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EXECUTIVE SUMMARY

During the 37th EFFoST International Conference, held in Valencia in November 6th to 8th, the WP7 team was involved in two events: First, a presentation in a special session dedicated to the ENOUGH project and second, a focus group addressing decarbonization and transparency in the food sector. The special session had a broad audience and the focus group targeted a specific set of stakeholders.

The presentation, entitled “Policy Gaps and Feasible Policy Interventions in the European Food Value Chain”, addressed two main issues. It first focused on the extent to which past EU policy instruments and interventions have contributed to reduce emissions in the food value chain (FVC) and second, on identifying the GAPS and opportunities to improve the effectiveness of those policies and interventions. The main conclusions indicate that there is a broad range of EU environmental directives and regulations affecting the food value chain, but they vary in ambitions and outcomes. Thus, harmonized monitoring systems are needed to develop emissions benchmarks and to design better strategies to achieve net-zero emissions. Additionally, financial mechanisms shall be issued in priority areas to support policy implementation.

The focus group brought together two Horizon-funded projects (TITAN, funded by Horizon Europe, and ENOUGH, funded by Horizon 2020) that support the EU’s Farm to Fork Strategy (F2F). TITAN focuses on food transparency as a central tool to spur a demand-driven economy that provides consumers with healthy and sustainable food. ENOUGH provides technical, political, and financial tools and solutions to reduce emissions in the European food supply chain in the context of the European Green Deal (EGD). The political directionality proposed by the EGD and F2F envisions considerable structural changes in the European food sector that should pave the way toward net-zero emissions. Hence, it is crucial to explore the degree of implementation and enforcement of policies and regulations in relation to GHG emissions and transparency in the food sector. These policies should be coherent with the progressive capacity of groups to adopt clean technologies and adjust to market changes. Therefore, it is an important exercise to assess the point of view of the involved stakeholders, to identify and close policy gaps and improve potential actions concerning implementation and applicability.

Results from the focus group show that participants perceive the regulatory arena as being very confusing. This is due to overregulation and the considerable amount of data that is requested but might not be necessary or even used. The success of decarbonization strategies depend on consistent data, indicators, information, a clear trajectory to be followed also at the global level and allowing players to develop their own strategies.

Milestone M7.1

1 GENERAL INFORMATION

The 37th EFFoST International Conference 2023, held in Valencia in November 6th to 8th, brought together researchers, policy makers, industry representatives, engineers, and students from food-related multidisciplinary fields. The ENOUGH project's policy working package participated in two main activities: First, a special session designed to present the ENOUGH's main outcomes up to present, and a focus group targeting a small selection of food-related stakeholders.

The presentation focused on policy gaps and feasible policy interventions in the European food value chain and informed the audience about the gaps and synergies concerning existing policies in the realm of food sustainability. The slides of the presentation are attached as an appendix of this report.

The focus group, in turn, was planned jointly by researchers of the TITAN and ENOUGH projects to assess stakeholders' perspectives about transparency, digitalization, and decarbonization strategies. Details of the focus group are presented in the table below (Table 1).

Table 1 - Focus group information regarding title, facilitators, place and date, target groups, participants, duration, and topics

Focus group's title	Policy solutions for a sustainable, healthy, and safe food system
Facilitator	ENOUGH (WP7) and TITAN
Place and Date	7 th November 2023 - EFFoST conference – Valencia, Spain
Target group	Policy makers, Industry representatives, and scientists
Duration	1h40 min
Number of Participants	8 participants. (2 participants from universities; 1 food policy consultant; 1 food policy scientist; 1 agri-food and innovation specialist; 3 industry)
Topics	Transparency and decarbonization in food systems

2 QUESTIONS AND DISCUSSION TO THE FOCUS GROUP

The focus group started with questions designed by the planners to assess perceptions about transparency and decarbonization, followed by opinions regarding how stakeholders perceive challenges and solutions in the aforementioned fields. Every question was addressed by the facilitators

to every participant, and followed by an in-depth discussion, such that related issues were disclosed and further acknowledged. This section summarizes the questions asked and the discussion that followed each question.

How would you define “Transparency” in the food system?

The definition of “transparency” is almost as vague as “sustainability”. Such terms are perceived very differently across groups of people. Stakeholders offered a view of transparency as “open systems”, “open access”, and something that is “verifiable”. In the realm of food consumption, it does not mean that consumers should have all information in a package, it would not fit. However, important information should advise consumers about specific standards of the products. Transparency relates to “clarity” about needs and duties in a way to respect proportions and not to overdo demands.

What are the key transparency-related challenges within your work?

From an industry point of view, companies are constantly needed to be “transparent”; however, there is considerable misunderstanding about the scope, where it should start or end, and what type of information should be disclosed. It seems that most data disclosed are not understood and valuable to final consumers. Thus, more attention is being placed on what type of information companies disclose and how they should demonstrate they record the needed data, but there are barely any efforts to disseminate corporate data to final consumers. The key challenge in this sense is understanding the scope because various information will serve different uses, distinct dissemination, and requirements.

Another important challenge relates to traceability of products along the supply chain and the high demand for the related data. Companies have to constantly gather data that are often not used and that could lead to more CO₂ emissions. It is crucial to define the right amount of information to be supplied and to assess the type of data that are needed and requested. Without a common understanding of what indicators are truly needed, this process will involve high investments, without serving the central purpose.

Communication is a challenge because it seems that priorities and issues are perceived differently by companies, consumers and policy makers. Thus, informing specificities of what is needed and for what purpose would contribute to the process of data transparency and to a common understanding.

What tools do you think can be used to achieve decarbonization?

Decarbonization is often a used term, but there is no consensus on how to achieve it. It was implicitly clear for all participants that technology is a central tool to decarbonize food operations and that the government needs to help funding this transition. Nevertheless, when national political agendas are not integrated, it becomes more complex. In the example of Australia, there are two levels of government, namely, federal and state governments. In western Australia, the mining industry is very strong, which responds to very different policy priorities in terms of decarbonization. The political agenda in the region is based on the taxation and royalties from minerals, as opposed to other states that rely on agriculture. Such regions also have a completely different understanding of decarbonization at the political level, a fact that hampers a common agreement even on a single sustainable goal.

How can digitalization help in achieving transparency?

Digitalization enables to predict much earlier where activities are passing planetary limits. Artificial intelligence, based on data and models, can inform the “playing ground” and conditions for certain production. The participants agree in that digitalization is key to improve transparency, but regulations in place must be in line in order to be able to use the available technologies. An example from Australia shows that there is already an available technology that can improve system traceability, but the

application of more advanced digital systems in the food sector (e.g., digital stamping pork carcass for meat export) is not allowed in some cases. The Australian government requires manual stamping only. This challenge could only be addressed by a policy change that enables digitalization and verification globally.

How could policy and regulation address these challenges?

Reaching consensus about the needs and possible solutions is central when aiming for overall gains for governments and industries. Validating already applied systems would enable a better evaluation of what should be further achieved and adjusted, rather than adding several systems that would not be in synergy with one another.

From a policy-making point of view, it is necessary to first define the purpose, followed by the selection of a system or procedure that serves the purpose. The first step is often missing.

Digitalization is almost always ahead of policy making and regulation. How to bridge this gap and which trajectory policy makers propose to, at least, head in the appropriate direction is often not clear. A recent example refers to the *legislative framework for sustainable food systems* in Europe, which should result in new legislation in autumn 2023. The results were rescheduled for 2024 mainly due to lack of transparency by the joint research centers of the European Commission. In their reports, they did not provide the right indicators that should be taken into account for the successful application of a legislative framework. There are several indicators, potential trade-offs, and contradictions among them, which is also the case for the EGD. This suggests that a political framework cannot be built based on contradictory information. Therefore, it is important to have a clear strategy on which targets should be considered and how to achieve them.

This issue is also observed in the F2F strategy. There are several goals that do not synergically connect with one another. First, the whole strategy is related to human health but looks at the system only from farm to fork, it is argued to be not enough and should be rather from “grass to grass”. Additionally, it looks into the problems of soil acidification, decarbonization, increasing biodiversity, and water use, among others, aspects that could be integrated into low-trophic systems. They should be realistically assessed by understanding that not all targets could be achieved simultaneously. Systems would be gradually stricter, supported by cost benefit analysis and finally translated into common policies.

What are the policy gaps to achieve decarbonization?

Typically, the various Directorate-Generals (DGs) do not seem to communicate enough with one another. While directly related, the aspects proposed by the F2F strategy are managed in a disintegrated way. There is an overall lack of consensus and integration of food policy in the EU.

The current political structure is based on silos. The solutions to achieve decarbonization are related to the objectives, of which some ministries might not have a role at all. Alternatively, the starting point could be a “mission”, where the strategy could be reformulated while presenting what is needed to achieve the mission, the most crucial elements, and the structure and ministries/departments that should be responsible. Fundamentally, there are windows in which it is possible to operate, and it is exactly where governments should act instead of focusing on a one-fits-all solution with significant inconsistencies.

Do you think that the existing and proposed policies are enough?

There are so many policies that end up having unintended consequences. A holistic approach is needed because individual goals are not going to generate synergies *per se*.

Does your company follow a specific roadmap for decarbonization?

One respondent mentioned that his company triggers a number of targets under ESG reporting. One of them is that the company shall have a roadmap. The roadmap does not demand that the company operates with carbon neutrality. In Australia, companies that claim carbon neutral operations will be verified, and if they do not meet the verification criteria, they can be prosecuted. Companies tend not to follow a carbon neutral roadmap because without off-sets, it is impossible to become carbon neutral. Even if a company buys off-sets for carbon emissions, the company might decarbonize operations following Scope 2 only, not considering Scope 1 and Scope 3. Following that, companies claiming to be carbon neutral should be transparent and specific in terms of all scopes and demonstrate whether they operate with or without off-sets.

Does your company respond to specific emission standards?

Companies must comply with standards when they are legally enforceable if they want to do business, which is similar to ESG reporting.

Do you find it difficult to navigate in the regulatory arena/framework?

It is very complicated from the point of view of the industry. In the EU, after transparency legislation was put in place, there were considerable misunderstandings, discussions, and significant delays in the process. If companies are after innovation, they certainly have difficulties finding the right way to navigate in the regulatory framework. The current regulatory framework hampers innovation due to the lack of consistency, guidelines, and even long and heavily bureaucratic systems for new companies.

Are you able to profit from the Just transition funds of funds offered to decarbonize operations?

EU member states implement the funds in a different way. In the Netherlands, for example, it is not possible to access the funds because they are allocated to very specific areas and they should do the carbonization process. This might also affect industry profiles across countries, where they can go and innovate.

Policies should fundamentally serve industries, civilians and farmers' needs so that all investments are related to pay-back periods. There is an uncertain arena for current and future public funds and legislation that do not clearly specify boundaries and pay-back periods in the EU.

3 MAIN CONCLUSIONS

In this section we summaries the main conclusions from the presentation and the focus group.

The presentation's central outcome is that there is a large number of food-related policies and regulations in the EU, which differ in ambitions and expected outcomes are not always synergically related. This means that there is a gap between what is expected from the policies and what is feasible to be implemented. Plausible recommendations to close the gaps highlight the need to:

1. Harmonize monitoring systems of emissions benchmarks.
2. Stablish financial mechanisms in priority areas to support policy implementation.
3. Harmonize and improve product labeling for healthier and more sustainable consumption.
4. Strengthen waste management policies.

The main messages that came out from the focus group concerning the challenges in enhancing transparency and decarbonizing the food system are as follows:

1. There is a problem of overregulation in the EU.
2. Many data are requested but not needed. Use of data by the administration should be more consistent, as well as deciding at what administrative level and what indicators are needed.
3. Communication between stakeholders (regulators and firms) is key. A common language is pressingly needed.
4. A traceability system, similar to the one in place for food safety, is needed for decarbonization.
5. Digitalization is ahead of policy and regulation, and bridging this gap is not easy.
6. There is no clarity on the trajectory that has to be projected at the global level.
7. Policy and regulation must give players the chance to develop their own strategies.
8. More has to be done to bring many actors/stakeholders together and find the optimal solutions. Policy—business—consumers. Need to cooperate and share mission.
9. Policy is becoming very popular and, with that, a considerable number of regulations are formulated. As a result, the food industry finds it very challenging to address all the changes that need to be implemented. The policy-making process has to be rebalanced, so that stakeholders can abide to what is really feasible and necessary.



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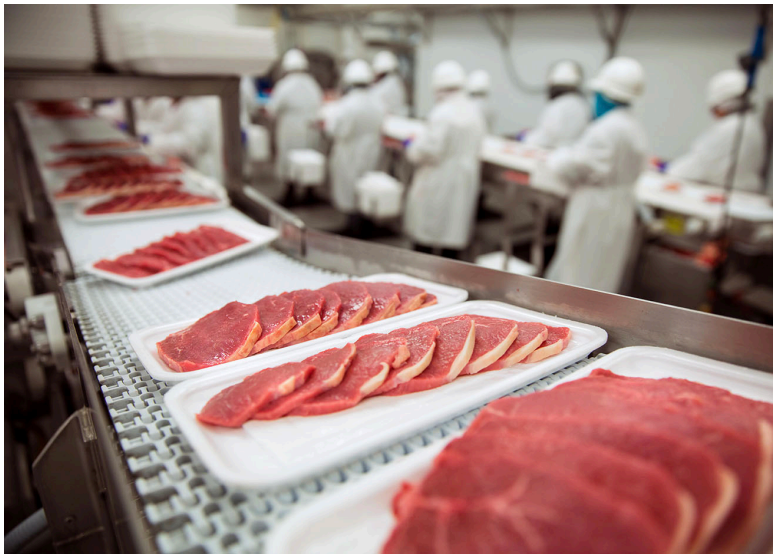
APPENDIX

November 2023:

ENOUGH Presentation: Technologies, tools and methods to achieve climate neutral food businesses - Policy Gaps and Feasible Policy Interventions in the European Food Value Chain

Inmaculada Martínez-Zarzoso, Ianna R. Moreira-Dantas

University of Göttingen and University Jaume I



 **ENOUGH**
EUROPEAN FOOD CHAIN SUPPLY
TO REDUCE GHG EMISSIONS BY 2050





Policy Gaps and Feasible Policy Interventions in the European Food Value Chain

**ENOUGH Symposium: Technologies, tools and
methods to achieve climate neutral food
businesses**

Inmaculada Martínez-Zarzoso

University of Göttingen and University Jaume I

Ianna R. Moreira-Dantas

University of Göttingen

November 2023

Introduction

- The European Green Deal (EGD), with the associated Farm-to-Fork (F2F), provide a new context to make the EU climate-neutral
- Questions:
- To what extent have past EU policy instruments and interventions contributed to reduce emissions in the food value chain (FVC)?
- What are the GAPs and oportunities to improve effectiveness?

Motivation

- **Food production:** Sensitive to climatic variations (Howden et al., 2007) responsible for 1/3 of anthropogenic GHG emissions globally (Crippa et al. 2021)
- **Food consumption:** Contributes to around 25% of household environmental impacts in the EU (Alek-sandrowics et al., 2016; Smil, 2000; Tukker & Jansen, 2006)
- **The food supply chain:** Need urgent transformations to ensure food security + sustainable pathways (Lipper et al. 2020)
- **Legislative framework:** must set directionality and support priorities for sustainable production and consumption

EU's policy framework

+Package including directives and regulations that set rules, practices and objectives



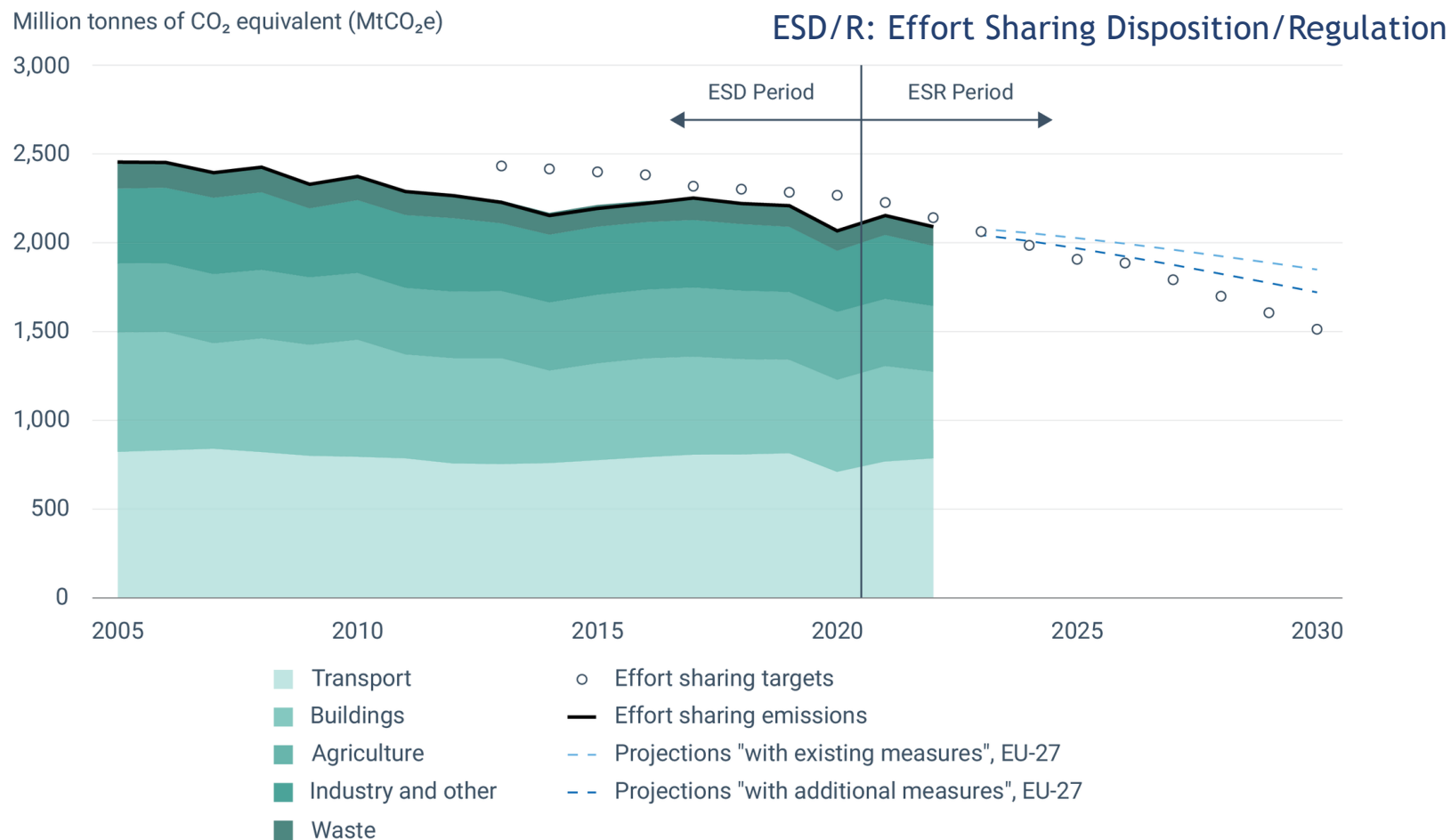
MAIN GOALS

- Make the EU a carbon-neutral economy by 2050
- Protect and enhance the EU's natural capital
- Promote health and well-being of citizens
- Ensure a sustainable and inclusive economic growth
- Transforming the EU into a fair, prosperous, modern, resource-efficient, and competitive economy

POLICY BLOCK

- | | |
|--------------------------|--|
| Climate Law | Circular Economy Action Plan |
| Farm to Fork Strategy | Zero Pollution Action Plan |
| EU Adaptation Strategy | Just Transition Mechanism |
| Sustainable Mobility | Biodiversity Strategy |
| Climate-Neutral Industry | Energy Transition |
| Renovation Wave | Green Financing & Sustainable Investment |

GHG emissions trends and projections under ESR



Strategies for a sustainable European FVC

- **Energy efficient systems**
 - Need to change to renewable energy sources
- **Information available for consumers**
 - Food-related voluntary certification initiatives; NGOs and industry associations promoting ecolabels in response to consumers and activist groups' concerns ([Gulbrandsen, 2006](#))
 - Consumer associations foster consumers' awareness across FVC
- **Technology roadmaps in the industry**
 - Challenging task: FSC industries need specific decarbonization processes
- **Policies and regulations & policy evaluation schemes**
 - Many under way

How is the EU financing the transition to net-zero?

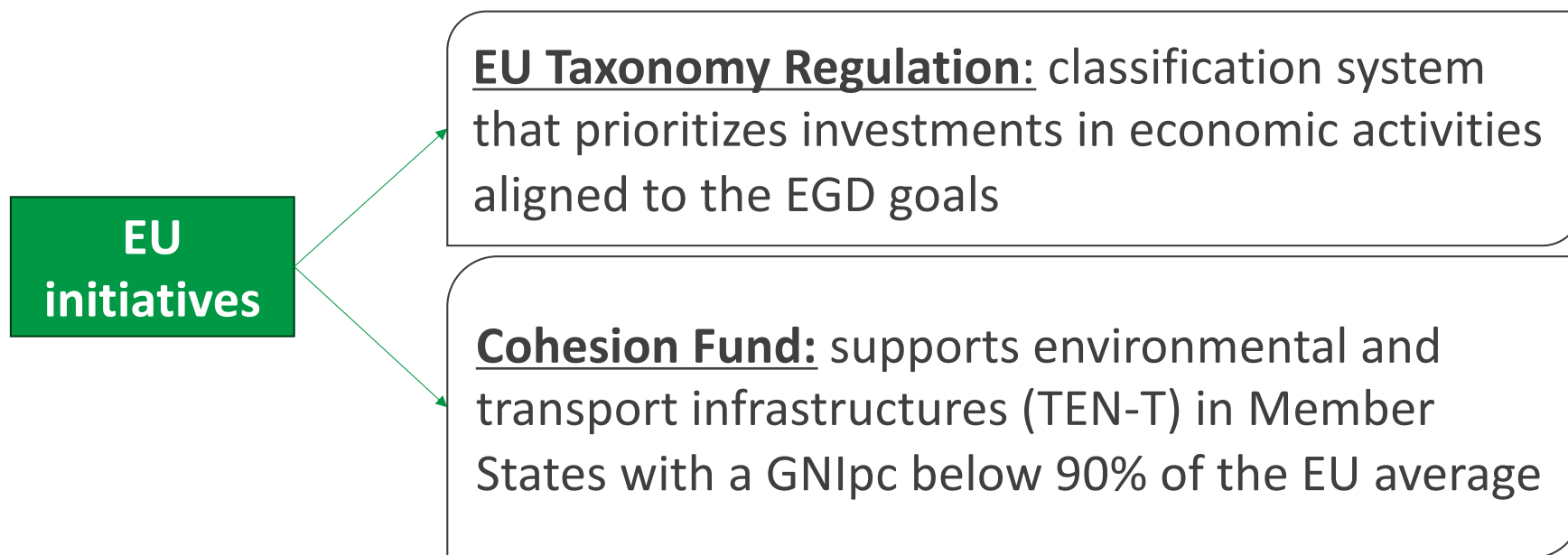
Climate-friendly investments are crucial:

Challenges

- Energy financing remains for fossil-fuel based technologies
 - Overall funds for clean-energy have decreased in the past decade (*Andrijevic et al., 2020; UNEP, 2014*)
-
- Qualitative divergence between investments in place and where they are most needed
 - Insufficient investments in R&D from private players (*Hannon & Skea, 2014*)

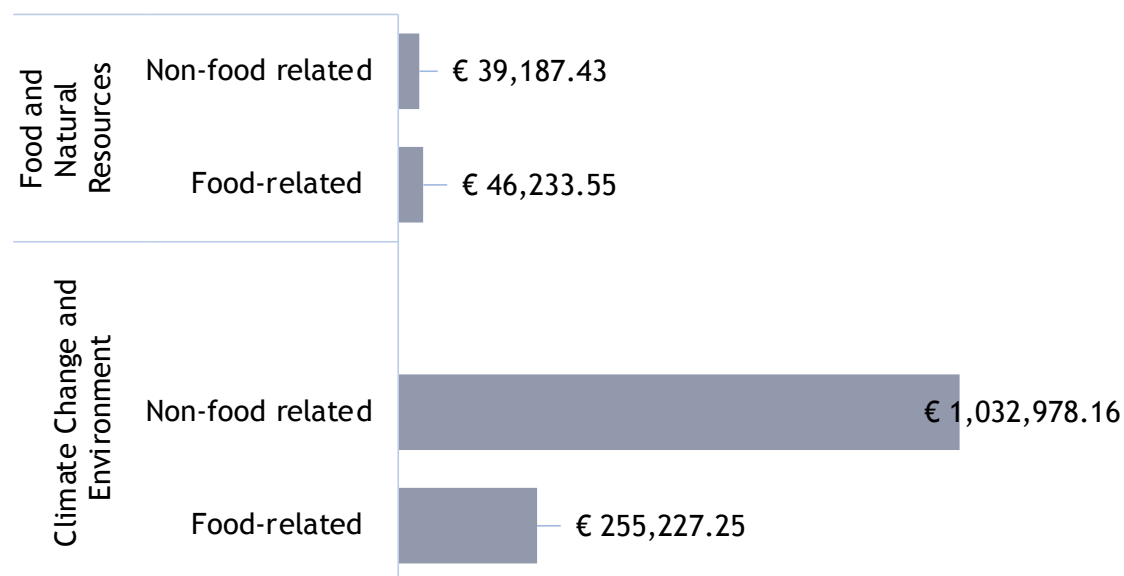
Financing the transition

Climate-friendly investments: Definition and sources



Research & Development Investments

Key to achieve sustainability milestones



Horizon 2020 (H2020) program:

- EU initiative to finance R&D (2014-2020) with a total budget of around €80 billion
- Unequal distribution of investments across FSC stages

Figure 1. Distribution of food-related projects across domain of application (in € 1.000).

Source: Authors' elaboration based on: Community Research and Development Information Service (CORDIS). <https://cordis.europa.eu/projects/en>. Period covered: 2020-2027.

R&D&I by Areas

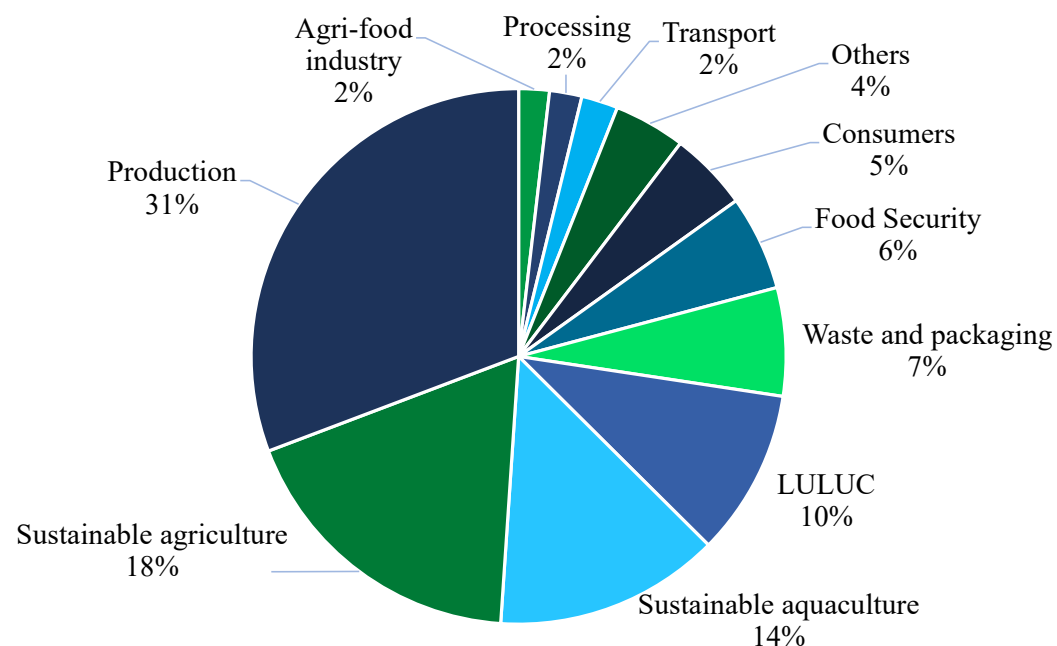


Figure 2. Distribution of food-related projects across domain of application across the climate change and environment category

Source: Authors' elaboration from Community Research and Development Information Service (CORDIS). <https://cordis.europa.eu/projects/en>. Period covered: 2020-2027.



November 2023

Horizon 2020 (H2020) program:

- Food production received 31% of the total budget directed to food-related projects followed by aquaculture and sustainable agriculture
- Food-related processing and transport sectors, in turn, only received 2% of the budget

F2F and FVC

A new impetus for EU food value chain



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EU BUDGET 2021-2027:

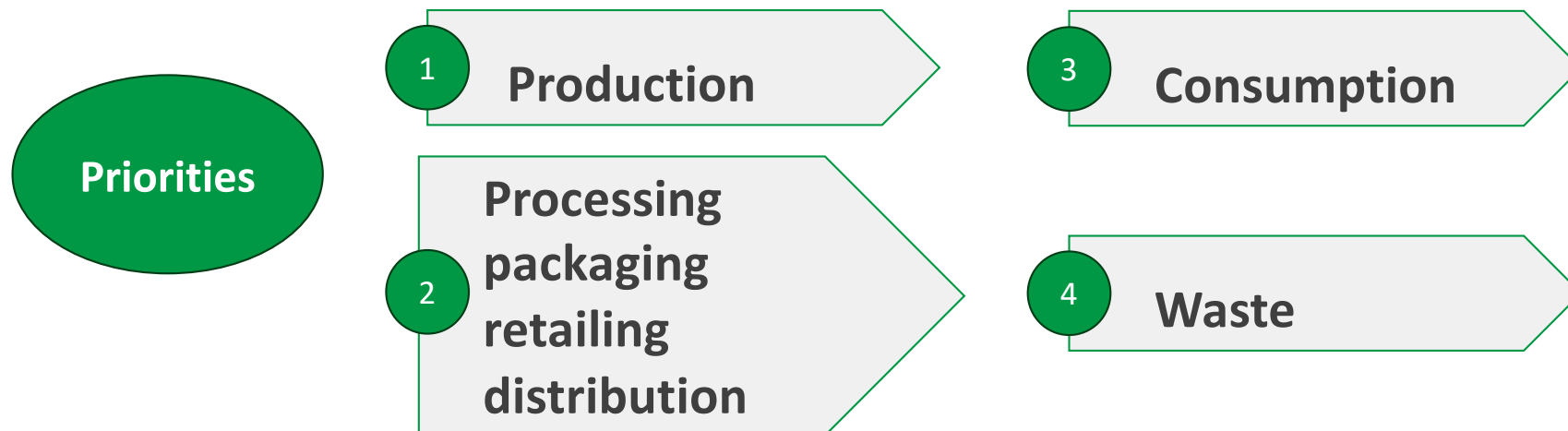
MORE THAN €550 BILLION
TO BE SPENT ON CLIMATE
ACTION: 80 FROM
COHESION AND THE
REGIONAL DEVELOPMENT
FUNDS

Source:

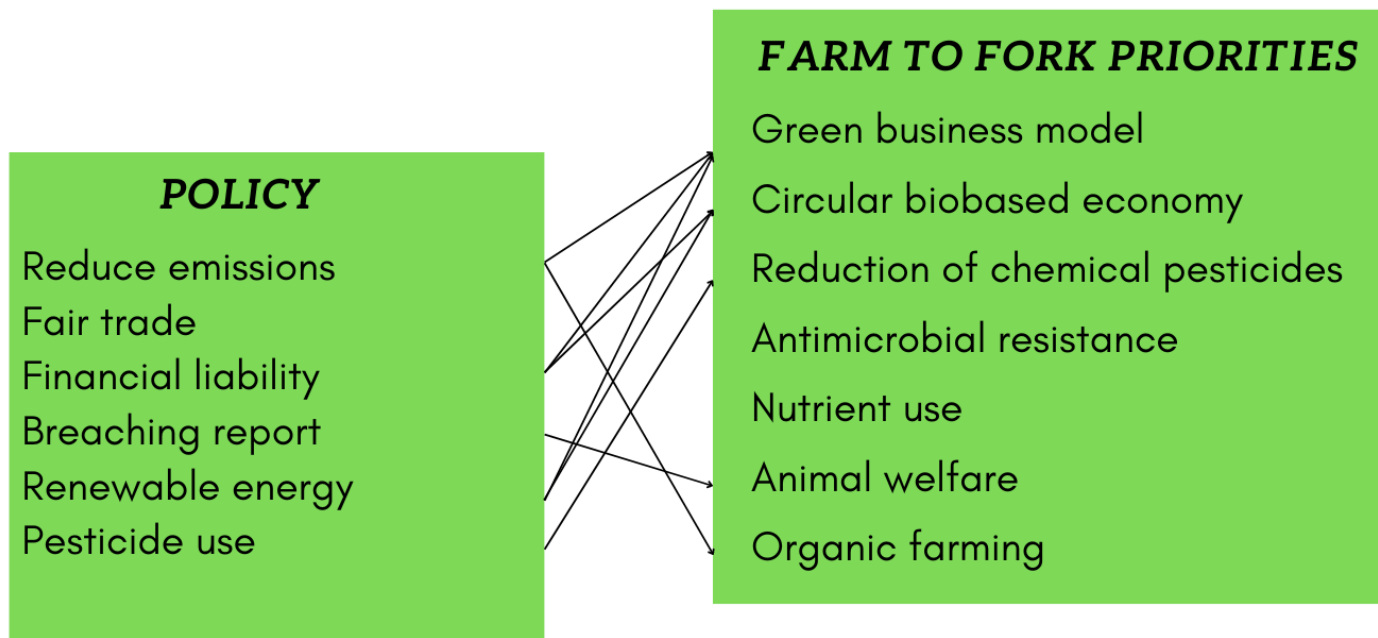
<https://www.consilium.europa.eu/media/63855/sn02884-re03-en21.jpg>

Farm to Fork (F2F) strategy

- *The F2F covers action across all FVC stages to enable the sustainable transition*
- *Policy design is crucial to guide and provide means for a transformation while considering all levels of policy implementation ([Parks, 2022](#))*

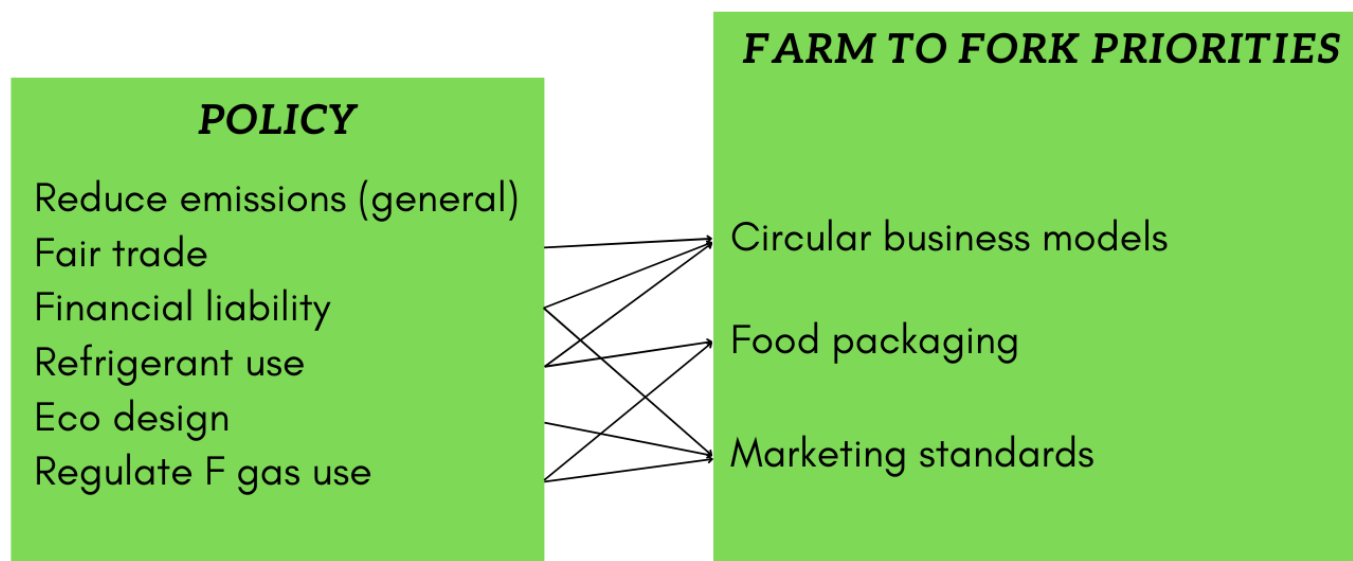


1. Production



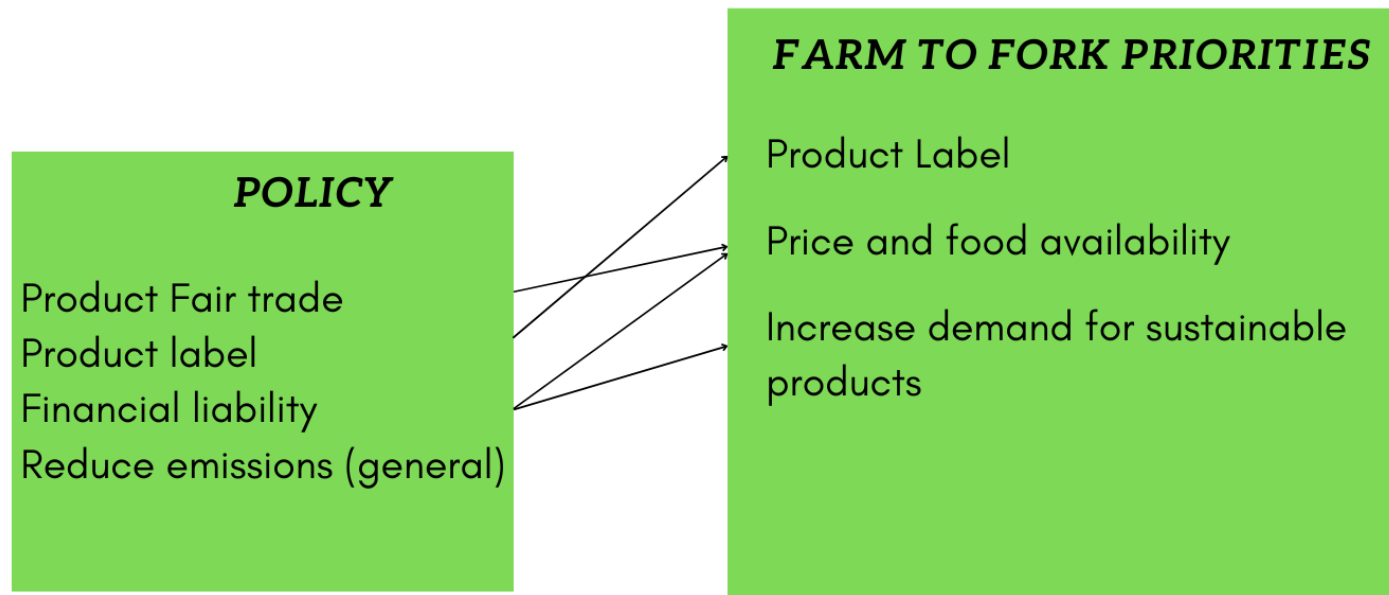
- *Overall F2F priorities are supported by existing policies*

2. Processing, packaging, retailing, distribution



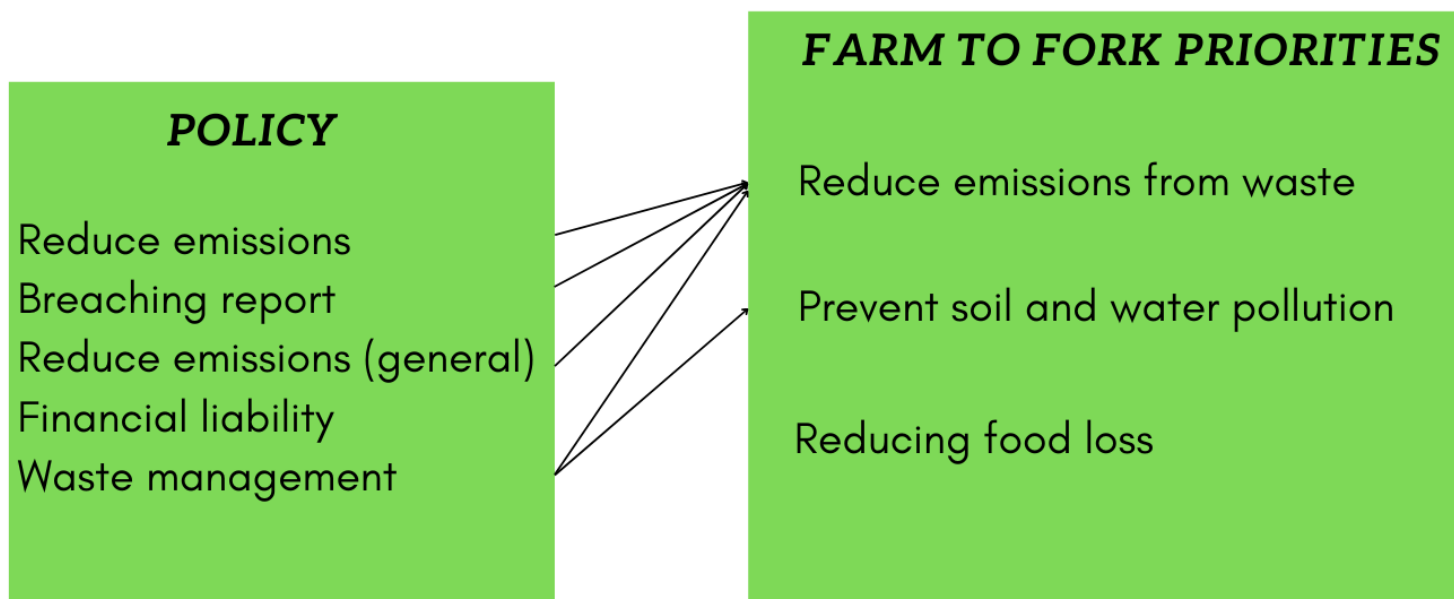
- *More emphasis needed on political and financial incentives to develop clean technologies and their subsequent adoption*

3. Food consumption



- *Existing policies are overall related to the F2F priorities*
- ***Product labeling*** is a key aspect for a conscious and sustainable consumption

4. Food waste



- *Priorities set for waste management seem to present insufficient synergies with existing policies*
- *Regulations for waste management, reducing food loss, and protecting soil and water resources from waste contamination shall be further elaborated*

Conclusions

- There is a broad range of EU environmental directives and regulations affecting the food value chain → Different ambitions, mixed results
- The assessment of the main EU legislation and policy implemented until now highlight the presence of a **GAP between: The ambition of policy objectives and the results of their implementation**
- Recently proposed legislation has a stronger focus on **objectives** and **reporting** results:
- Could be an opportunity to improve effectiveness of policies
- Simplification of administrative requirement around programs is key

Recommendations

- **Harmonized monitoring systems** needed to develop emissions benchmarks and design better strategies to achieve net-zero emissions
- **Climate finance** is crucial to make clean energy sources and technologies more accessible
- Financial mechanisms shall be issued in **priority areas** to support policy implementation
- Harmonizing and improving **product labeling** is key for consumers to be able to make healthier and more sustainable decisions
- **Waste management** current policies lack strategies to reduce food loss and to promote sustainable waste management



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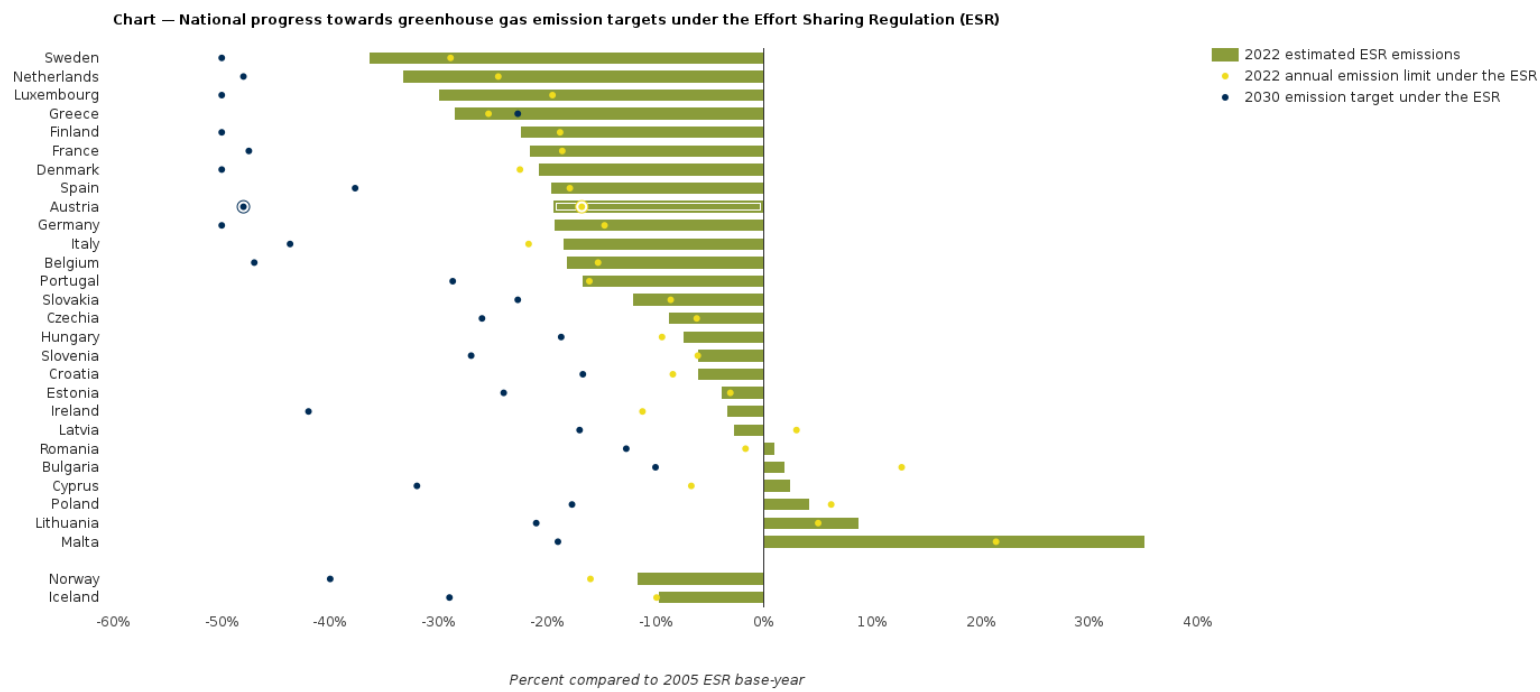
ENOUGH

EUROPEAN FOOD CHAIN SUPPLY
TO REDUCE GHG EMISSIONS BY 2050

THANK YOU!

@martinei1

National progress towards GHG emission targets ESR



Note:
This figure shows the progress of EU countries towards their effort sharing targets.
Yellow dots indicate estimated targets for 2022 under the Effort Sharing Regulation (ESR); blue dots indicate 2030 targets under the ESR.

Data sources:
[Approximated estimates for greenhouse gas emissions, 2022](#) provided by [European Environment Agency \(EEA\)](#)

