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GOVERNMENT REPORT TO PARLIAMENT

ENVIRONMENTAL LABELLING FOR FOOD PRODUCTS

Overview and Key Findings

January 2022

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This pilot programme was overseen by the French Ministry for the Ecological Transition, with support from the Ministry for Food and Agriculture and the Ministry of the Economy, Finance and the Recovery. The French Agency for Ecological Transition (Ademe) was responsible for operational coordination of the programme.

SUMMARY

A pilot programme to test environmental labelling for food products, following on work conducted in France over the past ten years, was mandated by article 15 of legislation to combat food waste and support the circular economy, later replaced by article 2 of the Climate and Resilience Act. This programme was carried out by Ademe and three government ministries, respectively Ecological Transition, Food and Agriculture, and Economy, Finance and the Recovery, and has achieved significant progress. The programme drew on a broad corpus of work and research conducted by stakeholders in the scientific community, agricultural value chains, industrial food processors, distributors, information technology developers, etc.

A consensus has emerged from the programme on the two main objectives of environmental information aimed at consumers.

- The first objective is to enable consumers to compare products in different food categories, to increase their awareness of the environmental impact of the foods they consume and encourage them to move towards a diet of foods that are more environmentally sustainable.
- The second objective is to allow comparison within a given category of food products, so that consumers can choose products on the basis of modes of production, transformation and distribution that have less harmful impacts on the environment.

The pilot programme has demonstrated that the choice of methodology or methodologies used to calculate an environmental score to be displayed on food products is of prime importance. The programme's work highlights the merits of evaluation based on the methods of life cycle assessment (LCA), following the European Product Environmental Footprint (PEF) methodology, with some modifications as the case may be. This methodology has limitations, however, and may underestimate the significance of certain production factors. Additional steps or corrective measures must be applied to better take into account impacts on biodiversity at the field scale, carbon stored in soil, and other impacts. The experimentation conducted under the programme also shows that semi-specific and specific data must be used, as they better reflect product characteristics than generic values for average products. These findings lead to the conclusion that the only way to provide consumers with consistent information on the environmental impact of food products is to use a LCA methodology modified to fill certain gaps.

The ultimate goal is to use the PEF approach, with modifications to integrate the results of the pilot programme conducted in France and extend it to cover all the environmental stakes of the sector.

Different label formats were tested, and a relative consensus emerged in favour of a simple aggregated and prescriptive display, e.g. attribution of an alphabetic score from A to E displayed on a coloured scale. This single score can be supplemented by breaking it down into more detailed information for a limited number of indicators to highlight ecodesign improvements to products. For example, these supplementary indicators could display an impact cursor for biodiversity, climate or natural resources. In the same spirit, it would be desirable to give consumers access to supplementary information via electronic media. Further work must be done to develop a graphic code that is practical for industrial companies and intelligible to consumers.

The pilot programme confirms that there is strong consumer demand for environmental information on food products, and that a scientifically informed and technically operational environmental labelling scheme can be constructed and broadly rolled out in the short term. All of this work leads to the conclusion that such a scheme will structure the environmental transition for both companies and consumers.

Whatever the system and codes ultimately adopted, operational deployment will require several more months of work – to correct and complete the LCA methodology, compile high-quality generic data, provide operators with an easy-to-use calculation tool, devise a verification system and set up a framework for governance. The cost of deployment will be a major factor, and must be kept under control to ensure broad acceptance.

1. Background and objectives of the pilot programme

Environmental labelling for food products must be aligned with public policy designed to reduce the environmental impact of food products, which represent one quarter of the carbon footprint of today's households. Reliable evaluation of the environmental impact of agricultural production and food processing is a major component of the ecological transition of society. Better environmental information on food products will:

- **encourage ecodesign in food value chains** by informing consumers on the ways that food production, processing and distribution is changing for the better in environmental terms;
- **inform consumers and accompany changes in diet** by making them aware of the environmental impacts of their food consumption and enabling them to adopt more sustainable habits and practices.

A first broad experiment with environmental labelling across all sectors of activity was conducted on a national scale in 2012. One conclusion of this trial was that this type of labelling was feasible for food products. **In the wake of work accomplished in recent years and in light of the multiple initiatives of the private sector, the government of France wants to work towards a harmonized environmental labelling system backed by public authorities**. A pilot programme was deployed from February 2020 to December 2021, in application of article 15 of French legislation to combat food waste and support the circular economy (AGEC Act, 2020), subsequently replaced by article 2 of the Climate and Resilience Act (2021). This programme was designed to determine how environmental information could be evaluated, implemented and displayed by actors in the economy, with the goal of meeting consumer demand for this information.

Thanks to projects proposed by a number of stakeholders, a great deal of information and knowledge has been acquired under the pilot programme. The programme findings draw upon the results of 18 trial projects that emerged from a call for proposals, and the work of two working groups, one on indicators and the other on formats. Additional studies on formats and consumer perception were carried out by the *Institut National de Recherche Agricole pour l'Agriculture, l'Alimentation et l'Environnement* (INRAE) and the *École Supérieure d'Agriculture d'Angers* (ESA). The *Institut pour le Développement Durable et des Relations Internationales* (IDDRI) submitted a study of signals undertaken on its own initiative. Lastly, an independent scientific council drew up a report.

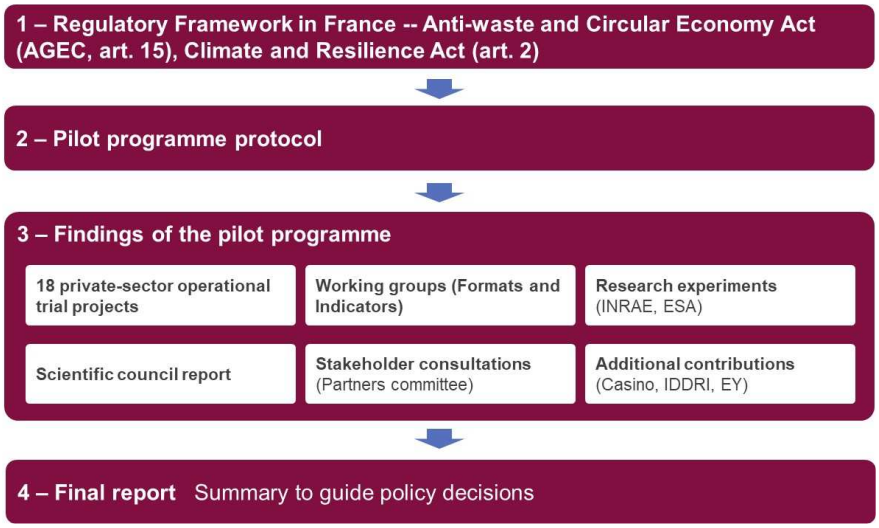

Figure 1: Pilot programme framework

A partners committee was assembled to follow the work of the pilot programme, including representatives of various sectors of agricultural and food processing activities (60 to 80 people present at meetings). The programme was overseen by a steering committee whose members represented the main French government ministries involved (Ministry for the Ecological Transition, Ministry for Food and Agriculture, Ministry of the Economy, Finance and the Recovery), plus the French Agency for Ecological Transition (Ademe) and the president of the scientific council. The ten-member scientific council conducted its work independently. Ademe also hired the EY consulting firm to provide support to consolidate and exploit the programme findings and to draft a summary report.

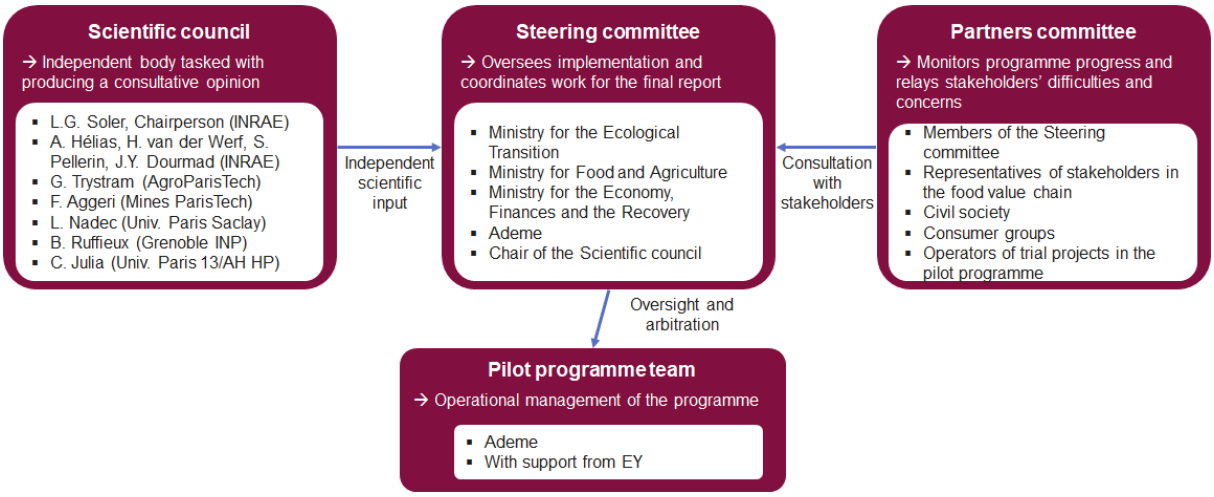

Figure 2: Governance bodies for oversight and implementation of the pilot programme

The present document is the summary report on the pilot programme. It proposes several targeted schemes and the stages, resources and conditions required for their initial implementation.

2. Preliminary remarks

At start-up the proposed scheme will be deployed through supervised voluntary projects. This supervision is designed to prevent greenwashing manoeuvres, in keeping with EU Inco regulation n° 1169/2011), and with French legislation, the Energy Transition For Green Growth Act (2015). This legislation requires transparent communication of clear and reliable information to consumers on the environmental impacts of products and services. In a second stage environmental labelling may be made mandatory for the food sector, in line with the aims of the Climate and Resilience Act (law No. 2021-1104 of 22 August 2021 to combat climate disruption and improve resilience to oppose its effects).

The proposed scheme must cover all foods[1] on the market in France, that is all food products available for purchase by consumers, included imported and processed foods.[2] Additives, flavourings and dietary supplements are also included. The pilot programme focused on typical food products however; the exact scope of mandatory information display will be specified by the regulations set for the display scheme.

The proposed scheme must be designed to enable comparison between food products. The pilot programme did not seek comparison of foods with products from other sectors. To allow scoring of an average shopping cart of food purchases, or items on a menu, for example, the score calculation must allow addition of multiple scores, based on a single transversal scale across all product categories. The pilot programme did not include any methodology that also covers other sectors, but attention is drawn to points of articulation with environmental labelling schemes for other types of products.

The proposed scheme must address the issue of consumer information regarding environmental impacts that are relevant to food products, particularly greenhouse gas emissions, loss of biodiversity, and consumption of water and other resources as outlined in article 2 of the Climate and Resilience Act. The law also stipulates that environmental information on food products must take into account the environmental externalities of agricultural production, e.g. biodiversity, soil carbon, water and air quality. The programme focused primarily on environmental impacts, without consideration of social and societal issues that are apprehended by other types of analysis. One example of is animal welfare, a societal issue that has sparked a high level of consumer interest. This question is to be addressed by specific investigations, as declared in statements from the French national food council (CNA) on trials with labelling to identify livestock husbandry methods, and from the French national food security agency (Anses) on forthcoming guidelines for animal welfare benchmark criteria for labelling, to be issued in late 2022. Work is also advancing at the European level on an action plan under the Farm to Fork Strategy. One task is to review options for animal welfare labelling to raise awareness of this added value among all stakeholders and throughout the value chain. At the time of this writing no timetable has been announced for this work. Beyond analysis of the consequences of coexistence of an environmental score with the existing Nutri-Score scale, convergence of these two ranking schemes was not explored under the pilot programme.

All actors in the food sector must be able to adopt the proposed scheme, for nearly all products. The environmental labelling schemes must be designed for the broadest deployment coverage possible, from artisanal products made in small quantities to mass consumer products. This necessitates close attention to operational feasibility and costs.

The proposed scheme should address the objectives set for environmental labelling, i.e.: i) emphasize ecodesign and environmentally friendly production modes; and ii) help consumers select products for their environmental impact and guide them to more sustainable food consumption practices. Following the recommendations of the scientific council the scheme should allow comparison both between i) products in different categories, to highlight the environmental impacts of a change in dietary content (e.g. consuming more vegetal protein), and between ii) products in the same category, to illustrate the application of ecodesign concepts to enhance the environmental performance of a given product over another similar item.

To prepare a publicly administered regulatory scheme the calculation methodology used for environmental scoring must have a robust scientific base.

The French Climate and Resilience Act stipulates that the proposed scheme must use an evaluation methodology that assesses environmental impact over the entire product life cycle. The scientific council is

[1] In this report the term "food" refers to foods and foodstuffs.

[2] The trial projects cover foodstuffs as defined under EU regulation 178/2002. The word "food" is also used in this report with reference to the pilot programme framework and the provisions of the French Climate and Resilience Act (2021).

favourable to an approach based on LCA methodology, as this is the most suitable method and one that can be rapidly operational to obtain environmental indicators for food products. It is also important that the environmental labelling scheme be aligned with the EU PEF framework that is itself based on LCA analysis and broadly recognized by the scientific community and institutions across Europe. This framework provides a harmonized system to measure the environmental footprint of products and attribute a single score that aggregates several impact indicators. It should be noted, however, that the PEF framework is not designed specifically for an environmental labelling scheme deployed on a large scale as is currently projected in France.

There is now a near-consensus that the PEF framework falls short in some respects. Methodological limitations for equitable comparison between products and production modes were revealed during the pilot phase.[3] This framework must be revised and supplemented to properly reflect the main environmental issues of food and food processing, and from this assessment develop an environmental labelling scheme. The proposal is to choose the LCA method, as defined at the EU level, as the principal foundation for calculation of environmental scores to be displayed. .This LCA foundation should be supplemented for environmental labelling in the short term in France. In the medium term environmental labelling should fully converge with the European system. Work to develop data can draw upon various generic LCA databases, and in particular on the French reference database Agribalyse (AGB) coordinated by Ademe and INRAE.[4] Agribalyse version 3.0.1 (issued in 2020) provides environmental data for 2 800 food categories (e.g. bread, pasta, etc.) and information specific to different agricultural systems. This pilot programme has made it clear that the Agribalyse database must be improved, in particular to correct evaluation of production modes, which at present does not adequately reflect the environmental impact of certain production systems.

The goal of the French government is to deploy an environmental labelling scheme in early 2023, assuming that a satisfactory methodology has been developed. 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. The scheme must be designed so that it can be amended and evolve for greater accuracy, as is the case for the Nutri-Score scheme. One of the goals of rapid official deployment is to avoid proliferation of private calculation methods and display systems for environmental impacts, using different formats and information channels, with the risk of confusing consumers.

3. Lessons from the pilot programme

Eighteen trial projects were conducted under the pilot programme. These experiments demonstrated that **it is today technically possible to put into place an environmental labelling scheme for food products.** The scientific council has reiterated this observation in its conclusions. Nonetheless, **the methodologies reviewed must be subjected to further work and testing before broad deployment.** The knowledge and tools needed are available to (i) revise the methodology, in a first step, and (ii) consolidate the parameters of a display scheme that meets the initial objectives and covers the principal segments of the consumer food market in France. Further work is needed to construct a harmonized and "consensual" information display scheme.

The trials demonstrated overall feasibility; that it is possible to provide consumers with pertinent information on environmental issues related to food products, on a large scale and at acceptable cost. These proposals were very well received by consumers. The trial systems diverged in some ways, however, reflecting the predilections and biases of different proponents, and each solution has its strong points and limitations. The options chosen for implementation of the labelling scheme are not modelled on any one project, but are drawn from the full set of projects, compiling components that have been judged to be scientifically robust and rapidly deployable. This labelling scheme will of course be designed to evolve over time, under a stipulated timetable, conditions and rules of governance.

3.1. Calculation of environmental impact indicators

There are limitations to the LCA method, which is the underlying foundation of environmental assessment; on these points the method must be revised or supplemented. Converging feedback and observations from

[3] Technical evaluation of the EU EF pilot phase, 2017.
Accessible at: https://ec.europa.eu/environment/eussd/smgp/pdf/HD_pilot_eval_final.pdf
[4] https://agribalyse.ademe.fr/

the trial projects show the need to revise the LCA method to do a better job of accounting for environmental externalities linked to agroecological production modes, as stipulated by the Climate and Resilience Act. Four trial projects calculated a single score using only LCA methodology. The other trials proposed a range of corrective measures: exclusion of findings for some of the 16 LCA indicators considered (e.g. two indicators for human toxicity, that were insufficiently robust); correction of the single LCA score with cumulative bonus and penalty points (e.g. Eco-score); revision of the calculation method for some LCA indicators or creation of supplementary indicators integrated into the LCA evaluation (e.g. Planet-Score).

Various types of supplementary indicators were proposed.

- **Evaluating the impact on local biodiversity** is one point of convergence for a majority of stakeholders in the pilot programme (trial projects, Indicators working group and the scientific council). As currently constructed LCA indicators reflect impacts on global biodiversity, particularly in terms of pollution, land use and climate impact; they could be supplemented by one or more indicators to account for biodiversity impacts at the field level. **The approach that appears to be the most rapidly operational in the short term** is the use of quality seals, labels and certifications. This approach was adopted in several trial projects. In the medium and long term the appropriate indicators could be developed on the basis of work already under way to improve LCA methods. Several possible approaches have been put forward but they are not yet fully operational and/or consensual enough for use in display systems in the short term (see work by Chaudhary;[5] Knudsen;[6] and Lindner[7]).
- **Integrating soil carbon sequestration/loss trends depending on uses is another point for improvement.** This aspect could be in part included in calculation of the LCA subindicator pertaining to climate change, based on findings from the INRAE "4 per 1000" study.[8] This approach has already been used in some of the trial projects (e.g. Interbev) and it should be possible to adapt it for all types of food products in the short term.
- **Given the shortcomings of current LCA methods the use of ecotoxicity and human toxicity indicators must be revised, following through on proposals made in trial projects.** There is strong societal demand for assessment of the health and environmental effects of pesticides, and measures to account for these impacts are in line with policy decisions to reduce the use of pesticides. The priority for ecotoxicity is to improve the existing LCA indicator to make it consistent with the most recent approaches under the PEF programme. This should be attainable in the short term. Regarding human toxicity, it should be emphasized that the risks linked to pesticide residues are addressed by existing health regulations, which among others set maximum authorized levels for these residues. Compliance with these regulations ensures that food products are safe for human consumption.
- **Corrective factors for packaging could be included,** in light of current shortcomings in evaluation of all the impacts of end-of-life treatment of packaging under current LCA methods. One particular problem is assessment of the contamination of ecosystems by plastic pollution and leaching of compounds. Generic and/or semi-specific data (see definitions below) do not do a good job of accounting for the recyclability of packaging, which may lead to bias in favour of plastic packaging compared to other materials such as paper, cardboard, glass, etc. These results are not necessarily relevant from an environmental standpoint, and could send signals that are not consistent with public policy to support the circular economy (for example the 2020 AGEC legislation in France). The need for vigilance on this point has been underscored by the UNEP Life Cycle Initiative[9] and the European Commission.[10] Complementary work of a relatively limited scope is needed to determine whether or not a corrective factor should be applied for plastic packaging.
- **Threats to biotic and halieutic resources, particularly fish populations** are not currently accounted for in the PEF methodological framework. These impacts are fairly narrowly applicable to products from the sea, but are significant for this food category. More work is needed to take them into account.

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[5] Chaudhary A., Brooks T.M., 2018. Land use intensity-specific global characterization factors to assess product biodiversity footprints. Environ. Sci. Technol. 52, 5094–5104.

[6] Marie Trydeman Knudsen, Christel Cederberg, Hayo van der Werf. Évaluer les impacts environnementaux de l'agriculture biologique : l'analyse du cycle de vie doit faire mieux. Innovations Agronomiques, INRAE, 2020, 80, pp.113-121.

[7] Lindner, J.P., et. al. Valuing Biodiversity in Life Cycle Impact Assessment. Sustainability 2019, 11, 5628.

[8] Available at : https://www.inrae.fr/actualites/stocker-4-1000-carbone-sols-potentiel-france

[9] https://www.lifecycleinitiative.org/resources/reports/

[10] https://ec.europa.eu/environment/enveco/circular_economy/pdf/studies/DG%20ENV%20Single%20Use%20Plastics%20LCA%20181213.pdf

LCA methodology should be revised to make it possible to assess all these indicators, in the short or medium term.

Adding supplementary indicators raises questions as to how they are to be selected, weighted and integrated into a final score. It is preferable to select the PEF weighting factors in the LCA calculations, so as to remain consistent with the European framework. Scientific input can guide thinking about additional indicators, as in the example of planetary limits that assign similar importance to biodiversity and climate impacts.[11] The relative weight of indicators is also a societal issue, as these choices transpose views of the relative importance of the environmental impacts at stake.

Two main methods for aggregation of LCA indicators and additional indicators were used in the trial projects conducted during the pilot programme.

I. The first of these is to apply bonus and/or penalty points to introduce supplementary indicators, by a **bonus or penalty applied after aggregation of LCA indicators** in a normalized single score. This method is the simplest, and gives a strong impact to the supplementary indicators. But as it is applied after normalization, it may overestimate some effects, in comparison with LCA indicators, as pointed out by the scientific council. This approach amplifies significantly the differences between product categories, but is dependent on arbitration of societal preferences and perspectives.
II. The second method is to **integrate corrective or supplementary indicators at the same level as LCA indicators.** The scientific council recommends this more rigorous aggregation method, to avoid the pitfalls listed above (disparate indicators, double counting, etc.) and make weighting of indicators more transparent.

The application of a bonus or penalty has the effect of increasing the visibility or weight of certain measures and levers of action, for instance action taken to align with public policies or avoid undesirable indirect effects in areas other than the environment. In this case the adjustments made must not be counterproductive or contradictory with the environmental signals. For example, secondary levers such as distance from the location of production must not become more important than first-order levers such as product category. In another example, one environmental impact, e.g. field-scale biodiversity, must not outweigh all the others, in particular climate change that is explicitly cited in the Climate and Resilience Act. To be adopted additional indicators must be robust. Furthermore, this sort of system would be difficult to update as scientific knowledge progresses.

Use of semi-specific or specific data is the preferred option, as recommended by the scientific council. This approach uses the following types of data in combination for a given product:

I. generic data drawn from LCA databases (such as Agribalyse) to evaluate the impact of an "average" product (e.g. standard bread *baguette* in France);
II. semi-specific data that describes the product in greater detail and differentiates it from others in terms of ingredients, type of packaging, provenance, etc.;
III. data specific to an individual product, as the case may be; these data are more precise and necessitate complete recalculation of the LCA score. Examples are information on the feed and raising of pigs used to produce ham, or composition and weight of packaging materials, etc.

The use of product-specific data highlights producers' ecodesign and environmentally friendly action for comparison with other products in the same category. This approach was tested in trials for certain value chains, among others vegetable oils (Experoil) and dairy products (ATLA). It is complex and requires substantial resources, which may make it difficult to extend to all food categories. It is preferable to use semi-specific data from public or private sources for short-term deployment. This approach was convincingly explored in trials (Yukan, Karbon, etc.). Semi-specific data allow differentiation between products, as long as calculation tools are provided and accessible to all types of actors (small and very small enterprises, digital platforms, etc.). To implement this approach consistently, within product categories or across the food sector as a whole, rules must be decided to identify levers with significant impact to be singled out and methods for calculating their effects. The minimum degree of data specificity and the pathways to attain this level remain to be determined.

The public database Agribalyse is a source of reference values for environmental impacts for all users and can contribute to operational deployment of environmental labelling in the near term. This database has been managed by Ademe since 2010. It is already widely used and has proved to be highly useful for most of the trial projects in the pilot programme. The database must be improved however, to better reflect the complexity of production, transformation and distribution in the food industry. This work to upgrade Agribalyse will be coordinated by the scientific interest group *Réseau pour l'évaluation environnementale des produits agricoles et alimentaires*

[11] Steffen et al., Science 13 Feb 2015, Vol 347, Issue 622. Available at: https://www.science.org/doi/10.1126/science.1259855

(Revalim) created in 2021 for the purpose of collective development of environmental evaluation of farm and food products.

This solution will achieve broad coverage of the agri-food sector only if **implementation costs are kept under control.** Some costs are borne by **public entities**: i) development of methodological components that are not yet available; ii) publication of generic and semi-specific data. Other costs are incurred by **private-sector actors**: i) compilation of specific and semi-specific data; ii) data input for evaluation of a large number of product references; iii) implementation of display for consumers. The trials show that it is possible to design schemes with a very low cost for the private sector, when the schemes are based on generic or semi-specific data alone, as the main cost for operators is data collection and verification. As an example, in the Eco-score trial the cost was roughly 1 euro per reference, not including display and verification costs. Inversely, costs rise very quickly to several thousand euros per reference if it is necessary to compile specific data or carry out full-scale PEF assessments.

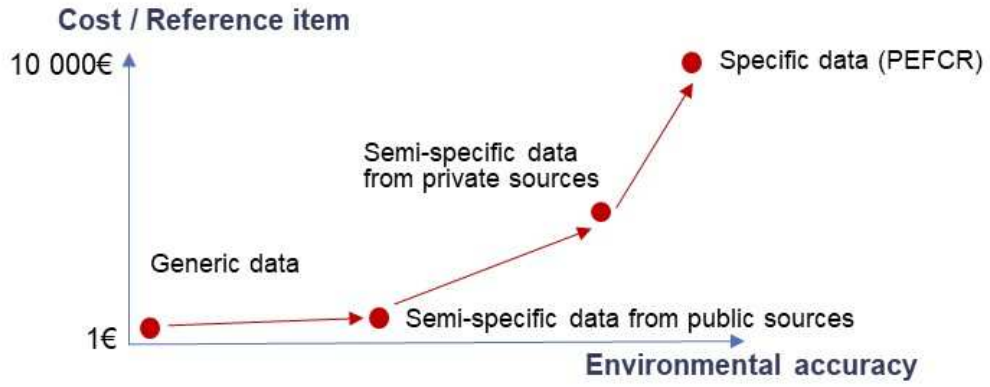

Figure 3: Costs for operators in the private sector by level of data precision

3.2. Formats

Overall the question of formats is simpler and more consensual than the construction of indicators. The work of the pilot programme confirms a general view that the format must be **simple and prescriptive.** If it is to have a significant effect on purchases the display format must be easy to understand for consumers, and give information that synthesizes and interprets the environmental evaluation data. **A colour scale with a limited number of levels (A to E, for example)** appears to be the most effective format, in light of consumer studies and experience with the Nutri-Score scale. This format does not suffice, however, to compare products within a given category.

To support ecodesign work undertaken by food producers, processors and distributors a more finely grained level of information must be communicated. This will highlight improvement and distinguish between products in the same category. One option, proposed by the scientific council, would be to **supplement the colour scale with a numerical value (from 0 to 100, for example)** that reflects the aggregated environmental score. Another option would be to increase the number of levels in the ranking scale, from 5 to 7 or 8.

The components of the ranking must be explained to consumers to increase the transparency of the display scheme and consolidate consumer confidence. Several trials pointed out a lack of background information among consumers, and emphasized the need to supply simple explanations of the environmental score mechanism. To this end analytical information to back up these scores is necessary, in addition to the "aggregated" indicators discussed above. This is particularly the case for subscores that breakdown the single score by environmental impact category.

3.3. Consumer perceptions and reactions

The pilot programme trials confirmed that **demand for environmental information and transparency is strong** and that consumers want to know more about the environmental impact of their food choices, to guide their purchases. In all polls 80% of people surveyed stated they were favourable to publication of such information.

Surveys also indicate that a sizeable proportion of consumers (64% in a survey by ESA) is ready to adjust purchases in light of environmental scores. This confirms the potential of the mechanism in terms of environmental transition. Consumers' declarations in surveys or experimental trials must be weighed with caution, as environmental criteria still come after price and health considerations. The analyses conducted also indicate that an official environmental

score would serve as the main reference point, alongside or in replacement of environmental information that is already visible on products (e.g. type of packaging, quality seals, labels, statements, etc.). This is very encouraging feedback for the structural impact of the environmental labelling scheme.

A significant finding of the trial projects comes from the INRAE study. INRAE observed that when experimental environmental labelling was implemented the **environmental quality of food purchases improved, without increasing the cost to consumers**. In some instances the overall cost of purchases was lower than it had been previously. This observation is an important step towards making environmental improvement feasible for all. A well calibrated mechanism should be able to reconcile better protection of the environment and purchasing power.

The information gathered shows **globally satisfactory understanding** of the proposed environmental scores. Consumers generally understand the distinction between the nutrition and health information provided by the Nutri-Score scale, and the environmental information score.

Despite these favourable aspects, however, **it was noted that the environmental score mechanism lacks maturity and reference points for consumers,** making it hard for them to rank the issues and impacts. Packaging and provenance are systematically cited as significant criteria, even though as a general rule these factors are not dominant contributors to the environmental footprint of food products. The lack of a reference framework is not surprising, as the topic is a recent one, compared to the discussion of nutrition. This tends to confirm the need for a simple and intuitive display that provides the requisite overall markers. It also raises the question of acceptability, because the mechanism will give information that is potentially counter-intuitive for some consumers. Didactic support will be an essential feature.

The environmental scope of the information mechanism is not always made clear. Consumers state that they want information on animal welfare, on social conditions in production chains, or on the effects of pesticides on human health, for instance. These dimensions are not environmental issues, strictly speaking. Above and beyond an environmental score, consumer research shows that a "complete" ranking of societal sustainability is sought.

Institutional food service

Commercial restaurant food provision was not studied in any of the trial projects. Just one of the 18 trials aimed to study environmental labelling in institutional and group food service settings. This trial by the Elior company was strongly impacted by the pandemic in 2020-2021, which disrupted institutional food service activity generally. There are signs that users of these food services do want information, but it is difficult to draw firm conclusions on the basis of this one trial. The basis of comparison could be real portion sizes for the different food items (main dishes, desserts etc.) and menus on offer. The methodological issues are globally similar to those encountered for in-store comparison, but there is less need for semi-specific data, because the aim is to compare different dishes or menus, and not to choose between different brands of similar products. The methodological framework could be tweaked and tools appropriate for this setting could be developed in the long term. This development could follow on from future work on methods to calculate scores on the product level, taking advantage of methodological progress in this field, and/or in relation with national bodies representing the institutional food service sector. This sector is already mobilized in France to meet conditions stipulated by recent legislation (EGalim legislation, Climate and Resilience Act), and environmental information cannot be a priority concern for the time being.

4. Proposals and future outlook

In light of the findings of the trials conducted under the pilot programme target mechanisms and trajectories can be identified to implement an official environmental labelling scheme for food products. Some further research and testing is needed before the scheme can be fully validated. Once a satisfactory methodology is decided, a scientifically robust information display scheme can be devised and broadly operational by early 2023.

4.1. Mechanisms for calculation of environmental impact

The pilot programme has outlined the main methodological mechanisms for calculation of the environmental impact of food products:

- **Mechanism A** is based on a **calculation combining LCA with a bonus/penalty system using quality labels.**[12] PEF indicators are aggregated in a single score that is then normalized on scale from 0 to 100. A single bonus is applied to this normalized score to take into account the greater environmental benefits associated with compliance with quality label criteria for certain products. Products with quality labels may be given extra points in the final score. This mechanism is the simplest way to address all the key parameters identified. Its main advantage is that it requires little technical work, and can be easily rolled out and operational in a relatively short time framework. This mechanism systematically and visibly places value on quality-labelled products, but to the detriment of scientific robustness: the bonus/penalty points can substantially alter the LCA score, and thus reduce the weight attributed to climate impacts and natural resources, for instance, in ways that are not highly transparent. Furthermore this mechanism has less possibility for future progression, and is less consistent than others with the EU PEF reference framework.

- **Mechanism B integrates supplementary indicators directly in the LCA framework. These indicators are integrated at the same level as PEF indicators, and weighted transparently.** The scientific council prefers mechanism B. It is more robust, as it does not integrate corrective measures after normalization, which tends to give too much weight to these measures. In addition mechanism B can evolve by integrating new indicators as they become available. Using this mechanism soil carbon sequestration is taken into account via the adjusted climate indicator that already exists in the LCA method (see section on findings). In addition to PEF indicators other supplementary indicators can be progressively introduced to address environmental issues that are poorly reflected in LCA: field-scale biodiversity, endangered species, toxicity to pollinating species, etc. These indicators are not yet fully developed and further work is needed to finalize them before they will be available for calculation of environmental impact information. This mechanism also requires semi-specific data, most notably for different agricultural production modes. For example, for organic farming users must have access to either "average organic farming LCA data for France" or to representative data for the principal existing organic farming methods in French value chains and for imported foods. These data could be compiled in work by the Revalim scientific interest group.

  To deploy an environmental labelling scheme more rapidly, mechanism B can be broken down into a pathway comprising several phases over time. Depending on the intermediate milestones adopted, there could be two or three phases.
  - **Mechanism B0** uses PEF indicators, including an adjusted climate indicator, to reflect soil carbon levels, plus a supplementary indicator for biodiversity at the field scale based on quality labels, and possibly an adjustment of scores for plastic packaging.
  - **Mechanism B1** uses PEF indicators, including an adjusted climate indicator to reflect soil carbon levels, a supplementary biodiversity indicator for LCA (Chaudhary, Knudsen or Lindner for example), an adjustment for plastic packaging and an indicator related to biotic resources for products from the sea.
  - **Mechanism B2** is designed to prolong the trajectory of mechanism B, using PEF indicators, the components of B1 and other supplementary indicators for additional impacts such as threats to endangered species, soil toxicity, impact on pollinating species, invasive exotic species, etc.

Going beyond the B2 trajectory, PEF methodology must be optimized and supplemented, to improve indicators that are not sufficiently robust and to take other environmental impacts into account via new indicators. Work currently underway in France and future studies must contribute to this goal. **The long-term goal is to be able to rely exclusively on the PEF framework, when it is capable of addressing all the key environmental issues of the food sector**. The mechanisms outlined above are intended to work towards this ultimate environmental labelling scheme.

The supplementary indicators described for B1 and B2 could progressively draw on work done by the Revalim group, which is the steering body for the Agribalyse database. Indicators could also be taken from recommendations by various international programmes (PEF, FAO, UNEP Life Cycle Initiative, etc.). For these indicators to be fully operational for the display scheme they must be defined via algorithms and included at the generic and semi-specific levels in Agribalyse.

Whichever mechanism is chosen, the recommendations of the scientific council can be followed regarding normalization. These are:

I. application of a functional unit by product weight (or volume for beverages) for all product categories;
II. rank products along a logarithmic scale to encourage ecodesign and enable consumers to distinguish and discriminate between products.

4.2. Display format

[12] The term "quality label" is used broadly here, to include organic farming logos, official quality seals, labels and other forms of product certification.

The trial projects under the pilot programme show that a simple aggregated and prescriptive three-level format is effective for information display. This display format is similar regardless of the method chosen to calculate environmental impact.

- Our proposal is to work on developing a standard format and logo for information display. This format must offer a first level of perception **via a colour scale with a limited number of levels**, for example A to E, A being the best product, E the least good option**.** This scale would be associated with a more detailed scale (0–100) to highlight ecodesign benefits.
- **At a second level a breakdown into subindicators should be displayed.** Three subindicators are recommended, corresponding to resource use, biodiversity and climate impacts.
- **These indicators could be supplemented by a third level of information,** displayed entirely separately. At this level consumers will have access to additional information on i) explanatory material on scores – technical indicators used to calculate scores, described in ways that are meaningful to consumers, e.g. quality seals and labels, provenance, packaging etc.; ii) methodological details – definition of indicators, calculation stages, functional units, data sources and tools, limitations, etc. – to supplement a common knowledge base on the display scheme provided by public authorities. The administrative requirements and framework for these components remain to be defined.

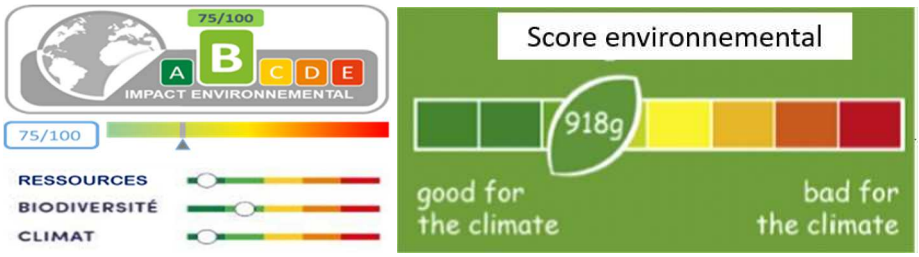

Figure 4: Sample formats for an official display scheme

The addition of an indicator of animal welfare is an option, subject to an arbitration process. **If this option is desired, an indicator must be constructed;** it could be based on the Planet-Score scheme or another system.

4.3. Devising operational methodological schemes

Whichever mechanism is chosen, conditions for deployment must be addressed in advance.

Mechanism B meets the conditions of a solid scientific basis for the future scheme, and is aligned with the recommendations of the scientific council. Work should be undertaken to test this scenario. Mechanism A with an "external correction" must also be considered and tested, in light of discussion on the objectives of environmental labelling and the capacity of the future scheme to attain these goals. On this basis the two scenarios can be compared. Much of the testing work is common to the two scenarios, and more specific analysis can be carried out in parallel.

To begin with, the work on calculation of an "environmental score" started under the pilot programme must be pursued in greater depth.

- One objective is to fine-tune indicators as described above: adjusted PEF ecotoxicity indicator, indicators accounting for soil carbon sequestration and plastic packaging, construction of a field-scale biodiversity indicator (see section on Findings and objectives of the pilot programme and its subsection on calculation of environmental impact indicators).
- Secondly, weighting and normalization methods to transpose the single score on a scale of 0 to 100, and then to an A to E scale, on the basis of work by the scientific council.
- Thirdly, thematic subindicators on resources, biodiversity and climate to supplement the aggregated score, based on work by the scientific council.
- Lastly, a final calculation formula consolidated in a prototype for a software tool for calculation using semi-specific data from public sources. This tool should enable comparison between different scenarios and also with possible hybrids of components from the A and B mechanisms.

In all cases **additional prior testing** will be required before selection of a scheme, indicators and formats and for final validation.

- Improvements must be made to the B0 scenario and then tested, to validate the operational feasibility of calculations and to ascertain the level of differentiation achieved, and the results of intra- and inter-category rankings. These studies must cover a large number of projects (500 for instance) in "real-life"

circumstances, and include case studies that reflect the major issues that allow comparison between conventionally grown products and organic products, between intensive and extensive livestock methods, local products and those imported over long distances, different types of packaging (plastic, carboard, glass) and sales in bulk. These studies will illustrate global signals as well as comparative information given by the information display scheme, and provide evidence for farming and food trends sparked by the scheme, and its alignment with other public policies.

- There is always the possibility, as evoked by IDDRI, that this work will show that mechanism B does not sufficiently differentiate between different production systems within a given category (e.g. between intensive and extensive livestock raising) to meet the objectives of public policy. In this case an external factor (similar to the approach under mechanism A) could be used if corrective measures at the LCA level do not have the desired outcomes.[13]
- Stakeholders may be solicited during the testing phases. It would be a good idea to hold a public consultation after publication of all results and proposals and before final validation of the scheme.
- This test phase should also serve to more closely analyse costs for the various operators, and in particular the impact on companies.

This solution will achieve broad coverage of the agri-food sector only if **user costs are kept under control.**

The calculation tools that are already on the market must be supplemented by a publicly available tool such as the one proposed by the scientific council.

[13] Laura Brimont, Mathieu Saujot (IDDRI), October 2021, Affichage environnemental alimentaire : révéler les visions pour construire un compromis politique.

5. Provisional timetable