

Background on METI's Long-term Strategy as Growth Strategy

**Global Environment Affairs Office
Ministry of Economy, Trade and
Industry, Japan
Daisuke Takayanagi**

Prime minister's instruction overview at the meeting of the Council on Investments for the Future on June 4, 2018.

Today, we had briefings on the latest trends surrounding the environment and the economy. ESG (environment, social, and governance) investments have grown by more than 1 quadrillion yen compared to 2012. Flows of global funds are changing significantly, including an increase in green bond issuance by 50 times.

Measures against global warming are no longer a cost for companies. They are a source of competitiveness. Companies that actively fight against environmental issues attract funds from all around the world, enabling them to prepare for the next phase of their growth and take further measures. This change, which can truly be called a virtuous cycle between the environment and growth, has spread throughout the world at an amazing pace in the past five years or so.

Up until now, measures against global warming have consisted of obligatory measures in response to the Government's initiatives. Meanwhile, if we are to lead the way towards decarbonization by 2050, we can no longer take such an approach. **A paradigm shift is needed such that the virtuous cycle between the environment and growth is accelerated and technological innovations led by businesses are encouraged.**

source :
https://japan.kantei.go.jp/98_abe/actions/201806/00013.html

Firstly, we will **stimulate active green finance, not by adhering to existing forms of regulations, but by advancing the disclosure of information and transparency.**

Secondly, we will **promote measures on a global scale, including developing countries, by shifting from support centered on public funding to private financing led by businesses.**

Thirdly, we will **combine the wisdom of not only the public and private sectors but also Japan, the United States, and Europe as well as the rest of the world, setting ambitious goals towards fostering revolutionary innovation.**

Under such directions, I intend to assemble experts from every field, including finance, the economy, and academia, **establish an expert panel for setting out a new vision that is not limited by past precedent,** and request relevant ministries and agencies to accelerate its considerations with this council, towards the establishment of a long-term strategy based on the Paris Agreement.



Meeting on a Long-Term Strategy under the Paris Agreement as Growth Strategy



As the G20 presidency of 2019, to realize a virtuous cycle between the environment and economic growth and to lead global energy transition and decarbonisation, an expert panel is established for setting out a long-term low greenhouse gas emission development strategy under the Paris Agreement as growth strategy.

< Direction of Consideration >

※Prime minister's instruction overview at the Meeting of the Council on Investments for the Future on June 2018

- ① **Stimulate active green finance**, not by adhering to existing forms of regulations, but by advancing the disclosure of information and transparency.
- ② Promote measures on a global scale, including developing countries, by shifting from support centered on public funding to **private financing led by businesses**.
- ③ Combine the wisdom of not only the public and private sectors but also the world, setting ambitious goals towards **fostering revolutionary innovation**.

source : <https://www.kantei.go.jp/jp/singi/parikyoutei/>





<Member>

- **Shuzo Sumi** Chairman of the Board, Tokio Marine Holdings, Inc.
 - **Hiro Mizuno** Executive Managing Director and CIO, Government Pension Investment Fund (GPIF)
 - **Takeshi Uchiyamada** Chairman of the Board of Directors, Toyota Motor Corporation
 - **Kosei Shindo** Representative Director and President, NIPPON STEEL & SUMITOMO METAL CORPORATION
 - **Hiroaki Nakanishi** Chairman, KEIDANREN (Japan Business Federation)
 - **Junko Edahiro** Founder and President, e's Inc.
 - **Shinichi Kitaoka** President, the Japan International Cooperation Agency (JICA) **[Chairman]**
 - **Yukari Takamura** Professor, Integrated Research System for Sustainability Science
 - **Itaru Yasui** Emeritus Professor, The University of Tokyo
 - **Masashi Mori** Mayor, Toyama City
- | | |
|---|------------------|
| } | Finance |
| } | Industry |
| } | Expert |
| } | Local Government |

<Past meeting schedule>

- 8/3 1st meeting : Setting up the meeting
- 9/4 2nd meeting : Hearing from external experts① (Professor Amano, Nagoya University / Professor Gonokami, University of Tokyo)
- 11/19 3rd meeting : Hearing from external experts② (Yves Perrier, CEO of Amundi Asset Management / Noboru Ota, Mayor of Maniwa City / Didier Holleaux, Executive Vice President of ENGIE)
- 12/25 4th meeting : Free discussion

Action and review in domestic and international bodies over the long-term strategy

	International Meetings	Development of a long-term strategy
2016	May : G7(Ise Shima) Commit to taking the necessary measures towards the entry into force of the Paris Agreement 	
2017	May : G7(Italy) Recommend the residence of the Paris agreement in the United States July : G20 Summit (Germany) Climate change WG will be established for the first time 	
2018	6/8-9 : G7(Canada)  10/1-5 : IPCC Session 10/10-11 : ICEF(Tokyo) 11/30 : G20Summit(Argentina) 12/3-14 : COP24(Poland) 6/15-16 : G20 Ministerial Meeting on Energy Transitions and Global Environment for Sustainable Growth (Karuizawa, Nagano) 6/28-29 : G20Summit(Osaka)	6/4 : The meeting of the Council on Investments for the Future (Prime minister's instruction)  8/3 : The first expert panel 9/4 : The second expert panel 11/19 : The third expert panel 12/21 : The forth expert panel . .
2019	To be determined : G7(France)	
2020	G7(USA) G20 Summit(Saudi Arabia)	The deadline of formulating and communicating a long-term strategy

towards the establishment of a Long-term Strategy as Growth Strategy

<Countermeasures>

Long-term Global Warming Countermeasures Platform

(Compiled a Report in April 2017)

- Reducing GHGs on a global scale is an absolute necessity
- Measures taken by Japan have been effective to a degree, but a country's own efforts can have only limited effect.
- Therefore, the platform has set the "three arrows" game changers as its core strategy.

<energy policy>

5th Strategic Energy Plan

(approved by the Cabinet in July 2018)

- **Toward reducing GHGs by 80%**
- Challenges towards energy transitions and decarbonisation

「3E+S」 ⇒ 「Sophisticated 3E+S」

- Safety + Safety innovation by technology/governance reform
- Energy security + Raise technical self-sufficiency rate and ensure diversity of choice
- Environment + Work towards decarbonisation
- Economic efficiency + Enhance domestic industrial competitiveness

<Industrial Policy>

Strategy Meeting for the New Era of Automobiles

(Interim Report in July 2018)

- 80% reduction of GHG emission per vehicles (90% reduction for Passenger vehicles, 100% xEV) produced by Japanese Automakers
- Realizing "Well-to-Wheel Zero Emission" in collaboration with global efforts to achieve zero emissions from energy supply and with innovation in how vehicles are used

<Viewpoints for formulating a long-term strategy>

○ Presentation of ambitious vision

- Set the ultimate goal without bottom-up calculation, and pursue every option

■ Contribution to reducing GHGs on a global scale

- promotion of dissemination of innovative low-carbon technologies and infrastructure

■ Promotion of innovation

- Promote development of innovative technology focusing on 5 areas, leading the way towards world energy transitions and decarbonization

■ Focus private funds on green sector

- "Visualize" corporate environmental measures and efforts towards decarbonization, establish a mechanism through which private funds are shifted

a Long-term Strategy as Growth Strategy
(Realization of a virtuous cycle between the environment and growth)

Realization of a virtuous cycle between the environment and growth

~Three pillars of a Long-term Strategy as Growth Strategy ~

Promote innovation to lead world energy transitions and decarbonization

- ◆ Maximize renewable energy with future energy technology
- ◆ Lead the world by demonstration of greening fossil fuels by hydrogen · CCS etc.
- ◆ Develop next generation nuclear power (Small modular reactors (SMR, etc.)
- ◆ Create a decentralized and digitized future society and revitalize regional economies
- ◆ **Monozukuri technology towards decarbonization** (Hydrogen Reduction Iron-making, Artificial Photosynthesis)

Promote of fund circulation through visualizing corporate efforts

- ◆ **Improve the investor presence of Japanese companies by enhancing dissemination efforts on climate change**
- ◆ **Promotion of dialogue between energy companies and financial institutions to accelerate energy transitions**
 - ✓ In order to accelerate energy transitions by the public and private sectors, government and industry should actively propose dialogue with domestic and foreign capital markets to secure investment

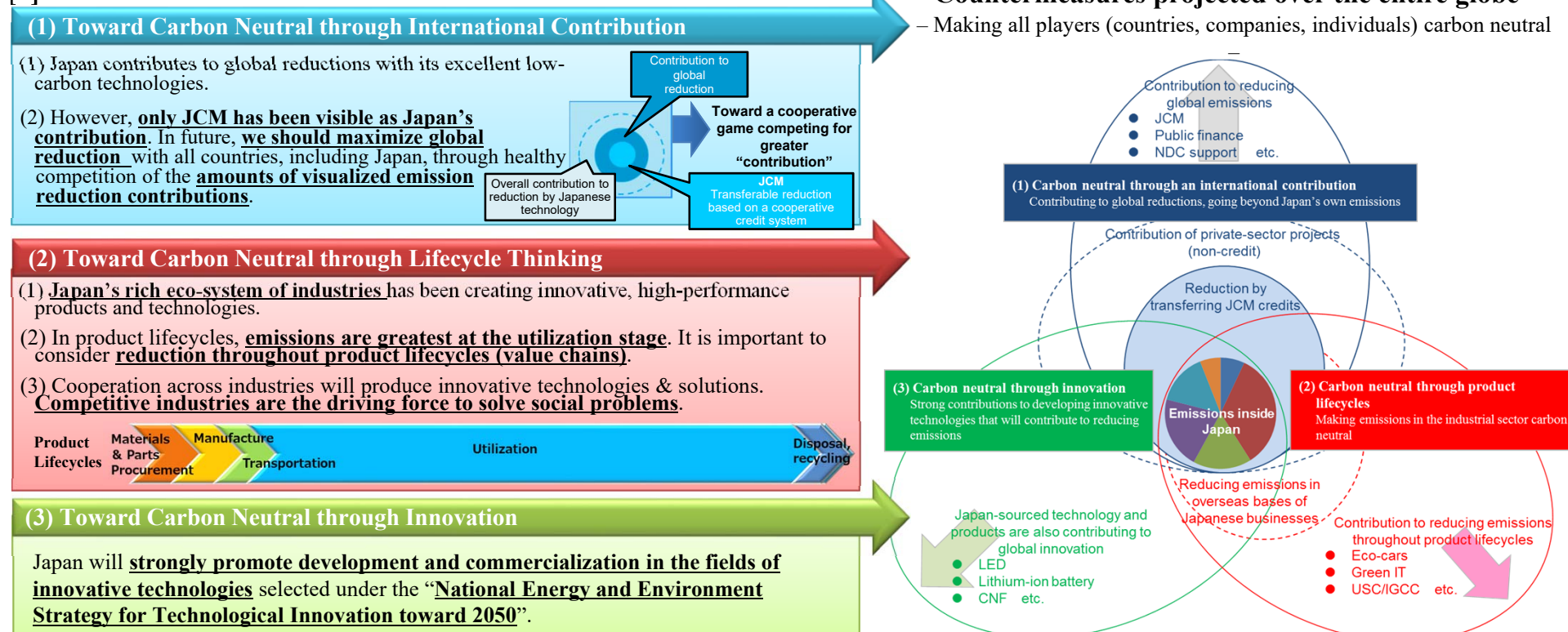
Contribute to reducing GHGs on a global scale with promotion of business activities

- ◆ **Global hydrogen alliance (Cooperate with Australia etc. to build a hydrogen supply chain)**
 - ✓ Japan will host the Hydrogen Energy Ministerial Meeting (Strengthen International Collaboration)
- ◆ **Global expansion of low-carbon products and services**
 - ✓ Supported Vietnam in introducing the energy efficiency standards and labelling program in 2013.
 - ✓ Quantify and clarify "GHG emission reduction of goods or services through Global Value Chain". Thereby, low carbon goods or services will be evaluated and spread through global markets

Interim Summary of the Long-term Global Warming Countermeasures Platform

- ◆ **Reducing GHG emissions on a global scale** is crucial in achieving sustainable development.
- ◆ Measures taken by Japan have been effective to a degree, but a **country's own efforts can have only limited effect**.
- ◆ Therefore, the platform has set the **“three arrows” game changers** as its core strategy.

[1] The Three Arrows



[2] Issues and Facts Concerning the Three Game Changers

Strategy to co-exist with uncertainty	Finance & investment	Carbon pricing	Support for overseas expansion
<ul style="list-style-type: none"> ● <u>Taking various uncertainties into consideration</u>, long-term strategy should be <u>robust yet flexible</u>. ● <u>Critical to seek for the best course of action in a continuous PDCA cycle</u>. 	<ul style="list-style-type: none"> ● Growing appetite for ESG information. <u>Predictability, recoverability and profitability are key</u>. ● Different views on “stranded assets.” ● <u>Policy changes</u> are another risk factor. 	<ul style="list-style-type: none"> ● Emissions trading: <u>Lessons from other countries</u> (carbon leakage, loss of incentives to reduce emissions, etc). ● Carbon pricing: Levels of <u>existing energy tax, regulation and other “implicit” carbon prices</u> are also an issue. 	<ul style="list-style-type: none"> ● Analyze <u>NDCs</u> of developing nations, <u>market potential</u> ● Build a <u>system of support</u> to help developing nations achieve their NDCs ● Create, accumulate and share <u>success cases</u>

5th Strategic Energy Plan

3E+S

- Safety
- Energy security
- Environment
- Economic efficiency

⇒

Sophisticated 3E+S

- + Safety innovation by technology/governance reform
- + Raise technical self-sufficiency rate and ensure diversity of choice
- + Work towards decarbonisation
- + Enhance domestic industrial competitiveness

Towards 2030

~To reduce emission of greenhouse gases by 26%~
~To achieve energy mix target ~

<Primary measures>

○ Renewable energy

- Lay foundations to use as major power source
- Cost reduction, overcome system constraints, secure flexibility of thermal power

○ Nuclear power

- Lower dependency on nuclear power generation to the extent possible
- Restart of nuclear power plants and continuous improvement of safety

○ Fossil fuels

- Promote independent development of fossil fuels upstream, etc.
- Effective use of high-efficiency thermal power generation
- Enhance response to disaster risks, etc.

○ Energy efficiency

- Continued thorough energy efficiency
- Integrated implementation of regulation of Act on Rationalizing Energy Use and support measures

○ Promotion of hydrogen/power storage/distributed energy

Towards 2050

~Toward reducing GHGs by 80% ~
~Challenges towards energy transitions and decarbonisation ~

<Primary directions>

○ Renewable energy

- Aim to use as major power source, economically independent and decarbonised
- Start on hydrogen/power storage/digital technology development

○ Nuclear power

- One of the options for decarbonisation
- Pursuit of safe reactors, development of back end technologies

○ Fossil fuels

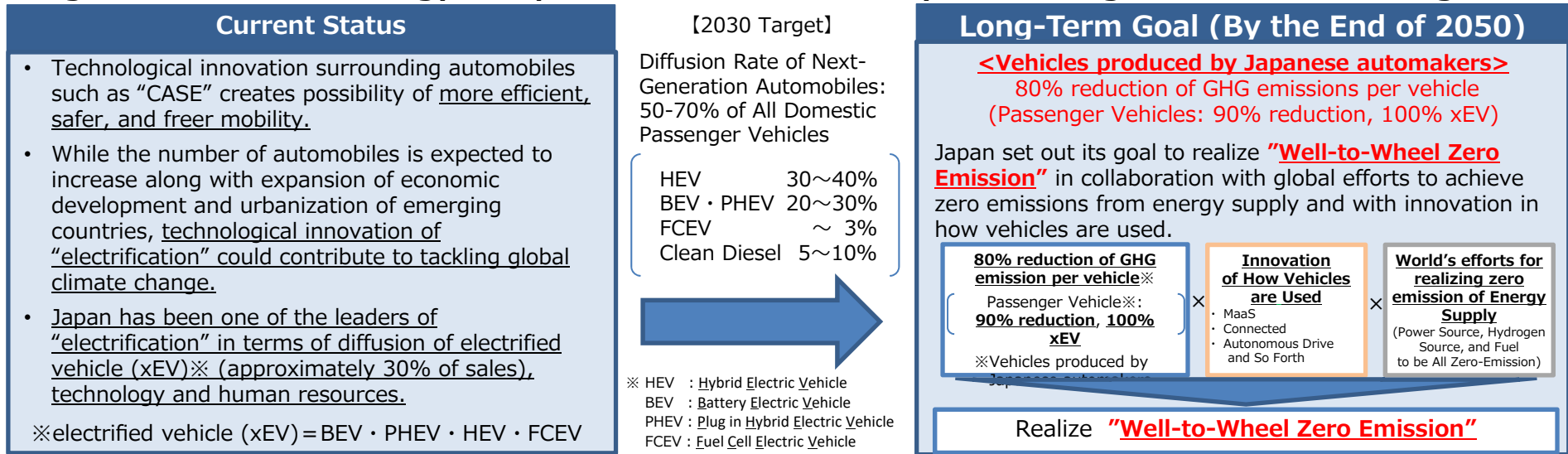
- Major power source during the transitional period. Enhance resource diplomacy
- Shift to gas, fadeout inefficient coal
- Start hydrogen development for decarbonisation

○ Heat & transportation, distributed energy

- Challenges for decarbonisation with hydrogen, power storage, etc.
- Distributed energy systems and regional development (Combination of next generation renewables/ power storage, EV, micro grid, etc.)

Draw up strategic plan ⇨ All Japan's efforts (projects, international collaboration, financial dialogue, policy)

Long-Term Goal and Strategy of Japan's Automotive Industry for Tackling Global Climate Change



3 Principles and Key Actions in next 5 years

• For achieving long term goal, Japan seeks to create **positive cycle where efforts for enhancing contributions to global environmental issues leads to growth of Japanese automobile industry.**

◆ promote **"OPEN"** innovation ◆ cooperate internationally to overcome **"GLOBAL"** issues ◆ establish **"SYSTEM"**

Promote Open Innovation	Cooperate Internationally to Overcome Global Issues	Establish System
<p>Promote Open Innovation in Next Generation Electrification Technology</p> <p>Early realization of the next generation of key technologies pertaining to electrification such as batteries, fuel cells, power semiconductors, motors, inverters, and light-weight materials through industry-academia-public, cross-enterprise cooperation.</p>	<p>"Well-to-Wheel Zero Emission"</p> <p>Internationally publicizing and sharing the Well-to-Wheel based zero-emission policy toward substantive solutions to global environmental issues.</p>	<p>Build up a Battery System</p> <p>Building up sustainable system for batteries and electric vehicles by stabilizing battery resource procurement, establishing guidelines for evaluating state of health of lithium ion batteries used for electric vehicles, creating battery reuse/recycle markets.</p>
<p>Promote Open Innovation toward De-carbonization of Internal Combustion Engines</p> <p>Maximizing efficiency of internal combustion engines and promoting commercialization of biofuels and alternative fuels with high GHG reducing effects.</p>	<p>Cooperate in International Electrification Policy</p> <p>Actively promoting dialogues among various countries in order to harmonize related automobile policies from around the world; and sharing Japan's experience in order to contribute to global electrification of vehicles.</p>	<p>Develop System for Utilizing Next-generation Vehicles for Commercial Vehicle Segment</p> <p>Developing operation and management system for electrified vehicles and other next-generation vehicles such as commercial LNG trucks by exploring both advantages and disadvantages compared to passenger vehicles.</p>
<p>Promote Model-based Development, Foster Human Resources, and Enhance Technology Level of Small and Medium Suppliers</p> <p>Promoting model-based development and utilizing AI for enhancing development efficiency. Fostering human resources and enhancing technology level of small and medium suppliers by promoting them through industry-academic, cross-enterprise cooperation.</p>	<p>Support Transformation of Global Supply Chains Toward Electrification</p> <p>To support transformation of Japanese automakers' global supply chain toward electrification, facilitating an environment that will enhance the technology level of local materials/supplies and human resources.</p>	<p>Accelerate Integration with Distributed Energy Systems</p> <p>Accelerating integration between infrastructure of electrified vehicles and distributed energy system and taking advantage of value created by diffusion of electrified vehicles.</p>

**'Moonshot' type Research & Development Project
Second supplementary budget for FY2018
200 billion yen (new)**

* We plan to establish a fund that will operate for 5 years.
* Covers general industrial technology such as AI. Energy / Environment is only one part.

Project Content

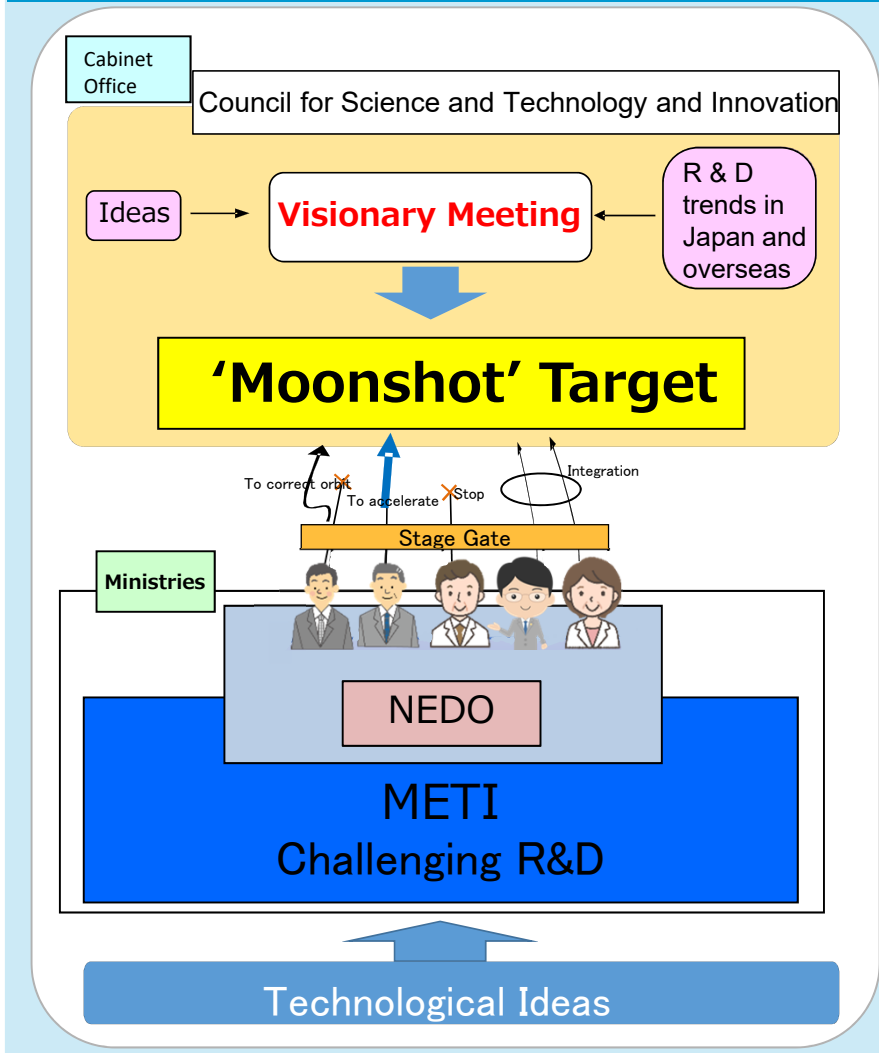
Project Goal / Overview

- We need to create a popular goal that the public can embrace and to find technological seeds and utilize discontinuous innovations that could be the source of future transformation in order to build a sustainable society in which solving social issues and economic growth are compatible. For that reason, we will work on the creation of innovative technological ideas that are not restricted by conservative thinking while making room for inevitable failures on the road to success.
- Specifically, with the aim of realizing the "Moonshot Target" indicated by the Council for Science, Technology and Innovation, the related ministries and agencies cooperate to adopt diverse technologies and approaches, introduce portfolio management; broadly recruit top researchers with diverse technical ideas; and promote the world's most advanced research and development.

Achievement goal

- By 2023, we aim to develop innovative technology seeds that will lead to market acquisition utilizing the results of this research.

Project Image



Innovation for Cool Earth Forum (ICEF)

- ◆ Under the initiative of Prime Minister Shinzo Abe, the Government of Japan has annually hosted a global conference called “Innovation for Cool Earth Forum (ICEF)” **SINCE 2014**.
- ◆ ICEF provides opportunities to raise awareness and promote discussion on **the LATEST TRENDS OF CLIMATE ACTION THROUGH INNOVATION** of energy and environmental technologies as well as to **EXPAND THE INTERNATIONAL NETWORK** of leading figures from industry, academia and government.
- ◆ ICEF Steering Committee is made up of 17 experts from 12 countries and **REFLECTS THE DIVERSE OPINIONS** of the world.
- ◆ ICEF consists of **Plenary Sessions** where global leaders discuss **LEADING ISSUES AND FUTURE STRATEGIES TO PROMOTE INNOVATION** from a global perspective and **Concurrent Sessions** where **LEADING GLOBAL EXPERTS DISCUSS SPECIFIC TECHNOLOGY**.
- ◆ ICEF has developed in the past five annual meetings. More than 1,000 experts from more than 70 countries and regions participated in ICEF 2018.

ICEF Steering Committee Members: 2018-2019



Nobuo Tanaka (Chair)
Chairman, The Sasakawa Peace Foundation;
Former Executive Director, International Energy Agency (IEA), Japan



Sally M. Benson
Professor, Department of Energy Resources Engineering, School of Earth Energy & Environmental Sciences, Stanford University, United States



Georg Erdmann
Professor, Berlin University of Technology, Germany



Eija-Riitta Korhola
Delegate of the Consultative Commission on Industrial Change, Adviser in the EU affairs, Finland



Reiko Kuroda
Professor, Tokyo University of Science, Japan



Hoesung Lee
Chair of the IPCC
Endowed Chair Professor, Graduate School of Energy and Environment, Korea University, Korea



Richard K. Lester
Associate Provost, Massachusetts Institute of Technology, United States



Ajay Mathur
Director General, The Energy and Resources Institute (TERI), Member of the Prime Minister's Council on Climate Change, India



Jon Moore
Chief Executive Officer of Bloomberg New Energy Finance, United Kingdom



Valli Moosa
Former Minister for Environmental Affairs and Tourism, Republic of South Africa



Nebojsa Nakicenovic
Deputy Director General and Deputy CEO, International Institute for Applied Systems Analysis, Austria



David Sandalow
Inaugural Fellow, Center on Global Energy Policy, Columbia University, United States



Ismail Serageldin
Founding Director Emeritus, Library of Alexandria, Egypt



Vaclav Smil
Distinguished Professor Emeritus, University of Manitoba, Canada



Laurence Tubiana
CEO, European Climate Foundation; Chair of the Board of Governors, French Development Agency; Professor, Sciences Po Paris, France



Kenji Yamaji
Director-General, Research Institute of Innovative; Professor Emeritus, The University of Tokyo Technology for the Earth, Japan



Itaru Yasui
Honorary Adviser, National Institute of Technology and Evaluation (NITE); Emeritus Professor, The University of Tokyo, Japan



ICEF 2018 Statement from the Steering Committee (Outline)

- Worldwide emissions of carbon dioxide have not yet started to decline but are **STILL RISING**. Under such circumstances, **A COMBINATION of CLIMATE CHANGE COUNTERMEASURES and ECONOMIC GROWTH** is required.
- FINANCIAL and INVESTMENT institutions** (as well as various industry sectors) are beginning to promote **BUSINESS-LED INNOVATION**.
- Industry, government, academia, and investors must come together to realize and promote innovation and create businesses using innovation by facilitating research and development and investment under **INTERNATIONAL COLLABORATIVE FRAMEWORKS**.
- In this regard, it is recommended that government and the industrial sector carry out the **FOLLOWING KEY ACTIONS** that are needed for the future **WITH UNPRECEDENTED URGENCY**.

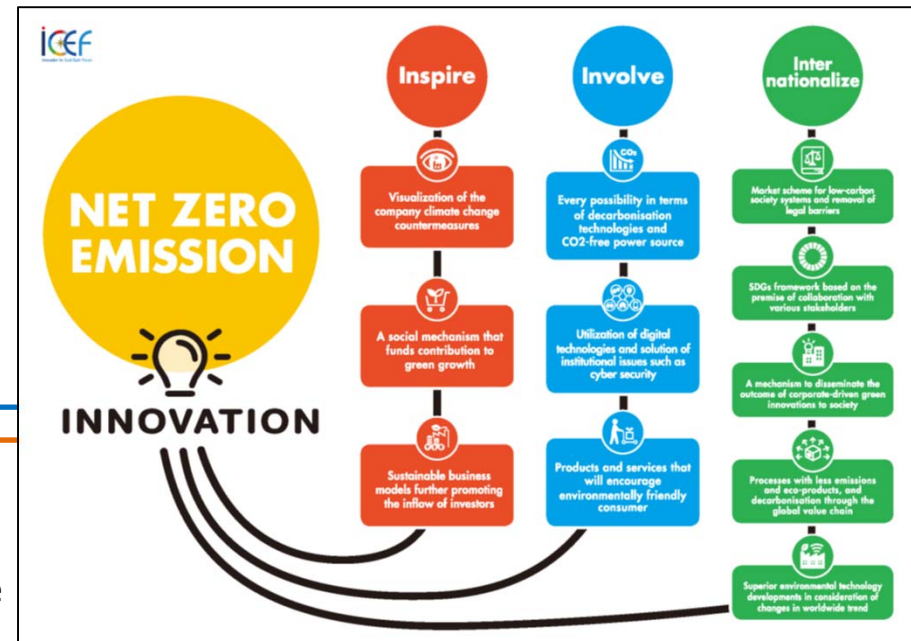
#1 Inspire investment in technology, products, and services for green growth

#2 Involve industry and consumers in accelerating technologies and innovation for decarbonization

#3 Internationalize cooperative efforts for deploying innovation outcomes

Other ICEF 2018 outcomes:

- Top 10 Innovations
 - Roadmap on Direct Air Capture of Carbon Dioxide
- ⇒ ICEF website: <https://www.icef-forum.org/>



About the Task Force on Climate-related Financial Disclosures (TCFD)

- In light of a global request for climate-related information disclosure, **private-led task force on climate-related financial disclosure (TCFD)** was launched. **The final report was published in June 2017.**
- **563 institutions worldwide and 42 institutions in Japan** signed TCFD (as of December 25, 2018). In Japan, many institutions in the non-financial sector signed.

【Development of TCFD recommendations】

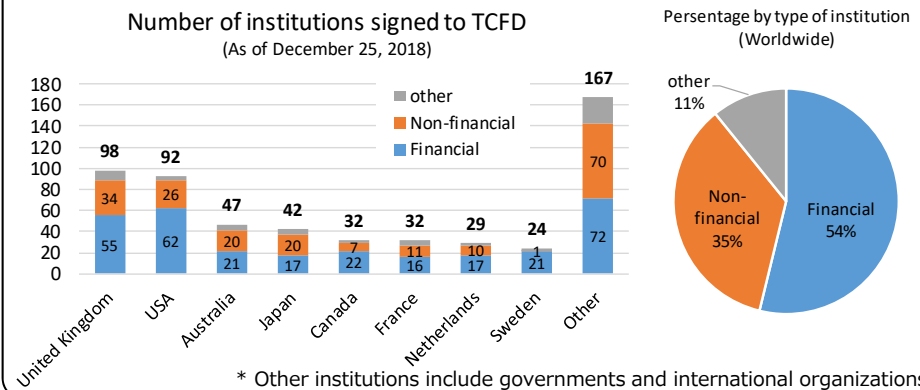
- ◆ Following the request from G20, private-led "Task Force on Climate-related Financial Disclosures (TCFD)" established by the Financial Stability Board (FSB) in 2015.
- ◆ It consists of 32 members chaired by Michael Bloomberg.
- ◆ **The final report was published in June 2017.** It was also reported at the G20 Hamburg Summit in July 2017.
- ◆ The status report summarizing the actual disclosure status for TCFD recommendations was published in September 2018.



Final report of TCFD

【Signature to TCFD】

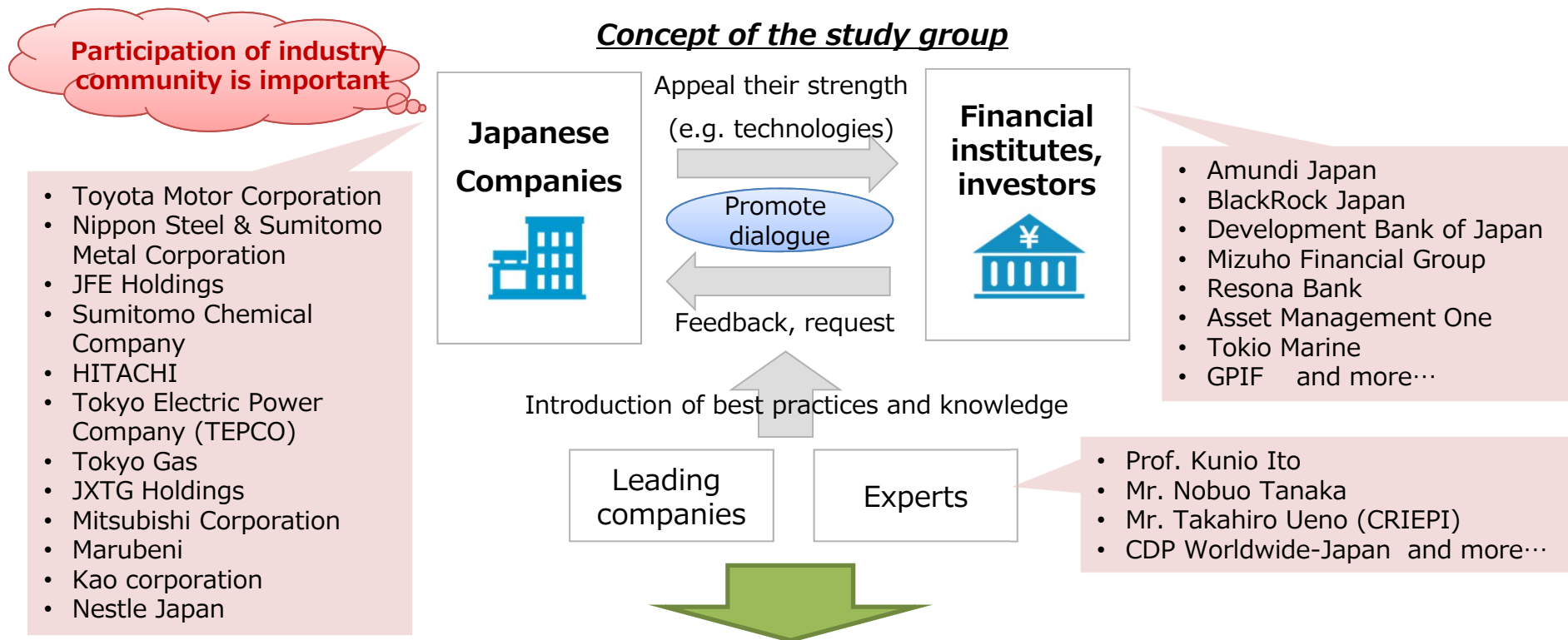
- ◆ TCFD is seeking supporters for its recommendations (= signature to TCFD). 563 institutions in the world have already signed TCFD (as of December 25, 2018).
- ◆ In Japan, 42 institutions have signed and it is the fourth largest number in the world. Japan tends to have more non-financial sector signatures than the global average.



Study Group on Implementing TCFD Recommendations for Mobilizing Green Finance through Proactive Corporate Disclosure

- METI established a study group to **discuss effective methodologies for TCFD disclosures, bringing together experts from both industry and financial communities.**
- An outcome of the discussions will be **compiled as a guidance for promoting dialogues between industry and financial communities,** so as to achieve sustainable growth.

Study Group on Implementing TCFD Recommendations



Overview of the METI's TCFD guidance

- In order to realize substantial emission reduction based on the Paris Agreement, it is important to produce bold innovation and create mechanisms to secure private funds for them.
- By properly disclosing corporate efforts on climate change based on TCFD, **"the virtuous cycle between environment and economic growth"** is realized, in which investors fund the active efforts of companies and gain returns. This guidance was created to show the first step to implement disclosure based on TCFD.

Chapter 1 (Introduction)

- The idea of considering the ESG (especially climate change) factor in long-term investment decisions has advanced, and TCFD* published the final report in June 2017.
- This guidance boosts disclosure of companies based on TCFD **by adding commentary on the final report of TCFD.**
- It is not necessary to complete disclosure from the beginning, **it is important to start disclosure from where possible.**
- METI will **accumulate best practices for disclosure** based on TCFD and will **further revise guidance** in the future.

*TCFD; Task Force on Climate-related Financial Disclosures

Chapter 2 (Commentary on TCFD recommendation)

Questions on TCFD recommendations by companies and financial institutions are resolved by commentary based on the opinions of financial institutions, actual disclosure practices and discussions at the time of formulation of TCFD recommendations.

[Explained items]

- **Media for information disclosure**
 - Material information should be disclosed in financial reports, but others can be reported in other media such as integrated reports etc.
- **Explanation of 4 themes of TCFD recommendation (governance, strategy, risk management, metrics and targets)**
 - Method of scenario analysis: Existing scenarios such as IEA's scenarios and how to analyze by referring them are introduced.
 - Methods of disclosing metrics and targets: Story-based disclosure on how they will lead to corporate value creation is recommended.
- **How to disclose in companies with different business models**
 - Disclosure according to the impact of each business models on climate change is recommended.
- **How to disclose in small and medium-sized enterprises**
 - Companies that is able to contribute to climate change should actively disclose their business opportunities.

Chapter 3 (Sector-specific guidance)

Desirable strategies as well as recommended disclosure items for different industries with different risks and opportunities for climate change are explained.

[Examples of recommended disclosure items]

- **Automobiles**
 - R&D of vehicles leading to emission reduction during driving phase
- **Iron and steel**
 - Efforts on improving efficiency (energy intensity) of production process
- **Chemicals**
 - Avoided emission by environmental contributing products and R&D efforts for them
- **Electrical and electronic**
 - IoT solution leading to emission reduction and development for energy saving technologies
- **Energy**
 - R&D for renewable energy and high efficiency power generation facilities

Hydrogen Energy Ministerial Meeting

- Date / Place : October 23rd, 2018 / Dai-ichi Hotel Tokyo
- Organized by : METI, New Energy and Industrial Technology Development Organization (NEDO)
- Participants : 300 people including representatives from 21 countries, regions, international organizations, etc.*

*Japan, Australia, Austria, Brunei, Canada, China, France, Germany, Italy, the Netherlands, New Zealand, Norway, Poland, Qatar, South Africa, Korea, United Arab Emirates, United Kingdom, United States, European Commission, IEA Participants :

PROGRAM

- Ministerial Session
- Industry and International Organization Session

- Plenary Session: Potential of Hydrogen Energy for Energy Transition
- Session 1: Expansion of Hydrogen Use - Mobility & H2 Infrastructure
- Session 2: Upstream & Global Supply-chain for Global Hydrogen utilization
- Session 3: Renewable Energy Integration & Sectoral Integration

Tokyo Statement

We share the view that hydrogen can be a key contributor to the energy transitions underway to clean energy future and an important component of a broad-based, secure, and efficient energy portfolio. Also, we confirmed the value of collaborating on the following four agendas on “Tokyo Statement” to achieve a “Hydrogen Society” .

- ◆ Harmonization of Regulation, Codes and Standards
- ◆ International Joint R&D emphasizing Safety
- ◆ Study and Evaluate Hydrogen’s Potential
- ◆ Communication, Education and Outreach



Relationship with International Organizations

- **Global Summit on CCUS (IEA)**
 - With Ministers and CEOs of global energy company
 - Agreed collaboration between gov. and industries
 - IEA will host high-level meetings & workshop of CCUS.
- **CSLF(The Carbon Sequestration Leadership Forum)**
 - Facilitates international collaboration for CCS deployment.
 - METI leads Regulatory TF on CO2 storage into sub-seabed.
- **IEAGHG, GCCSI for the knowledge sharing**
- **ISO TC265**
 - Technical Committee of ISO for global promotion of CCS
 - ISO/TC265 has 6 WGs on CCS and Japan leads WG1 & WG3.



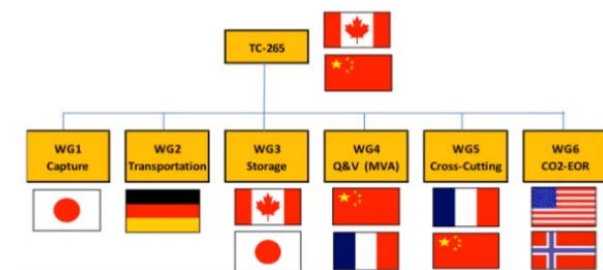
Global Summit in Edinburgh, 2018

Co-Chair

C. Perry, Minister of State for Clean Energy and Growth, UK

F. Birol, Executive Director, IEA

ISO TC265 Working Groups



GCCSI, 2014

CCS Projects & Development Assistances

Saudi Arabia :

- ✓ Saudi-Japan vision 2030 (2017)
- ✓ Master Plan for CCS & Hydrogen
- ✓ Japanese Heavy Industries, Oil and Trading companies involve.



USA:

- ✓ MOC on the CCS collaboration
- ✓ R&D and FS for CCS deployment
- ✓ Petra Nova Co2EOR project



Indonesia :

- ✓ Collaboration toward the launch of CCS business with Japanese CCS related companies & institutions.
- ✓ JICA(Japan International Cooperate Agency) supports Gundhi CCS demo project.

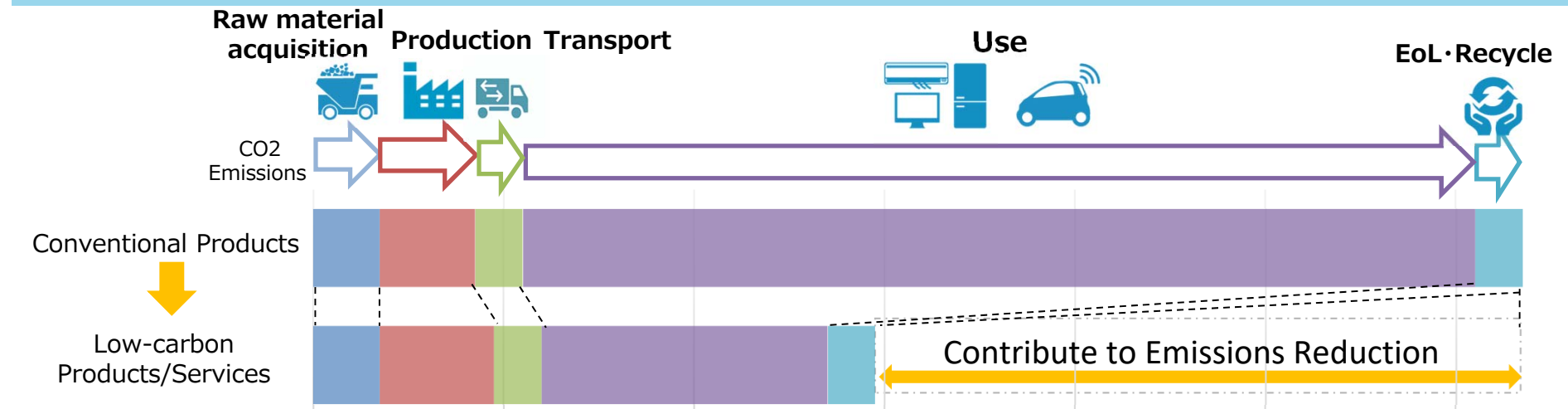


Mexico:

- ✓ CO2EOR projects in southern Mexico, using CO2 emitted from ammonia plant, etc.
- ✓ Japanese Heavy Industry & Oil company involve.

Publicizing GHG emissions reduced through contribution efforts across global value chain

- Guidelines for GHG emissions reduced through contribution efforts, the principle and framework of quantification, verification and report, by developing and supplying low-carbon products and services was formulated in cooperation with industries in March, 2018.
- GHG emissions reduced through contribution efforts are defined by accounting for complete life cycle GHG emissions by products/services from raw material acquisition to end-of-life stages and comparing the GHG emissions to the one of conventional products and others.
- While working together with industries in other countries, industrial players in Japan promote publicizing GHG emissions reduced through contribution efforts across the world in each industry down the road.



Examples of GHG emissions reduced through contribution



High efficiency and function of appliances such as TV and air conditioners reduce energy usage. In case the appliances sold in FY2016 are used until the end of lifetimes (e.g. 10 years for TV), CO2 emissions reduced through contribution efforts with those appliances is expected to be 23 million tons at home and abroad. (Liaison Group of Japanese Electrical and Electronics Industries for Global Warming Prevention)



Using the RO membrane method for seawater desalination requires much less energy because of its lack of conventional thermal processes. If seawater desalination plants scheduled to be constructed in FY2020 are operated until the end of lifetimes (5 years), CO2 emissions reduced through contribution efforts is estimated to be 170 million tons worldwide. (International Council of Chemical Associations)