Outlook and Challenges for Policies Related to Climate Change

The Institute of Energy Economics, Japan

Takahiko Tagami, Senior Coordinator, Manager
Climate Change Group
Climate Change and Energy Efficiency Unit

Key Points of This Presentation

- ✓ The EU has updated its 2030 GHG emission target from 40% to 55%. China plans to update its target by the end of 2020, and the US aims to communicate its 2030 target in time for COP26. The details of these targets and the timing of their submission deserve attention.
- ✓ How the Biden administration will change the US' environmental and energy policies and how this may impact the world must be watched.
- ✓ What kind of roadmap, including its Fourteenth Five-year Plan, China will formulate to reach its 2060 carbon neutrality target deserves attention.
- ✓ In Japan, challenges for achieving a carbon-neutral society by 2050 include setting specific and detailed measures for disruptive innovation and R&D, and what kind of policies to formulate for renewable energy, nuclear power, and fossil fuel power plants, and how to combine them.
- ✓ In response to the developments regarding hydrogen and carbon recycling in 2020, efforts for expanding hydrogen production and CO_2 utilization deserve attention.

Global

Events in 2020

- COP26, which was to be held in Glasgow, UK in 2020, was rescheduled to November 2021 due to the spread of Covid-19.

	Submission of NDC (2030 target)
United States	Aim to communicate its NDC in time for COP26
China	Planning an update of the NDC by end of 2020 (aim to peak total emissions before 2030, and raise the target ratio of non-fossil energy from 20% to 25%?)
EU	Updated its NDC from 40% to 55% in December 2020
India	Unknown (raise the installed capacity of renewables to 450 GW by 2030?)
Japan	Resubmitted its existing NDC in March 2020

- Article 6 mechanisms under the Paris Agreement
  - Brazil: maintain the CDM or transfer it to the Article 6 mechanisms
  - EU: enhance the environmental integrity of the Article 6 mechanisms, limit supply, and abolish the CDM
- CDM Executive Board (December 2020)
  - As temporary measures until guidance is provided by CMP16 (Nov. 2021), requests for registration of project activities and issuance of CERs on or after Jan. 1, 2021 will be processed as “provisional.”

Points of Focus for 2021

- The guidance on cooperative approaches that involve the use of internationally transferred mitigation outcomes referred to in Article 6, paragraph 2, of the Paris Agreement, and the rules, modalities and procedures for the mechanism for mitigation activities established by Article 6, paragraph 4, of the Agreement will continue to be discussed heading toward COP26.
- Will the parties agree on the CMP guidance for the CDM for 2021 and beyond?
- G7 presidency: the UK; G20 presidency: Italy

United States (1/2)

	Trump administration	Biden administration	Points of Focus for 2021
Reduction target	—	100% clean energy economy and net-zero emissions (using CCUS and nuclear) no later than 2050	
Electricity	Abolished the Clean Power Plan established under the Obama administration	Carbon pollution-free power sector (using nuclear) by 2035 through a technology-neutral energy efficiency and clean electricity standard	Executive orders will be signed, possibly leading to lawsuits
Automobiles	Eased auto fuel economy standards and revoked a waiver granted to California to set its own fuel economy standards and ZEV regulations (lawsuit under way)	Create 1 million new jobs in the auto industry by making the US a global leader of EV manufacturing Set ambitious fuel economy standards	
Methane emission regulation	Eased (lawsuit under way)	Revert to the Obama administration's regulations	

United States (2/2)

	Trump administration	Biden administration	Points of Focus for 2021
Investment	—	Clean energy investment worth USD 2 trillion over his first term	Whether the budget will pass Congress
Research and development	Reduced R&D-related budget	Major investments planned for clean energy innovation, incl. CCUS and nuclear	
Environmental justice	—	Set a goal that disadvantaged communities (color, low-income and tribal communities) will receive 40% of overall benefits of spending (remediation of legacy pollution, development of clean water infrastructure, etc.)	
Paris Agreement	Notified its withdrawal from the Agreement in Nov. 2019	Return to the Agreement, put pressure on other countries to raise their climate targets	Day One: Return to the Agreement In the first 100 days: Aim to host a climate world summit
Border adjustment	—	Proposing imposing carbon fees on goods from countries not fulfilling climate obligations	
Coal-fired power exports		Stop other countries from providing subsidies	Pressure on China, Japan, etc.

China

Events in 2020

- September 2020: Aim to achieve carbon neutrality by 2060
- October 2020 (Fifth Plenary Session of the 19th CPC (Communist Party of China) Central Committee): Adopted the Proposal on the Fourteenth Five-year Plan and the Long-term Target for 2035
  - To establish an action plan for peaking GHG emissions before 2030, and promote the market of GHG emission allowances

Points of Focus for 2021

- March 2021 (National People's Congress) Fourteenth Five-year Plan
  - Reduce CO_2 emissions intensity per unit GDP by 19-20%?
  - Limit the total energy-related CO_2 emissions to 10.5 billion tonnes?

- Domestic emissions trading system
  - Draft allocation plan was circulated to the system's participants by the Ministry of Ecology and Environment

Draft allocation plan
The plan is applied retroactively to emissions starting from 2019.
The allowances per 1 MWh of electricity are rather relaxed. Coal-fired: 1.003 tCO_2/MWh Natural gas-fired: 0.404 tCO_2/MWh
Natural gas-fired power plants are not required to buy emission allowances even if they exceed the allocation.
The maximum volume of allowances that coal-fired power plants must buy is capped at 20% of total emissions.

EU

	Events in 2020	Points of Focus for 2021
"EU Climate Law" that enshrines the 2050 carbon neutrality objective in legislation	In October 2020, the Council of the European Union agreed to the EU Climate Law apart from the update of the 2030 target.	
Increase of the 2030 EU target from 40% to 55%	In December 2020, the European Council agreed on the new target.	Legislations are scheduled to come out for amending or enhancing the EU ETS, the Effort Sharing Regulation (which sets targets for each member for non-ETS sectors), energy efficiency and renewable energy policies, and CO_2 standards for automobiles, by June 2021. The key points are the allocation of revenues from allowance auctions and the sharing of efforts to address East European countries' concerns.
A carbon border adjustment mechanism for selected sectors to reduce the risk of carbon leakage	Presumably initially applied to steel, cement, and electricity. Instead of imposing carbon tax or customs duties, EU ETS will be expanded to include imported products.	A proposal to be submitted by June 2021
A draft delegated act establishing technical screening criteria for determining the conditions under which a specific economic activity qualifies as contributing substantially to climate change mitigation, etc. (the draft Taxonomy Delegated Regulation)	A draft delegated act which includes gas-fired power only with less than 100 g/kWh, no nuclear power and renewable and non-renewable hydrogen with 94 gCO_2e/MJ or less in the list, is due to be adopted at the end of 2020.	A delegated act shall enter into force only if no objection has been expressed either by the European Parliament or the Council of the European Union within a period of 4 months.
Recovery plan for Europe	Agreed at the European Council in December 2020.	

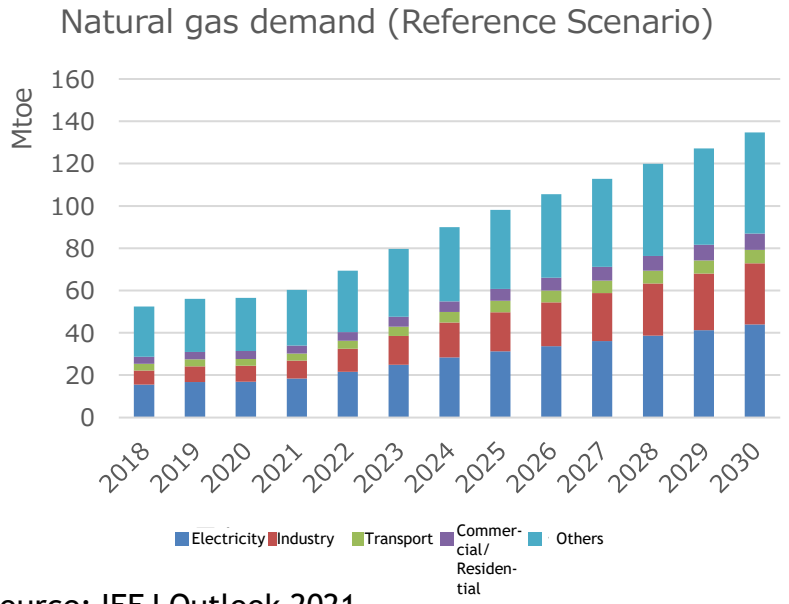
India

Events in 2020

- November 2020: PM Modi said that India's energy plan will have seven drivers:
  - Accelerating efforts to move towards a gas-based economy
  - Cleaner use of fossil fuels
  - Greater reliance on domestic sources of biofuels
  - Achieving the renewable energy target of 450 GW by 2030
  - Increasing the contribution of electricity to decarbonize mobility
  - Moving into emerging fuels like hydrogen
  - Digital innovation across all energy systems
- November 2020: The Apex Committee for Implementation of Paris Agreement was established

Points of Focus for 2021

- Will the economy's shift to natural gas be incorporated in the energy plan, and if so, how?
- How natural gas demand will increase in the electricity, industry, and transport sectors



Source: IEEJ Outlook 2021

Japan

Events in 2020

- Review of the global warming countermeasures started
  - Aim for net-zero GHG emissions by 2050
  - The Sixth Strategic Energy Plan
  - Review of the Global Warming Countermeasures Plan
  - Consider introducing new regulatory measures to ensure the fading-out of inefficient coal-fired power plants
  - Discuss follow-ups and revisions to the Environment Innovation Strategy, and actions for various technological areas and acceleration plans

Points of Focus for 2021

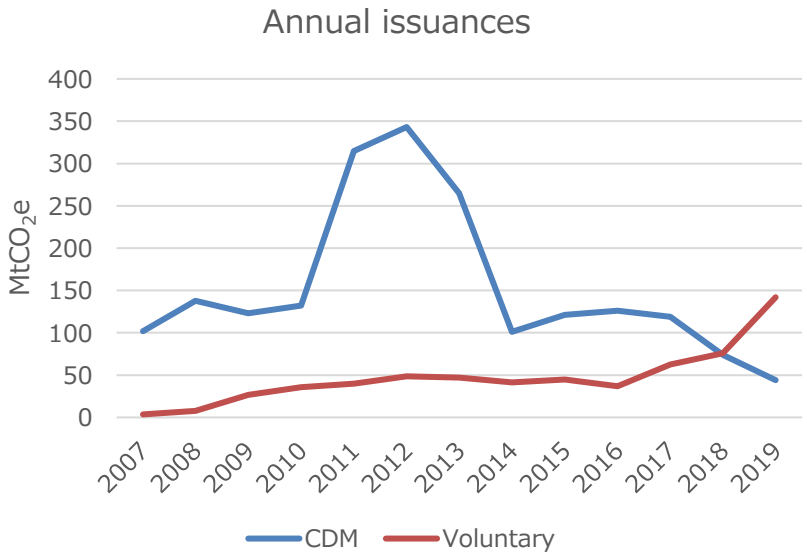
- Challenges for achieving net-zero GHG emissions by 2050
  - Innovation and R&D
    - Hydrogen
    - Automobiles, batteries
    - Carbon recycling
    - Offshore wind power, etc.
  - Renewable energy
  - Nuclear power
  - Fossil fuel power plants

Upstream Emissions and Carbon Offset

- Several energy companies are announcing the target of achieving net-zero emissions
- The sale of carbon-neutral fossil fuels has started

- Upstream emissions for oil and gas
  - Accounting methodologies
    - Oil Gas Methane Partnership 2.0 (November 2020)
  - EU strategy to reduce methane emissions (October 2020)
    - Incentivise a compulsory measurement, reporting and verification (MRV) framework for all energy-related methane emissions
    - In the absence of significant commitments from international partners on methane emissions reductions, the Commission will consider proposing legislation on targets, standards or other incentives to reduce methane emissions from fossil energy consumed and imported in the EU

- Voluntary carbon markets
  - Taskforce on Scaling Voluntary Carbon Markets (since September 2020)



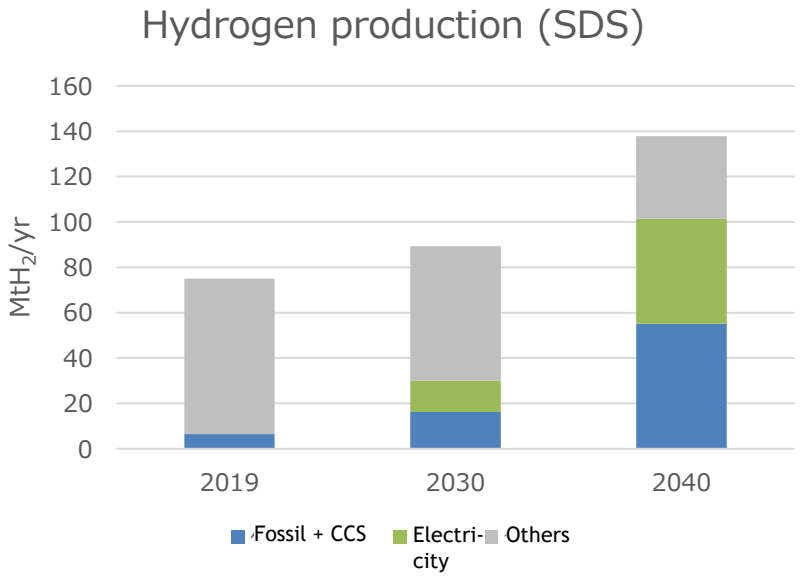
Source: UNFCCC CDM website; Ecosystem Marketplace, State of Voluntary Carbon Markets 2020

Hydrogen

- Japan-Saudi Arabia: Blue ammonia
- EU: Hydrogen strategy (acknowledges the need for non-renewable low-carbon hydrogen in the short-term) (July 2020)
- China: For FCVs, from purchase subsidies to support for model cities in the technological development, production and infrastructure of hydrogen
- Russia: Plans to become a global player by producing and transporting hydrogen (energy minister, November 2020)
- US: Hydrogen Program Plan announced by DOE (November 2020)
- Japan: Will review its basic hydrogen strategy

- Announced in July 2020: Equinor's H2H Saltend project (blue hydrogen) in UK, a reduction of 0.9 million tonnes of CO_2/year, production to start in 2026
- Announced in July 2020: Saudi Arabia NEOM's green hydrogen plant, 0.237 million tonnes of hydrogen and 1.2 million tonnes of ammonia per year, production to start in 2025

- While gray hydrogen (made from fossil fuels) is still the main product, blue hydrogen (made from fossil fuels with CCS) and green hydrogen (made by water electrolysis using renewable electricity) will account for the majority in 2040
- In the short- to medium-term, blue hydrogen is expected to increase first. Attention must be paid to the launch of more blue hydrogen projects in 2021.

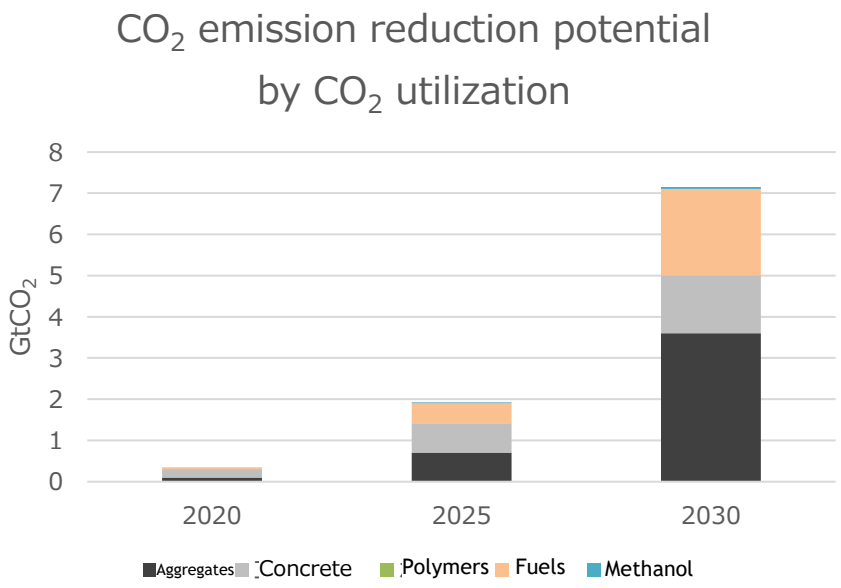


Source: IEA, Energy Technology Perspectives 2020

Carbon Recycling

- G20 Summit in Riyadh: the Circular Carbon Economy (CCE) approach as an integrated approach to managing emissions, built on the four Rs (Reduce, Reuse, Recycle, and Remove) was proposed, recognizing the key importance and ambition of reducing emissions

- Aggregates, concrete (CO_2-absorbing cement), and fuels (synthetic methane) have a large reduction potential
- Aggregates and concrete are in the commercial stage



Source: Carbon Dioxide Utilization – ICEF Roadmap 1.0, 2016

(Reference) Automobiles and Batteries

	EV deployment targets	4-wheel vehicle sales (M units, 2019)	New BEV sales (K units, 2019)	Global share of EV battery megafactory capacity 2019	2023	2029
China	50% NEVs (PHEV, BEV, FCEV) by 2035?	25.8	834.2	73%	68%	70%
US	California (Sept. 2020): All passenger vehicle sales to be ZEV by 2035	17.5	241.9	10%	10%	9%
Europe	Netherlands: 100% ZEV sales by 2030 Norway: 100% ZEV sales by 2025 France: No sales of new cars using fossil fuels by 2040 Spain: 100% ZEV sales by 2040 UK (Nov. 2020): No sales of new ICE (excl. HEV, PHEV) by 2030 (HEV, PHEV by 2035)	16 EU states: 14.4 Germany: 4.0 France: 2.7 Italy: 2.1 Spain: 1.5 Netherlands: 0.5 UK: 2.7 Norway: 0.2	6 EU states: 192.7 Germany: 63.3 Netherlands: 62.0 France: 42.8 UK: 38.5 Norway: 60.4		13%	16%
Japan	100% sales of HEV, PHEV, BEV, and FCEV by mid-2030s?	5.2	21.3		Asia excl. China: 9%	
Global		91.3	1533.4	455 GWh	922 GWh	2397 GWh
Source	IEA, Global EV Outlook 2020, etc.	OICA, JAMA	IEA, Global EV Outlook 2020	Benchmark Mineral Intelligence, SAFE (2020)		

In Dec. 2020, the European Commission proposed new batteries regulation, establishing requirements on carbon footprint, recycled content, and performance. The regulation will be applied to battery supplies from China to EU auto manufacturers.

SAFE (2020): Securing America's Future Energy, The Commanding Heights of Global Transportation

Contact: report@tky.ieej.or.jp