G7 Joint Discussion Project

Final Report

Under Japanese Presidency 2023

Edited by

G7 Agriculture Team 2023

Ministry of Agriculture,
Forestry and Fisheries of Japan

Agriculture Ministers' Meeting
in Miyazaki

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Preface

G7 Agriculture Ministers, when they met in Miyazaki, Japan in April 2023, recognized that the global food and agriculture situation has significantly changed over time, and that the world needs to urgently increase efforts to make agriculture and food systems more resilient and sustainable as our legacy to future generations.

Indeed, the focus of agricultural policy discussion has been shifting according to the situation surrounding food and agriculture. For example, a major point of discussion in the 1980s was how to deal with structural surpluses of agricultural commodities on the international market. This was important background to various policy analyses made then as well as to the launch of the GATT Uruguay Round negotiations on agriculture. At that time, environmental issues were not seen as important in agriculture policy discussions as they are today.

As the world experiences conflict, such as Russia's illegal war of aggression against Ukraine, prolonged recovery from the disruptions caused by the COVID-19 pandemic, and more apparent impacts of climate change and biodiversity loss on global food security, many call for solutions to multiple challenges that the agriculture and food systems are facing: ensuring food security and nutrition for a growing global population, improving the environmental sustainability of the sector, and providing livelihoods for farmers and others in the food chain.

With those challenges in mind, G7 Agriculture Ministers agreed in their Communique that **"**Recognizing the need for methods which adequately analyze both short and long term impacts of climate change, biodiversity loss, land degradation and other factors affecting future sustainability of agriculture, we welcome the initiative of the Presidency to launch a discussion among G7 policy experts to identify gaps in existing research and analysis to offer suggestions to facilitate inclusive transformation towards resilient and sustainable agriculture and food systems."

This report is the outcome of discussions among G7 policy experts in response to this call by G7 Agriculture Ministers. The first round of discussions focused on two major issues: the environmental impacts of agricultural policies, in recognition of growing interest in clarifying the positive and negative impacts of agricultural policies on climate, land, water, and biodiversity; and, the impacts of export restrictions, in recognition that more frequent production shocks resulting from climate change can result in greater use of export restrictions, in turn increasing market uncertainty and price volatility, with negative consequences for vulnerable populations.

Discussion participants emphasized the interlinkages across these two issues and other challenges related to achieving resilient and sustainable food systems. These issues serve as examples, not end cases, in efforts to explore and to identify information and analytical gaps to contribute to informing policy making by G7 members and by wider international communities, in order to meet the multiple challenge in achieving resilient and sustainable food systems.

March 2024

Acknowledgment

This report is the outcome of the discussion among G7 policy experts in response to the call by G7 Agriculture Ministers at their Meeting in Miyazaki, Japan in April 2023. The discussion was organized under Japanese Presidency, chaired by Tetsuo Ushikusa (Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF). Throughout the process, Ritsuko Yoneda (MAFF) coordinated discussion and led the documentation with assistance by Masato Nagai, Noriko Shimauchi, Kenta Shiraki and Ippei Tomo. In preparation of the meetings, Tatsuji Koizumi and Hiroki Sasaki from the Policy Research Institute of MAFF prepared background documents for the discussion.

The experts from G7 countries are: Darleine Dessureault (Canada), Herwig Ranner (European Commission), Mickaël Hugonnet and Françoise Simon (France), Sebastian Lakner and Martin Banse (Germany), Andrea Angeli and Viola Gentil (Italy), Jake Sales-Dupont, Nikhil Kaplia, Ruth Hadley, Richard Dyer and Brendan Bayley (United Kingdom), Elise Golan (United States) and Hideki Hagiwara (Japan). Their contributions at the discussion and feedbacks to the draft were indispensable in shaping the outcome.

On behalf of G7 Agriculture Team 2023,

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Executive Summary

This report is the outcome of discussions among G7 policy experts in response to the call by G7 Agriculture Ministers, who, in their Communique at the Ministerial Meeting in Miyazaki, Japan in April 2023, welcomed "the initiative of the Presidency to launch a discussion among G7 policy experts to identify gaps in existing research and analysis to offer suggestions to facilitate inclusive transformation towards resilient and sustainable agriculture and food systems." This report provides findings and recommendations from the first round of discussions, which focused on two major issues: environmental impacts of agricultural policies and the impacts of the use of export restrictions. These findings and recommendations will be reported to G7 Agricultural Ministers, ahead of their Ministerial Meeting in September 2024 under the Italian G7 Presidency.

Recommendations from G7 experts to address gaps in available information and analysis

<on the environmental impacts of agricultural policies>

1. Empirical data and analysis of agricultural policy impacts on the environment are inadequate. While there is a growing literature on such impacts, particularly with respect to climate, results are highly sensitive to the available data and assumptions employed; these issues warrant further attention.

2. Analyses on a granular and site-specific basis is required to clarify policy impacts on land, water, and biodiversity. Analytical tools used should integrate those site-specific environmental impacts into economic analysis.

3. Pulling together diverse sources of existing data and carrying out comparative analyses are necessary for filling information gaps. Practical ways forward should be explored, including using models, proxies, and case studies. Incorporating diverse empirical data sets into economic analyses, while maintaining a clear focus on possible unintended impacts on other goals (such as global food security, sustainable productivity growth, livelihoods in rural areas, etc.), can help inform better policy decisions.

4. The private sector can be a source of granular data and information, including with respect to the impacts of agriculture policies under various farming conditions. Unique insights are increasingly available from the application of digital tools and data analytics that can contribute to better policy outcomes in environmental as well as economic terms and should be explored as a priority.

<on the impacts of export restrictions>

5. Empirical data and analysis on the use, and the impact on global markets, of various forms of export restrictions, including quotas, bans, and taxes, are inadequate. Research on the impacts of export restrictions on the country which imposes them, including those of a long-term and indirect nature, also warrants more attention. Addressing these gaps would enable countries considering introducing export restrictions to identify the least disruptive forms.

6. Additional research is also needed to identify alternative policy options to export restrictions, including various social safety net programs, which would minimize the negative impacts of price shocks and supply disruptions on vulnerable populations, on global markets, and on sustainable resource use.

7. There is a continuing need to improve the accuracy and timeliness of information on the international food and agriculture market situation and related policy measures. In this respect, further analysis is warranted of options to strengthen both the role of AMIS and the effectiveness of WTO provisions on country notification of export restrictive measures. This is essential to maintain trust in a rules-based multilateral trading system.

1. The Environmental Impacts of Agriculture Policies

【Question】

- It has become more evident that not only does climate change impact agriculture and agriculture impact climate change, but also that agricultural policies themselves can have strong impacts on climate and on land, water, and biodiversity. To develop better policies, we, G7 and other agricultural policy makers, need further analysis of their impacts on the environment, without losing sight of the diversity of policy goals for the sector.
- As the urgency of environmental issues increases, so too does the urgency for governments: 1) to assess both the negative and the positive impacts of current and alternative agricultural policies; and 2) to develop best-fit policies that take into account the differences in local conditions and the trade-offs across diverse policy goals.
- In these circumstances, how can we identify the most effective policy packages? What information and analysis would inform the design of policies to enable better environmental outcomes, including both reduced negative and increased positive impacts? How can we develop robust metrics to assess the environmental performance of agriculture policies, internationally, while avoiding unintended negative impacts on other goals, including food security and livelihoods?

【Context and background】

1.1 There is an urgent need to tackle environmental issues. While it is widely recognized that agricultural policy can have substantial impacts on environmental outcomes, including climate change, direct and indirect land use change, water use, and biodiversity loss, there is less agreement about the extent and nature (positive and negative) of different types of policies. Many current assessments of policy impacts do not extend past the assumption that those policies that lead to increased production potentially result in environmental harm. As the urgency of achieving environmental sustainability - including adapting to and mitigating climate change and halting and reversing biodiversity loss – heightens, so does the necessity of establishing better analytical methods to assess the environmental impacts of agriculture policies.

【What we know】

1.2 The OECD Producer and Consumer Support Estimate (PSE-CSE) methodology (see Box 1.1) classifies policies and related support indicators based on implementation criteria affecting incentives for the supply of private goods. Over time, these OECD estimates have become, and remain, the international reference for analyzing the

economic and trade impacts of agriculture policies. As other policy objectives, notably improving the environmental performance of the sector, have become a prime focus of some governments, the PSE-CSE estimates have also been used to explore the possible negative environmental effects of agriculture support, particularly support incentivizing increased input use and output quantities. But the methodology was not originally designed to classify to what extent these initiatives actually affect the environment under specific local conditions or under various conditionalities accompanying the policy measures, nor to examine the possible positive environmental effects of policies that create incentives for the provision of valuable environmental goods and ecosystem services, including carbon storage, preservation of rural landscapes, resilience to natural disasters such as floods, soil restoration, and habitat provision. Neither is it clear that the PSE-CSE methodology is well suited to doing so. While this information and analytical gap is generally recognized, there has been little progress thus far in filling the gap.

Box 1.1 OECD Producer and Consumer Support Estimates (PSE-CSE)

The OECD developed a methodological framework to measure and evaluate the impact of support to agriculture in response to its 1982 Ministerial Trade Mandate. Subsequently, these support estimates provided an important reference for international negotiations that lead to agriculture being brought into the multilateral rules-based trading system in 1995. Since then, the methodology has been regularly reviewed and improved.

Today, the annual OECD *Agricultural Policy Monitoring and Evaluation* report provides up-to date estimates of government support to agriculture across 54 countries, including all OECD members and several emerging and developing economies. The report's support estimates and related indicators provide insights into the increasingly complex nature of agriculture policy.

The latest report estimates that an average of USD 851 billion was transferred to producers each year during the 3-year period 2020-22. Over 50% of that support was delivered via the most production and trade distorting policy instruments. In contrast, over these same 3 years on average less than USD 10 billion targeted the provision of environmental public goods.

Source: OECD (2023), *Agricultural Policy Monitoring and Evaluation*, Paris, OECD Publishing. https://doi.org/10.1787/b14de474-en

1.3 A report published jointly by FAO, UNEP, and UNDP in 2021, which emphasized the need to "repurpose" existing government incentives to more sustainable agricultural outcomes, uses a similar methodology as the PSE to capture the value of government support to agriculture of 88 countries (FAO, UNDP and UNEP, 2021). A World Bank and IFPRI joint report on the same issue, published in the following year, is also based on the same approach (Gautam et al., 2022). As there exist few international databases on incentives in policy areas other than agriculture, this narrative is sometimes referred to in wider environmental discussions in the context of policy reform or resource mobilization.

1.4 There have been some efforts to measure actual environmental outcomes. OECD started to develop its Agri-Environmental Indicators in the 1990s, and now 62 indicators are published, including nitrogen/phosphorus balance and water quality. Efforts are also conducted in the context of the Sustainable Development Goals (SDGs) indicators, SDG 2.4.1 (Proportion of agricultural area under productive and sustainable agriculture) in particular, but the actual reporting on SDG 2.4.1 has been slow due to the difficulty of designing measurable, comprehensive measures. As a result, the FAO worked with countries to develop proxy indicators for SDG 2.4.1, which were accepted by the UN Statistical Commission in February 2024 (Box 1.2) as the best available option. These assess macro-level trends of each country's situation, and more empirical and site-specific data are needed, especially for those countries with large areas or diverse natural/geographical conditions in their territories.

Box 1.2 SDG Indicator 2.4.1

Under SDG2 (Zero Hunger), Indicator 2.4.1 aims to measure the "Proportion of agricultural area under productive and sustainable agriculture," which is essential in achieving the goal.

The indicator was originally composed of eleven sub-indicators covering diverse aspects of land productivity, profitability, resilience, soil health, water use, fertilizer pollution risk, pesticide risk, biodiversity, decent employment, food security, and land tenure. However, measuring those initial indicators was challenging for many countries, so the FAO developed a set of proxy indicators. A country-led working group is working with FAO to refine these proxies for presentation to the UN Statistical Commission.

As with the actual sub-indicators for 2.4.1, the proxy sub-indicators cover the economic, environmental, and social dimensions of sustainability, all of which must be addressed.

New proxy indicators include gross production value per hectare, gross output diversification, nitrogen use efficiency, agriculture component of water stress, GHG emissions intensity, agricultural value added per worker, and informal employment in agriculture. All those data are available in over 80% of UN member countries and will help measure the progress of sustainable agriculture.

Source: UNESC Statistical Commission (2024), "*Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators*" (E/CN.3/2024/4).
https://unstats.un.org/UNSDWebsite/statcom/session_55/documents/2024-4-SDG-IAEG-E.pdf

1.5 As efforts to assess agricultural policy impacts grow, so does awareness that impacts may vary depending on socio-economic and environmental conditions. Every country must assess its best-fit policies, recognizing that each country has different natural, environmental, economic, and societal situations. At the UN Food Systems Summit in 2021, UN Secretary-General Guterres noted that there was no one-size-fits-all solution for achieving sustainability. At the Leaders' session of the UNFCCC COP28 last year (Box 1.3), over 150 countries committed to "Pursue broad, transparent, and inclusive engagement, as appropriate within our national contexts, to integrate agriculture and food systems into National Adaptation Plans, Nationally Determined Contributions…and other related strategies…".

1.6 While reducing negative environmental impacts is a focus of many agri-environmental policy discussions, governments should also strive to enhance the positive environmental effects of agricultural policies. This view is reflected in many forums. For example, Target 18 of the Kunming Montreal Global Biodiversity Framework adopted in the COP15 of the CBD 2022 articulates the need to "scale up positive incentives for the conservation and sustainable use of biodiversity." In November 2022, OECD Agriculture Ministers acknowledged "the need for agricultural policies, including support, to contribute to reducing agricultural emissions and to create positive environmental outcomes" in their declaration. Clearly, policy analysis should focus on both positive and negative environmental externalities.

Box 1.3 Emirates Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action

With increased global attention to the sustainability of agriculture and food systems and its impact on climate change, the UNFCCC COP28 chair, the UAE, focused on the food systems issue as one of the major discussion topics. Among various related initiatives, "The Emirates Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action" was announced at the beginning of the COP and was supported by 134 countries (the number became over 150 at the end of the COP).

The Declaration focuses on both climate change mitigation and adaptation in the context of food security and nutrition. It emphasizes the need to integrate agriculture and food systems into National Adaptation Plans, Nationally Determined Contributions, and other action Plans before COP30, as appropriate.

The document also highlights the need to maximize the climate and environmental benefits associated with agriculture, while containing and reducing harmful impacts. It shows that the positive aspects of agriculture are widely accepted and that countries agree to take measures to enhance those.

Source: Cop28 website, "*COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action.*"
https://www.cop28.com/en/food-and-agriculture

1.7 Addressing environmental challenges is an urgent need, and even in the absence of perfect information new policy measures are being developed. For example, while it is widely recognized that policies that target desired outcomes are highly preferable to measures that focus on agricultural processes, several process-based agri-environmental policies have been introduced. Policy impact monitoring is essential to ensure that such measures work as desired and do not impose unnecessary costs on producers, consumers, or the environment.

1.8 Monitoring the impacts of policy packages, as well as individual policy measures, and making any needed adjustments are essential to avoid any unintended negative impacts. While policy objectives are helpful in understanding what governments hope to achieve, the actual impacts can be very different. Experience shows that evidence-based policy design coupled with continuous monitoring of impacts and timely policy design upgrades

are needed. In this way, international concerns about potential “green washing” and “green protectionism,” and domestic concerns about increased GHG emissions from indirect land use change induced by policies encouraging otherwise unsustainable production systems, for example, can be mitigated.

【What more do we need to know】

1.9 First, perhaps the most important step to improve our understanding of the wider environmental impacts of agricultural policies is to consider them in a holistic way, including by incorporating them in agri-economic analyses reflecting the complex dynamics at play. Incorporating environmental feedback into economic models could shed light on discrepancies between short-term and longer-term economic costs and benefits. In addition, there may be a rationale for policies to enhance sustainability when the economic rationale alone is insufficient for farmers to prioritize environmental considerations, because the economically optimal situation is not necessarily optimal from the environmental point of view. As the” Dasgupta Review” of 2021 points out, models of economic growth and development should account fully for the impact of our interactions with Nature, and of its site-specificity and complexity (Dasgupta, 2021).

1.10 Second, diverse measures are being introduced by various governments looking to achieve desired outcomes while taking into account regional circumstances (See Box 1.3). While diverse policy measures may increase the choices available to farmers and other stakeholders, more analyses and sound evidence are needed to verify actual impacts.

1.11 Third, as the diversity of policy measures increases, a more comprehensive approach is needed to analyze and to understand how multiple types of measures can be well integrated. For example, it is widely accepted that the importance of the “food systems approach,” highlighted at the UNFSS 2021, encourages consideration of distribution, consumption, and other relevant sectors in the policy scope, as well as the agriculture production sector. As the three pillars of the SDGs are equally important in food systems, more information is needed on how to promote cross-sectoral cooperation with relevant stakeholders, at global, regional, and local levels.

1.12 Fourth, it must not be forgotten that the primary objective of agricultural policies is not just about addressing environmental concerns. The aim is also to achieve global food security and feed the increasing global population. In the domestic context, agricultural ministers have responsibilities to feed their citizens and vitalize the agricultural sector as a part of the national economy. In addition, agricultural policies have strong ties with regional policies, as agriculture contributes to enhancing livelihoods, rural amenities, and rural communities. Thus, it is essential to consider proper balance between food production and environmental considerations.

1.13 Modern policymaking requires the above-mentioned aspects to be considered, which raises a further challenge. As the policy options become diverse, it becomes more difficult to measure, evaluate, and compare the effectiveness of those policies. Appropriate measurement of actual environmental consequences of agricultural policy measures is still under development since it becomes more contingent upon various

factors, including climate and geographic conditions, farmland use patterns, production techniques, farming systems, and the trade of agricultural products.

1.14 The site-specificity described above is well illustrated when we consider the difference between climate change and biodiversity issues. For climate change, a major proxy of "measurement" is greenhouse gas (GHG) emissions, but precise capturing of this is a big challenge. From the global context, the issue of displacement (leakage) arises, when a country proceeds with stronger environmental disciplines and regulations to its domestic producers/processors. This is also a challenge considering the local nature of the environmental issues (e.g., the same regulation may result in different levels of emission in different regions) and the level of development in measurement.

Box 1.4 Countries take different approaches toward ensuring sustainable food systems

In accordance with the idea of "there is no one-size-fits-all" solution toward sustainable food systems, countries are taking various measures to achieve the goal.

The EU has been focused on including agri-environmental conditionalities when providing farm subsidies. Those conditionalities consisted of regulatory and voluntary measures in line with EU sustainability standards, incorporated in its Common Agricultural Policy (CAP). The EU is also concerned that the associated risks of "environmental leakage" have yet to be adequately modeled and considered.

Japan's approach is pursuing appropriate measures that fit its Asia-Monsoon climate condition, focusing on innovation. Its MIDORI strategy, launched in 2021, set some Key Performance Indicators targeted in 2050, and its ambitions to improve both the sustainability and productivity of food systems will be realized by various forms of innovation.

The US is focused on innovation and voluntary partnerships. Through the Partnership for Climate Smart Commodities, for example, USDA is financing partnerships to support the production and marketing of climate-smart commodities via a set of pilot projects. These projects provide technical and financial assistance to producers to implement climate-smart production practices on a voluntary basis on working lands; pilot innovative and cost-effective methods for quantification, monitoring, reporting and verification of greenhouse gas benefits; and develop markets and promote the resulting climate-smart commodities. USDA estimates that the initiative will reach more than 60,000 farms, encompassing more than 25 million acres of working land and sequestering more than 60 million metric tons of CO2 over the lives of the projects.

While solutions have to be adapted taking account of each country's context, it is important to share experiences and practices that can help others to develop their own measures. Information sharing is also important when various environmental regulations are involved, to understand not only their direct impacts on the country which implement them but also associated impacts on other countries, international markets, and trade.

Source: Information from experts, and Paarlberg, R. (2022) "The trans-Atlantic conflict over 'green' farming," Food Policy 108, 102229.
https://doi.org/10.1016/j.foodpol.2022.102229

1.15 For biodiversity issues, policymakers and scholars are still struggling to find effective proxies, since more local context is required. As ecosystems in Europe are quite different from those of Japan, for example, international comparison is more difficult. Although development of “headline indicators” of KMGBF is underway at the subsidiary bodies of the CBD, it is a big challenge to establish adequate indicators that account for each respective country’s conditions. More precise proxies are needed in measuring the concrete impact of agricultural policies.

1.16 The development of adequate measuring methods of policy consequences is also vital for economic analysis. In order to integrate environmental externalities into economic models, those externalities of policy measures should be properly internalized. In relation to this, the 2023 FAO SOFA report features a discussion of the “true cost” of food. This “true cost” discussion requires the evaluation of “hidden” externalities of agricultural-related activities on a monetary basis, and the development of proper measuring methods is an important prerequisite.

1.17 Recognizing its importance, many governments have started to explore better measurement, including through collecting a wide range of data and structuring knowledge in order to provide more options to relevant stakeholders. For example, the European Union has launched a classification system that helps stakeholders to identify environmentally sustainable practices, including farming practices. The United States has also established a platform named the COMET-Planner to integrate soil data and estimated GHG reduction by farming practices. In Japan, a demonstration program for calculating GHG reduction backed by actual on-farm data for 23 commodities has started operation, together with labeling as a tool of consumer communication (Box 1.5). Those efforts build upon a common recognition that one cannot mitigate what you cannot measure.

1.18 Efforts to integrate actual policy impacts on the environment in economic analyses are underway. In some cases, macro-level analysis has been carried out using CGE (Computable General Equilibrium) models, since a comprehensive evaluation of the impact of agricultural policies extends beyond just considering their environmental repercussions. Some studies using CGE models have started to capture both direct and indirect impacts. If this kind of trial is further explored to integrate empirical data, it will be a very promising and useful analytical method for policy evaluation.

1.19 Another important and emerging analytical focus is farmers' behavioral change. Many national agri-environment programmes are based on the voluntary participation of farmers, but farmers may not always participate in the programmes as expected. Even mandatory programmes may not have the intended impacts if farmers react negatively to the new mandates. Many studies examine the effect of nudges to enhance farmers’ decisions, and this approach is worth further elaboration, taking into account various external factors such as farmers’ risk preferences, social interactions (e.g., learning and imitation, trust, advice), and culture and personality (Wuepper et al.,2023).

1.20 Additionally, analytical methodologies must incorporate the result of scientific progress and innovation and support that progress. In recent years, evolving data analytics and digital tools have demonstrated the potential to improve policy performance. In planning

government support that can be beneficial to the environment, those new technologies can help underpin policy decisions.

1.21 Overcoming data limitations is a challenge to introducing more empirical analysis of the biological and other impacts of agriculture policies. One way forward is to pull together diverse sources of existing data, even if it may be time-consuming to do so. In addition, it might be useful to carry out multiple case studies and comparative analyses and share the results across research communities, taking into account each country's environmental, societal, and economic conditions. In doing so it would be effective to differentiate the global issue of climate change and more local issues such as land, water, and biodiversity, even if they are interlinked. The goal is to incorporate empirical data sets into economic analyses and to explore more elaborated modeling methods.

Box 1.5 Efforts for better measurement and better communication

Capturing the impacts of agriculture adequately is the key component of effective measures; those results should be better understood among stakeholders, including farmers, consumers, and investors.

The EU taxonomy is a classification system that defines criteria for economic activities that are aligned with a net zero trajectory by 2050 and the broader environmental goals other than climate. In agriculture, it provides several criteria to be classified as "environmentally friendly" for perennial crops, non-perennial crops, and livestock. The EU also prepares various online tools and materials as communication tools to enhance stakeholders' recognition.

COMET-Farm and COMET Planner are two tools developed by the U.S. Department of Agriculture and Colorado State University for conservation planning and greenhouse gas mitigation in agriculture and forestry. With models and databases and peer-reviewed methods, the tools provide CO2, CH4, and NO2 estimates based on management, soils, and climate, with impact estimates tailored to specific geolocations and management practices. COMET-Farm allows users to estimate how conservation practices can reduce GHG emissions and sequester carbon on a farm or ranch.

France set up the labeling system of "low carbon" as a better communication tool for consumers, that is included in the French "low carbon" strategy." The Ministry of Agriculture and Food has indicated several possible methods to reduce GHG, notably for carbon sequestration, for example, reforestation or planting, agriculture, and building rehabilitation.

Japan's "Visualization" project also aims to communicate farmers' efforts to consumers. Based on the historical soil mapping datasets and actual on-farm measured value of GHG emission, it provides farmers with effective tools to calculate their GHG reductions compared to conventional farming practices. The project also sets up voluntary labeling to present the GHG reduction of products with a three-star rating. With cooperation from retailers, these "stars" are labelled at the store to increase consumer awareness of farmers' efforts.

Source: Information from Experts, and Ministry of Agriculture and Food in France, "Financing an action thanks to the Low Carbon Label."
https://www.culture.gouv.fr/en/Thematic/Ecological-transition/Ecological-Transition-of-Culture-Resource-Centre/Financings/Financing-an-action-thanks-to-the-Low-Carbon-Label

1.22 In this endeavor, it is essential to collect a wide range of knowledge, not only from government and academia, but also from the private sector. For example, large retailers are leading farmers and food industries to more environment-friendly products through their standards, while investment funds are pushing companies in the food systems to better environmental performance through their requirement on disclosure of information. Upstream input suppliers are investing in digital tools and data analytics to support efficient, safe, and environmentally sustainable use of their products and services. Important evidence has been accumulated through those activities, and it is desirable to develop a better way to utilize that evidence while paying due attention to specific business interests and intellectual property rights.

1.23 Considering that the role of agriculture includes feeding the world, acting as custodian of much of the world's land and water, impacting (as well as being impacted by) a changing climate and biodiversity resource base, and providing livelihoods in rural and sometimes remote areas, the challenge of identifying the policy packages that would work best under a wide range of local conditions, while avoiding unintended negative consequences, is formidable.

Recommendation from G7 experts
to address gaps in available information and analysis

1. **Empirical data and analysis of agricultural policy impacts on the environment are inadequate. While there is a growing literature on such impacts, particularly with respect to climate, results are highly sensitive to the available data and assumptions employed; these issues warrant further attention.**

2. **Analyses on a granular and site-specific basis are required to clarify policy impacts on the environment, including land, water, and biodiversity. Analytical tools used should integrate those site-specific environmental impacts into economic analysis.**

3. **Pulling together diverse sources of existing data and carrying out comparative analyses are necessary for filling information gaps. Practical ways forward should be explored, including using models, proxies, and case studies. Incorporating diverse empirical data sets into economic analyses, while maintaining a clear focus on possible unintended impacts on other goals (such as global food security, sustainable productivity growth, livelihoods in rural areas, etc.), can help inform better policy decisions.**

4. **The private sector can be a source of granular data and information, including with respect to the impacts of agriculture policies under various farming conditions. Unique insights are increasingly available from the application of digital tools and data analytics that can contribute to better policy outcomes in environmental as well as economic terms and should be explored as a priority.**

2. The Impacts of Export Restrictions

【Question】

- Export restrictive measures have long been criticized as amplifying price volatility in international agriculture and food markets, affecting the most vulnerable, especially in net food importing developing countries.
- By limiting access to global markets, export restrictions also act as a disincentive for investment in sustainable production systems, reduce confidence and trust in the reliability of international markets as a source of supply, and tend to trigger further trade restrictions.
- Climate change is contributing to more frequent production shocks and increased market uncertainty, which in turn risks to result in greater use of export restrictions. Although many analyses have revealed the adverse impacts of these measures, and despite the repeated calls by the international community including G7, G20 and the WTO, 30 countries resorted to export restrictive measures in 2022, most of which were not properly notified as stipulated in the WTO Agreement on Agriculture.
- What information and analyses are required to inform countries' consideration of the likely impacts of export restrictive measures, and of a range of alternative policies, on the availability of sustainably produced and affordable food for consumers globally?

【Context and background】

2.1 Under the WTO rules, quantitative restrictions, either on exports or on imports, are generally prohibited in Article 11.1 of GATT 1947. At the same time, the rules acknowledge that there may be cases, as an exception, where countries resort to these measures temporarily in order to ensure their national food security: Article 11.2(a) of GATT 1994 stipulates that "export prohibitions and restrictions temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party" are not prohibited. For agricultural products, Article 12 of the WTO Agreement on Agriculture obliges member countries to give notice before instituting such a measure, and to consult and provide necessary information upon request, so that other countries can be well informed and better able to prepare for the situation.

2.2 It was during the "food crisis" of 2007–2008 that as many as 27 countries imposed measures restricting agricultural and food exports to ensure "food security at a national level." How to deal with price volatility of agriculture and food products was high on the agenda in international fora at the time. For example, the report made by 10 International Organisations in 2011 included 10 recommendations ranging from policy options to reduce price volatility to those to deal with the consequences of price volatility (World Bank et al., 2010). The importance of the transparency of market information was

particularly emphasized, which lead to the establishment of Agriculture Market Information System (AMIS) by G20 (See Box 2.1).

Box.2.1 The Agricultural Market Information System (AMIS)

AMIS is an inter-agency platform that provides improved transparency on food markets and informs national policy actions, thereby helping to avoid excessive market volatility and to enhance global food security. AMIS was launched in 2011 by G20 Ministers of Agriculture following the global food price hikes in 2007-08 and 2010. Bringing together the principal agriculture trading countries, AMIS assesses global food supplies (focusing on wheat, maize, rice, and soybeans) and provides a platform to coordinate policy decisions in times of market uncertainty.

AMIS is comprised of a Global Food Market Information Group, assembling technical representatives from participating countries who share timely market and policy information; a Rapid Response Forum, composed of senior officials from participating countries who assess evolving market conditions and consider options to address any 'shocks'; and a Secretariat that produces short-term market outlooks, assessments and analyses and support all functions of the Information Group and the Rapid Response Forum.

Source : AMIS Secretariat. https://www.amis-outlook.org/amis-about/en/

2.3 Reflecting on the experiences during the food crisis of 2007-08, and due to the urgent requirement of ensuring smooth trade of goods, especially after COVID-19, the international community has repeatedly advocated refraining from export restrictive measures. In April 2020, G20 Agriculture Ministers unanimously agreed to "guard against any unjustified restrictive measures that could lead to excessive food price volatility in international markets and threaten the food security and nutrition of large proportions of the world population." In May 2022, G7 Agriculture Ministers affirmed to "continue to avoid any unjustified restrictive measures on exports that could exacerbate the increases in food and input price volatility." These momenta were brought to the WTO and in June 2022, "Ministerial Declaration on the Emergency Response to Food Insecurity" was adopted at the WTO 12th Ministerial Conference. Although the Declaration includes no additional new disciplines on export restrictions, it was the first multilateral declaration addressing the issue of food insecurity in WTO history and reaffirmed the importance of not imposing export prohibitions or restrictions in a manner inconsistent with relevant WTO provisions. At MC12, WTO Members also adopted a Decision that they would not impose export prohibitions or restrictions on foodstuffs purchased for humanitarian purposes by the World Food Programme, in light of the critical support provided by the WFP in poor countries, which was made more urgent as global hunger levels have increased sharply.

2.4 Despite these commitments to avoid export restrictive measures, the number of such measures has increased in recent years. According to IFPRI data, it rose up to 30

countries in 2022[1], most of which are emerging or developing countries. These measures helped grain prices to soar, at least for a short period, which exacerbated the negative effects of higher food prices on importing countries (Table 1).

Box.2.2 WTO MC12 outcomes related to export restrictions

In "Ministerial Declaration on the Emergency Response to Food Insecurity", Ministers agreed that trade, along with domestic production, plays a vital role in improving global food security in all its dimensions, and in enhancing nutrition, and commit to take concrete steps to facilitate trade and improve the functioning and long-term resilience of global markets for food and agriculture. While the Declaration refers to various elements including international food aid, technical and financial assistance to LDCs and NFIDCs, and the establishment of a specific work programme on food security for LDCs and NFIDCs at the WTO Committee on Agriculture, the most relevant part to export restrictive measures include,

- "We underscore the need for agri-food trade to flow, and reaffirm the importance of not imposing export prohibitions or restrictions in a manner inconsistent with relevant WTO provisions." (para4)

- "We resolve to ensure that any emergency measures introduced to address food security concerns shall minimize trade distortions as far as possible; be temporary, targeted, and transparent; and be notified and implemented in accordance with WTO rules." (para5)
The Declaration also acknowledge the positive role of the Agricultural Market Information System (AMIS) in enhancing agricultural market transparency and policy responses for food security.

In "Ministerial Decision on World Food Programme Food Purchases Exemption from Export Prohibitions or Restrictions", Ministers decided that "Members shall not impose export prohibitions or restrictions on foodstuffs purchased for non-commercial humanitarian purposes by the World Food Programme."

Source：WTO, https://www.wto.org/english/thewto_e/minist_e/mc12_e/documents_e.htm

【What we know】

2.5 Export restrictions on food commodities are often used by countries that are net exporters of food in the wake of either commodity price booms (e.g., the 2007–08 and 2010 food price crises) or in response to sudden shocks, such as extreme weather or wars (e.g., the Russian invasion of Ukraine in 2022). Among the objectives of this trade policy tool, the most common is to insulate domestic prices from the world price level and thus avoid political repercussions from external shocks in the adopting countries (Bouët and Laborde, 2010; Martin and Anderson, 2012; Tadesse et al., 2014), i.e., to constrain domestic food price inflation. In some cases, the measure is introduced driven by factors of a macro-economic nature, such as exchange rate or balance of payments concerns, rather than food markets per se.

[1]The latest WTO report shows that the number has increased to 75 as of October 2023, including export restrictions on fertilizers.
https://www.wto.org/english/news_e/news23_e/trdev_18dec23_wto_report_e.pdf

2.6 Another feature of export restrictive measures is that they are often implemented out of concerns for uncertainty and lack of transparency in the international market. The AMIS, launched by the G20 Ministers of Agriculture following the global food price hikes in 2007/08 and 2010, has been considered instrumental in helping to mitigate unexpected price hikes. Still, both G7 and G20 Leaders call for strengthening AMIS further, including broadening its coverage to include fertilizer and vegetable oils, improving data provision (including on stocks), and enhancing collaboration with early warning systems.

Table 1. Imposing export ban in agriculture and food sector (2022)

Country	Products	Net food exporter/importer for products	Prevalence of Undernourishment (2020/22)(%)	Changing rate of CPI (all items) (%)		Changing rate of CPI (food) (%)		Active as of July 2023	WTO Notification on export restrictions
				2021	2022	2021	2022		
Russia	Wheat, rye, barley, maize, rapeseed, sunflower seeds, sugar and others	Net Exporter	<2.5	6.7	11.8	9.6	-	○	×
Kazakhstan	Wheat, wheat flour, sunflower seeds, sunflower oil, sugar, potatoes	Net Exporter	<2.5	8.0	14.4	10.8	19.2	×	×
Ukraine	Wheat, oats, millet and sugar	Net Exporter	4.8	9.4	20.2	10.8	24.4	○	○
Georgia	Wheat, barley	Net Importer	2.9	9.6	11.9	10.8	16.8	○	×
Tajikistan	Onion, carrots, potatoes	Net Exporter	9.3	8.9	6.6	-	-	×	×
Uzbekistan	Onions	Net Exporter	<2.5	10.7	11.4	14.4	15.0	×	×
Kyrgyzstan	Wheat, Bovine meat	Net Importer	4.8	11.9	13.9	18.0	15.7	×	○
Moldova	Wheat, Maize, Sugar	Net Exporter	<2.5	5.1	28.7	7.1	29.9	×	○
Hungary	Wheat, rye, barley, oat, soybeans	Net Exporter	<2.5	5.1	14.6	3.4	27.8	×	×
Serbia	Wheat, maize and others	Net Importer	<2.5	4.1	12.0	4.5	16.6	○	×
Kosovo	Wheat, corn, flour, vegetable oils, salt and other	-	-	3.4	11.7	-	-	○	×
Argentina	Beef meat, soybean oil and soy flour	Net Exporter	5.8	48.4	72.4	49.9	74.6	○	×
Bolivia	Soybeans, soybean meal, beef, sugar and other	Net Exporter	19.4	0.7	1.7	0.6	1.4	×	×
Iran	Potatoes, tomatoes, onions, and eggplants	Net Exporter	6.1	43.4	36.2	59.2	60.5	×	×
Afghanistan	Wheat	Net Importer	30.1	5.1	-	-	-	○	×
Lebanon	Bread, sugar, processed fruits and vegetables and others	Net Importer	-	154.8	189.4	310.7	276.1	×	×
Kuwait	Grains, vegetable oils, chicken meal	Net Importer	<2.5	3.4	4.1	9.5	6.9	○	×
China	Corn starch	Net Importer	<2.5	0.9	2.0	-1.7	2.5	○	×
India	Wheat, Broken rice, sugar and others	Net Exporter	16.6	4.9	5.9	3.7	6.9	○	×
Pakistan	Sugar	Net Exporter	18.5	9.5	19.9	10.5	21.6	○	×
Bangladesh	Rice	Net Importer	11.2	5.3	7.7	5.3	7.4	○	×
Indonesia	Palm oil, palm kernel oil	Net Exporter	5.9	1.6	4.2	2.7	6.3	×	×
Malaysia	Chicken meat, live chicken	Net Importer	2.7	2.5	3.4	1.8	5.4	×	×
Egypt	Wheat, vegetable oil, maize, pasta, beans and others	Net Importer	7.2	5.2	13.9	4.6	21.0	×	×
Algeria	Pasta, vegetable oils and others	Net Importer	<2.5	7.2	9.3	10.1	12.7	○	×
Tunisia	Fruits and vegetables	Net Exporter	3.0	5.7	8.3	6.3	9.8	○	×
Turkey	Butter, Olive oils, beef meat, sheep meat and others	Net Exporter	<2.5	19.6	72.3	24.3	85.7	○	×
Burkina Faso	Millet flour, corn flour and sorghum flour	Net Importer	16.2	3.8	14.3	6.8	25.2	○	×
Cameroon	Cereals, vegetable oils	Net Importer	6.4	2.3	6.2	4.3	12.0	○	×
Ghana	Rice, maize and soybeans	Net Importer	4.9	10.0	31.3	10.3	28.8	×	×

*Translated from Koizumi and Furuhashi (2024, forthcoming)
*The original table is sourced from IFPRI (2023), FAO et.al (2023), OECD (2023) and Ha et.al (2023)

2.7 Furthermore, although the WTO Agreement on Agriculture requires members to give a prior notification when they introduce export restrictions, only 3 out of 30 members who introduced the measures in 2022 made the notification. The lack of accurate and timely information on new export restrictive measures may have caused other countries to

respond by introducing their own export restrictive measures, thus triggering domino-effects that exacerbate disruptions on the international market.

2.8 These measures reduce the supply to the international market of the agricultural products subject to the restrictions, further increasing international prices. A study revealed that during the 2010 food price crisis, price insulation policies adopted by countries accounted for 40% of the increase in the world wheat price and 25% in the price of maize (Laborde, Lakatos, and Martin, 2019).

2.9 It is apparent that the policies restricting agricultural and food product exports affect the availability and stability of food supply in importing countries. The International Food Policy Research Institute (IFPRI, 2023) estimated that the imposition of policies restricting agricultural and food product exports would affect 16% of the world's caloric intake in 2008, 7% in 2020, and 17% in 2021. These policies are more likely to have a greater impact on developing countries and in lower income groups.

2.10 On the other hand, policies restricting exports implemented to stabilize domestic food supplies and prices have not necessarily contributed to stabilizing domestic prices, although this assessment requires further examination, since food prices could have risen further had restrictions not been imposed by those countries (Koizumi and Furuhashi, forthcoming).

2.11 At the same time, several studies have shown that restrictions may have a longer-term adverse effect on the domestic market of the export restriction country, where lower prices due to the export restriction measures reduce production and investment incentives in the domestic market. Another study showed that implementing an export ban could reduce long-term demand from their traditional trading partners, thus even though export bans are temporary in nature, they can have long lasting effects also on the demand side (Deuss, 2017).

【What more do we need to know】

2.12 Three areas for further analysis are highlighted here. First, the effectiveness of export restrictive measures in the implementing country: There is widespread recognition that export restrictions in exporting countries can benefit consumers by increasing domestic supply and lowering domestic prices in the short term, but less recognition of the associated costs. Those costs include lower prices for farmers, less domestic production and investment, loss of global market share to competitors, reduced foreign exchange revenues, reputational damage, and sowing seeds of contagion that could easily backfire by affecting availability and prices of other foods (FAO, 2020). The apparent negative impacts on the country which imposes export restrictions, including those of a long-term and indirect nature, should be more fully analyzed and disseminated.

2.13 Second, alternative measures to ensure domestic food security: As noted above, export restrictions are but one among a broad range of policy measures aimed at improving domestic food security, and if there are alternative measures which do not have negative effects on other countries' food security, they should be promoted. Efforts should be made to identify the full range of these alternative policy actions, which could include, for

example, various social safety net programs for vulnerable populations and arrangements to maintain the function of domestic distribution systems, etc. The desirable role of the private sector should be also explored. And it is important that these measures should be implemented, or ready to be implemented, before a critical shortage of foodstuff arises. This direction seems to be consistent with, and would be a part of, the current call for action by many international fora, including G7, for more resilient food systems. Because many less developed countries are unlikely to have the fiscal capacity to implement robust social safety nets the international community should explore options for providing appropriate support and assistance.

2.14 Finally, improving the accuracy and timeliness of information on the global market situation and related policy measures: The experiences of COVID-19 and the illegal war of Russia against Ukraine revealed that the supply chains for food and agricultural products are now more interconnected. An exogenous shock, whether natural disasters, conflicts, or export restrictive measures, may have more far-reaching effects than it used to, which in turn makes the availability of accurate and timely information on the market situation and policy measures all the more important. Furthermore, as we are experiencing more extreme weather events in recent years due to climate change, it is likely that we will see more export restrictive measures implemented, unless we prepare conditions where countries feel less inclined to resort to such measures. There is also substantial room for improvement in both the implementation of the current WTO disciplines on export restrictions notifications, and the current disciplines themselves that include some ambiguities. And as already noted, the role of AMIS is very important in improving the transparency of both markets and policies, through its monitoring activities and the framework of Rapid Response Forum. In addition, the private sector might be expected to contribute more, in particular with respect to information on potential supply chain vulnerabilities.

2.15 In tackling these challenges, we should note there are various forms of export restrictions, and that we need to analyze in more detail different forms of restrictions that may have different impacts (domestically and internationally, in the short- and long-term). Quantitative export restrictive measures range from the outright ban of exports to an export quota which allows exports up to a certain amount. Some countries are implementing export taxes, which are not disciplined under the current WTO rules. In this case the policy objective may be to raise financial revenues through imposing taxes, and/or to lower the domestic price of raw material to support the domestic processing industry, rather than to prevent or relieve a critical shortage of foodstuffs for national food security, but the impacts may be essentially the same as for other forms of restrictions.

Recommendation from G7 experts
to address gaps in available information and analysis

1. **Empirical data and analysis on the use, and the impact on global markets, of various forms of export restrictions, including quotas, bans, and taxes, are inadequate. Research on the impacts of export restrictions on the country which imposes them, including those of a long-term and indirect nature, also warrants more attention. Addressing these gaps would enable countries considering introducing export restrictions to identify the least disruptive forms.**

2. **Additional research is also needed to identify alternative policy options to export restrictions, including various social safety net programs, which would minimize the negative impacts of price shocks and supply disruptions on vulnerable populations, on global markets, and on sustainable resource use.**

3. **There is a continuing need to improve the accuracy and timeliness of information on the international food and agriculture market situation and related policy measures. In this respect, further analysis is warranted of options to strengthen both the role of AMIS and the effectiveness of WTO provisions on country notification of export restrictive measures. This is essential to maintain trust in a rules-based multilateral trading system.**

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