

Chapter 7

Low-carbon Green Growth Policies and Budgetary Support During the Pandemic in Japan

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Chapter 7

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1. Setting the Scene: From pandemic crisis to system change

1.1. The pandemic crisis and infection control measures

The first Japanese case of COVID-19 was reported on 26 January 2020. The person was a returnee from Wuhan, China. Then, on 28 January, the infection of a bus driver who worked for a tourist group from Wuhan was reported and was the first infection that occurred in Japan.

Japan did not enforce lockdowns, but the government and local governments made efforts to prevent the spread of infection through the isolation of people testing positive for COVID-19 and by asking people to voluntarily refrain from going out. When infections spread explosively, the government requested a temporary schools closure on 27 February and announced the State of Emergency Declaration on 7 April. Instead of using lockdowns, the government and local governments have urged companies and citizens to voluntarily avoid the '3Cs': confined spaces, crowded spaces, and close contact. This is not compulsory, but people's behaviour has changed significantly. Looking at the year-on-year weekly change in the rate of grocery sales at supermarkets and convenience stores, it increased by more than 20% during the temporary school closure period in February, and it continued at more than a 20% increase during most of the emergency declaration period

(METI, 2020).¹ This number indicates how many people were staying at home. An interesting observation is that grocery sales increased when the Governor of Tokyo mentioned the possibility of a lockdown at the end of March, prior to the announcement of the State of Emergency Declaration, but was down some 10% when the government was considering a cancellation of the emergency declaration.

The number of new infections per day was over 700 but began to decline afterwards. This was the first wave. In early July, the number of infections increased again and reached around 2,000 people per day, but due to the call for self-restraint, the number gradually decreased. This is understood as the second wave.

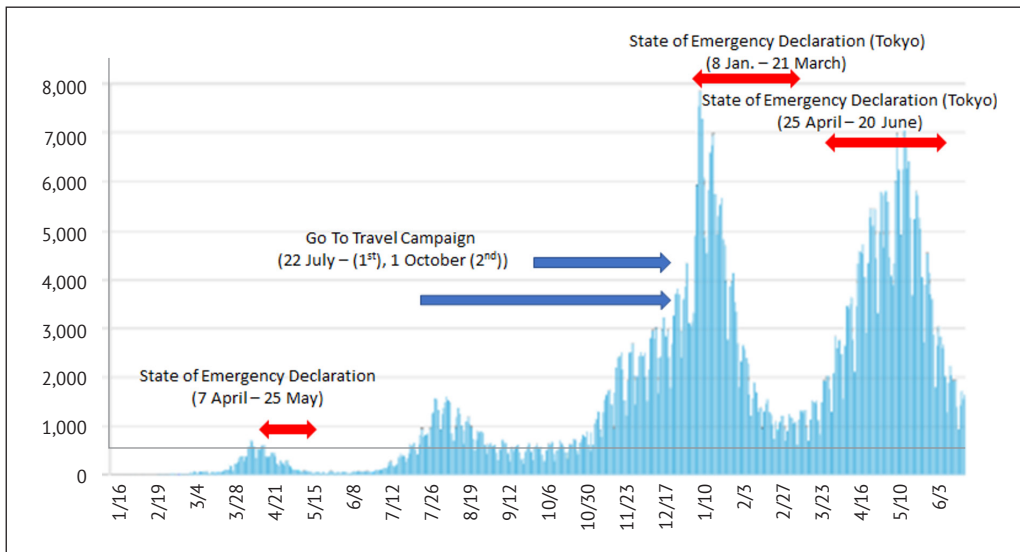
However, in mid-November, the number of new infections started increasing again. The government decided to control the movement of people across prefectures on 28 December and on 8 January 2021 declared a State of Emergency Declaration for the Tokyo Metropolitan City and three prefectures. It was planned to be ended on 7 February but extended to 21 March. This is considered the third wave. Infection numbers increased again in April in Tokyo and other prefectures and a State of Emergency Declaration was started on 25 April and ended on 20 June 2021. This is understood as the fourth wave.

¹ Point-of-sale data, which are released 1 week late, are available on the digital data platform.

The lessons from Japan are that lockdowns were not forced but a voluntary approach was effective to control infections to some extent. People had enough information to change their behaviour through their own decisions. Information is important for behaviour change, and digital data will be useful for implementing policy in a timely manner.

However, if voluntary control is too long, some people will not be able to endure it economically or psychologically. In the fourth wave, its effects diminished compared to the previous waves. Vaccines are indispensable for the control of COVID-19. The government has secured sufficient volumes of vaccines, and local governments will implement vaccination. Vaccination started from medical staff in March 2021 and was

Figure 7.1 Number of COVID-19 Infections, January 2020–June 2021(as of 6 January 2021)



Source: Ministry of Health, Labor and Welfare (2021).

followed by vaccination of the elderly. Prime Minister Suga explained that vaccination for everyone who wants to be vaccinated will be completed by October or November 2021.

1.2. Emergency economic measures

Economic activity declined due to restrictions on going out. As an emergency measure, ¥100,000 was given to all citizens in June, and economic compensation was

paid to restaurants and other businesses subject to restrictions on business hours. However, with the prolonged restrictions, there have been increasing demands that the economic compensation is insufficient, and with the increasing unemployment of non-regular workers, additional relief measures are becoming necessary.

On the other hand, some businesses, such as those related to

online shopping, digital devices to support telecommuting, consumer electronics, and food delivery and sales, have seen extremely high increases in sales due to the restrictions on going out and increases in remote work. The need for appropriate financial support is becoming more complex.

The service sector, particularly tourism, has been most severely affected. The government launched the 'Go to Travel' campaign in July 2020 to stimulate travel and travel-related consumption, including eating and drinking. The campaign was intended to both support the seriously affected sector as an emergency measure and to stimulate the economy by increasing consumption as a measure for a ripple effect.

However, in mid-November, the number of new infections began increasing again. The government decided to suspend the Go to Travel campaign and restrict the movement of people across prefectures on 28 December. It is clear that when the number of infections increased, the economic stimulus was stopped. A 'stop and go' policy implementation was inevitable. Key for this approach was the timely manner of the monitoring of infections being operated by municipalities. The Japanese government restructured health centres operated by municipalities and cut their budgets in order to cope with the budget deficit, and there are policy arguments that a review of the public health system is needed following the experience of COVID-19.

1.3. Economic impact

a. Economic growth

Gross domestic expenditure dropped to -1.8% in January–March 2020 and decreased further to -10.3% in April–June 2020 (year-on-year percentage change) (JCER 2021). Economic recovery started in July 2020 and, therefore, April–June is thought to be the bottom. Because of the medical system in place, Japan's economy is understood to have gradually recovered from mid-2020. GDP dropped by 4.8% in 2020 and is forecast to grow by 3.3% in 2021 (IMF 2021).

b. Uneven impacts on employment

The number of unemployed increased from April 2020 and approached 200,000 in May 2020 compared to 160,000–170,000 during 2018–2019. Since then, it has remained high at around 200,000, even in 2021. The unemployment rate jumped to 2.9%–3.1% from May 2020 but was still lower than its levels in 2009 and 2010 during the financial crisis period. Many companies have maintained employment through various support programmes and still need these measures.

Overall, the increase in unemployment has been somewhat contained, but its impacts have been uneven. Unemployment is greater in the service sector, such as in hotels and restaurants, than in the manufacturing sector, and the impacts on non-regular employees are larger than for regular employees. The share of non-regular female employees is much higher than for men, so the impact on female workers is bigger.

In Japan, labour market liberalisation policies have been in place for improving the competitiveness of industry, but in situations such as the COVID-19 crisis, vulnerable workers tend to be more affected, confirming the need for safety nets.

c. Impacts on the supply chain

With regard to the supply chain for energy and resources, the mechanisation of the value chain is progressing, and no significant impacts have been observed, including on imports (as of 25 June 2021). Regarding the trade of final products and parts, imports from China, Thailand, and other countries are delayed, leading to shortages of some goods. However, overall, there has been no big impact because demand for many products has been decreased by self-restraint.

However, the security of the supply chain has become an issue. This was caused by the shortage of medical products in the first half of 2020 due to the heavy reliance on imports. Medical products, such as masks and alcohol disinfectant, disappeared from stores and some hospitals had to restrict to receiving new patients due to the shortage of medical goods, such as protective clothing and disinfectant. This became a serious social problem, and the government banned the resale of these goods at higher prices through online shops and supported the production of masks, ethanol, and disinfecting protective clothing, etc. in Japan. In addition to these consumer medical goods, shortages of advanced medical equipment, such as respirators known as ECMO, led to serious bottlenecks. The government implemented countermeasures for infection, such as securing vaccines and medical equipment, as a part of national security.

The system for collecting and incinerating medical waste and personal anti-infection products functioned well by using the existing medical waste treatment system, which is operated privately but regulated by municipalities. Therefore, medical waste was not a problem.

d. Digitalisation as an indispensable tool

The importance of digitisation has been reaffirmed during the pandemic. Many companies moved smoothly to using online systems, and telecommuting became common. On the other hand, the delay of digitalisation was noticeable in the government sector and in education. The lack of equipment and experience became apparent, and countermeasures were taken, such as the distribution of tablet computers to schools for online education. Vaccinations, which began in April 2021, are administered by local governments, but local governments have lagged behind in digitalisation, and delays in managing the ordering of vaccinations have been noticeable and criticised. The Digital Agency for pushing a digital government has been announced by Prime Minister Suga and will start in September 2021. But the environment for the digital telecommunication network is not enough for large-scale use, and this is a bottleneck. This reconfirms the need for improvement in the telecommunication infrastructure.

In addition, in order to balance infection protection and the economy, it is necessary to undertake a 'stop and go' policy. New tools, such as POS data, for knowing consumers' activities and mobile GPS data for tracking the movement of people, can be very useful in accelerating or suspending economic measures in a timely manner.

The delay in digitalisation has been a major problem in Japan, but COVID-19 is pushing digital transformation.

Table 7.1 Long-term Outstanding Issues for Japan

Long-term outstanding issues	Impacts of COVID-19 and countermeasures
Revitalisation of the local economy - Increase in the gaps between local areas and Tokyo because of the concentration in Tokyo	- Serious impacts on inbound tourism, affecting the revitalisation of the local economy.
Promotion of the digital economy - Digitalisation as a key for growth strategy	- Slow progress in government was a bottleneck. Digitalisation is planned to be pushed by the Digital Agency.
Elimination of disparities in income and education - Negative impacts from labour market liberalisation	- Much bigger impacts on vulnerable people and the necessity of a safety net system have been reconfirmed.
Transformation of the energy system and climate change - Energy market reformation for a net zero emission society	- Risk of delay due to budget constraints for the science and technology support programme and private R&D investment.
Financial sector reform - Reform is needed under less demand and a saving surplus, particularly for regional banks	- Liquidity was supplied quickly by banks and a safety net function for small and medium-sized enterprises and the local economy was confirmed. - Risk of non-performing assets is increasing.
Rebuilding of the government budget deficit - Primary balance by 2025	- ¥57.8 trillion additional government bond issuances (outstanding will be ¥1,125 trillion at the end of FY2020). Delay in realising a primary balance. - Fiscal system reform is needed.

Source: Author.

1.4. Concerns for long-term impacts

Long-outstanding issues, such as disparities in income and education and the delay in digitalisation, have been highlighted by the pandemic. Some issues, like digitalisation, will be pushed by the COVID-19 countermeasures, but others, like disparity, are becoming more serious. In addition, many issues were suspended during the crisis. Economic recovery and post-COVID-19 growth strategies need to address these challenges.

2. Low-carbon Green Growth During the Pandemic: Changes in policy and budgetary and non-budgetary support before the COVID-19 outbreak and from March 2020

2.1. Economic outlook

The peak of the second wave was June or July 2020, but the pandemic was still not over. Since the cancellation of the Declaration of Emergency, the government has been trying to balance the economy and COVID-19 control measures, particularly the revitalisation of the service industry, which was most severely depressed. The Go to Travel campaign, which provides subsidies for travel, is an example.

Table 7.2 Economic Growth Outlook

FY 2020	FY 2021	Apr/Jun 2020	Jul/Sep 2020	Oct/Dec 2020	Jan/Mar 2021	Apr/Jun 2021	Jul/Sep 2021
-4.6	5	-10.1	-5.6	-1.1	-1.6	7.9	4.7

Note: April 2020–March 2021 show the actual statistics. The quarters show the year-on-year statistics.

Source: JCER (2021).

A big economic stimulus is needed, but a ‘stop and go policy’ has been necessary to attempt to contain the pandemic.²

Before the COVID-19 crisis, the government expected economic growth in 2020 to be 1.4%, but in July 2020, the government revised the growth rate to -4.5% in 2020 and 3.4% in 2021. The Japan Center for Economic Research (JCER), a leading private research institute in Japan, forecast 7.9% growth for April–June 2021 and 5% growth in FY2021. However, the growth rate will be lower if the vaccination process is delayed.

2.2. Impact on industry and the energy sector

The industrial production index dropped to -20.3% in April–June 2020 (year-on-year) but the annual average recovered to -9.5% in 2020 and 11.2% in 2021. Energy and resource imports declined; for instance, in May, oil imports fell to about two-thirds of the 2019 average, and coking coal imports dropped to -20%. But now, these imports are recovering, and symptoms of structural change have not been observed at this point.

In the electric power sector, demand in April and May 2020 was lower than

that in 2019 and 2018. The share of thermal power in April and May 2020 was around 3 percentage points lower compared to the level of 2019. If the demand for electricity decreases, from an economic standpoint, power companies will reduce their output of thermal power generation, which requires fuel costs, and use renewable energy, which has low operating costs. In addition, under the feed-in-tariff (FIT) system, renewable energies are legally required to be connected to the grid on a priority basis. Increases in renewable energy supported by the FIT system and continuous improvements in energy efficiency are a trend in Japan, but, at this time, it is not clear whether the COVID-19 crisis has accelerated structural change.

In the first half of January 2021, electricity demand surged due to very cold weather. However, due to a shortage of liquefied natural gas (LNG), the supply of electricity could not keep up, and the ratio of demand to supply capacity for some power companies exceeded 95%, which was very dangerous. One of the reasons for the shortage of LNG was the tightening of the market due to the shift from coal to natural gas in China and other Asian countries. LNG supply investment in 2020 decreased to one-third, and a shortfall is expected by 2025 (IEA 2021). In order to achieve net zero, unabated gas will not be used in the long term, but in the medium term,

² Japan hosted the Olympics, which were postponed to July 2021, during which the balance between the economy and pandemic control was crucial.

it is necessary to switch from coal to LNG as fuel for power generation. The transition needs to pay close attention to the stable supply of electricity, and the transition strategy is becoming important in Japan.

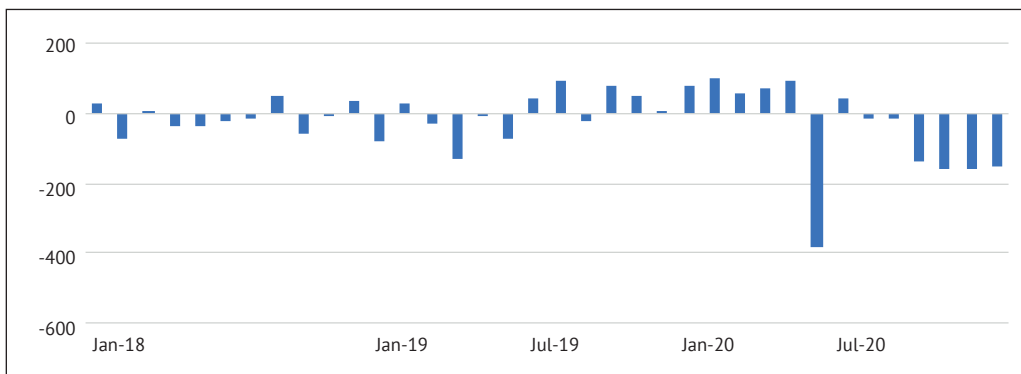
Emissions for 2020 are expected to decrease compared to the previous year due to the decrease in fossil fuel imports: crude oil to -11.5%, LNG to -5.7%, and coal to -1.0% during January–June 2020 (year-on-year) (Ministry of Finance of Japan 2020). Emissions in Japan are expected to show a similar percentage drop as the world average, -8% (IEA 2020). But due to the economic recovery

in 2021, a rebound is expected. The acceleration of climate change policy and the restructuring of industry is needed for the post-COVID-19 growth strategy.

2.3. Financial sector

In Japan, the financial sector has faced difficulties since the mid-1990s because of the low demand for finance due to the lower economic growth rate and savings surplus that have persisted over time. Local banks, in particular, have encountered challenges due to the slump in the local economy and the restructuring of local banks.

Figure 7.2 Number of Bankruptcies (increase/decrease; year-on-year)



Source: Japan Institute for Labor Policy and Training (2021).

Many subcontracting companies in the manufacturing industry, mostly SMEs, operate in rural areas. Orders from their clients are decreasing and they face strong pressure due to cost cuts from their clients because the companies are vulnerable in the supply chain. The number of bankruptcies was generally stable during 2020 (Figure 7.2). Local banks and credits unions have supported companies based on their long and continuous relationships. The

government provided a huge amount of support to companies, including SMEs, but this took time for delivery, so local finance was the first to provide funding. Finance demand from large companies, like airlines and car manufacturers, has been funded mainly by major banks. The role of public finance in the domestic finance market in Japan is limited to SMEs because an ex-development bank is being privatised.

However, lending by local banks and credit unions has been stretched, and the number of bankruptcies has increased slowly since the end of December 2020, particularly in the service sector, so it is necessary to support their operation. The government has begun to consider the restructuring of local banks, but it is reminded that local banks and credits unions play the role of a safety net for the local economy. In March 2021, the Bank of Japan (BOJ) started a special zero interest lending programme to boost funding from regional banks to local companies (BOJ, 2020). This will continue to March 2023. Furthermore, on 18 June 2021, the BOJ's Policy Board and Monetary Policy Committee decided that it would create a new funding mechanism to help strengthen the funding capacity of financial institutions to support industry working to combat climate change. The BOJ should ensure its neutrality as a central bank, and attention has been focused on the detailed requirements for what kinds of businesses it will support (BOJ, 2021).

2.4. Changes in working styles

Companies have become aware of the effectiveness of teleworking and have switched to online meetings during the crisis. When COVID-19 subsides, there will be some swing-back in working style, but it is clear that the pandemic has accelerated the use of online working styles.

In Japan, concentration in megacities is a big trend, and the energy system has been constructed to support this trend. When online working styles take hold, concentration in megacities

stops, providing more flexibility for the energy system. It is helpful to reduce the bottleneck of transmission infrastructure, which carries renewable electricity from the most appropriate places for generation to the megacities. The renewable-based decentralised network is gaining attention, and digitalisation may contribute to both revitalisation of the local economy and emissions reductions. Thus, policy measures for upgrading the digital infrastructure and improving digital literacy are needed.

2.5. The public health system and the role of local governments

The hospitalisation and isolation of infected people are managed by the health centres of municipalities as part of their administrative services. However, it has been pointed out that the number of infected people exceeding the capacity of public health centres has become a bottleneck in the monitoring of infectious diseases and the management of medical services.

One of the reasons for the lack of capacity in health centres is that the Japanese government has restructured health centres operated by municipalities and cut their budgets in order to cope with the budget deficit. There are policy arguments that a review of the public health system is needed in the wake of a major epidemic such as COVID-19.

In addition, infectious diseases need to be managed beyond the boundaries of the local governments, and the need for national health care centres has been mentioned. The expansion of hospital facilities alone is considered insufficient, and the entire public health care system needs to be reviewed. A review of the roles of the

Table 7.3 Package of Emergency Countermeasures
(¥ trillion)

Supplemental budget	Magnitude of stimulus	Government budget	Of which cash expenditure	Of which public finance
1 st	117.1	48.4	33.9	12.5
2 nd	117.1	72.7	33.2	39.3
Total	233.9	120.8	66.8	51.9

Source: Author, using data from various Japanese government presentations.

Table 7.4 Major Components of Emergency Countermeasures
(¥ trillion)

Major component	Amount
Employment support	0.5
Working capital support	11.6
Rent support	2.0
Medical care support	3.0
Others (to local government, low-income households, etc.)	4.7
Reserve fund	10
(Subtotal)	31.8

Source: Author, using data from various Japanese government presentations.

national and local governments may lead to a reconsideration of the nature of local autonomy, including the budget system

3. Composition of Recovery and Stimulus Packages

3.1. Measures for the COVID-19 crisis and the Green Growth Strategy

The total amount of the emergency countermeasure packages by the Japanese government was ¥233.9 trillion, and the sum of the budgets was ¥120.8 trillion, which were prepared by two Supplemental Budgets in April and June 2020 (Table 7.3). Even for the second budget, the majority of the spending was for emergency support, such as employment support, working capital support, rent support, and medical

care support. There was no specific climate component (Table 7.4).

On 17 July 2020, the Basic Policy for Economic and Fiscal Management and Reform 2020 (Basic Policy) for the 2021 budget preparation was approved by the cabinet. It aims for the control of COVID-19 and the reconstruction of Japan post COVID-19, in the ‘new normal’. It states natural disaster management and digital transformation as policy priorities but does not refer to ‘green recovery’ explicitly. However, some components, such as quality infrastructure support, hydrogen innovation, smart city and digitalisation, can be constituted as green recovery. Also, it stresses the positive cycle of environment and economy as a principle.

Table 7.5 Basic Plan for 2020 and Low-carbon Components

Structure of the Basic Plan	Low-carbon components
Improve resilience - Control of COVID-19 and economic stimulus - Resilience against natural disaster	- Digital transformation, bail-out finance - Resilience under climate change
Construction of the new normal - Digital transformation - Revitalisation of the local economy - Innovation and human capital - Inclusive society - Economic growth and international cooperation	- 5G and beyond 5G - Smart city, de-concentration on megacities - Innovative energy development, such as hydrogen - Quality infrastructure, 'beyond zero', Sustainable Development Goals, global supply chain, hydrogen society

Source: Author.

On 16 September 2020, Prime Minister Suga was elected as the new prime minister, and he committed to continuing basic policies. It is expected that ministries will propose policy measures for low-carbon investment following the Basic Plan (Table 7.5).

On 25 December 2020, the Japanese government disclosed its Green Growth Strategy (Table 7.6). This

seems to be a combination of the Basic Plan and a long-term strategy that has already been disclosed. Amongst the long-term outstanding issues, digitalisation is focused on as a megatrend of the post-COVID-19 new normal. For instance, the Post-COVID-19 Growth Facility is implemented by the Japan Bank for International Cooperation, and consists of two areas, the promotion of decarbonisation and improvement of supply chain resilience.

Table 7.6 Green Growth Strategy

Policy	Priority technology
- Budget <ul style="list-style-type: none"> • Green Growth Fund (¥2 trillion) • Induce ¥15 trillion in private R&D leveraged by the Green Growth Fund - Tax incentives <ul style="list-style-type: none"> • Tax deduction for investment • Accelerated depreciation • Carry forward of losses • R&D tax incentives - Finance <ul style="list-style-type: none"> • Enhancing transition finance through subsidies to interest payments • Green Investment Promotion Fund (¥80 billion) • Post COVID-19 growth facility (¥1.5 trillion) • Taxonomy for private finance (Japanese style) - Carbon pricing <ul style="list-style-type: none"> • Carbon tax emission trading/offset, border tax adjustment 	- Offshore wind - Ammonia for fuel - Hydrogen - Nuclear - Automobiles (electric vehicles and fuel cell vehicle) and batteries - Ships - Logistics, human flow, civil infrastructure - Food, agriculture, and fishing industry - Aircraft - Carbon recycling - Housing, construction, next-generation solar - Circular economy - Lifestyle

Source: Author.

The decarbonisation facility supports hydrogen and other zero-emission fuels in addition to energy-saving and the use of renewable energy, and the supply chain resilience facility may support the supply chain in ASEAN, too. However, countermeasures for expanding the disparities in Japan are not stressed upon.

Apart from long-term measures and growth strategy, an important policy issue is the 'stop and go' countermeasures. The Go to Travel campaign was proposed for stimulating the economy, particularly the service sector. However, there was a trade-off relationship between the increase of movement of people for the Go to Travel campaign and the containment of infections, so the timing was important. The campaign was started in July 2020 but then suspended on 4 December 2020 after a long policy debate. This is a typical case of the trade-off between economic recovery and infection containment.

On 2 June 2021, the government announced a draft plan to implement the Green Growth Strategy. In this plan, economic recovery from COVID-19 was analysed and specific areas and policies were outlined. The plan focuses not only on fiscal spending but also on stimulating private sector activities, and includes deregulation to ensure that the introduction of new technologies is not disturbed. It also states that carbon pricing will be introduced without hesitation if it is conducive to growth, and that offset markets, such as J-credits, will be developed, but no conclusions have been reached on raising the carbon tax or on emissions trading. From the perspective of

international competitiveness, the government will closely monitor the European Union's Border Carbon Adjustment Mechanism and prepare for responding strategically.

On 18 June 2021, the Basic Plan 2021 for the FY2022 budget was released (Table 7.7). This was the first Basic Plan under Prime Minister Suga, and it has a strong focus on economic recovery and growth, as economic growth for FY2022 is likely to be lower than expected due to the continued effects of COVID-19. The four engines of economic growth are green growth, digitalisation, revitalisation of the local economy and society, and measures for the declining birth rate. As in the 2020 plan, the Basic Plan proposes digitalisation and local economy revitalisation, but green growth is listed as one of the four pillars. The prime minister intends to place a higher priority on climate change than the previous administration.

3.2 Lesson learnt from the financial crisis

The 'Green Deal' was a big global trend during and after the financial crisis period in Japan, too. For the election in August 2009, two big parties at the time, the Liberal Democrat Party (LDP) and the Democrat Party of Japan (DPJ), proposed the Green Deal and competed on climate policy. The DPJ won the election and promoted their climate policy, such as support for renewable energy, electricity market liberalisation, and the deployment of emissions trading. However, the Great East Japan Earthquake in 2011 changed everything. Feed-in-tariffs (FITs) for renewable energy were

Table 7.7 Comparison of the Basic Plan, 2020 and 2021

Basic Plan 2021 (18 June 2021)	Basic Plan 2020 (17 July 2020)
<ul style="list-style-type: none"> ◆ Positive cycle of overcoming infections and economic growth ◆ Four driving forces for economic growth <ul style="list-style-type: none"> - Green growth <ul style="list-style-type: none"> • Private investment and innovation by green growth: Green Innovation Fund, International Green Finance Hub • Energy and resource policy for decarbonisation • Carbon pricing for green growth - Digitalisation <ul style="list-style-type: none"> • Revitalisation of the local economy and society - Smart cities <ul style="list-style-type: none"> • Measures for the declining birth rate ◆ Economic and financial reforms 	<ul style="list-style-type: none"> ◆ Protect the lives, employment and businesses of the people ◆ Realise the new normal <ul style="list-style-type: none"> - Digital new deal <ul style="list-style-type: none"> • 5G, post 5G, beyond 5G • Measures for the digital disparity - Revitalisation of the local economy and society <ul style="list-style-type: none"> • Smart cities • Supply chain efficiency - Investment in the innovation of human resources <ul style="list-style-type: none"> • ICT education • Open innovation - Inclusive society <ul style="list-style-type: none"> • Healthcare system • Relief of depressed generation for employment - Active Japanese economy under the new global economy <ul style="list-style-type: none"> • Trade rules • International contribution, including decarbonisation ◆ Economic and financial reform

Source: Author; Cabinet Office (2020) and Cabinet Office (2021).

adopted, but emissions trading was not implemented. After the LDP's comeback as the ruling party, Japan withdrew its emissions reduction target in 2020 under the UNFCCC framework due to the uncertainty of energy supply without nuclear power. The costs of renewable generation in Japan have been slow to fall. The economic burden for consumers is high under the current extremely high FITs for renewable power generation, and reforms of FITs are under discussion. Thermal power is still important due to the limitations of electricity from zero-emission energy sources, such as renewable and nuclear power. So, the government is aiming for the new option of zero emission fuel for thermal power generation, such as hydrogen and ammonia. The restructuring of the energy system is delayed in Japan, but policy debate for energy system restructuring is more active. In general, Japan can learn from its

experience of the financial crisis in 2009 for the combination of economic stimulus with climate policy, but there are differences in circumstances as follows:

Domestic – the energy supply options are limited because nuclear was planned to play an important role for reducing emissions, but public sentiment changed after the Fukushima Daiichi accident. Technology innovation, such as for the cost of renewable power generation, is needed.

International – change in US climate policy and the global trend towards a net-zero commitment. However, there is still the risk of a global trend of 'home country first principle' and a trade war.

3.3. Climate policy and economic recovery

Japan's commitment for emissions reduction under the Paris Agreement is a 26% reduction by 2030 from the

level in 2013 and an 80% reduction by 2050. In June 2019, the government announced that emissions will be net zero as early as possible after 2050. In September 2020, Prime Minister Suga declared net-zero emissions by 2050 at his first speech to parliament.

Emissions have been decreasing since 2013, but it will be tough to achieve a 26% reduction by 2030. The most important assumption for the 2030 target is reduction of emissions from the power sector, and the measures are described in the Basic Energy Plan. It is assumed that 44% of electricity should come from zero-emission energy and the carbon emission factor should be 370 g/kwh. Nuclear power was expected to supply half of the zero-emission power, but only 6% came from nuclear in 2019. How to secure a stable and sufficient supply of electricity is a critical concern because phasing out coal requires discussing and considering the way to reduce the economic burden from the higher tariff of renewable energy under the FITs.

As mentioned above, it will not be easy to achieve the 2030 target under the current policies. In December 2020, Prime Minister Suga decided to make active use of carbon pricing and instructed the Minister of Economy, Trade and Industry and the Minister of the Environment to consider 'carbon pricing to contribute to economic growth' in order to achieve net zero emissions by 2050.

In April 2021, before the climate change summit hosted by United States President Biden, Prime Minister Suga stated that the 2030 target will be raised from 26% to 46%. This is a very ambitious target, because time until 2030 is limited, so it will not

be easy to achieve the target. It is said that a concrete strategy will be announced before COP26 in November 2021. It is not surprising that the Basic Plan for 2022 emphasises economic growth strategies through climate change activities.

4. Post-crisis Design of a Green Stimulus for ASEAN+6

The SARS outbreaks in 2002 and 2003 had little impact on Japan, and, therefore, Japan's preparedness for the pandemic was not sufficient. The response to COVID-19 was a trial-and-error process, and it is difficult to say it was perfect. Also, because the outbreak has not been as explosive as in Europe and the United States, measures for the pandemic were implemented to maintain economic activities as much as possible. The repetition of Japan's pandemic measures and economic policies may be a valuable experience for ASEAN's green growth policy, although the situation is not the same.

4.1. Phased approach for economic measures

The appropriate economic measures vary by the situation of infection because measures for COVID-19 restriction, such as self-restraint, can conflict with economic enhancement. A phased approach is practical. There are three phases: the emergency phase (Phase I), the recovery phase (Phase II), and the growth phase (Phase III). Measures taken in Japan prepared by two supplemental budgets are mainly for emergency purposes, but the Budget Plan includes recovery purpose measures.

In Phase I, measures controlling infection are focused on and low-carbon measures are limited. An example could be bail-out finance with climate-related conditions. For instance, France supported Air France but with the condition of a low-carbon commitment, such as an emission reduction target (to half by 2030), 2% bioenergy use, the abolishment of short-distance routes that can be replaced by high-speed trains, and Canada asked for climate risk disclosure in line with the recommendation by the Task Force on Climate-related Financial Disclosures (TCFD) and alignment with Canadian climate policy. Japan had a similar experience during its recovery from the financial crisis. In 2010, the BOJ provided liquidity for activities for economic growth, including environment-related investment. Conditional finance seems to be a realistic option during Phase I.

In Phase II, during the recovery from the pandemic, the first priority is the impacts on employment and economy and, therefore, policies that stimulate personal consumption, such as the Go to Travel campaign, are the core of measures. Some climate-related investments are also fit for the recovery phase, for instance, retrofit energy efficiency investment, including in building and homes, which is labour intensive and can start quickly and provide business for the local economy. Policy to support the sales of electric vehicles (EV) and other low-carbon cars and the expansion of charging stations can avoid the lock-in effect of higher carbon emission cars.

Improvement in digital infrastructure is urgently needed, so it should start in Phase II and continue during Phase III. In addition to domestic measures, resilience of the global supply chain should be supported to avoid the bottleneck in the production of low-carbon products.

However, there were no large-scale stimulus packages aimed at economic growth or targeting the long-term challenges, such as climate change, in 2020. Infectious diseases are still not well controlled in Japan, and the emphasis is on digitisation support to help with both Phase I and Phase 2. But following the Green Growth Strategy in December 2020, the implementation plan and the Basic Plan for the 2022 budget were announced in June 2021. In Japan, it looks like green components are going to be incorporated into the budget from now on. Also, it seems to include components for not only Phase I but also Phase II and Phase III.

In Phase II, there is a risk that the infection will spread again. It remains to be studied whether the timing of the start and stop of the Go to Travel campaign in Japan was appropriate, but this is an important lesson that the monitoring of infections and stop and go measures is inevitable. Many measures are included in the implementation plan, but it is necessary to clarify the purpose of each measure and to manage the implementation in a timely manner responding to the infection and socio-economic situation.

For Phase III, the growth phase, low-carbon infrastructure investment and support for R&D investment for innovation shall be included:

Infrastructure – the stability of the electricity networks system, including countermeasures for cyber security,

the supply chain of low-carbon or zero emission fuel supply, and digital infrastructure.

Innovation – carbon recycle and carbon capture and storage (CCS), energy storage including battery and hydrogen storage, and enhanced quality infrastructure.

Digitalisation, which has multiple effects, such as infection-related measures on shifting to remote work, climate change, economic growth, and the revitalisation of the local economy, is used at all phases. The provision of digital equipment is made in Phase I and job training in Phase II. In addition to these measures, the improvement in infrastructure and education for improving digital literacy is needed for Phase III. Investment in human capital should not be missed.

In Phase III, growth strategy is a long-term challenge and will require long-term commitments. It is not a major objective for Phase II, where economic recovery is a top priority. However, an early indication of the plan will provide an important message to industries that are considering a long-term business strategy post COVID-19. Also, for a zero emission fuel supply, it takes longer to construct the supply chain infrastructure and a concrete plan should be considered. Although the announcement of Japan's Green Growth Strategy was made during the third wave of the surge in infections, it is never too early to announce. There is a time lag between the announcement and the actual start of its implementation. Table 7.8 shows the recommended measures for each phase.

4.2 Adoption of a market mechanism for fiscal system reform

In 2020, ¥90 trillion in government bonds, including ¥57 trillion in additional bonds, was planned to be issued, and the outstanding amount is assumed to reach ¥1,125 trillion following the plan, almost twice the amount of GDP. The debt service of the government will be increased and the recovery of the primary balance will be delayed. Incentives are effective in accelerating low-carbon investment, but there are limitations under budgetary constraints. Ultimately, carbon externality should be removed by incorporation into the market economy. The first step is the adoption of carbon pricing. Since February 2021, the Ministry of Environment and the Ministry of Economy, Trade and Industry have been examining emissions trading, a carbon tax, and carbon border adjustment separately. The main issues are whether they can be effectively reduced, whether the burden is equal on companies and industries, and the impact on international competitiveness. All policies have their strengths and weaknesses, and the appropriate combination for adoption in ASEAN will vary from country to country. Carbon pricing and the market base mechanism is recommended for the government policy system reform, too.

- a. Recovery phase: performance/ outcome-based incentive mechanism that can deliver incentives more efficiently, and incentives through local banks, which may revitalise the local economy and banking sector.

Table 7.8 Phased Approach and Recommended Investment

Categories	Phase 1 (Emergency)	Phase 2 (Recovery)	Phase 3 (Low-carbon growth)
Electricity and energy supply	- Stable supply	- RE generation - Review of efficiency benchmarks - Resilience of the supply chain, such as LNG	- Grid security, including stability and resilience - Market liberalisation with carbon cost - Lower carbon fuel, including waste-based bio fuel
Industry, building, transport	- Efficient air conditioners - Clean personal mobility - Congestion relief of public transport	- Retrofit efficiency improvement - Retire of inefficient equipment - Electrification/fuel cells	- Electrification and switch to low-carbon energy (hydrogen, etc.) - Restructuring of industry (retirement) - New building code - Electrification and/or lower carbon energy - New transportation system (combination of modal shift and personal mobility)
Technology innovation including digitalisation	- Continuity of R&D (secure of its budget) - IT equipment support	- Hydrogen, ammonia, etc. (R&D, production, and use) - CCS/CCUS (R&D) - Application for efficiency and digital infrastructure	- Energy storage (battery, hydrogen, etc.) - Infrastructure for new energy systems - CCS/CCUS - Digital infrastructure and literacy improvement
Finance	- Bail out finance with conditions	- Outcome-based incentives (pilot) - Incentives through local banks	- Outcome-based incentives (mainstreaming) - Carbon market (budget neutral finance)
Regional Cooperation	- Support for clean energy access	- Joint procurement of natural gas - Minimise lock-in effects - Improving digital security - Resilience of global supply chain	- Harmonisation of regulations - Common electricity and gas market - Common carbon market - 'Quality infrastructure'

Source: Author; Cabinet Office (2020) and Cabinet Office (2021).

b. Growth phase: incentive for innovation by competition and portfolio-type investment in new technology for enhancing competition amongst different technologies, and emission trading and/or an offset mechanism.

The Green Innovation Fund, established to implement the Green Growth Strategy, will work on the 14 green growth sectors identified by the government. In each of the 14 sectors, there are various technologies options, and companies are competing

to develop them. There is uncertainty as to which technology will succeed. It will be interesting to see whether the government will concentrate its support on specific technologies or consider diversified investment as a portfolio approach, what technologies will be selected, and how the responsibilities of companies and the government will be shared.

4.3. Financial system

Banks have made a great contribution to supporting businesses affected by COVID-19 by providing huge amounts of finance prior to the government support programme. But, in general, the

banking system in Japan is suffering from a structural problem. Amongst them, local banks are depressed, and, in the long run, it is understood that restructuring for revitalisation is needed. In the short term, like the BOJ's financial operations, financial support for banks is needed for supporting green projects because the financial conditions of banks have been weakened by the continuing pandemic.

Government subsidies will not cover 100% of the investment costs, and additional finance by banks is needed to fill the finance gap. The implementation of incentive systems by banks that have long and close relationships with local companies may provide one-stop services for financing low-carbon investment smoothly. This may contribute to both low-carbon investment and the local economy. Recommended measures are as follows:

- a. Delivery of incentives through local banks and a combination of outcome-based incentives for SME finance
- b. Conditional lending, including bail-out finance in Phase I, with climate change commitment/actions.

Careful consideration is needed on which climate change activities are eligible. ASEAN does not have the same economic and energy structure as Europe, the United States, or Japan. A diversified approach may be realistic. Central banks are not experts in industrial finance and have limited information on energy and climate change. There are different opinions on how deeply they should intervene.

4.4 Digitalisation

Digital technology is indispensable for sustainable growth as it can contribute to emissions reductions, such as through energy efficiency and the optimisation of electricity networks. Also, it supports reductions in disparities in income and education because it can provide equal opportunities for all. It has been pointed out that the widespread use of remote work has led some people to move their residences from city centres to suburbs and even to the countryside, and this may provide great opportunities for local companies. Digitalisation could be a chance for ASEAN to reap the positive effects of Industry 5.0.

- a. Both hard infrastructure and soft infrastructure need to be improved. Soft infrastructure includes application development and the improvement of data literacy.
- b. Rules for the digital economy, such as on intellectual property rights, the ownership of data, and privacy rules, should be in place.
- c. Cyber security is critical for the digital economy and energy security. New international rules are an important condition of the digital revolution.

It is also necessary to deal with the negative aspects of digitalisation. Not all companies and not all people can make good use of digitalisation. Worker training and equal educational opportunities also need to be addressed.

4.5. ASEAN+6 cooperation

Huge investment is required for the transition to low-carbon growth, but international and regional collaboration can be reduced costs through economies of scale and the sharing of experiences, technologies, and resources. New technologies need to be developed for the changing long-term goals. There is uncertainty in developing new technologies, and relying on one technology is risky. It is better to have as many technology options as possible. The resources of a single country are limited and international cooperation is necessary. Open policy is better than a 'home country first' policy.

- a. ASEAN energy security pool – the supply of low-carbon energy is crucial for climate change actions in ASEAN, where energy demand is increasing. Ongoing projects, such as the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline, are improving the connectivity of electricity markets. Looking at the energy system for 'beyond 2030' and 'net zero emissions' until 2050 and afterwards, hydrogen and ammonia, or other low or zero-carbon energy supply chain and carbon recycle systems using carbon capture and sequestration, should be jointly studied and constructed. The infrastructure construction and R&D investment are too big for ASEAN member countries alone. Therefore, ASEAN+6 cooperation is needed. The Japanese government will cooperate with ASEAN for constructing a zero or lower emission energy system, including zero-emission hydrogen and ammonia, by using the Post-COVID-19 Growth Facility as a part of the Green Growth Strategy. Zero-emission fuels increase flexibility in zero emission energy options.
- b. Harmonisation of regulations – due to the deepening of the supply chain, the harmonisation of the energy and carbon standard is progressing. The influence of climate-related voluntary initiatives, such as green bonds, sustainability bonds, and sustainable finance taxonomy, is increasing. Also, varieties of ISO for sustainability, including climate change, are being prepared. It is important to adjust to these global trends, but each country has its own national preference because the economy, industry, and energy vary from country to country. The SDGs are a useful tool for the balance of global or regional movements and national or local preferences. Japan is going to promote transition finance, which balances practicability and ambition. This is an option for cooperation with ASEAN for harmonisation.
- c. ASEAN+6 common carbon market – the average cost for achieving the Paris Agreement target has been reduced to US\$40 per tonne of carbon dioxide equivalent, and an additional 5 billion tonne reduction a year can be realised when international emission trading is used (IETA 2019). The ASEAN common carbon market is recommended to reduce the burden and speed up the transition.
- d. Another important thing is to share the transition scenario: ASEAN's energy demand will continue to increase. This is different the European Union, the United States, and Japan, where energy demand will

decrease if policies are implemented in line with the Paris Agreement – therefore, the adoption of the same policies is not appropriate. ASEAN and Japan may have a lot of potential for cooperation in developing decarbonised energy, including zero-emission fuels. In order to achieve the goals of the Paris Agreement, it would be beneficial for ASEAN to develop their energy and climate change scenarios in cooperation with Japan.

5. Game-changing

Recommendations for ASEAN +6

There are many challenges for the long-term sustainable development of Japan – disparities in income and education, the shrinking local economy, and increasing natural disaster risks and energy insecurity under climate change. The transition to a low-carbon economy is a very important challenge, but not the only one, and it is interrelated with other challenges. Therefore, it needs to be tackled by comprehensive policy packages.

Three principles for approaches are recommended.

Fiscal system reform through a market-based approach

Ultimately, carbon externality should be removed by regulations, and the government should change its role to a ‘rule maker’ from a ‘market player.’ Subsidies cannot be a permanent measure, and direct intervention by the government should be minimised. COVID-19 has expanded the budget deficit, and this is a chance to accelerate the transformation of fiscal

and financial policy measures by using a market-based mechanism as an option for a budget-neutral approach.

Balance of a global approach and a national approach

Climate change is a global issue, and all countries have to tackle it. International collaboration can reduce the cost of transition. Free trade and investment are essential not only for economic growth but also for climate change. It is important to respect the local conditions because the structure and background of the economy, industry, and energy vary from country to country. However, recently, ‘home country first’ has become a big movement. This is a threat to economic growth and climate change even though national security is one of the most important issues. SDGs can be a useful tool for balancing the global and local approaches.

Digitalisation for all

Digital technology contributes to the low-carbon transition in addition to reducing the gaps in income and education and enhancing the local economy. It has multiple benefits and is an indispensable technology. Digital information has a different nature from conventional goods and services and, as such, can cross national borders, and property rights are not clear. New rules, such as for intellectual property rights, ownership, and privacy, are required to utilise its potential fully and mitigate its negative impacts. In addition, cybersecurity is a real threat to the economy and society, and ASEAN and countries with close ties to ASEAN, such as Japan, should cooperate to tackle cybercrimes. As for the telecommunications system, this is an important form of infrastructure.

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