

Perspectives and challenges for carbon neutrality by 2050

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"Clear and Present Danger"

- Climate related disasters have caused gigantic economic losses.
 - Sense of climate emergency, of climate crisis, especially on the part of future generations.
 - Economic loss amounts to more than 23 billion dollars for 2018 and 25 billion dollars for 2019. More than 1 trillion yen of payment respectively 2018 and 2019 by insurance companies.

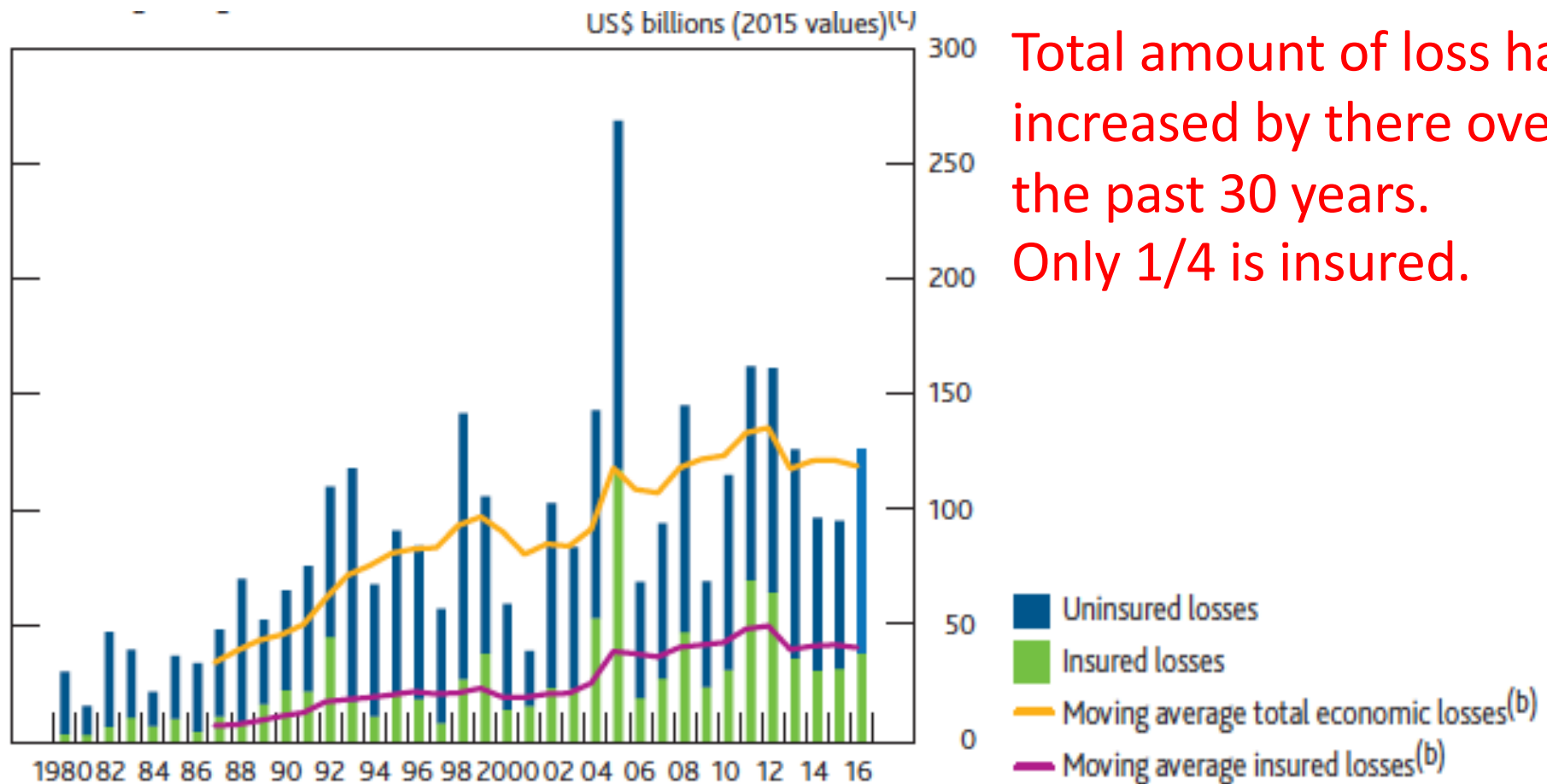
2018 Top 10 Global Economic Loss Events

Date (s)	Event	Location	Deaths	Economic Loss (billion USD)	Insured Loss (billion USD)
October 10-12	Hurricane Michael	US	32	17.0	10.0
September 13-18	Hurricane Florence	US	53	15.0	5.3
November	Camp Fire	US	88	15.0	12.0
September 4-5	Typhoon Jebi (No. 21)	Japan	17	13.0	8.5
July 2-8	Flooding	Japan	246	10.0	2.7
Spring & Summer	Drought	Central & Northern Europe	N/A	9.0	0.3
September 10-18	Typhoon Mangkhut	Oceania, East Asia	161	6.0	1.3
July - September	Flooding	China	89	5.8	0.4
November	Woolsey Fire	US	3	5.8	4.5
August 16-19	Tropical Storm Rumbia	China	53	5.4	0.3
	All Other Events		-	123.0	45
Source : AON, 2019		Totals		225.0	90.0

2019 10 Global Economic Loss Events

Date (s)	Event	Location	Deaths	Economic Loss (USD billions)	Insured Loss (USD billions)
October 6-12	Typhoon Hagibis (No. 19)	Japan	99	15.0	9.0
June - August	Monsoon Floods	China	300	15.0	0.7
September 7-9	Typhoon Faxai (No. 15)	Japan	3	10.0	6.0
May - July	Mississippi Basin Floods	United States	0	10.0	4.0
August 25 – Sep 7	Hurricane Dorian	Bahamas, Caribbean, US, Canada	83	10.0	3.5
March 12-31	Missouri Basin Floods	United States	10	10.0	2.5
June - October	Monsoon Floods	India	1750	10.0	0.2
August 6-13	Typhoon Lekima	China, Philippines, Japan	101	9.5	0.8
March - April	Flooding	Iran	77	8.3	0.2
May 2-5	Cyclone Fani	India, Bangladesh	81	8.1	0.5
		All Other Events		126 billion	44 billion
Source : AON, 2020		Totals		232 billion	71 billion

Global Climate related Economic Loss Trends (1980-2016)

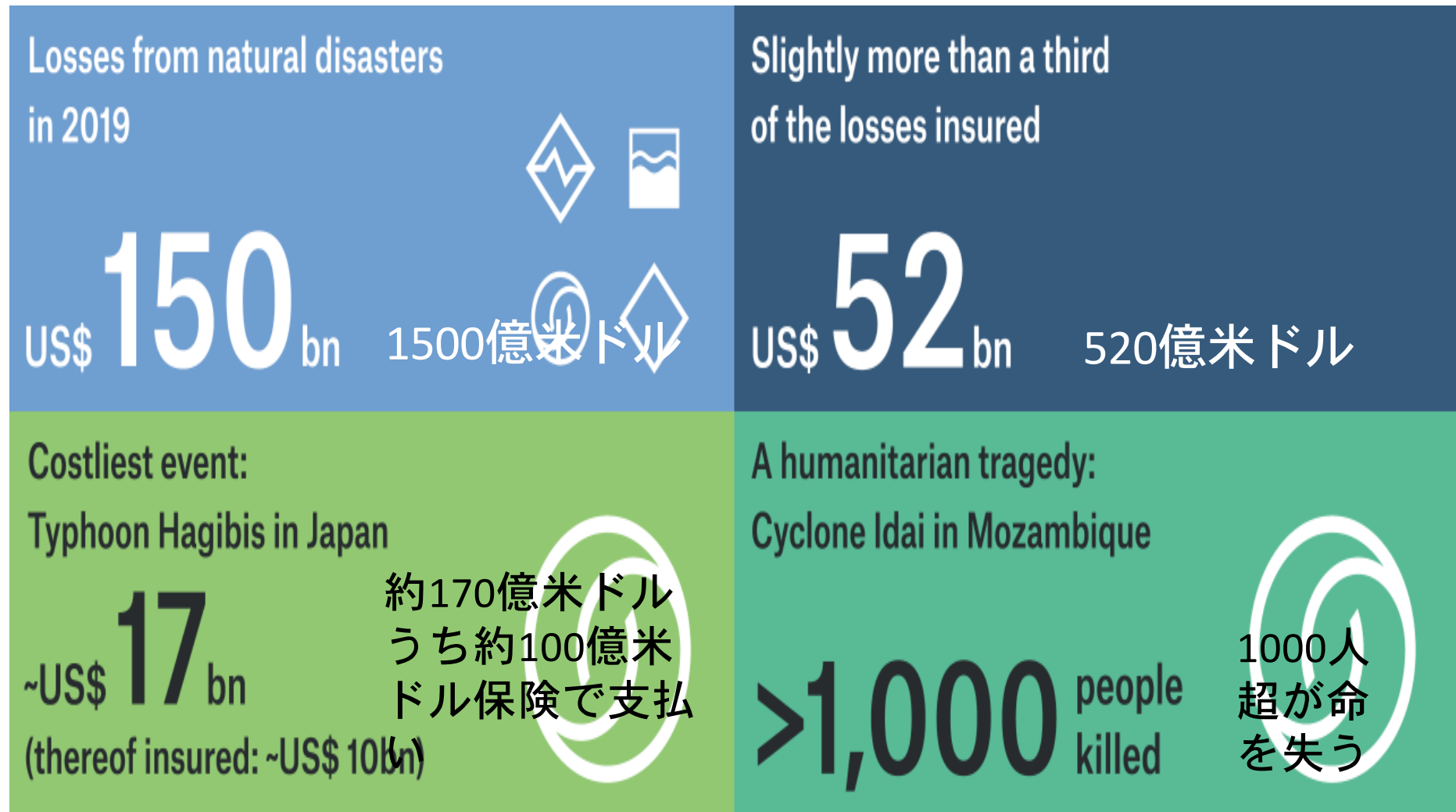


Total amount of loss has increased by there over the past 30 years.
Only 1/4 is insured.

Sources: Geo Risks Research, Munich Reinsurance Company and NatCatSERVICE 2017 (data does not account for reporting bias).

Source : Bank of England, Quarterly Bulletin 2017 Q2, 2017

Loss caused by climate related disasters in 2019



© Munich Re NatCatSERVICE

Source : Munich Re, 2020

Clear long-term goal for decarbonization under the PA

- Paris Agreement (2015)
 - Holding the increase in the global average temperature to **well below 2 °C** and pursuing efforts to limit the temperature increase to **1.5 °C above pre-industrial levels** (Art. 2.1 (a))
 - **“Net zero emission” “De-carbonization” in the second half of this century** (Art. 4.1)

Towards GHG net zero by 2050

- Prime minister of Japan's first policy speech to the Parliament on 26 October 2020
- Under the third pillar of his general policy:
Toward realization of a green economy
 - Declares “Japan pledges to, by 2050, reduce GHG emission in Japan to net zero, namely become carbon neutral and achieve a decarbonized society”.
- **More than 120 countries and EU including all G7 countries** have now pledge to reduce emission to net zero.

GHG net zero by 2050

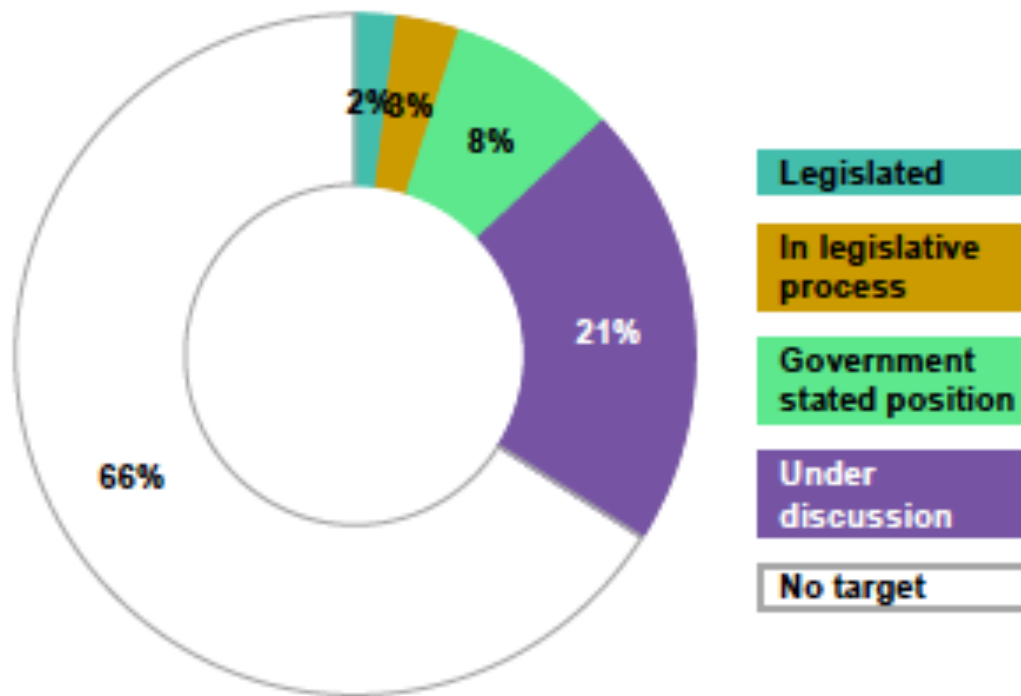
Prime Minister's first policy speech

- “Climate actions are no longer constraints on economic growth. Aggressive climate actions will bring transformation of industrial structure and economy and society, leading to higher economic growth.”
- Key
 - Disruptive innovation such as next generation photovoltaic module and carbon recycling; R&D; regulatory reform; green investments; new space for deliberation between the government and local authorities; digitalization; green industry
- Energy policy
 - Drastic energy conservation (improvement in energy efficiency)
 - Introducing renewable energy as much as possible
 - Implementing nuclear policy, keeping in mind safety issue as matter of the highest priority
 - Ensuring stable energy supply
 - Drastically change policy on coal fired plants

More than half of all global emissions are now covered by net-zero target

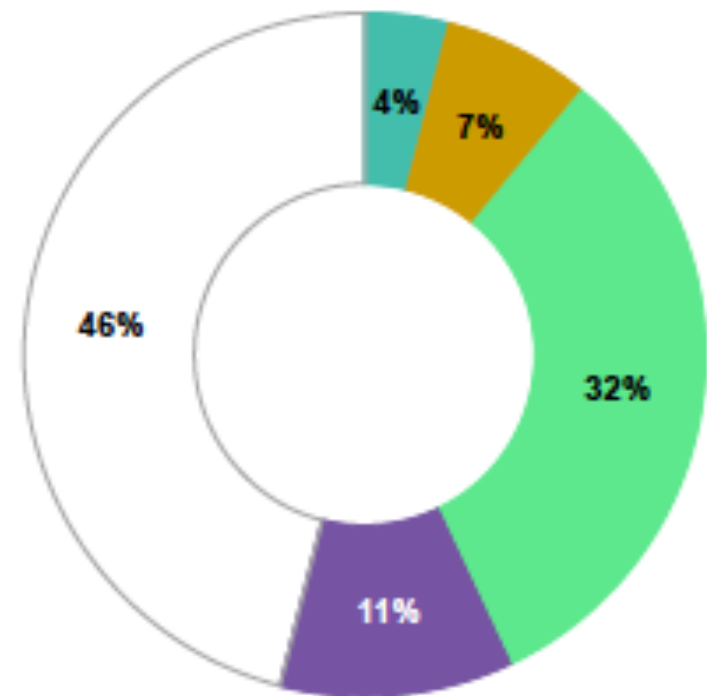
January 2020

34% with at least a net-zero discussion



December 2020

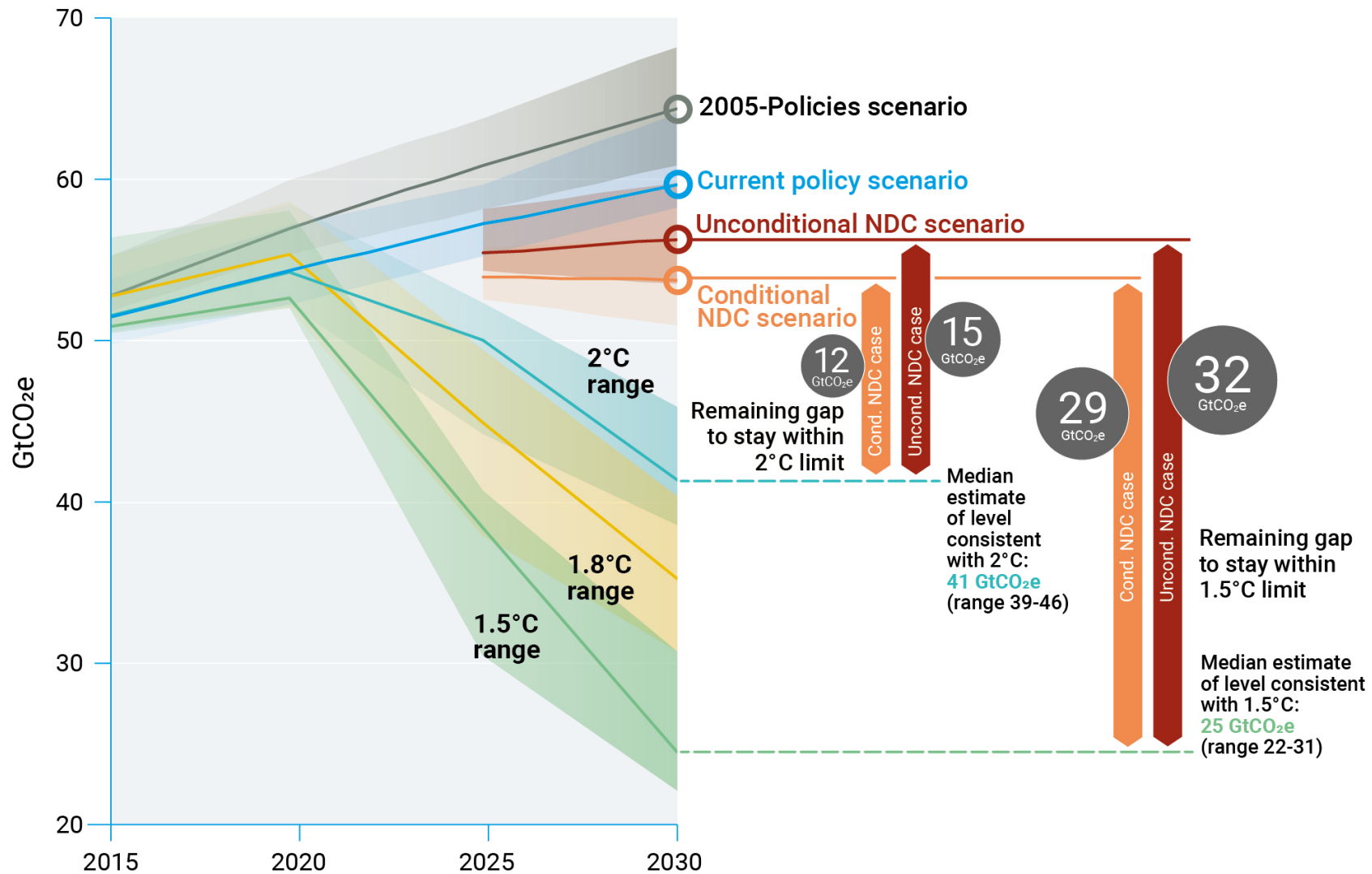
54% with at least a net-zero discussion



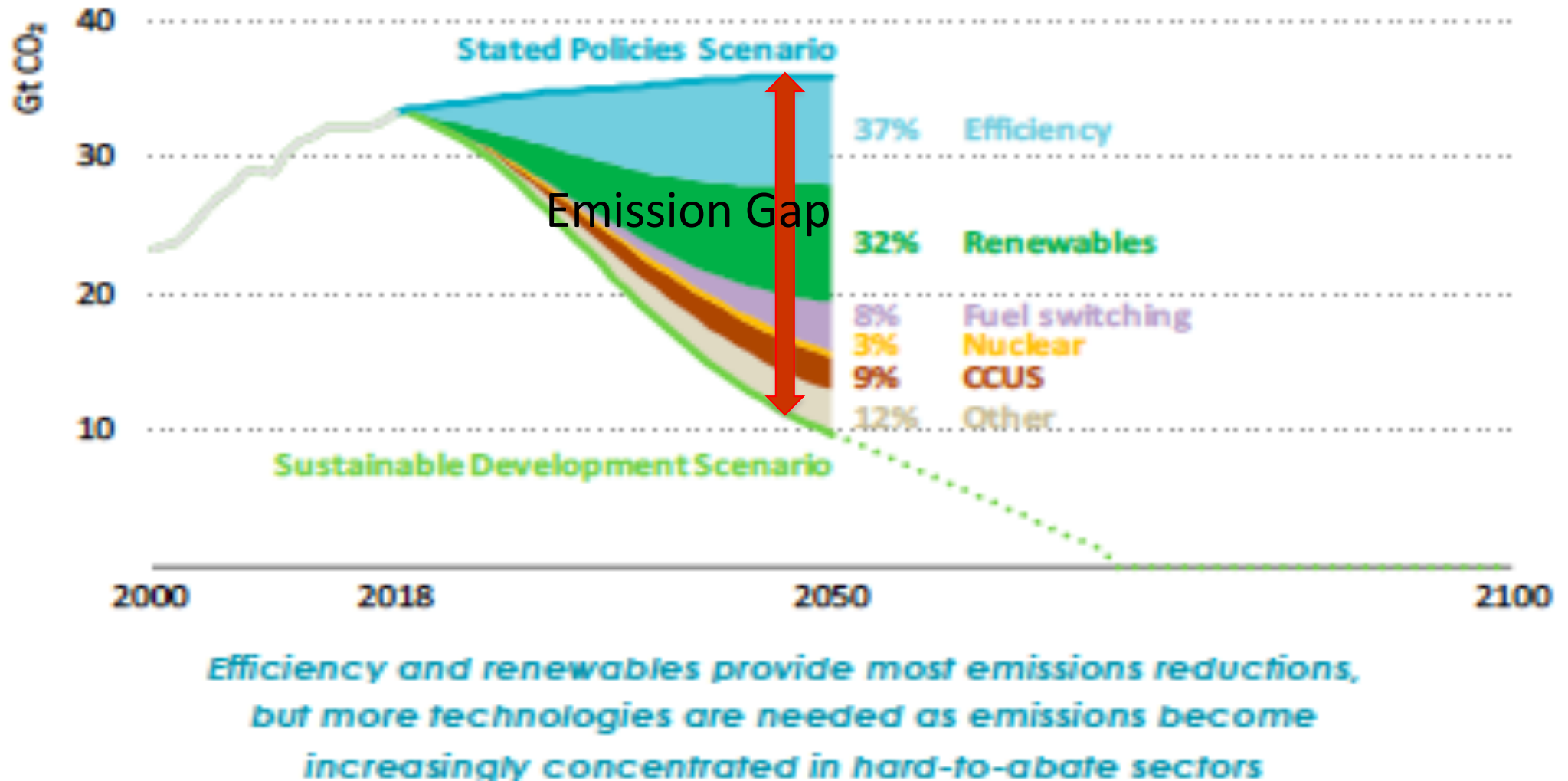
Climate policy (EU, UK, US, China)

EU	<ul style="list-style-type: none"> ▪ Dec 2019: "European Green Deal" as strategy of transformation to sustainable society and growth strategy "Climate neutrality by 2050)" Proposal for carbon adjustment ▪ May 2020年: "Green Recovery" ▪ 2030 NDC: aiming to reduce GHG emission by at least 55% below 1990
UK	<ul style="list-style-type: none"> ▪ Hosting G7 and COP26 ▪ 2030 NDC: raise the level of ambition from 53% to 68 reduction below 1990 ▪ Climate Change Act (amended June 2019) providing for net zero emission by 2050 ▪ Oblige a part of listed companies to undertake climate related disclosure (Comply or Explain) in line with TCFD by 2020
US	<ul style="list-style-type: none"> ▪ 20 January 2021: Re-ratification of the Paris Agreement (entered into force on 19 Feb) ▪ Climate policy of Biden administration: Net zero emission by 2050. Carbon free electricity by 2035. 2 trillion dollars of investment in infrastructure such as in green energy
China	<ul style="list-style-type: none"> ▪ Top 1 of installed renewable capacity and of power generated. Strategic focus on hydrogen and fuel cell industries ▪ Peak emissions before 2030 and achieve carbon neutrality before 2060 (22 Sept 2020) ▪ Reduce carbon emissions per unit of GDP by over 65% from the 2005 level; - Increase non-fossil fuels in primary energy consumption to around 25%; - Increase wind and solar power generation capacity to at least 1,200 GW.

NDC contributions and the Emissions Gap



What long-term goal would suggest?



Clear long term goal enhancing climate actions

- As guidance for each country's policy direction
- As signal for other regimes: "Orchestrator" in global climate governance (Abbott, Genschel, Snidal, 2015)
- As signal for non State actors, especially business and investors

Orchestrator in climate governance

- Regulation of CO2 emission from international aviation by International Civil Aviation Organization (ICAO)
 - Long term goal(2010): Improving fuel efficiency by 2% per year, carbon neutral growth from 2020.
 - General Assembly Resolution A38-18 (2013)
 - March 2017, 36-State ICAO Council has adopted a new aircraft CO2 emissions standard.
 - for which the application for a type certificate was submitted on or after 1 January 2020
 - Global market based mechanism (Carbon offsetting and Reduction Scheme for International Aviation (CORSIA))
 - October 2016 Assembly Resolution A39-3
 - Step-by-step Introduction since 2020.
 - Voluntary participation by countries
- Long-term goal for CO2 emission reduction from International maritime transport by International Maritime Organization (IMO)
 - Reducing GHG emission at least 50% by 2050 compared to 2008 emission and seeking net zero emission in line with long term goal of the Paris Agreement
- 15 October 2016: Amendment of the Montreal Protocol to phases down HFCs (Kigali Amendment)

Local authorities are now moving towards carbon neutrality by 2050

- More than 310 of local authorities (including Tokyo, Kyoto, Yokohama...) covering about 100 million population has now declared they pledge to reach carbon neutral by 2050.

Tokyo seeks "Carbon half by 2030"

- Declaration of "Carbon half by 2030" by the Governor of Tokyo Koike in the World Economic Forum (27 Jan. 2021)
 - Zero emission by 2050 and its strategy (2019)
 - Halving GHG emission in Tokyo below 2000 by 2030 (current target: 30% reduction)
 - Increase share of renewable power to 50% in the power used in Tokyo by 2030

Science Based Target (SBTs)

- Initiative created by CDP, UN Global Compact, WRI, and WWF
- **Targets adopted by companies** to reduce greenhouse gas (GHG) emissions are **certified as “science-based”** if they are **in line with the level of de-carbonization required to keep global temperature increase well below 2 degrees Celsius** compared to pre- industrial temperatures.
- **1245** companies have committed to having such targets, **615** of which have set certified science-based targets (**427** of which have set 1.5 degrees goal) (as of 8 FMarch 2021)

➤ <https://sciencebasedtargets.org>

Japanese companies setting SBTs (as of 8 March 2021)

<p>Companies setting SBTs (91)</p> <p>*Companies setting 1.5 degrees target underlined (26)</p>	<p>Aeon, <u>Ajinomoto</u>, Anritsu, <u>Asahi Group Holdings</u>, ASICS, <u>ASKUL</u>, Astellas Pharma, Azbil, Brother Industries, <u>Comany</u>, <u>DAIDO TRADING</u>, Dai Nippon Printing, Daiichi Sankyo, <u>Daito Trust Construction</u>, Daiwa House Industry, Dentsu, <u>Eco Works</u>, Eisai, FamilyMart, FUJI OIL HOLDINGS, FUJIFILM Holdings, Fujitsu, Furukawa Electric, HAZAMA ANDO CORPORATION, <u>HITACHI</u>, Hitachi Construction Machinery, J. FRONT RETAILING, <u>Fujitoppa Printing</u>, Japan Tobacco, <u>JENEX</u>, KAO, <u>Kawada Feather</u>, Kawasaki Kisen Kaisha, <u>Kirin Holdings</u>, Komatsu, Konica Minolta, KYOCERA, <u>KYOHATSU INDUSTRY</u>, Lion, LIXIL Group, Maeda Corporation, <u>MARUI GROUP</u>, Mitsubishi Electric Corporation, MITSUBISHI ESTATE, MITSUI FUDOSAN, <u>Miyakoda Construction</u>, Nabtesco, NEC, Nikon, Nippon Sheet Glass (NSG Group), <u>Nippon Weston</u>, Nippon Yusen Kabushiki Kaisha, Nissin Foods Holdings, Nomura Real Estate Holdings, Nomura Research Institute, <u>NTT Data</u>, <u>NTT Docomo</u>, NTT Corporation, <u>Ohkawa Printing</u>, <u>ONO PHARMACEUTICAL</u>, Otsuka Pharmaceutical, Panasonic, Re:CS, REMATEC Holdings, <u>Ricoh</u>, <u>Sakakibara Industry</u>, SCREEN Holdings, Seiko Epson, SEKISUI CHEMICAL, Sekisui House, Sharp, SHIMADZU CORPORATION, Shimizu Corporation, <u>Sony</u>, SUMITOMO CHEMICAL, Sumitomo Forestry, Suntory Beverage & Food, Suntory Holdings, TAIHO PHARMACEUTICAL, Taisei Corporation, <u>Takeda Pharmaceutical</u>, Terumo, TODA Corporation, Tokyu Construction, TOPPAN PRINTING, Toshiba Corporation, Unicharm, USHIO, <u>WasteBox</u>, Yamaha, YKK.AP</p>
<p>Companies committing to set SBTs (28)</p>	<p>Advantest, ANA Holdings, Benesse Corporation, CASIO COMPUTER, ESPEC, FAST RETAILING, Hamamatsu Photonics, Hitachi Capital, KOBAYASHI PHARMACEUTICAL, Kokusai Kogyo, KOSÉ, MEIDENSHA, MS & AD Insurance Group Holdings, Murata Manufacturing, Nissin Electric, OMRON, Shionogi, Sampo Holdings, Sumitomo Electric Industries, Takasago International Corporation, Takasago Thermal Engineering, Teijin, TIS, Tokyo Marine Holdings, Tokyu Fudosan Holdings, YAMAHA MOTOR, YKK</p>

Other companies committing to net zero by 2050

- Nissan motors (2009)
- Toyota motors (2015)
- Tokyo gas (2019)
- JR East (2020)
- JAL group
- JERA (2020)
- Daigas (2021)
- ENEOS (2020)
- INPEX(2021) and others.



RE100: 291 companies to go
'100% renewable'.
(March 2021)



50 Japanese companies committing to RE100 (March 2021)

- RICOH
 - target to source 100% renewable electricity by 2050, with an interim goal of at least 30% by 2030.
- 2017 (3): RICOH, Sekisui House, ASKUL
- 2018 (10): Daiwa House Group、AEON、Watami Co.、Johnan Shinkin Bank、Marui Group、Envipro Holdings、Fujitsu、Sony Corporation、COOP Sapporo、Fuyo General Lease
- 2019 (17): Toda Corporation、Daito Trust Construction、Konica Minolta、Nomura Research Institute (NRI)、Tokyu Land Corporation、FUJIFILM Holdings Corporation、Asset Management ONE、Dai-ichi Life Group、Panasonic Corporation、Asahi Kasei Homes、Takashimaya、Fujikura、Tokyu Corporation、Hulic Co.、Lixil Group Corporation、Hazama Ando Corporation、Rakuten
- 2020 (16): Mitsubishi Estate、Mitsui Fudosan、Sumitomo Forestry Group、Ono Pharmaceutical Co.、Nihon Unisys Group、Advantest、Ajinomoto Group、Sekisui Chemical、ASICS、J front retailing、Asahi group holdings、Kirin、Diamond Electric Holdings、Noritsu、Seven & I holdings、Murata
- 2021 (4): Ichigo、Kumagaigumi、Nicon、Nisshin group
- <https://www.there100.org>

Business taking the lead

- **Business** has been demanding policies for decarbonization.
 - July 2020: **Japan Association of Corporate Executives** demands that **40% of power should come from renewable sources by 2030**.
 - 6 October 2020: in the Council on economic and fiscal policy under the cabinet. Mr. Nakanishi, Chairman of The Keidanren (Japan Business Federation) (Chairman of the Board of Hitachi), proposed **"Green growth" as one of the pillars of a new growth strategy**, which refers to **"aiming to reach carbon neutral by 2050"**.
- **Why?**
 - Pressures from **financial institutions and investors** (shareholders).
 - **Request for decarbonizing its supply chain**
 - **Demand side** seeks and claims clean/renewable energy.

Asahi Carbon Zero

(Base year: 2015)

2050	Aiming to achieve GHG net zero emission 温室効果ガス排出量「ゼロ」をめざす	
2030	Scope 1 & 2 emission	30% reduction
	Scope 3 emission	30% reduction