Dominant Narratives and Manufactured Consensus:

A Critical Analysis of Japan's Climate Transition Policy Process and Governance

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Abstract

Japan's climate change policy has historically lagged in ambition, only recently aligning with global climate goals. This shift became evident in October 2020 when Prime Minister Suga announced Japan's commitment to a decarbonized society by 2050. Despite this, the Ministry of Economy, Trade and Industry (METI) maintains a technocratic approach, focusing on technical changes within the manufacturing and energy sectors, often barring broader stakeholder engagement. This dissertation critically examines the dominance of METI in shaping Japan's decarbonization strategies, hypothesising that its centralized and top-down governance hinders the emergence of innovative policy pathways. The research investigates the characteristics of the Japanese climate policy framework, METI's role in sustaining dominant decarbonization narratives, and the suppression of policy contestations. Through an in-depth literature review and semi-structured interviews, the study reveals that METI's governance creates an exclusionary policy-making environment where consensus is manufactured among a handful of stakeholders. The dominant narrative surrounding climate policy emphasises the 'inherent limitations' of tackling climate change, justifying lower emission reduction targets and continued use of coal. This policy environment limits transparency and the involvement of civic NGOs, local governments, and climate-conscious businesses, reinforcing a techno-managerial narrative that marginalizes alternative perspectives. The thesis argues for a more inclusive and holistic approach to climate governance that embraces social, political, and ecological dimensions. The findings suggest that the current policy framework is inadequately equipped to meet the complex challenges of climate transition.

List of Abbreviations

ANRE	Agency for Natural Resources and Energy		
CCUS	Carbon Capture, Use and Storage		
COP	Conference of the Parties		
CO2	carbon-dioxide		
DPJ	Democratic Party of Japan		
ETS	Emission Trading Scheme		
EU	European Union		
FEPC	Federation of Electric Power Companies of Japan		
G7	Group of Seven		
GHG	greenhouse gas emission		
GX	Green Transformation		
IEA	International Energy Agency		
JCI	Japan Climate Initiative		
JCLP	Japan Climate Leaders' Partnership		
LDP	Liberal Democratic Party		
MAFF	Ministry of Agriculture, Forestry and Fisheries		
METI	Ministry of Economy, Trade and Industry		
MITI	Ministry of International Trade and Industry		
MLIT	Ministry of Land, Infrastructure, Transport and Tourism		
MOE	Ministry of the Environment		
MOF	Ministry of Finance		
MOFA	Ministry of Foreign Affairs		
NGO	non-governmental organisation		
R&D	research and development		
Solar PV	solar photovoltaic		
TMG	Tokyo Metropolitan Government		

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1. Introduction

Japan has been reluctant to set ambitious CO2 emission reduction targets until recently. In preparation for the Paris Agreement in 2015, the Japanese government proposed an emission cut from the 2013 level of 26% by 2030, and 80% by 2050, raising serious questions about contributions to global climate change mitigation as a highly industrialised country (Oshiro et al., 2017). However, the Japanese government made a pivotal turn in its climate change policy in October 2020, when Prime Minister Suga declared that Japan will aim to realize a decarbonized society by 2050. Within a short span of four months, the number of local governments that announced their commitment to net-zero carbon emission by 2050 rose to 206, representing roughly 90 million people, or 72% of the country's population (MOE, 2021). Yet, the climate change policy represented by the Ministry of Economy, Trade and Industry (METI) seems to focus narrowly on technical changes in manufacturing and energy industry involving only a handful of stakeholders. Moreover, the one-trillion USD investments under the Green Transformation (GX) policy for the decarbonisation of Japanese economy appear to be misaligned with the Paris Agreement's 1.5 degrees target. Generally, there is a lack of recognition that the global climate change is not merely a geo-physical phenomenon, but entails social, environmental, and political dimensions. The Anthropocene, the age in which every human activity has a consequence on the natural order, demands a deeper reflection on the causes of environmental and socio-economic crises, and more fundamental changes to the ways of life in the 21st century. Hence, climate change policy should embrace the complexity and severity of the problem and strive to provide solutions in the spirit of democratic participation and equity.

This thesis critically engages with the dominant narratives of Japanese climate policy and uncovers the effects of METI's central position on the national decarbonisation plan, and its role on fostering

partnership and creating contestations among different actors. This thesis hypothesises that a highly technocratic and bureaucratic administration of national climate policy, as well as its centralised, top-down approach hinders opportunities for new ideas and policy pathways to emerge. METI's vast resources and close relations to the Japanese industry create a narrow focus on how climate policy is conceptualised and governed, leading to a self-reinforcing closed loop in which consensus is manufactured. Especially, there seems to be a gap between progressive initiatives of local municipalities, NGO groups, new climate conscious business associations and the national government, but also between METI and other ministries. By critically engaging with the dominant narratives created through the policy making process under METI, and the ways in which consensus is manufactured among a few stakeholders, this dissertation evaluates whether the current Japanese climate governance framework is fit for the challenges of the 21st century.

To evaluate the effects of METI's central position on the national decarbonisation plan, and unravel the ways in which METI creates and deploys a dominant narrative on decarbonisation, this dissertation asks the following research questions:

- What are the characteristics of the Japanese climate policy framework (in terms of process and substance)?
- What is the role of METI in orchestrating Japanese climate policy, how does it create and sustain dominant narratives on decarbonisation?

How does the process of policy making repress contestations and manufacture consensus?
 Through an in-depth literature review and semi-structured interviews with representatives from METI, ANRE, think tanks, academics, an industry association and a local municipality, this thesis argues that METI operates a closed policy making process with the participation of selected

members who do not have the power or the incentive to contest its policy directions. Under METI's governance, climate policy is strategically blended into energy policy, which in turn is conceptualised as a technological and infrastructural challenge. Energy policy is envisioned as part of a wider industry policy, where METI's historically deep ties with industrial associations and manufacturing companies have strong influence. The METI-industry constellation creates and reinforces the narrative of techno-managerialism through its policy committees, which legitimise its national plans despite representing only a fraction of stakeholders. The structural deficiencies for enabling transparency in policy making, as well as the lack of involvement of civic NGOs, local municipalities or climate conscious business restrain the emergence of contestations, manufacturing a consensus that supports the dominant narrative. Interviews with government officials, think tanks, academics, an industry association and a local municipality have added depths to the analysis.

This thesis is structured as follows: first a thorough literature review will assess international literature on the challenges of climate policy, as well as a tendency to depoliticize climate governance. The specificities of Japanese bureaucratic governance structure and METI's historical role in Japanese industry policy are showcased, including the deep rooted 'vested interests' that METI has created and maintained. A historical overview of Japanese climate policy indicates attempts at using climate change as a cause for greater leadership on the international stage and catalysing some legislative changes. A short period of ambitious climate leadership in domestic politics was swept away with the triple disaster in 2011, leading to a delay in preparations for decarbonisation and instead producing a strong push to prioritize security of energy supply over climate concerns. Second, the thesis shows that the announcement of the carbon neutrality goal in

2020 has nudged the country into aligning itself with international climate goals, however, the national roadmap for decarbonisation raises serious questions about feasibility and commitment to climate transition. Finally, an in-depth discourse and thematic analysis of interviews reveals the system in which dominant narratives are created and consensus about climate policy is manufactured among a handful of stakeholders. The thesis argues that decarbonisation and climate change mitigation/adaptation require not only technical fixes, but a wider transition incorporating social, political and ecological aspects, for which the current Japanese climate policy and governance is inadequately prepared.

2. Literature Review

2.1 Complexity and Consensus in Climate Policy

Climate change is often referred to as a "wicked problem" that challenges entrenched power structures in all countries. Some conceptualise climate change as a complex governance problem with intricate interdependencies, uncertainties, and stakeholders with contesting values, which is difficult to grasp in its entirety, let alone find out their solution (Lazarus, 2009; Ohta, 2020). Furthermore, climate change has features that make it more "wicked" than other social problems. The longer it takes to address the climate change problem, the harder it will be in the future; hence, inaction can result in catastrophic harms to human communities and ecosystems. Climate change results from individual and collective activities at multiple scales, erasing the discrete antagonists and protagonists divide. Those who are best positioned to address the problem are not only the ones that contributed the most to exacerbate it, but also have the least immediate incentive to act on it. Moreover, there is no clear division of responsibilities and no centralised governance structure among the international community with a jurisdictional reach that matches the scope of the problem. Decision makers in national governments, on the other hand, usually lack control or incentives to anticipate long-term changes (Levin et al., 2012).

The scientific evidence of climate change has been steadily growing since the publication of the first report by the Intergovernmental Panel on Climate Change (IPCC) in 1990, and the Assessment Report 6 in 2023 stated that human activities "unequivocally caused" global warming (IPCC, 2023). Moreover, there is growing recognition that radical societal changes are needed to achieve deep decarbonisation and climate transition for avoiding the looming existential threat (Thomas et

al., 2004; Weber, 2015). Some argue that what effective climate action is lacking is not scientific understanding or the unavailability of technological solutions, but "*political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies*" (IPCC, 2023; Jordan et al., 2022). Boasson and Tatham (2023) argue that complex, polycentric governance systems facilitate climate transition the best, and complexity should be embraced in governance structures as well as the policy mixes they produce. They argue that "*complexity underpins consensus-building, and hence the necessary public support for a long-term and enduring transition*" (Boasson & Tatham, 2023).

Boasson and Tatham (2023:405-409) distinguish three models for describing climate governance. The 'market failure model' perceives climate change as market failure to which corrective measures are arranged. In this model, economic incentives and market-based mechanisms such as global carbon pricing with international emission reduction commitments are perceived as the prime driver of mitigation (Nordhaus, 1991). The 'socio-technological transition model' highlights the interrelationship between business and the state, as well as the role of industrial change and innovations for mitigation. This model sees changes in infrastructure, industrial practices and technology as a driver of the mitigation effort, and advocates for a wider socio-technological system reform (Geels et al., 2017). The role of government is to adopt sector specific changes and establish support schemes for technology and innovation. The socio-technical transition model posits that as more and more targeted policies are employed among different sectors, complexity increases, and climate governance advances through negotiations between governmental and corporate actors. Finally, the '*public support model*' puts democratic processes at the core of the decarbonisation challenge and emphasises the creation and acceleration of civic

support for climate actions. Democratic legitimacy can be secured through public support, increasing the efficiency of complex climate policy and regulations by developing political consensus over climate governance. Based on this model, politicians and political parties in representative democracies take leadership roles for adopting climate policies, reflecting the voices of civic actors and changes in public sentiment (Oberthür & Von Homeyer, 2023).

A growing amount of literature, especially from Science and Technology studies (STS) and political geography discusses the importance of paying attention to the ways in which ideas, power, and resources are conceptualised, negotiated and implemented by different actors on different scales in climate change governance (Tanner & Allouche, 2011). Narratives of apolitical, technomanagerial solutions to the climate change problem work to ignore the unequally distributed vulnerabilities and risks, transfer authority to the perceived expertise of government bureaucracies, and de-politicise the environment (O'Lear, 2016; Swyngedouw, 2015). As scholars of STS have shown, focusing on the conditions under which the production, distribution and utilisation of knowledge occurs can help deconstruct a seemingly politically neutral response to bio-physical changes (Beck et al., 2021; Goldman et al., 2018). Focusing too narrowly on policy-making and planning as a response to climate change risks characterising the decision-making process related to adoption and mitigation as exclusively technical or managerial, restricted by economic and technical capacities (Eriksen et al., 2015; Sovacool et al., 2020).

Climate governance in Japan seems to lack public involvement or wide civic support and can be best described with the mixture of 'market failure model' and 'socio-technological transition model'. Following World War II, Japan was set up to have a weak government to prevent a return

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to authoritarianism. Instead, a strong, centralised bureaucracy was set up to run the country. As such, strong political leadership is uncommon in any matter, and the Japanese political system has been coined "democracy without competition" (Scheiner, 2005). Climate governance is one of many issues that are dealt with by the government ministries, and its problematisation occurred far from the public eye. Moreover, the strong bureaucratic control over climate governance seemingly acts to depoliticise and disengage citizens, creating a techno-managerial policy-making complex in which ideas and narratives are difficult to challenge, leaving little space for transformative changes. The Ministry of Economy, Trade and Industry (METI) is undoubtedly the most influential in the Japanese bureaucracy, overseeing issues from international trade to energy policy and industry policy. The exceptionally strong bureaucracy of METI is also highly politicised and maintains close ties with businesses (E. Moe, 2011). STS literature that analyses the interaction of science and policy making in Japan is scarce, perhaps partially because of the opaque system of deliberative policy councils functioning under government ministries. Policies are made in councils where stakeholders are pre-selected and invited by the ministries, pre-empting contestations that could challenge the status quo.

2.2 Bureaucracy and Industrial policy in Japan

To understand the seemingly unchallenged position of METI at the centre of Japanese climate transition policy, this section dives into the history of Japanese bureaucracy in the post-war era. The industrial policies that METI orchestrated created strong ties between the ministry and key industrial sectors, functioning as a bargaining channel for adopting laws and regulations that support the further growth of the economy. This relationship still flourishes, especially with heavy industries and energy utility companies, creating a 'vested interest' that obscures and rejects structural changes. The consensus that promoted the Japanese economy in the 20th century have since eroded, but the 'iron triangle' between METI, industry and the ruling political party excludes critical actors and voices for more radical climate policy to emerge. To better understand how the contemporary narratives on climate change policy fail to accelerate decarbonisation in Japan, we need to dive into the historical background of Japanese policy making and bureaucracy.

2.2.1. Bureaucracy and Plan-rational system

Between 1946 and 1976, the Japanese economy expanded 55-fold. The speed, form, and consequences of the 'Japanese Miracle' of economic growth in the post-World War II era inspired many academics to research the unique characteristics and efficiency of the Japanese economic bureaucracy. Particularly, the Ministry of International Trade and Industry (MITI) played a crucial role as the leading state actor in the economy, bringing forward collaborations between the state and big businesses (Johnson, 1982). Johnson argues that the development of Japan in the latter part of twentieth century differs from the Western market economies or socialist developmental states, as "*in Japan, the state's role in the economy is shared with the private sector, and both the*

public and private sectors have perfected means to make the market work for developmental goals." (Johnson, 1982: viii).

An important feature of the MITI-led industry policy is an agreement among the government, its ministries, the ruling political party, industry leaders, and the business community; a general and shared consensus of economic primacy that guides a wide array of stakeholders. The consensus is reinforced under what Dahrendorf calls the "plan rationality" (Dahrendorf, 1968, Chapter 8). Whilst a market rational regulatory state concerns itself with the form and rules of economic competition, a plan rational state focuses on delivering development by setting substantive social and economic goals, and creating agreements, or in another word, consensus, on why and how to do so (Johnson, 1982:19). In Johnson's description of Japan as a plan rational state, he argues that the government gives great concern to the structure of domestic industry that enhances international competitiveness. In essence, it is a strategic, goal-oriented approach to the economy that contrasts to a market rational approach (such as the United States in the post-war era) which subordinates industry and trade policy to rules and procedures that ensure economic competition. In Japan, a powerful and talented pool of bureaucrats supported the developmental and strategic quality of economic policy in the post-war era. For Japan to achieve a higher level of industrialisation and regain international competitiveness, the state produced economic bureaucrats to the ministries of Finance, International Trade and Industry or Economic Planning Agency, which made major decisions, drafted virtually all legislation, controlled the national budget and acted as the source of all major policy innovations in the system (Johnson, 1982:21).

Olsen argues that the effectiveness of bureaucracy can be judged by looking into the quality of 'end product', that is, whether the produced rules and procedures create the desired effect (Olsen, 2006). Carefully considered rules increase action capabilities and efficiency by making it possible

to coordinate simultaneous activities and reducing uncertainty. Effective rules can enforce agreements, and enforcing these rules helps avoid conflicts between actors. The effectiveness of rulemaking in a bureaucratic structure also depends on the existence of a widely agreed upon set of overarching goals for society. When consensus exists in a plan-rational system, such as in Japan's high-growth era, state resources can be directed to catalyse industries and achieve desired economic and social goals (Johnson, 1982:22). However, when there is confusion or conflict over the goals in a plan rational economy, and there is no strong consensus, the system becomes incapable to perceive basic problems and unable to attribute responsibility for failures. For instance, a plan-rational system encounters challenges when recognising and readjusting its focus to address external impacts beyond the scope of its national objectives. This was also the case in the industrial pollution caused by the lack of regulation of the heavy industry sector in the 1950s and 60s. Long after evidence of very serious environmental damage was made public, the Japanese ministries were unable to recognise and readjust their focus to address the impacts of rapid industrialisation (George, 2002). It took well over a decade for the government to acknowledge the causes of Minamata disease in the late-1960s after the detection of first cases in the 1950s. However, once the plan-rational system finally shifted its focus to give priority to industrial pollution, it created effective centralised rules for stricter environmental regulations for industrial activities. The Water Pollution Control Law was passed in 1970, mandating the regulation of treated wastewater discharge across all water bodies in Japan, particularly concerning toxic substances (MOE, 2002). The process of policy change also manifests differently in plan-rational and market rational systems according to Johnson (1982). Decision-making is centred around an elite bureaucracy in plan-rationality, and change will be marked by internal bureaucratic disputes, factional infightings, and conflicts among ministries. In a market-rational system, changes are marked by parliamentary

contests over new legislation or by election battles. Japan notably lacks political contests between parties or changes in political systems. Hence, the lack of political contestations hinders the representation of pressing issues among the public. The continuity of the rule of Liberal Democratic Party from 1955 to present days (except from short-lived opposition governments between 1993 to 1994 and 2009 to 2012) also signals that it is the institutionalised policy making system dominates over an active parliamentary legislative process.

2.2.2. Industrial Policy

"In Japan's industrial policies, the visions are considered as the base for policy measures."

Keiichi Konaga, Director-General of the Industrial Policy Bureau, Ministry of International Trade and Industry

One of the main features of Japanese plan-rational system and a demonstration of industrygovernment consensus was the industrial policy led by MITI. It is also the historic root of an insurmountable relationship between industrial associations and present-day METI (Akkemik, 2015). MITI has actively and consciously created close ties with domestic industry, and entrusted industry policy with a vision to restructure Japanese society in the 20th century. Industrial policy in Japan refers to "a complex of those policies concerning protection of domestic industries, development of strategic industries, and adjustment of the economic structure in response to or in anticipation of internal and external changes which are formulated and pursued by MITI in the cause of the national interest" (Ozaki, 1970:879). Or to put it more simply, industry policy is any policy that "attempts to achieve the economic and noneconomic goals of a country by intervening in resource allocation across industries or sectors" (Ito et al., 1991). Moreover, according to Okuno-Fujiwara, industrial policy holds significance due to its function in aligning the planning and managerial decisions of individual firms, as well as facilitating the dissemination of information (Okuno-Fujiwara, 1991). The industrial policy, or sangyo seisaku, is not a clear set or directives or rules, but rather an idea, a vision of government for the economy as the Director-General of the Industrial Policy Bureau of MITI phrased it in 1983. Konaga emphasised that "there are various kinds of visions: some cover overall industrial structure, others relate to certain segments of industrial structure or specific problems such as energy and industrial adjustment" (Konaga, 1983:21). As such, the means for promoting these visions also changed with industrial development. Policies were made to directly regulate government involvement through licensing or granting the authority to allocate foreign exchange (Okuno-Fujiwara, 1991). From the 1970s onwards, however, MITI's industrial policies were focused more on correcting market failures, promoting private research and development, and assisting in the structural adjustment of the economies, through 'soft measures' such as legal and regulative assistance or promoting industrial and research associations for facilitating information flow (Okuno-Fujiwara, 1991). MITI's industrial policy and the deliberate creation of powerful interests in the economy might also reflect a conviction that market forces alone do not produce the desired shifts to achieve the 'vision' set forward by the ministry (Johnson, 1982).

2.2.3. The 'Burst of Bubble' and METI

The economic slowdown in the 1990s, intensification of globalisation, maturation of domestic industries and acceleration of the rate of technological change has led to a government reorganisation, and as a part of this, MITI was renamed to METI (Ministry of Economy, Trade and Industry) in 2001. One pivotal and enduring element of METI's policy was the emphasis on national strategy and the need to improve international competitiveness in response to the collapse of the 'bubble economy'. METI's microeconomic policies targeted at the allocation of resources branched out into new directions, shifting its focus on economy-wide reforms in many areas

outside its jurisdiction that required greater efforts to collaborate with other ministries. These broader strategies encompassed the promotion and dissemination of information technology, fostering the growth of environmentally friendly products and manufacturing methods, and instituting measures to support new businesses (Elder, 2003).

There are three major characteristics to METI's policy orientation in the late 1990s and early 2000s according to Elder (2003). Initially, METI prioritized comprehensive reforms across the economy instead of the conventional approach of targeting specific sectors such as steel or supercomputers. METI aimed to foster innovation and new technology by implementing measures such as ecommerce standards and regulations, updating the Commercial Code, restructuring the tax system, supporting research and development, and enhancing access to financing for emerging businesses. The second characteristic of METI's new policy orientation revolved around the promotion of emerging industries and enterprises. Past policies, which centred on protecting infant industries, directing capital allocation, regulating market entry through licensing, and incentivising exports, became increasingly impractical due to trade liberalisation, deregulation, and the maturation of Japanese industry. In response, new policies adopted a more generalised approach, aligning with market principles compared to the early post-war period. They prioritised objectives such as advancing technology, enhancing human capital, bolstering information dissemination, reducing transaction costs, and addressing broader public goods and coordination challenges. Lastly, METI's policy orientation involved providing ongoing assistance to both growing and declining industries, aiming to enhance their international competitiveness and facilitating improvements within them. Many benefited from a privatised protection embedded in the distribution system, which was closely linked to lenient enforcement of antitrust laws, with minimal efforts made to address the issue of monopolies.

2.3. 'Vested interest' in Japanese policy making

However, the 'vision' of industry policy seems lost in contemporary circumstances. Despite efforts for comprehensive reform of the economy and allocation of resources to emerging economies, METI stays invested in maintaining the conventional, carbon intensive industry in Japan. Among other factors, the loss of institutional coherence, lack of governance coordination and inclusivity in the economy resulted in the 'lost decades', which further exacerbated resistance to structural changes that could bring new visions to the country (Lechevalier, 2024; Whittaker & Nakata, 2024).

The stable political climate characterised by the rule of LDP and the institutionalised policy making system in Japan embodies a certain duality. It produces strong industry-ministry relations. But it also serves to create strong, virtually impossible to eliminate vested interests. It is almost inevitable in any realm of public policy to have groups of individuals or stakeholders that reap benefits from what the established institutional mechanisms provide. It is argued that such vested interests can act as a powerful forces for stability, as they have strong incentives to protect the institutions and the status quo when faced with political change of threatening reforms (E. Moe, 2011; T. M. Moe, 2015). Vested interests are particularly prevalent in Japan, especially in the energy sector (Kingston, 2012). Bureaucratic policy making in Japan gravitates toward compromise rather than direct and public confrontation, which leads to the pursuit of solutions behind closed doors. This is a by-product of the structure of Japanese bureaucracy. The government is divided into ministries, and each ministry oversees a particular industry's development. Thereby, sector-specific interests often influence the decision-making processes within both the bureaucracy and the ruling party. This also acts to render industry interests more politically effective over consumer interests (Okuno-Fujiwara, 1991). Additionally, all such

ministries are shadowed by committees of the LDP's policy research division (Policy Affairs Research Council – PARC) covering different industries, such as transportation, manufacturing, telecommunication, agriculture, finance and so on (Okuno-Fujiwara, 1991). LDP representatives specialise in a particular policy arena and accumulate seniority alongside becoming entwined within webs of interconnected vested interests due to their long-term exposure to a particular policy realm. Leveraging experience, expertise, and networks within vested interests and pertinent bureaucratic agencies, PARC emerges as a key actor within the core of the Japanese policy making framework (Krauss & Pekkanen, 2011). Policy decisions are typically deliberated among the ruling party's experts and bureaucratic officials. Conflicts arising from industry-specific interests are often resolved through closed negotiations involving ministries and legislators from PARC committees. This negotiation process fosters cooperation among industry representatives to pursue mutually acceptable solutions and consensus (ibid). This tendency, combined with the absence of an open and transparent decision-making process, renders the policy-making process and its implications less clear and transparent.

2.3.1. Vested interest in Renewable Energy

Sector-specific interests also often influence the decision-making processes in policies related to climate change or renewable energy implementation. METI's effort in supporting emerging industry through allocation of resources and emphasis on research and development, as well as investment subsidies contributed to the solar photovoltaic (PV) market development in Japan in the 1990s and early 2000s (Kimura, 2009). The Japanese PV industry, with the collaboration of MITI, worked towards commercialising solar power generation, ensuring the reliable supply of grid-connected PV systems (Yu et al., 2016). Various policy measures, including simplified administrative processes, technical standards, net-metering systems, and investment subsidies for

residential PV systems, were implemented to promote grid-connected PV systems. Lobbying efforts from the PV industry influenced political support for these policy actions. The government spending for solar PV commercialisation from 1974 to 2002 reached 1.3 trillion yen, and Japan's global PV production share exceeded 40% by the year 2000 (Chowdhury et al., 2014; Kimura, 2009). However, after the termination of the subsidy program, Japan began to lose its advantage and its global cumulative installed PV share decreased to 7.3% in 2011 (ibid). There was a limit to renewables expansion due to the intricate web of vested interest among energy utility companies and METI (E. Moe, 2011). The ten regional utility companies had monopolies over electricity production, distribution and transmission until the electricity market liberalisation in 2016. The Federation of Electric Power Companies of Japan (FEPC) strongly lobbied against any liberalisation attempts required for greater expansion of renewable energy, and METI favoured the interest of FEPC. Instead, FEPC advocated for the expansion of nuclear and coal fired power plants that better fits the system of monopolies. Solar PV industry have partially consolidated its own position in the energy industry, largely benefitting from the introduction of Feed-in Tariff program in 2012 which rapidly increased the solar PV capacities in Japan (Wen et al., 2021). Other sources of renewable energy, especially wind, stood outside of the vested interest due to incompatibility with the utilities' monopoly system and have negligible share in the energy mix of Japan. The degree of structural changes required is far greater for wind than for solar, as wind power produced by independent power generators requires priority access to the grid, which essentially create competition against the utilities. As such, opposition from powerful actors in the energy industry, with the backing of METI, was able to obstruct structural economic changes at the expense of climate change mitigation.

2.4. Intra-ministerial Conflicts over Climate Change Policy

Japanese decision-making process is frequently depicted as a tripartite power elite model, characterized by three primary centres of influence: the central bureaucracy, the governing political party, and major business organizations. Together, they create an 'iron triangle,' operating through interconnected human networks and collaborating to marginalize other actors from political influence (Colignon & Usui, 2001). While the central bureaucracy undeniably holds considerable power in Japan, it is also fragmented into ministries and agencies with diverse interests (Pempel, 1992). The disagreements between ministries regarding climate change policy are particularly evident in the conflicts between the Ministry of Environment (MOE) and the METI (Kameyama, 2016). The interests of ministries often operate independently of each other. For instance, MOE seeks to advance the climate change agenda while aiming to expand its administrative authority over energy and fiscal policies, which fall under the jurisdiction of other ministries. Conversely, the METI prioritizes safeguarding and fostering activities related to Japanese industry and businesses, including the task of securing energy resources. The Ministry of Foreign Affairs (MOFA) is focused on enhancing the country's image and reputation in negotiations with foreign partners, with global decarbonization discussions serving as a crucial component of its soft power diplomacy. Meanwhile, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) shares responsibility with METI for establishing energy efficiency standards for buildings, homes, and vehicles, as well as reducing greenhouse gas emissions from air and marine transport. MLIT also must navigate the challenge of not overly burdening transportation industries with energy consumption reduction measures. Additionally, the Ministry of Finance (MOF) is concerned with increasing the annual budget, decreasing annual spending, and securing financial resources for the

costly socio-economic transition necessitated by climate change, all while contending with a worsening budget deficit (Kameyama, 2016:11).

2.5. A Historical Overview of Japanese Climate Policy

Japanese climate policy has also been long captured by the iron triangle of ministries, LDP and industry associations. Since the oil shocks in the 1970s, MITI and the Agency for Natural Resources and Energy (ANRE) have framed climate change as an energy issue, without meaningful interference from other ministries. The main concern of government ministries was to meet the growing demand for energy without impeding economic development, and energy policy goals have been set in cooperation with the industry (E. Moe, 2011). The resulting legislations were often lenient and based on voluntary participation, without coercive measures to limit industrial emissions. The emergence of climate change problem was a result of external pressures from international political processes in the 1990s and 2000s, as well as 'shocks' to the system from an environmental-technical disaster in 2011. Energy policy took priority over climate change policy, and without a meaningful political leadership on the international and domestic stage alike, Japan failed to follow the shifting paradigm on decarbonisation.

2.5.1. The emergence of the Climate Change Problem in Japan

Kameyama shows that the first gradual move towards environmentally sound policies by Japan was a result of a combination of two factors (Kameyama, 2016: 26-28). First, by the 1980s, Japan has become a major world economy, with a high standard of living, alongside an increased domestic consumption and polluting industrial activities both within its borders and abroad. Second, Japan as a major economic power was 'expected' by other countries to make an 'international contribution' to global causes. Political leaders perceived climate change as an ideal

agenda both domestically and diplomatically. Domestically, LDP politicians faced accusations of various scandals, leading to a loss of credibility among the public. Addressing global environmental challenges presented an opportunity to rehabilitate their tarnished reputation and regain political influence. Internationally, Japan had faced criticism for prioritizing economic issues over security concerns. Addressing global environmental challenges offered a platform for Japan to demonstrate its technological and financial prowess and make a substantial contribution to the international community. This approach was welcomed by the MOFA, which sought to pursue more proactive foreign policy initiatives. It also aligned with the Environmental Agency's objectives of finding new roles after successfully addressing local industrial pollution issues. For instance, the question of global environmental change was still in its infancy when Japan made a substantial financial contribution to establish the World Commission on Environment and Development (WCED) in 1984 under the United Nation's (UN) General Assembly. The final report published by the WECD in 1987, "Our Common Future", or also known as the Brundtland Report, has since become known as the first influential document that coined the term 'sustainable development' (WCED, 1987). Such international contributions were considered as a crucial method for solidifying Japan's status in the international community.

The initial efforts to establish domestic greenhouse gas (GHG) emission targets and place a greater emphasis on climate change policy were also influenced by shifts in the international understanding of environmental change. The discussion for setting targets for GHG emission reductions took place exclusively inside the central government, among MITI, ANRE and EA (Environment Agency, predecessor of MOE). In 1990, the Diet adopted the Action Program to Arrest Global Warming (also known as the Global Warming Action Plan), which established a two-tier target for CO2 emissions. The first tier aimed to stabilize carbon emissions per capita by the year 2000 and beyond at the 1990 level, while the second tier focused on developing innovative technologies to further stabilize emissions at this target. The tiered system also reflects a compromise among ministries and a push by the EA to enable the adoption of more ambitious targets.

Japan ratified the United Nations Framework Convention on Climate Change (UNFCCC) in May 1993. The Convention demanded that Annex I countries "adopt national policies and take corresponding measures on the mitigation of climate change" (Article 4.2(a)). Japan enacted the Basic Environment Law in November 1993. The new law covered not only climate change, but also other areas of environmental policies including pollution control and nature conservation (Kameyama, 2016). The Law also designated responsibilities for the national and local government, corporations and citizens. In essense, all stakeholders are obliged to "take some action toward an environmentally sound future" (ibid: 36), however, provisions regarding economic measures or concrete elaboration on the policies and measures to reach emission stabilisation were either ambiguous or missing. Overall, both the Basic Environment Law and the Global Warming Action Plan lacked substantive enforcement mechanisms to compel the relevant ministries and agencies to implement more comprehensive policies and measures aimed at effectively reducing GHG emissions.

2.5.2. The Kyoto Protocol and Failure in Global Climate Leadership

The adoption of Kyoto Protocol was presented as a significant success for the Japanese government and its foreign policy. Adopted at COP3 in 1997, it was the first international treaty on GHG emission reduction with legally binding targets for developed countries. However, it was also a failed attempt at securing an international climate leadership role as a result of intraministerial conflicts, lack of domestic political leadership and ambitious targets. The adoption of

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the Kyoto Protocol (KP) also marked the beginning of Japan's long-term challenge with meeting the 6% emission reduction target between 2008 and 2012. KP can also be seen as an 'external pressure' by the international community to move towards more stringent targets than initially planned by the government. Yet, Japan has failed to take profound actions to alter the structure of economy and industry. Rather, Japan focused on enacting laws that emphasised voluntary participation in GHG emission reduction.

During the lenghly negotiation process leading up to COP3¹, Japan initially advocated for emission stabilisation targets rather than reduction targets, and tried to position itself as 'middle-power country' in managing the positions taken by the United States (US) and other developing countries (Kameyama, 2016). Kameyama contends that Japan lacked the necessary capacity to assume a strategic leadership role in multilateral affairs, primarily because political leaders were predominantly focused on domestic matters. Additionally, ministries, particularly MOFA and MITI, regarded the US-Japan alliance as the cornerstone of Japanese foreign and trade policy. As COP3 negotiations were reaching a conclusion, Japan agreed to set an emission reduction target, and even increase the target from 5% to 6% from 1990 levels during the first commitment period (from 2008 to 2012) due to pressures from the EU and developing countries (Kameyama, 2016:60). However, meeting the KP's legally binding 6% emission reduction proved challenging, national emissions increased by 1.4% above 1990 levels, necessitating an 8.4% offset through forest CO2 sequestration and overseas emission credits (Kuramochi, 2015:1321). While carbon credits are permissible under the KP, these measures positioned Japan on a noticeably lagging trajectory. The Japanese government seemed reluctant to create stringent policies to achieve 6% emission

¹ Commonly known as the Ad Hoc Group on the Berlin Mandate (AGBM). In total, eight AGBM meetings were held between 1995-1997.

reduction domestically. This was further underscored by Japan's refusal to commit to the KP second commitment period, citing withdrowal of US as a main reason, and advocating for universal participation in emission reduction efforts during COP16 in 2010. As the Clean Development Mechanism established under KP for trading emission credits plummeted after the conclusion of the first commitment period, Japan continued to advocate for bilateral alternatives in the form of voluntary carbon markets (VCM) and Joint Crediting Mechanism (JCM) in the most recent COP meetings (Ahonen et al., 2022:238).

2.5.3. Climate Laws without Enforcement

Soon after the COP3, the Act on Promotion of Global Warming Countermeasures (1998 Law)² was enacted. Designed to serve as the cornerstone of Japanese climate policy, this legislation outlined a broad framework for tackling climate change. It delineated the roles and responsibilities of various stakeholders, including the central government, local authorities, businesses, and citizens. The 1998 law mandates the creation of a Kyoto Protocol Target Achievement Plan, which the government must develop to fulfill its international commitment for the initial commitment period for a 6% reduction. Local authorities are also mandated to decrease emissions based on their unique environmental and social circumstances as outlined in the law. Rather than prescribing precise policies and measures, the 1998 Law mandates the government to formulate a comprehensive plan incorporating policies and measures proposed by relevant ministries (Takamura, 2015).

²地球温暖化対策の推進に関する法律, Act No. 117 of October 9, 1998, https://www.japaneselawtranslation.go.jp/en/laws/view/4479

The 1998 Law and Japanese climate policy in general shows tendency of focusing on voluntary initiatives (Takamura, 2015:38). In one of the most influential environmental policy literature 'Talking with the Dokey', Harrison classified government tools and programs along a continuum of an increasing degree of coerciveness (Harrison, 1998). Ranging from less coercive approaches, such as incentive-based and voluntary strategies, to more coercive methods, including regulatory command-and-control measures, this framework offers a heuristic model for classifying three primary models and enables the creation of policy blends incorporating elements from each. Regulatory tools (sticks), economic incentives (carrots), and information-based strategies (sermons) gained significant traction within environmental policy.

Decision makers might select particular instruments for various reasons, but these rationales ought to be aligned with the two primary objectives of decision-making: striving for effectiveness and fostering a collective understanding or consensus (Capano & Lippi, 2017). Hence, the choice of policy instrument can also be indicative of the decision makers' potentially conflicting priorities and values. Japanese climate policy seem to use only one method, eventhough it is argued that employing a combination of policy instruments are more effective for environmental policy, especially in contexts marked by uncertainty and governance complexity (Pacheco-Vega, 2020). For instance, avoiding coercive regulation (sticks) proves disadvantageous when economic or persuasive instruments are less effective or challenging to implement. Regulation as a policy instrument is showed to hold significance, particulartly in situations where its effectiveness can be enhanced by robust legal frameworks. Combining different policy instruments can fulfill multiple objectives. They aid in addressing distinct aspects of a particular public policy issue across diverse demographics. Additionally, these mixes may facilitate the simultaneous addressing of multiple angles of the same policy, spanning various sub-sectors or geographic places. Ultimately, they assist in resolving interconnected policy challenges across different sectors or areas (Capano & Lippi, 2017; Taylor et al., 2012). The legislative changes following the KP did create measures that could effectively produce a complex mix of climate policy. Rather, years of inaction in renewable energy expansion and advocation for nuclear power continued under the LDP government until 2009.

2.6. The Fukushima Disaster and Reconsideration of Japan's Energy Policies

In the 2009 general elections, the Democratic Party of Japan (DPJ) secured a resounding victory over the ruling Liberal Democratic Party (LDP). This electoral outcome stands as the most significant defeat for a governing party in modern Japanese history. It was only the second instance since its inception in 1955 that the LDP failed to establish a government post-election, and notably, the first time it relinquished its position as the largest party in the lower house. This seismic political shift not only reshaped the landscape of national politics but also catalysed a reevaluation of climate policy, paving the way for more innovative and ambitious plans in this domain. However, the Great East Japan Earthquake and tsunami, and the subsequent nuclear meltdown of three reactors at Fukushima Daiichi nuclear power plant in 2011 swept away a short-lived rise in progressive climate change policy. The growing energy security concerns further eclipsed climate policy, and resulted in a decade of growth in fossil fuel consumption. As such, preparations for the era of decarbonisation in the 2010s were lost, and policies were redirected to reconsolidate the pre-Fukushima conditions instead of structural changes for a new economic system.

2.6.1. Double U-Turns

2010s were turbulent years for Japanese domestic politics and energy policy alike. The DPJ government have set ambitious GHG emission reduction targets in its 2010 Basic Energy Plan aiming for a 30% reduction in CO2 emissions by approximately 2030 and doubling of Japan's energy self-sufficiency ratio to 40%, primarily through the construction of 12 new nuclear plants alongside the existing 54 (Duffield & Woodall, 2011). The Basic Act on Energy Policy³ mandates METI to develop the Basic Energy Plan every three years, which is then endorsed by the cabinet, establishing the fundamental directions for national energy policy in accordance with the principle of "3E" (energy security, economic efficiency, environmental protection).

The DPJ government also attempted at enacting a legally binding Basic Act on Global Warming Countermeasures⁴ (GW Basic Act). The GW Basic Act aimed to create legally binding targets for greenhouse gas (GHG) reduction, including an 80% reduction by 2050 and a 25% reduction by 2020, relative to 1990 levels. This legislative effort included the implementation of measures such as a carbon tax, a national emission trading system (ETS), and a comprehensive renewable energy Feed-in Tarrif (FIT) system. However, the bill never passed a Diet due to strong opposition from from the business community and remained unfinished in July 2010, when the DPJ suffered losses in the upper house elections (Duffield & Woodall, 2011; Kuramochi, 2015).

Undeniably, one of the most important turning points of Japan's climate policy is the nuclear accident of Fukushima Daiichi power plant following the Tōhoku Earthquake and tsunami in March 2011. Nuclear power accounted for about 26% of electricity production in Japan before the

³エネルギー政策基本法, Act No. 71 of June 14 of 2002, Article 12 https://www.japaneselawtranslation.go.jp/en/laws/view/3818

⁴ Ministry of Environment Overview of the Bill of the Basic Act on Global Warming Countermeasures, https://www.env.go.jp/en/earth/cc/bagwc/overview bill.pdf

earthquake from a total of 57 nuclear reactors. By 2014, all nuclear reactors were provisionally shut down, and 24 units were selected to be decomissioned as a result of tighter security measures (Japan Electric Power Information Center, 2022). The public perception around the safety of nuclear power shifted quickly, and the DPJ government introduced the Renewable Energy Act, officially known as the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities.⁵ It was passed by the Diet in August 2011 and enacted in July 2012 and stands out as one of Japan's most effective legislative initiatives for promoting renewable energy. This law mandates electric utility operators to purchase all electricity generated from most renewable energy sources. However, exceptions are permitted for wind and solar photovoltaic (PV) electricity uptake onto the grid by facilities larger than 500kW, for a maximum of 30 days per year without compensation, aimed at maintaining grid stability during periods of supply exceeding demand (Kuramochi, 2015). Under the FIT scheme, power companies were obliged to purchase electricity generated from renewable sources at a fixed price (solar for 10-20 years, geothermal for 15 years, wind, small-scale hydro and biomass for 20 years). Electric utilities levy surcharges on electricity users to cover the costs of purchasing renewable energy (Renewable Energy Institute, 2017). The scheme initially offered high tariff rates (JPY42/kWh for ten years) which significantly incentivized solar installations, especially in non-household facilities exceeding 10kW. From 2012 to 2014, Japan saw an additional 12GW of renewable electricity capacity become operational, with solar PV accounting for 98% of this capacity (Kuramochi, 2015). Prior to the FIT scheme, Japan's renewable power capacity was only 20GW. The proportion of renewable energy in overall power generation rose from 10% in 2012 to 18.6%

⁵電気事業者による再生可能エネルギー電気の調達に関する特別措置法, Act No. 108 of August 30, 2011 <u>https://www.japaneselawtranslation.go.jp/en/laws/view/3235</u>

in 2019 (IEA, 2021:91). However, this growth failed to compensate for the decline in nuclear generation. Instead, there was a resurgence in fossil fuel usage, characterized by the reactivation of older coal and natural gas power plants, alongside the construction of new thermal facilities (Kameyama, 2016; Ohta & Barrett, 2023).

Follwing the Fukushima disaster, debates around the role of nuclear power took centre stage in energy policy. The cabinet ordered research institutes to create model scenarios for reducing or phasing out nuclear from the energy mix, and the government conuducted polls and collected comments to increase public participation in the decision making process (Kameyama, 2016:134; Ohta, 2020:14). The Fukushima disaster also offered justification for Japanese authorities to pursue significant policy changes within the energy sector. Prime Minister Naoto Kan (2010-2011), representing the DPJ, aimed to leverage the disaster to steer Japan towards renewable energy sources. Nonetheless, the catastrophe also presented a potential avenue for policymakers to steer in the opposite direction, diverting public focus from climate change towards more pressing concerns such as ensuring a stable energy supply and enhancing nuclear safety measures. The crises response by the DPJ government was seen inadequate by the public, and the general elections in 2012 brought back LDP in a landslide victory, resulting in a second U-turn in energy policy.

2.6.2. "Abenergynomics"

LDP returned to power in 2012, and Prime Minister Shinzo Abe ordered the government to reconsider Japan's energy and climate policy from scratch. The 2014 Basic Energy Plan marked a significant shift, emphasizing the inclusion of safety (+S) as a cornerstone of national energy policy (Kuramochi, 2015). Departing from the DPJ government's 2012 Innovative Strategy, which proposed a phased reduction of nuclear power, the 2014 plan advocated for the prompt restart of

existing nuclear plants upon approval from the Nuclear Regulation Authority. While not specifying the future energy mix, the 2014 plan encouraged the expansion of coal-fired power plants both domestically and internationally, while streamlining the environmental assessment process for their new constructions (METI, 2014).

Incerti and Lipscy (2021) coined "Abenergynomics" to refer to a collection of policies crafted to support the economic aims of Abenomics, often with less consideration given to other factors such as public sentiment, opposition from utility companies, or environmental implications. According to Incerti and Lipscy, Prime Minister Abe's primary focus was on implementing policies conducive to economic expansion, and climate change mitigation actions were not among the priorities of the Abe government. In alignment with this objective, the bureaucratic power struggle between MOE and METI, which had favored MOE during the DPJ government, was resolved in favor of METI.

The primary thrust of "Abenergynomics" was on maintaining or reducing energy costs for consumers, fostering competition in electricity distribution, and implementing industrial policies aimed at bolstering sectors with internationally competitive advantage, such as hydrogen (Incerti & Lipscy, 2021; Trencher & Van Der Heijden, 2019). There was comparatively less emphasis on initiatives to facilitate decarbonization, although the government generally expressed support for international climate change action. Abe's administration reaffirmed its commitment to nuclear and coal-fired power plants while weakening the FIT system. Japan showed reluctance towards ambitious measures to promote energy conservation, such as an emissions trading scheme or a substantial carbon tax. Furthermore, Japan's long-term decarbonization targets for the energy sector lagged behind those of Western counterparts. This became especially evident when Japan presented its intended nationally determined contribution in 2015 prior to COP21 in 2015, which set out an emission reduction target of 26% by 2030 compared to 2013 (MOE, 2015).

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3. Recent developments in Japanese climate policy

Japan suddenly changed the course of climate policy in October 2020, when PM Suga announced a new target for carbon neutrality by 2050.⁶ In April 2021, an interim target was announced, aiming at 46% emission reduction by 2030 relative to 2013 levels. This change is especially a significant compared to the conservative emission reduction targets announced in the Paris Agreement (26% reduction relative to 2013) and the cautious energy policy dictated in the 5th Strategic Energy Plan. Furthermore, the government revised the Act on Promotion of Global Warming Countermeasures (1998 Law) to give legal foundation for decarbonisation by 2050.⁷ This drastic change was welcomed by environmental NGOs, academics, and the renewable energy industry both in Japan and abroad. Considering Japanese policy makers' avoidance of drastic changes, it raises the question of how the decarbonisation pledge was made possible.

Figure 1: Changes in emission reduction targets					
Target year	DPJ - COP15 (2009)*	INDC (2015)	Suga declaration (2020)		
2020	25%	-	-		
2030	-	26%	46%		
2050	60%	80%	carbon neutral		

Source: Kameyama (2016), METI (2014, 2021a). *DPJ's emission reduction targets are relative to year 1990, whereas 2015 and 2020 targets are calculated with 2013 being the base year.

3.1. Electricity market reform

The electricity market liberalisation in 2016 enabled new entries into the retail electricity business, and gave consumers the freedom to choose their electricity retailers. The electricity market reform was a significant yet necessary step to adapt to a post-Fukushima energy landscape, as well as the

⁶ Policy Speech by the Prime Minister to the 203rd Session of the Diet, October 28, 2020, Kantei, <u>https://japan.kantei.go.jp/99_suga/statement/202010/_00006.html</u>

⁷地球温暖化対策の推進に関する法, Article 2-2, <u>https://www.japaneselawtranslation.go.jp/en/laws/view/4479</u>
resulting change in industry structures and their relationship with the government. The vested interest of regional electric utility companies was challenged by the rise of competition, and some disintegration started within the FEPC and METI. Subsequently, this market reform led to some positive developments in terms of decarbonisation policy making, albeit induced by energy security concerns and market constraints (necessity) rather than climate change policy itself.

The grid capacity in Japan poses a significant challenge for the future of the FIT scheme, particularly in areas with high renewable production but low demand due to the vertically integrated regional electric utilities and limited interconnection capacity between regions. In 2014, two years after the implementation of FIT system, four regional electric utilities (Kyushu, Hokkaido, Shikoku, Tohoku EPCOs) announced a suspension of grid connection applications for solar PV installations larger than 10kW, despite these areas having the highest potential for renewable energy production in Japan. The utility companies argued that there was a lack of power grid capacity to receive electricity genrated by renewable energies. The fundamental problem is the decision-making power held by regional power electric utility company in deciding the volume of different sources they allow to connect with the grid (Ohta, 2020). As part of a wider electricity market reform post Fukushima, the Organization for Cross-regional Coordination of Transmission Operators (OCCTO) was established in 2015 to facilitate enhanced cross-regional grid operation. The OCCTO's responsibilities encompass demand-supply equilibrium and grid planning, upgrading transmission infrastructure (such as frequency conversion facilities), and overseeing grid operations across various power company domains to foster improved integration of renewable energy sources (Ichinosawa et al., 2016). Kucharski and Unesaki (2018) show that there have been positive institutional changes as a result of this policy reform. While the government continues to shape policies for the energy transition thorugh the Strategic Energy Plan, Kucharski

and Unesaki argue that the political-bureaucratic-corporate "iron triangle," or the "nuclear village" no longer hold significant sway over energy policies and markets, particularly following the gradual market reforms post-Fukushima disaster. The energy sector now functions within a more complex framework, where the governance of Japan's energy transition entails a greater degree of interaction and decision-making among a broader spectrum of energy-related institutions compared to earlier times.

3.2. Overview of 5th and 6th Basic Energy Plan

There are fundamental differences between the three Basic Energy Plans published by ANRE in the past one decade. The 4th Basic Energy Plan published in 2014 by the returning Abe government emphasised the security of supply concerns and encouraged the expansion of coal fired power plants to replace the baseload capacity lost to the shutdown of nuclear plants. The 4th plan was published before Japan submitted its Intended Nationally Determined Contributions (INDC) to the UNFCCC prior to the Paris Agreements in 2015. In other words, METI established the energy mix for 2030 without setting targets for GHG emission reduction, and the resulting 26% reduction by 2030 was merely a 'realistic' calculation of what is achievable through the advancement of energy efficiency measures (Sofer, 2016). This largely limited the tools and potential for significant emission reduction. The 5th Basic Energy Plan included some cautious moves towards increased renewables and decarbonisation, but rather focused on energy security issues in the post-Fukushima years. More drastic changes that reflect the international and domestic impetus for decarbonisation became evident in the 6th Strategic Energy Plan in 2021. The 6th energy plan reflects on the Suga declaration of carbon neutrality and sets out a roadmap for cutting emissions by 46% by 2030 and achieving net-zero in 2050. Essentially, the 6th plan was the first energy plan that was a result of a political leadership for climate change policy, initiated by the Cabinet rather

than the bureaucracy. The 4th and the 5th plan, on the other hand, were technocratic calculations by the METI and ANRE meant to preserve the dominant energy system in Japan.

The international energy arena changed significantly since the 5th Basic Energy Plan was published in 2018. The Covid-19 pandemic, the Russian invasion of Ukraine, and growing international ambitions to decarbonise the economy substantially influenced the prices of fossil fuels and altered previously established energy trades. The 6th Energy Plan underlined the importance of energy policy for decarbonisation, as energy sector accounts for more than 80% of GHG emission in Japan (METI, 2021a). In the power sector, alongside employing decarbonized energy sources like renewables and nuclear power already in practical application, the 6th Energy Plan aims to advance further decarbonization efforts by driving technological innovations in thermal power, such as utilizing hydrogen/ammonia, CCUS, and carbon recycling. For non-power sectors, the Plan advocates for electrification using decarbonized power sources. Hydrogen and synthetic fuels will be deployed to decarbonize industrial sectors reliant on high-temperature processes that are challenging to electrify. The 6th Plan also revised the "Outlook for Energy Supply and Demand 2030" established in 2015. The new outlook envisions a 59% non-fossil source of energy, an increase from the 2015 figures of 44% (renewables 36-38%; nuclear 20-22%) and 41% share of fossil-based energy, decreased from 56% (20% LNG; 19% coal; 2% oil).



Figure 2: Current power generation structure and new energy mix under 6th Basic Energy Plan

The Suga Cabinet's Growth Strategy Council officially backed a creation of a government plan that identifies key industries and challenges for realising carbon neutrality by 2050, and in June 2021 METI with collaboration of other ministries, published the "Green Growth Strategy through Achieving Carbon Neutrality in 2050" (METI, 2021b). According to this plan, 50-60% of electricity demand will be generated by renewables in 2050. The previously neglected wind power capacity will generate 30-45 GW by 2040, which is around ten-fold increase compared to 4.8GW produced in 2022 (Watanabe, 2022). The plan states that nuclear and coal power plants equipped with carbon capture and storage (CCS) technology will account for approximately 30-40% of the energy demand, with the remaining 10% met by hydrogen and ammonia plants. The New Technology and Industry Development Organisation (NEDO) established a two trillion-yen Green Innovation fund (GI fund). The GI fund can be used by private companies engaging in innovative

Source: ANRE (2022)

R&D in technologies for offshore wind power, next-generation solar cells, hydrogen and ammonia supply chains or CCUS⁸.

3.3. Overview of Green Transformation Strategy

Following the resignation of Suga and the inauguration of Kishida's new cabinet in October 2021, the prime minister established the GX (Green Transformation) Implementation Council. The Kishida administration adopted the "Basic Policy for Realization of Green Transformation" (GX Basic Policy) in February 2023 (METI, 2023), and the Diet adopted the "Bill on the Promotion of a Smooth Transition to a Decarbonized Growth-Oriented Economic Structure"⁹ (GX Promotion Bill). The Green Transformation (GX) refers to the transformation of a fossil dependent economic and societal structure, aiming to drive economic growth and development through emission mitigation. It entails a 150 trillion JPY (approximately 1 trillion USD) of private and public investment over the course of 10 years. The GX consists of five key initiatives:

- 1. Growth oriented carbon pricing
- 2. Integrated regulatory and assistance promotion measures
- 3. New financing methods
- 4. International development strategies and leadership in the Asian region
- 5. Development of GX league

⁸ METI Green Innovation Fund. [Accessed 13 May 2024]

https://www.meti.go.jp/english/policy/energy_environment/global_warming/gifund/index.html

⁹ 脱炭素成長型経済構造への円滑な移行の推進に関する法律, Act No. 32 of February 16, 2023. [Accessed 13 May 2024] <u>https://elaws.e-gov.go.jp/document?lawid=505AC0000000032</u>

1. Growth oriented carbon pricing

The GX Basic Policy highlights that industrial competitiveness needs to be maintained, while adhering to international norms and commitments for decarbonisation. The upfront investment support, in the form of GX Transition Bonds, is to be issued for investments in industry decarbonisation worth 20 trillion JPY for 10 years. To incentivise emission reduction, GX introduces carbon pricing in the form of Emission Trading Scheme (GX-ETS) and carbon surcharge (GX-Surcharge). The participation in GX-ETS would be on a voluntary basis, with businesses setting their emission reduction targets themselves. The auctioning of the allowances would begin in FY2033. The GX-Surcharge would only be introduced in FY2028, with an initial low price that would later be increased.

2. Integrated regulatory and assistance promotion measures

The government is establishing long-term targets and commitments as an initial strategy, with supportive measures to follow through the integration of regulatory updates and systematic support. Public financial support will be prioritized for sectors where investments are challenging for the private sector alone and where such investments enhance both industrial competitiveness and emission reductions. These include technological R&D, streamlining regulations and frameworks, or supply- and demand-side support for emission reduction.

3. New financing methods

Transition finance represents a financing strategy aimed at assisting companies in implementing long-term changes to achieve carbon neutrality. Investment support for transition technologies such as ammonia, LNG and CCUS and technology diffusion through fostering successful transition technologies, as well as formulating guidelines for transition are part of transition finance. Furthermore, it aims to extend financing outreach by improving sector-specific technology roadmaps and taking steps to attract private investors.

4. International development strategies and leadership in Asia

Japan aims to actively contribute to the GX in the Asian region. The Asia Zero Emission Community (AZEC) initiative serves as a regional platform aimed at offering diverse support, coordinating policies, and advancing energy transition efforts across Asian countries. It seeks to promote practical approaches to decarbonization while concurrently safeguarding energy security. Furthermore, the Asia Energy Transition Initiative (AETI) framework is designed to facilitate the development of a roadmap towards achieving net-zero GHG emissions. It aims to support financing activities for transition technologies and projects in alignment with the Asia Transition Finance Guidelines and other pertinent schemes. Additionally, it will endorse programs aimed at cultivating expertise in decarbonization of the Joint Crediting Mechanism (JCM) through the expansion of partner countries participating in the JCM, as well as by strengthening its implementation framework. These are part of a larger plan to develop green markets in which Japanese technologies in carbon removal, hydrogen or next-generation nuclear plants can be diffused.

5. Development of GX League

GX League is a forum for cooperation between a group of companies and the government, universities, and academic institutions, established in 2022. The corporate members of the League participate in voluntary emission reduction with targets for 2030 and aim for carbon neutrality by 2050. Furthermore, it acts as a basis for the trial period of ETS launched in 2023. The members

are encouraged to decarbonise their supply chain, as well as strive for the creation of green markets. Currently the League has 747 members and covers over 50% of GHG emissions in Japan¹⁰.

¹⁰ METI, March 27, 2024. "From FY2024, 179 Companies Newly Participate in the GX League, Bringing the Total Number of Participants to 747" [Accessed 14 May 2024] https://www.meti.go.jp/english/press/2024/0327_003.html#:~:text=1.,have%20participated%20in%20the%20league.

4. Qualitative analysis

This thesis has so far demonstrated the key characteristics of Japanese climate policy and governance through the literature review and the analysis of recent developments in climate policy. The first research question [*What are the characteristics of Japanese climate policy framework?*] can be answered as the following:

- The Japanese climate policy has long been captured by the 'iron triangle' of LDPbureaucracy-industry association. Climate policy has been delegated to METI, which in turn strategically blended it with and subordinated it to energy policy, with the primary objective to support their industrial clients.
- Climate change policy was never assigned a political significance by the government, and some leadership attempts failed due to inadequate political backing or shocks to the domestic politics.
- The focus on energy security and safety has become the prime objective of Japanese government following the triple disaster in 2011, and climate change concerns were eclipsed by the need to supply energy, even if that meant a rising share of fossil fuels in the energy mix.
- Recent changes in policies for decarbonisation are a result of international political pressure as well as businesses' reaction to a changing global market. The net-zero declaration in 2020 indicates a sign of political leadership, however, the subsequent policy direction is increasingly focused on technical fixes by a centralised bureaucracy.

However, more profound qualitative research is required to answer the remaining two research questions, and to give more depth to the first question. These questions are difficult to be answered

through an analysis of ministry documents and industry reports, as it deals with the process of knowledge and policy making which are inherently opaque and complex in Japan.

The remaining two questions ask:

- What is the role of METI in orchestrating Japanese climate policy, how does it create and sustain dominant narratives on decarbonisation?
- How does the process of policy making repress contestations and manufactures consensus?

4.1. Methods

The qualitative research includes ten semi-structured interviews conducted in May 2024 with representatives from academia (3), think tanks (3), government ministries (2), an industrial association and a local municipality. The interviews lasted from 45 minutes to one hour, conducted online and in person in Tokyo Metropolitan Area. Permissions for audio recordings were granted prior to the interviews (except for one), and the transcripts of the interviews were anonymised to protect personal information. The interviews were thoroughly analysed and coded using a qualitative data analysis software (Atlas.ti). The emerging topics were then categorised by themes and are presented in the following section. The list of sample questions can be found in the Appendix.

4.2. Limitation

There are inherent biases introduced to any qualitative research stemming from the positionality of the author, design of the interview, as well as the selection of interviewees. The initial goal of this study was to interview a wide array of people from different stakeholder groups, with an aim of reaching 20 to 30 interviews. However, it proved difficult to reach the desired number of interviews due to limitations in time, resources and language barriers. Interview requests were sent

out in English, and most were unreciprocated. Those who responded and agreed to take an interview had sufficient abilities to discuss a complex issue in English, which further limited the number of interviews. Moreover, only one government ministry and its agency (METI and ANRE) were interviewed, which limits the analysis from the side of national government, especially the lack of insights from MOE posits a challenge to the analysis. Furthermore, the study was unable to include any civic organisations or NGOs, which limits the analysis of public engagement in climate policy making. Nonetheless, the ten interviews provided a sound basis for answering the research questions and reaching a sensible conclusion on Japanese climate change policy and governance.

5. Results and Discussion

5.1. "Energy Policy is Industrial Policy"

Eikeland and Sæverud (2007) argued based on a study conducted among European countries' renewable deployment that the ambitiousness of a country's renewable energy policies mirrors the seriousness of its energy problems. Hence, in theory, Japan should have ambitious renewable energy policy considering its severe energy dependency and the experience of a nuclear disaster. However, there are different theories for explaning the inaction of Japanese government in climate change policy.

Scholars have long pointed out that climate change is conceptualised as part of an energy problem in Japan (Luta, 2011; E. Moe, 2011). It is partially due to the high share of CO2 emission originating from the power sector in Japan, and energy security being placed a high priority since the oil shocks in the 1970s. Energy policy has been framed in terms of meeting the growing demands from the industry without impeding economic growth. It is however not a Japanese specificity to try to link clean energy transition with economic growth. Both the EU Green Deal and US Inflation Reduction Act is based on the premise that deep decarbonisation is financially and technically feasible, and also expected to bring economic benefits and increase international competitiveness (Arent et al., 2017; Heal, 2022; Tagliapietra et al., 2019). The peculiarity of Japanese energy policy is a keen focus on satisfying the supply side needs and incite changes through voluntary measures. As showed in the previous sections, METI's strong connection to energy utility companies results in an energy policy making process that heavily inclines towards the opinions of energy suppliers. The FEPC is actively involved with ANRE when developing the Basic Energy Plans, and voice their concerns on taking steps that drastially change the energy landscape of Japan, and advocates for the continued use of coal power plants and expansion of nuclear energy. The emission reduction targets for electricity production and traditional heavy industries (petrochemicals, iron and steel industry) are set on a voluntary basis by the companies, and no punitive steps are taken for breaching their targets. As one scholar pointed out during the interviews, there is no integrated bureaucracy or institution to integrate climate and energy policies, eventhough the interlink between the two has been recognised by the GX Basic Policy. METI has a strong grip on domestic climate mitigation policy through the Basic Energy Act, and MOE has little influence in setting emission reduction goals among industry actors. There is a clear divide of responsibility, in which METI controls the energy policy as part of industry policy, and MOE manages environmental protection and climate change that fall outside the energy realm. This creates a discrepancy between climate and energy policy as emission reduction becomes a secondary concern after considering economic interest and industry support. As an official from ANRE said:

"I think our policy is different to many countries in the sense that we have a holistic approach combining both energy policy and industrial policy. METI covers everything." (Interview with ANRE, May 14th, 2024)

The Fukushima accident in 2011 has also largely contributed to the entaglement of energy and industry policy. The nuclear shutdown and subsequent energy shortage posed a significant difficulty for consumers and industry alike. The question of energy security was amplified out of the "3Es", and environmental concerns were overshadowed by the race to secure enoguh energy to cover for the loss of nuclear. The large expansion of coal and LNG plants in 2010s have put Japan in a trajectory that made decarbonisation harder to attain. By 2019, Japan had the third most CO2 intense power generation among the IEA member countries, and the only country that

significantly increased its carbon intensity (Figure 3). The "missing twenty years", as an interviewee from a think tank phrased, consists of ambigous leadership attempts to participate in international climate change initiatives in the 2000s, and the post-Fukushima coal switch that significantly delayed Japan's preparations for the global decarbonisation race. Even though favourable policies and FIT system contributed to the rise of solar PV in the share of energy mix, other renewable sources were virtually left out from the Basic Energy Plans. Studies have shown that wind power had the highest potential among renewable sources in Japan, yet, the LDP government failed to create a comprehensive renewable energy policy to address the bottlenecks (Duffield, 2016; Mizuno, 2014). E. Moe (2011) showed that energy efficiency measures alongside the deployment of solar has been METI's preferred approach since it did not challenge the existing economic structure or energy sector, just offered technical fixes to existing industires. The growth of solar industry in Japan has occurred within the existing institutional and industrial framework, leveraging the strengths of established players. Rather than posing a challenge, solar energy has bolstered the competitiveness of existing industries. This stands in contrast to typical vested interest structures, which often hinder the emergence of new industries, such as the wind power industry. The high priority assigned to energy security in energy policy, did not help to significantly weaken the regional monopolies by electricity power companies (Ohta & Barrett, 2023). The three laws for power development (Dengen sampo) gave considerable authority and subsidies to regional power companies, and significant public funding to coal and nuclear power plants (Behling et al., 2019). The closely-knit policy community that emerged from the Dengen sampo and institutionalisation of energy security functioned to promote the nuclear energy and fossil fuel industry. This vested interest worked to undermine proposals for systemic change, including decentralisation of power generation and unbundling monopolies on electricity production and

transmission required for a greater level of renewable energy integration requires (Ohta, 2021). Some positive changes have occurred since the electricity market liberalisation to break down the dominance of FEPC, yet the retail market share of new energy utility companies remain low, around 20% (Renewable Energy Institute, 2023b).



Figure 3: Carbon intensity of power generation in IEA countries, 2009-2019

5.2. Ambition within Limits

Narratives are socially constructed 'stories' that make sense of phenomena, a system of framing that becomes the action guidelines by incumbent regimes, strongly influencing policy decision-making (Hinkel et al., 2020). More importantly, narratives contribute to determining what is 'politically feasible', limiting the scale and speed of socio-economic transformations (Hermwille, 2016). Among Japanese policy makers, there is a recurring narrative of inherent limitations and disadvantages that limits the deployment of renewables and neccesitates continued use of fossil fuels.

Trencher et al. (2019) identifies the narratives that justifies the use of coal power plants in Japan. Government and industry actors regularly describe Japanese coal technology as the 'most efficient'

Source: (IEA, 2021a)

and 'cleanest' in the world. Furthermore, ANRE and Keidanren argues that a combination of national policy and voluntary industry actions can reduce GHG emissions from energy production without putting a ban on coal. According to the pro-coal narratives, coal contributes to securing a reliable and cost-effective electricity for the industries, and contribute to the overall energy security of Japan. As an official from ANRE put it,

"just scrapping the coal-fired power plants and building renewable energy may not be always realistic [...]. Renewable energy is not suitable for baseload power because there's intermittency and variability in terms of output depending on natural circumstances. So what we believe a realistic approach is to make use of existing power. And yet reduce the emission. And that that's why we think that coal firing with ammonia is one realistic option." (Interview with ANRE, May 14th, 2024)

The International Energy Agency (IEA) emphasises advanced economies must reach net-zero before developing economies and emerging markets, and assist others in achieving a decarbonised society (IEA, 2021b). In April 2024, Energy Ministers from the Group of Seven (G7) agreed to end use of coal in power generation during the first half of 2030. However, Japan advocated for the continued use of coal if it is abated, that is, if the coal power plant is retrofitted with emission reduction technologies. Japan thus remained the only country in G7 that has not yet commited to stop using coal, nor set a target date (The Japan Times, 2024).

In terms of renewables, the ANRE official accentuated that Japan has inherent geographical limitations for further deployments, especially in the case of solar PVs. Indeed, Japan has the third largest generation capacity from solar PV (102TWh in 2022) following China and US, however, only around 12% of electricity is produced from renewable sources (ember-climate.org, 2023). Officials from both ANRE and METI's Environmental Policy Bureau highlighted that "*Japan is*

lacking the potential for renewable energy" because of the lack of flat area for solar PV or limited area of continental shelf to develop offshore wind farms. Hence, Japan needs to be "realistic" about its conditions and, and must recognise that there are "various pathways" to decarbonisation that include fossil fuels. However, several studies have showed that 100% renewable energy in power sector is technically feasible at a competitive cost by 2050 (Cheng et al., 2022; Kuriyama et al., 2024). The reason for failing to recognise this potential goes back again to priority given to industry concerns through energy policy, as well as the policy making process that limits the incursion of ideas that diverge from the dominant narrative.

When asked whether Japan's climate policy is ambitious enough, an important distinction between the goals and the means to achieve the goals became evident. The Suga declaration in 2020 was recognised by many of the interviewees as "ambitious" and "a historic turning point", after which Japanese climate policy has become more clear and "heading to the right direction". The emission reduction goals did indeed increase significantly since the Intended Nationally Determined Contribution (INDC) submitted for the Paris Agreement in 2015. However, the process for achieving the emission reduction target leaves room for ambiguity:

"The current Japanese climate policy long term goals and the 2030 target are quite ambitious. But the problem is that the policy and measures to achieve it, to realise, in some areas, for instance the introduction or expansion of renewable energy, I must say, it's not sufficient enough." (Interview with an academic, May 19th, 2024)

This highlights a general problem with GX Basic policy, which places importance on supporting abatement technologies, such as ammonia co-firing or CCUS through GX Transition Finance. Critics of GX stresses that the promotion of abated coal power plants is expected to reduce GHG emissions only marginally with high costs, with high investment requirements of human and

financial resources for the development of such technologies (Renewable Energy Institute, 2022, 2023a). Strong criticism was voiced by an academic that highlighted that GX policy runs short in promoting structural changes, rather, it preserves the status quo. As they argued:

"The Transition Finance is not necessarily really purely promoting renewable, they give some money for the gas power plants and then so-called the ammonium hydrogen co-firing. [...] There's no policy for promoting, but just to maintain the existing power system" (Interview with an academic, May 15th, 2024).

The emphasis on innovative future technologies and its significant financial support could redirect attention away from investments in renewables. Although the GX Basic Policy acknowledges the urgency of accelerating decarbonisation and has established a legal framework for this purpose, it raises questions regarding its specifics and governance approach. Under the GX Plan, Japan's renewable energy target is relatively modest at around 36-38% by 2030. In contrast, the EU and Germany have committed to increasing their renewable energy shares to 40-45% and 80% respectively by 2030, while China aims for 33% by 2025.

5.3. Global vs. National vs. Local Leadership

The Suga declaration on carbon neutrality can be seen as an example of a political leadership that diverged from the previous METI-dominated bureaucratic narrative. The subsequent national decarbonisation planning process, however, has been allocated to METI by the GX Promotion Bill. Nevertheless, there are examples of local municipal level leadership that have emerged which follow, or in some cases, preceed international decarbonisation trends. While these progressive sub-national leaderships became a catalyser for speeding up national decarbonisation policy to a certain extent, the discrepancy between national and local governments still exist. This divergence is a result of rigid national policy making structure and a lack of policy feedback loops.

Tokyo Metropolitan Government (TMG) is one example of such discrepancy between national and local policies which showcased significant political leadership for decarbonisation. TMG has pledged to achieve net zero emission by 2050 during the Urban 20 (U20) summit in 2019. U20 gathers the Mayors and representatives from members of Group of 20 (G20) cities and acts as an international forum for facilitating local level actions. The U20 Summit in 2019 was hosted by Tokyo and chaired by Governor Yuriko Koike, and put climate action as its main agenda¹¹. The Zero Emission Tokyo Strategy was formulated to support the decarbonisation pledge, and identifies key sectors with emission reduction targets for 2030 (TMG, 2019). Tokyo's energy related annual CO2 emissions is over 51 million t-CO2, equivalent to the annual emission of Greece or Austria. The main tool for emission reduction in the building sector, which accounts for 70% of Tokyo's emission, is the Tokyo Cap-and-Trade Program (TokyoC&T). The program was initiated with a mandatory reporting responsibilites for the most energy intensive facilities and commercial buildings in 2002, and introduced the mandatory reduction requirement in 2010. TokyoC&T is the world's first urban cap-and-trade scheme, and its mandatory reporting requirement even predates the EU ETS, albeit with a smaller scope. The third compliance period included 1200 facilities that account for 11.18 million tonnes of CO2 emissions, or over 20% of overall annual emissions of Tokyo. In FY2022, TokyoC&T achieved 32% emission reduction from the base year¹², and 79% of emission reduction was achieved through self reduction, such as implementing energy efficiency measures or switching to low-carbon energy providers (TMG, 2024).

¹¹Urban 20. 2019 - Tokyo https://www.urban20.org/u20summit/2019-tokyo/

¹² The base-year emissions are the average of three consecutive fiscal years selected by the facilities between FY2002 and FY2007. Emission factors from electricity is calculated using the values in the third compliance period.

TokyoC&T's successful operation and leadership role played as an international metropolis rises the question of whether TMG's climate policies can be extended or mirrored to the national level. However, the interview with TMG's Bureau of Environment revealed that interactions between the national government and TMG are scarce. In fact, TMG has been requesting the government to implement a mandatory C&T programme on a national level since 2010 (TMG, 2010). Yet, no formal agreement have been made from government ministries. In light of the implementation of GX ETS from 2026, the officials of TMG highlighted that TokyoC&T has clearly demonstrated the ineffectiveness of voluntary participation and target setting. Furthermore, TMG is placing emphasis on the balance between mandatory measures and incentive schemes in their Zero Emission Strategy. Still, METI has not recognised TMG's valuable insights and experiences in the formulation of national ETS plan. The GX ETS started in 2023 on a trial basis, but participation and reduction targets are entirely voluntary. The GX Promotion Bill does not impose obligations on corporations with sizable business facilities and does not set emission reduction targets. The effectiveness of ETS with a voluntary approach and without mandatory emission cap, combined with an extended timeline (auctioning starting in 2033) raises concerns.

Albeit, TMG has a special status compared to other local municipalities in Japan given its population size and economic capacity to implement progressive policies. Takao (2016) underlines that only the largest municipalities and prefectures have a substantial degree of expertise and financial resources to reduce GHG emissions and engage in international environmental cooperation. The zero-emission pledges of other smaller local governments have different drivers, not directly related to political leadership for climate policy. As one academic pointed out during an interview, rural Japan is facing a drastic demographic crisis that significantly reduces the economic production. By pledging to go carbon neutral by 2050, and implementing local measures

for renewable energy deployment, these municipalities follow an global trend and increase attractiveness towards businesses that are looking to improve their international competitiveness. Decarbonisation thus becomes a tactical move to differentiate the municipality from other local governments, and sub-national actors become an important actor that can influence national climate policy (Kameyama, 2021).

5.4. Old Industries vs. New Businesses

The global decarbonisation trend seems to have disturbed the conventional METI-industry collaboration and consensus, and more diverge business interests have emerged that challenge the national decarbonisation policy. However, the GX policy and its policy making process gives little attention to accommodate the emerging business community, and prioritises the carbon intensive manufacturing industries in Japan.

The industry and business sectors wield significant influence over environmental decision-making in any country. They function as transnational actors, shaping decisions at the multilateral level, and also exert considerable influence domestically. Climate mitigation policies present varying costs and benefits across different industries. For instance, energy-intensive heavy industries like steel manufacturing often oppose emission reduction policies and have been major beneficiaries of government subsidies in the past. Some industries have economically profited by reducing CO2 emissions and promoting themselves as environmentally friendly companies (De Freitas Netto et al., 2020). Conversely, emerging industries such as those in renewable energies have benefited from governments' proactive steps toward emission reduction and increased subsidies for low-carbon energy production (Haas et al., 2011; Peng & Liu, 2018).

Japanese trading companies, electric utilities, manufacturers and financial institution reacted to the global financial investors divestments from fossil industries and begun refraining from active

investments in the coal sector. Most Japanese companies have joined Japan's Consortium of the United Nations Task Force on Climate-related Financial Disclosure (TCFD) and RE100, a global network of businesses committed to achieving 100% renewable energy (Ohta & Barrett, 2023). Additionally, as a prominent member of RE100, Apple has pledged to achieve carbon neutrality throughout its entire business and supply chain by 2030. This commitment has implications for Japanese companies that manufacture components for Apple products, such as Sharp, Sony, or Murata, as they must comply if they wish to maintain their supply contracts in the future (Apple, 2023). Furthermore, various new alliances between businesses, NGOs, and local municipalities have formed around climate and energy issues, including the Japan Climate Initiative (JCI) and the Japan Climate Leaders' Partnership (JCLP), which collectively boast over 1000 members (Japan Climate Initiative, 2023; japan-clp.jp). For instance, the JCLP has urged the Japanese government to adopt even more ambitious targets, calling for 50% renewable energy by 2030 and net-zero greenhouse gas emissions by 2050 following the announcement made by Suga (JCLP, 2020).

Yamada (2021) argues that there has also been a change to Japanese ministries' and businesses' perspective to climate change and competitiveness in the international field. He argues that the climate security discourse, that is, the perception of climate change as an existential threat became shared to some degree by key stakeholders (Buzan et al., 1997; Diez et al., 2016; Koppenborg & Hanssen, 2021; Yamada, 2021). Following Suga's announcement in 2020, MOE incorporated the term "climate crisis" (*kikō kiki*) into its annual white paper for the first time, and the Japanese House of Representatives endorsed a "climate emergency declaration"¹³ (MOE, 2020). Yamada

¹³ 203rd Session of the Diet, Resolution No.1, House of Representatives. <u>https://www.shugiin.go.jp/internet/itdb_annai.nsf/html/statics/topics/ketugi201119-1.html</u>

(2021) shows that while governmental actors like MOE, Ministry of Agriculture, Forestry and Fisheries (MAFF) or Ministry of Land, Infrastructure and Transport (MLIT) have become aware of the existential threat of climate change, the business community is less prone to accept the climate crisis characterisation. Instead, business communities and Keidanren's take on the challenge of carbon neutrality is more focused on the technological innovation that contributes to decarbonisation.

Business community, however, have diverse and often opposing interests to decarbonisation. While the traditional, Keidanren-backed industries are carbon intensive and high emission, such as steel production or petrochemicals oppose drastic structural changes and advocate for emission reduction technologies included in the GX policy. On the other hand, service industry, IT, telecommunication and electric part manufacturers that are more embedded and sensitive to global market changes pressure the national government to adopt more stringent decarbonisation target and renewable energy deployment.

"If the policy does not advance sufficiently, it would undermine the business opportunity and even degrades the evaluation of Japanese company [...] their voice is very strong, getting stronger, and the government and METI have to listen to that [...]" (Interview with an academic, May 19th, 2024)

The motivation of the business community to accept the decarbonisation target seem to stem from the industry's fear of losing international competitiveness in the emerging international 'green economy' combined with the financial sector's aversion to invest in carbon intensive technologies due to the risk of stranded assets creation (Schumacher et al., 2020). By doing so, new business associations such as JCI or JCLP present climate change mitigation as an opportunity for economic growth, effectively replacing METI's previous dominant narrative of climate change action as an economic burden (Koppenborg & Hanssen, 2021).

The regional leadership role articulated in the GX policy also gives little focus to the new business associations, but rather works to support the interests of carbon intensive industries. In terms of global just transition, Japan should indeed take proactive measures to provide support for emerging economies in South-East Asia. However, the current GX policy places greater focus on investments in emission reduction technologies for coal abatement rather than investing in renewable developments. The interview with METI's Environmental Bureau emphasised that there are "various pathways to achieve decarbonisation", and Asia have different geographical features that make European or Northern American decarbonisation approach unattainable. However, the excessive focus on investments into coal power plants can lead to stranded assets and carbon lock-in, and carbon crediting under JCM works to expand the export of Japanese fossil fuel business abroad, taking valuable financial and human resources.

5.5. The Policy Making "Black Box"

The policy making process orchestrated by METI amplifies the dominant narrative around decarbonisation, and limited participation to policy making blocks structural changes to occur. Preparations for policy making happens at the 'Shingikai' councils organised by the ministries. Shingikai functions as a meeting to gather opinions from the industries, financial institutions, think tanks or other stakeholders. It is usually chaired by a professor from a prestigious university to ensure impartiality. Through several meetings and hearings, the council aims to create a policy proposal as the outcome of the discussion, submitted to the Ministry for the final deliberation. However, the selection of council members as well as agenda setting is entirely up to the ministries, which leads to a biased representation of opinions that works to confirm the stance of the ministries.

For decarbonisation, METI and MOE both organise their own policy councils to deliberate on the priority areas they wish to represent at the GX Promotion Council organised by the Cabinet. According to the GX Promotion Bill, the Minister of Economy also fulfils the role of Minister in Charge of Promoting GX Implementation¹⁴, assigning significant power over the general direction of GX policy as well as the appointment of invitees to the Cabinet GX Council. In fact, 11 GX Councils were organised since 2022 but not a single climate NGO or environmental think tank was invited to attend the meetings (as of May 2024)¹⁵. Among the list of attendees, Keidanren, Japan Consumer's Association, several regional financial institutions and energy utility companies, as well as heavy industry representatives can be found.



Figure 4: The structure of GX Promotion Council

Another way METI exerts significant influence over decarbonisation policy is the formulation of the Basic Energy Plan. Under the jurisdiction of METI, ANRE organises several policy councils and hearings with the involvement of industries and energy companies to plan the energy mix and emission reduction strategies. However, this process does not necessitate intra-ministerial

¹⁴ G X 実行推進担当大臣

¹⁵ Cabinet Secretariat, GX Promotion Council Minutes and Agenda <u>https://www.cas.go.jp/jp/seisaku/gx_jikkou_kaigi/index.html</u>

discussion or deliberations. As METI controls the decarbonisation strategy over the energy sector, the biggest source of GHG emissions in Japan, other ministries or business group have hardly any say in influencing the policy pathways. Moreover, as an interviewee from a think tank pointed out, that while Act on Promotion of Global Warming Countermeasures requires parliamentary procedures to be adopted, the Basic Energy Plan only requires approval from the Cabinet.



Figure 5: Formulation of Basic Energy Plan

Ohta (2020) argues that the lack of complexity in Japanese climate and energy policy stems from the lack of aspects of anticipatory governance. The transition to sustainable energy to mitigate climate change is an example of a complex governance problem. This process necessitates preparation for various future scenarios (foresights), active engagement between policymakers and the public, and a reflective policy innovation process that includes normative decisions regarding energy mix selection (integration) (Guston, 2014). Japan's long-term energy policy lacks foresight and fails to align with the principles of anticipatory governance, which emphasize "governing in the present to adapt to or shape uncertain futures" (Muiderman et al., 2020:1). This is evident in its oversight of potential alternative energy sources and failure to anticipate diverse future scenarios in long-term energy supply and demand. Rather than exploring various possibilities, the policy adheres to the initial notion of nuclear, coal, and hydrogen as substitutes for oil, while assuming the continuation of the current industrial structure. The promotion of household rooftop PV from the mid-1990s to the early-2000s is one of the few examples in which the engagement between the public and experts in energy policy was visible. Ohta (2020) notes that private companies committed themselves to the development of the solar PV technology and creation of markets while going into deficits, and households took an active role in installing rooftop PV without full recovery of the costs. Furthermore, the electricity market liberalisation contributed to growing consumer awareness of national energy policy, and a scenario analysis showed that a more participatory, consumer driven energy policy can achieve transition towards a low carbon society in a more sustainable and socially equitable manner (Chapman & Itaoka, 2018; Chapman & Pambudi, 2018). Evidence thus show that consumers can play a crucial role in energy transition and take anticipatory perspective on what energy paths should be chosen.

The policy making process in the Basic Energy Plan and GX Policy only involves stakeholders invited by the ministries, and the ministries are not expected to face harsh criticisms or contestations in the process. The current structure of policy making thus works to manufacture consensus among limited number of stakeholders. The invited academics and think tanks are presented as a basis for science and evidence-based policy making, however, ministries often have think tanks closely associated with their policy making process, producing knowledge that are partial or biased. A study by a climate policy think tank showed that the process of selecting the policy council members is unregulated, and the members of the councils are often includes ex-METI officials that 'retired' into consulting firms or industry associations (Climate Integrate, 2024). The 'revolving door' raises concerns around conflict of interest. Furthermore, the policy council for formulating the Basic Energy Plan consists of people who have moderate stance for decarbonisation. The high average age (50-70 years) and high proportion of males (over 75%) also leaves questions around fair representation. However, detailed studies on stakeholder interactions and lobbying for decarbonisation policy making process are scarce in Japan, and officially available information can only reveal a partial picture.

5.6. Where is the 'Public'?

Public participation and democratic process can enhance climate action. Moreover, there exists an abundant literature of the advantages of decentralised public policy (Ogawa & Wildasin, 2009; Ortiz-Moya et al., 2021; Takao, 2012). However, studies show that public interest in climate change is relatively low in Japan compared to other developed countries (Dentsu Institute, 2023; Kosugi & Baba, 2023). The highly bureaucratic, centralised and top-down policy making acts to disengage the public and elevate the climate change policy into a 'post-political' level. Climate change is thus dealt as a technological problem which does not neccesitate public participation.

The Fukushima accident in 2011 triggered citizen participation in public deliberation on energy and environmental management for a short period of time. More than 88,000 people submitted their comments on government's energy and environmental strategy and town meetings were held across the nation (Nakamura, 2017). Citizen participatory actions surged and called for local and national referendums on the operation of nuclear power plants. However, the willingness of Japanese citizens to take civic actions and participate in political and social decision making have declined since the Fukushima accident (Kobayashi, 2015). It appears that the trauma of nuclear accident faded gradually by the mid-2010s, and the decreasing media coverage on civic activism and the future of energy system inferred that much of the population is indifferent to policy making.

However, studies show that there is indeed willingness to participate in governance to a greater degree, and there are major institutional barriers that do not facilitate a deliberative democratic process (Chiavacci & Obinger, 2018; Hardacre et al., 2021; Nakamura, 2019)

"Japanese policy making process is top down. And there's no room for the public participation. Even though they occasionally hold public hearings, and some NGO's send comments to the first drafts, this period is short and there's no deliberative discussions between policymakers and the public interest. [...] then we have authorised those policies mainly because experts say yes and then public say no rejections." (Interview with an academic, May 15th, 2024).

The GX Basic Policy, which should structurally transform the Japanese economy and society to meet the decarbonisation goals, has only one month of public commenting period, and received merely 3,303 answers¹⁶. The public commenting system, as an expert from a think tank pointed out, "is not really useful for anything" as it opens for a short period of time after all the policy deliberations have been conducted behind closed doors in METI. Even though the officials of METI emphasised that it is a form of public engagement, if it does lead to constructive contestations or if it is not incorporated into the policy, public commenting does not fulfil the requirements for participatory decision making.

The lack of public participation infers a 'chicken or the egg' causality dilemma: is the public not interested in climate change mitigation because of the bureaucratic policy making system that excludes their voice, or is the policy making process incapable of involving public voice because

¹⁶ G X 実現に向けた基本方針に対するパブリックコメントの結果について, GX Implementation Council, Cabinet Secretariat. 10th February 2023. <u>https://public-comment.e-</u>gov.go.jp/servlet/PcmFileDownload?seqNo=0000248593

there is no coherent civic activism around climate change. A growing body of interdisciplinary research from physchology and behvaioural studies shows that the public participation for climate change adaptation are set within the broader frameworks of governance (Hügel & Davies, 2020). The systemic barriers impede participation from being further embedded, as seen in post-Fukushima civic activism in Japan. Moreover, limited participation and technical fixes in climate change policy work to conceal conflicts and ambivalences which will not dissapear, but may lead to resistance by excluded stakeholders in the future (Sprain, 2016).

The lack of public engagement is compatible with the 'market failure model' and 'socio-technical transition model' of climate governance detailed by (Boasson & Tatham, 2023). Furthermore, it also fits the modus operandi of METI and industry policy, in which the bureacuracy complex and the industry decides on the direction of broader industrial policy. However, it is lacking a grander vision and ideal for socio-economic transition which was still present in the era of post-war industrialisation. In the late 20th century, industrial policy was driven with a vision to transform the war-torn, disintegrated Japanese society to a modern, advanced economy. Now, the dominant narrative is shifted to evaluate what is 'realistic' given the current circumstances, rather than aspiring for a future based on ideals. Further researches are needed on how to transform the Japanese climate transition governance into a more participatory and emancipatory structure, fit for the era of what Bruno Latour described as the 'New Climatic Regime' (Latour, 2018).

6. Conclusion

This thesis has critically examined the Japanese climate policy framework, focusing on the central role of the Ministry of Economy, Trade and Industry (METI) in shaping the national decarbonization strategy. The analysis reveals that METI's technocratic and bureaucratic approach, characterized by a centralized and top-down governance structure, significantly influences the direction and implementation of Japan's decarbonisation policies. This governance style has created a narrow focus on technical solutions within the manufacturing and energy sectors, often at the expense of broader stakeholder engagement and innovative policy pathways.

The research highlights several key findings. Firstly, METI's historic ties with industrial associations and manufacturing companies have entrenched a techno-managerial narrative in climate policy, emphasizing technological and infrastructural challenges over social and political considerations. This approach has led to a self-reinforcing loop where policy directions are largely shaped by a limited group of stakeholders, resulting in manufactured consensus that marginalizes alternative voices. Furthermore, this thesis identifies a significant gap between the progressive initiatives of local municipalities, NGOs, and climate-conscious business associations, and the central climate policies orchestrated by METI. This misalignment suggests that local and grassroots efforts are often overlooked or underrepresented in the national policy discourse, limiting the potential for more comprehensive and inclusive climate strategies. Finally, the study underscores the need for a more holistic approach to climate governance that integrates social, political, and ecological dimensions. The current policy framework's emphasis on technical fixes is insufficient to address the multifaceted challenges posed by climate change. Effective climate mitigation and adaptation require broader societal engagement, transparency in policy-making, and the inclusion of diverse perspectives to foster innovative solutions.

In conclusion, while Japan's recent commitment to carbon neutrality by 2050 represents a significant step towards aligning with global climate goals, the existing governance framework under METI's leadership is inadequately prepared to meet the complex demands of climate transition. To achieve structural changes for deep decarbonisation, Japan must adopt a more democratic, participatory, and interdisciplinary approach to climate policy, ensuring that all stakeholders have a voice in shaping the nation's decarbonization journey. Numerous avenues for future research on this topic are available. A more comprehensive understanding of the negotiation processes within Shingikai policy councils could serve as the foundation for a comparative analysis, juxtaposing the strategies and discourses employed by the EU, the US, and Japan. Additionally, investigating the potential of climate change policy to stimulate democratic participation in Japan presents a promising area for further scholarly inquiry.

References

- Ahonen, H.-M., Kessler, J., Michaelowa, A., Espelage, A., & Hoch, S. (2022). Governance of Fragmented Compliance and Voluntary Carbon Markets Under the Paris Agreement. *Politics and Governance*, 10(1). https://doi.org/10.17645/pag.v10i1.4759
- Akkemik, K. A. (2015). Recent Industrial Policies in Japan. In M. Yülek (Ed.), *Economic Planning and Industrial Policy in the Globalizing Economy* (Vol. 13, pp. 181–205).
 Springer International Publishing. https://doi.org/10.1007/978-3-319-06474-1_9
- ANRE. (2022). Here's more about the 6th Strategic Energy Plan. Thermal power generation to be decarbonized while ensuring a stable supply of electricity. Electricity Infrastructure Division, Electricity and Gas Industry Department, ANRE.
 https://www.enecho.meti.go.jp/en/category/special/article/detail 175.html
- Apple. (2023). 2023 Environmental Progress Report. https://www.apple.com/environment/pdf/Apple_Environmental_Progress_Report_2023.p df
- Arent, D., Arndt, C., Miller, M., Tarp, F., & Zinaman, O. (Eds.). (2017). *The Political Economy of Clean Energy Transitions* (1st ed.). Oxford University PressOxford. https://doi.org/10.1093/oso/9780198802242.001.0001
- Beck, S., Jasanoff, S., Stirling, A., & Polzin, C. (2021). The governance of sociotechnical transformations to sustainability. *Current Opinion in Environmental Sustainability*, 49, 143–152. https://doi.org/10.1016/j.cosust.2021.04.010
- Behling, N., Williams, M. C., Behling, T. G., & Managi, S. (2019). Aftermath of Fukushima: Avoiding another major nuclear disaster. *Energy Policy*, *126*, 411–420. https://doi.org/10.1016/j.enpol.2018.11.038
- Boasson, E. L., & Tatham, M. (2023). Climate policy: From complexity to consensus? *Journal of European Public Policy*, 30(3), 401–424. https://doi.org/10.1080/13501763.2022.2150272
- Buzan, B., Wæver, O., & De Wilde, J. (1997). Security: A New Framework for Analysis. Lynne Rienner Publishers. https://doi.org/10.1515/9781685853808
- Capano, G., & Lippi, A. (2017). How policy instruments are chosen: Patterns of decision makers' choices. *Policy Sciences*, *50*(2), 269–293. https://doi.org/10.1007/s11077-016-9267-8

- Chapman, A., & Itaoka, K. (2018). Curiosity, economic and environmental reasoning: Public perceptions of liberalization and renewable energy transition in Japan. *Energy Research & Social Science*, 37, 102–110. https://doi.org/10.1016/j.erss.2017.09.026
- Chapman, A., & Pambudi, N. A. (2018). Strategic and user-driven transition scenarios: Toward a low carbon society, encompassing the issues of sustainability and societal equity in Japan. *Journal of Cleaner Production*, 172, 1014–1024. https://doi.org/10.1016/j.jclepro.2017.10.225
- Cheng, C., Blakers, A., Stocks, M., & Lu, B. (2022). 100% renewable energy in Japan. *Energy Conversion and Management*, 255, 115299. https://doi.org/10.1016/j.enconman.2022.115299
- Chiavacci, D., & Obinger, J. (Eds.). (2018). Social movements and political activism in contemporary Japan: Re-emerging from invisibility (1 Edition). Routledge, Taylor & Francis Group.
- Chowdhury, S., Sumita, U., Islam, A., & Bedja, I. (2014). Importance of policy for energy system transformation: Diffusion of PV technology in Japan and Germany. *Energy Policy*, 68, 285–293. https://doi.org/10.1016/j.enpol.2014.01.023
- Climate Integrate. (2024). Report "Policy Making Process in Japan: An Examination of the Case of the Basic Energy Plan" (in Japanese) レポート「日本の政策決定プロセス:エネ

ルギー基本計画の事例の検証」. https://climateintegrate.org/archives/6201

- Colignon, R., & Usui, C. (2001). THE RESILIENCE OF JAPAN'S IRON TRIANGLE. Asian Survey, 41(5), 865–895. https://doi.org/10.1525/as.2001.41.5.865
- Dahrendorf, R. (1968). Essays in the theory of society. Routledge.
- De Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., & Soares, G. R. D. L. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe*, 32(1), 19. https://doi.org/10.1186/s12302-020-0300-3
- Dentsu Institute. (2023). 気候不安に関する意識調査(国際比較版). *電通総研コンパス vol.9*.
- Diez, T., Lucke, F. V., & Wellmann, Z. (2016). The Securitisation of Climate Change: Actors, processes and consequences (1st ed.). Routledge. https://doi.org/10.4324/9781315665757

- Duffield, J. S. (2016). Japanese Energy Policy after Fukushima Daiichi: Nuclear Ambivalence. *Political Science Quarterly*, *131*(1), 133–162. https://doi.org/10.1002/polq.12431
- Duffield, J. S., & Woodall, B. (2011). Japan's new basic energy plan. *Energy Policy*, *39*(6), 3741–3749. https://doi.org/10.1016/j.enpol.2011.04.002
- Eikeland, P. O., & Sæverud, I. A. (2007). Market Diffusion of New Renewable Energy in
 Europe: Explaining Front-Runner and Laggard Positions. *Energy & Environment*, 18(1),
 13–36. https://doi.org/10.1260/095830507780157276
- Elder, M. (2003). METI and Industrial Policy in Japan. Change and Continuity. In Schaede, U. and Grimes, W. (Eds). Japan's managed globalization: Adapting to the twenty-first century. Routledge.
- ember-climate.org. (2023). Yearly electricity data. ember-climate.org.
- Eriksen, S. H., Nightingale, A. J., & Eakin, H. (2015). Reframing adaptation: The political nature of climate change adaptation. *Global Environmental Change*, 35, 523–533. https://doi.org/10.1016/j.gloenvcha.2015.09.014
- Geels, F. W., Sovacool, B. K., Schwanen, T., & Sorrell, S. (2017). Sociotechnical transitions for deep decarbonization. *Science*, 357(6357), 1242–1244. https://doi.org/10.1126/science.aao3760
- George, T. S. (2002). *Minamata: Pollution and the struggle for democracy in postwar Japan* (1. paperback ed). Harvard University Asia Center.
- Goldman, M. J., Turner, M. D., & Daly, M. (2018). A critical political ecology of human dimensions of climate change: Epistemology, ontology, and ethics. *WIREs Climate Change*, 9(4), e526. https://doi.org/10.1002/wcc.526
- Guston, D. H. (2014). Understanding 'anticipatory governance'. *Social Studies of Science*, 44(2), 218–242. https://doi.org/10.1177/0306312713508669
- Haas, R., Panzer, C., Resch, G., Ragwitz, M., Reece, G., & Held, A. (2011). A historical review of promotion strategies for electricity from renewable energy sources in EU countries. *Renewable and Sustainable Energy Reviews*, 15(2), 1003–1034. https://doi.org/10.1016/j.rser.2010.11.015
- Hardacre, H., George, T. S., Komamura, K., & Seraphim, F. (Eds.). (2021). *Japanese* constitutional revisionism and civic activism. Lexington Books.

- Harrison, K. (1998). Talking with the Donkey: Cooperative Approaches to Environmental Protection. *Journal of Industrial Ecology*, 2(3), 51–72. https://doi.org/10.1162/jiec.1998.2.3.51
- Heal, G. (2022). Economic Aspects of the Energy Transition. *Environmental and Resource Economics*, 83(1), 5–21. https://doi.org/10.1007/s10640-022-00647-4
- Hermwille, L. (2016). The role of narratives in socio-technical transitions—Fukushima and the energy regimes of Japan, Germany, and the United Kingdom. *Energy Research & Social Science*, 11, 237–246. https://doi.org/10.1016/j.erss.2015.11.001
- Hinkel, J., Mangalagiu, D., Bisaro, A., & Tàbara, J. D. (2020). Transformative narratives for climate action. *Climatic Change*, 160(4), 495–506. https://doi.org/10.1007/s10584-020-02761-y
- Hügel, S., & Davies, A. R. (2020). Public participation, engagement, and climate change adaptation: A review of the research literature. *WIREs Climate Change*, 11(4), e645. https://doi.org/10.1002/wcc.645
- Ichinosawa, M., Sawa, T., Tanaka, E. H., Fujiwara, S., & Nishioka, A. (2016). Solutions for changes to cross-regional grid operation improving from electricity system reform. *Hitachi Review*, 65(4), 21–29.
- IEA. (2021a). Japan 2021 Energy Policy Review. International Energy Agency. https://iea.blob.core.windows.net/assets/3470b395-cfdd-44a9-9184-0537cf069c3d/Japan2021 EnergyPolicyReview.pdf
- IEA. (2021b). Net Zero by 2050. A Roadmap for the Global Energy Sector. https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
- Incerti, T., & Lipscy, P. Y. (2021). The Politics of Energy and Climate Change in Japan under the Abe Government. In T. Hoshi & P. Y. Lipscy (Eds.), *The Political Economy of the Abe Government and Abenomics Reforms* (1st ed., pp. 445–476). Cambridge University Press. https://doi.org/10.1017/9781108921145.015
- IPCC. (2023). CLIMATE CHANGE 2023. Synthesis Report. Summary for Policymakers. https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf
- Ito, M., Kiyono, K., Okuno-Fujiwara, M., Suzumura, K., & Shell, C. (Eds.). (1991). *Economic Analysis of Industrial Policy*. Academic Press.
- Japan Climate Initiative. (2023). 5th Anniversary of the Japan Climate Initiative: Achievements and Future Developments. https://japanclimate.org/english/wpcontent/uploads/sites/3/2023/07/JCI-5th-anniversary_EN.pdf
- Japan Electric Power Information Center. (2022). *The Electric Power Industry in Japan 2022*. https://www.jepic.or.jp/pub/pdf/epijJepic2022.pdf
- JCLP. (2020). Proposals for the Review of Japan's Long-Term Energy Demand (Energy Mix). https://japan-clp.jp/wp-content/uploads/2020/10/20201016_JCLP_policyproposals_energy-mix-.pdf
- Johnson, C. A. (1982). *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925 1975.* Stanford Univ. Press.
- Jordan, A., Lorenzoni, I., Tosun, J., I Saus, J. E., Geese, L., Kenny, J., Saad, E. L., Moore, B., & Schaub, S. G. (2022). The political challenges of deep decarbonisation: Towards a more integrated agenda. *Climate Action*, 1(1), 6. https://doi.org/10.1007/s44168-022-00004-7
- Kameyama, Y. (2016). *Climate Change Policy in Japan* (0 ed.). Routledge. https://doi.org/10.4324/9781315733920
- Kameyama, Y. (2021). Climate Change Policy: Can New Actors Affect Japan's Policy-Making in the Paris Agreement Era? *Social Science Japan Journal*, 24(1), 67–84. https://doi.org/10.1093/ssjj/jyaa051
- Kimura, O. (2009). The National Programs for Development of Energy Technologies. Central Research Institute of Electri Power Industry. SERC Discussion Paper, SERC09007. https://www.denken.or.jp/jp/serc/research_re/download/09007dp.pdf
- Kingston, J. (2012). Japan's Nuclear Village. *The Asia-Pacific Journal*, 10(37-1.). https://apjjf.org/wp-content/uploads/2023/11/article-202.pdf
- Kobayashi, T. (2015). Lower willingness for political and social activities of the Japanese and its background: From the ISSP survey on citizenship—Survey results of Japan. NHK Mon. Rep. Broadcast Res.
- Konaga, K. (1983). Industrial Policy: The Japanese Version of a Universal Trend. *Journal of Japanese Trade & Industry*, *4*, 18–23.
- Koppenborg, F., & Hanssen, U. (2021). Japan's Climate Change Discourse: Toward Climate Securitisation? *Politics and Governance*, 9(4), 53–64. https://doi.org/10.17645/pag.v9i4.4419

- Kosugi, M., & Baba, K. (2023). Five types on perception of global warming in Japanese. *Frontiers in Climate*, 5, 1227585. https://doi.org/10.3389/fclim.2023.1227585
- Krauss, E. S., & Pekkanen, R. (2011). *The rise and fall of Japan's LDP: Political party* organizations as historical institutions. Cornell University Press.
- Kucharski, J. B., & Unesaki, H. (2018). An institutional analysis of the Japanese energy transition. *Environmental Innovation and Societal Transitions*, 29, 126–143. https://doi.org/10.1016/j.eist.2018.07.004
- Kuramochi, T. (2015). Review of energy and climate policy developments in Japan before and after Fukushima. *Renewable and Sustainable Energy Reviews*, 43, 1320–1332. https://doi.org/10.1016/j.rser.2014.12.001
- Kuriyama, A., Xianbing, L., Katsuhiko, N., Akibi, T., & Yugo, T. (2024). Importance of longterm flexibility in a 100% renewable energy scenario for Japan. *Sustainability Science*.
- Latour, B. (2018). *Down to earth: Politics in the new climatic regime* (English edition). Polity Press.
- Lazarus, R. L. (2009). Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future. Georgetown Law Faculty Publications and Other Works, 159. https://scholarship.law.georgetown.edu/facpub/159
- Lechevalier, S. (2024). Society 5.0 and new capitalism: Complementarities and contradictions. *Asia Pacific Business Review*, 30(3), 467–484. https://doi.org/10.1080/13602381.2024.2320538
- Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45(2), 123–152. https://doi.org/10.1007/s11077-012-9151-0
- Luta, A. (2011). Japan after the Quake: Prospects for Climate Policy. *FNI Climate Policy Perspectives*, *1*. https://www.osti.gov/etdeweb/servlets/purl/22017537
- METI. (2014). *Strategic Energy Plan 2014*. https://www.enecho.meti.go.jp/en/category/others/basic_plan/pdf/4th_strategic_energy_p lan.pdf
- METI. (2021a). 6th Strategic Energy Plan. https://www.enecho.meti.go.jp/category/others/basic_plan/pdf/strategic_energy_plan.pdf

- METI. (2021b). Green Growth Strategy Through Achieving Carbon Neutrality in 2050. https://www.meti.go.jp/english/policy/energy_environment/global_warming/ggs2050/pdf /ggs_full_en1013.pdf
- METI. (2023). *The Basic Policy for the Realization of GX*. https://www.meti.go.jp/english/press/2023/pdf/0210_003a-2.pdf
- Mizuno, E. (2014). Overview of wind energy policy and development in Japan. *Renewable and Sustainable Energy Reviews*, *40*, 999–1018. https://doi.org/10.1016/j.rser.2014.07.184
- MOE. (2002). *Minamata Disease: The History and Measures*. Environmental Health Department, MOE. https://www.env.go.jp/en/chemi/hs/minamata2002/index.html
- MOE. (2015). Submission of Japan's Intended Nationally Determined Contribution (INDC). https://www.env.go.jp/content/900451275.pdf
- MOE. (2020). *令和2 年版 環境 · 循環型社会 · 生物多様性白書, 2020 White Paper on the Environment*. Ministry of the Environment. https://www.env.go.jp/policy/hakusyo/r02/pdf.html
- MOE. (2021). Initiatives of the Ministry of the Environment to Achieve Carbon Neutrality by 2050. *Japan Environment Quarterly*, *26*(January 2021). https://www.env.go.jp/en/focus/jeq/issue/vol26/feature.html
- Moe, E. (2011). Vested interests, energy efficiency and renewables in Japan. *Energy Policy*, S0301421511007841. https://doi.org/10.1016/j.enpol.2011.09.070
- Moe, T. M. (2015). Vested Interests and Political Institutions. *Political Science Quarterly*, 130(2), 277–318. https://doi.org/10.1002/polq.12321
- Muiderman, K., Gupta, A., Vervoort, J., & Biermann, F. (2020). Four approaches to anticipatory climate governance: Different conceptions of the future and implications for the present. *WIREs Climate Change*, 11(6), e673. https://doi.org/10.1002/wcc.673
- Nakamura, H. (2017). Political and environmental attitude toward participatory energy and environmental governance: A survey in post-Fukushima Japan. *Journal of Environmental Management*, 201, 190–198. https://doi.org/10.1016/j.jenvman.2017.06.053
- Nakamura, H. (2019). Six years after: 'Fukushima memories' and continued willingness to participate in energy and environmental policy-making process in Japan. *Contemporary Japan*, 31(1), 21–39. https://doi.org/10.1080/18692729.2018.1543244

- Nordhaus, W. D. (1991). To Slow or Not to Slow: The Economics of The Greenhouse Effect. *The Economic Journal*, *101*(407), 920. https://doi.org/10.2307/2233864
- Oberthür, S., & Von Homeyer, I. (2023). From emissions trading to the European Green Deal: The evolution of the climate policy mix and climate policy integration in the EU. *Journal of European Public Policy*, *30*(3), 445–468. https://doi.org/10.1080/13501763.2022.2120528
- Ogawa, H., & Wildasin, D. E. (2009). Think Locally, Act Locally: Spillovers, Spillbacks, and Efficient Decentralized Policymaking. *American Economic Review*, 99(4), 1206–1217. https://doi.org/10.1257/aer.99.4.1206
- Ohta, H. (2020). The Analysis of Japan's Energy and Climate Policy from the Aspect of Anticipatory Governance. *Energies*, *13*(19), 5153. https://doi.org/10.3390/en13195153
- Ohta, H. (2021). Japan's Policy on Net Carbon Neutrality by 2050. *East Asian Policy*, *13*(01), 19–32. https://doi.org/10.1142/S1793930521000027
- Ohta, H., & Barrett, B. F. D. (2023). Politics of climate change and energy policy in Japan: Is green transformation likely? *Earth System Governance*, 17, 100187. https://doi.org/10.1016/j.esg.2023.100187
- Okuno-Fujiwara, M. (1991). Industrial Policy in Japan: A Political Economy View. In Krugman, P. (Eds.) Trade with Japan: Has the Door Opened Wider? (pp. 271-304.). University of Chicago Press. http://www.nber.org/chapters/c8667
- O'Lear, S. (2016). Climate science and slow violence: A view from political geography and STS on mobilizing technoscientific ontologies of climate change. *Political Geography*, *52*, 4–13. https://doi.org/10.1016/j.polgeo.2015.01.004
- Olsen, J. P. (2006). Maybe It Is Time to Rediscover Bureaucracy. *Journal of Public Administration Research and Theory*, *16*(1), 1–24. https://doi.org/10.1093/jopart/mui027
- Ortiz-Moya, F., Kataoka, Y., Saito, O., Mitra, B. K., & Takeuchi, K. (2021). Sustainable transitions towards a resilient and decentralised future: Japan's Circulating and Ecological Sphere (CES). *Sustainability Science*, *16*(5), 1717–1729. https://doi.org/10.1007/s11625-021-00941-y
- Oshiro, K., Kainuma, M., & Masui, T. (2017). Implications of Japan's 2030 target for long-term low emission pathways. *Energy Policy*, 110, 581–587. https://doi.org/10.1016/j.enpol.2017.09.003

Ozaki, R. (1970). Japanese Views on Industrial Organization. Asian Survey, 10(Oct.), 872-89.

- Pacheco-Vega, R. (2020). Environmental regulation, governance, and policy instruments, 20 years after the stick, carrot, and sermon typology. *Journal of Environmental Policy & Planning*, 22(5), 620–635. https://doi.org/10.1080/1523908X.2020.1792862
- Pempel, T. J. (1992). Bureaucracy in Japan. PS: Political Science & Politics, 25(1), 19–24. https://doi.org/10.2307/419570
- Peng, H., & Liu, Y. (2018). How government subsidies promote the growth of entrepreneurial companies in clean energy industry: An empirical study in China. *Journal of Cleaner Production*, 188, 508–520. https://doi.org/10.1016/j.jclepro.2018.03.126
- Renewable Energy Institute. (2017). *Feed-in Tariffs in Japan: Five Years of Achievements and Future Challenges*. https://www.renewableei.org/en/activities/reports/img/pdf/20170810/REI_Report_20170908_FIT5years_Web_E N.pdf
- Renewable Energy Institute. (2022). Japan's "GX: Green Transformation Policy" is a Missed Opportunity to Respond to the Current Climate and Energy Crises. https://www.renewable-ei.org/pdfdownload/activities/REIcomment GX EN.pdf
- Renewable Energy Institute. (2023a). Proposal for the 2035 Energy Mix (First Edition) Toward Decarbonizing Electricity with Renewable Energy. https://www.renewableei.org/pdfdownload/activities/REI_2035_Study_EN.pdf
- Renewable Energy Institute. (2023b). *Statistics, Electricity Market*. https://www.renewableei.org/en/statistics/electricitymarket/?cat=retail
- Scheiner, E. (2005). Democracy without Competition in Japan: Opposition Failure in a One-Party Dominant State (1st ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511610660
- Schumacher, K., Chenet, H., & Volz, U. (2020). Sustainable finance in Japan. Journal of Sustainable Finance & Investment, 10(2), 213–246. https://doi.org/10.1080/20430795.2020.1735219
- Sofer, K. (2016). Climate Politics in Japan. The impacts of public opinion, bureaucratic rivalries, and interest groups on Japan's environmental agenda. Sasakawa USA. Climate Politics in Japan The impacts of public opinion, bureaucratic rivalries, and interest groups on Japan's environmental agenda

- Sovacool, B. K., Hess, D. J., Amir, S., Geels, F. W., Hirsh, R., Rodriguez Medina, L., Miller, C., Alvial Palavicino, C., Phadke, R., Ryghaug, M., Schot, J., Silvast, A., Stephens, J., Stirling, A., Turnheim, B., Van Der Vleuten, E., Van Lente, H., & Yearley, S. (2020).
 Sociotechnical agendas: Reviewing future directions for energy and climate research. *Energy Research & Social Science*, *70*, 101617. https://doi.org/10.1016/j.erss.2020.101617
- Sprain, L. (2016). Paradoxes of Public Participation in Climate Change Governance. *The Good Society*, 25(1), 62–80. https://doi.org/10.5325/goodsociety.25.1.0062
- Swyngedouw, E. (2015). The Non-political Politics of Climate Change. *ACME: An International Journal for Critical Geographies*, *12*(1), 1–8.
- Tagliapietra, S., Zachmann, G., Edenhofer, O., Glachant, J.-M., Linares, P., & Loeschel, A. (2019). The European union energy transition: Key priorities for the next five years. *Energy Policy*, 132, 950–954. https://doi.org/10.1016/j.enpol.2019.06.060
- Takamura, Y. (2015). Chapter 3. Climate Change and the Law in Japan. In H.-J. Koch, D. König,
 J. Sanden, & R. Verheyen (Eds.), *Legal Regimes for Environmental Protection* (pp. 37–48). Brill | Nijhoff. https://doi.org/10.1163/9789004302839_005
- Takao, Y. (2012). Making Climate Change Policy Work at the Local Level: Capacity-Building for Decentralized Policy Making in Japan. *Pacific Affairs*, 85(4), 767–788. https://doi.org/10.5509/2012854767
- Takao, Y. (2016). *Japan's Environmental Politics and Governance* (0 ed.). Routledge. https://doi.org/10.4324/9781315720043
- Tanner, T., & Allouche, J. (2011). Towards a New Political Economy of Climate Change and Development. *IDS Bulletin*, 42(3), 1–14. https://doi.org/10.1111/j.1759-5436.2011.00217.x
- Taylor, C., Pollard, S., Rocks, S., & Angus, A. (2012). Selecting Policy Instruments for Better Environmental Regulation: A Critique and Future Research Agenda. *Environmental Policy and Governance*, 22(4), 268–292. https://doi.org/10.1002/eet.1584
- The Japan Times. (2024, May 1). *G7 to phase out coal-fired power plants by mid-2030s*. https://www.japantimes.co.jp/environment/2024/05/01/energy/g7-coal-power-plants/
- Thomas, C. D., Cameron, A., Green, R. E., Bakkenes, M., Beaumont, L. J., Collingham, Y. C., Erasmus, B. F. N., De Siqueira, M. F., Grainger, A., Hannah, L., Hughes, L., Huntley, B.,

Van Jaarsveld, A. S., Midgley, G. F., Miles, L., Ortega-Huerta, M. A., Townsend Peterson, A., Phillips, O. L., & Williams, S. E. (2004). Extinction risk from climate change. *Nature*, *427*(6970), 145–148. https://doi.org/10.1038/nature02121

- TMG. (2010). Proposal for Nationwide Introduction of Cap & Trade. Experience from Tokyo. (In Japanese) キャップ&トレードの全国導入についての提言~東京における実績を踏 まえて~. https://www.env.go.jp/council/06earth/y0610-10/900423826.pdf
- TMG. (2019). Zero Emission Tokyo Strategy. A decarbonization strategy to realize a Tokyo that serves as a pioneer for our brilliant future. https://www.kankyo.metro.tokyo.lg.jp/documents/d/kankyo/full-ver-ze-strategy0311
- TMG. (2024). Tokyo Cap-and-Trade Program. Significant Emission Reductions Continue at Covered Facilities in the Third Fiscal Year of the Third Compliance Period. Bureau of Environment.

https://www.kankyo.metro.tokyo.lg.jp/documents/d/kankyo/resultsofthethird3

- Trencher, G., Healy, N., Hasegawa, K., & Asuka, J. (2019). Discursive resistance to phasing out coal-fired electricity: Narratives in Japan's coal regime. *Energy Policy*, 132, 782–796. https://doi.org/10.1016/j.enpol.2019.06.020
- Trencher, G., & Van Der Heijden, J. (2019). Contradictory but also complementary: National and local imaginaries in Japan and Fukushima around transitions to hydrogen and renewables. *Energy Research & Social Science*, 49, 209–218. https://doi.org/10.1016/j.erss.2018.10.019
- Watanabe, Y. (2022). JAPAN 2022. Technology Collaboration Programme by IEA. IEA-Wind. https://iea-wind.org/wp-content/uploads/2023/12/Japan_2022.pdf

WCED (Ed.). (1987). Our Common Future. Oxford University Press.

- Weber, E. U. (2015). Climate Change Demands Behavioral Change: What Are the Challenges? *Social Research*, 82(3), 561–580.
- Wen, D., Gao, W., Kuroki, S., Gu, Q., & Ren, J. (2021). The effects of the new Feed-In Tariff Act for solar photovoltaic (PV) energy in the wake of the Fukushima accident in Japan. *Energy Policy*, 156, 112414. https://doi.org/10.1016/j.enpol.2021.112414
- Whittaker, D. H., & Nakata, Y. (2024). Reforming Japanese capitalism: Introduction. Asia Pacific Business Review, 30(3), 421–432. https://doi.org/10.1080/13602381.2024.2320533

- Yamada, T. (2021). Transforming the Dynamics of Climate Politics in Japan: Business' Response to Securitization. *Politics and Governance*, 9(4), 65–78. https://doi.org/10.17645/pag.v9i4.4427
- Yu, H. J. J., Popiolek, N., & Geoffron, P. (2016). Solar photovoltaic energy policy and globalization: A multiperspective approach with case studies of Germany, Japan, and China. *Progress in Photovoltaics: Research and Applications*, 24(4), 458–476. https://doi.org/10.1002/pip.2560

Appendix

List of sample questions for the semi-structured interviews

What do you perceive as the main constraints for reaching agreements on climate policy among governments, ministries, and industrial actors regarding Japanese climate policy?

In what ways does METI's involvement contribute to or hinder the development of effective and ambitious climate policies?

What are the perceived limitations or advantages of a centralized approach to climate policy making, particularly in the context of Japan?

How would you evaluate the electricity market liberalization and the legal unbundling of the ten vertically integrated electricity companies? How has the feed-in tariff (FIT) system impacted the operation of regional utility companies?

What is the process of climate policy-making in Japan, how are the stakeholders selected, invited, moderated?

What is the process of stakeholder consultation? Is the Japanese public involved in the policy making/execution? How is the public engaged to take active role in decarbonisation?

What is the rationale for maintaining a voluntary participation approach to GX/carbon trading instead of having punitive measures?

What are the points of contestation between METI and other ministries (especially MOE) in environmental and climate policy? How are these disagreements resolved, consensus reached?