

Summary of the interim report of a study group on ideal economic and other approaches for achieving worldwide carbon neutrality

Situation surrounding carbon neutral(CN) –Global competition for reducing CO2-

- 125 countries and 1 region declared to achieve CN by 2050
- Development of ESG finance, transition to low carbon/decarbonization, as a requirement to fundraising
- Emerging new trade practices on supply chains, calls for decarbonization by global set makers.

1. Coming corporate governance towards transition to CN

- Multi-stakeholders such as consumers, customers, financial market and labor markets regulate companies by disclosures

2. Change of the viewpoints of CO2 reduction; "Reducing CO2" is evaluated by markets

- Diversification of the value according to methods/places. Noticing CO2 as a raw material (carbon recycling)

3. Enhancing the attention to carbon pricing

- Expanding voluntary credit trading and international credit markets (TSVCM) / Ongoing discussion on CBAM by EU / Expanding Internal carbon pricing / Starting nationwide ETS in China

Current status of carbon pricing(CP) in Japan

- ❑ Carbon pricing is one of the economic approaches that put a price on carbon and change emitter's behavior.
- ❑ It exists by the public and private sectors, attracting attention internationally.

	By public	By private
Domestic	Carbon tax <ul style="list-style-type: none"> ➢ Mechanism pricing CO2 by taxation on use of fuel/electricity in proportion to the volume Cap & trade (with upper limit) <ul style="list-style-type: none"> ➢ Mechanism determined upper limit of each companies, if emission is over the limit, need to buy emission rights. ➢ Price of carbon is determined by demand and supply of emission rights 	Internal carbon pricing <ul style="list-style-type: none"> ➢ Companies voluntarily value their CO2 emission themselves and refer to investment Baseline and credit <ul style="list-style-type: none"> ➢ Certifying the CO2 reduction abroad and exchanging. Non-fossil fuel certificate, J-Credit scheme and JCM(binary credit mechanism)by public and also introduced credit trading by private
International	Carbon border adjustment mechanism <ul style="list-style-type: none"> ➢ Paying the price gap when imported by low CO2 pricing country . 	International voluntary credit exchange <ul style="list-style-type: none"> ➢ Certifying the CO2 reduction abroad and exchanging. Ex. VCS and GS. ➢ International initiative(TSVCM), which aims to formulate the standard of trade and expand the scale of market is ongoing.

- ❑ It is important that CP by public refers to CP by private.
- ❑ As carbon tax in Japan, tax for climate change mitigation exists(289JPY/t-CO2) . And it already introduced tax on all the fossil fuels, it costs approx. 4.3 trillion (4,057JPY/t-CO2) . ※It would be approx. 6..7 trillion, added the total cost of FIT (6,301JPY/t-CO2)
- ❑ Overall energy cost(energy price, carbon tax, energy tax and FIT...) is high compared to other countries that is affected to industries and consumers. (However, some argue it is not in proportion to CO2.)

Basic principle of carbon pricing contributes for growth

- ❑ To achieve carbon neutrality by 2050, from the view of the positive cycle of economic growth and environmental protection, CP can contribute by:
 - Promoting the investment for innovation rather preventing research and development/ capital investment.
 - Designing the policies that is fair to international business competition in consideration of trends of global business.
 - Signaling that there are multiple paths to changing behavior depending on different situations, such as institution, price and existence of market, and visualization, so the proper policy mix is essential.
 - Setting proper time span based on the development status of alternative technology differed by each industries and macroeconomic situation. (Refer the image below)
 - Promoting consumer behavior towards choosing products that contribute to CN.

	Present	Short term	[Image]	Long term
Alternative methods developed (decarbonized tech exists...)	※however, costly	Need methods to support introducing tech in this area? (Ex) • <u>Positive incentive</u> (subsidy, institution) ※FIT introduced from 2012 • Visualization the benefits by life cycle ※When the initial cost is high, but it would be beneficial in life cycle • <u>Demand creation</u> (Procurement by the public sector)		Incentive to strongly introduce methods if it can be compatible to existing tech? (Ex) • Negative incentive (Taxation etc.) • Carbon border adjustment
Alternative methods developing (decarbonized tech not existed)		Need support for developing technologies and steadily transitioning to low carbon? (Ex) • <u>Support for R&D, capital investment</u> (subsidy, tax benefits etc.) • Promoting steady transition to lowcarbonized society (Saving energy, energy transition, credit exchange etc.) ※ Possible to execute if tech is still existed		Need methods to support introducing tech with comparison and competition with other tech when still costly? (Ex) • <u>Positive incentive</u> (subsidy, institution) ※FIT introduced from 2012 • Visualization the benefits by life cycle ※When the initial cost is high, but it would be beneficial in life cycle • <u>Demand creation</u> (Procurement by the public sector) Need more methods to support introducing with comparison and competition with other tech, in case necessary to introduce to achieve CN even costly in life cycle

Future direction of policy response

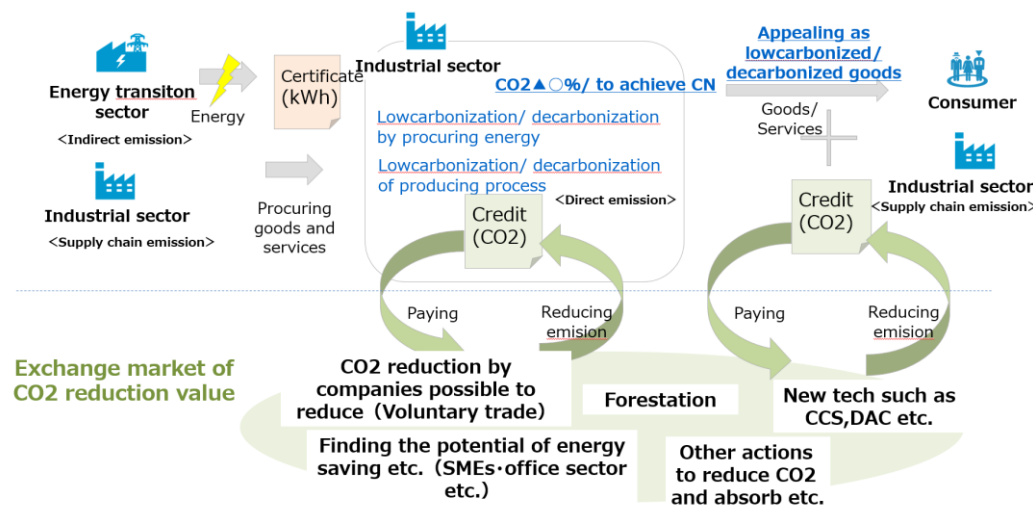
- ❑ Policies in each country surrounding CN such as regulations, economic methods, fiscal policies, financial policies, and industrial policies are in trial and error at present. It is necessary to deal with CN rapidly along with change in circumstances in each country and global business. In this study group, it presented, policies in (1) to deal with present company's demand, long-term policies in (2) and it is also important to attempt to make policies in an agile manner as flexible and fast according to change in circumstances.

(1) Developing existing domestic credit markets

- ❑ Recently, it expands the demand to develop credit exchange according to the change in trade practice such as decarbonization of energy (RE100 etc.) and call for CO2 reduction aligned with the Paris Agreement by international initiatives(SBT).
- ❑ By developing credit exchange markets, it promotes CP in the private sector and accelerates nationwide CO2 reduction.

[image]

- Using certificates to decarbonize energy and reducing CO2 of production and supply chain
- Adding high value on products by carbon offsetting. Promoting investment to absorbed or new tech for saving energy, forestation etc. by credit finance.



Concrete action

- ① Non-fossil fuel certificate; Allowing companies to purchase by themselves and improving the convenience of the system.
- ② J-credit system; Developing the infrastructure with local government and promotion of the digitalization to ensure the quality and expand the supply.
- ③ JCM; To improve the trading, it attempts to develop the management to expand the project, attract the investment and increase partner countries and

(3) Developing the infrastructure of CP for growth

- ❑ When carbon footprints (CFP) can be accurately visualized or tracked, companies and consumers can choose low-carbonized goods. Also, dealing with carbon border adjustment, it can be required to calculate the volume of CO2 of the product.

Future direction of consideration

- ① Developing of infrastructure of carbon foot prints by utilizing IT technologies (Discussion with experts)
- ② Consideration of calculating the CFP of storage battery (in FY2021).

(2) Considering the mechanism of long-term action to change one's behavior

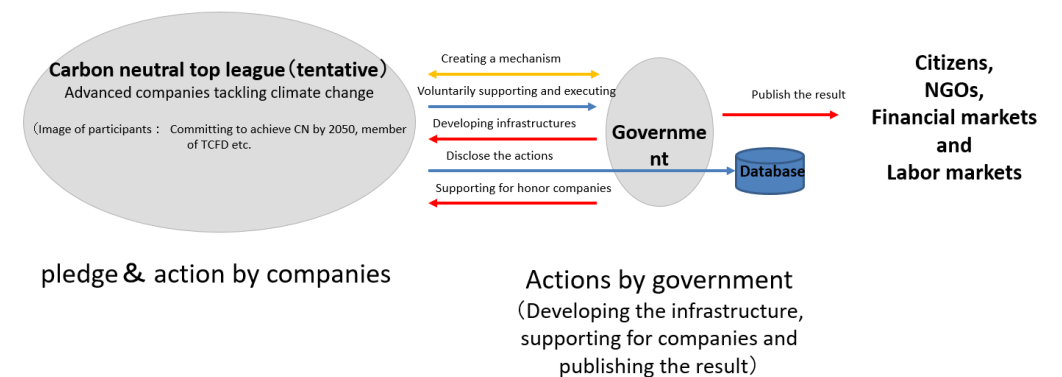
- ❑ Advanced companies※ competing globally to reduce CO2 showing ambitious actions and the appropriate mechanism to lead to **achieving nationwide CN and economic growth and contributing to worldwide CN.**
※TCFD supporters: 465 (Top of the world). Quality of disclosure as well(CDP)
- ❑ Strategically dealing with CBAM by EU based on "Basic principle" which was formulated in the study group.
- ❑ Regarding CBAM, it requires to calculate CO2 costs by country, it is important to explain the current situation in Japan (the previous page) such as energy tax, FIT etc.
- ❑ It is necessary to consider and organize ideal CP including taxation, ETS and regulations concerning industrial structure and business circumstance in CN society.

Future direction of consideration

- ① Creating a mechanism assembling advanced companies and evaluated by markets.(Discussion with experts)

※Respecting the independency of companies, but the progress will not go well related to the national emission targets, the government will aim to introduce another CP.

<Image of the mechanism>



- ② Strategically dealing with carbon border adjustment
- ③ Continuous consideration in concern with ideal CP to CN society

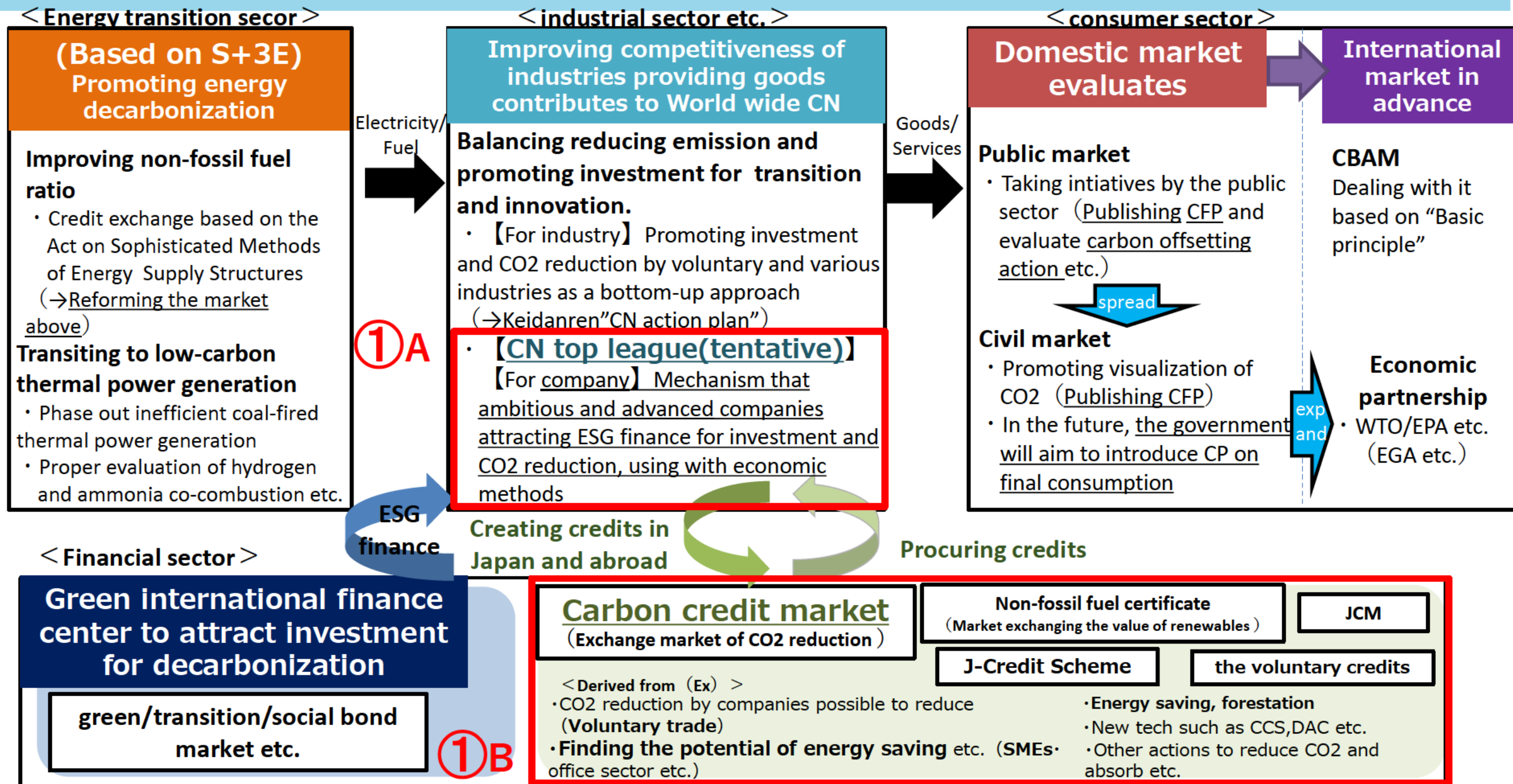
Future direction of consideration

- ① Clarifying the carbon credit to achieve carbon neutral (discussion with experts)

◆ The image of actions below (①~③) are explained in coming pages.

Ideal direction of Japanese industrial, finance and energy sector , and consumer market in 2050 CN era

- To achieve CN by 2050 and contribute to worldwide CN, it is necessary to develop socioeconomic infrastructure in an innovative manner. Proper CP that change sector behavior and utilizing the right policy mix can contribute to achieving CN.
- It continues specialized and technical consideration on ideal tax system and ETS to realize CN society.
※CP related policies are underlined.



Infrastr
ucture

① Maintaining methods to calculate CFP/LCA and the Database as the infrastructure etc.

③

② Clarifying the definition of CN and carbon credit

Image of ①A and ①B (1)

①A: A company sets an emission target and the government confirms the result.

“Carbon neutral top league (tentative)” (※)

※ It starts to respect the independency of the private sector, but the progress will not be very good aligned with the national emission targets, the government will aim to introduce another CP.

- Setting an emission target
- Confirming the result
- Establishing the brand
- Attracting ESG investment

+

①B: A company exchanges qualified national / international credits

“Carbon credit market (tentative)”

- Publishing the price
- Promoting investment
- Controlling the volume of the emission

◆ The details and relationship between A and B are described on the next page.

◆ It is necessary to have specialized discussion on the concrete system design of these policies and it aims to start the demonstration of exchange credits from FY2022.

Image of ①A and ①B (2)

①A: “Carbon neutral top league (tentative)” (a company voluntarily participates)

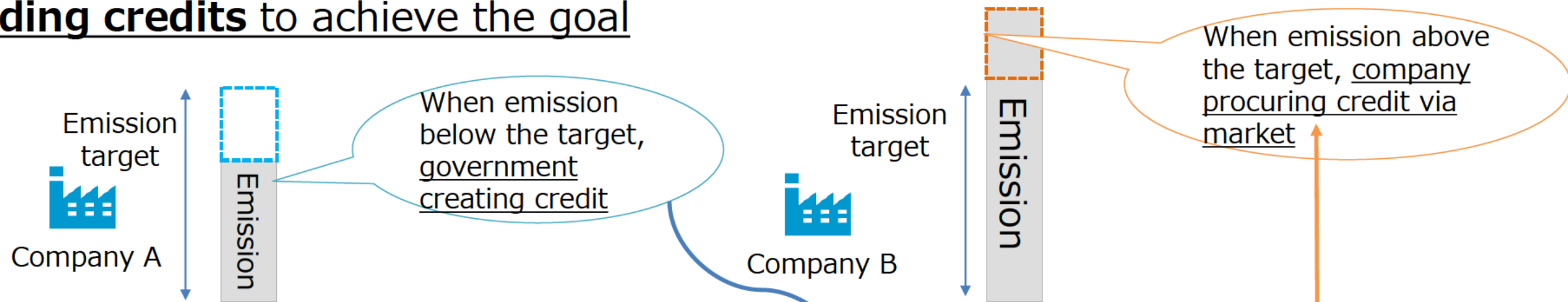
◆The participants set a target and a plan to achieve the goal, and exchange via market.

①Setting an emission target of 2030 aligned with 2050CN and a plan to achieve the goal, and publish those to the market. (pledge & review)

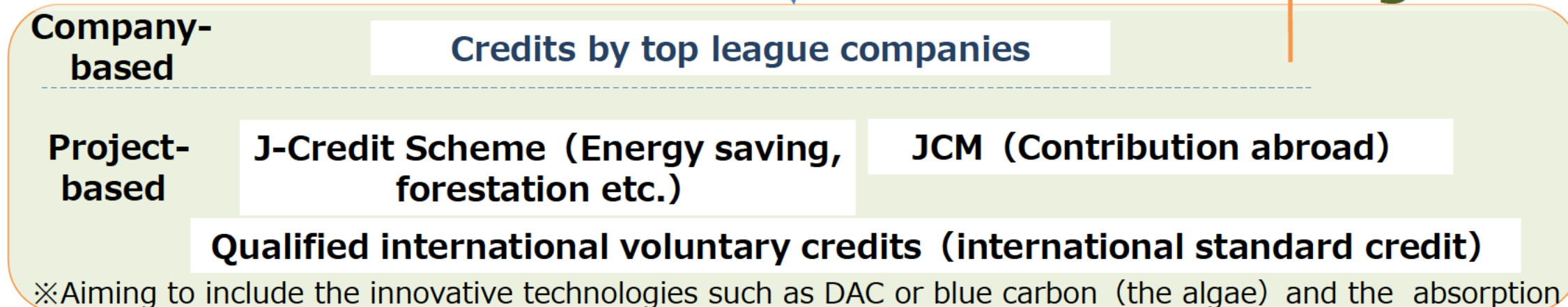
※the government formulates the guideline of setting the emission target

②Execution (the government publishes the progress every year)

③Trading credits to achieve the goal



①B: “Carbon credit market (tentative)” (an exchange)



◆Aligned with international standard of credit exchange(TSVCM), providing the international credit market.

◆An exchange will publish the traded prices (Sending price signals as carbon cost) .

◆Non-top league companies can exchange project-based credits.

Image of ②

② Developing the infrastructure of carbon footprints (CFP) by utilizing IT technologies

- ◆ If tracking carbon foot prints, companies and consumers can choose low-carbonized goods. Also, dealing with carbon border adjustment, it requires to calculate the volume of CO2 of the product.
- ◆ Especially, concerning CBAM by EU, EC published the draft in July 2021, targeting industries that emit large quantities of CO2 such as iron, aluminum, cement etc. EU also considers the regulation of batteries based on CFP. Regarding these actions, in the respect of improving the international competitive power, it needs to analyze LCA/CFP of the specific products.
- ◆ It is necessary to have specialized discussion on developing the infrastructure of carbon footprints (CFP) by utilizing IT technologies.
- ◆ It will promote the concrete discussion on the system design of and how to achieve visualizing the life cycle CO2 emission of the storage battery and in FY2021.

Image of ③

③ Clarifying the carbon credit to achieve carbon neutral society

- ◆ Expanding the needs of credits, it requires the concrete system design because of offsetting the emission of companies and adding value of goods and services. Additionally, it attracts company's attention that the voluntary credits based on international projects, and the discussion on credits such as TSVCM is ongoing.
- ◆ Secure the quality and expanding the quantity of credits, it is important to ensure the transparency of credit exchange and to clarify the definition of credit in policies in Japan such as the Act on Promotion of Global Warming Countermeasures and voluntary approaches toward a low carbon society by the business community
- ◆ It is necessary to have specialized discussion on clarification of credits to achieving carbon neutral society.

<Comparison of credits>

	Public		Private
	J-credit	JCM	Voluntary
Target action	Only in the inventory	Only in the inventory	Including the outside of the inventory
Place to reduce CO2	In Japan	In partner countries	Abroad
Third-party certification	○ (ISO certificated institution verifying)	○ (ISO certificated institution verifying)	○~x
Proper monitoring, management and reporting	○	○	○~x
Corresponding adjustment on Paris agreement	No adjustment necessary because of targeting domestic action	○	Discussion is ongoing ~ x
Policies that credits are available for	• Reporting(The Act described above) • Reporting(Voluntary approaches described above) • Voluntary carbon offsetting • CORSIA (※ongoing)		• Voluntary carbon offsetting (partially) • CORSIA