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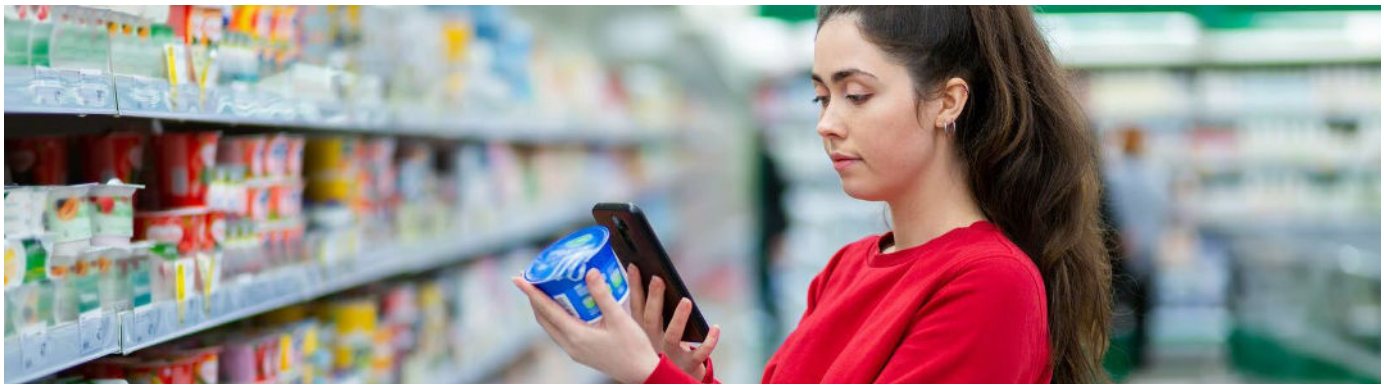

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# Product Environmental Footprint:

## Overview of EU and national public and private initiatives in agro-food

Irina Verweij-Novikova, Roline Broekema, Koen Boone

## 1. Introduction

The Product Environmental Footprint (PEF) is a multi-criteria measure of the environmental performance of a good or service throughout its life cycle. PEF information is produced for the overarching purpose of seeking to reduce the environmental impacts of goods and services, taking into account supply chain activities (from extraction of raw materials, through production and use, to final waste management). In different communications and depending on the ways PEF is used, PEF is referred to as a methodology, policy instrument, initiative supporting labelling, and as a calculation tool. The discussions around PEF easily get complex and thus can be confusing. First, due to the complexity of the method itself, which relies on LCA methodology and builds on a decade of developments between the European Commission and all relevant stakeholders. Second, due to numerous activities engaging the PEF as a policy tool, calculation tool and communication platform. The dialogues around PEF are very diverse depending on the setting and the agendas of the engaged stakeholders.

The goal of this factsheet is to clarify the terminology and multiple references to PEF and the ways of its use, i.e. to deliver a glossary of terms relevant for general audience when understanding the communication about PEF.

Chapter 2 presents the process around PEF methodology development which is still ongoing.
Chapter 3 considers PEF use as a policy tool that:

- can support the EU policy attempting to tackle green washing,
- guarantee proper information of consumers, and
- support sustainable choices during the Green Public Procurement.

Chapter 3 complements Chapter 2 with further information on the process under respective EU expert groups that support the work on EU policy initiatives.

Chapter 4 lists several examples of national public initiatives where PEF and LCA in environmental footprinting in general is put forward by countries such as Italy, France, the UK, Nordic countries and the Netherlands.

The description of national public initiatives is followed in Chapter 5 by four examples of private initiatives that connect to PEF.

Chapter 6 concludes the memorandum with a discussion and concluding remarks.

# 2. PEF is a methodology in development

The development of PEF has four phases (see Sections 2.1-2.3 and Chapter 3) and is supported by an Expert Group (see Section 2.4):

- Phase 1: preparatory phase,
- Phase 2: pilot phase,
- Phase 3: transition phase,
- Phase 4: policy implementation phase.

The preparatory phase and pilot phase have been finalised between 2008 and 2018. The transition phase is currently running and the policy implementation phase has started and several policy proposals have been adopted in 2022 and more is on its way.

## 2.1 Preparatory (2008-2013) and Pilot Phases (2013-2018)

In 2008, the European Council invited the European Commission (EC) to develop a methodology for carbon audits for organisations and carbon footprints for products. During this Preparatory Phase, the EC performed studies on carbon footprints and corporate greenhouse gas reporting. It was concluded that focusing on carbon only could lead to unwished trade-offs and thus it was important to look at other environmental issues such as resource use (fossils), toxicity, acidification, water use, and land use. In 2011 the work has led to the creation of two harmonised methodologies, one at product level (PEF) and one at company level - the Organizational Environmental Footprint (OEF). These phases established the importance of life cycle thinking in the EU: in 2013 an important milestone was achieved, namely the Recommendation of using PEF for assessing the environmental footprinting was published in official EU Journal, making this method officially recognised by the EC and suitable for application in policy (2013/179/EU). PEF and OEF enabled Member States and the private sector to assess, display and benchmark the environmental performance of products, services and organisation to promote sustainable consumption and production.

In the pilot phase (2013-2018) the focus was on developing product-specific PEF rules, the so-called Product Environmental Footprint Category Rules (or PEFCRs). The overall PEF Guiding principles are followed in developing such rules while accounting for the sector specific conditions. The phase started with 25 PEF pilots with the goal to develop PEFCRs and a harmonised secondary database. The pilots were used to test and ultimately to move closer to using the secondary data-sets and PEFCRs with real products. Nineteen pilots were successfully released, among which relevant for agriculture: dairy, beer, wine, pasta, olive oil, packed water and feed (see here).

## 2.2 Environmental Footprint transition phase (2019-2024) and policy implementation phase (ongoing)

In Spring 2019 the EU issued a call for volunteers for the Environmental Footprint transition phase (EC, 2019). The call prescribed the governance of the PEF development process, i.e. the development of new PEFCRs/OEFSRs, the full revision of existing PEFCRs/OEFSRs and the integration of 'shadow pilots' (PEFCRs and OEFSR developed outside of the pilot phase in the period 2013-2018) among the officially listed ones. Five pilots are participating in the transition phase, of which 'PEFCR Cut Flowers and Potted Plants' lead by the Dutch public-private consortium HortiFootprint (Haasnoot et al., 2022). Other pilots are: marine fish, flexible packaging, synthetic turf, and apparel. The transition phase is expected to last until 2024. The transition phase is run by Directorate General for the Environment (DG-ENV) and the Directorate General for the Internal Market, Industry, Entrepreneurship and SMEs of the European Commission (DG GROW). DG ENV and DG GROW lead the work, acting in close collaboration with the Joint Research Centre (JRC) and

other Commission services. To guarantee a smooth governance during the transition phase, the following two groups are consulted on a regular basis: the Sustainable Consumption and Production (SCP) expert group and the Technical Advisory Board (TAB, see Section 2.5).

What concerns the policy implementation phase that is ongoing and indicates no ending date, one important achievement is stipulated in the recent 2021 Commission Recommendation (EC, 2021a). This recommendation on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations replaces the earlier Recommendation (2013/179/EU). In short, the EU recommends using PEF methods to calculate the environmental performance as the most reliable, comparable and verifiable way to know the real environmental footprint of a product or organisation to date. The Member States are invited to inform the Commission of actions taken in light of this Recommendation on a yearly basis, including (a) the information on how the PEF method and the OEF method and related PEFCRs/OEFSRs are used in policy initiative(s); (b) number of products and organisations covered by the initiative; (c) incentives related to life cycle environmental performance; (d) initiatives related to the development of high quality life cycle data; (e) assistance provided to SMEs in the provision of life cycle environmental information and in improving their life cycle environmental performance; (f) eventual problems or bottlenecks identified with the use of the methods.

Late 2022, decisions are expected on how the policy implementation of the EF method (last phase out of four) would be foreseen in a European context. Policy proposals that envisage a connection to PEF/OEF method are described in Chapter 3.

### 2.3 TAB (E03710): Expert Group 'Environmental Footprint Technical Advisory Board' and its sub-groups

The EU expert group 'Environmental Footprint Technical Advisory Board' supports the work of DG-ENV with the Circular Economy Action Plan (CEAP) initiative 'Substantiating Green Claims' and endorses the PEF method development. The issues discussed in the TAB include, but are not limited to, analysis of the content of newly developed PEFCRs/OEFSRs, consistency of approaches among different PEFCRs/OEFSRs, and new methodological developments seen as necessary within the EF context. The meetings are chaired by a representative of DG Environment, thereby ensuring synergies between the PEF method development and PEF application in policies that are also under the mandate of this unit. The expert group has a closed membership that is endorsed through an admission procedure. Current membership is listed under the register of expert groups (link).

DG Environment has set up sub-groups for the purpose of examining specific methodological questions on the basis of a mandate defined by DG Environment. Sub-groups report to the TAB. They will be dissolved as soon as their mandate is fulfilled. The following two rather technical sub-groups have been set-up, expected to finalise their work in 2022:

- Agricultural Working Group (AWG)
- Data Working Group (DWG).

*AWG*

The goal of the Agricultural Working Group (AWG) is to promote in-depth discussion among experts on a number of agriculture related LCA topics, both on the areas of life cycle inventory (LCI) and life cycle impact assessment (LCIA) modelling, for continuous improvement of the Environmental Footprint (EF) methods. The outcomes of this working group are presented to the TAB and can become recommendations of the European Commission for integration in the EF method or a basis for future discussion and research. The following tasks are addressed in so-called Milestones 1-7:

1. To improve LCI modelling of pesticides and toxicity characterisation
2. To improve LCI modelling of fertilisers
3. To identify a common approach to model flows/direct emissions related to feed digestion and manure management at farm
4. To provide guidelines for LCI modelling of water use
5. To assess different approaches to measure biodiversity impacts and derive recommendations on how to complement or improve the current EF impact indicators in this area

6. To understand difficulties and propose improvement in data collection and quality requirements for farm related activities, in line with the data requirements of the EF method
7. To tackle cross cutting issues and provide suggestions for future developments for some additional points.

*DWG*

The goal of the Data Working Group (DWG) is to ensure the coordination and the communication with data developers and LCA software providers on the Environmental Footprint reference packages and on data generation in the EF framework. The scope of the working group is to create a collaborative framework for future developments around EF. The following tasks are addressed in the so-called Milestones A-F of the DWG:

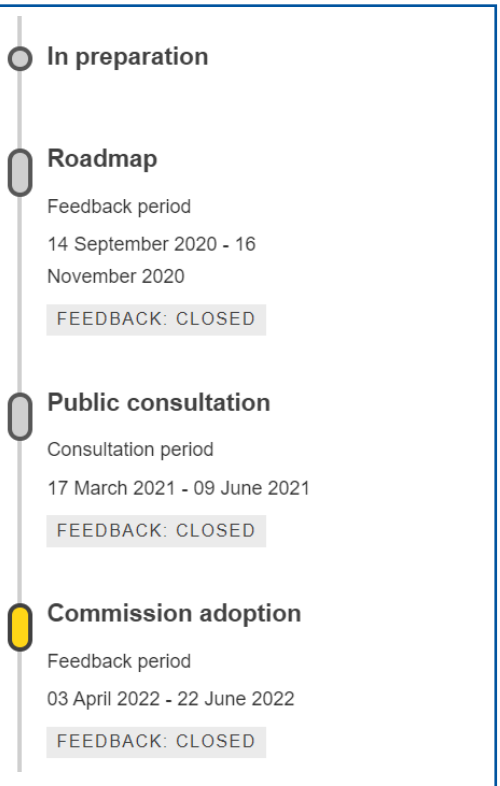
A) Define a procedure and timeline for update and release of EF reference packages
B) Fine tuning of the current EF reference package
C) Exchange of models across software
D) Define a set of minimum requirements to be fulfilled by a software to be 'EF ready'
E) Agree on an improved review procedure and data quality rating system.

### 2.4 PEF methodology anno 2022

The most up-to-date version of the PEF method is annexed to the Commission Recommendation on using PEF and OEF methods (EC, 2021a). These Annexes replicate the method as presented in Zampori and Pant (2019), which is often cited as the most recent PEF method. The next update of the PEF method is expected in 2024.

## 3. PEF method used in policies

### 3.1 Overview of PEF related policy initiatives




**Box 2.1 Illustration of mandatory steps for a policy initiative on the 'have your say' portal** (link).

There is no overview up to now (August 2022) of policy initiatives that are building on the use of PEF methodology to the extent as presented in Table 2.1. DG-ENV has been clear in their communication that during the transition phase they see the screening of environmentally related policies (new or under revision) to their fit regarding the use of EF methodology to achieve harmonisation in policy instruments.

In Table 1, selected initiatives are listed, which are connected to PEF and are also briefly described thereafter (Sections 3.2-3.7). Whether a particular initiative in Table 2.1 falls under the package of the Farm to Fork strategy (F2F) or under the Circular Economy Action Plan (CEAP) is also mentioned in each column for information. Concerning the initiatives listed in Table 2.1, all of them run through the same sequence of mandatory steps (see Box 2.1).

Before the Commission proposes a new policy or law, it describes the initiative in a roadmap or inception impact assessment. Next, it examines the potential economic, social and environmental consequences in an impact assessment. Finally, it requests input from the public and stakeholders (Public Consultation). The European Commission analyses and sums up the feedback and

contributions received during Public Consultations. Statistics over the feedback is provided by country and by category of respondent (e.g. business associations, EU citizens, NGO, public authority, academic/research institutions, consumer organisations, etc.). Individual feedbacks are also disclosed if contributors agreed to that. Finally, under the phase 'Commission adoption', the policy proposal is published jointly with the Impact Assessment. The Commission submits a legislative proposal to the Parliament and Council, who must agree on the text in order for it to become EU law. The proposal is offered for public comments as well, which are also openly shared in case agreed by the contributors.

The initiatives presented in Table 2.1 relate to different ways the PEF methodology is used (see also DG-ENV, 2021b). Both, the GCI and UCPD intend to apply the EF methods in communication of environmental profile and labelling. The SPI intends to apply the EF methods in EU Ecolabel to identify hotspots along the value chain and thus to steer the innovation. The Taxonomy Regulation intends to use the EF methods in tracking environmental performance of economic activities. In Batteries Regulation (not listed in Table 2.1), the EF methods are used in defying of thresholds for classes of performance for products. Although this factsheet provides an overview of PEF-related initiatives in agro-food, the initiative on Sustainable Products is not intended for agro-food products.

The Sustainable Food Systems policy initiative consists of several building blocks, including the food labelling proposal and is part of the F2F set of initiatives. This initiative is still at the beginning of its development and has completed the first open public consultation in July 2022. The EU initiative under CEAP 'Mandatory Green Public Procurement criteria' is sectoral and is not as advanced in its development for the food but has however links to PEF (see Section 3.5). Several elements of a rather broad initiative on Sustainable Finance are also listed in Table 2.1 and briefly elaborated in Section 3.7.

***Table 2.1*** *Overview of EU initiatives related to PEF methodology*

| **TITLE OF THE INITIATIVE** | **Substantiating green claims (GCI)** **(part of CEAP)** | **Empowering consumers in the green transition (UCPD)** **(part of CEAP)** | **Sustainable product policy initiative (SPI)** **(part of CEAP)** | **Green Public Procurement (GPP) for Food** **(part of CEAP)** | **Sustainable food system framework initiative (SFS)** **(part of F2F)** | **Sustainable Finance** | |
|---|---|---|---|---|---|---|---|
| | | | | | | **EU- Environmental Taxonomy** | **Corporate Sustainability Reporting Directive (CSRD)** |
| Name of EU expert group | TAB - Environmental Footprint Technical Advisory Board | CPAG - Commission's Consumer Policy Advisory Group | Sustainable Consumption and Production | Informal Green Public Procurement Advisory Group (GPP AG) | Expert Group on General Food Law and Sustainability of Food Systems (EG FSL SFS) | Member States expert group on sustainable finance | European Financial Reporting Advisory Group |
| Link to expert group in the Registry of the EC | E03710 | E03750 | E00470 | E00453 | E03020 and EF FSL SFS | E03603 | E03603 and EFRAG |
| Link to agro-food (product/sector) | Any products, including food | Any products, including food | Non-food products only (electronics & ICT equipment, textiles, furniture, steel, cement & chemicals) | Non-food products.<br><br>In development for food products. | Food products | Various economic activities, including agriculture (livestock, crop) | Various sectors |
| Lead DG | DG ENV, Unit B1 | DG JUST, unit E1 | DG ENV, Unit B1<br>DG GROW, Unit C1<br>DG ENER, Unit C4 | DG ENV | DG SANTE, Unit Farm to Fork<br>DG AGRI<br>DG ENV<br>DG MARE | DG FISMA | |
| Public Consultation on Inception impact assessment report | 20 Jul 2020 - 31 Aug 2020 | 23 Jun 2020 - 01 Sept 2020 | 14 Sep 2020 – 16 Nov 2020 | n.a. | 28 Sep 2021 - 26 Oct 2021 | 23 Mar 2020 - 27 Apr 2020 | 30 Jan 2020 - 27 Feb 2020 |
| Public Consultation via Survey | 27 Aug 2020 - 03 Dec 2020 | 30 Jun 2020 - 06 Oct 2020 | 17 Mar 2021 - 09 Jun 2021 | n.a. | 28 Apr 2022 - 21 Jul 2022 | 20 Nov 2020 - 18 Dec 2020 | 20 Feb 2020 - 11 Jun 2020 |
| Adopted/Proposed for Commission adoption | Proposed for Q4 2022 | Adopted 30 March 2022 | Adopted 30 March 2022 | n.a. | Proposed for Q4 2023 | Adopted 21 April 2021 | Adopted 21 April 2021 |

### 3.2 EU initiative under CEAP 'Substantiating Green Claims'

The EU initiative on Substantiating Green Claims (CGI) is led by the DG ENV, unit B1. This is the same unit that is in charge of the PEF method development. This initiative is the closest to the use of PEF in policy. Its inception impact assessment states 'companies making "green claims" should substantiate these against a standard methodology to assess their impact on the environment'. This proposal for a regulation is meant to make the claims reliable, comparable and verifiable across the EU – reducing 'greenwashing' (companies giving a false impression of their environmental impact). This is expected to help commercial buyers and investors make more sustainable decisions and increase consumer confidence in green labels and information.

More information is available under the on-line source on the portal, for which the link is provided in Table 2.1. The original proposal presented in the Inception Impact Assessment has been revised due to the publication of the official European Commission Recommendation to use PEF methods (EC, 2021a). According to the EC, these methods will help to improve environmental performance and help achieve a truly clean and circular economy. Several policy options which are being considered in the context of the GCI can be found in a webinar in April 2022 (DG-ENV, 2022a):

Baseline: the 2021 Recommendation on using EF methods (see EC, 2021a).

- Option 1: Revised Recommendation including recommendations on how to communicate results, how to develop PEFCRs/OEFCRs.
- Option 2: Voluntary green: legislation establishing a voluntary framework based on the PEF and OEF methods – existing methods/ initiatives are not affected
- Option 3: Mandatory green claims: Requiring companies making green claims to substantiate them based on the Product and Organisation Environmental Footprint methods (PEF/OEF). Substantiation via PEF category rules/OEF sector rules (if existing) or the PEF/ OEF method (if no product- or sector-specific rules)

Only claims covered by the method or product-/ sector-specific rules (e.g. claims on climate change covered, repairability not covered)

The interpretation of the above-mentioned policy options can be difficult. Difference in interpretation by different sources can also be found. DG-ENV is rather reserved in explaining how the end version of the proposal may look like. The fact that the adoption by the European Commission was initially planned for Q2 2021, however has been rescheduled at least twice to Q4 2022 also signals about the challenging process towards the adoption. In the presentation by the DG-ENV in April 2022 (DG-ENV, 2022b) it was clarified that the GCI will be focusing on voluntary claims made by organisations regarding their products and it is not a proposal on mandatory labelling. In other words, the companies may or may not communicate environmental claims but once they do, they will be advised or required to substantiate their environmental claims using PEF methodology (see Option 2). The absolute clarity about which option will be chosen will only be available with the release of the official policy proposal, which is now expected late November 2022.

### 3.3 EU initiative under CEAP 'Empowering consumers in the green transition'

On March 30, 2022 the European Commission has released a proposal for a Directive that is proposing a directive on 'Consumer policy – strengthening the role of consumers in the green transition' (UCPD – Unfair Consumer Practices Directive). The initiative aims to help consumers play their part in achieving a more sustainable economy under the New Consumer Agenda. The initiative aims to ensure consumers obtain reliable and useful information on products, prevent overstated environmental information (greenwashing) and set minimum requirements for sustainability logos and labels among other aspects. The initiative proposes to 'ban displaying sustainability labels which are not based either on an independent third party verification system or are not established by public authorities' (UCPD, 2022). Also, it proposes to 'ban generic environmental claims used in marketing towards consumers, where the excellent environmental performance of the product or trader cannot be demonstrated in accordance with EU Ecolabel - the official European Union voluntary label for environmental excellence of non-food products and services, officially recognised eco-labelling schemes in the Member States (like Nordic Swan, Blue Angel), or other applicable

Union laws, as relevant to the claim'. Next, this initiative aligns with the former initiative (see Section 3.2) the EU initiative on green claims (GCI, 2020) 'will introduce further requirements in relation to environmental claims made about products and organisations; both when made by businesses towards consumers and by businesses towards other businesses'. DG-Justice has worked jointly with DG-Environment on specifying technical criteria for avoiding green washing to? the consumers which are based on PEF methods. More information can be found on the 'Portal for better regulation' (UCPD, 2022).

### 3.4 EU initiative under CEAP 'Sustainable product policy initiative'

The 'Sustainable product initiative' (SPI, 2022) is not linked to agro-food sector directly but is in the package of initiatives under the CEAP and is developed in close coordination with the CGI and UCPD to ensure for mutual consistency and complementarity.

The SPI initiative is linked to PEF and focuses on the sectors that use most resources and where the potential for circularity is high such as: electronics & ICT equipment, textiles, furniture, steel, cement & chemicals. The SPI will revise the Ecodesign Directive (2009) and is expected to set the eco-design requirements for a product based on its impacts over its life cycle with the use of PEF methods. The European Commission is determined to set EU rules for mandatory sustainability labelling and/or disclosure of information to market actors along value chains in the form of a digital product passport. Such passports are meant to foster the availability of data related to product's content, footprint and recyclability. The exact scope of such a digital passport will have to be determined in close cooperation with the industry. The policy proposal for this initiative has been released in March 2022. This initiative is guided by DG ENV in collaboration with DG GROW and DG ENER. The SPI as adopted only represents a generic framework and a follow up legislation is yet to be expected in the form of delegated acts and specific for each industry/product.

### 3.5 EU initiative under CEAP 'Mandatory Green Public Procurement criteria'

EU initiative under CEAP 'Mandatory Green Public Procurement (GPP) criteria' is not new and has specified mandatory GPP requirements for several sectors/product already (like transport, electronics, textiles, etc.). The work on GPP criteria for food is yet to start. The work is to be supported by the Informal Green Public Procurement Advisory Group (GPP AG) that gives input to the work plan for the development of GPP criteria, comment on GPP criteria and related reports. It is replacing the former informal group of national GPP experts that was advising the Commission on EU GPP policies. The GPP mandatory phasing-in is mentioned in the communication around the use of PEF methods in policy (see DG-ENV, 2021b) and well as it is referred to as one of the building blocks of the Sustainable food system framework initiative (see Table 2.1 and Section 3.6). In November 2021, the European Commission published the results of a study on the implementation of life-cycle assessment (LCA) and environmental footprint methods in the context of public procurement (EC, 2021c). The study builds on the Commission's PEF method and is aimed at supporting the Commission in assessing how to best address LCA-based information in public procurement procedures. The study evaluated the existing practices in nine European Economic Area (EEA) countries (Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Sweden and Switzerland), and assessed how LCA based instruments may serve contracting authorities (procurers) and tenderers (suppliers). The reviewed regulations, literature and interviews with experts on Green Public Procurement identified benefits and limits. None of the existing practices can be seen as applicable in all EEA countries without adaptation. Nevertheless, this study shows existing requirements and identifies possible best practice approaches and future options.

### 3.6 EU initiative under F2F 'Sustainable food system framework initiative'

A key cross-cutting action announced in the Farm to Fork strategy is the development of a new EU legislative framework for sustainable food systems – FSFS (SFSF, 2022), which is due for publication towards the end of 2023. This initiative is being developed in synergy with other relevant initiatives such as: Front-of-pack nutrition labelling, Green Claims initiative, Animal welfare labelling (GD-ENV, 2022a). The work is coordinated by DG SANTE in close collaboration with DG AGRI, DG ENV, DG MARE. The expert group that facilitates the development of this initiative is

called Expert Group on General Food Law and Sustainable Food System (EG FSL SFS, See Table 2.1).

Its overarching objective is to set the foundations for the systemic changes that are needed by all actors of the food system, including policy makers, business operators and consumers in order to accelerate the transition to a sustainable EU food system. The FSFS will target the entire EU food system and will address issues relating to sustainability of products and operations. This initiative features consumer information related to the sustainability performance of food products regarding the nutritional, climate, environmental and social aspects. The working session of the EG FSL SFS in May 2022 has presented several building blocks of this framework initiative (see Figure 3.1).

- Mandatory minimum requirements in terms of level of sustainability). It is supposed to cut out the least sustainable products and operations.
- Sustainable labelling framework that is supposed to incentivise the choice of more sustainable food.
- Sustainable Public Procurement (with highest level of sustainability). It is supposed to encourage development of new and more sustainable products and operations.

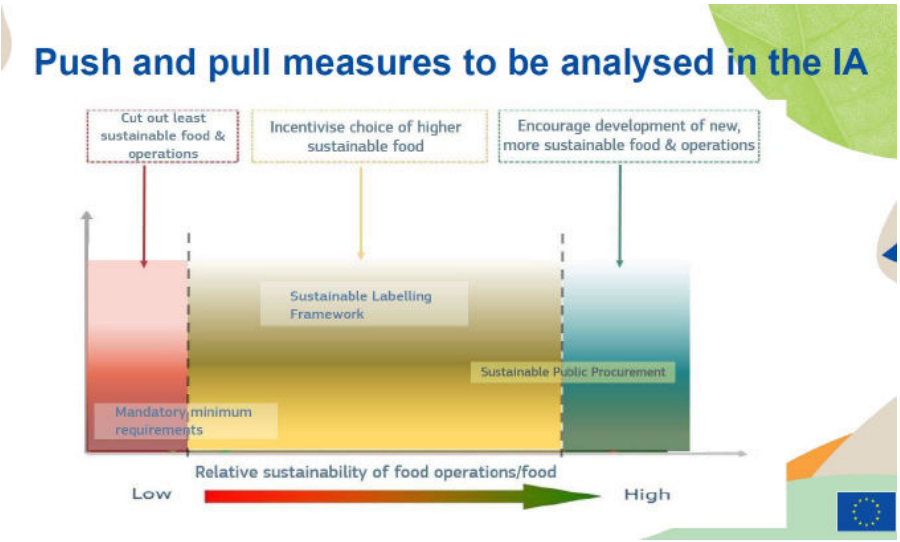



***Figure 3.1*** *Three building blocks of the EU future Sustainable Food System*
*Source: EG GFL SFS presentation on May 20, 2022 (link).*

The stakeholder consultation for this initiative that took place in September-October 2021. It gathered publicly available feedback from about 230 organisations and/or individuals. The on-line survey that was open up until 21 of July 2022 has gathered the response from 2669 respondents that have expressed their opinion on specific elements of the three blocks of the SFS, including the governance of the systems. The Commission has put up the following questions regarding the preference of the respondents on an EU sustainability label, if such was established:

- Such a label should be a voluntary label identifying only sustainable food products
- Such a label should be a voluntary label- identifying sustainable and non-sustainable food products
- Such a label should be a mandatory label informing on the sustainability of all EU food products
- Such a label should be a mandatory label informing on the sustainability of all EU and imported food products
- An EU sustainability label is not necessary / desirable.

The Commission has also asked to specify which sustainability aspects (like Nutrition, Climate, Environment, Animal Welfare, Fair and just renumeration of producers, Fair and just working conditions) are the most important to consumers to receive information upon in order to empower them to make sustainable food choices. It will be interesting to see the next steps in developments of this overarching Food Sustainability Framework and to learn about the results of the Survey.

### 3.7 EU Initiative on Sustainable finance

The evolving of two initiatives under the Initiative on Sustainable finance are worth monitoring due to their relation to EF methods at the organisation/sector level:

- The first one is the Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment (the 'EU Taxonomy Regulation'), adopted on 21 April 2021 (EC, 2022).
- The second is the proposal for the Corporate Sustainability Reporting Directive (CSRD) that requires large companies (more than 500 employees) to disclose non-financial information on their social and environmental impact (CSDR, 2021). The CSRD is meant to ensure that companies provide information on the sustainability of their business practices in a transparent and comparable manner. Further detailing of standards and reporting criteria for this policy is ongoing.

The initiatives on Sustainable Finance fall under the work of the DG FISMA - the Directorate-General for Financial Stability, Financial Services and Capital Markets Union and are supported by the Member States expert group on sustainable finance.

*EU Taxonomy Regulation*

The EU Taxonomy provided the first set of technical screening criteria on climate mitigation and adaptation (EC, 2022). A set of criteria for water and marine resources, resource use and circular economy, pollution and bio-diversity and eco-systems are being developed. The link between the technical criteria of EU Sustainable Finance and EF is in the compliance by industries with the technical screening criteria/standards by performing a PEF/OEF study. The requirement to show the compliance is specified under the EU Taxonomy Regulation.

*CSDR*

What exactly to be shown by companies, i.e. the standards for CSRD are developed as a follow up implementation of this adopted initiative. The draft standards are being developed by the European Financial Reporting Advisory Group (EFRAG). This group since 2022 is providing Technical Advice to the European Commission in the form of fully prepared draft EU Sustainability Reporting Standards and/or draft amendments to these Standards. The standards will be tailored to EU policies, while building on and contributing to international standardisation initiatives and considering the EU Recommendation on the EF methods (EC, 2021a). The first set of standards has been offered for public consultation up until 8 August 2022 and the first adoption of standards is expected before the end of 2022. EFRAG takes an observer role in the work of the Expert Group on Sustainable Finance that is developing technical criteria for the Taxonomy Regulation.

## 4. PEF in ongoing national public initiatives

The interest in PEF in several European countries is more prominent than in others. This chapter presents all known national initiatives that promote the use of PEF methods in different sectors, including agro-food, with those in France and Italy being supported by national laws.

### 4.1 Nordic Environmental Footprint platform

Nordic Environmental Footprint (NEF) Group was established in 2015 by the working group for Sustainable Consumption and Production under Nordic Council of Ministers (NMR), covering Denmark, Finland, Iceland, Norway, Sweden, and Greenland. The aim of the NEF is to coordinate the Nordic countries authority work within PEF and to disseminate knowledge regarding PEF to Nordic stakeholders. The participants of the group included national representatives in the Environmental Footprint Technical Advisory Board and organised the support to European Commission during the PEF pilot phase of 2013-2018.

The NEF platform organised a number of conferences and workshops around PEF, often with the engagement of the staff from the DG ENV Unit B1 (EU PEF team). Feedback on behalf of Nordic Council of Ministers is presented during open public consultations on topics related to PEF. Next to that, NEF's position paper reflects on latest developments around PEF (NEF, 2020).

### 4.2 Italy: 'Made Green in Italy' labelling

Building on the product environmental footprint method, Italy has committed to setting up a national voluntary scheme through national regulation, with the aim of increasing the competitiveness of Italian eco-products on national and international markets. 'Made Green in Italy' aims at:

- promoting sustainable patterns of production and consumption
- fostering eco-competitiveness of Italian small and medium enterprises
- improving the environmental performance of products
- reducing environmental impacts generated during their life cycle
- enhancing citizens' awareness; promoting sustainable consumption
- and ensuring transparency and comparability of environmental performance of products.

The label is based on product performance derived on the basis of existing PEFCRs or Product Category Rules (PCRs) developed outside of the PEF framework, at national level, and covers the entire life-cycle of a product, including end-of-life. PCRs are a collection of specific LCA rules, requirements and guidelines for producing Environmental Product Declarations (EPDs) for one or more product categories. Both PEFCR and PCR are based on the same ISO 14040/44 which is the basis LCA standard. The scheme is operational in Italy since 2018 and currently covers products like Padano cheese, dry pasta, tomato paste, red meat (in development), wooden packaging, industrial laundry services, wool, tobacco (in development), geotextiles (in development). The granting of the label as well as its audit is governed by the Italian Ministry of Environment and is introduced by National Law n. 221/2015. Academic support to the 'Made Green in Italy' label is provided by Sant'Anna School Institute of Management. More information in English can be found in Iraldo (2021).

### 4.3 France: French experiment on Environmental labelling in the food sector (2020-2022)

Although the European Commission aims to implement PEF-related instruments into environmental policies during and after the PEF transition phase, France can be seen as the front runner in this respect. Article 15 of French legislation to combat food waste and support the circular economy, later replaced by article 2 of the Climate and Resilience Act, has mandated a two-year pilot programme. This pilot programme was set up to test environmental labelling for food products in France. It was led by several Ministries: the Ministry of Ecological Transition, the Ministry of Agriculture and Food, the Ministry of the Economy and Finance. The scientific support was provided by ADEME – the French Agency for Ecological Transition. About 19 experiments run by different consortia were completed and evaluated, among which the Eco-Score (see Section 5.1) and Planet-Score (see Section 5.2).

The Scientific Council lead by ADEME has published its recent recommendations in a scientific report (ADEME, 2022a) and wrote a final report to French parliament (ADEME, 2022b). The goal was not to select any of the experiments as such but to gather learnings and conclusions from all of them. Some of the conclusions presented in the final report are:

- It is possible to design and implement an environmental labelling system that meets the expectations expressed by the French law (AGEC law, 2020 and the Climate and Resilience law, 2021).
- Environmental labelling must have two types of objectives: a) intra-category comparison of food substitutions to create incentives for eco-design approaches on the supply side and b) comparison between major categories of food to encourage consumers to adopt to more environmentally favourable diets.
- The environmental information to be provided to consumers must be developed on the basis of the LCA metric and the EU PEF framework and enabling for a single score for the impact of food products, by aggregating several environmental dimensions (climate change, use resources, pollutant emissions, etc.).

- The PEF's LCA framework provides a useful and relevant basis for labelling but bares limitations to reach global scientific consensus on the method that limits its implementation, thereby justifying amendments to this framework.
- A five-level scale, established on the basis of an environmental score synthetic, is effective in guiding consumers through product comparisons between food categories. The five-level scale can be supplemented with a numerical value, which expresses the environmental score aggregated on a scale 0-100. The five-level scale can also be supplemented by a breakdown of the aggregate score into sub-scores expressing the major environmental dimensions (climate, biodiversity, etc.).

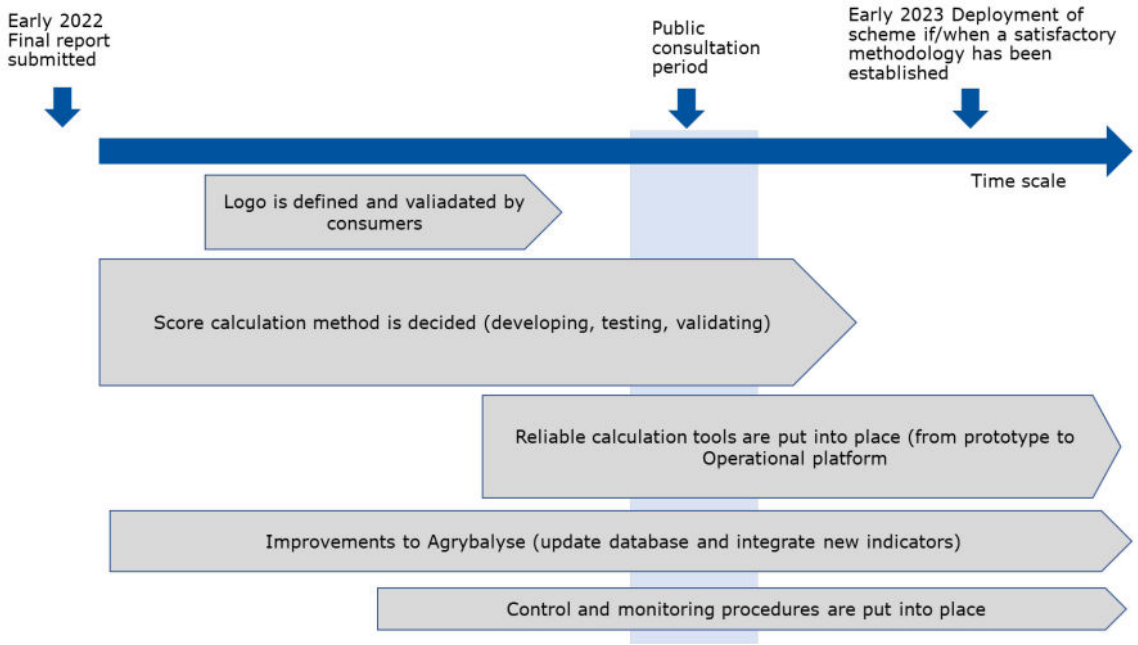



***Figure 4.1*** *Simplified provisional timetable for deployment of an operational methodological scheme for food labelling in France*
*Source: ADEME, 2022b (with original Figure).*

The report submitted to French Parliament (ADEME, 2022b) states that the goal of the French government is to deploy an environmental labelling scheme in early 2023, assuming that a satisfactory methodology has been developed (see Figure 4.1). The main methodological biases of LCA methodology identified during the pilot programme must be corrected, with all necessary attention to robustness, techniques and testing requirements. Lots of work is scheduled for 2022 to provide reliable calculation tools to be in place early 2023.

### 4.4 UK: Guidance on environmental claims on goods and services

WRAP was established in 2000 as a not-for-profit organisation, operating in the UK. Now it is one of the world's leading NGOs that works in sustainability in the areas of food and drink, plastic packaging, clothing and textiles and collections and recycling. WRAP represents an independent body operating between governments, industries, businesses and the public, focusing to cut climate change connected with wasting natural resources. WRAP initiated The Courtauld Commitment 2030 (WRAP, 2022). The Courtauld Commitment 2030 is a voluntary agreement setting commitment on reduction targets, including the GHG emissions reduction with 50% by 2030 (2015 base). It enables collaborative action across the entire UK food chain to deliver farm-to-fork reductions in food waste, greenhouse gas (GHG) emissions and water stress that will help the UK food and drink sector achieve global environmental goals.

The Courtauld Commitment has a strong emphasis on achieving targets via lowering not only Scope 1 (direct emissions from owned or controlled sources) and Score 2 emissions (indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company) but also scope 3 emissions (includes all other indirect emissions that occur in a company's value chain). There are three actions which the Courtauld Commitment focusses on in the context of measuring and reducing:

- developing a standardised accounting and reporting methodology to enable a level playing field.
- Agreeing on a common set of GHG emission factors for different foods/ingredients/production systems/geographies.
- Developing the forward path for more systematic ways of collecting (and verifying) data along the supply chain.

### 4.5 Dutch initiative within 'Climate Covenant': sub-group Footprint

The Dutch Climate Covenant contains multiple working groups working to achieve the agreements in the covenant. One of these working groups is about food. This working group has three targets:

1. reducing food waste
2. developing a carbon footprint as a monitoring and comparison tool and
3. encouraging a better dietary pattern.

In 2021 a sub-working group under the working group on food was established, focusing on environmental footprinting (see WUR, 2022).

The footprint working group has identified five work streams, among which 3 focus on data and measuring of environmental footprint and 2 are more organisational work streams. PEF and PEFCRs are used wherever available and the group is working on an alternative for when PEFCRs are not available for specific products. They seek strong alignment with international initiatives and follow the development of the various EU policy initiatives as presented earlier in this document.
The group is also seeking connection with buyers and retailers to develop attractive and correct communication forms and business models.

The footprint working group engages stakeholders representing the following food categories: red meat, poultry, potatoes and starch, eggs, sugar, feed, nuts, cereals, legumes, fruits and vegetables, drinks, fish, oils and fats, composite food products. The financial sector, science and government are also represented. Organisations representing primary producers and processors are in the core of the groups and retail is on its way of joining.

The overall objective of the working group is to achieve harmonised methodology and communication that are essential:

a. for the reduction of the environmental footprint of products and
b. in support of retail and consumers in making choices towards sustainable products allowing for comparisons between and within product categories.

## 5. Ongoing private initiatives liaising with PEF

There are several private initiatives aiming to communicate about environmental sustainability with consumers, enabling them to make for informed and sustainable purchasing decisions. This chapter lists the most prominent ones that liaise to PEF. The methodology behind these initiatives is not PEF complaint as it covers many products while PEFCRs are available for a limited number of food products (see Section 2.2). However the initiatives have good understanding of PEF methodology and work towards PEF compliance.

### 5.1 Eco-Score (France)


The Eco-Score was launched in France (January 2021) and Belgium (March 2021) by a private initiative. In 2020, among others, this initiative entered a series of French experiments (see also Section 4.3). At the end of the trajectory the Eco-Score received an assessment that stipulates that the method needs to be further improved, however the future methods of food labelling in France must be based on LCA.

The Eco-Score, being based on Agribalyse LCI database, combined with other bonus/penalty points for sustainability elements in a manner that is easy to implement, made the Eco-Score very attractive to the retail. After the release in France and Belgium, the initiative gained enormous interest and support that resulted in the real-life testing for a limited set of products (coffee and tea) in many other EU countries (Germany, Netherlands, Italy, Spain, Portugal, Luxembourg). Next to environmental indicators from Agribalyse, the Eco-Score awards a bonus to products that have an official label, a label or a certification that guarantees environmental benefits (among which organic, fair trade, HVE, Label Rouge, Bleu Blanc Cœur, MSC/ASC, with the total of 11 labels that are assessed by now) and a bonus is awarded based on the origin of the ingredients. A penalty is given to products that contain ingredients that can have significant negative impacts on biodiversity and ecosystems. Also a penalty is computed to take into account the circularity of packaging (use of recycled raw material and recyclability) and overpacking. The total of 2,500 food product categories, including categories of meat, eggs, fish, milk and dairy products, also in processed form (sausages, cheese) make it so far the largest LCA database of environmental footprints.

One of the criticism of the Eco-Score is that it is based on French national averages of the footprint scores and thus is not able to differentiate among products within the same product category (i.e. eggs from supplier A vs supplier B). The Eco-Score does distinguish between product categories (i.e. comparing eggs and cereals).

### 5.2 Planet-Score (France)


The Planet-Score is an environmental rating system based on the Agribalyse database of ADEME. The Planet-Score was introduced among the French experiments (see Section 4.3), just like the Eco-Score (see Section 5.1) but its methodology is even younger than that of Eco-Score. It has been developed during the French experiment and tested after the experiment timeframe. The Institute of Organic Agriculture and Food (ITAB) and its partners (SAYARI and VGF) were in the lead of this initiative in 2020. By summer 2022 this initiative has evolved into a winning-prize event 'Retail for Good' and is supported by 140 companies, as the developers inform (Planet-Score, 2022). The description of the method is available in French only. Further exposure of this method to a broader scientific audience is needed for further reflection. Interested readers are advised to follow the Planet-Score communication platform that is expected to release the methodology in English any time soon. According to the IDDRI report (Brimont and Saujot, 2021) that compares environmental labelling schemes, the key principle guiding the Planet-Score is to distinguish between the different production modes (conventional, organic, extensive, etc.), and thus to give better consideration to the differences between them: pesticide use, ammonia (and nitrogen) management, land use. The Planet-Score introduces a number of changes to the PEF method that is in the basis of Agribalyse. For example, the method reverts to the original weighting of environmental issues in PEF that results in reducing the weighting of climate change while bringing pesticide issues to a higher weight. Another example of adjustments is in accounting for type of land used. As a result, production systems such as extensive livestock farming are not penalised for using a lot of land in case land is not suitable for cultivation. The method claims to introduce the key elements missing in the Agribalyse database: biodiversity, pesticides, updating of climatic elements according to the latest IPCC data and accounting for the production system. All these elements are also reflected on the logo.

### 5.3 Foundation Earth and Eco-Impact (United Kingdom)


Non-profit organisation, Foundation Earth, has been established in 2020 to issue front-of-pack environmental scores for food products. Foundation Earth by the end of 2021 had the support of all major UK food industry (e.g. Tesco, Sainsbury's, Morrisons, Marks & Spencer, Co-op, Lidl, Aldi, Nestle, Unilever, PepsiCo, Danone). Foundation Earth is working towards one new method for deriving the sustainability score per food product on the basis of individual product environmental footprint. According to Eco-Impact method, food products are given a traffic light score on an 8-level label (from A+ to G) based on their impact on the environment. Green labels are being issued for products deemed more 'environmentally friendly' and red labels for those that are not. When generating the score, Foundation Earth analyses the environmental impact of the food product by conducting a life-cycle assessment against four key criteria: water usage, water pollution, biodiversity, and carbon emissions. Included stages of the food product's life-cycle considered as part of this assessment are: the farming of raw ingredients, processing, packaging and transport. Excluded are consumption stage and end-of-life stage. The Foundation is working on automated solutions to calculate product-specific footprints.

### 5.4 ENVIROSCORE (Spain and Belgium)


ENVIROSCORE has been created with the aim of promoting sustainable consumption and production of food products. The methodology is built on a step-wise approach (see Ramos et al., 2020). First, a set of normalisation factors was developed to aggregate 16 environmental impact categories into a single dimensionless index adjusted to the European food basket, coined the European Food Environmental Footprint Single Index (EFSI). Next, the effectiveness of the EFSI index was evaluated and the thresholds to translate the EFSI index into the easy-to understand ENVIROSCORE for food (using an A, B, C, D, E scoring grid) was established. The index and score are both based on the Product Environmental Footprint methodology. The validity of the ENVIROSCORE is assessed on the basis of 149 food items categorisation. ENVIROSCORE is developed by an EU-funded EIT Food consortium of AZTI (Spain) and Leuven University (Belgium). A follow-up testing is ongoing and interested readers are recommended to follow the ENVIROSCORE communication platform (ENVIROSCORE, 2022).

## 6. Discussion and concluding remarks

PEF is found back in a growing amount of food scoring and labelling systems and initiatives that have been launched by national governments and private companies or independent consortia (see Chapters 4 and 5). The importance keeps growing, also through the growing number of tools that gradually become available to companies.

*High costs for small/medium enterprises (wish for tools)*

The development of PEF/PEFCR compliant tools is important. Small and medium enterprises often do not have the knowledge, experience and capacity to invest in measuring their environmental impact. Even with PEFCRs being at hand, the assessment remains complex, especially without any prior experience. Tools will enable all stakeholders to start measuring and reducing the environmental footprint of their products. The European Commission has identified some key actions: provide initial tools that support SMEs and make sure that PEFCRs represent a simplification in the application of PEF. Two examples of PEFCR integration into tools are available. EU-Life project RENDER (RENDER, 2021) has developed RENDER Web Application integrating the PEF and Dairy PEFCR methodologies. Another EU-LIFE project EFFIGE (EFFIGE, 2022) has developed PEFStarter - lingual online tool (available in English and Italian) that aims at helping companies to understand the method for the calculation of the product environmental footprint (PEF), to understand its objectives and procedures and to know the advantages that can be obtained by its application. After the beer industry has developed a PEFCR for beer, it has also worked on the online tool developed by RDC Environment for breweries to enable producers to calculate the environmental footprint of their products (Dupriez,

2021). Access is provided to members of national associations who are part of the Brewers of Europe Association. Overall, the PEFCR-based tool development is yet to be further advanced.

*Challenges to communicate about PEF*
The complexity of the PEF method provides insight into multiple environmental indicators, however this also leads to difficulty in communicating about the results. PEF is not a communication tool as it is. The labelling initiatives which have been described in this document demonstrate a link to PEF to various degrees, however it remains a challenge to develop a communication tool which is easy to understand and also grasps the depth of the analysis. PEF harmonises the method applied in life cycle assessments. Similar type of harmonisation is needed in translating the LCA results into correct and appealing labels.

*Non-covered impact categories*
Currently, PEF covers sixteen environmental indicators. Although this seems like a lot, there are environmental issues which are not covered well in PEF. This also leads to (parts of) sectors feeling not well represented by PEF. The environmental issues not covered well include for instance micro-plastics, biodiversity, soil quality, use of crop protection and marine resource depletion. PEF is a method in development and as explained, the Technical Advisory Board and the Agricultural Working Group are working together on improvements. It will remain important for PEF to improve and engage with for instance biological producers and organisations representing them, to get them on board. Until the environmental issues which are not covered well in LCA and in PEF are more developed, making it possible to quantify the impact, it might be needed to use additional and less quantitative indicators in communication tools.

*Differences in level of detail*
There is a trend in the market to communicate about sustainability and environmental impact of products. This also presents a challenge, since PEFCRs are not available yet for all product categories. How do we combine information from PEF studies, which is often robust and verified, with information on products which fall into product categories not covered by a PEFCR? In countries such as France, Netherlands, Belgium, Germany and the UK, the development of a national generic database is already a fact or is foreseen. Such a generic database can provide a fall back option, for when no PEF results are available. It could also be the sole data source for communicating about environmental performance of products. However, a certain level of company specific data will allow companies to differentiate themselves (business models) and will allow more precise assessments. How do we combine PEF results, with more a generic approach and to what extent can we include company specific data which are easily available?

*Complicated PEFCR development process*
Expanding the number of PEFCRs is also important to increase the coverage of product categories with a harmonised LCA method in place. There are multiple aspects which form a challenge for sectors to develop a PEFCR. First, there needs to be an opening by the European Commission to develop new PEFCRs. Without an official opening sectors can work on so-called shadow PEFCRs in an attempt to agree on using one harmonised method in the sector. Second, the consortium developing a PEFCR needs to be a representation of the European market. In an official PEFCR development process this means the organisations in the consortium need to cover at least 51% of the European market. Third, the development of a PEFCR comprises a financial investment, as the process of development requires certain steps to be taken in terms of analyses, writing, testing and verification and it takes time.

**Conclusion**
As written above, PEF as method and as policy tool faces many challenges that have to be addressed before it can serve the entire agro-food sector and help to facilitate the transition towards more sustainable food system. Despite the criticism that PEF faces, there are many more developments as described above in Chapter 4 and 5 that occur with high speed and have taken PEF to the next level. PEF is declared by the Commission as the recommended method in measuring product environmental footprint, PEF-related policy initiatives are evolving and getting more concrete in referring to PEF method.

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**More information**
Irina Verweij-Novikova
T + 31 641334956
E irina.verweij-novikova@wur.nl
www.wur.eu/economic-research

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