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# Japan's Spending Plans for Climate and Energy

**Unpacking Japan's National Budget for Fiscal 2024** 



## 日本政府の気候・エネルギー予算と GX投資の現状

2024年度の気候・エネルギー予算と3年間のGX投資の分析



The size of government budgets and the steady implementation of upfront investments by governments are crucial factors in promoting policies and measures relating to climate and energy.

On January 16, 2024, Cabinet approved the government of Japan's budget for 2024.<sup>1,2</sup> The budget also incorporates GX (Green Transformation) investments funded by GX Economy Transition Bonds under the policies to promote a GX (On GX, see our report).

This report summarizes and examines the overall picture of the Japanese government's 2024 climate/ energy budget<sup>3</sup> and current tallies for the GX investments for 2022 to 2024.

<sup>1</sup> In this report, budget references are for the Japanese government's fiscal year. For example, fiscal 2024 starts April 1, 2024 and ends March 31, 2025.

<sup>2</sup> Ministry of Finance "FY2024 Budget Government Draft" (in Japanese)

<sup>3</sup> Analysis of a national budget is a daunting task. In this report, we define "climate/energy budget" as the total of funds budgeted for projects/programs we deem to be related to climate and/or energy. We include climate mitigation and energy, but exclude the following: budget items where only a portion is used for climate/energyrelated activities; carbon sequestration in forests; contributions to international organizations; climate observation; climate adaptation; and the Special Account for Reconstruction from the Great East Japan Earthquake. Due to methodology, our climate/energy budget totals may differ from published government numbers.

### **Key Findings**

Below are our main findings from compiling data we were able to obtain from official announcements and documents as well as direct inquiries to the relevant ministries.

- Of the total government budget of 113 trillion yen (\$750 billion, \$1=150 yen) for 2024, the total climate- and energy-related allocations amount to 1.75 trillion yen (\$11.7 billion), only 1.6% of the national budget. GX promotion measures account for 34.4% (603.6 billion yen) of the climate/energy allocations. The Ministry of Economy, Trade and Industry (METI) accounts for more than 70% of the climate/energy allocations. Of the climate/energy allocations, just three categories (energy efficiency; fossil fuels; and cross-sectoral, which includes subsidies to secure power generation sites, GX Promotion Organization expenditures, etc.) account for 60%, while renewables account for less than 10%.
- The GX budget for 2024 was halved from the 1.26 trillion yen budget request (\$8.4 billion) to 603.6 billion yen (\$4 billion), significantly less than the total of 2.97 trillion yen (\$19.8 billion) for 2022 and 2023. Requests by the relevant ministries for the categories of housing/buildings (148.4 billion yen), automotive (141.7 billion yen), and semiconductors (107.8 billion yen) were completely declined.
- More than one-third of the GX budget for 2024 is related to battery storage.
- Regarding fossil fuels, the budget for the Special Account for Energy Measures allocates a large amount to that category every year, but very little of the GX-related funds for 2022 to 2024 have been allocated. This suggests that while the government still aggressively funds fossil fuels, it is attempting to present GX in a positive light in order to gain acceptance for GX from institutional investors.
- If the government continues to invest in GX on the same scale as in the three years 2022 to 2024 (total 3.58 trillion yen), the total will come to about 12 trillion over 10 years, far short of the 20 trillion pledged by the government.
- There are significant disparities in the budget allocations by category for GX investments in 2022 to 2024 compared to the allocations of government investment and public-private investment planned for the next decade. Notably, government investment for renewables is extremely low relative to the 10-year plan.

# I. Climate and Energy within the Fiscal 2024 Budget

#### Climate/energy budget<sup>₄</sup> overview

Based on our compilation from official documents, the total budgets for climate and energy come to 1.75 trillion yen as part of the government's 113 trillion budget for 2024. That represents only 1.6% of the national budget. The GX budget (603.6 billion yen), accounting for 34.4% of the climate/energy budget, is financed by GX Economy Transition Bonds. More than one-third of the GX-related allocations for 2024 relate to battery storage.



<sup>4</sup> Total of climate/energy-related budgets in the government's 2024 budget. The numbers include budgets related to climate mitigation and energy, but do not include budgets where only part of the amounts is used for climate/energy-related activities and budgets for carbon sequestration in forests, contributions to international organizations, climate observation, and climate adaptation

# 02

#### Climate/energy budget breakdown (by ministry)

Of the total climate/energy budget (1.75 trillion yen), the Ministry of Economy, Trade and Industry (METI) accounts for the largest share (72%), followed by the Ministry of the Environment (MOE) (10%), the Ministry of Land, Infrastructure, Transport and Tourism (8%), and the Ministry of Education, Culture, Sports, Science and Technology (6%).



### **METI and MOE climate/energy budgets**

METI and MOE stand out with the largest shares of the national climate/energy budget, although METI's share is around seven times that of MOE. In most climate/energy categories, METI's amounts are larger than MOE's, and its fossil fuel-related budget (including hydrogen, ammonia and CCUS) is particularly large. MOE's share of the budget is allocated to categories such as cross-sectoral items (mainly local decarbonization), energy efficiency, and resource recycling.



#### Climate/energy budget breakdown (by category)

A breakdown (inner circle in Fig. 4) of the government's total climate/energy budget for 2024 (1.75 trillion yen) includes the cross-sectoral category at 21% (grants for power generation siting, funding for GX Promotion Organization, etc.),<sup>5</sup> energy efficiency (21%), fossil fuels<sup>6</sup> (20%), nuclear (14%), battery storage (13%), renewables (8%), and resource recycling (2%). In the energy efficiency category, a large share is allocated to housing/

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<sup>5</sup> Within the cross-sectoral category, the main areas in the GX budget include the Fund for GX Promotion Organization (120 billion yen), startup support (41 billion), and local decarbonization promotion subsidies (6 billion). Meanwhile, in the cross-sectoral category other than the GX budget, funds are mainly allocated to three broad categories (power generation siting (76 billion), local measures (63.6 billion), and international cooperation (20.6 billion), as well as financial and carbon markets (57 billion), and other cross-sectoral areas (35.6 billion).

<sup>6</sup> The fossil fuels category includes budgets for ammonia, hydrogen and CCUS.

buildings, aviation/shipping, and automotive.

In the battery storage, aviation/shipping, cross-sectoral, and renewables categories of the total budget figures, funds are mainly allocated under the GX budget (purple sections in outer circle in Fig. 4). Meanwhile, in the fossil fuels, nuclear, housing/buildings, and automotive categories, funds are mainly allocated under the Special Account for Energy Measures budget, while the proportion under the GX budget is smaller.

As a result, the three categories of energy efficiency, fossil fuels, and cross-sectoral account for 60% of the overall climate/energy budget for 2024, while renewables get less than 10%.



<sup>7</sup> In the outer circle of the graph, segments marked "GX" are under the government's GX budget, while segments without "GX" are budgeted under the government's Special Account for Energy Measures and the General Account.

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### II. Green Transformation (GX) Budget

The following is a summary of the GX components within the climate/energy budget for 2024 as described in Section 1.

#### Scale and current status of 10-year GX budget

The government plans to invest 20 trillion yen as upfront investment for the 10 years from 2023 onward (the government includes the 2022 supplementary budget in this amount) using GX Economy Transition Bonds (sovereign bonds), bringing total investment, including private sector funds, to more than 150 trillion yen by 2032. GX-related investment by the government so far includes 2.97 trillion yen implemented in 2022 and 2023. Combined with the 603.6 billion in the 2024 budget, the total for the three years comes to 3.58 trillion (Fig. 5).

If investment continues at this pace, the total will come to about 12 trillion yen over 10 years, well short of the 20 trillion pledged by the government. With regard to the 150 trillion yen as the combined total of public and private investment, no roadmap to attract the private investment portion (130 trillion) has been presented.

In fact, the 1.26 trillion yen indicated for GX promotion measures in 2024 at the time of the budget request (announced August 2023), ended up being halved to 603.6 billion in the draft budget (announced January 2024) approved by Cabinet after consultations with the Ministry of Finance. Some amounts in the budget request were completely absent from the draft budget, including housing/buildings (148.4 billion yen), automotive (141.7 billion), and semiconductors (107.8 billion). In other categories, significant reductions (to one-half or one-third) were made in the process of going from budget request to the draft budget. For example, from 498 billion yen to 230 billion for battery storage, from 117.1 billion to 63.3 billion for renewables, from 91 billion to 32.7 billion for energy efficiency in the manufacturing industry, and from 25.6 billion to 8.9 billion for hydrogen, etc.

As for other major countries, the U.S. government has pledged the equivalent of 50 trillion yen in decarbonization investments over 10 years (ave. 5 trillion yen annually), and the German government 33 trillion yen over 4 years (ave. 8 trillion yen annually). In comparison, GX investments pledged by the Japanese government are small at 20 trillion yen over 10 years (ave. 2 trillion yen annually). With such a large disparity, it will be challenging for Japanese industry to become internationally competitive in decarbonization markets.



### **GX budget breakdown (by category)**

The following is a breakdown of the GX budget, by category.

As a breakdown of 20 trillion yen of upfront investment over the next 10 years, the Japanese government has signaled that it will spend 6 to 8 trillion for non-fossil energy, 9 to 12 trillion for industrial transformation and energy efficiency, and 2 to 4 trillion for resource recycling and carbon fixation technologies, etc.

However, when we calculated the amount of GX-related government investments for 2022 to 2024 based on official data, we found that a large share has been allocated to the industrial transformation and energy efficiency category, which is inconsistent with the original allocations for 20 trillion yen (Fig. 6).



In addition, we find that the government's actual GX investments (by category) for the three years 2022 to 2024 as percentages of the 10-year amounts are only 3.1% for non-fossil energy, 22.7% for industrial transformation and energy efficiency, and 0.3% for resource recycling and carbon fixation technologies (Table 1).

As one can see, while the government's GX investments in 2022-2024 have prioritized budgets for industrial transformation and energy efficiency, investments have been low in non-fossil energy, and in resource recycling and carbon fixation technologies. At this pace, investments by category are a far cry from what the government has said it will spend over the next 10 years. Thus, it is uncertain whether Japan will realize the appropriate budget allocations and scales of investment needed to accelerate the country's energy transition.

Category	(A) Govt support FY2022- 2024 (actual)	(B) Govt support for next decade	(C) Public and private investment for next decade
Expansion of non-fossil energy	<ul> <li>217.6 bil yen</li> <li>(% of achievement for B:</li> <li>3-4%)</li> <li>Nuclear (145.4 bil yen)</li> <li>Renewables (63.3 bil yen)</li> <li>Hydrogen (8.9 bil yen)</li> </ul>	<ul> <li>6 - 8 tril yen</li> <li>Support for demand expansion of hydrogen and ammonia</li> <li>R&amp;D of new technologies related to renewables etc.</li> </ul>	<ul> <li>60 tril yen +</li> <li>Massive introduction of renewables</li> <li>Nuclear energy (R&amp;D of innovative reactors, etc.)</li> <li>Hydrogen, ammonia etc.</li> </ul>
Transformation of industrial structure on both supply and demand sides & Drastic reinforcement of energy efficiency	<ul> <li>2.38 tril yen</li> <li>(% of achievement for B: 20-26%)</li> <li>Battery storage (827.4 bil yen)</li> <li>Semiconductors (536 bil yen)</li> <li>Corporate energy efficiency (372.7 bil yen)</li> <li>Daily life (Housing/buildings) (326.9 bil yen)</li> <li>Automotive (273.6 bil yen)</li> <li>SAF (27.6 bil yen)</li> <li>Shipping (9.4 bil yen)</li> <li>Regional (9 bil yen)</li> </ul>	<ul> <li>9 - 12 tril yen</li> <li>Energy efficiency and fuel conversion for structural reform and improving profitability in the manufacturing industry</li> <li>Nationwide measures addressing domestic energy demands which achieve drastic energy efficiency</li> <li>R&amp;D of new technologies etc.</li> </ul>	<ul> <li>80 tril yen +</li> <li>Energy efficiency and fuel conversion in the manufacturing industry (e.g., steel, chemicals, cement, paper, automotive, etc.)</li> <li>Digital investment for decarbonization</li> <li>Establishment of battery industry</li> <li>Structural transformation of ship and aircraft industries</li> <li>Next-generation automobiles</li> <li>Housing and Buildings etc.</li> </ul>
Resource recycling and carbon fixation technologies etc.	<ul> <li>8.5 bil yen</li> <li>(% of achievement for B:</li> <li>0.2-0.4%)</li> <li>Resource recycling (8.5 bil yen)</li> </ul>	<ul> <li>2 - 4 tril yen</li> <li>R&amp;D and implementation of new technologies etc.</li> </ul>	<ul> <li>10 tril yen +</li> <li>Resource recycling industry</li> <li>Bio manufacturing</li> <li>CCS etc.</li> </ul>
Other support for R&D and deployment	<ul> <li>967 bil yen</li> <li>R&amp;D by GI Fund, etc. (806 bil yen)</li> <li>Funding for GX Promotion Organization (120 bil yen)</li> <li>Start-up assistance (41 bil yen)</li> </ul>		
Totals	3.58 tril yen	20 tril yen	Over 150 tril yen

#### Table. 01 Government's GX investment plan (10 years) vs actual (2022-2024)

Prepared by Climate Integrate based on government data

# **GX** public and private investment plan for 10 years vs current tally

In terms of the projected public and private investment of more than 150 trillion yen over the next 10 years, the breakdown indicated by the government (largest to smallest) is automotive (34 trillion), renewables (31 trillion), daily life (housing/buildings) (14 trillion), semiconductors (12 trillion), hydrogen, etc. (7 trillion), and battery storage (7 trillion) (Fig. 7).

The government's investments in those seven categories for the 2022 to 2024 period amount to the following: automotive (273.6 billion yen), renewables (63.3 billion), daily life (housing/buildings) (326.9 billion), semiconductors (536 billion), hydrogen, etc. (8.9 billion), and battery storage (827.4 billion) (Table 1). Compared to public and private investment projected for the next 10 years, current government investment in renewables has been extremely low, while a large amount of investment has already been made in nuclear and battery storage (Fig. 7).

As for aviation, steel, chemicals, and sustainable aviation fuel (SAF), GX budgetary allocations have been relatively small to date, but the government plans to use funds from GX Economy Transition Bonds to provide tax credits based on production volume for these areas as well as electric vehicles.



\* The dots do not include 'Other support for R&D and deployment' (967 bil), 'Corporate energy efficiency' (340 bil) and 'Regional' (9 bil) in Table 1(A), where GX priority category is unknown or not applicable. Of the 'Corporate energy efficiency' (372.7 bil), 32.7 bil was divided equally to Steel, Chemicals, Pulp and paper and Cement, based on use of the budget concerned.

Prepared by Climate Integrate based on the government's investment strategy (p.11) and website

As one can see, there has been a significant disparity so far in the government's GX investments in terms of budget allocations by category, compared to both government investment and public-private investment projected by the government for the next 10 years.

# 04

#### **GX Economy Transition Bonds issued in February 2024**

The first GX Economy Transition Bonds (1.6 trillion yen) were issued in February 2024. Proceeds will be used for GX investments budgeted in FY2022 and 2023. Of the 1.6 trillion yen, 756.4 billion is to be used for R&D under the Green Innovation Fund (GI Fund), 137 billion for R&D outside the GI Fund, and 715.5 billion for subsidy programs (Table 2).<sup>8</sup> However, the allocation amount for seven projects under the GI Fund (362.4 billion, 23% of the 1.6 trillion) had not been determined before the issuance (Fig. 8).<sup>9</sup>

While investments to be made by GX Economy Transition Bonds include unproven technologies such as ammonia co-firing in coal-fired power plants, the initial bond issuance in February did not include ammonia co-firing.

The GX components of the 2024 budget are expected to be covered by GX Economy Transition Bonds to be issued subsequent to February 2024.



<sup>8</sup> Japan Credit Rating Agency (JCR) "Climate Transition Bond Pre-issuance Verification Report" February 6, 2024 (p.2-4, Annex 4 p.28)

9 JCR "Climate Transition Bond Evaluation Results" February 27, 2024 (p.28)

Table. 02	GX Economy	Transition	Bond (Climate	Transition Bond	allocations
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	Budget year	Program type	Programs eligible for allocations (including some candidate programs)	Sector	Allocation (planned) (billion yen)
(1) GI Fund	2022 2023	R&D	1. Development of next-generation solar cells (Expansion of demonstration scale of perovskite solar cells)	Electricity	15.0
	2022	R&D	2. Lowering the cost of offshore wind power generation (Development of common infrastructure related to integration of wind turbines, floating structures, etc. in floating offshore wind power, floating offshore wind power demonstration project)	Electricity	* 1
	2022	R&D	3. Building a large-scale hydrogen supply chain (Demonstration of hydrogen power generation technology (high co-firing (equal or greater than 30%)) using large gas turbine)	Electricity	15.0
	2022	R&D	<ol> <li>Development of next-generation aircraft (development of electric aircraft)</li> </ol>	Transport	30.6
	2022	R&D	5. Development of next-generation ship (development of zero emission ship)	Transport	* 1
	2022	R&D	6. Development of fuel manufacturing technology using CO2 etc. (Development and demonstration of control technology that responds to raw material fluctuations in synthetic fuel (transportation fuel) production)	Transport	* 1
	2022	R&D	7. Hydrogen utilization in the steelmaking process (Expansion of demonstration scale of hydrogen reduction ironmaking technology)	Heat Manufacturing	256.4
	2022	R&D	8. Decarbonization of thermal processes in the manufacturing sector	Heat Manufacturing	32.5
	2022	R&D	<ol> <li>Building a large-scale hydrogen supply chain (commercialization demonstration of liquefied hydrogen/ MCH supply chain, research and development of dehydrogenation technology from ammonia for large-scale hydrogen transportation)</li> </ol>	Electricity and heat Manufacturing	* 1
	2022	R&D	10. Hydrogen production through water electrolysis using electricity derived from renewable energy, etc.	Electricity and heat Manufacturing	* 1
	2022	R&D	11. Achieving carbon neutrality in the waste and resource recycling field	Waste	44.5
	2022	R&D	12. Development of plastic raw material manufacturing technology using CO2 etc.	Waste Manufacturing (Chemical)	* 1
	2022	R&D	13. Promoting carbon recycling using CO2 as a direct raw material using bio-manufacturing technology	Manufacturing (Chemical)	* 1
Subt (subt	Subtotal of GI Funds (subtotal amount of *1, which has not yet been determined the amounts to be allocated)				756.4 (362.4)

\* 1:Detailed plans for these seven programs have not been determined at the time of verification. The actual allocation results of GI Fund will be disclosed in the post-issuance Reporting on the allocation of proceeds

(2) R&D other than GI Funds	2022	R&D	14. Among the post-5G information and communication system infrastructure reinforcement research and development projects, research and development of future technologies that are essential for realizing GX such as optoelectronic convergence	ICT	75.0
	2022	R&D	15. Innovative GX technology creation project	Transport Electricity and heat	49.6
	2023	R&D	16. Fast reactor demonstration reactor development project	Electricity	7.6
	2023	R&D	17. High temperature gas reactor demonstration reactor development project	Electricity and heat	4.8
Subto	tal of R	&D other t	han GI Funds		137.0
Subto	tal of C	BI Eligible	R&D Programs (No.1-14, 16 and 17)		843.8
Subto	tal of N	on Eligible	R&D Program (No. 15)		49.6
Total	of R&D	Programs			893.4
	Budget year	Program type	Programs eligible for allocations (including some candidate programs)	CBI sector criteria	Allocation (planned) (billion yen)
(3) Subsidy program	2022	Subsidy	18. Among the support projects for strengthening the supply chain of important materials in response to changes in the economic environment, the project supports strengthening the semiconductor supply chain for use in renewable energy components, EVs, electrified rail systems, storage batteries, power transmission and distribution systems, to achieve GX by improving power performance.	<ol> <li>Solar v2.3</li> <li>Wind v1.3</li> <li>Low carbon transport (Rev2.2)</li> <li>Electrical Grids and Storage (March 2022)</li> </ol>	152.3
	2022	Subsidy	19. Among the support projects for strengthening supply chains for important materials in response to changes in the economic environment, support for strengthening supply chains for manufacturing storage batteries, which are essential for a green society.	<ol> <li>Low Carbon Transport (Rev2.2)</li> <li>Electrical Grids and Storage (March 2022)</li> </ol>	331.6
	2022	Subsidy	20. Project to promote the introduction of advanced equipment to improve the insulation performance of houses	Buildings (White list for Low Carbon Building Technology Rev1.0)	100.0
	2022	Subsidy	21. Energy saving investment promotion/demand structure transformation support project subsidy. Energy efficiency improvement of SME to Large Corporate factories	No CBI sector criteria available	25.0
	2022 2023	Subsidy	22. Subsidy to promote the introduction of clean energy vehicles (BEV, PHEV, FCV)	Low Carbon Transport (Rev.2.2)	90.0
	2023	Subsidy	23. Commercial vehicle electrification promotion project	Low Carbon Transport (Rev.2.2)	13.6
	2023	Subsidy	24. Subsidy for promoting regional decarbonization (independent line microgrid project subsidy)	Electrical Grids and Storage (March 2022)	3.0
Subtotal of CBI Eligible Subsidy Programs (No.18-20, No. 22-24)				690.5	
Subtotal of non CBI Eligible Subsidy Program (No.21)				25.0	
Total of subsidy programs					715.5
TOTAL program amount				1,608.9	

Prepared by Climate Integrate based on JCR data (p.2-4)

### III. Disclosure of Government Budget Information

In analyzing the government budget this time, we referred to the documents released by each ministry, but as described below, we were unable to accurately grasp climate/energy budgets.

- At the point in time when the government announces the draft budget (typically in December, for the new fiscal year starting in April), it does not provide a compilation of the climate/energy budget of the government as a whole. Every year, MOE publishes its compilation of the government's draft budget, focusing on global warming countermeasures,<sup>10</sup> although its methodology differs from that of Climate Integrate. For about a decade until 2021, MOE published its numbers in February or March each year, but since then has published in June, which leaves a gap of up to six months when it is difficult to grasp the actual climate/energy numbers.
- The names and amounts of budget line items often do not match between the budgets listed for each ministry's budget briefing materials versus detailed budgetary accounting statements, so the consistency between the two is unclear. Often no explanation can be obtained even by directly contacting the relevant ministry. This all makes it difficult to ascertain the exact amounts and to confirm consistency of the data presented in different official documents.
- In the case of budgets that include multiple purposes or programs, budgets and final spending reports fail to specify climate/energy amounts (e.g., funds related to the "Green Food System Strategy" under the Ministry of Agriculture, Forestry and Fisheries; cultural and educational facilities maintenance under the Ministry of Education, Culture, Sports, Science and Technology; defense equipment under the Ministry of Defense; local GX promotion under the Ministry of Internal Affairs and Communications).
- In official GX-related documentation, the classifications of target areas for GX investments change with updates every few months, resulting in inconsistencies and difficulties in matching GX investment amounts between documents.

<sup>10</sup> Ministry of the Environment "Budget for Global Warming Countermeasures" (in Japanese)

As described above, this report is an attempt to organize and analyze information to the best of our ability in a situation where it is difficult to fully grasp the actual status, so we ask readers to please note these limitations when using this information. Climate Integrate assumes responsibility for any discrepancies, omissions, or misunderstandings we have made of the actual situation.

To enable a more accurate grasp of the actual situation, the government is urged to further improve the transparency of information disclosure and provide data in more user-friendly formats.



#### **IV. Conclusions**

As outlined at the Key Findings in this report, based on our efforts to compile data from the Japanese government's public announcements and documentation as well as direct inquiries to ministries, the climate/energy budget for 2024 accounted for only 1.6% of the total national budget, while allocations for renewables came to less than 10% of the climate/energy budget. Also, the GX budget for 2024 was halved from the budget request (1.26 trillion) to 603.6 billion yen, and ended up with significant reductions from the total of 2.97 trillion for 2022 and 2023. In addition, we discovered that budgets for fossil fuels are largely allocated to the Special Account for Energy Measures rather than GX investments, which suggests that while the government still aggressively funds fossil fuels, it is attempting to present GX in a positive light in order to gain acceptance for GX from institutional investors.

Again we emphasize how difficult it has been to accurately ascertain the amounts of climate and energy budgetary allocations based on official announcements and documents. For these reasons, we urge the government to further improve the transparency of information disclosure and provide this crucial data in more userfriendly formats.



Climate Integrate is an independent climate policy think tank in Japan. Through integrated approaches to connect scientific, political, and social dimensions, we support actions for decarbonization by civil society, business and the public sector. "Japan's Spending Plans for Climate and Energy"

Climate Integrate March 2024 Written by: Hiroaki Odawara, Kimiko Hirata, and Tatsuko Sato Designed by: Yasuyuki Sasaki climateintegrate.org