

# Outline of the Planned Global Warming Countermeasures <Cross-sectoral countermeasures (2)>

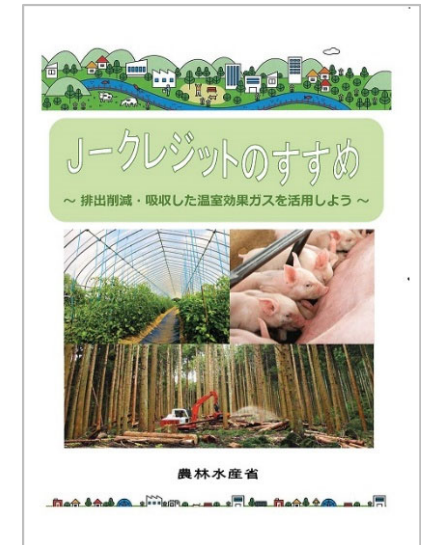
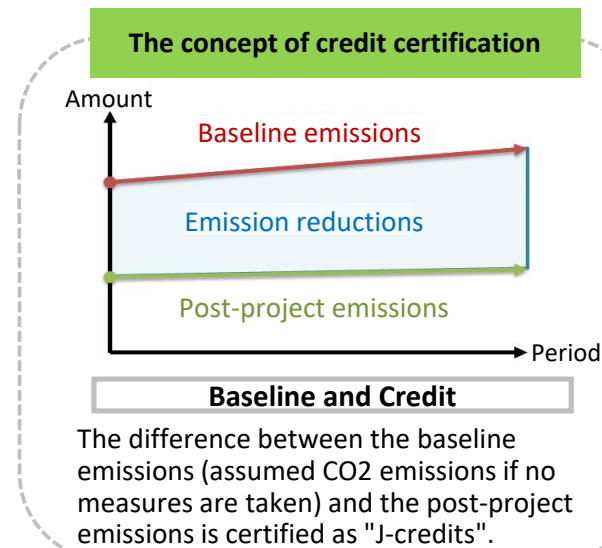
## Promotion of the J-Credit Scheme

- Informing the J-Credit Scheme by holding environment-related events
- Operating the J-Credit Scheme in a manner that many people and entities can participate in the scheme through hearings with farmers, forestry and fishery workers
- Providing information on best practices of the use of the J-Credit Scheme
- Promotion of formulation of new methodologies and project in the AFF sectors
- Improvement of the carbon crediting methodologies for forest management projects

## Disclosure of information on climate change-related risks and opportunities, and promotion of visualization of greenhouse gas emissions and reductions

- Promoting disclosure of information about the climate-related risks and opportunities based on TCFD recommendations
- Promotion of decarbonization practices of those involved in agriculture, forestry and fisheries
- Promotion of increased consumer willingness to purchase though carbon footprints
- Generalization of GHG calculation method on agricultural and rural development projects

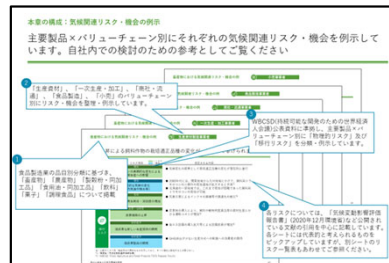
## Promotion of the J-Credit Scheme



Provision of information on the outline of the Scheme and examples of good practices, etc.

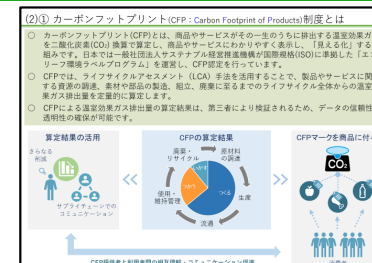
## Disclosure of information on climate change-related risks and opportunities, and promotion of visualization of greenhouse gas emissions and reductions

### TCFD Guide for Food Business Operators (Announced by the Ministry of Agriculture, Forestry and Fisheries in June 2021)



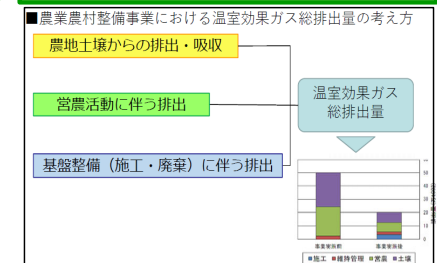
Examples of key issues and business impacts of climate risks and opportunities by the industry sector, including livestock products and agricultural products

### Introductory materials on Decarbonization Technology and Visualization (Announced by the Ministry of Agriculture, Forestry and Fisheries in June 2021)



Introduction of decarbonization technologies and a carbon footprint system to visualize decarbonization efforts, etc.

### GHG Emissions Calculation Program in agricultural and rural development projects (Announced by the Ministry of Agriculture, Forestry and Fisheries in 2020)



Calculation scheme of GHG emission and reduction over the entire life cycle of agricultural facilities

# Outline of the Planned Global Warming Countermeasures <Cross-sectoral countermeasures (2)>

## Measures under the MAFF's initiatives

- Formulation of the Action Plan of the Ministry of Agriculture, Forestry and Fisheries, based on the "National Government Action Plan"
- Taking the initiative in introducing solar power generation in buildings, EV, LED lighting, as well as procuring electricity from renewable energy sources

## (Reference) Strategy for Sustainable Food Systems

- Realization of Zero CO<sub>2</sub> emission from fossil fuel combustion in the AFF sector by 2050 (KPI)
- Promotion of measures to reduce methane and nitrogen oxide emissions from the agriculture and livestock sectors
- Promotion of carbon sinks measures through long-term, large-scale storage of carbon in crop land, forests, timber, and the ocean.

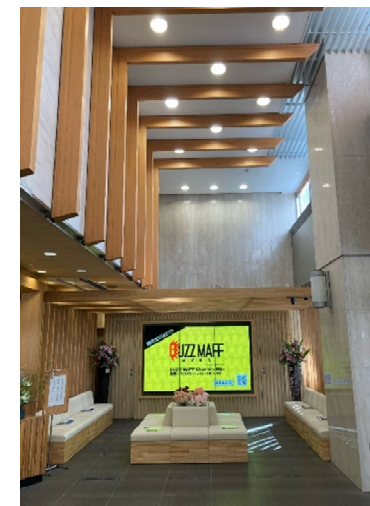
## Measures under the MAFF's initiatives



Installation of solar power generation equipment on the roof of government buildings

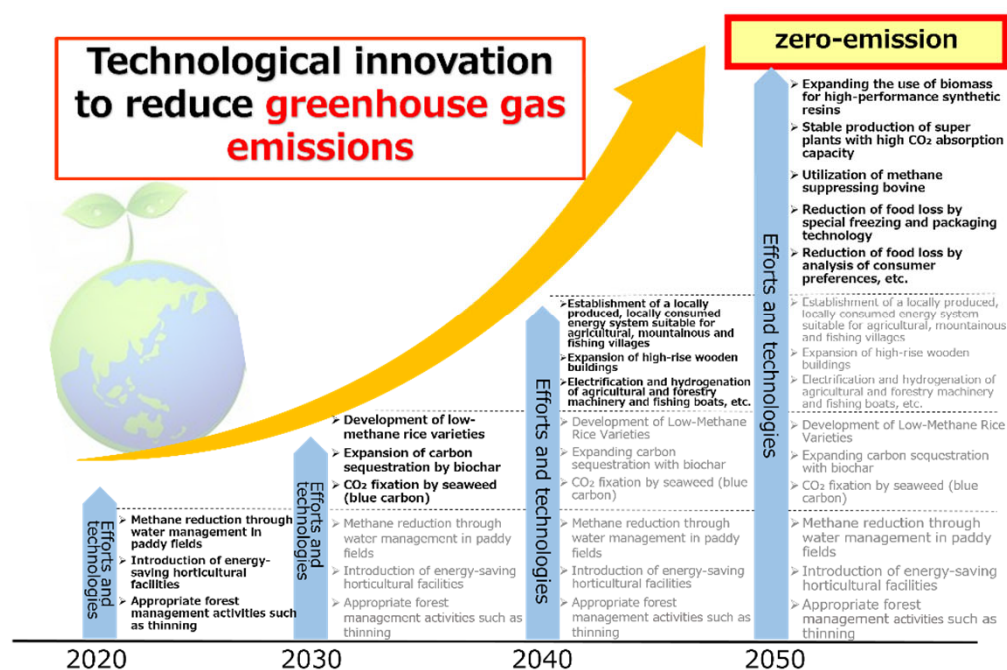


Introduction of LED lighting



Wooden building interiors

Efforts to achieve zero emissions in the agriculture, forestry, and fisheries sectors



# Outline of the Planned Global Warming Countermeasures <Creation of Innovation (1)>

## Development of GHG emission reduction technology

- Improving the existing emission reduction technology
- Development of technology to achieve significant energy and labor savings in agriculture, forestry and fisheries through the use of ICT, etc.
- Development of technology to reduce greenhouse gas emissions by utilizing the unique agriculture, forestry and fishery resources of the region
- Development of emission reduction technologies in the livestock sector where practical technologies have not yet been established. For example, technologies to reduce GHG emission from fermentation within digestive tracts and from excreta.
- Development of technologies for the electrification and hydrogenation of agricultural and forestry machinery and fishing vessels

## Development of GHG emission reduction technology

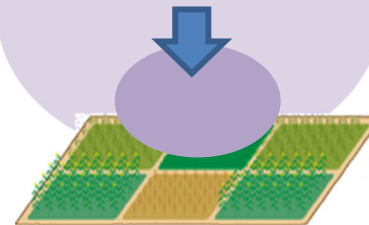
Small-scale hydroelectric power generation



Biogas plant

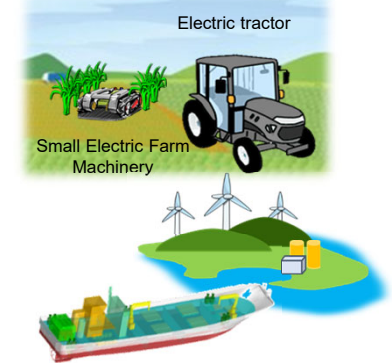


Local agriculture, forestry and fisheries  
Utilization of resources  
Reduction of Greenhouse Gases



R&D for measuring methane production with milking robots to produce low-methane producing cows

Promote the elimination of fossil fuels by electrifying and increasing the efficiency of various machines

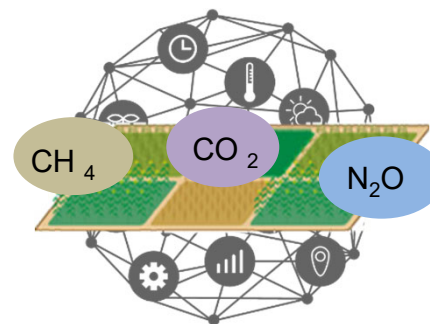


Promotion of fossil fuel-free fishing by developing next-generation electric propulsion fishing boats, etc.

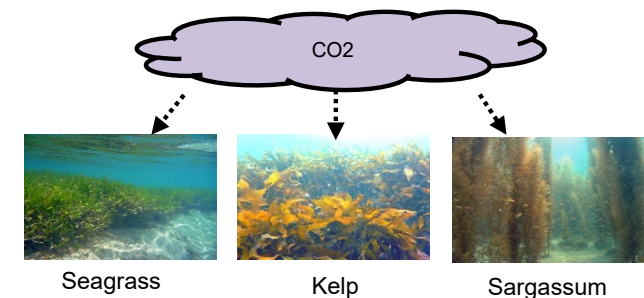
## Research and technology development that will contribute to calculating GHG emissions and removals and improving monitoring

- Implementing yearly monitoring on GHG emissions and removals in the AFF sector
- Implementing research and technology development that will contribute to improving monitoring techniques and calculation methods necessary for calculating accurate amounts of emissions and removals
- Development of evaluation methods for blue carbon and technologies for efficient seaweed bed formation and expansion (reprinted)

## Research and technology development that will contribute to calculating GHG emissions and removals and improving monitoring



Monitoring and calculation methods.  
Research and technological development to improve



Development of evaluation methods for blue carbon, etc.



# Outline of the Planned Global Warming Countermeasures <Creation of Innovation (2)>

## Basic research and technology development on forest carbon sinks

- Development of forest tree breeding and forestry machinery to enhance and reserve forest sinks in the medium- and long-term
- Development of wooden building materials for long-term and mass storage of carbon with wood
- Utilization of new wood-derived materials to replace plastics and other materials and development of new wood-derived materials
- Development and dissemination of the technologies that contribute to reforestation in degraded areas in developing countries

## Promotion of application of research achievements

- Organizing the information according to the development level of the results obtained, and promptly develop them into demonstrations, social implementation, and dissemination through provision and collaboration with administrative departments, experimental research institutions, local governments, and private companies
- Preparing a roadmap for each technology field and managing the progress of its implementation depending on the maturity level
- Enhancing the information dissemination to foreign countries

## Basic research and technology development on forest sinks

Breeding of "elite tree" seedlings and fast-growing trees



"elite tree"



Conventional varieties

Growth comparison 4 years after planting

Development of wooden building materials



Long-term and large-scale storage of carbon

Utilization of new wood-derived materials



Substitution of plastics and other materials with new wood-derived materials

Reforestation Efforts in Developing Countries



Development of forestry machinery

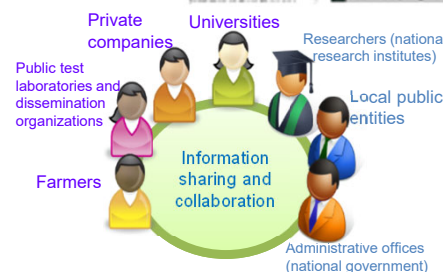


Development of remote and automatic operation machines, etc.

## Promotion of application of research achievements

Dissemination of developed research achievements

Publication of the results



Sending information overseas



Distribution of technology dissemination posters (Reforestation of degraded land in developing countries)

# Outline of the Planned Global Warming Countermeasures <International Cooperation>

## Action to emission reductions from deforestation and forest degradation

- In order to promote REDD+ activities under JCM by the private sector, aim to increase the number of JCM-REDD+ partner countries and formulate projects through developing rules on afforestation and reforestation, and holding public-private workshops. Note: JCM: Joint Crediting Mechanism
- Develop and disseminate methods for visualizing the environmental and social contribution by the private sector through forest projects in developing countries.
- Develop reforestation technologies for degraded forests and lands in developing countries, and disseminate them to governments, private companies, NGOs, etc.
- Utilize and disseminate knowledge and technology of Japan to address issues related to the production and processing of forest resources in developing countries.
- International cooperation on the distribution and utilization of legally-harvested wood, etc., including securing international cooperation for the suppression of illegal logging in foreign countries.

## Promotion of international collaborative research on reduction of GHG emissions

- Utilizing various international platforms in the field of agriculture, sharing of Japan's excellent technologies, knowledge and experience, and promotion of joint research
- Promotion of research on cultivation management technologies that can reduce greenhouse gas emissions from paddy fields
- Provision of Japan's scientific knowledge, etc. through dispatch of experts, etc. in preparation of the IPCC assessment report, etc.
- Development of climate change response technologies that contribute to the realization of Measures for achievement of Decarbonization and Resilience with Innovation (MeaDRI)

## Cooperation with international organizations

- Promote the spread of efficient biomass utilization methods that are compatible with food supply and forest conservation to developing countries, etc., through collaboration with IRENA (International Renewable Energy Agency).
- Promote the development of cultivation management systems and new varieties that contribute to the reduction of greenhouse gas emissions through collaboration with CIAT (International Center for Tropical Agriculture) and CIMMYT (International Maize and Wheat Improvement Center).
- Preserve and enhance the function of forests as carbon sinks in cooperation with the Food and Agriculture Organization of the United Nations (FAO), and promote initiatives for the calculation and assessment of greenhouse gases absorbed and emitted from agricultural soil in Asia and the development of technologies for their reduction.
- Preparation of a local plan for forest fire reduction and damage mitigation in collaboration with CIFOR (Center for International Forestry Research), etc.

## (Example) Recent initiatives

### ■ Development of reforestation technology for degraded land in developing countries

Demonstration tests were conducted in the drylands of Uzbekistan and on sandy beaches in the Philippines to improve seedling mortality rates and promote growth.



Adapted from Reforestation Technical Note (Technical Data Base)

### ■ Holding international symposiums

Taking the opportunity of the Intergovernmental Panel on Climate Change (IPCC) General Assembly to be held in Kyoto, an international symposium on climate change and agricultural technology will be held in May 2019 under the theme of "Agriculture is the solution! for climate change," an international symposium on climate change and agricultural technology will be held in Shiga Prefecture in May 2019.



# Outline of the Planned Global Warming Countermeasures

## < Matters Necessary to Promote Global Warming Countermeasures >

### 1 Implementation of measures that address the viewpoint of the general public and the actual situation of rural communities

- In Japan, various forms of agriculture, forestry, and fisheries are operated by taking advantage of the characteristics of different rural areas. The management styles of agriculture, forestry, and fisheries are also diverse, ranging from family business to corporate management and from small- and medium-scale to large-scale businesses.
- It is necessary to pay attention to the trade-offs between the reduction of greenhouse gas emissions and the stable supply of food as well as the biodiversity conservation
- Efforts will be made to implement measures that address the actual situation of rural communities while identifying local issues and needs

### 2 Effective and efficient system for promoting measures

- In implementing measures, efforts will be made to promote understanding among agricultural/forestry/fishery workers and consumers by employing easy-to-understand expressions that demonstrate the benefits of the measures, etc.
- Efforts will be made to accurately communicate information to agricultural/forestry/fishery workers and consumers by collaborating and sharing information with local governments and other relevant organizations in the region.

### 3 Promotion of measures through participation of various people concerned and cooperation among relevant ministries

- Since global warming countermeasures concerning agriculture, forestry, and fisheries are related to a wide range of fields in the lives of people and the economic society, measures will be comprehensively and systematically implemented based on an appropriate division of roles among the national and local governments, agricultural/forestry/fishery workers, consumers, business operators, and relevant organizations.
- Based on the numerical targets and policy directions set forth in the "Plan for Global Warming Countermeasures" and other documents formulated by the government, as well as the "Strategy for Sustainable Food Systems" and other documents formulated by MAFF, measures will be implemented in cooperation with relevant parties and ministries.

# Planned Targets for Global Warming Countermeasures (1)

Measures	Targets				
	Index	Target fiscal year	Target level	Note	Related plan
Global warming countermeasures in the agriculture sector					
Energy conservation measures for greenhouse horticulture	Number of energy-efficient machines introduced	2025	143,000 units		Government's Plan for Global Warming Countermeasures
		2030	170,000 units		
	Number of sites where energy-efficient facilities are installed	2025	304,000 sites		
		2030	376,000 sites		
Energy conservation measures for agricultural machinery	Number of energy-efficient agricultural machines introduced	2025	70,000 units		
		2030	190,000 units		
GHG emission reduction measures for agricultural soil	Dissemination rate of the extending the period for midseason drainage	2030	30%		
		2025	380,000 tN		
	Amount of demand for chemical fertilizer	2030	358,000 tN		
Recycling of waste plastics for agriculture	Ratio of recycled amount to total plastic discharge in horticulture	2025	80%		Plastic Resource Recycling Strategy
		2030	90%		
Measures for agricultural soil carbon sinks	Carbon storage in soil (mineral soil)	2030	8,500,000 t-CO <sub>2</sub>		Government's Plan for Global Warming Countermeasures
GHG emission reduction measures in the livestock sector	• Improvement of productivity through improvement of livestock breeding management through livestock improvement and use of ICT, etc. • Promote manure management systems that reduce greenhouse gas emissions. • Spreading the use of feeds with improved amino acid balance				Green growth strategies associated with carbon neutrality in 2050
Global warming countermeasures in the food sector					
Formulation of low-carbon society action plans in food industry	Increase in the number of industry associations that have formulated their low-carbon society action plans for 2030				Government's Plan for Global Warming Countermeasures
Measures for energy conservation and GHG emission reduction in food industry	Decrease in the number of business entities making less progress in energy conservation, and promotion of the introduction of equipment and machinery using natural refrigerants				
Reduction of food loss	Amount of business-related food loss	2025	2,940,000 t		Basic Policy for Promoting Use of Recyclable Food Resources
		2030	2,730,000 t		
Resource recycling of plastics and other materials in the food industry, etc. and recycling of containers and packaging	•Reduce the use of plastics and promote recycling •Promotion of recycling of waste containers and packaging				Plastic Resource Recycling Strategy
Reduction of the impact on the environment caused by the distribution of food and beverage products	Promote initiatives such as the establishment of a data coordination system for the entire supply chain.				

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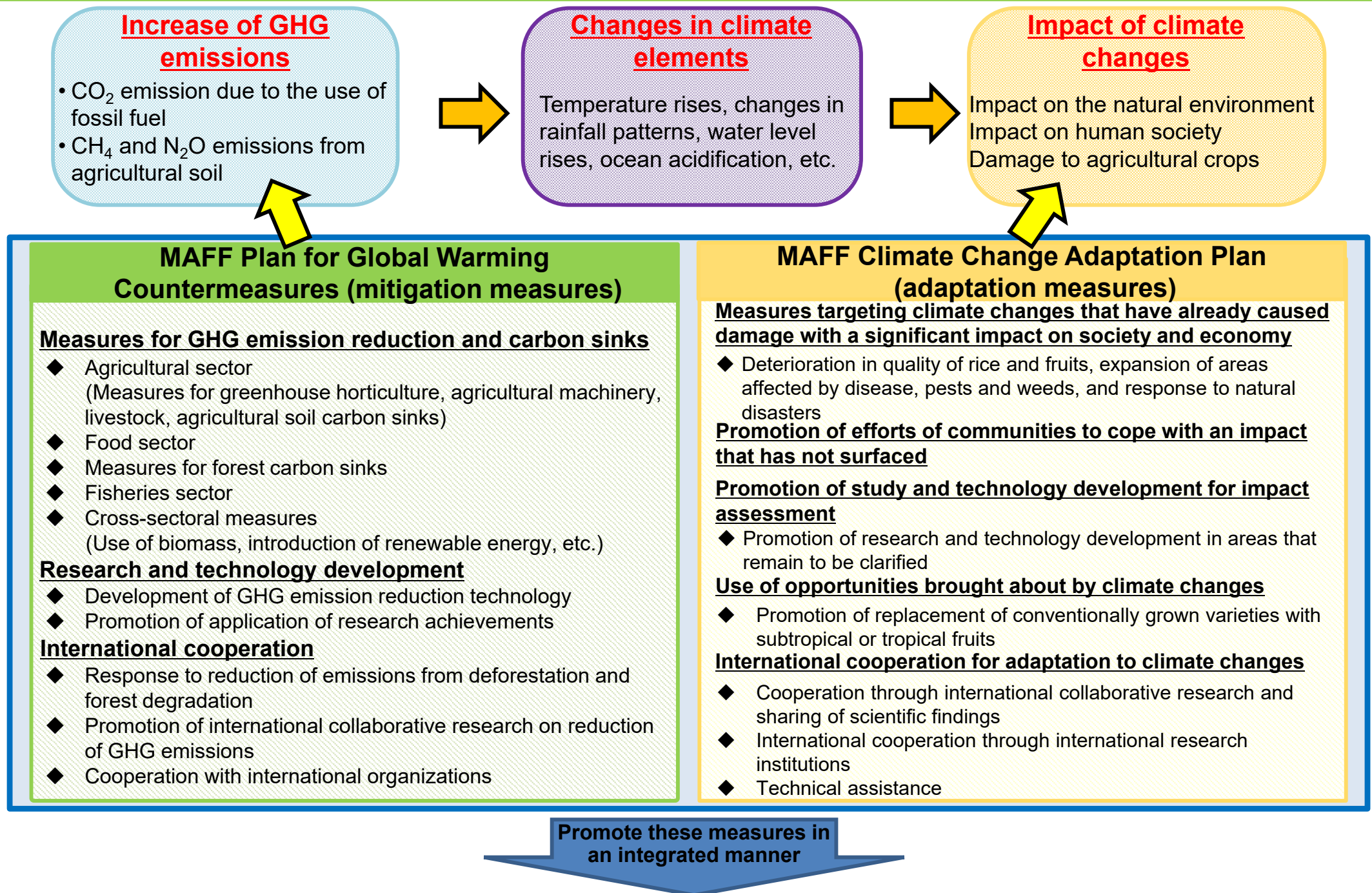


# Planned Targets for Global Warming Countermeasures (2)

Measures	Targets					
	Index	Target fiscal year	Target level	Note	Related plan	
Measures for forest carbon sinks						
Sound forest management	Forest management area	2030	700,000 ha	Average between FY2021 and FY2030	- Government's Plan for Global Warming Countermeasures - Forest and Forestry Basic Plan	
Proper maintenance and conservation of protection forests						
Development of efficient and stable forestry management						
Promoting citizen involvement in forest development						
Promotion of the use of wood and woody biomass						
Global warming countermeasures in the fisheries sector						
Measures for energy conservation and GHG emission reduction for fishing vessels	Replacement of conventional fishing vessels with energy-efficient models	2025	32.6%		Government's Plan for Global Warming Countermeasures	
		2030	41.0%			
Energy conservation measures for fishing ports and fishing grounds	Number of floating fish reefs maintained (units)	2025	Approx. 30 units		- Basic Policy for Promoting Development of Fishing Ports and Fishing Grounds - Long-term Plan for Development of Fishing Ports and Fishing Grounds	
		2030	Approx. 30 units			
Conservation and creation of seaweed beds	Promotion of development of seaweed beds					
Cross-sectoral measures						
Promotion of the use of biomass	Amount of biomass used	2025	Approx. 26 million t-C		Basic Plan for the Promotion of Biomass Utilization	
	Formulation of plans for promoting the use of biomass	Prefecture	2025	47		
		Municipality	2025	600		
Promotion of the introduction of renewable energy in rural communities	Scale of biomass industry	2023	60 billion yen		(Government's Plan for Global Warming Countermeasures)	
	Ratio of electricity generated from renewable energy such as small-scale hydroelectric power generation using agricultural water utilization facilities to the amount of electricity used by land improvement facilities.	2025	Approx. 40% or more		Long-term Plan of Land Improvement (Government's Plan for Global Warming Countermeasures)	
	Amount of use of fuel wood (domestic wood)	2025	8 million m³		Forest and Forestry Basic Plan	
		2030	9 million m³			
Promotion of the J-Credit Scheme	Increasing the number of projects in the AFF sector that participate in the J-Credit Scheme				Government's Plan for Global Warming Countermeasures	
Disclosure of information on climate-related risks and opportunities, and promotion of visualization of greenhouse gas emissions and reductions	• Expansion and enhancement of information disclosure based on TCFD recommendations by food business operators • Increase consumers' willingness to purchase low-carbon products. • Understanding the results and effects of activities such as greenhouse gas reductions in business activities.					
Measures under the MAFF's initiative						
GHG emission reduction in MAFF's work and projects	GHG emissions	2030	50% reduction from the FY2013 level		(National Government Action Plan)	



# (Reference) Outline of Global Warming Countermeasures (mitigation/adaptation) in the AFF Sector



Promote global warming countermeasures in the AFF sector comprehensively and systematically