relies heavily on industrial export and services. However, industrial exported goods are mainly produced under the original equipment manufacturing (OEM) system while services are mostly the traditional ones such as tourism.

2 RISING INNOVATION PERFORMANCE

Since 2018, Thailand is one of the most impressive countries to leveraging its innovation ranking. This capability reflects on Global innovation index (GII); of which Thailand moved from the 52nd to the 44th order. In 2020, Thailand was ranked as the winner in gross expenditure on research and development (GRED) spent by the corporate sector to commercialize deep-knowledge or technology outputs. Encouragingly, Thailand was also ranked at the 1st of the world in creative goods export.

3 WORLD CLASS MARKET SOPHISTICATION

Despite Thailand's heavy reliance on extend sectors; export and import, it has shown the great market sophistication reflected by the GI rank of the 22nd, thanks to the high potential in domestic innovation. However, innovation products still account for a minor part of total products, partly because of the existing limitations of financial tools to support innovation and unfavorable regulation.

4 HUMAN CAPITAL REFORM

The country is facing with changing job market towards emerging innovation regime that will affect the traditional job market. Thus, Thailand merged the Ministry of Science and Technology with the Higher Education Institute. This reform helps leverage human capacity such as brainpower and manpower and develops STEAM education in youth. Importantly, the reform is expected to bridge the gaps between the demand and supply sites of human capital development while strengthening STI capability.

5 NEW SECTORAL INNOVATION

Public sector provides high potential demand for innovation goods and services. They help develop sectoral innovation through mechanisms such as government procurement transformation (GPT) and granting/funding in deep-tech innovation, including "MARtech" that stands for music, art and recreation.

6 LEAPFROG BUSINESS SOPHISTICATION

Thailand is one of the most attractive destinations for investment of international capital as shown by the leapfrog of GI rank from the 60th to 36th. This is led by its innovation infrastructure, innovation capability and entrepreneurship development. Promisingly, Thailand is a significant part of the global value chain of various goods and services.

“COVID-19” THE UNPREDICTABLE DISRUPTOR OF CURRENT INNOVATION SYSTEM

Early this year, before COVID-19 hit Thailand, GDP growth was predicted at 2.4%. The government's prompt responses, apart from economics stabilization measures, are 1) shutting down the country and services; 2) imposing the use of masks and social-distancing and 3) tracking down infected cases. Due to the shutdown and economic interruption, the forecast of GDP growth was reduced to -8.1%, as estimated by the various agencies. The mainstream of the nation's income was switched to in house business, even our current innovation that serves the old business model might have not be functioned effectively at this situation. This phenomenon was beyond our prediction and completely cleaned our future pathways to an undesirable future unless innovation policy could respond timely, mighty and vigorously. This COVID-19 is indeed a “Black Swan” of the world. The six development dimensions that shifted drastically and challenging our innovation system and approach are as follows:



SHIFT OF MACROECONOMIC ARCHITECTURE

So far, more than 38% of the Thai economy are contributed by manufacturer, which mainly based on OEM, as influenced by foreign direct investment (FDI). COVID-19 has derailed global value chain (GVC) and consequently disrupted FDI. In addition, some FDI have been relocated to neighboring countries like Vietnam, partly due to more favorable wages. Physical services which account to 20% of GDP, was badly hit during the time of lockdown and social-distancing measures were imposed. Ageing society and automation have led to change in market. The current crisis and foreseeable risk to the economic development in the futures have reminded policy makers and business alike revisit macroeconomic architecture. Thailand needs to rebalance economic focuses by shifting from export OEM to knowledge-intensive economy, namely moving from OEM to OBM (Original Brand Manufacturer), and encouraging innovation and productivity growth to drive the economy.



LEVERAGING INNOVATION PERFORMANCE

In Thailand, a leader in innovation development is corporate sector, especially big firms which perform a medium-low tech innovation. In contrast, the innovation capability in the government sector is still limited. COVID-19 interrupted the innovation by leaving small rooms for innovation products. Thus, the innovation products would be enhanced only with various kinds of platform innovation. As accelerated by COVID-19 pandemic, Thailand tends to invest in RDI up to 1.0%, the rate that looks promising to be achieved this year. Moreover, the new stakeholders such as environment, social enterprise and non-firm were introduced to the innovation ecosystem. To leverage this innovation awareness to the “new economics order”, corporates should step forward to deep-tech investment, whereas government should uplift their underutilization innovation capability.



THAILAND RISING INNOVATION MARKET

Instead of crashing the innovation market, COVID-19 brings mega challenges. First, since Thai people have high potential to access the internet, are a very friendly user in a digital platform, which help people in the local area sustain with minimum needs during a crisis. This crisis is an opportunity for a local brand to respond to the local demand, decentralizing both technology and power. Second, to design innovation based on user orientation, user innovation was put into the spotlight. Finally, the huge barrier of innovation is the limitation of law, regulation and standardization. As shaped by COVID-19, this limitation needs to be amended for better resilient market and helping the implication of innovation immediately.



JOB FOR THE FUTURE

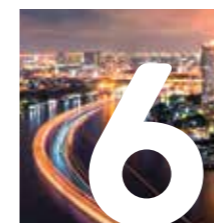
Since 2014, the cost of living is continuously increasing, contradict to the minimum wages. Furthermore, the forthcoming automation technology will disrupt the old way of work. Upskill/reskill programs without technology or innovation-intensive might not be working, and COVID-19 comes to confirm this failure of human skill development. In the future, the way we work may vastly different from now. To sustainably develop capital human, the innovation platform needs to be applied, beginning with the education system. Youth need to be cultivated with innovative and entrepreneurship programs. Multitasking and digital literacy will be required as future skill. Thus, a job for the future will be transformed to be more professional and dynamics.



NEW SECTOR AND NEW STAKEHOLDER

COVID-19 pointed out important areas during the crisis and will continue to be crucial

- 1** Social innovation: This innovation responds to changes of social situation and help broadly opportunities and thereby reduce inequality between cities and local areas. The impacts of this innovation are aimed mainly to create social value.
- 2** Deep Technology (DeepTech): The crisis has reconfirmed that medium to low tech development are not sufficient to drive growth with quality. DeepTech would need to be more emphasized innovation-driven companies to sustain economics profit and growth.
- 3** Government Technology (GovTech): The COVID-19 is showing that underdeveloped government's technology or innovation would limit. To precisely deal with a crisis, GovTech needs to be improved to be more resilient and updated especially in the areas of open data, health care sciences and digitalization.
- 4** Business model innovation: This crisis has let companies to revisit their business models and tried to make them more agile. The solution is applying innovation to the business model to be more resilient for changes and agile.



INCLUSIVE BUSINESS SOPHISTICATION

Although, Thailand is attractive for venture capital investment, but shortage in skilled labor, low investment in R&D, and low level of R&D commercialization remain a challenge. To refine the weaknesses during COVID-19 crisis, knowledge-intensive business needs to be established by persuading talented/skilled people aboard, grooming people to be the change makers and taking advantages through knowledge absorption and diffusion. This process helps diffuse the innovation to local areas and decentralize the innovation opportunity to the local area.



REBALANCING OF POLITICAL EQUILIBRIA

The political and institutional momentum is heating up along the collapse of economic by COVID-19. Citizen feels their interests as been was mismanaged. Unfair judgments indulge every step of political bodies as questioned by many Thais. The COVID-19's measures and mitigation policies propagate only among some groups. Consequently, many people they feel disenfranchised. Actually, there is no absolute democracy or authoritarian. However, the state needs to rebalance the political power to ensure improvement in the social and economic status. Thailand has faced serious political issues of balancing this equilibrium, and COVID-19 helps illustrate this challenge. Political innovation is a solution to improve the situation without violence and resolve this political differences.

WHY INNOVATION IDEOLOGY NEEDED TO CHANGE BY THE ARRIVAL OF “COVID-19” ?

Previously, Thailand frequently used the “linear model” to develop innovation representing in “Triple helix” models which consist of government, firms and education institution (figure 1A). However, this model has successfully solved the purpose of moving out from the valley of death and enter commercialization stages. This process is called a technology push or research-driven model. Furthermore, among rapid changes and disruption like COVID-19 pandemic, this model is too rigid and somewhat outmoded. The remarkable innovation these days are driven from the demand side, the so called “demand-pull innovation”. This type of innovation quickly diffuses to customer behaviour and responds to social needs directly. In this context, the innovation paradigm has been shifted to “Quintuple helix” that includes society and environment to the helix (figure 1B).

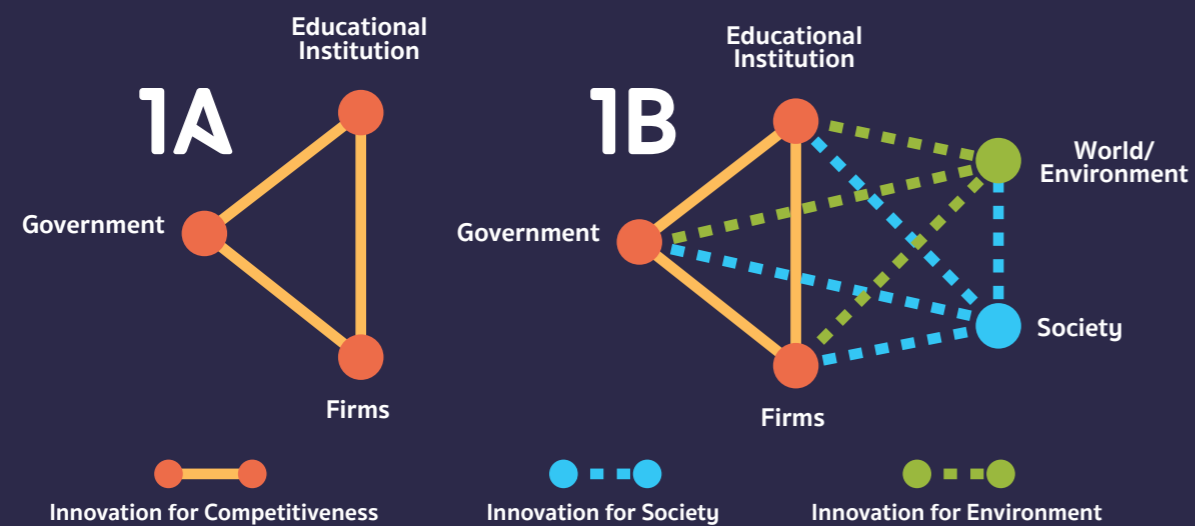


Figure 1. Triple helix (A) and Quintuple helix (B) models that support innovation for competitiveness, society and environment.

With this reformation, the NIA's role has shifted to “system integrator” to facilitate and bridge each quintuple helix domain performing co-creation innovation. This quintuple helix helps increase inputs to innovation by both financial and nonfinancial mechanisms, and improves framework conditions for innovation. This structure also reshapes the innovation driven enterprises to be more responsible to the social and environmental sectors. Thus, the innovation will thrive our well-prepared innovation ecosystem. Effective innovation system has been realized as a key success factor to development more importantly during this post-COVID era.

FROM THE PAST TO THE PRESENT

RECOVERING THAILAND WITH INNOVATION



Since 2017, Startup Thailand has brought a visible positive impact on the Thai economy. Entrepreneurial university is the key in gathering innovative ideas from youth through the startup league projects. The qualified ideas could further process to business matching, and more than 600 ideas were matched to further investment. However, there are some obstacle that should be removed.

- 1. Legislation of startup business:** Regulatory legislation is the main problem that startup in Thailand could not leap out of the country because the regulation support remains limited. The Startup Act could be successfully enacted and enforced, it will facilitate and promote a powerful push to the economic situation given the startup business and ecosystem would be more effectively supported.
- 2. New regime of innovation laws:** startup business completely taking risks along its growth trajectory. In order to promote startup development, there is still a need for government supports both financial and non-financial supports. One of the most possible and easier ways is to waive out of tax or give a more favorable tax rate than other businesses. This measure could let the startup businesses to leverage their resources efficiently; lowering their financial concerns and increase their investment innovation.
- 3. Capability building of new business model:** the important factor that will enhance the business is the innovative entrepreneurial mindset which could be more resilient to changes and support new business model innovation. In Thailand, there is no clear policy or measures to elevate innovative capacity. The government should enhance the measures of business model innovation and cultivating the innovative entrepreneurial mindset through various training programs as well as platforms.
- 4. RDI system development:** As Thailand has board bases of economy. It is, therefore, challenging to target RDI rightly to strategic sectors and businesses. This development is aimed to bring the centre system for RDI development by allocating proper incentives or subsidies in each step of business development, as well as enhancing the capacity of innovation incubation and acceleration unit in each area.
- 5. Green Finance:** Global warming is not only affecting the livelihoods of people, it also deteriorate the environmental resources. To consider this environmental aspect, the policy should encourage the business to take more responsibility to the environment by promoting green businesses. Under this situation, green financing needs to be innovated further.

AREA-BASED INNOVATION

It is impossible to leapfrog Thailand with innovation only in the city while the local areas are left behind. Going forwards, area-based innovation would have to be promoted to support are-based development.

1. **Optimization of local Innovation infrastructure:** This policy enhancement employs various infrastructures such as physical structure like a laboratory, incubator unit and regional science park, leveraging their local infrastructures to foster innovation in their areas. Moreover, this measure also decentralizes the innovation opportunity to the local areas, empowering them build their local economy sustainably.
2. **Innovation district development:** The knowledge-intensive cluster is being carried out in some area. By taking this chance, this measure promotes areas as a collaborating platform taking advantage of various stakeholders engaging in co-creation and innovation development.
3. **Innovation corridor development:** Given that foreign investment has been important growth engine for the Thai economy. The development of location that attracts global investor is essential. This measure helps build the fundamental structure of corridor areas such as EEC and WEC by supporting joint ventures of investment. Moreover, it is the government role, to encourage the technology and knowledge transfer from aboard to Thailand.
4. **Local leader and local changemaker:** To sustainably develop the area-based innovation, one of the critical elements is a good foundation of human capital like a local innovator. The human capital development needs to put more focus on educating the leadership in youth, who are expected to profoundly drive a transformative change in local areas.

SOCIAL INNOVATION

The economic-driven growth is not sufficient for sustainable development, the social quality must be improved hand in hand. Up until now, we mainly aim for the economic growth, contributing by a higher rate of the global market participation to gain more profitable outcome. However, there are many existing society problems that need to be solved.

1. **Foundation of social enterprise:** Social innovation is important approach to reduce inequality. This policy aims to make change to local communities in a sustainable manner for them to sustain their well-being behaviour by themselves through support from the government during the first period. The social innovation project is implemented to gain an insight into social problem, and help grooming entrepreneurship. The innovation diffusion is then encouraged throughout the local areas.
2. **Revisiting the social enterprise regulation:** To facilitate social enterprises in Thailand's context, measures and regulations should be revisited. The social enterprise law that has already existed needs to be modified to overcome its limitation.
3. **Shifting of triple helix paradigm:** the society is beginning to involve with innovation ecosystem whereas research triangle is reformed. The quadruple helix is to help innovation to increase both economic impacts and solve the equity problem. However, there are few players in this domain. The government should encourage the ease of doing social business by applying supporting measures and favorable regulation.
4. **Protection of Human Rights:** Nowadays, people in society are likely to express their identity more than the past. This brings the mega challenge and serious confliction in society. While the human of social diversity is threatening, the government is still ignoring this problem. This measure will enhance social innovation by supporting social enterprises that are doing innovation businesses in social diversity aspects.
5. **Green Recovery and Mitigation:** The continuous combustion of fossil fuel makes significant leap of economy and technology, but at the high social and environmental costs. To mitigate and recover environment, such policy like a reduction of emission of greenhouse gas and zero-carbon have been implemented.



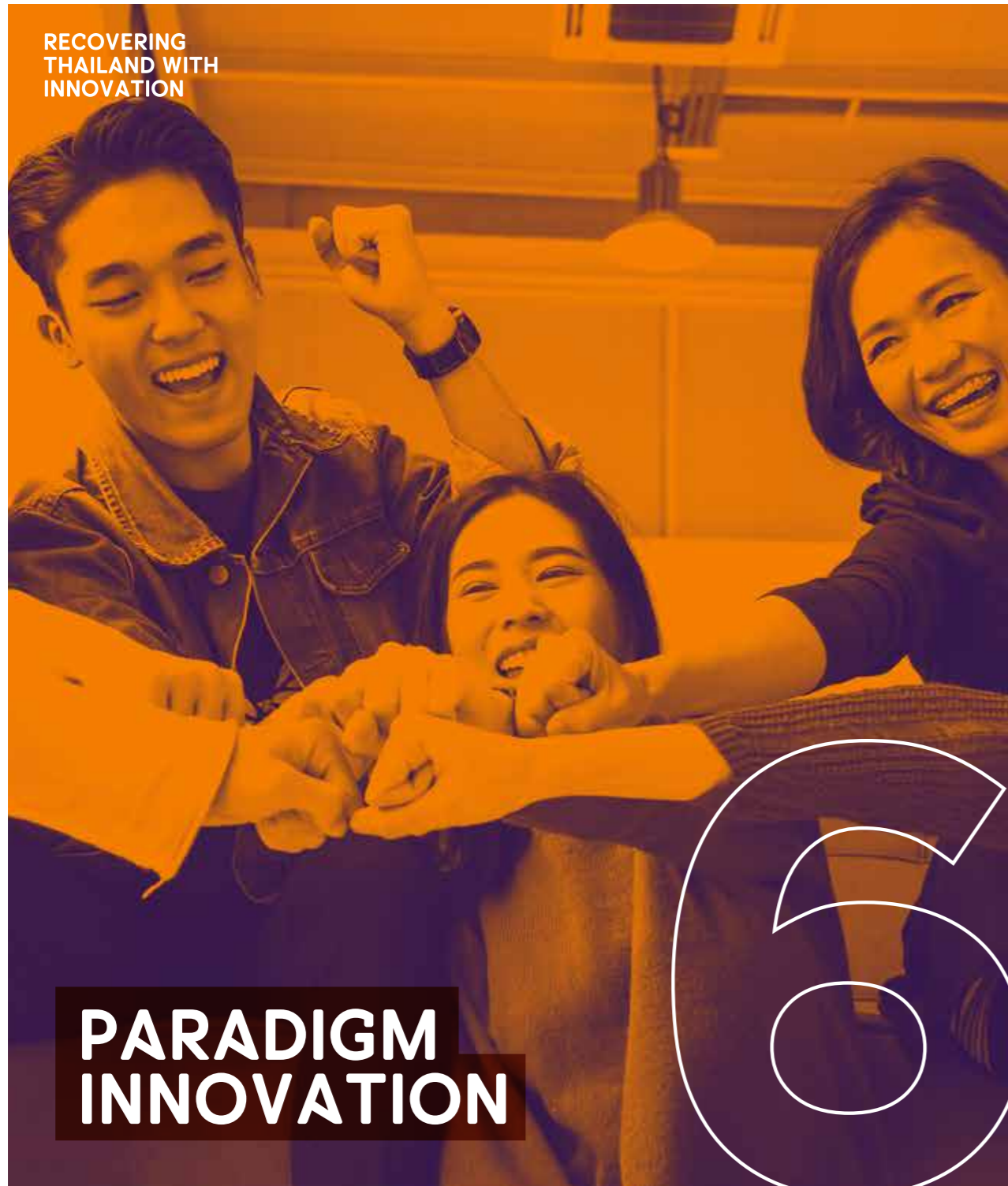
PUBLIC SECTOR INNOVATION

- Digital Transformation of government:** Government is the must sector to promote innovation and also be a leader in transformation, especially in digitalization. This policy helps to enhance government sector to use the transformative approach, stimulating the redundant physical process to universal digital platforms. Digitalization and other transformation of the government activities will lead to more effective administrator works and better accessibility of public services throughout the country.
- Government Procurement transformation (GPT):** The massive gap between the corporate and public sectors is the procurement process which obstruct the ease of doing innovation business. The GPT is an innovative solution to bridge the gap, making the technology transfer from private sector especially the startup business to government easily. With this solution, the capability to leverage their resources and growth in the international market of the private sector is boosted.
- Changing of the public service provider:** The private sector is able to perform innovation business better than public undeniably. Thus, some government services are that essential for a living should be innovative to optimize the people's well-being. This policy allows the private sector to be entrusted to do some government activities, where the innovative ideas could benefit the economy and people's well-being.
- Innovative Political Tools:** COVID-19 is indirectly impacting on politic as some of the government's handlings of the pandemic have failed people's expectations. This outcome is bringing the political depolarization from unsatisfied citizens. To mitigate to political problems, political innovation tools is raised. Referring to the countries that previously confronted with political depolarization, they used political innovation tools such as, affirming the rule of law and fight corruption, regulating the interaction between money and politics, recognizing the public role of media, developing and deepening participation, pursuing economic enfranchisement and reforming electoral system.



DATA-DRIVEN INNOVATION

- National Data and AI Dashboard:** the overwhelming of digital transformation prevails concurrently with the massive amount of data, especially the collected data from public sector. To manage data complexity, human capacity is still limited. Thus, the development of national data platform would help systematize the massive amount of data. Then the assimilated AI dashboard will visually analyze those data into a simple implication for further application. This platform could transform our data collection in every sector and support the use of data.
- Open Data for All:** When the data is systemized, the next step is to deploy those data to make impacts on economy and society. The open data for all is a user-friendly platform to help the accessibility of public and private to data. This open data could support the innovation business to utilize the data in various ways of the development pipeline. Moreover, it gives the opportunity from the regular innovation business to be data-driven enterprise effectively.
- Digital infrastructure development:** Even Thailand has a good in digital awareness, but there are some limited of digital infrastructures such as digital platform. To foster digital literacy in Thailand's context, the policy needs to promote the investment of digital infrastructure, as well as to enhance the demand for total digital consumption.



PARADIGM INNOVATION

1. **Entrepreneurship and Change Maker:** The vital factor that elevates innovation in the future is the improvement of human capital. The cultivated youth about entrepreneurship is one of the key success factors for long-term transformative change in innovation. This also includes the development of the entrepreneurial university, the grooming up of students to be young change-makers and innovator. This recommendation is therefore focused on well-preparing foundation of an innovation ecosystem in the human resources aspect.
2. **Foresight for Youth:** Foresight is the excellent tool to lead transformation at the national and international level. However, the foresight is still limited to the large company or professional area, whereas the youth barely encounter future related. This recommendation is to introduce the foresight tools to the youth and familiarize them with the thinking about uncertainly through various training programs. This seeding of change will grow up with the combination of experiences and transformative mindset. They are expected to catch up with the innovative solution in the future.



AESTHETIC INNOVATION

1. **MARTECH:** MARTECH stands for media, art and recreation technology. While innovation has deviated from research and development, the MARTECH is worth seriously looked at. This new area of innovation, driven by customer behaviour, is a new way of relaxation which engages more digitalization to the area. The virtual worlds of entertainment make everyone easily connect with the things that help them be better mindful. Not only the music and art in the new forms of entertainment but including games that further help people enjoy their life anytime and anywhere. This area of innovation modernizes our perceiving in artistic product or service and could diffuse the moment of joy to the local area.
2. **Streaming Platform:** The streaming platform is one of the platforms that were originated by digitization, and it is growing stronger with higher revenue from streaming businesses. However, few streaming platforms are officially from Thailand. This recommendation is to consolidate the steaming users in Thailand as a clan to promote the domestic produced platform so that people can use with the support from the government. Furthermore, it also creates jobs and content creators that give benefit Thailand's digital industry.
3. **TRAVELTECH:** Since our economy has predominantly relied on tourism and service industry, the policy that could elevate the travel and service industry would make higher impacts on the Thai economy than the usual industry. Given that tourism and services industry are accounting for a high share to the Thai economy, the travel tech is being promoted. This travel tech policy is to enhance the digitalization and creation of Thai's travelling platform such as booking of hotel and airlines platform. Digitization creates the E-travelling that would help travelers to gain better-understanding in details and preservatives of origin places. This policy also encourages the travel ecosystem, such as the local economy and employment in the local areas.

THAILAND AFTER COVID-19: WHAT DO PEOPLE NEED?

The COVID-19 pandemic crisis brought us both positive and negative impacts on social and economic development. It makes every country revisit their current status, policy, and measure and profoundly realize that they are not good enough for changes. As developed countries already prove it, innovation is one of the best ways to mitigate and respond to global uncertainty. We elaborate the seven innovation for recovering Thailand from COVID-19 and endorse the measures, policies and solutions for a better society. The eight strategic themes were drafted from those seven innovations and surveyed more than 500 engagement (Figure 2). Each strategic represent the seven innovations dimension and cut across each other. These strategic themes reflected what people want after the world of COVID-19. It directly guides Thailand innovators or policymakers to focus on that theme.

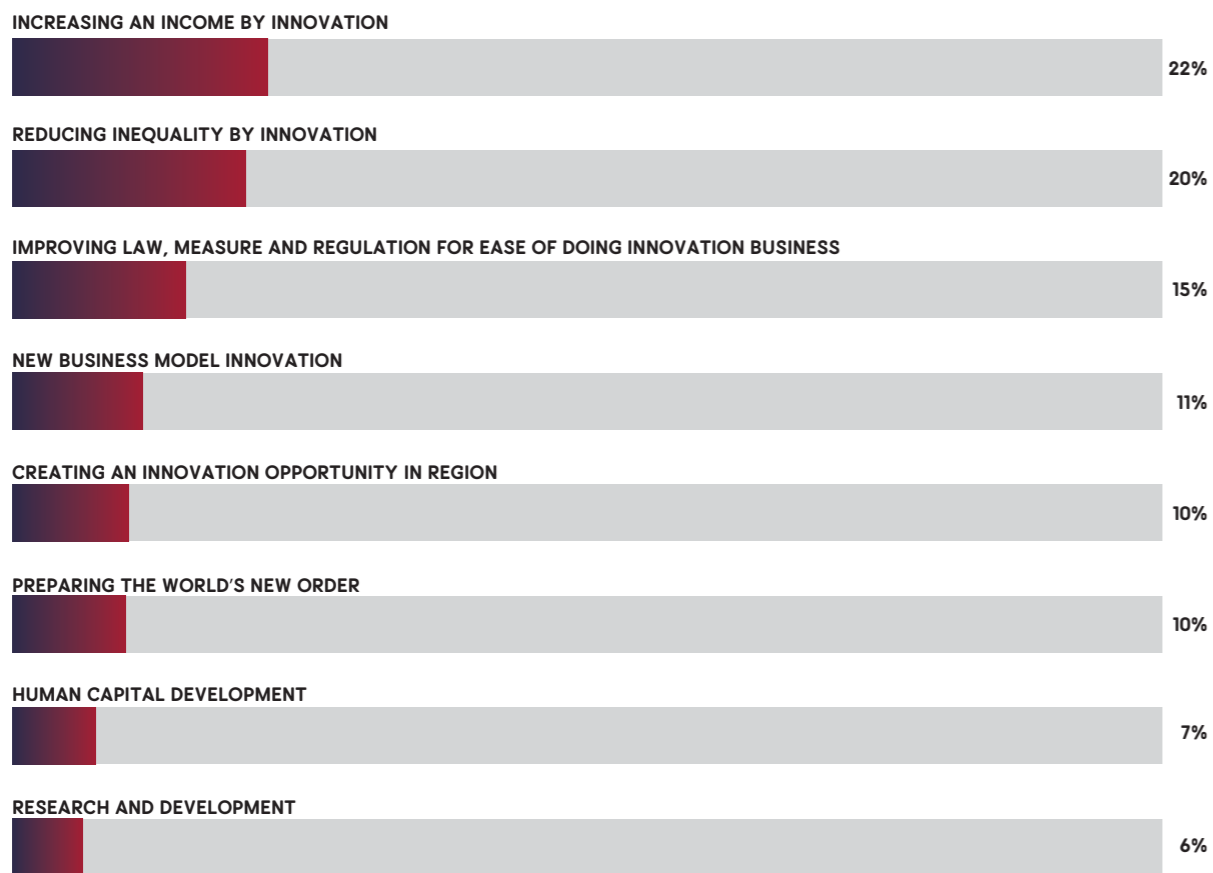


Figure 2: The critical issues of innovation system under COVID-19 crisis

The highest score belongs to the increasing income by innovation. This problem reflects that people have lost their income and starving for insufficient livelihood. So they would like to be helped by any innovation to make them enough expense. The second things that people desire are innovation should help reduce inequity. Just like the first place, innovation helps people overcome their poor livelihood will not benefit the economic status and influence social inequality. The third theme reflects that Thai firms are suffering from inappropriate relegation context that slows down their innovation capability, while the lowest concern is about research and development. It truly reports what people think about the emergency that Thailand needs to do to survive under the pandemic crisis.

INNOVATION THAILAND: THE WAY FORWARD

After and preliminary survey what people need after the world of COVID-19 and interpretation (Figure 3). People would like government agency action by bringing innovation to help their inequality and poverty. COVID-19 is about health crisis and shows us the real problem behind is beyond than that. There are three critical issues drawn by COVID-19 are inequality, competitiveness and climate change. Starting with inequality, to solve this problem, social innovation is a significant response. Likewise, social innovation, other innovation dimensions such as business model innovation, data-driven innovation, aesthetic innovation, and area-based innovation also help cut across the borderline strategic theme. The new mode of business competition is evolved by COVID-19 consequently. This new chapter of competitiveness has shaped by various innovation dimensions. After that combination and resourceful investment in innovation elevate this consequence to increasing income and well-being. The next step is to help the innovation business arise from the ashes of crisis. Detailed-oriented for law and regulation support should be fixed. Not yet forgettable, a global issue like climate change, sustainable value is still going on and encourages innovation to craft the world's caring-step. Thus, the new generation will be shaped by the new paradigm innovation that makes them adaptive and thinking for better future worlds.

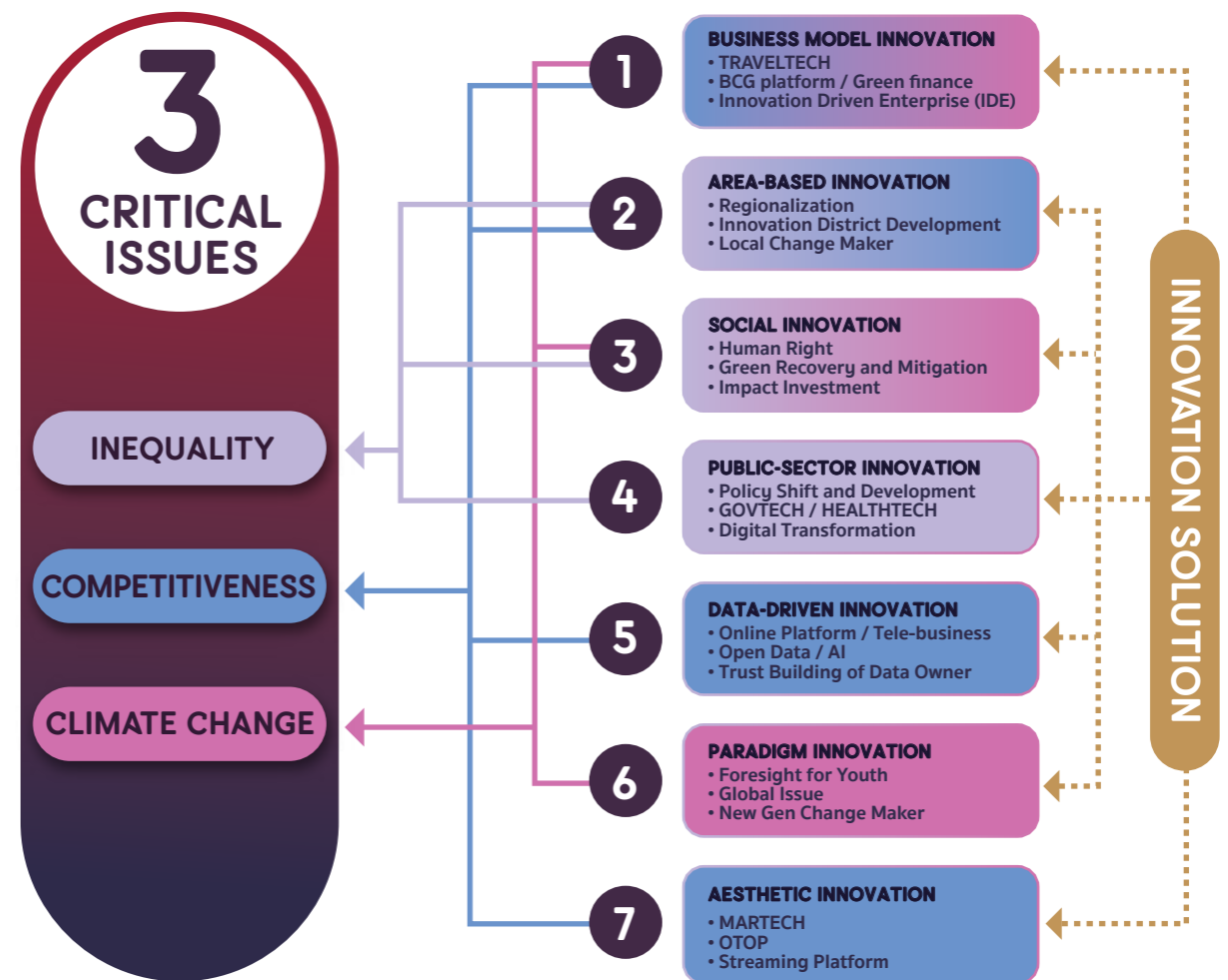
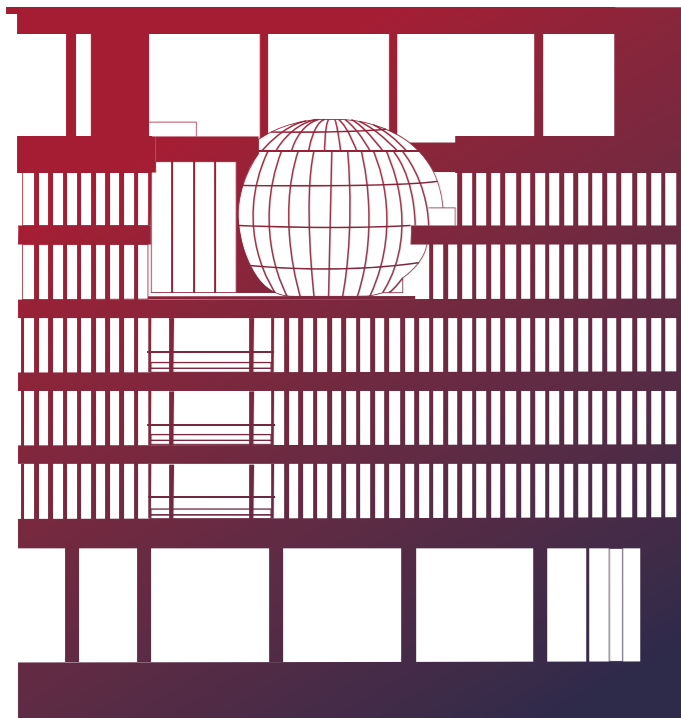


Figure 3: The seven dimensions of innovation solution to solve the three critical issues after COVID-19 crisis



ABOUT NATIONAL INNOVATION AGENCY

National Innovation Agency (NIA), established in 2003, is responsible for empowering Thailand's innovation with the goal to drive Thailand to be an innovation-driven country. The vision of NIA is to be a key stakeholder in enhancing national innovation effective system through four strategic frameworks consisting of (1) strengthening innovation system, (2) catalysis for change, (3) nurturing future value and (4) be an innovative organization (figure 4). These strategies support the development of Thailand innovation ecosystem and help to connect the dots with national and international partners. These 4 strategies will also need to respond to those future challenges.

In recent years, NIA is successful in elevating Thailand with innovation and leveraging the innovation capability to the local economy in both economic and social innovation frameworks in 3 sectors as (1) bio-economy, (2) manufacturing and circular economy and (3) sharing, social and service economy. More than 270 projects were granted, 49% of that was commercialized generating impact greater than 4,000 million baht; 14 folds of seeding budget. This economic funding session has been proved to boost up the global and local areas through various projects such as open innovation, thematic innovation, government procurement transformation (GPT) and GROWTH mechanism. Likewise, innovation for economic, social innovation was remarkably achieved last year. Despite lower impact than innovation for economic development, social innovation leverage up to 95% of total projects by flagship program; "social innovation driving unit (SID)". With the goal that Thailand's innovation should contribute up to 60% of total GDP. For next year, NIA aims to strengthen Thailand's innovation starting from innovation policy deployment, leveraging innovation infrastructure to sectoral development of SMEs and corporate sectors. This implication would further extend to equity problem by increasing income in the labour market. This innovation deployment cascading could leap Thailand's innovation in international aspects.

NATIONAL INNOVATION AGENCY (NIA) UNDER MINISTRY OF HIGHER EDUCATION, SCIENCE, RESEARCH AND INNOVATION		
ROLE: NATIONAL INNOVATION SYSTEM ACCELERATOR		
STRATEGY 1	STRATEGY 2	STRATEGY 3
<p>Strengthening Innovation System</p> <p>NIA is strengthening the innovation ecosystem by connecting the four sectors consisting of private, government, academic and society in both centric and regional aspects, as well as accelerate the development of innovative entrepreneur for an excellent structure of innovation ecosystem</p> <p>Strategic goals</p> <ul style="list-style-type: none"> • R2I Facilitation & High-tech Growth Poles • Regionalization • Innovation Change Makers 	<p>Catalyst for Changes</p> <p>NIA is developing an innovation leading to changes through various tools and mechanisms, and also enhance ease of doing of innovation business</p> <p>Strategic goals</p> <ul style="list-style-type: none"> • Comprehensive Financing Innovation • Appropriate Framework Condition • Mandatory Innovation 	<p>Nurturing Future Value</p> <p>NIA is elevating an innovation for the future in individual, organization and nation levels through awareness development of innovation tools knowledge.</p> <p>Strategic goals</p> <ul style="list-style-type: none"> • Internationalization • Insights & Communication • Corporate Assessment & Monitoring
<p>STRATEGY 4</p>	<p>Innovative Organization</p> <p>NIA is reforming itself to be an innovative organization for better strength and growth</p>	<p>Strategic goals</p> <ul style="list-style-type: none"> • Breeding New Gen • Empowerment and Incentives • Innovation Alliance

Figure 4: The role of National Innovation Agency (NIA) with the four strategies for elevating Thailand's innovation

ABOUT INNOVATION FORESIGHT INSTITUTE



Foresight has been widely used in many countries as a methodology to establish development scenarios and thereby helps policy makers to foresee other possible, probable, plausible or preferable futures. A design of policy response aimed to achieve long-term desirable changes are thus based on the future available making use of foresight. It has also been applied for resources allocation of Science, Technology and Innovation development. Foresight has been involving with policy development and recommendation that lead to the transformations. To response to transformations in the future, the NIA has established the Innovation Foresight Institute (IFI) in 2018 to be the think tank unit under NIA. IFI studies the future trends that lead to innovation for changes by making use of various foresight tools, aiming for the economics, social and environment transformations. IFI has three strategies framework as shown in figure 5.

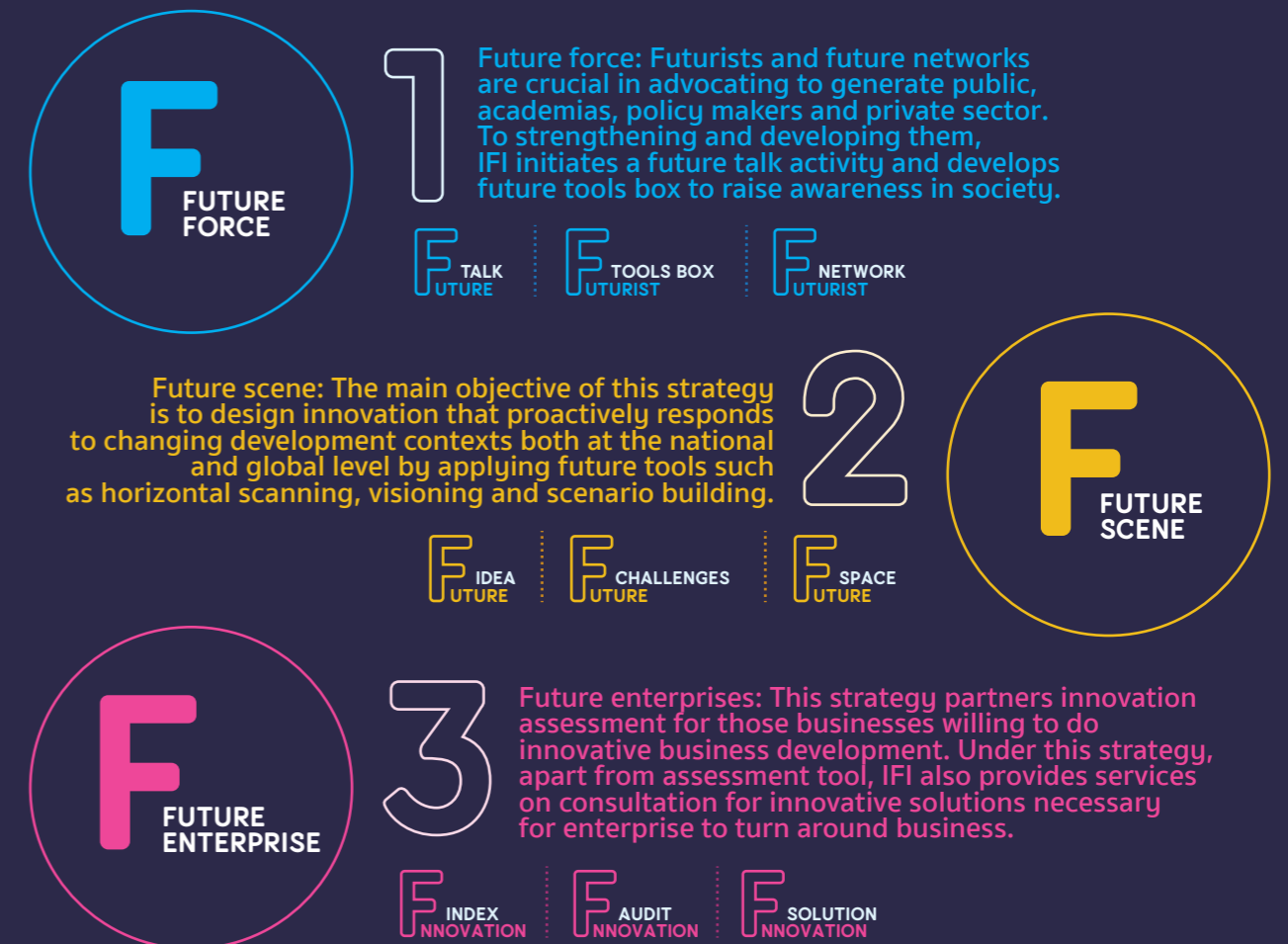


Figure 5: Strategic frameworks of innovation foresight institute (IFI)

A nighttime cityscape featuring several illuminated skyscrapers. The central focus is a tall, modern building with a distinctive curved top. The scene is overlaid with a complex digital graphic consisting of blue and pink lines, squares, and circles, suggesting data analysis or technology. The overall color palette is dominated by deep blues and purples, with warm yellow and white lights from the buildings.

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