

2024年度日欧フォーラム

Japan-Europe Forum 2024

The impact of geopolitical developments on energy security,  
environment, supply chains and green transformation

## 報告書

2024年9月16日(月)

(ドイツ・ヴッパータール開催)

一般財団法人 国際経済交流財団



2024年度 日欧フォーラム 2024年9月16日(月)(於:ドイツ・ヴッパータール)



開会の辞  
Peter Hennicke 氏



開会の辞  
豊田 正和



Part1 モデレーター  
原岡 直幸



Part1 スピーカー  
秋元 圭吾 氏



Part1 スピーカー  
日原 正視 氏



Part1 スピーカー  
Andreas Goldthau 氏



Part1 スピーカー  
Felix Christen Matthes 氏



Part2 モデレーター  
Stefan Thomas 氏



Part2 スピーカー  
田村 暁彦 氏



Part2 スピーカー  
渡邊 真理子 氏



Part2 スピーカー  
Clara Brandi 氏



Part2 スピーカー  
Klaus Schaefer 氏



2024年度 日欧フォーラム 2024年9月16日(月)(於:ドイツ・ヴッパータール)



ディスカッサント  
Pascal Daleiden 氏



ディスカッサント  
Andrew Hammond 氏



ディスカッサント  
茂木 高志 氏



ディスカッサント  
渡邊 理絵 氏



会場の様子



会場の様子



会場の様子



会場の様子

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# 1. 開催趣旨

国際経済交流財団(JEF)では、予測可能なビジネス環境づくりを行うべく、各種事業を通じて世界経済の動きと背景を提供すると共に、そうした情報の受発信を行う日本と海外の関係者が交流する場を提供している。

毎年、日本の産業と関係の深い世界の4地域にフォーカスし、フォーラムやダイアログなどを開催しているが、本「日欧フォーラム」では、過去30年以上にわたり、英仏独等の欧州研究所と共催して日欧の学界、産業界、官界から政策に影響力を持つ有識者を集め、直近の経済問題とその解決方法について議論を重ねて来た。

関係の皆様には、JEFが発信する情報に触れ、交流の場を経験して得られた内容をご活用いただくことで、国際経済システムの動きについての理解促進や、中長期的なビジネス及び国内外の政策策定の場で意思決定する際に役立ていただければ、と考える。

2024年度は、ドイツ・ヴッパータールにて、ヴッパータール気候・環境・エネルギー研究所(Wuppertal Institute for Climate, Environment and Energy:以後WIと略す)との共催による日欧フォーラムを開催した。

## (1)開催の背景と経緯

今回、日本側(JEF)が選定したスピーカーは5名で、2名が日本から、3名が欧州各国(ドイツ、英国、フランス)駐在地从りヴッパータールに赴いた。JEFからは主催者代表として会長が、またモデレーターの一人として専務理事が参加した。ドイツ側(WI)が指名したスピーカーは6名だった。

WIは気候・環境・エネルギーに関する持続可能性と変革について研究するドイツの代表的な機関であり、ノルトライン・ヴェストファーレン州が所有する公益有限会社である。インパクトある実践的な適用を行うことに注力し、環境負荷をかけずに資源消費の少ない世界を形成するため、変革プロセスを如何に実現するかに焦点を当て、具体的な社会問題の研究を行うシンクタンクである。学問分野を超え、異なる知識領域を結び付けて、科学・産業・政治の世界を繋ぐ仲介役を担う。中心とする研究課題は、エネルギー転換の形成、温暖化防止と原料産業の両立、資源循環の維持、モビリティの見直し、気候変動の抑制、デジタル変換などの8分野に及ぶ。

ドイツ側共催機関を選定するにあたっては、いくつかの候補機関がある中、ドイツ経済の低迷もあり、経費面での折り合いをつける難しさを経験した。そのような中、今回は世界の共通課題である気候変動とエネルギーにフォーカスし、そこに地政学的動向が与える影響及び貿易・投資がどう関わるかを欧州の視点から検討するという目的を達成すべく、同機関を選定した。

今回の特徴としては、従来の研究者に加えて共催機関の強い希望もあり、日独両サイドから産官学界の方々にスピーカーとして議論に参加いただくことを試みた。日本側は当財団が別途開催する研究会の参加メンバー企業に声がけした結果、産業界から2名のスピーカーを選出した(現地在住のトップクラス人材)。また、官界からは、海外拠点で活躍される経済産業省出身の3名(JETRO勤務)にヴッパータールまで出張いただいた。

残念だったのは、ドイツ側の参加者の殆どが結果的に大学・研究所からとなり、産業界からは1名、官界からの出席者が不在となった点である。日本への関心度が低下しているのかもしれないと感じた。一方、共催機関であるWIは毎月1回のオンライン打合せを行うなど、用意周到に準備を進めてくれた。地政学的な要素が世界の政治経済等多くの事象と切り離せなくなっており、気候・環境・エネルギーのみに特化して研究を進めることが困難になっているのだと理解した。

## (2)フォーラムの概況

本フォーラムは、地球上の「待ったなしの優先課題とチャレンジ事項」について、ドイツを中心とした欧州と日本の観点から、持続的かつ包含的な発展のためにどのような対応が可能か、情報交換と考え方を議論する目的で行われた。クローズド・ラウンドテーブル方式で開催されたため聴衆は不在だったが、出された結論は、それぞれの側で産官学界にフィードバックすることが求められている。JEFでは報告書作成と送付、HP掲載による一般への開示、フォーラムから得た要旨を各界のコンタクトポイントに伝え、そこから更に情報が伝搬していくことを目指す。

当日は、日本及び関係各国から専門家16名がドイツ西部の都市・ノルトライン＝ヴェストファーレン州ヴッパータールにある、WIに参集した。朝10時に主催者WIの元所長ピーター・ヘニケ博士(Prof. Dr. Peter Henicke)及びJEF会長の豊田正和が開会の挨拶を行った後、Part1を開始。「地政学的動向がエネルギー安全保障と環境に及ぼす影響」(“The impact of geopolitical developments on energy security and environment”)について議論を行った。途中、昼食休憩のため1時間を割いた後、14時に再開したPart2では「貿易・投資とグリーンTRANSフォーメーション(GX)」(“Trade & investment and green transformation”)について討論を行った。

いずれのパートでも日／独のモデレーターが采配を振り、予め指定された日独2名ずつ・計4名のスピーカーが冒頭10分で背景・持論等を参加者にインプットし、問題提起を行った。その後、日本側5名、独側3名、日独いずれの側にも付ける1名の専門家が入り、13名で議論を戦わせた。

パート1では、脱炭素化目標に向けてエネルギー効率を高める必要性・重要性和、そもそも需要を少なくする社会作りを目指すべきなのか、という2つの戦略について議論が行われた。また、エネルギー転換には技術・政治・社会的要因が複雑に絡むため、サステナブルな状況を作るには優先事項と利害バランスを見極めた国際協力の加速が必要である。エネルギー消費の削減は、よりクリーンなエネルギー源の使用を加速させるとの主張がある一方、輸入依存が包括性とサプライチェーンのレジリエンスを失わせ、むしろ環境リスクの発生も懸念される。エネルギー安全保障を重視する日本は、現状石化エネルギーや原子力を合わせて使うが、同じ思考の同盟国間でパートナーシップを確立し、依存関係を構築すれば安全で地政学的分断をも軽減することも可能ではないか、との議論もあった。コストがかかり、格差が広がりやすいグリーン化は、融資面での国際協力も必要であり、市民に犠牲を払わず、公平に環境目標を達成させる政策作りも重要だとの意見が出された。

パート2ではパート1を受け、グリーン化(GX)を進めるために必要な技術や製品を作る原材料のサプライチェーンを築く国際協力、そこに立ちちはだかる保護主義的な動きへの対応やグローバルサウスにどう向き合うかについて日本及びドイツを始めとしたEU、米国の役割と共に討論した。日欧は、DXを行う産業変革を起こすには資金力面で米中に敵わず、カーボンプライシングや補助金もそのバランスが重要だとした。市場の分断を避け、地域を越えた政策には国際協力の下、共通規格を策定していく必要がある。ここでも日欧を上回る生産量と規模を誇る中国に焦点が当てられた。単一供給源への懸念から、レジリエンスを戦略的に保つための諸課題も明らかになったが、グローバルなGXに格差対応はマストである。期限が定められたカーボンニュートラル達成については国により目標年も異なり、技術だけでは解決できない財政以上の国際貢献が必要となる。次期米国大統領が決まった今、各国の現状、思惑、格差をも踏まえた複雑な世界が益々広がっている。その中で何が重要か、どう優先順位をつけて対応していくべきかは国家戦略であると同時に、同じ地球上に住むものとして国際的対話による理解の促進と、それに応じた協力の重要性を認識することに力点を置いていくべきである。

※議論の詳細は、後掲した各々の項目(パネルディスカッション参加者は以下「開催概要」、略歴は「出席者略歴」、ディスカッション要旨は「議事要旨:(1)日本語(2)英語)」をご参照ください。

## 2. 開催概要

1.開催日時：2024年9月16日(月)

2.開催会場：ドイツ・ヴッパータール研究所内会議室

3.主催者：〈日本〉一般財団法人国際経済交流財団

Japan Economic Foundation (JEF)

〈ドイツ〉ヴッパータール気候・環境・エネルギー研究所

Wuppertal Institute for Climate, Environment and Energy

4.テーマ：The impact of geopolitical developments on energy security, environment, supply chains and green transformation／地政学的動向がエネルギー安全保障、環境、サプライチェーン、グリーンTRANSフォーメーション(GX)に及ぼす影響

・パート1:The impact of geopolitical developments on energy security and environment／地政学的動向がエネルギー安全保障と環境に及ぼす影響

・パート2:Trade & investment and green transformation／貿易・投資とグリーンTRANSフォーメーション(GX)

5.出席者：日欧よりスピーカー16名、日独事務局5名他

〈日本側参加者〉 9名

(敬称略 / アルファベット順)

Keigo Akimoto	Systems Analysis Group Leader, Chief Researcher, Research Institute of Innovative Technology for the Earth (RITE)
Pascal Daleiden	Country Managing Director Austria, Germany and Switzerland, Hitachi Energy Germany AG
Andrew Hammond	Director of External Affairs, Mitsui Europe
Naoyuki Haraoka	Executive Managing Director, Japan Economic Foundation
Masami Hihara	Deputy Director-General of Berlin Office, Japan External Trade Organization (JETRO) Berlin / METI
Takashi Mogi	Director of Industrial Research, Japan External Trade Organization(JETRO) London / METI
Akihiko Tamura	Director General, Japan External Trade Organization(JETRO) Paris / METI
Masakazu Toyoda	Chairman & CEO, Japan Economic Foundation
Mariko Watanabe	Director, Research Division Energy, Transport and Climate Policy, Wuppertal Institute



〈ドイツ側参加者〉 6名

(敬称略 / アルファベット順)

Clara Brandi	Head of Program, Transformation of Economic and Social Systems, IDOS German Institute of Development and Sustainability
Andreas Goldthau	Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University
Peter Henricke	former president of the Wuppertal Institute/Principal Advisor of the GJETC
Felix Matthes	Research Coordinator Energy and Climate Policy, Oeko Institute
Klaus Schaefer	former chief production officer, Covestro AG, member of the German hydrogen council
Stefan Thomas	Director, Research Division Energy, Transport and Climate Policy, Wuppertal Institute

〈どちらの側からも発言〉 1名

(敬称略)

Rie Watanabe	Professor, School of International Politics, Economics and Communication, Aoyama Gakuin University
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6. 形式：クローズド・ラウンドテーブル・ディスカッション(チャタムハウス・ルール)

7. 使用言語：英語

### 3. 詳細日程

# 15th Japan- Europe Forum

The impact of geopolitical  
developments on energy security,  
environment, supply chains and  
green transformation



## Background

The Japan-Europe Forum is organized regularly by the Japan Economic Foundation in cooperation with partners in European states. The aim of this expert roundtable is an exchange of information and standpoints on top priority issues and challenges for sustainable and inclusive global development to seek possible solutions. This will be done through expert inputs by invited speakers lasting roughly 10 minutes each and an open discussion following the Chatham House Rule for each part. The joint findings, takeaways and recommendations are communicated to the worldwide community through recordings of the speaker-inputs and summaries of the subsequent discussions.



## Agenda

10:00

### **Welcome and Opening Remarks**

Prof. Peter Hennicke, former President of the Wuppertal Institute

Mr. Masakazu Toyoda, Chairman & CEO, Japan Economic Foundation (JEF)

10:15 - 12:45

### **Part 1:**

#### **“The impact of geopolitical developments on energy security and environment”**

- Which geopolitical developments do we need to prepare for in the next 10 years in the context of the long-term net zero targets?
- Energy Efficiency is one way to avoid the impact of geopolitical development: How far and how quickly can we reduce energy consumption through energy efficiency and lifestyle changes?
- Domestic energy is another way to avoid the impact of geopolitical development: How much of the following energy can be domestic or imported; RES electricity, clean hydrogen and derivatives, nuclear, and CCUS?
- Energy Stockpiling [e.g., of LNG or clean hydrogen and derivatives] is the third way to alleviate the impact of geopolitical development: How can we strengthen international cooperation and supply chains?

Moderator: Naoyuki Haraoka, Executive Managing Director,  
Japan Economic Foundation (JEF)

<b>10:15 - 10:55</b>	<b>Inputs</b>	
	Speakers (Japanese side):	
10:15 - 10:25		<i>Prof. Keigo Akimoto, Systems Analysis Group Leader, Chief Researcher, RITE Research Institute of Innovative Technology for the Earth</i>
10:25 - 10:35		<i>Mr. Masami Hihara, Deputy Director-General, JETRO Berlin/METI</i>
	Speakers (German side):	
10:35 - 10:45		<i>Prof. Andreas Goldthau, Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University</i>
10:45 - 10:55		<i>Dr. Felix Matthes, Research Coordinator Energy and Climate Policy, Oeko Institute</i>
<b>11:00 - 12:35</b>	<b>Discussion</b>	
	Discussants (Japanese side):	
		<i>Mr. Pascal Daleiden, Country Managing Director, Austria, Germany and Switzerland, Hitachi Energy Germany AG</i>
		<i>Mr. Andrew Hammond, Director of External Affairs, Mitsui Europe</i>
		<i>Mr. Takashi Mogi, Director of Industrial Research, JETRO London/METI</i>
		<i>Dr. Akihiko Tamura, Director General, JETRO Paris /METI</i>
		<i>Prof. Mariko Watanabe, Faculty of Economics, Gakushuin University</i>
	Discussants (German side):	
		<i>Dr. Klaus Schaefer, former chief production officer, Covestro AG, member of the German hydrogen council</i>
		<i>Dr. Stefan Thomas, Director, Research Division Energy, Transport and Climate Policy, Wuppertal Institute</i>
		<i>Prof. Peter Hennicke, former president of the Wuppertal Institute /Principal Advisor of the GJETC</i>
	Discussant (for both sides):	
		<i>Dr. Rie Watanabe, Professor, School of International Politics, Economics and Communication, Aoyama Gakuin University</i>
<b>12:35 - 12:45</b>	<b>Summary by the moderator</b>	

13:00 - 14:00 Executive Lunch

**14:00 - 16:00 Part 2: “Trade & Investment and Green Transformation”**

- Opportunities and challenges comparing the role of the USA, the EU/Germany and Japan
- Competition in specific critical green technologies and materials: How can we realize the supply chain cooperation?
- Assessment of trade and competition related challenges of the IRA: How can we deal with protectionist tendency?
- Potential of initiatives by EU/USA/Japan to cooperate and avoid a “trade war”
- CBAM: how can we consider the concerns of the Global South?
- EV related matters (re. China’s dominance in the market and EV purchasing subsidies)

Moderator: Dr. Stefan Thomas, Wuppertal Institute

**14:00 - 14:40 Inputs**

Speakers  
(Japanese side):

14:00 - 14:10

*Dr. Akihiko Tamura, Director General, JETRO Japan External Trade Organization, Paris / METI Ministry of Economy, Trade and Industry*

14:10 - 14:20

*Prof. Mariko Watanabe, Faculty of Economics, Gakushuin University*

Speakers  
(German side):

14:20 - 14:30

*Prof. Dr. Clara Brandi, Head of Program, Transformation of Economic and Social Systems, IDOS German Institute of Development and Sustainability*

14:30 - 14:40

*Dr. Klaus Schaefer, former chief production officer, Covestro AG, member of the German Hydrogen Council*



<b>14:40 - 15:50</b>	<b>Discussion</b>	
	Discussants (Japanese side):	<p><i>Prof. Keigo Akimoto, Systems Analysis Group Leader, Chief Researcher, RITE Research Institute of Innovative Technology for the Earth</i></p> <p><i>Mr. Pascal Daleiden, Country Managing Director, Austria, Germany and Switzerland, Hitachi Energy Germany AG</i></p> <p><i>Mr. Andrew Hammond, Director of External Affairs, Mitsui Europe</i></p> <p><i>Mr. Masami Hihara, Deputy Director-General, JETRO Berlin/METI</i></p> <p><i>Mr. Takashi Mogi, Director of Industrial Research, JETRO London/METI</i></p>
	Discussants (German side):	<p><i>Dr. Felix Matthes, Research Coordinator Energy and Climate Policy, Oeko Institute</i></p> <p><i>Prof. Andreas Goldthau, Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University</i></p> <p><i>Prof. Peter Hennicke, former president of the Wuppertal Institute / Principal Advisor of the GJETC</i></p>
	Discussant (for both sides):	<p><i>Dr. Rie Watanabe, Professor, School of International Politics, Economics and Communication, Aoyama Gakuin University</i></p>
<b>16:00</b>	<b>Final Remarks</b>	<p><i>Prof. Peter Hennicke, former President of the Wuppertal Institute</i></p> <p><i>Mr. Masakazu Toyoda, Chairman &amp; CEO, Japan Economic Foundation (JEF)</i></p>
<b>16:15</b>	<b>Coffee / Get Together</b>	
<b>17:00</b>	<b>End</b>	

Further participants:

*Junko Ishii, JEF*  
*Frank Labunski, Wuppertal Institute*  
*Fiona Bunge, Wuppertal Institute*  
*Johanna Schilling, ECOS*

## 4. 出席者略歴

〈Japanese Side〉

Keigo Akimoto

Systems Analysis Group Leader, Chief Researcher,  
Research Institute of Innovative Technology for the Earth (RITE)



Keigo Akimoto was born in 1970. He received Ph.D. degree from Yokohama National University in 1999. He joined Research Institute of Innovative Technology for the Earth (RITE) to work with the Systems Analysis Group in 1999. Currently he is the Leader of the Group and a chief researcher at RITE. He was a guest researcher at IIASA in 2006, and a guest professor, the Graduate School of Arts and Sciences, the University of Tokyo between FY2009 and FY2014. From November 2022, he is a specially appointed professor at, Institute of Innovative Research, Tokyo Institute of Technology. He was a Lead Author for the Fifth and Sixth Assessment Reports of IPCC and is a member for several advisory bodies on energy and environmental policy for the Japanese government including the Strategic policy committee, Advisory Committee for Natural Resources and energy. His scientific interests are in modeling and analysis of energy and environmental systems. He received the Peccei Scholarship from IIASA in 1997, and an award from the Japan Society of Energy and Resources in 2004.

## Pascal Daleiden

Country Managing Director Austria, Germany and Switzerland,  
Hitachi Energy Germany AG



Pascal Daleiden, 51, a native of Luxembourg, holds a degree in electrical engineering and industrial information technology from the Karlsruhe Institute of Technology and started his career at Schneider Electric and Rockwell Automation.

In 2009, he joined ABB Benelux as a Power Technology Sales Manager and moved to ABB Germany in 2014, also as a Power Technology Sales Manager.

Since the launch of the joint venture between Hitachi and ABB in July 2019, he has served as Head of Sales and Marketing Germany.

Since March 1, 2022, he has been CEO of Hitachi Energy Germany AG and Country Managing Director in Germany, Austria, and Switzerland.

## Andrew Hammond

Director of External Affairs, Mitsui Europe



Andrew Hammond is the Director of External Affairs for Mitsui Europe. Before joining, he worked in the UK Government as a Special Adviser when the United Kingdom last held the Presidency of the EU. He has also previously been employed by consultancy firms advising organisations in the public, private, and third sectors on strategy and performance, including navigating complex political and economic landscapes that impact operations, reputation, policy, and investments. He is a Visiting Fellow at LSE IDEAS at the London School of Economics.

## Naoyuki Haraoka

Executive Managing Director, Japan Economic Foundation



Born in Tokyo in 1955. After graduating the University of Tokyo in 1978 (Bachelor of Economics), he joined MITI (Ministry of International Trade and Industry) of Japanese government. Having been posted in the industrial policy section and the international trade policy section for a few years, he was enrolled in a two year MPA (Master of Public Administration) programme at Woodrow Wilson School

of Princeton University in the US on a Japanese government sponsorship. After having acquired MPA at Princeton, he rejoined MITI in 1984 as an economist. Since then he had been posted as Deputy Director and Director of a number of MITI divisions including Research Division of International Trade Policy Bureau. He was also posted in Paris twice, firstly, Principal Economist of Trade Bureau of OECD (Organization of Economic Cooperation and Development) from 1988 to 92 and secondly Counselor to Japanese Delegation of OECD from 1996 to 99.

After coming back to MITI from his second stay in Paris, at the occasion of the government structural reform in 2001 when MITI was remodelled as METI (Ministry of Economy Trade and Industry) he joined the efforts to found METI research institute, Research Institute of Economy Trade and Industry as its Director of Administration. He became Chief Executive Director of JETRO San Francisco in 2003 and stayed in San Francisco until 2006. He was Director-General of METI Training Institute from 2006 until July, 2007 when he left METI permanently and joined JEF as Executive Managing Director.

## Masami Hihara

Deputy Director-General of Berlin Office, Japan External Trade  
Organization (JETRO) Berlin/METI



Masami Hihara joined JETRO Berlin as Deputy Director-General in July 2022 and was also appointed Special Advisor to the Minister's Secretariat on European Affairs at the Ministry of Economy, Trade and Industry (METI) of Japan. Prior to his current appointment, he held various positions in METI over a period of 20 years, including Director of the Corporate Finance and Tax Affairs Division of the Small and Medium Enterprise Agency, and Principal Deputy Director of the Budget and Accounts Division of the Minister's Secretariat. In 2014, while serving as Deputy Director of the Hydrogen and Fuel Cells Strategy Office at METI, he was instrumental in developing Japan's first hydrogen and fuel cell strategic roadmap, which later became the basis for the world's first national hydrogen strategy.



## Takashi Mogi

Director of Industrial Research, Japan External Trade Organization  
(JETRO) London/METI



2004 Joined METI

Policy Planning and Coordination Division, Trade policy Bureau

2005 Americas Division, Trade policy Bureau

2007 Global Environmental Affairs Office,

Industrial Science, Technology and Environment Policy Bureau

2010 University College London, MSc Public Policy

2011 King's College London MA European Public Policy

2012 Deputy Director, Policy Evaluation Division, Minister's Secretariat

2013 Deputy Director, Budget and Finance Division, Minister's Secretariat

2014 Deputy Director, Oil and Gas Division,

Agency for Natural Resources and Energy

2016 Deputy Director, Finance Division,

Small and Medium Enterprise Agency

2019 Deputy Director, Policy Planning and Coordination Division

Small and Medium Enterprise Agency

2020 Deputy Director, Personnel Division, Minister's Secretariat

2021 Director for Personnel Affairs, Minister's Secretariat

2023 Director, Industry Creation Policy Division, Economic and Industrial Policy Bureau

2024 Director for Industrial Research, JETRO London Special Advisor to METI

## Akihiko Tamura

Director General, Japan External Trade Organization (JETRO)Paris/METI



Dr. Akihiko Tamura was appointed Director General of JETRO in France in August 2023, seconded by the Ministry of Economy, Trade & Industry (METI). He has strong expertise in international political economy, global governance, international economic law, regional integration (EU and Asia in particular), and China.

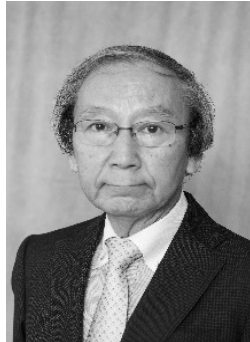
Before joining JETRO he was Councilor in charge of the TPP (Trans-Pacific Partnership) at the Cabinet Secretariat of the Japanese government. He spent more than 30 years at METI serving, among others, as Director-General for Trade Policy and Chief Negotiator for the Regional Comprehensive Economic Partnership (RCEP).

Dr Tamura was also a Legal Affairs Officer at WTO and First Secretary at the Japanese Embassy in the United States of America. He also worked in Beijing as General Manager at the Japan-China Economic Association.

He was born in Tokyo in 1966. He holds a bachelor's in law from the University of Tokyo, a Master of Laws (LL.M) from Harvard Law School, and a Doctor of Juridical

## Masakazu Toyoda

Chairman & CEO, Japan Economic Foundation



Masakazu Toyoda currently serves as the Chairman and CEO of the Japan Economic Foundation (JEF), as well as Special Advisor to the Institute of Energy Economics of Japan and Director of the Pacific International Center for High Technology Research.

He is the former Chairman and CEO of the Institute of Energy Economics (2010-2021); served also for nearly a decade on both the Board of Governors of the Oxford Institute of Energy Studies (2012-2021); and the International Advisory Board Council of the King Abdullah Petroleum Studies and Research Center (KAPSARC) in Saudi Arabia (2011-2019).

During his distinguished government career, he served in numerous key positions within the Ministry of Economy, Trade, and Industry of Japan culminating in his service as Vice Minister for International Affairs (2007-2008). He also subsequently served as Secretary General of the Secretariat for Space Policy in Japan's Cabinet Secretariat.

Mr. Toyoda holds a Master of Public Affairs degree from the Woodrow Wilson School of Public and International Affairs at Princeton University (1979), and an undergraduate Bachelor of Law degree from the University of Tokyo (1973).

## Mariko Watanabe

Professor, Faculty of Economics, Gakushuin University



Business Strategy, Supply Chain Management, Manufacturing System, Management Science, Gakushuin University

Education/Profession

1991 BA of Economics, University of Tokyo

1991-2013 Research Fellow, Institute of Developing Economies

1999 M.Phil at School of Business, University of Hong Kong

2006-2009 Visiting Scholar at Guanghua School of Management, Peking University

2011 Ph.D from University of Tokyo

2013 Professor, Gakushuin University

Research

Research Fields

Applied Micro Economics (Empirical IO, Law and Economics, Contract Theory, Business Economics),

⟨German Side⟩

## Clara Brandi

Head of Program, Transformation of Economic and Social Systems,  
IDOS German Institute of Development and Sustainability



Clara Brandi has been a professor in International Economics / Development Economics at the University of Bonn since 9.2022 and the head of the Research Programme "Transformation of Economic and Social Systems" at the German Institute of Development and Sustainability (IDOS) since 12.2020. Her research area is the transformation of economic and social systems and she has expertise for East Asia. After graduating from Albert-Ludwigs-University, Freiburg 2004, she has experience in the European Parliament and International Labour Organisation in Geneva from 2000-2001 and gained an M.Phil. and MRes in political sciences at the University of Oxford from 2004-2006 and European University Institute in Florence in 2007. After that, she returned to Geneva to work in the Department of Ethics, Equity, Trade, and Human Rights in Geneva for a year and became a PhD researcher at the European University Institute in Florence. In 2009, she joined the German Development Institute (DIE) as a researcher and experienced the German Advisory Council on Global Environmental Change (WBGU) as a Senior Researcher there.

She is a member of ADBI Advisory Council 2024-2026, Economic Advisory Network of the German Federal Ministry for Economic Cooperation and Development and the Academic Council for Programme Evaluation of Alexander von Humboldt Foundation, and co-chair of VSS Academic Advisory Council.

## Andreas Goldthau

Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University



Andreas C. Goldthau is Director of the Willy Brandt School of Public Policy at the University of Erfurt where he holds the Franz Haniel Chair for Public Policy at the Faculty of Economics, Law and Social Sciences. Before joining the Brandt School he served as Research Group Lead on the Energy Transition in the Global South at the Research Institute for Sustainability – Helmholtz Center Potsdam (RIFS), as Professor in International Relations at Royal Holloway College, University of London and as Professor at Central European University’s School of Public Policy in Budapest. He was Marie Curie Senior Fellow with the Geopolitics of Energy Project at Harvard Kennedy School and Adjunct Professor with John Hopkins’ MSc program in energy policy and climate. He also held postdoctoral appointments at the Paul Nitze School of Advanced International Studies at Johns Hopkins University, the RAND Corporation and the German Institute for International and Security Affairs. Professor Goldthau is non-resident fellow with the Payne Institute at the Colorado School of Mines, the Global Public Policy Institute and the German Council on Foreign Relations, and a Visiting Professor at the College of Europe in Bruges.

Professor’s Goldthau’s academic interests lie in energy security, energy geoeconomics and the political economy of the clean transition. His publications include *The Politics of Shale Gas in Eastern Europe* (Cambridge University Press, 2018), *the Handbook of the International Political Economy of Energy and Natural Resources* (Edward Elgar, 2018), *an Energy Union. Europe’s new Liberal Mercantilism?* (Palgrave Macmillan, 2016).

Professor Goldthau serves on the editorial boards of the *European Journal of International Relations*, *Global Policy*, *Energy Policy*, *Contemporary Politics and Energy Research in Social Science*, and sits on the steering committees of leading academic associations.



## Peter Hennicke

former president of the Wuppertal Institute/Principal Advisor of the GJETC



### Professional Experience

2014–2015 Guest Professor, International Institute for Industrial Environmental Economics (IIIEE), University of Lund, Sweden

2008–present Senior Advisor at the Wuppertal Institute

2000–2008 President of the Wuppertal Institute

1998–2000 Vice President of the Wuppertal Institute

1994 Professor at the University of Wuppertal

1988–1992 Professor of Economics, University of Applied Sciences, Darmstadt

1981 Postdoctoral qualification in Economic Policy with emphasis on Energy Policy, University of Osnabrück

1977 PhD in Development Theory, University of Bremen

### Special Assignments (selected)

2015–present Full Member of the Club of Rome

2012–2016 Member of the Management Board of the European Environmental Agency (EEA) as a representative of the European Parliament

2016–2022 Co-Chair of the German-Japanese Energy Transition Council

2002–2006 Member of the Scientific & Technical Advisory Panel (STAP) of the Global Environment Facility (GEF)

2002–2003 Member of the „Board of Trustees“ of the Institute of Global Environmental Strategies (IGES)

1989–2002 Expert Member of three Enquiry Commissions of the German Bundestag on Climate and Energy

## Felix Matthes

Research Coordinator Energy and Climate Policy, Oeko Institute



### Research area

German, European, and International Decarbonisation Strategies, Energy System Modelling, Energy and Climate Policy Mix, Energy Market Design, Energy Technology Assessments

### Professional Experience

2009 – present Research Coordinator Energy & Climate Policy, Oeko Institute

2007 – 2008 Visiting Scientist at the Massachusetts Institute of Technology (MIT), Cambridge, MA

2003 – 2004 Deputy Director, Oeko-Institut

1997-2008 Coordinator of the Energy & Climate Division, Oeko-Institut

1999 PhD in Political Science, Free University of Berlin

1991-1997 Senior Researcher, Energy Division, Oeko-Institut

### Special Assignments

2022 - present Member of the Expert Commission on Monitoring the Energy Transition

2016 - present Member of the German-Japanese Energy Transition Council (GJETC)

2018 Member of the Special Commission on “growth, structural economic change and employment” of the German Government

2011 Advisory Group of the European Commission for the EU Energy Roadmap 2050

2000 – 2002 Study Commission of the German Federal Parliament (Deutscher Bundestag) on Sustainable Energy

## Klaus Schaefer

former chief production officer, Covestro AG, member of the German hydrogen council



### Research Current activities/ board roles

Since 2019 TÜV Rheinland AG: Supervisory board

Since 2019 National Hydrogen Council: member

Since 2018 Dechema e.V. : Chairman of the board

Since 2023 University of Cologne Hochschulrat: member

Since 2024 Cyclize Chairman of the advisory board

### Professional Experience

2015–2023 Covestro AG Board Member

2015 Bayer Material Science: Industrial Operations and ExCo Member

2013-2014 Bayer MaterialScience: Senior Vice President production polyurethane

2011–2013 Bayer MaterialScience: Senior Country Representative China (President)

2006–2011 Currenta GmbH & Co. OHG: CEO

2001-2006 BAYER AG: Senior Vice President Technology Bayer Polymers/ MaterialScience

2000-2001 BP Grangemouth: Utilities Manager

1996–2000 EC Erdölchemie GmbH Plant Manager Ethylene Oxide

1993-1996 EC Erdölchemie GmbH: Lead Engineer

1991-1993 EC Erdölchemie GmbH: Group Lead

1984-1991 University of Cologne: Different assistant/support functions in research and education

### Education

1989 University of Cologne: PHD Physics

1987 University of Cologne: Diplom-Physiker

## Stefan Thomas

Director, Research Division Energy, Transport and Climate Policy, Wuppertal Institute



### Research area

Energy, Transport and Climate Policy

Energy Efficiency and the related Policy, Energy Services, New Business Fields of Utilities

### Professional Experience

2003 – present Director of the research group "Energy, Transport and Climate Policy“, Wuppertal Institute

1993 – 2003 Project Co-ordinator in the Energy Division and Scientific Coordination: Energy Efficiency and New Business Concepts, Wuppertal Institute

1991 – 1993 Research fellow and Project Co-ordinator in the Energy Division at the Öko-Institut, Darmstadt Office

### Special Assignments

Since 2023 Co-chair of the German-Japanese Energy Transition Council

2012 – 2014 Co-Chair of the International Energy Program Evaluation Conference (IEPEC)

2012 – present Member, Editorial Board of Journal “Energy Efficiency”

〈For both sides〉

## Rie Watanabe

Professor, School of International Politics,  
Economics and Communication, Aoyama Gakuin University



Dr. Rie Watanabe is a political scientist with expertise in policy process theories, comparative politics, and central (federal) and local climate and energy politics in Germany, EU, Japan, and the United States. Her special interests in research lie in examining the role of actors' beliefs in climate and energy policy changes in the process towards paradigm shift and in constructing a model of paradigm shifts.

As of April 2022, she is working as full-professor in the School of International Politics, Economics and Communication, Aoyama Gakuin University. She received her Bachelor's (1992) and Master's (1994) degrees in Law from the University of Tokyo, Japan, and her PhD (2009) from the Free University of Berlin, Germany. She promoted with her dissertation entitled "Climate Policy Changes in Germany and Japan: A Path to Paradigmatic Policy Change" (Routledge, 2011).

Before joining the Aoyama Gakuin University, she has been working at international environmental research institutes, including the Wuppertal Institute for Climate, Environment and Energy in Germany, and also serving as a member of Japan's delegates for the negotiations of the United Nations Framework Convention on Climate Change. She also spent one year (2019-2020) as a visiting research fellow at the Weatherhead Center, Harvard University, and at the PRICE school, University of Southern California.

## 5. 議事要旨

### (1) 日本語

**テーマ：** 地政学的動向がエネルギー安全保障、環境、サプライチェーン、グリーントランスフォーメーション（GX）に及ぼす影響

**開催日時：** 2024年9月16日（月）10:00～16:00

**開催場所：** ヴッパータール気候・環境・エネルギー研究所（ドイツ、ヴッパータール）



日欧フォーラムは、国際経済交流財団（JEF）が欧州各国のパートナーと協力して定期的で開催しているものである。2024年度の日欧フォーラムはドイツのヴッパータール研究所との共催で開催された。この有識者ラウンドテーブルの目的は、持続可能でインクルーシブな世界の発展を目指して最優先の問題と課題について情報と意見を交換し、考え得る解決策を追求することである。招待された有識者は、学界、科学研究者、政府機関、ビジネス界から選定された。

ロシアのウクライナ全面侵攻から2年が経過しても、日本やドイツを含め、多くの国々でエネルギー安全保障とエネルギーコストが依然として主要な議題となっている。2023年10月7日のハマスによる攻撃とイスラエルの反撃に端を発する中東での新たな紛争により、石油・ガス供給への懸念も高まっている。一方、2024年に多くの国々で深刻な洪水が発生したことを受けて、気候変動緩和の必要性が再び議論の俎上に載せられるようになった。従って、本フォーラムのセッション1では、「地政学的動向がエネルギー安全保障と環境に及ぼす影響」に焦点を当てた。



2050年までに温室効果ガス排出量ネットゼロを達成し、2030年までに再エネ発電容量3倍かつ省エネ改善率2倍というCOP28の目標を達成するとともに、長期的には化石燃料から脱却するには、クリーンテクノロジー、その生産設備、関連する製品や原材料の重要なサプライチェーンへの多額の投資が必要である。米国、中国、EU、日本のような国やブロックは、こうしたこれからのクリーンテクノロジー分野でシェアを確保しようとしている。その中で競合することも、協力することもあるだろう。現在の貿易と国際協力の傾向、課題、機会については、セッション2の「貿易・投資とグリーントランスフォーメーション(GX)」で討論した。

本要旨は、第15回日欧フォーラムの主要な論点をまとめたものである。いずれも、日欧フォーラムの不可欠な部分を成す、進行役のいる自由討論で提起されたものである。チャタム・ハウス・ルールに基づき、討論者の氏名は公表しない。本文書は要約(英文版の翻訳)であり、音声の書き起こしではないため、完全性を意図したものではない。

## 開会挨拶

- ヴッパータール研究所元所長 ピーター・ヘニケ (Peter Henricke) 教授
- 一般財団法人国際経済交流財団 (JEF) 会長 豊田正和

# パート 1：「地政学的動向がエネルギー安全保障と環境に及ぼす影響」

## 主な課題

- 長期的なネットゼロ目標がある中で、今後 10 年間どのような地政学的動向に備える必要があるか。
- エネルギー効率は地政学的動向の影響を回避する方法の一つである。エネルギーの効率化とライフスタイルの変化によって、我々はエネルギー消費をどこまで、どれくらい迅速に削減できるのか。
- エネルギー国産化もまた地政学的動向の影響を回避する方法の一つである：RES（再生可能エネルギー源）電力、クリーン水素とその派生製品、原子力、二酸化炭素回収・有効利用・貯留（CCUS）のうち、どれくらいを国産で賄えるか、あるいは輸入しなければならないのか。
- エネルギー備蓄（例えば、LNG やクリーン水素とその派生製品）は、地政学的動向の影響を緩和する 3 つ目の方法である。どうすれば国際協力とサプライチェーンを強化することができるのか。

## 情報共有プレゼンテーション

- 地球環境産業技術研究機構（RITE） システム研究グループリーダー・主席研究員 秋元圭吾博士「地政学的動向がエネルギー安全保障と環境に及ぼす影響：日本の視点」
- エアフルト大学ヴィリー・ブランツ公共政策大学院ディレクター アンドレアス・ゴルトハウ（Andreas Goldthau） グローバル公共政策教授「地政学的動向がエネルギー安全保障、環境、サプライチェーン、グリーントランスフォーメーション（GX）に及ぼす影響」
- 日本貿易振興機構（JETRO）ベルリン事務所次長／経済産業省 日原正視氏「地政学的緊張が高まる中での日本のエネルギー政策」
- 応用自然環境研究所（Öko Institute: Institute for Applied Ecology） エネルギー・気候政策研究コーディネーター、フェリックス・マッテス（Felix Matthes）博士「地政学的動向がエネルギー安全保障と環境に及ぼす影響」

## モデレーター

一般財団法人国際経済交流財団 (JEF) 専務理事 原岡直幸

## 討論者：

渡邊真理子教授、ピーター・ヘニケ教授／博士、渡邊理絵教授、ステファン・トーマス (Stefan Thomas) 博士、秋元圭吾博士、アンドレアス・ゴルトハウ教授、フェリックス・マッテス博士、日原正視氏、パスカル・ダライデン (Pascal Daleiden) 氏、アンドリュー・ハモンド (Andrew Hammond) 氏、クラウス・シェーファー (Klaus Schaefer) 博士、茂木高志氏、田村暁彦博士

## パート 1 討論の要約

世界的なエネルギー転換（エネルギートランジション）の多面的な課題が討論の中心となり、特に日本とドイツの課題に重点が置かれた。脱炭素化の目標達成に向けて、エネルギー政策、技術革新、地政学上の諸事情に対処する複雑さを反映して、討論からいくつか重要なテーマが浮上した。

特に繰り返されたテーマは、「エネルギー効率第一」主義に則って、持続可能なエネルギー政策の基礎としてエネルギー効率を優先すべきか、という点である。複数の討論者が、特に改善率が鈍化している日本において、全分野でエネルギー効率を高める重要性を強調した。

「エネルギー需要の少ない社会」の達成を目指すためには、充足性 (sufficiency) 政策と資源効率の向上によって実現する、より幅広いライフスタイルの変化と、エネルギー効率とを統合した「エネルギー需要の少ない社会」の達成を目指していく必要性が強調された。討論者は、この転換が、多様な利益をもたらすエネルギー消費の削減だけでなく、よりクリーンなエネルギー源への移行も促進するだろうと主張した。日本とドイツは相対的にエネルギー効率が高いことで知られているが、両国ともこの分野ではまだ潜在能力を最大限に発揮していない。

脱炭素化に果たす再生可能エネルギーと水素の役割もまた重要な焦点であった。日本もドイツも、この2つをエネルギー戦略の重要な要素として研究を進めている。しかし、課題は山積しており、特に日本では、再生可能エネルギー資源が限られていることがグリーン水素の国産化を難しくしている。そのため水素輸入への依存度が高くなり、討論者たちによると、この輸入依存からサプライチェーンのレジリエンスやある種の水素生産に伴う環境リスクに対する懸念が生じるという。内包される排出量や輸入排出量を含め、水素からの排出量を追跡するための包括的な炭素会計システムの必要性が、切迫した政策ギャップとして浮き彫り

になった。製品の内包排出量の追跡にあたって透明性を高める積極的な措置の一例として、EUとドイツによる「デジタル製品パスポート（DPP）」の導入が挙げられた。再生可能エネルギーから発電される電力は、建物、輸送、産業のさらなる脱炭素戦略としての大規模な電化を可能にする。また、こうした再エネ発電技術は、太陽光発電と風力発電の割合が高いドイツの電力システムにおいて、需要に柔軟性をもたらすであろう。

その他の脱炭素化技術の選択肢、特に原子力エネルギーや CCUS（二酸化炭素回収・有効利用・貯留）のような物議をかもす技術の利用についても議論が行われた。コスト効率の良い再生可能エネルギー源と水素を優先し、原子力と石炭エネルギーを段階的に廃止するドイツの決定は、エネルギー安全保障を重視し、こうした資源による発電計画を継続させている日本のアプローチとは対照的であった。日本のエネルギー転換は、福島原発事故の政治的影響によって、また限られた平地やコスト効率の良い洋上風力発電の可能性が限定される地理的制約によって妨げられてきた。

グローバルダイナミクスと地政学的ダイナミクスも議論の対象となり、特にサプライチェーンのレジリエンスと国際協力の必要性が論じられた。世界の主要プレーヤー、特に中国への依存を減らすことが戦略上の優先事項として認識された。この文脈の中で、重要鉱物やエネルギー源を戦略的に備蓄し、エネルギー・インフラとサプライチェーン開発のためのパートナーシップを確立する提言とともに、レジリエンスの高いエネルギー政策の重要性が強調された。さらに、グローバルサプライチェーンから考えを同じくする同盟国、あるいは地域同盟へも依存関係を移行させることが、従来のグローバリゼーションに代わるより安全な選択肢として提案された。この変化は、エネルギー転換を遅らせかねない地政学的な分断に関連するリスクを軽減するのに役立つだろう。

コストと政策の検討もまた議論の中心となった。グリーンテクノロジーによっては初期費用が高額であること、その負担を軽減するために何らかの資金メカニズムが必要であることが強調された。グリーンテクノロジーをより手頃な価格の利用しやすいものにするためには、特に研究開発や開発途上国向け融資においても、国際協力が不可欠であるという見解であった。

最後に、エネルギー転換の社会的・政治的側面に議論が及んだ。数人の討論者が政治指導者への警告として、社会のエネルギー政策許容度を慎重に扱わなければならないと述べた。市民が個人的な犠牲を伴うと受け取れば、政策が抵抗に遭うことも想定されるからである。このような緊張が生じることを考えれば、環境目標を達成することはもちろん、公平かつ社会に容認されるエネルギー政策を立案する重要性は明らかである。

結論として、パート 1 の議論では、世界的なエネルギー転換におけるテクノロジー、地政学、社会的要因の複雑な相互作用が強く認識された。日本とドイツは、脱炭素化に取り組む中で

自国特有ではあるが重複する課題に直面している。持続不可能なエネルギー・インフラのロックイン効果を回避するために、両国は政策、技術革新、国際協力を加速しなければならない。エネルギー転換の緊急性は明確であるが、目標に向けて歩を進めるには、相反する優先事項と利害のバランスを注意深くとる必要がある。



## パート 2：「貿易・投資とグリーントランスフォーメーション（GX）」

### 主な課題

- 米国、EU およびドイツ、日本の役割を比較することで見えてくる機会と課題
- 特定の重要グリーンテクノロジーと原材料における競争：どうすればサプライチェーンの協力を実現できるのか
- IRA の貿易と競争に関連する課題の評価：どうすれば保護主義的な傾向に対処できるか
- EU・米国・日本による協力と「貿易戦争」回避のイニシアチブの可能性
- CBAM（炭素国境調整措置）：グローバルサウスの懸念にどう配慮するか
- 一例として EV 関連の問題（中国の市場支配と EV 購入補助金に関して）

### 情報共有プレゼンテーション

- コベストロ社（Covestro AG）元最高製品責任者、ドイツ水素評議会メンバー クラウス・シェーファー博士
- 日本貿易振興機構（JETRO）パリ事務所長／経済産業省、田村暁彦博士 「グリーン産業政策の貿易政策としての側面」



- 学習院大学経済学部経営学科 渡邊真理子教授「産業政策の経済学と国際ルール」
- ドイツ開発・持続可能性研究所（IDOS） 経済社会システムの変革プログラム責任者  
クララ・ブランディ（Clara Brandi）教授／博士「貿易・投資とグリーントランスフ  
ォーメーション（GX）」

## モデレーター

ヴッパータール研究所「エネルギー・輸送・気候政策」研究部門ディレクター

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## 討論者：

アンドリュウ・ハモンド氏、パスカル・ダライデン氏、フェリックス・マッテス博士、ピーター・ヘニケ教授／博士、渡邊理絵教授、茂木高志氏、ステファン・トーマス博士、日原正視氏、アンドレアス・ゴルトハウ教授、クラウス・シェーファー博士、田村暁彦博士、渡邊真理子教授、クララ・ブランディ教授／博士

## パート 2 討論の要約

日本、EU、米国を比較しながら、産業政策、グリーントランスフォーメーション（GX）、資金調達の課題に焦点を当てた討論が展開された。EU が米国と中国の産業力、特に規模と資金の点で競争できるかどうかをめぐる懸念が討論され、参加者からは、欧州に十分な財源を確保し、大規模な産業変革を効果的に管理する能力があるのか疑問視する声が聞かれた。過去には産業政策で成功を収めた日本も、昨今は同様の課題に直面している。

大きな懸念点はグリーントランジションの財源である。数人の討論者から脱炭素化に必要な大規模な金融投資の必要性を強調する意見が出た。ドイツだけでも推定されるコスト増は約7000億ユーロに達する。比較の基準として米国インフレ抑制法（IRA）が頻繁に引き合いに出された。IRAの例が出るたびに、迅速な税還付（例：IRA）、明示的な補助金（例：EUや日本）、グリーンテクノロジーにインセンティブを与える手段としてのカーボンプライシング（炭素課金）の違いが活発に討議された。国際的な合意を得た新たな資金調達方法として、最富裕層への課税や最低法人税という案が挙げられた。

「カーボンプライシングか補助金か」は、繰り返し討議されたテーマであった。主にプライシングの仕組みによって効果的に脱炭素化が進むセクターもあるだろうが、ほとんどのセクターは、イノベーションとグリーン成長の推進にターゲットを絞った補助金とカーボンプラ

イシングの併用を必要とする。「ムチ」（規制措置）と「アメ」（優遇措置）のバランスも検討され、金銭的優遇措置を補完するためにより強力な規制の枠組みを提唱する参加者が多かった。規制を定める権限が弱い連邦政府のために米国は補助金に頼る傾向がある一方、EUは加盟国を規制する権限が強いものの、独自の財源に乏しいという指摘があった。

地域を越えて足並みのそろった産業政策とエネルギー政策には国際協力と国際基準が不可欠なものとして挙がった。討論者たちは、研究開発（R&D）協力の拡充、特に電気（EV）や水素自動車などのテクノロジーに対する共通規格の策定における協力の強化を求めた。大量生産と規模に強みを持つ中国との競争に直面する中で、市場の分断を回避し、産業の競争力を確保するには、標準化が必須であると論じた。グローバルな貿易問題に対処し、特定のセクターにおける中国支配に対抗するには、EU、米国、日本の間で共同交渉が必要であるという点で意見の一致が見られた。交渉に中国を含めることができるならば、さらに良いかもしれない。これに関して、ある討論者はEUと日本が最良のパートナーになるのではないかと述べた。別の討論者は、G20、WTO、世界銀行などの国際フォーラムの役割を強調した。

GXの地政学的側面にも話が及んだ。単一の供給源に過度に依存することに対して警告があり、戦略的なレジリエンスの必要性が明確になった。産業の生産能力を維持することは、コストがかかるとはいえ、長期的なレジリエンスにとって決定的に重要であるという主張であった。従って、GXに必要なグリーン電力とグリーン転換のための原材料を保有する地域では「国内産業のグリーン化」と「グリーン産業の工業化」の間にジレンマが生じるかもしれない。

EUの炭素国境調整措置（CBAM）は、EUの産業の「カーボンリーケージ」を回避するためだけでなく、国境を越えたカーボンプライシングを刺激し、規制するためにも不可欠な政策に発展する可能性があるという指摘した。一般に生産拠点は需要地に近い立地にする必要があるため、「カーボンリーケージ」の脅威が必要以上に大きく扱われているかもしれないが、再エネを利用する方向への引きがあるため、（再エネのコストや安定供給などにおいて有利な地域へ、企業が生産を移転する現象）「グリーン産業の工業化」も「グリーンリーケージ」につながりかねない。

グローバルサウスもまた討論の焦点となり、特に気候変動緩和策の財源が論じられた。数人の参加者が、グローバルサウスに対する公平な資金援助の重要性を強調し、社会格差とエコロジー格差に対処しなければ、世界全体のGXは達成できないだろうと警鐘を鳴らした。それに加えて、CBAMは、特に発展途上国だけでなく先進国にも炭素価格が導入され、上昇する可能性もあるという理由から、重要な懸念材料として注意が向けられた。繰り返しになるが、カーボンプライシングで鍵となるのは、収益の用途であり、貧困層向け財政支援とGXへのインセンティブの組み合わせである。

日本に関しては、エネルギー効率や再生可能エネルギーに加えて、2050年までのカーボンニュートラル達成という目標に不可欠なテクノロジーとして、原子力発電やCCUS（二酸化炭素回収・有効利用・貯留）も必須技術として重要視された。しかし、脱炭素化を世界にまで広げると、特にインドや中国のような異なる目標を掲げる国を考えた場合に、こうしたテクノロジーの実現可能性は疑問視される（インドは2070年、中国は2060年までの脱炭素化を目指す）。国際協力には単なる財政貢献以上のものが必要であるという合意があり、政策の一致と目標の共有が必要である一方、各国は脱炭素化に向けて適切なエネルギーミックスを自由に選択できるべきということが確認された。来たる米国の選挙は、国際的な気候協力のターニングポイントになり得るという指摘があった。世界全体の変化を推進するために強固な同盟を結ぶ重要性を力説する参加者もいた。

結論として、パート2の討論では、特に産業政策、資金調達、国際協力の観点から、グローバルなGXの複雑さが明確になった。調和のとれた基準、レジリエンスの高いサプライチェーン、十分かつ公平な資金メカニズムの必要性が、重要な優先課題として浮上した。万能の解決策などないが、脱炭素化を達成するには国家戦略と国際協力のバランスが重要であることを際立たせた討論であった。

## 閉会挨拶

- ヴッパータール研究所元所長 ピーター・ヘニケ教授／博士
- 一般財団法人国際経済交流財団（JEF）会長 豊田正和

(2) 英語

**Topic:** The impact of geopolitical developments on energy security, environment, supply chains and green transformation

**Time:** Monday, September 16th, 2024, 10:00 – 16:00 CEST

**Location:** Wuppertal Institute for Climate, Environment and Energy, Wuppertal, Germany



The Japan-Europe Forum is organized regularly by the Japan Economic Foundation in cooperation with partners in European states. This year, it was co-organized with the Wuppertal Institute in Wuppertal, Germany. The aim of this expert roundtable is an exchange of information and standpoints on top priority issues and challenges for sustainable and inclusive global development to seek possible solutions. The experts invited were selected from academia, science, governmental organizations, and business.

Two years after Russia's full invasion of Ukraine, energy security and energy costs are still high on the agenda in many countries, including Japan and Germany. Worries about oil and gas supply have been increased due to the new conflicts in the Middle East, following the Hamas attack on 7 October 2023 and Israel's reaction. At the same time, severe floodings in many countries in 2024 brought the need to mitigate climate change back on the agenda. Therefore, the first session of this Forum focused on *The impact of geopolitical developments on energy security and environment*.

Achieving net zero greenhouse gas emissions by 2050 and achieving the COP-28 goals of tripling electricity generation from renewable energies and doubling the rate of energy efficiency improvement by 2030, as well as transitioning away from fossil

fuels in the long run requires massive investments in clean technologies, their production facilities, and their critical supply chains for products and raw materials. Countries or blocks such as the USA, China, the EU, and Japan aim to secure their share in these clean technologies of the future. In doing so, they may compete or cooperate. Current trends, challenges, and opportunities for trade and cooperation were discussed in the second session on *Trade & Investment and Green Transformation*.

This summary includes the key discussion points of the 15<sup>th</sup> Japan-Europe Forum, which were raised during the open and guided discussion rounds that formed an integral part of the Forum. Due to the Chatham House rules, the names of the discussants will not be disclosed. As this document is a summary but no transcript, it has no claim for completeness.

During the Forum, input presentations as well as introductory and closing remarks of the session moderators have been recorded for further documentation and dissemination. Therefore, the content of these recorded input presentations and remarks has not been included in this summary, but the names and affiliation of the presenters have been mentioned.

## Welcome and opening remarks

- Prof. Peter Hennicke, former President of the Wuppertal Institut
- Mr. Masakazu Toyoda, Chairman & CEO of the Japan Economic Foundation (JEF)

# Part 1: “The impact of geopolitical developments on energy security and environment”

## Key questions

- Which geopolitical developments do we need to prepare for in the next 10 years in the context of the long-term net zero targets?
- Energy Efficiency is one way to avoid the impact of geopolitical development: How far and how quickly can we reduce energy consumption through energy efficiency and lifestyle changes?
- Domestic energy is another way to avoid the impact of geopolitical development: How much of the following energy can be domestic or imported; RES electricity, clean hydrogen and derivatives, nuclear, and CCUS?
- Energy Stockpiling (e.g., of LNG or clean hydrogen and derivatives) is the third way to alleviate the impact of geopolitical development: How can we strengthen international cooperation and supply chains?

## Input presentations

- Dr. Keigo Akimoto, Systems Analysis Group Leader, Chief Researcher, RITE Research Institute of Innovative Technology for the Earth: The impact of geopolitical developments on energy security and environment: Japan’s perspectives
- Prof. Andreas Goldthau, Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University: The impact of geopolitical developments on energy security, environment, supply chains and green transformation
- Mr. Masami Hihara, Deputy Director-General, JETRO Berlin/METI: Japan’s Energy Policy Amid Rising Geopolitical Tensions
- Dr. Felix Matthes, Research Coordinator Energy and Climate Policy, Oeko Institut: The impact of geopolitical developments on energy security and environment

## Moderator

Naoyuki Haraoka, Executive Managing Director, Japan Economic Foundation

## Discussants:

Prof. Mariko Watanabe, Prof. Dr. Peter Hennicke, Dr. Rie Watanabe, Dr. Stefan Thomas, Dr. Keigo Akimoto, Prof. Andreas Goldthau, Dr. Felix Matthes, Mr. Masami Hihara, Mr. Pascal Daleiden, Mr. Andrew Hammond, Dr. Klaus Schaefer, Mr. Takashi Mogi, Dr. Akihiko Tamura



## Summary of the part 1 discussion

The discussion centered on the multifaceted challenges of the global energy transition, with a particular focus on Japan and Germany. Several key themes emerged throughout the conversation, reflecting the complexity of navigating energy policies, technological innovation, and geopolitical considerations in the pursuit of decarbonization.

A recurring theme is the prioritization of energy efficiency as a cornerstone of sustainable energy policy, following the ‘energy efficiency first’ principle. Multiple discussants stressed the importance of advancing energy efficiency across sectors, particularly in Japan, where improvement rates have slowed. The need for integrating energy efficiency with broader lifestyle changes enabled by sufficiency policies and with resource efficiency was emphasized, aiming to achieve a “low-energy-demand society.” This shift, discussants argued, would not only reduce energy consumption, with its multiple benefits, but also facilitate the transition to cleaner energy sources. Both Japan and Germany were noted for their relative energy efficiency, though neither country has yet fully maximized its potential in this area.

The role of renewable energy and hydrogen in decarbonization was another critical focus. Both Japan and Germany are exploring these as key elements of their energy strategies. However, challenges persist, especially in Japan, where limited renewable energy resources make domestic green hydrogen production difficult. This has led to increased reliance on hydrogen imports, which, according to discussants, raises concerns about supply chain resilience and the environmental risks associated with some forms of hydrogen production. The need for comprehensive carbon accounting systems to track emissions from hydrogen, including embedded and imported emissions, was highlighted as an urgent policy gap. The EU’s and Germany’s introduction of a “digital product passport” was cited as a proactive step towards transparency in tracking embedded emissions in products. Electricity generated from renewable energies enables large-scale electrification as a further decarbonisation strategy in buildings, transport and industry. In Germany, these technologies may also offer the flexibility in demand that is needed due to a high share of photovoltaics and wind energy in the system.

The conversation also explored other technological options for decarbonization, particularly the use of controversial technologies such as nuclear energy and carbon capture, utilization, and storage (CCUS). Germany’s decision to phase out nuclear and coal energy in favor of cost-effective renewable sources and hydrogen was contrasted with Japan’s approach that puts higher emphasis on energy security and continues to plan with these technologies. Japan's energy transition has been hindered by the



political aftermath of the Fukushima disaster, as well as geographical constraints, including limited flat land and cost-effective offshore wind energy potential.

The discussion also addressed global and geopolitical dynamics, particularly the need for supply chain resilience and international cooperation. Reducing dependencies on dominant global players, especially China, was identified as a strategic priority. The importance of resilient energy policies was underscored in this context, with suggestions to develop strategic reserves of critical raw materials and energy resources and to establish partnerships for energy infrastructure and supply chain development. Moreover, shifting dependencies from global supply chains to like-minded or even regional allies, was proposed as a more secure alternative to traditional globalization. This shift would help mitigate the risks associated with geopolitical fragmentation, which may be slowing the energy transition.

Cost and policy considerations were also central to the discussion. The high first cost of some green technologies and the need for financial mechanisms to reduce these costs were emphasized. International cooperation, particularly in research and development but also in finance for developing countries, was viewed as critical to making green technologies more affordable and accessible.

Finally, the discussion acknowledged the social and political dimensions of the energy transition. Several discussants warned that political leaders must carefully manage the social acceptance of energy policies, as citizens may resist policies that involve perceived personal sacrifices. This tension highlights the importance of designing energy policies that are both equitable and socially acceptable, while also achieving environmental goals.

In conclusion, the discussion highlighted the intricate interplay between technology, geopolitics, and social factors in the global energy transition. Japan and Germany face unique but overlapping challenges in their efforts to decarbonize, and both countries must accelerate their policies, technological innovations, and international collaborations to avoid the lock-in effects of unsustainable energy infrastructures. The urgency of the transition is clear, but navigating the path forward requires careful balancing of competing priorities and interests.



## Part 2: “Trade & Investment and Green Transformation”

### Key questions/topics

- Opportunities and challenges comparing the role of the USA, the EU/Germany and Japan
- Competition in specific critical green technologies and materials: How can we realize the supply chain cooperation?
- Assessment of trade and competition related challenges of the IRA: How can we deal with protectionist tendencies?
- Potential of initiatives by EU/USA/Japan to cooperate and avoid a “trade war”
- CBAM: how can we consider the concerns of the Global South?
- EV related matters as an example (re. China’s dominance in the market and EV purchasing subsidies)

### Input presentations

- Dr. Klaus Schaefer, former chief production officer, Covestro AG, member of the German hydrogen council
- Dr. Akihiko Tamura, Director General, JETRO Japan External Trade Organization, Paris / METI Ministry of Economy, Trade and Industry: Trade Policy Dimension of Green Industrial Policy
- Prof. Mariko Watanabe, Department of Management, Gakushuin University: Economics of Industrial Policies and International Rules

- Prof. Dr. Clara Brandi, Head of program, Transformation of Economic and Social Systems, IDOS German Institute of Development and Sustainability: Trade & Investment and Green Transformation

## Moderator

Dr. Stefan Thomas, Director of the research division "Energy, Transport and Climate Policy", Wuppertal Institute

## Discussants

Mr. Andrew Hammond, Mr. Pascal Daleiden, Dr. Felix Matthes, Prof. Dr. Peter Hennicke, Dr. Rie Watanabe, Mr. Takashi Mogi, Dr. Stefan Thomas, Mr. Masami Hihara, Prof. Andreas Golthau, Dr. Klaus Schaefer, Dr. Akihiko Tamura, Prof. Mariko Watanabe, Prof. Dr. Clara Brandi

## Summary of the part 2 discussion

The discussion focused on the challenges of industrial policy, green transformation, and financing, with a comparative lens on Japan, the European Union, and the United States. Concerns whether the EU can compete with the industrial strength of the U.S. and China, particularly in terms of scale and resources were discussed, with participants expressing doubts about Europe's ability to secure sufficient funding and manage large-scale industrial transformations effectively. Japan, historically successful in industrial policy, faces similar challenges nowadays.

A major point of concern is financing the green transition. Several discussants highlighted the massive financial investments required for decarbonization, with the estimated incremental costs in Germany alone reaching approximately 700 billion €. The U.S. Inflation Reduction Act (IRA) was a frequent reference point, sparking debate on the differences between quick tax rebates (as under the IRA), explicit subsidies (as in the EU or Japan), and carbon pricing as tools for incentivizing green technology. Potential new internationally agreed ways of raising funds through taxation of the richest or minimum corporate taxes were mentioned.

The debate on carbon pricing versus subsidies was a recurrent theme. While some sectors may be effectively decarbonized mainly through pricing mechanisms, most others require a targeted combination of subsidies and carbon pricing to drive innovation and green growth. The discussion also explored the balance between "sticks" (regulatory measures) and "carrots" (incentives), with many participants advocating for stronger regulatory frameworks to complement financial incentives. It was noted that the USA may rely on subsidies, because the federal government has

weak powers to set regulations, while the EU has stronger powers in regulating the Member States but little own financial resources.

International cooperation and standards were identified as critical to ensuring that industrial and energy policies align across regions. Discussants called for enhanced research and development (R&D) collaboration, particularly in developing common standards for technologies such as electric vehicles (EVs) or hydrogen. It was argued that standardization is essential to avoid fragmented markets and ensure the competitiveness of industries in the face of competition from China, whose advantage lies in mass production and scale. There was consensus on the need for joint negotiations between the EU, the U.S., and Japan to address global trade issues and counter China's dominance in certain sectors. If it were possible to include China in the negotiations, it might even be better. A discussant suggested that the EU and Japan may be the best potential partners in this context, another discussant highlighted the role of international fora, such as the G20, the WTO, and the World Bank.

The conversation also touched on the geopolitical aspects of the green transformation. Discussants highlighted the need for strategic resilience, cautioning against over-reliance on any single source of supply. They argued that maintaining industrial capacity, though costly, is crucial for long-term resilience. There may thus be a dilemma between 'greening the domestic industry' and 'green industrialization' in the regions that possess the green electricity and raw materials for the green transformation.

Discussants noted that the EU's Carbon Border Adjustment Mechanism (CBAM) may develop to an essential policy not only to avoid 'carbon leakage' of industries from the EU, but also to stimulate and regulate carbon pricing across international borders. While the threat of 'carbon leakage' may be overestimated, since production often needs to be located close to demand, the 'green industrialization' may lead to 'green leakage', following the 'renewables pull'.

The global south was also a focus, particularly in the context of financing climate change mitigation efforts. Several participants emphasized the importance of equitable financial support for the global south, warning that without addressing social and ecological inequalities, a global green transformation would be impossible.

Additionally, the CBAM was flagged as a key concern, especially as carbon prices may be introduced and rise in developing countries, but also in developed nations. Again, the use of the revenues and the combination with target financial support to the poor and incentives for the green transformation is key.

Regarding Japan, in addition to energy efficiency and renewable energies, also nuclear energy and carbon capture, utilization, and storage (CCUS) were highlighted as

essential technologies for reaching carbon neutrality by 2050. However, there were concerns about the feasibility of these technologies in the broader context of global decarbonization, especially when considering different targets in countries like India and China, which aim for decarbonization by 2070 and 2060, respectively. There was agreement that international cooperation requires more than just financial contributions, emphasizing the need for policy alignment and shared objectives, while countries should be free to choose their appropriate energy mix on the way to decarbonization. The upcoming U.S. elections were noted as a potential turning point for international climate cooperation, with some participants stressing the importance of having strong allies to drive global change.

In conclusion, the discussions underscored the complexity of the global green transformation, particularly in terms of industrial policy, financing, and international cooperation. The need for harmonized standards, resilient supply chains, and sufficient and equitable financial mechanisms emerged as key priorities. While there is no one-size-fits-all solution, the conversation highlighted the importance of balancing national strategies with global collaboration to achieve decarbonization.

## Final Remarks (recorded)

- Prof. Peter Hennicke, former President of the Wuppertal Institut
- Mr. Masakazu Toyoda, Chairman & CEO of the Japan Economic Foundation (JEF)

## 6. 発表資料

パワーポイントスライド、トーキングポイント等、掲載許可を得たスピーカー分のみを掲載。

### Part 1 : The impact of geopolitical developments on energy security and environment

- ① Keigo Akimoto      Systems Analysis Group Leader, Chief Researcher, Research Institute of Innovative Technology for the Earth (RITE)
- ② Masami Hihara      Deputy Director-General of Berlin Office, Japan External Trade Organization (JETRO) Berlin / METI
- ③ Andreas Goldthau    Global Public Policy; Director, Willy Brandt School of Public Policy, Erfurt University
- ④ Felix Matthes        Research Coordinator Energy and Climate Policy, Oeko Institute

### Part 2: Trade & investment and green transformation

- ⑤ Akihiko Tamura      Director General, Japan External Trade Organization(JETRO) Paris / METI
- ⑥ Mariko Watanabe    Professor, Faculty of Economics, Gakushuin University
- ⑦ Clara Brandi         Head of Program, Transformation of Economic and Social Systems, IDOS German Institute of Development and Sustainability

① Keigo Akimoto Systems Analysis Group Leader, Chief Researcher, Research Institute of Innovative Technology for the Earth (RITE)

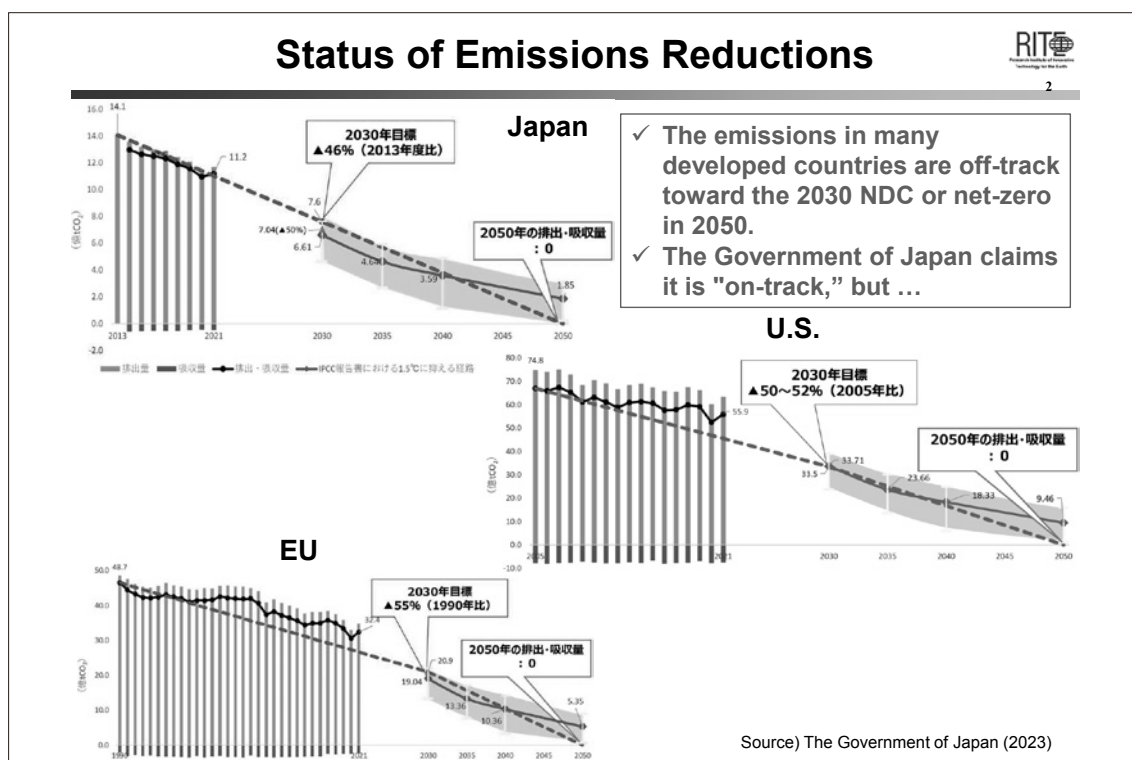
**15th Japan-Europe Forum:**  
*The impact of geopolitical developments on energy security, environment, supply chains and green transformation*  
 at Wuppertal Institute, on 16 September 2024

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**The impact of geopolitical developments on energy security and environment: Japan's perspectives**

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**Keigo Akimoto**  
 Group Leader, Systems Analysis Group,  
 Research Institute of Innovative Technology for the Earth (RITE)  
 (Specially Appointed Professor, Institute of Innovative Research,  
 Tokyo Institute of Technology)

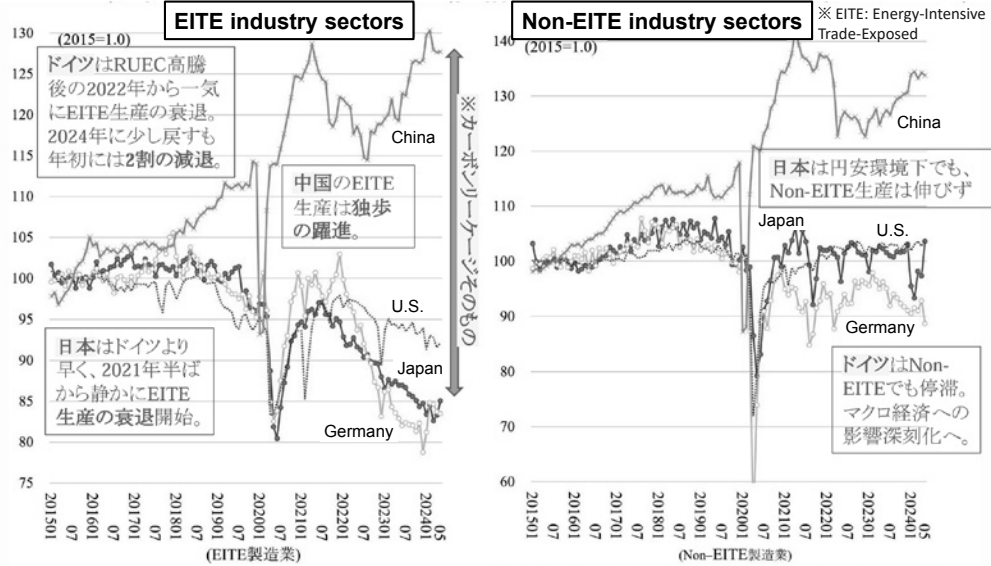





## Weighted Production Index in Japan, Germany, US, and China: Industry leakage



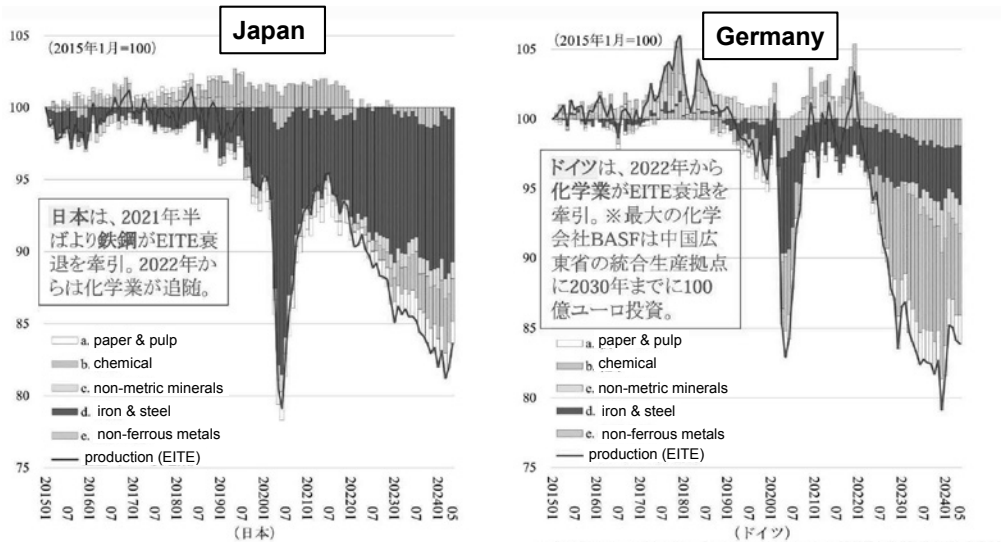
3



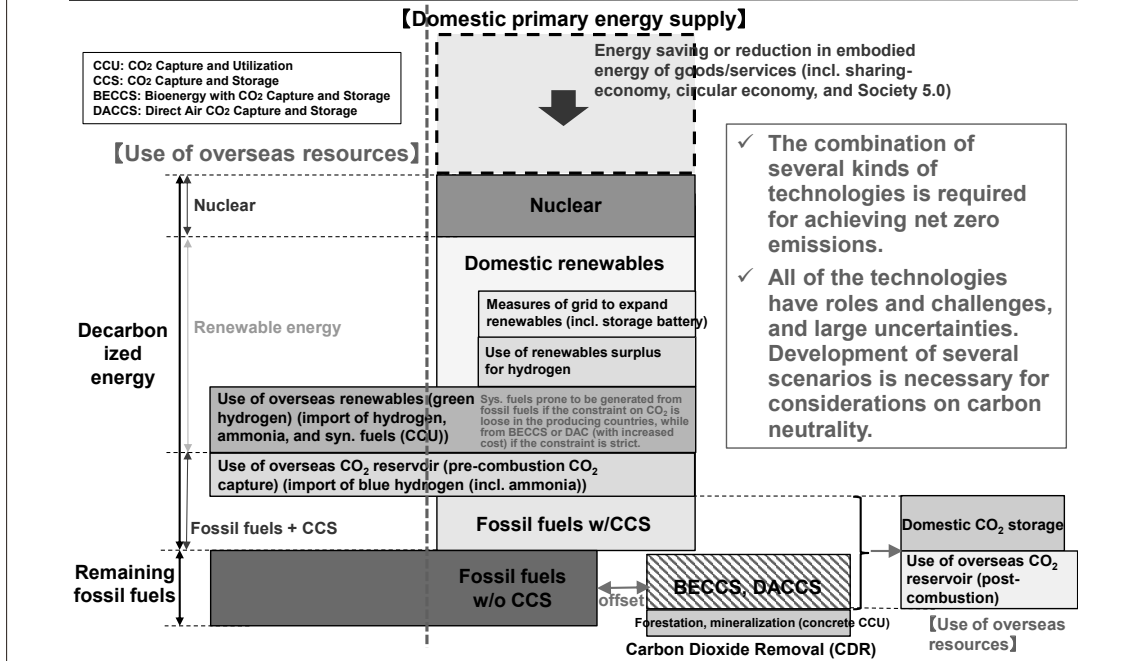
## Production changes by EITE sector in Japan and Germany



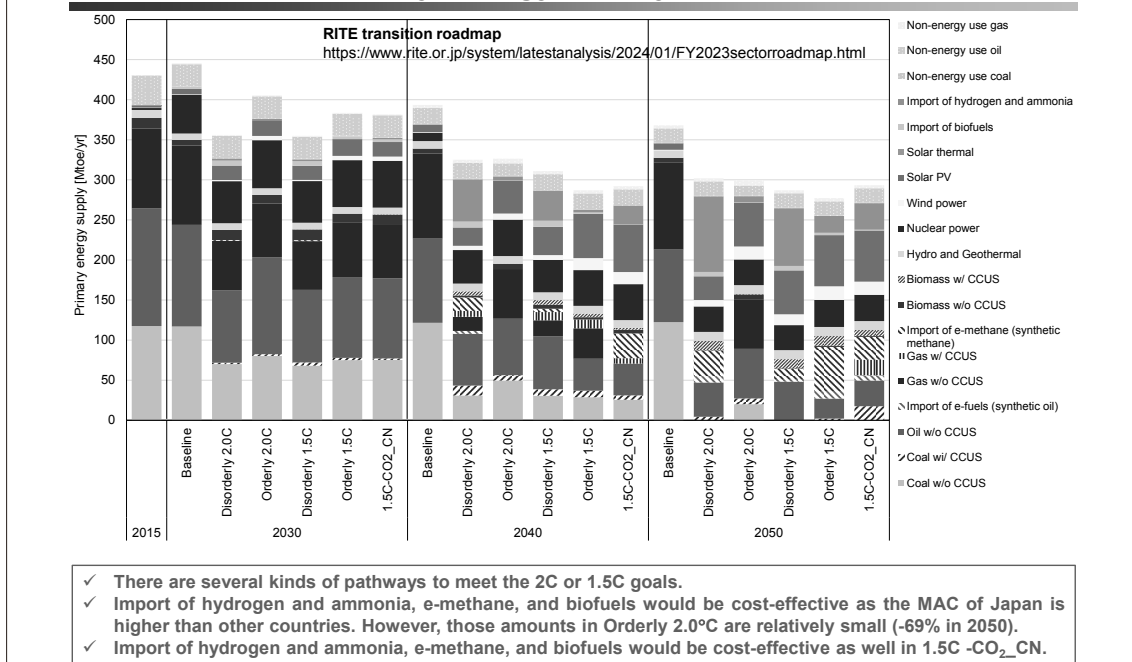
4



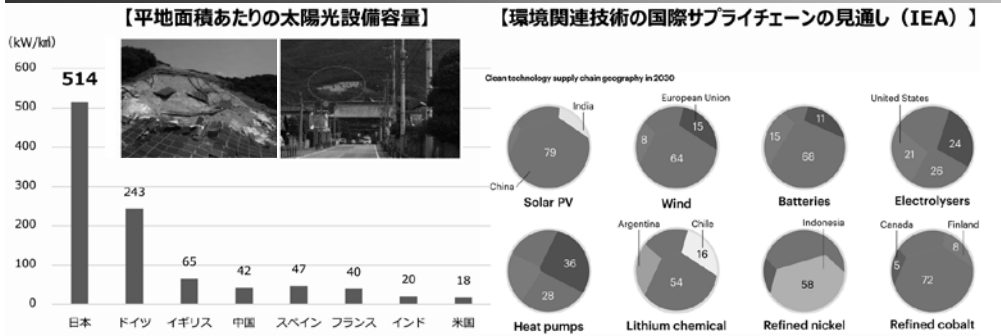
# Image of Primary Energy in Japan (or a Country) for Net Zero Emissions



# Energy transition meeting the 2C/1.5C scenarios: primary energy supply in Japan



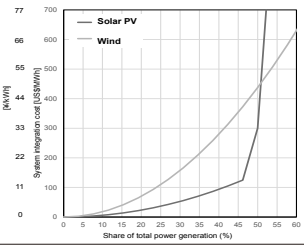
# Challenges of renewables



(出所) 外務省HP (https://www.mofa.go.jp/mofaj/area/index.html)、Global Forest Resources Assessment 2020 (http://www.fao.org/3/CA9825EN/CA9825EN.pdf)、IEA Renewables 2022、IEA データベース、2021年再生エネルギー供給実績(種別)、FIT認定額等より作成  
 ※平地面積は、国土面積から、Global Forest Resources Assessment: 2020の森林面積を差し引いて計算したもの。  
 (注) 数字は2030年の国別製造能力のシェア (%)。計画段階のものを含む。  
 (出所) IEA World Energy Outlook 2023  
 Source) The Government of Japan (2024)

**[Estimated grid integration costs of VRE in Japan]**  
 Grid integration costs approximated from the analysis of the Univ. of Tokyo – IEEJ power generation mix model

- ✓ Challenges in good harmonizations with other land uses, due to low energy intensity
- ✓ High dependences on China
- ✓ High grid integration costs of VRE



# LNG price spike



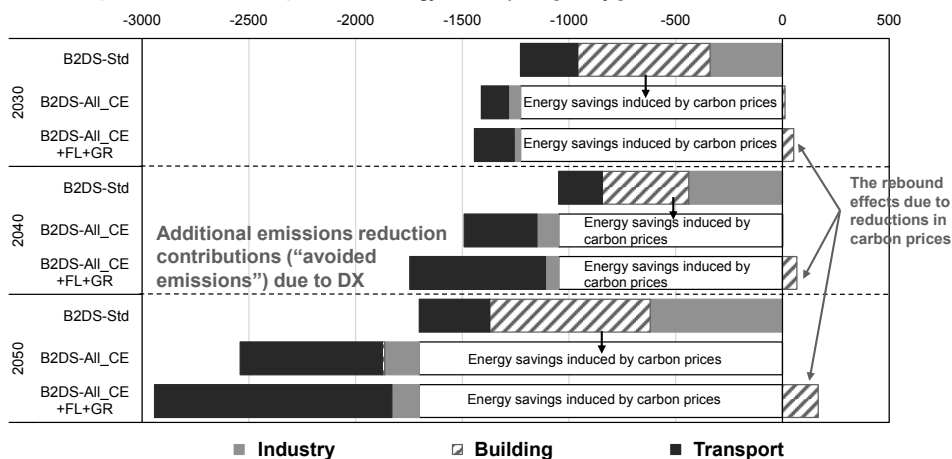
(出所) Platts、IMF、ICEほか、各種資料により JOGMEC 作成 ※日本平均 LNG 輸入価格内にスポット契約による購入 LNG カゴが含まれることに留意。  
 Source) The Government of Japan (2024)

- ✓ Long-term contract for LNG will be important.
- ✓ For the long-term contract with affordable prices, a certain levels of amounts of LNG demands for long-term will be required.
- ✓ Pragmatic and effective emissions reduction will be important particularly in the transition periods toward net-zero emissions.

## GX induced by DX: Low Energy Demand Society

B2DS (well below 2 °C)

Final energy consumption [Mtoe/yr]



Ref.) Global final energy consumption in 2019: 10 Gtoe/yr; baseline final energy consumption in 2050: 14 Gtoe/yr

The impacts of 1) ride- and car-sharing, 2) virtual meeting, 3) e-publication, 4) Recycling and reductions in apparels, 5) longer life time of buildings due to improv. in city planning, 6) reductions in food losses due to better demand projection, 7) AM (3D-printing) for applying aircraft, and 8) reductions in freight shipping services due to reductions in basic materials and products are considered for the estimations.

- ✓ There are the opportunities achieving a low energy demand society through sharing- and circular economies with low costs potentially due to DX.
- ✓ Low energy demand society will enhance the energy securities.

## Conclusion

- ◆ The leakages of energy-intensive industries from developed countries can be observed. The leakages are largely concerned also from energy/economic security viewpoints, as well as economic and employment issues. It is important to keep within a certain levels of the relative costs of energy between domestic and overseas to avoid the leakages.
- ◆ Renewable energies, particularly of solar PV and wind power, are important options to achieve deep emissions reduction and robustness to price spike of fossil fuels. However, the grid integration costs will be high according to their expansions particularly in Japan.
- ◆ The importance of long-term contracts for LNG even under the pathways to net-zero emissions (e-methane may play some flexible roles).
- ◆ Nuclear power will be a necessary option to achieve 3E (energy security, economics, and environment).
- ◆ There are the opportunities achieving a low energy demand society through sharing- and circular economies with low costs potentially due to DX. Low energy demand society will enhance the energy securities.

# Appendix

## Energy Assessment Model: DNE21+ (Dynamic New Earth 21+)



12

- ◆ Systemic cost evaluation on energy and CO<sub>2</sub> reduction technologies is possible.
- ◆ Linear programming model (minimizing world energy system cost; with approx. 10mil. variables and approx. 10mil. constrained conditions)
- ◆ Evaluation time period: 2000-2100  
Representative time points: 2005, 2010, 2015, 2020, 2025, 2030, 2040, 2050, 2070 and 2100
- ◆ World divided into 54 regions  
Large area countries, e.g., US and China, are further disaggregated, totaling 77 world regions.
- ◆ Interregional trade: coal, crude oil/oil products, natural gas/syn. methane, electricity, ethanol, hydrogen, CO<sub>2</sub> (provided that external transfer of CO<sub>2</sub> is not assumed in the baseline)
- ◆ Bottom-up modeling for technologies on energy supply side (e.g., power sector) and CCUS
- ◆ For energy demand side, bottom-up modeling conducted for the industry sector including steel, cement, paper, chemicals and aluminum, the transport sector, and a part of the residential & commercial sector, considering CGS for other industry and residential & commercial sectors.
- ◆ Bottom-up modeling for international marine bunker and aviation.
- ◆ Around 500 specific technologies are modeled, with lifetime of equipment considered.
- ◆ Top-down modeling for others (energy saving effect is estimated using long-term price elasticity.)

- Regional and sectoral technological information provided in detail enough to analyze consistently.
- Analyses on non-CO<sub>2</sub> GHG possible with another model RITE has developed based on US EPA's assumptions.

- Model based analyses and evaluation provide recommendation for discussions on some energy and climate change policy making processes, e.g., cap-and-trade system, Environmental Energy Technology Innovation Plan, 6<sup>th</sup> Energy Strategic Plan for the Government of Japan, and also contribute to IPCC scenario analyses.

## The transition scenarios for the 2 °C and 1.5 °C goals

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Scenarios	Global average temp. increase	Policy speed <sup>#</sup>	CDR contribution	Renewables and BEV	Differences in policy intensity among regions	Relation to other scenarios		
						IPCC AR6 (IPCC 2022)	NGFS (2022)	IEA
<b>Disorderly Below 2 °C</b>	1.7 °C in 2100 (peak: 1.8 °C)	Gradual (NDCs in 2030)	medium	Medium cost reductions	Large (major developed countries: CN by 2050)	Likely below 2 C, NDC [C3b]	Disorderly: Delayed Transition	APS (WEO 2022)
<b>Orderly Below 2 °C</b>	1.7 °C	Rapid	Small	High cost reductions	Small (equal MAC among countries)	Likely below 2 C with immediate action [C3a]	Orderly: Below 2C	SDS (WEO 2021)
<b>Disorderly 1.5 °C</b>	1.4 °C in 2100 (peak: 1.7 °C)	Gradual (NDCs in 2030)	Large	Medium cost reductions	Large (major developed countries: CN by 2050)	1.5 C with high overshoot (IMP-Neg) [C2]	(Disorderly: Divergent Net Zero)*	
<b>Orderly 1.5 °C</b>	1.4 °C in 2100 (peak: 1.6 °C)	Rapid	Medium	High cost reductions	Medium (major developed countries: CN by 2050)	1.5 C with no or limited overshoot [C1]	Orderly: Net Zero2050	
<b>1.5C-CO2_CN</b>	Approx. below 1.5 °C	Rapid	Small (Near-zero of CO2 by sector)	High cost reductions	Large (major developed countries: CN by 2050)	1.5 C with no or limited overshoot [C1]		NZE

<sup>#</sup> The emission reduction targets in 2030 of NDCs submitted in the end of December 2021 are considered.

\* The emissions pathway is rather similar to the Orderly 1.5 °C

- ✓ The assumed scenarios are consistent with the long-term goals of Paris Agreement, and cover the existing scenarios which are widely referred globally.
- ✓ The scenarios also cover a certain range of uncertainties in technologies and policies.

## Low energy demand scenarios due to DX (1/2)

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### Digitalization and innovations, and induced social changes – Demand reductions (1/2)

Changes due to digitalization	Direct impacts	Indirect impacts
1) Ride and car-sharing associated with fully autonomous cars	- Energy consumption reductions due to ride-sharing	- Reductions in consumption of basic materials due to reductions in number of cars - Reductions in freight shipping => 8)
2) Virtual meeting and teleworking	- Reductions in travel service demand and the associated reductions in energy consumptions in transport sector	- Potential reductions in numbers of commercial building, and the resulting reductions in basic materials [Not yet]
3) E-publication etc.	- Reductions in paper consumptions due to large deployment e-publications etc.	- Potential reductions in freight services for papers. [Not yet]
4) Recycling and reductions in apparels due to e-commerce and other digitalization	- Reductions in energy consumptions for apparel productions	- Potential reductions in energy consumption at shopping centers etc. [Not yet]

Red: residential sector, Green: commercial sector, Blue: transport sector, Purple: industry sector, Brown: Non-CO2 GHGs etc.

## Low energy demand scenarios due to DX (2/2)



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### **Digitalization and innovations, and induced social changes – Demand reductions (2/2)**

Changes due to digitalization	Direct impacts	Indirect impacts
5) Longer life time of buildings due to improv. in city planning	- Potential Reductions in cement and steel due to longer life time of buildings	
6) Reductions in food losses due to better demand projection	- Reductions in nitrogen fertilizer, plastics, etc. and the resulting energy consumption reductions - Potential reductions in energy consumption at supermarkets etc. - Red. in CH4 and N2O	- Reductions in freight shipping services => 8) - <i>Pot. red. in construction for supermarkets etc., and the resulting reductions in basic materials [Not yet]</i> - <i>Pot. increases in afforestation due to increase in rooms of land area [Not yet]</i>
7) AM (3D-printing) for applying aircraft	- Reduction in aluminum and steel production - Reduction in electricity for productions	- Energy efficiency improvements of aircraft and the consumption reductions - <i>Energy efficiency improvements of cars and the consumption reductions [Not yet]</i>
8) Red. in freight shipping services due to reductions in basic materials and products	- Energy consumption reductions in freight shipping	

Red: residential sector, Green: commercial sector, Blue: transport sector, Purple: industry sector, Brown: Non-CO2 GHGs etc.



② Masami Hihara Deputy Director-General of Berlin Office, Japan External Trade Organization (JETRO) Berlin / METI

## Japan's Energy Policy Amid Rising Geopolitical Tensions

METI Special Advisor/ JETRO Berlin

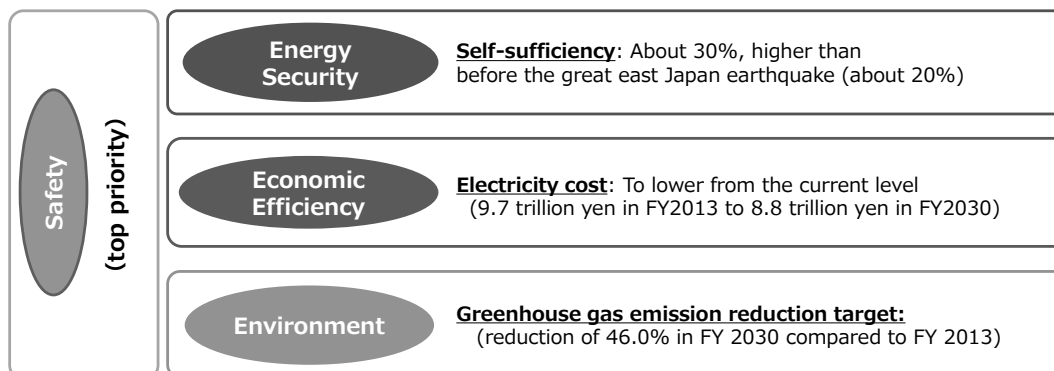
Masami Hihara

September 16, 2024

### Policy Targets in Japan's Energy Policy

- Based on the Strategic Energy Plan, Japan sets up the energy policy targets, **①Safety**, **②Energy security**, **③Economic efficiency**, and **④Environment** simultaneously. (**S+3E**)

#### Policy target for S+3E

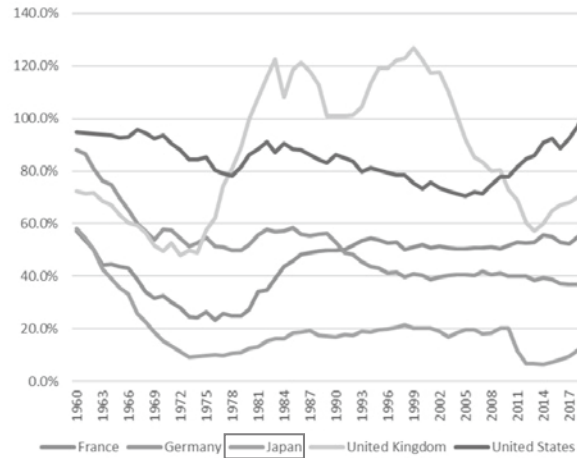


2

## Japan's Energy Self-sufficiency Rate

- Japan's energy self-sufficiency rate is on the increasing trend due to the increased introduction of renewable energy and the restart of nuclear power plants, but **it remains low compared to other countries**.

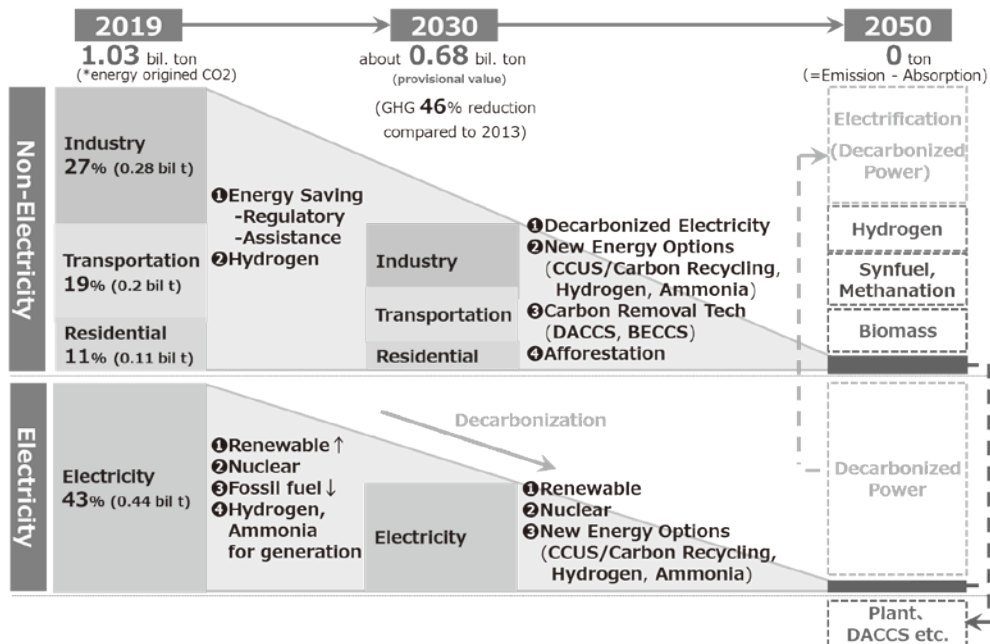
Trends in the primary energy self-sufficiency rate of various countries



Source: METI based on IEA Database

3

## Japan's pathway toward Carbon Neutrality by 2050

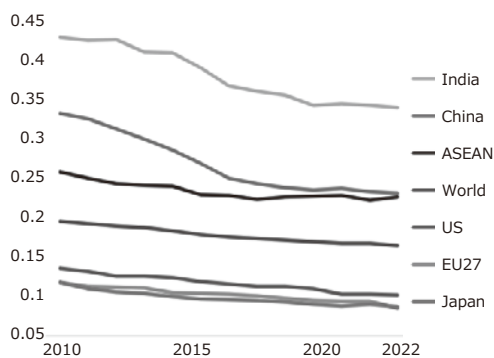


4

## Energy Saving: (1) Energy Efficiency and Energy Consumption

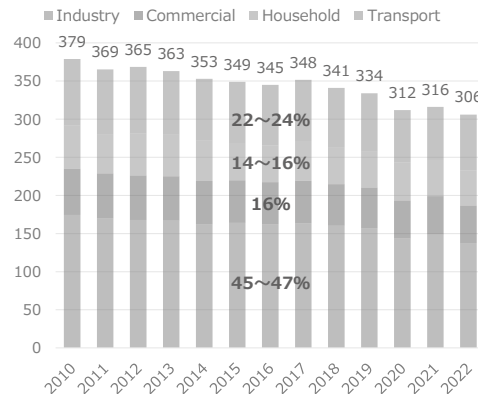
- Japan's energy efficiency is among the highest in the world and continues to improve, and its final energy consumption is also declining in all sectors.
- Japan will continue to support the development and introduction of high-efficiency equipment and promote non-linear technological innovation.

**Primary Energy Consumption Rate per GDP**  
(Petroleum equivalent tons/1000 dollars, 2015 prices, exchange rate basis)



Source: IEEJ based on IEA (2024)

**Primary Energy Consumption in Japan**  
(crude oil equivalent Million KL)



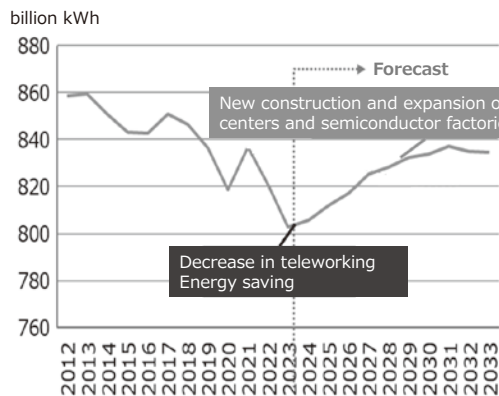
Source: METI

5

## Energy Saving: (2) Potential Increase in Electricity Demand

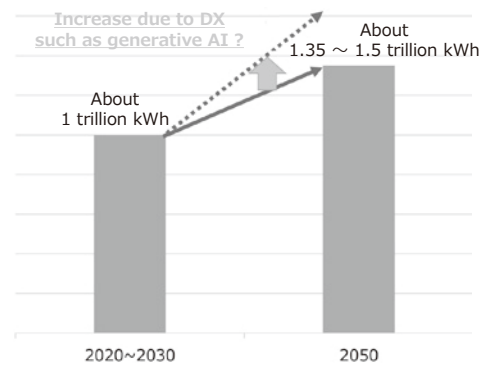
- As the use of generative AI expands, the power consumption of computational resources may begin to increase.
- While promoting the development of semiconductor technologies that contribute significantly to reducing power consumption, it is necessary to respond by assuming a scenario in which power consumption increases rapidly.

**Forecast of Japan's Electricity Demand**



Source: METI

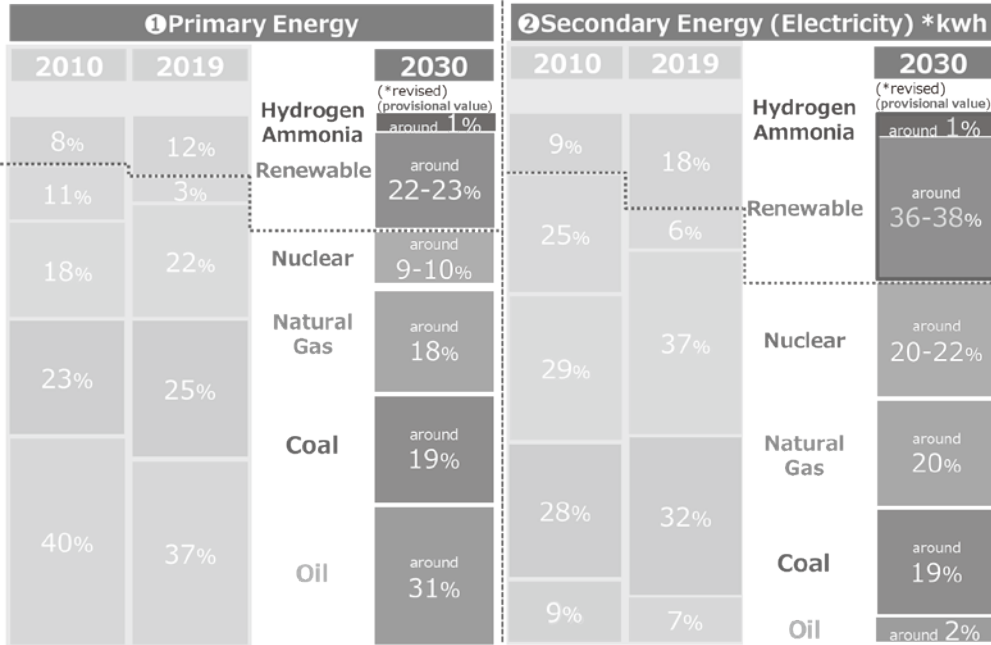
**Image of Amount of Electricity Needed in Japan**



Source: METI

6

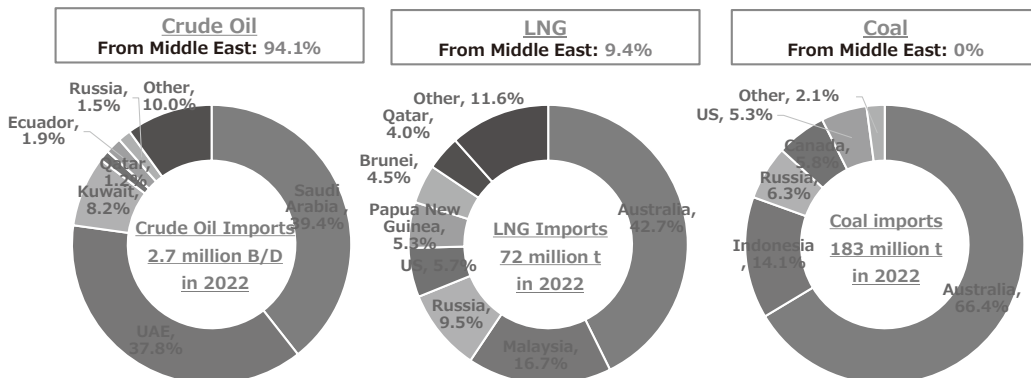
## Japan's Energy Mix (2030)



7

## Fossil Fuels: (1) Japan's Dependence on Foreign Fossil Fuels

- **Japan imports almost all of its fossil fuels from abroad.** It is about 90% dependent on the Middle East for crude oil.
- In comparison to crude oil, LNG is more diversified in terms of countries of origin, with the dependence on the Middle East of about 10%.
- Japan's dependence on the Middle East for coal is zero. It can be imported from countries with low geopolitical risk and geographic proximity, such as Australia.

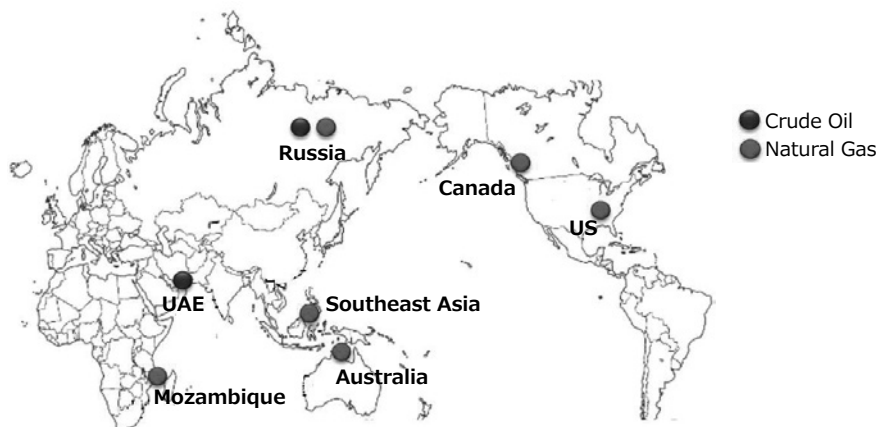


8

## Fossil Fuels: (2) Diversification of Fossil Fuel Sourcing Countries

- In order to secure a stable supply of fossil fuels, it is essential for Japan to diversify its sourcing countries.
- Therefore, it is important for Japan to secure interests in overseas projects in addition to concluding fossil fuel purchase agreements.

Major oil and gas projects involving Japan



9

## GX: (1) 2050 Carbon Neutral and 2030 Climate Goal in Japan

- In October 2020, Prime Minister Suga declared that by 2050 Japan will aim to reduce greenhouse gas emissions to net-zero, that is, to realise a carbon-neutral, decarbonised society.
- At Leaders Summit on Climate in April 2021, Prime Minister Suga announced that Japan aims to reduce its GHG emissions by 46 percent in FY 2030 from its FY 2013 levels.

Remarks at Leaders Summit on COP26 (Nov. 2021)



Japan aims to reduce its greenhouse gas emissions by 46 percent in the fiscal year 2030 from its fiscal year 2013 levels, and that Japan will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emissions by 50 percent.

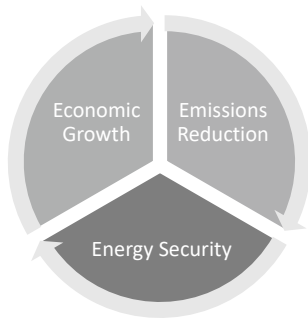
10

## GX: (2) Green Transformation's Three Principals

### Triple breakthrough

Japan aims to simultaneously achieve

- Emissions Reduction
- Economic Growth
- Energy Security



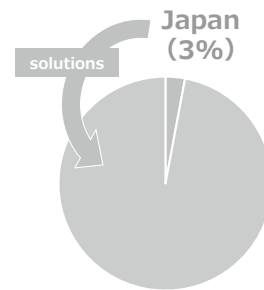
### One goal, various pathways

Toward our common goal of achieving net zero, we will make practical energy transitions through various pathways depending on the circumstances of each country.



### Solution to the world

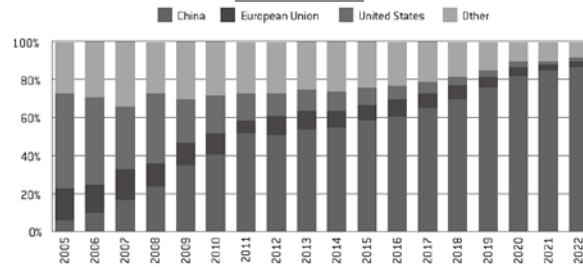
Japan will decarbonize itself, but also contribute to global decarbonization by providing solutions outside Japan.



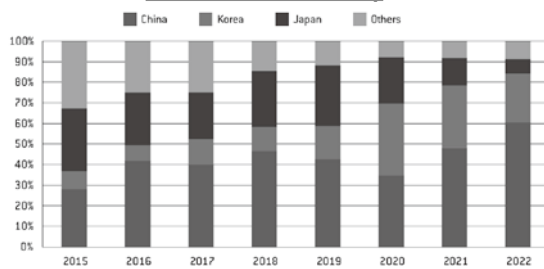
11

## GX: (3) Challenges ① Excessive Dependence for GX Technologies

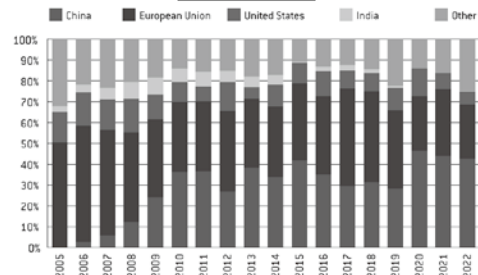
Solar Panels



Lithium-ion EV Battery



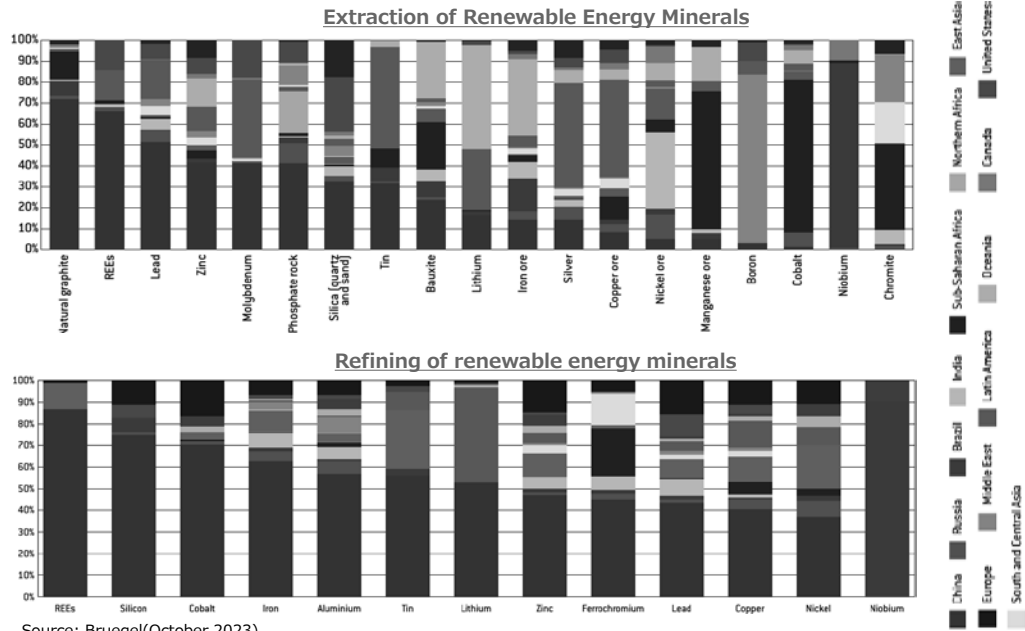
Wind Turbine



Source: Bruegel(October 2023)

12

## GX: (3) Challenges ① Excessive Dependence for GX Technologies



13

## Reference: Sustainability Criteria

### Joint Press Statement of Japan-EU High Level Economic Dialogue (May 2, 2024)

2. They expressed **deep concern about the weaponisation of economic dependencies** on certain supply sources for strategic goods, resulting from a wide range of non-market policies and practices such as market-distortive industrial subsidies. They recognise the need to address systemic vulnerabilities, stemming from such strategic dependencies and overcapacities, and to **promote level playing field** through coordinated efforts.
3. Ministers concurred on a Transparent, Resilient and Sustainable Supply Chains Initiative to coordinate and advance their efforts on policies for building more transparent, resilient and sustainable supply chains. ... Ministers raised the need to work together on the following issues, ensuring consistency with international rules including WTO Agreements:
  - a. Addressing strategic dependencies and systemic vulnerabilities and ensuring resilient and reliable global supply chains through the application of the **principles of transparency, diversification, security, sustainability, trustworthiness and reliability**, in the efforts to address, among others, climate change, energy security, cyber security and the stability of supply.
  - b. Continuing their coordinated efforts with the view to identifying requirements based on such principles including in the **procuring and auctioning of goods and services**, and in **other demand-side policies such as consumer subsidies**.
  - c. Encouraging businesses to enhance transparency, resiliency, and sustainability **in the market**.
  - d. Building and enhancing transparent, resilient, and sustainable supply chains as broadly as possible **in coordination with like-minded countries**.

14



## Reference: Sustainability Criteria

Apulia G7 Leaders' Communiqué  
(June 15, 2024)

### Economic Resilience and Economic Security

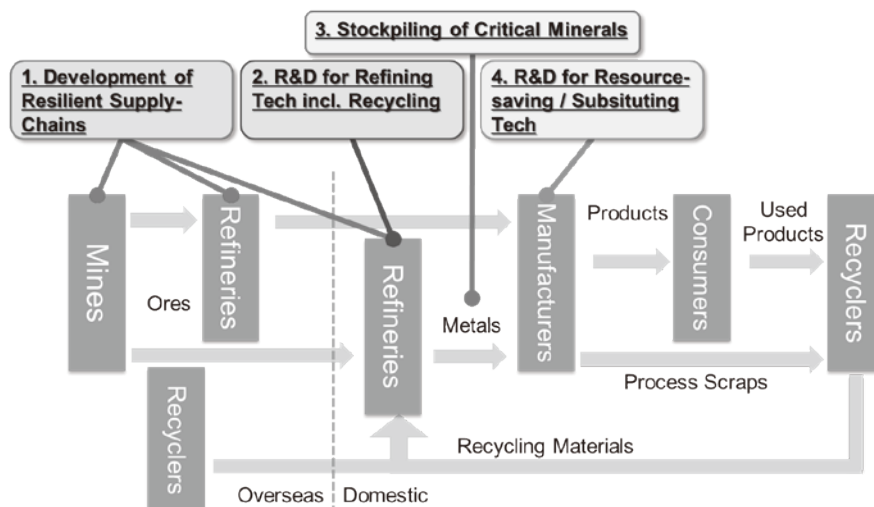
Building on the progress we made on our strategic coordination since Hiroshima, we reinforce our commitment to promote economic resilience and economic security, in partnership and cooperation within and beyond the G7. In particular, we are building resilient economies and supply chains, ensuring our toolkits to respond to harmful practices are fit for purpose, and safeguarding critical and emerging technology that could be used to threaten international peace and security.

Recognizing that economic resilience requires de-risking through diversification and reduction of critical dependencies, including those resulting from overcapacity, **we will implement the principles on resilient and reliable supply chains, namely transparency, diversification, security, sustainability, trustworthiness and reliability.** We will do so by actively engaging with partners and the private sector, within and beyond the G7, while preserving economic dynamism and openness. We encourage the public and private sectors to make coordinated efforts to strengthen the supply chains resilience of strategic goods, in terms of both supply and demand. This will include **seeking to collectively identify critical goods, strategic sectors, and supply chains, for future coordination within the G7 on relevant criteria that take into account not only economic factors, but also factors linked to the principles above.**

15

## Reference: Japan's Mineral Resources Policy

- To secure the stable supply of mineral resources, the Japanese government promotes policies shown below and conducts diplomatic approaches to resource-rich countries and other like-minded countries.

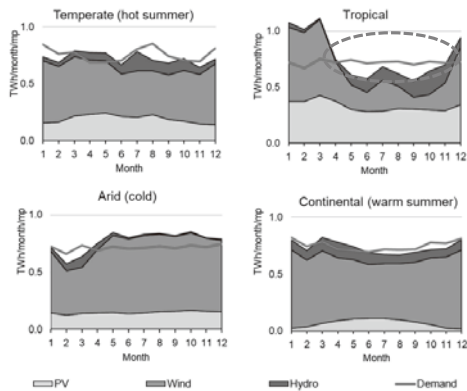


16

## GX: (3) Challenges ② Managing Variability

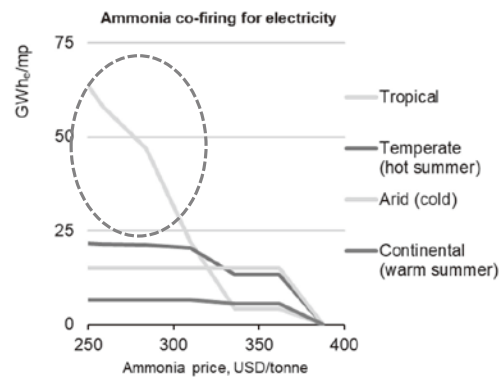
- The IEA report analyzes the impact on the energy system due to its seasonal and interannual variations in each of the four climate categories, which is an issue that will arise as the introduction of renewable energy expands.
- Especially in tropical regions such as Southeast Asia, the need for adjustability to the impact is high, and zero-emission thermal power generation.

Monthly Demand and Generation Potential from Renewables based on an hourly optimisation model



Source: IEA

Impact of Import Cost on the Use of Low-emission Ammonia for Power Generation by Example System



Source: IEA

17

## Reference: Hydrogen and Ammonia Power Generation

- Japan is a world leader in hydrogen power generation technology. Demonstration projects are underway for both large and small turbines.
- In addition, Japan is also developing ammonia power generation technology. Stable combustion and reduced NOx emissions with 20% of ammonia co-firing have already been achieved. Demonstration with actual large-scale equipment (1GW power plant) is expected to be completed in FY2024.

### Hydrogen Power Generation

#### <1MW class>

Achieving combined heat and power supply to urban areas using hydrogen exclusively in 2018.

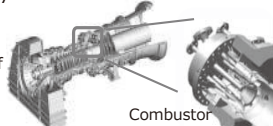


Hydrogen CGS on Port Island in Kobe City

#### <500MW class>

Achieving hydrogen co-firing rate of 30% vol in 2018.

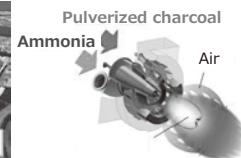
The image of gas turbine



Combustor

### Ammonia Power Generation

#### JERA Hekinan Thermal Power Station



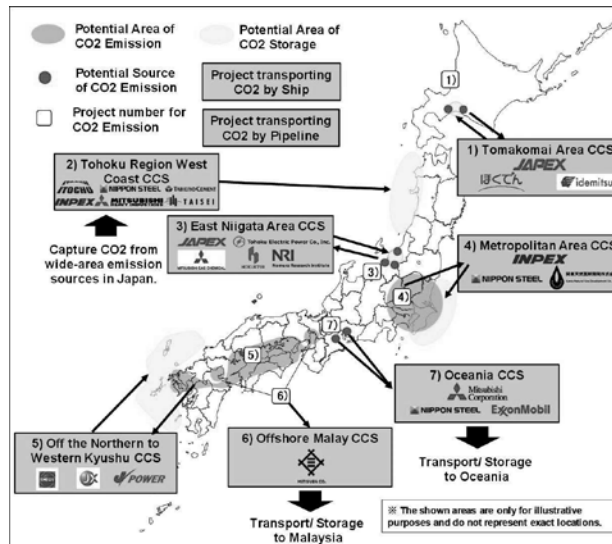
Ammonia Storage Tank



18

## Reference: Advanced CCS Program projects

- Program aims to **establish CCS business models by supporting projects** with different combinations of CO2 source, transportation methods and CO2 storage areas. It aims to **secure 6-12 million tons of CO2 storage per year by 2030**.



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## Key Elements of G7' Communiqué

### Various pathways according to each country's situation

- highlight **various pathways according to each country's energy situation, industrial and social structures, and geographical conditions** should lead to **our common goal of net zero**

Energy security and clean energy transitions (Para 49),  
G7 Sapporo Climate, Energy and Environment Ministers' Communiqué

### Engagement with other developing and emerging countries

- We **reaffirm the critical importance of collective action, and engagement with other developing and emerging countries**, particularly within the G20, to accelerate emission reduction, including by supporting their transition to net-zero GHG emissions through various and practical pathways taking into account national circumstances

Collective action (Para 58),  
G7 Sapporo Climate, Energy and Environment Ministers' Communiqué

### Importance of countering geopolitical risks

- emphasize **the importance of countering geopolitical risks**, including with respect to critical minerals, for the clean energy transition.

Energy security and clean energy transitions (Para 49),  
G7 Sapporo Climate, Energy and Environment Ministers' Communiqué

<https://www.meti.go.jp/press/2023/04/20230417004/20230417004-1.pdf> 20

**Thank you for your attention!**

Special Advisor to METI  
& Deputy Director-General of JETRO Berlin

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**UNIVERSITÄT ERFURT**  
Willy Brandt School of Public Policy

# The impact of geopolitical developments on energy security, environment, supply chains and green transformation

15th Japan-Europe Forum, Wuppertal

Professor Andreas C. Goldthau  
Franz Haniel Chair for Public Policy, Brandt School

**UNIVERSITÄT ERFURT**  
Willy Brandt School of Public Policy

**McKinsey & Company**  
MCKINSEY GLOBAL INSTITUTE  
**GLOBALIZATION IN TRANSITION: THE FUTURE OF TRADE AND VALUE CHAINS**  
JANUARY 2019

**Deloitte.**  
**Rewiring globalization**  
Five geoeconomic trends transforming the business environment

INTERNATIONAL MONETARY FUND  
**Geoeconomic Fragmentation and the Future of Multilateralism**  
Prepared by Cheol Eun, Joann Choh, Christian Ebeke, Roberto Garcia-Sanchez, Trifun Gadinandjose, Irena Bano, Alvin Kengur, Tanayaa Kanasakul, Sergio Rodriguez, Michelle Ruta, Tatjana Schuler, Gabriel Sudekerg, and Juan Pedro Tervino  
SDN/ 2023/001  
2023 JAN  
STAFF DISCUSSION NOTE

20.09.2024 2

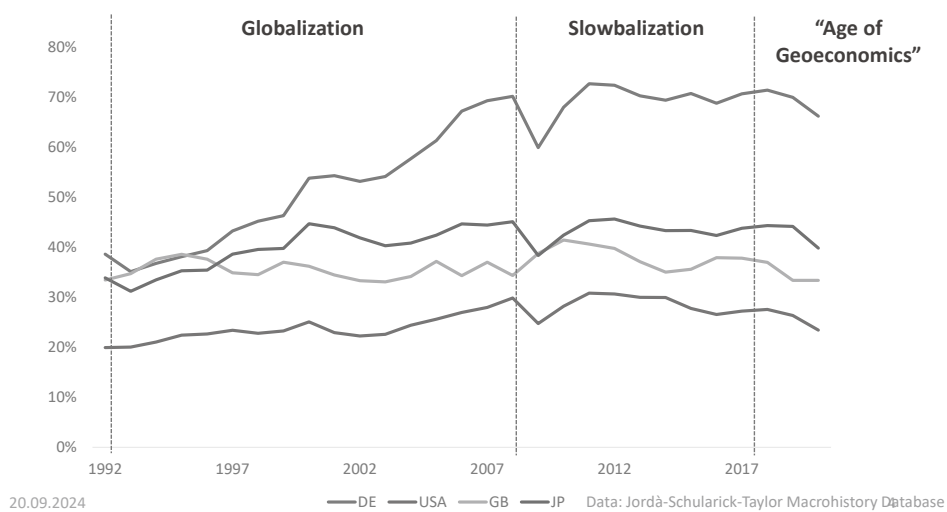


20.09.2024

3

Trade openness moved sideways for a decade. Since 2017 it is in retreat

Imports & exports as share of GDP

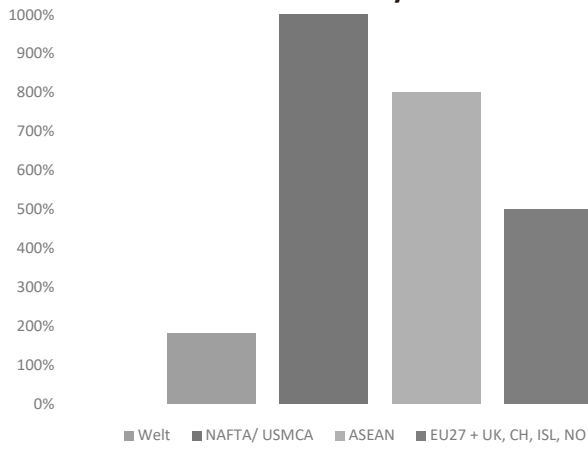


20.09.2024

# Economic interconnectedness still increases, but regionally not internationally



Inter-regional linkages since 2016 as per Deloitte Geoeconomic Dynamics Index



- **Regionalization:** WTO → FTAs
- **Re-politicization:** markets and tech → 'strategic industries'
- **Reorientation:** „trading with friends“

20.09.2024

Source: Deloitte 2024

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# Economic security and ,nation first' policies increasingly trump Ricardo



Clean tech: United States policy measures (2011-2022)

Year	Initiative/Policy	Type of Initiative/Policy	Targeted Countries	Year	Initiative/Policy	Type of Initiative/Policy	Targeted Countries
2011	Subsidy Initiative	Industrial policy I	Not specified	2021	China's Statement on Priorities for Supply Chain Resilience	Classification	Not specified
2011	National Clean Air Act Strategy	Industrial policy I	Not specified	2021	US-EU Trade and Technology Council inaugural joint statement	Classification	Not specified
2011	2011 Strategic Plan	Industrial policy I	Not specified	2021	Executive Order on Addressing the Threat from Securities Investments that Finance Certain Companies of the People's Republic of China	Classification	China
2011	Blueprint for a Secure Energy Future	Industrial policy I	Investment incentives mentioned as possible energy policy tool	2021	US-EU Investment in Research, Innovation & Strategic Supply Chains of Clean Energy R&D	Industrial policy II	China, UK, Europe
2012	American Energy Manufacturing Technical Competitiveness Act	Industrial policy I	Not specified	2021	Steel Supply Chain Transparency Process	Classification	China (not explicitly mentioned)
2013	Clean Energy Manufacturing Initiative	Industrial policy I	Not specified	2021	Executive Order on America's Supply Chains	Industrial policy II/Investment	Not specified
2013	Climate Action Plan	Industrial policy I	Not specified	2021	Executive Order on Strengthening American Leadership in Clean Cars and Trucks	Industrial policy I	Not specified
2014	President Obama's 8th Annual Energy Act of 2014 (Reauthorized)	Industrial policy I	Not specified	2021	Securing Semiconductor Supply Chains Act of 2021	Regulatory	Not specified
2014	Artificial Intelligence Energy Strategy as a Path to Sustainable Economic Growth	Industrial policy I	Not specified	2021	Reshoring American Manufacturing Act of 2021	Regulatory	China
2015	North American Energy Security and Infrastructure Act of 2015	Industrial policy II/Investment	Mexico, Canada	2021	Inflation Reduction Act of 2022	Industrial policy I	Not specified
2015	Clean Energy Investment Initiative	Industrial policy I	Not specified	2021	Infrastructure Investment and Jobs Act	Industrial policy I	Not specified
2015	Solar and Wind Energy Rule	Industrial policy I	Not specified	2021	State Energy Manufacturing for Strategic Act (SEMMA)	Industrial policy II	Not specified
2017	Department of Energy Research and Innovation Act	Industrial policy I	Not specified	2021	Supreme Court Security Funding Act of 2022	Industrial policy II	China "for any other foreign country of concern"
2017	Repeal Budget Act of 2018	Industrial policy I	Not specified	2021	NAAM Act of 2021 (Reauthorized)	Regulatory	China
2017	Executive Order on Promoting Energy Independence and Economic Growth (revoked)	Industrial policy II	Not specified	2021	To establish an expedition security pilot program as a part of the "Hedgehog Initiative" (Executive Order 13972)	Industrial policy I	Not specified
2017	Executive Order on Implementing an America First Offshore Energy Strategy (revoked)	Industrial policy II	Not specified	2021	Initiative to High Manufacturing of 2021 (HMF2021)	Industrial policy I	Not specified
2018	2018 Trade talks on solar modules	Industrial policy II	China	2021	National Institute of Standards and Technology for the Future Act of 2021	Industrial policy I	Not specified
2018	Executive Order on Promoting Energy Infrastructure and Economic Growth	Industrial policy I	Not specified	2021	United States Innovation and Competition Act of 2021 (USICA)	Industrial policy II	China mentioned throughout, Russia
2020	Global Economic Activity and Recovery (GEAR) strategy	Industrial policy I	Not specified	2021	Executive Order on Expanding Clean Energy Industries and Jobs Through Federal Investment	Industrial policy I	Not specified
2020	Economic Prosperity Network	Classification	China	2022	Reshoring Supply Chain Act of 2022 (Reauthorized)	Regulatory	Not specified
2020	NAAM Act of 2020 (Reauthorized)	Regulatory	China	2022	Jobs and 21st Century Act of 2022	Classification	China, HK, Russia, North Korea
2020	America LEADS Act (Reauthorized)	Industrial policy I	China	2022	Facilitating the Reshoring of Energy-Intensive Manufacturing Act of 2022	Industrial policy I	Not specified
2021	Endless Frontier Act (Reauthorized)	Industrial policy I & II (primarily I)	China (mentioned in Sections 9, 10, 11)	2022	CHIPS and Science Act	Industrial policy II	China "for any other foreign country of concern"
2021	Strategic Competition Act of 2021 (Reauthorized)	Classification	China	2022	Executive Order on the Implementation of the Energy and Infrastructure Provisions of the Inflation Reduction Act	Industrial policy I	Not specified
2021	National Manufacturing Security Act of 2021 (Reauthorized)	Industrial policy II	Not specified	2022	To certify a national concern that the dissemination of classified strategic vital data of Criticality, Trustworthy, Resilient, Versatile	Classification	"To certify a national concern that the dissemination of classified strategic vital data of Criticality, Trustworthy, Resilient, Versatile"
2021	To ensure that goods made with forced labor in the Xinjiang Uyghur Autonomous Region of the People's Republic of China do not qualify for US trade benefits	Classification	China	2022	Supply Chain Transparency for Transparency Enforcement of Trade and Classification	Classification	China
2021	Wahmi W (S) Transparency National Defense Authorization Act for Fiscal Year 2021	Industrial policy II	Not specified	2022	Supply Chain Transparency of Solar Cells and Modules from Southeast Asia	Industrial policy II	China
2021	Resilient of the White House CEO Summit on Semiconductor and Supply Chain Resilience	Industrial policy II	Not specified	2022	America's Strategy to Secure the Supply Chain for a Nuclear Clean Energy Transition	Classification	China
2021	Resilient of the White House Summit on Expanding Federal EV Infrastructure	Industrial policy I	Not specified	2022	National Strategy for Advanced Manufacturing	Industrial policy I	Not specified
2021	The American Jobs Plan	Industrial policy I	China				

Source: Goldthau, Hughes & Nahm 2022

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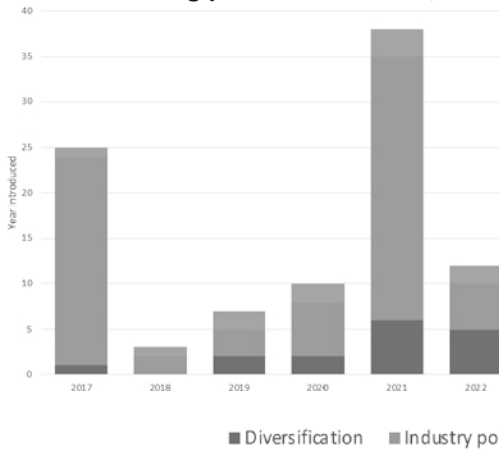
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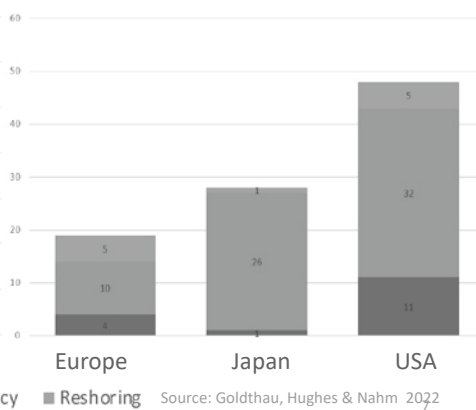
## Industrialized nations have come to intervene in clean tech supply chains



Frequency of industry, diversification, and reshoring policies 2017-2022, total



Frequency of industry, diversification, and reshoring policies 2017-2022, by region

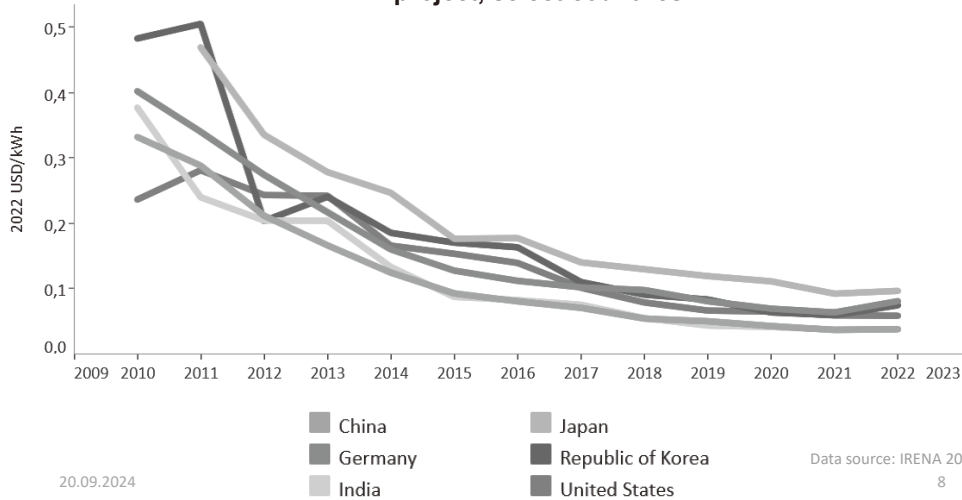


Source: Goldthau, Hughes & Nahm 2022

## Geoeconomic fragmentation risk slowing the clean transition & increasing the costs



Weighted average LCOE from newly commissioned, utility-scale solar PV project, select countries



20.09.2024

Data source: IRENA 2023

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# The policy imperative: carefully navigate geoeconomic complexity to protect global supply chains



- Keep international clean tech trade networks intact to ensure these keep getting better and cheaper. Quick
- Calibrate interventions well: regulation, investment and subsidies should support start-ups and high-risk, high-return endeavours
- Focus green industrial strategies on developing innovations and bringing them to market, rather than replacing supply chains for mature technologies
- Avoid narrow-focused national policies eating up time that we don't have

20.09.2024

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Andreas C. Goldthau

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Institute for Applied Ecology

## The impact of geopolitical developments on energy security and environment

15<sup>th</sup> Japan-Europe Forum

**Dr. Felix Chr. Matthes**  
Wuppertal, 16<sup>th</sup> September 2024

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### The increasingly Europeanised market framework for the energy transition A holistic view of old and new needs for action and regulatory areas

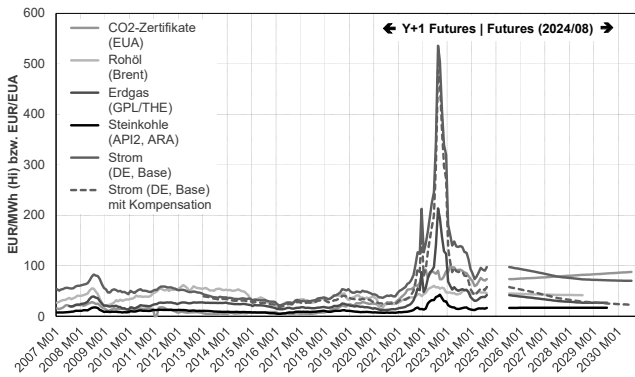
- Process acceleration in all areas
- Greenhouse gas emission reduction
  - Climate neutrality targets and paths
  - Greenhouse gas pricing
  - Other emission reduction instruments
- Market design
  - for electricity (gas and hydrogen, CO2)
  - Refinancing instruments, localisation signals
  - European integration and security of supply
- Infrastructure
  - Target grid planning (for transmission and distribution grids)
  - Integrated design of electricity, hydrogen & CO2 networks
  - Municipal heat planning
- Industrial policy
  - Securing the European value chains
  - Improving competitive position of European suppliers
  - Energy costs and smart industrial electricity cost solutions

Energy transformation & Geopolitics | 15th Japan-Europe Forum | Matthes | 12.09.2024

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## Natural gas, oil, electricity and CO2 prices (and costs) The 2022/2023 shock waves of geopolitics (partly caused by German energy policy)

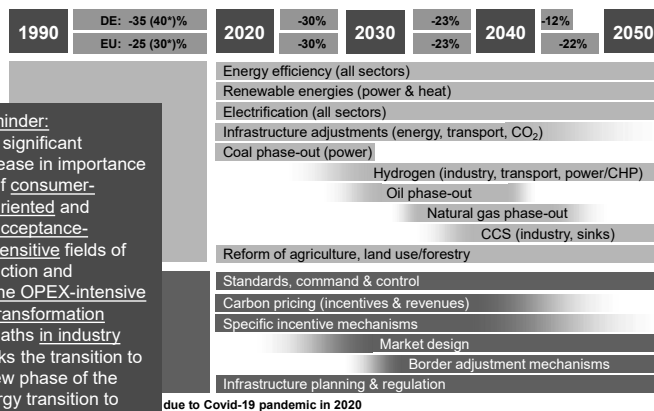
Natural gas, oil, electricity wholesale & EUA prices & CO2 price compensation



Sources: EEX, ICE, DEHSt, European Commission, own calculations

- Russian invasion of Ukraine with far-reaching consequences for security of supply and energy prices (prices for fuel, electricity and CO<sub>2</sub> have risen massively)
- Renewable shares are slowly lowering prices, CO<sub>2</sub> prices (for base price) are counteracting this partly
- 2020s remain critical in terms of prices (despite current declining price levels), uncertainties remain high
- Challenge of industrial policy: transformation support needed, but coexistence of old & transformative options (current shifts to other regions often not towards green production)

## Transition to climate neutrality (Germany/Europe) in a changed geopolitical environment All strategies remain robust, some implementation mechanisms/sequences may change

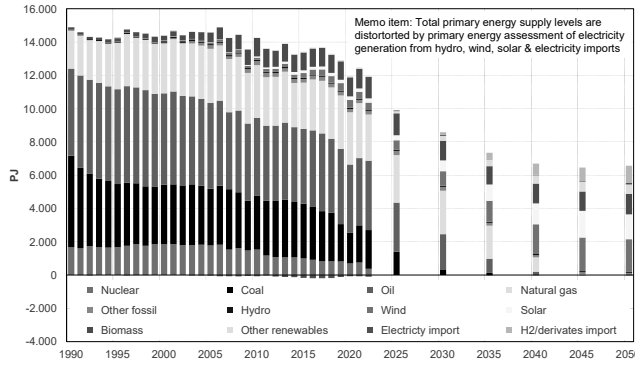


**Reminder:**  
The significant increase in importance of consumer-oriented and acceptance-sensitive fields of action and the OPEX-intensive transformation paths in industry marks the transition to a new phase of the energy transition to climate neutrality!

due to Covid-19 pandemic in 2020

- Six key strategic elements for a successful transformation to climate-neutrality
- Paving the way for transformative options
  - Actively managing exit game for unsustainable options
  - Initiating necessary infrastructure adjustments (expansion/conversion/ decommissioning) with sufficient lead times
  - Supporting timely ramp-up of the necessary value chains
  - Making innovations available in time and avoiding the innovation dilemma
  - Taking into account (international) learning and diffusion processes

**A mainstream projection: There are and will be corridors, the ranges are relatively narrow**  
**The 10-43-17 archetype and the C<sup>2</sup>SIA tracks of managing structural change**



**Long-term system characteristics**

- 1,000 TWh renewable electricity for direct use (mainly wind & solar, land availability restrictions)
  - 400 TWh imported hydrogen and hydrogen derivatives
  - 300 TWh biomass (mainly cascade use)
  - 100 TWh domestic hydrogen (and some hydrogen derivatives)
  - 70 million tons CO<sub>2</sub> to be stored in geological formation
- Managing broad structural change**
- Coordination-intensive
  - Capital-intensive
  - New spatial patterns
  - Infrastructure-intensive
  - Acceptance-sensitive

**After the wake-up call: New awareness on resilience (in a comprehensive sense) as a new challenge to sustainability strategies (and beyond)**

	Raw material	Intermediate	Good	Goods
Manufactures		Polymers, China 71%	High-strength steel, China 71%	Metals, China 71%
Wind power			Cells, China 81%	Solar glass
Components and modules for wind power and electric mobility	Light rare earths, China 100%	Light rare earths, China 91%	Permanent magnets, China 81%	
Electromobility	Lithium	Lithium	Carbon fiber, China 71%	Battery cells
Electromobility	Cells, China 71%	Cells, China 71%	Management, China 71%	
Electromobility	Cells, China 71%	Cells, China 71%	Management, China 71%	
Electromobility	Cells, China 71%	Cells, China 71%	Management, China 71%	
Electromobility	Cells, China 71%	Cells, China 71%	Management, China 71%	
Heat pumps	Compressors, China 71%			
Green steel	High-purity iron ore			Plant engineering for steel reduction, China 71%

Crucial parts of value chains (not only for the transformation) depend on key resources and strategic goods

- Partly high concentration of production and/or processing of strategic resources and/or goods in few countries (i.e. China)
- Some of them with specific geopolitical interests which should be perceived as potential threats (not only for energy transformation)

**Six main counter-strategies**

- Lowering short-term vulnerability (energy/resource efficiency, stockpiling)
- Safeguarding crucial cores of industrial production within Germany and/or Europe
- Diversifying the supplies of resources and strategic goods (as well as interim production steps as processing etc.)
- Going for new technologies or circular strategies that can lower the longer-term demand for resources
- Avoiding (new) lock-in effects (economic, political and contractual) and stranded assets
- International cooperation and creating new alliances

## Global energy transformation will change international trade flows Energy commodities, transformation-related commodities and strategic goods

### Case study: Net export and import positions for (green and low-carbon) hydrogen

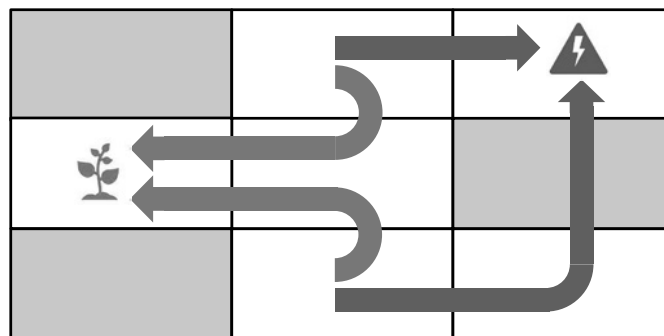


Source: German Expert Commission for the Monitoring of the Energy Transition

Significantly changing patterns for the global economy (not only but also due to the transformation)

- Key regions will be (more or less) self-sufficient for commodities (and technologies?)
- Few regions will be significantly import-dependent for commodities (not only energy!)
- Regions with abundant clean energy resources will attract new parts of the value chains
- Global technology market for clean/resource-efficient technologies will grow, distribution of market shares is open
- Home markets will be crucial
- These are crucial coordinates for international cooperation

## The new era of geopolitics Energy transformation depends crucially on it – and may contribute to it



Unpredictable Geopolitics

Restructured Geopolitics

Dominance of Geoeconomics

rather improbable constellations

# Thank you very much

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⑤ Akihiko Tamura Director General, Japan External Trade Organization (JETRO)  
Paris / METI

## Trade Policy Dimension of Green Industrial Policy

What should EU do to address this *casse-têtes*?

September 16, 2024

15th Japan-Europe Forum, Wuppertal Institut

Akihiko TAMURA, SJD

JETRO Paris / RIETI

Chinese Industrial Policy and Reaction by US and  
EU – protecting their own bases and reducing  
dependence on China, “de-risking”

- ▶ On May 14, the United States announced that it will increase Section 301 tariffs on Chinese EVs and certain hybrids to 100 per cent. (just announced to be implemented on 27 September.)
- ▶ On June 12, the European Commission announced that it will begin to apply provisional countervailing duties on Chinese-made EVs on July 4, with final duty rates expected to be finalized in the fall. (remained to be finalized. China is trying to persuade some of EU member states to block the green light.)

## US Industrial Policy and Reaction by China and EU – concerned about US “on-shoring”

- ▶ On July 15, China requested to the WTO Dispute Settlement Body to establish a panel on the US IRA, arguing that local content requirements (LCRs) of the Clean Vehicle Credit (assembly, critical minerals, battery) are inconsistent with the non-discriminatory principles (GATT Art. I, III, SCM Art. 3). (DS623)
- ▶ It seems EU has not done anything significant to address the IRA’s problems so far. EU did not join the DS623. EU negotiated with US for exceptional treatment on LCRs, but apparently unsuccessful. (EU is not the US’ FTA partner. TTIP failed in 2016. The primary reason may be that US rejected the EU’s request to accept the latter’s higher standards and regulations.)

## Everybody is sinner, but... EU could be reform leader

- ▶ US and EU are “de-risking” the relationship with China. China and EU are concerned about the US’s “on-shoring” trend. Then, US and China are evils and EU is good? Not necessarily.
- ▶ CBAM, the measure assuring the level playing field (LPF) between domestic players paying the ETS price and importing players not paying the price. If carefully structured and applied, it should not be against the WTO rules. And its real impact seems limited. However, the *esprit* felt in the CBAM, pervasive through the EU trade policy, is not liked by others. (“race to top or *civilized*” imposed. the scent of “weaponization”.)
- ▶ But EU’s basic positions (such as respecting WTO system, making the effort to assure LPF, and (let alone) being serious about carbon neutrality) could make EU best qualified to be a reform leader, working with other like minded countries, in spite of its tremendous obstacles.

## EU cannot afford the same as US and China

- ▶ EU will not have “common industrial policy” anytime soon due to the lack of consensus among 27 member states on allocation of competencies between Brussels and member states. (see. e.g., Members’ resistance to post-RRF. Draghi report insists on common debt instruments) Also mindful of the emergence of Euro-sceptics everywhere, pushed by EU citizens’ concern about the immigration problem.
- ▶ Member states simply have little money to copy IRA. Draghi report insists on additional investment of €800billion/year. (But...e.g., If France is to contribute 20-25% thereof, it would be €160-200billion/year. France is now implementing “France 2030” €54billion/5years(2021-25). Pension reform (saving €10-15billion/year) is on the verge of back-pedaling. Still searching the money for military support to Ukraine (€3billion/2024). Let alone, France must be accountable to EU process on fiscal deficit and public debt.

## What should EU do?

1. Negotiate again with US to reduce negative impact of IRA’s LCR so that the EU may be the part of the EV Supply Chain built by IRA’s massive investment. For it, EU may consider initiating WTO case against the LCRs of IRA (like DS 623).
2. Launch the initiative to establish new rules distinguishing “bad subsidy” and “good subsidy”, referring to SCM Art.8 (non-actionable subsidy. Expired) and GATT 20 (general exception) among others.
3. Launch the initiative to consider the idea of capping the amount of industrial subsidy, referring to WTO Agriculture Agreement.
4. For 2 and 3 above, EU should work like-minded countries such as CPTPP (note: 9 out of 12 members have FTA with EU) and to construct “friend-shoring” regime, large enough to enjoy scale economy as well as to get leverage to involve US eventually. OECD may be also utilized.



Thank you! Dankeschön!

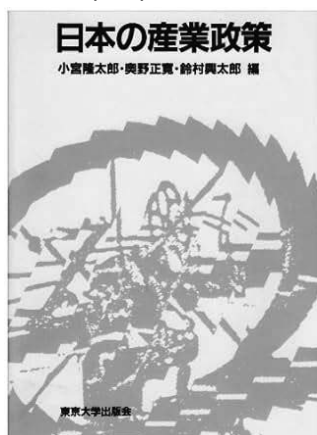
# Economics of Industrial Policies and International Rules

September 16, 2024

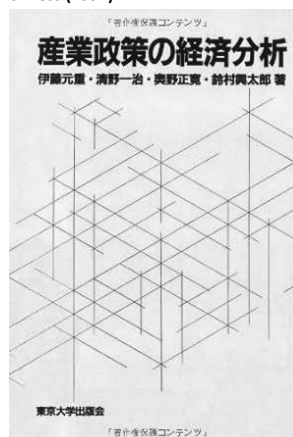
15<sup>th</sup> Japan-Euro Forum, Wuppertal Institute for  
Climate, Environment and Energy,  
Mariko Watanabe (Gakushuin University, Japan)

## Economics of Industrial Policy

Komiya, et.al ed, *Industrial Policy of Japan*, 1984,  
Academic Press (1988)



Ito, et.al, *Economic Analysis of Industrial Policy*, 1988,  
Academic Press (1991)



2024/9/15

Industrial policies and International Rules ,  
Watanabe

## Remarks of Japanese Economists in 40 years ago

1. "Given that market failures are likely to occur in industries where learning and technological development are important, **government support and policy intervention in these industries cannot be universally denied.**
2. **The issue arises when only one country engages in extreme policy intervention, pushing aside already established industries in other countries**—in other words, when a country secures its own interests at the expense of others.
3. Therefore, **it is necessary to establish international rules regarding policy interventions** for research and development and learning, and it is desirable to form international agreements on horizontal division of labor between nations, or on international dispersion of production bases through direct investment and industrial cooperation, **so that no single country monopolizes advantageous industries** (Koyima, 1984, p. 242)."

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## Cores: Economies of scale

- Economy of scale
  - is a phenomenon where **average or marginal costs decreases in proportion to scale.**
    - Impacts on marginal cost is more significant.
  - This leads to market failures, including
    - Domestic market failures (widely discussed)
    - International market failures (not fully considered)

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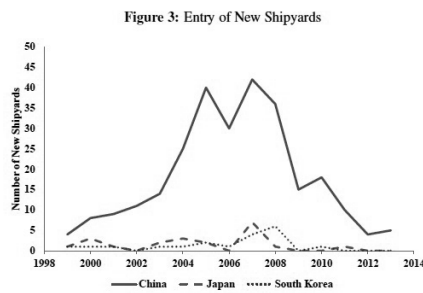
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# Economy of scale justifies industrial policy

## 1. Fostering Industries

- Setting up industry involves enormous cost
  - A single firm cannot bear
  - Market failure due to the economy of scale
  - (Well planned systematic) Industrial policies are necessary
- Aiginger and Rodrik(2020) , Juhaz, Rodrik et.al (2023) , Lin, Justin Yifu (2010, 11, 24), Naughton(2021)
  - Currently very popular
  - EU’s industrial policy, USA’s IRA

## A flood of new entrants



Source: Clarksons Research. Number of new shipyards.

Jia-Barwick, et.al (2019)

2024/9/15

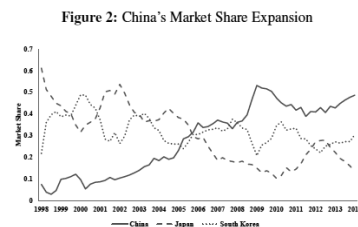
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# Economy of scale affects terms of trade

## 2. Economic Friction

- “Scale” of Large country improves terms of trade,
  - resulting in “overproduction”
  - industrial bases of less large countries are destroyed.
  - This leads social and political tensions.
- Ito et.al (1988), Krugman(1984) , Panagariya(1981)

## Drastic changes of market share



Source: Clarkson Research. Market shares computed from total quarterly ship orders.

Jia-Barwick, et.al (2019)

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## Remedies to the friction

- **Ex Ante:**
  - **Profit-sharing schemes for scale economies**
  - 1. FDI & Industrial Cooperation (Komiya, 1984)
  - 2. Global Value Chains development (since 2000s)
    - IT Agreement: Zero Tariffs
  - 3. FTAs/RTAs (e.g., CPTPP): Effective for sharing profits in emerging industries & technologies
- **Ex Post:**
  - 1. WTO Trade Remedies (Anti-dumping, CVD, Safeguards)
  - 2. **(NEW) Disciplines to Prevent Abuse of Power**
  - 3. **(NEW) Appropriate Linkage with National Security Exception**

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## Three sources of economies of scale

1. **Setting up cost**
  - Supported by subsidies.
  - **WTO subsidy agreement** discipline.
2. **Internal economy of scale; Learning by doing**
  - Result of the firm's internal effort.
    - No ex ante disciplines
  - Abuses by firms ⇒ Ex post disciplines
3. **External economy of scale (Marshallian externalities);**
  - Arise from external factors affecting firms.
  - Disciplines to firms are ineffective.
  - Abuses by nations ⇒ Ex-post discipline."

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## Ex post discipline to firms level action

1. Subsidies
  - WTO CVD, Anti-dumping, Safeguard
2. Internal economy of scale
  - Abuse of monopoly power needs discipline
    - **(New) Competition policy harmonization**

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## Ex post discipline by national level

3. Marshallian externalities
  - WTO Safeguard
  - **(NEW) Scale Based Rules**
    - **Differentiated ex post enforcement for high market share in Specific Industries**
      - CVD, AD Tariffs/ Safeguard measures
  - **(NEW) Rigorous / flexible enforcement of the Security Exemption**
    - Targeting Economic Coercion
    - **Urgent: Separation of Securities and Trade and Investment**
- CPTPP : A testing ground for the new consolidated set of the rules

2024/9/15

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**THANK YOU**

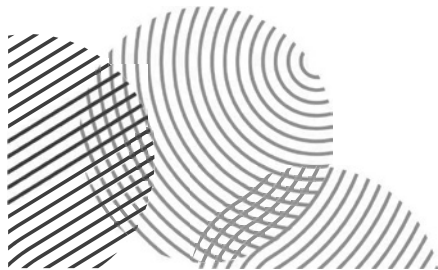
2024/9/15

Industrial policies and International Rules ,  
Watanabe

⑦ Clara Brandi Head of Program, Transformation of Economic and Social Systems, IDOS  
 German Institute of Development and Sustainability



**Trade & Investment and Green Transformation**  
 15th Japan-Europe Forum, Wuppertal Institute



Prof. Dr. Clara Brandi  
 16.9.2024

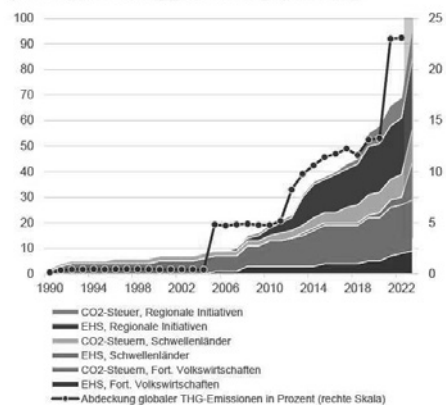


**1. CO2-Pricing: Progress and Obstacles**



- No global CO2-pricing **but** many initiatives at *regional, national and sub-national level*
- Since 1990: *almost 70 CO2-pricing initiatives* by around 47 countries worldwide
- **However:** the measures are far from sufficient

Anzahl implementierter CO<sub>2</sub>-Preissysteme nach Instrument und Ländergruppe (linke Skala) und Abdeckung globaler Emissionen (rechte Skala).



Anmerkung: Hellblauer Bereich stellt künftig geplante oder diskutierte Initiativen dar. Wert für Abdeckung globaler Emissionen für 2022 ist vorläufig.  
 EHS: Emissionshandelssystem.

Quelle: World Bank Carbon Pricing Dashboard, KfW Research

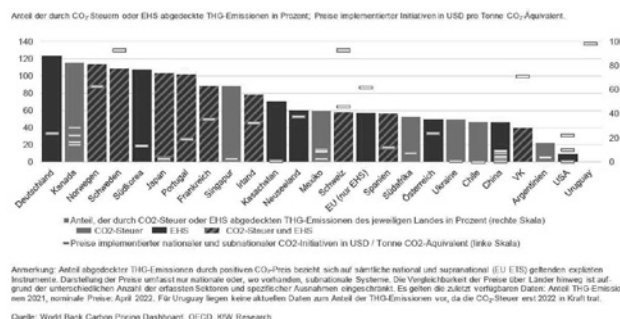
## i) Distributional Effects of CO<sub>2</sub>-Pricing

- Main Goal of **Just Transitions**: a socially just and acceptable transition to a climate-neutral global economy
- CO<sub>2</sub>-pricing initially has a regressive effect
  - Hypothetical CO<sub>2</sub>-price of 50 USD per ton without redistribution of revenues could increase extreme poverty worldwide (Malerba et al. 2022)
- *But*: Empirical studies show the potential of *revenue recycling* (Malerba et al. 2022)
- Redistribution of revenues from such a tax could:
  - Reduce poverty by 16%-27% (110-190 million people)
  - Reduce inequality (average Gini coefficient would decrease by 4%-8%)
  - **Conclusion**: policy design of the CO<sub>2</sub>-pricing matters (and complementary measures)

## ii) Question of Competitiveness

- Introduction of a CO<sub>2</sub>-price negatively affect the competitiveness of the domestic economy
- Carbon Leakage

### International "patchwork" of climate policy approaches



## ii) Question of Competitiveness

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### *Possible solutions:*

- a) global CO<sub>2</sub>-price – not politically feasible
- b) “*Climate Clubs*” (discussions e.g. at G7; research has shown numerous environmental agreements with trade clauses generate club goods for their members; therefore *de facto* environmental clubs, see also Morin, Brandi, Schwab, 2023)
- c) border carbon adjustment, e.g. EU Carbon Border Adjustment Mechanism (CBAM) launched in 2023 (but is also currently being discussed or prepared in other regional contexts)

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## 2. CBAM from a Global Perspective

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- CBAM is primarily intended to promote an ambitious climate policy of the EU without energy-intensive sectors shifting their emissions abroad (*carbon leakage*)
- However, the design of the EU CBAM has disadvantages, not only at the expense of climate policy effectiveness, but also at the expense of a development policy perspective (not well compatible with the concept of Just Transition)
  - For many developing countries, additional export costs are expected as a result of the CBAM; this challenge could be addressed if the revenues of the CBAM were invested in decarbonization in other countries outside the EU (but this is not the case)
- *Important in future discussions:* Border compensation mechanisms should be designed in such a way that they are effective in terms of climate policy and sufficiently take low-income countries into account

### 3. Approaches beyond CO2-Pricing : Green Industrial Policy



- The current trend is also in the direction of industrial policy support for climate-relevant innovations, in particular "green" subsidies
- *Main challenges:*
  - Subsidization has disadvantages, e.g. is less efficient than CO2-pricing
  - The international "*subsidy race*" has challenging implications, especially for low-income countries
    - One of the main reasons: they cannot afford subsidies, and then are left behind in the race for innovative technologies in the sense of climate neutrality (not well compatible with the concept of Just Transition)

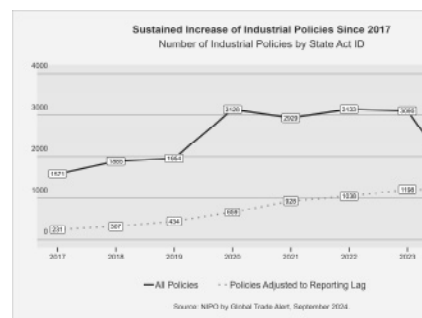
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### Renewed Interest in Industrial Policy



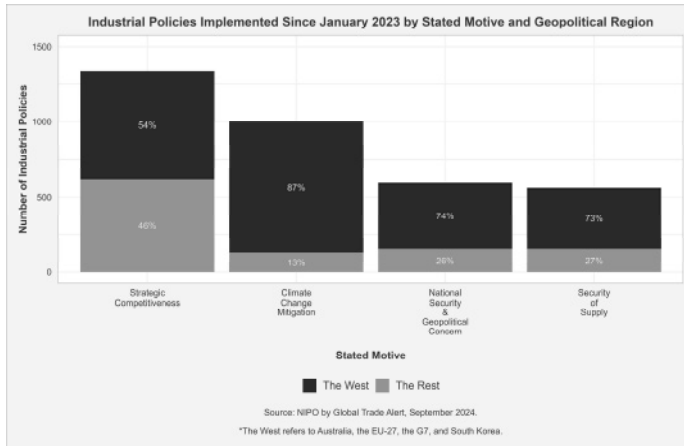
*Industrial policy (IP)* continues to gain momentum - a **historic high** is expected during 2024

- IP is not new but used to achieve **public policy goals**, e.g. low carbon transition
- some **Advanced Economies** which had eschewed IP in the past now embrace it





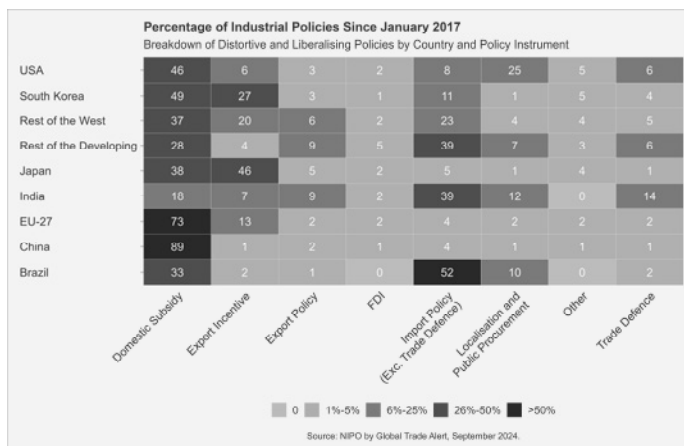
## Competitiveness is the Most Frequent Stated Motive



- **Climate change-related (87%) and national security & geopolitical concerns (74%) motives are found most often in the West**

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## Distinct Regional Variations are Evident in Selection of Policy Instruments



- **Deep pockets likely matter:** high per-capita income economies (e.g. EU) lean heavily on corporate subsidies, while developing countries rely more on import barriers.
- The USA relies more on **localisation and public procurement** measures
- Most of the Japanese industrial policy relates to **export incentives** or financial help of firms abroad

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## 4. Climate Policy in the context of Trade Policy



*Why is it important to study the links between international trade and environmental policy?*

- Trade as part of the problem (transport, etc.). *But:* to what extent can trade also be part of the solution and contribute to environmental protection?
  - Negative relationship: conflict of interest; e.g. more emissions due to more production and transport (e.g. Daly, 1993; Esty, 1994; Conca, 2000)
  - *Positive relationship:* synergies; e.g. faster transition to environmentally friendly technologies; higher demand for environmental protection (e.g. Bhagwati, 1993; Gamso, 2017)



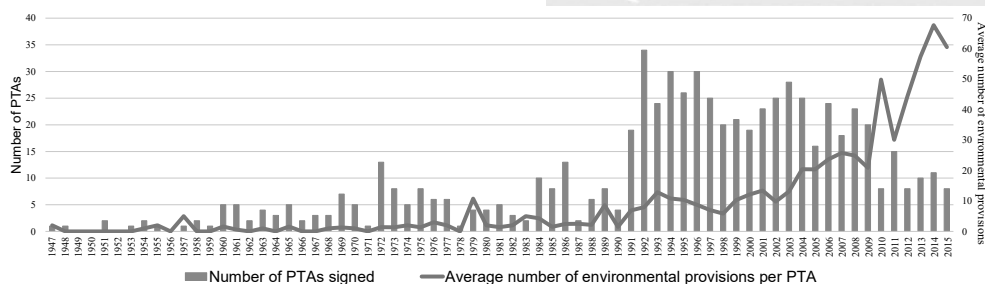
11

## Trade and Environment Database (TREND)



- 700 preferential trade agreements (PTAs)
- include 300 types of environmental provisions, many of them are relevant for climate protection

See [www.TRENDanalytics.info](http://www.TRENDanalytics.info)



2

## Environmental clauses in Trade Agreements: Effects



### Environmental effects:

- positive relationship between environmental clauses and environmental legislation (Brandi et al., 2019) and environmental quality (Bastiaens & Postnikov, 2017; Martínez-Zarzoso & Oueslati 2018; Zhou et al. 2017)
- e.g. environmental clauses are accompanied by a reduction in greenhouse gases, so they can promote climate protection (Brandi & Morin, 2023; Brandi & Schwab, 2023)



### Trade effects:

- Potential for win-win effects: e.g. certain environmental clauses reduce environmentally harmful exports between partner countries and increase the exports of environmental goods (Brandi et al. 2020)

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## Practical Relevance for Trade and Climate Interactions



- Many of the climate provisions in trade agreements remain vague, weak and not very innovative; they should be specified and strengthened
- Some examples of practical relevance for trade and climate interactions:
  - Recently concluded Agreement on Climate Change, Trade and Sustainable Development (ACCTS) between some countries (incl. New Zealand, Costa Rica)
  - New discussions on trade and the environment in the World Trade Organization (WTO), incl. climate protection
  - At COP28: “Trade Day”, to discuss the interaction of trade and climate and to promote exchange between climate and trade experts



**United Nations**  
Framework Convention on  
Climate Change



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## 5. Conclusions and Outlook



- Measures for decarbonisation from an international perspective are far from sufficient
- Policy measures should be designed in the sense of Just Transition; but this is challenging and is not happening to a sufficient extent at the moment (e.g. CBAM, subsidy race, etc.)
- Trade policy can also make an important contribution to climate protection; potential should be better exploited
- Overall: more global cooperation needed, which is difficult in the current geopolitical context
- But: climate policy one of the few policy areas in which international cooperation is currently progressing (although very slowly) and is possible at all



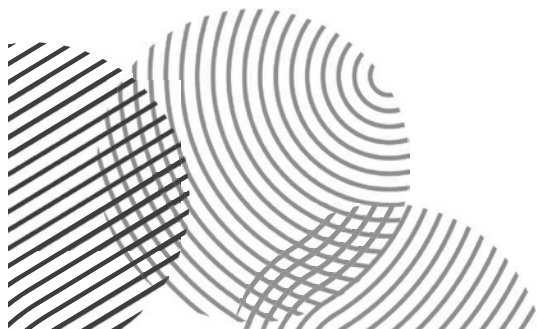
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## Thank you!

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## References



Altenburg, Berger, Brandi, (2023): Der internationale Subventionswettbewerb um grüne Technologien

Brandi (2021): Prioritäten für eine entwicklungsfreundliche Ausgestaltung des CO<sub>2</sub>-Grenzausgleichsmechanismus der EU

Brandi et al. (2023): Trade and climate change: how to design better climate-related provisions in preferential trade agreements

Malerba et al. (2022): The Impact of Carbon Taxation and Revenue Redistribution on Poverty and Inequality

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## The race for innovation in high-tech involves local support and export bans



**Export Curbs in Force on 29 August 2024**  
Advanced Technology Products & IT and Digital Services



Source: NIPO by Global Trade Alert, September 2024.

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## 7. 成果

昨年、一昨年に開催した日欧フォーラムを振り返っても、2024年の世界情勢は更に混沌としたものになったことが分かる。予想どおり、解決しなかったウクライナ戦争は益々混迷を深め、米国大統領選の結果と共に先が見通せなくなった。その大統領選も、米国内だけではなく、世界を分断の危険に晒している。そこに加えて昨秋に発生した中東における衝突、世界の右傾化とリーダーや政党の交代も目立って来た。

我々が直面する課題を幅広く捉えすぎると焦点がブレるため、似た境遇面も多い日欧で共通するトピックに絞り、今年度は議論を行うことになった。とは言え、喫緊の課題は相互に影響し合っている。今回は、気候変動と温暖化が与える経済への影響と、それを取り巻く社会・政治環境について状況を整理し、日欧(特にドイツ)の考えを確認することにフォーカスした。今後も引き続きこの会議成果を広め、産官学界の指針を策定する際に役立てていただくことを期待したい。

ラウンドテーブル形式で開催したためオーディエンスはおらず、参加者のみの会議となったが、その8割以上が満足したとの結果となった。また、クオリティーについても全員が期待通り高い、もしくは期待以上だったとのアンケート結果だった。トピックはタイムリーであり、特にエネルギー安全保障と環境に関する地政学的展開のインパクトについて議論したセッションの評価が高かった。

意図したとおり、参加者所属先のミックスは大いに議論を盛り上げた。関係者には、その結果を各方面に発信していただきたい。JEFでは報告書の作成と送付、JEFウェブページへの掲載、議論の要旨と結果の方向性を産業界・政策決定者に説明していく。

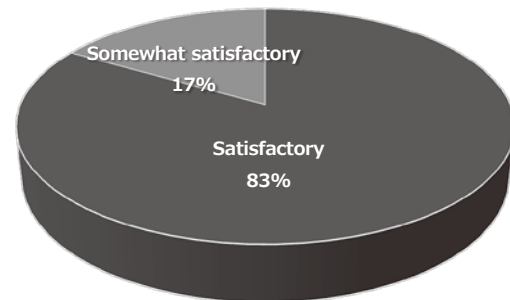
これからも、世界各地域においてビジネスを実際に行う産業界の意見を伺い、学界での研究や政界にも反映できるような取り組みを進めていく所存である。

## 8. アンケート集計報告

フォーラム参加者 30 名にアンケートを実施（回答者数 12 名）

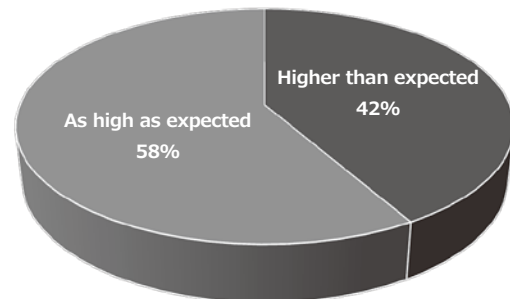
### 1. Overall Evaluation of the Forum

Evaluation	%
Satisfactory	83
Somewhat satisfactory	17
Somewhat unsatisfactory	0
Unsatisfactory	0



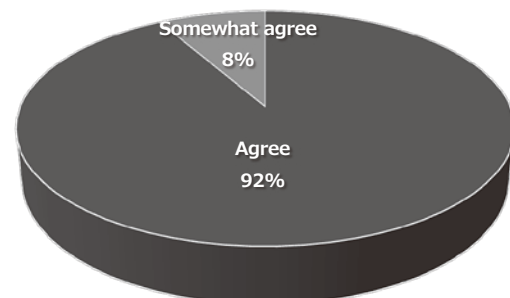
### 2. Evaluation of the Quality of the Forum as compared with your expectation

Evaluation	%
Higher than expected	42
As high as expected	58
As low as expected	0
lower than expected	0



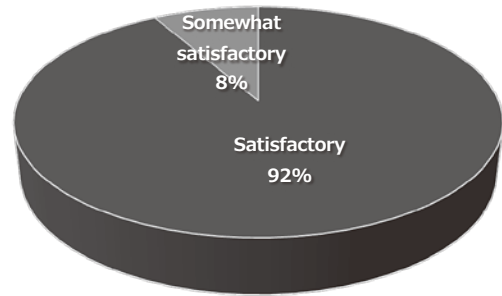
### 3. Were the topics timely and relevant to the issues of the day?

Evaluation	%
Agree	92
Somewhat agree	8
Somewhat disagree	0
Disagree	0



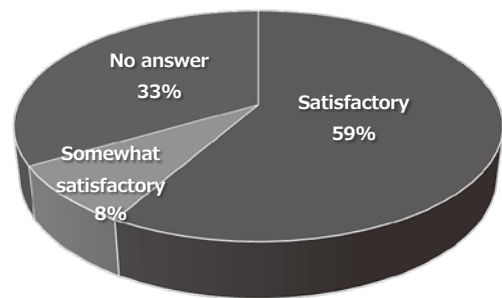
4. Session by Session Evaluation Part1

Evaluation	%
Satisfactory	92
Somewhat satisfactory	8
Somewhat unsatisfactory	0
Unsatisfactory	0
No answer	0



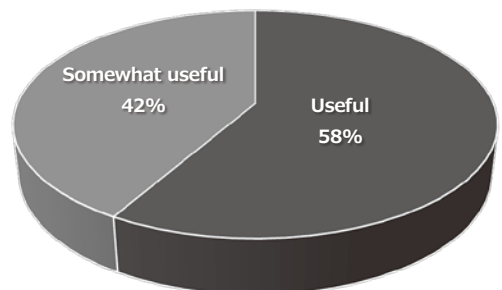
4. Session by Session Evaluation Part2

Evaluation	%
Satisfactory	59
Somewhat satisfactory	8
Somewhat unsatisfactory	0
Unsatisfactory	0
No answer	33



5. Were today's discussions useful for your work/research?

Evaluation	%
Useful	58
Somewhat useful	42
Somewhat useless	0
Useless	0





6. Any other comments/suggestions are appreciated.

- Discussion themes are very interesting but broad.

Probably I would like to listen to more focused presentations on either theme (morning or afternoon).

Many presenters could provide more detailed presentations with figures.

It would have been nice to have such presentations and based on them have debated.

-The conference was very useful since I found many common ground between Japan and Germany.

In this regard, to my particular interest, it will be even more helpful if we had

Germany industry people and had their insights.

- 継続的なコミュニケーションが大変重要と思います

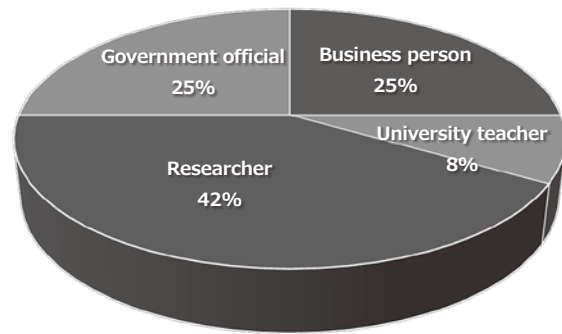
-日欧フォーラムでは、日本と欧州だけでは世界が動かないとの現実認識を持って、特に、いかに米国を動かしていくのかに関する戦略は現実的議論をもっと行わないといけないと思う。

-Some of the presentations were very good, and I encourage you please to ensure the materials are shared with all attendees. I would encourage to widen the participation not just to academics, and some business to include other key thinkers and thought leaders, including more think tank representatives and possibly government officials too.

The quality of the academic presentations was mixed never, and this could help you even out the quality today.

You are:

Affiliation	%
Business person	25
University teacher	8
Researcher	42
Student	0
Media	0
Government official	25
Others	0



## 9. 共催団体紹介

### Japan Economic Foundation (JEF)



The Japan Economic Foundation (JEF) was established in July 1981 to deepen understanding between Japan and other countries through activities aimed at promoting economic and technological exchange.

With this goal in mind, JEF engages in a broad range of activities; it provides information about Japan and arranges venues for the exchange of ideas among opinion leaders from many countries in such fields as industry, government, academia and politics in order to build bridges for international communication and to break down the barriers that make mutual understanding difficult.

URL: <https://www.jef.or.jp>

### The Wuppertal Institute



The Wuppertal Institute is a leading think tank for sustainability and transformation research focused on impact and practical application. The organisation's activities are

centred on developing transformation processes aimed at shaping a climate-friendly and resource-efficient world.

The overriding goal of the Institute's work is to help to respect the planetary boundaries. This is represented in the guiding vision of a "climate-neutral and resource light society" by 2050.

URL <https://wupperinst.org/en/>

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