Goodness Groceries!
A short methodology to the project

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About Sustainable Food Practices

The Sustainable Food Practices project analyses Luxembourg's food system from a social science perspective. We examine who the actors and stakeholders are within the system and what their role is in the transitions towards a more sustainable food system and culture. The objective of the project is to analyse social practices that have both favourable and unfavourable influences on Luxembourg's food system. An analysis of the current and future opportunities and challenges is an appropriate tool to help interpret and justify perceptions, practices, decisions and arguments from political, economic, ecological and societal perspective. The aim of the project is to understand the global consequences of our food practices by researching the transition processes towards a more sustainable food system.

https://food.uni.lu

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The authors listed in the reference here-above should be recognised as contributors of the project.

Abstract

This project introduces a mobile application (App), *Goodness Groceries*, which contains information and the sustainability characteristics of a selection of everyday food products available at the Pall Center supermarket in Luxembourg. This experimental and transdisciplinary project is a collaboration between the Sustainable Food Practices team, the IT department – "Service Informatique de l'Université" (SIU) – and BicsLab at the University of Luxembourg, in partnership with Pall Center.

The goal of the project is to create and pilot an application presenting ethical and eco-responsible information about food products, for consumers to peruse while shopping for food. This information is provided within the four main sustainability themes environment, social well-being, economic well-being and good governance. As a virtual shopping companion for consumers, the App allows scanning of a product specific QR code on shelf tags, that shows information about the sustainable attributes of the product. Within the App, and for the pilot study, there are 23 food products represented within four categories: local organic, local conventional, imported organic and imported conventional.

In order to participate in the pilot project, consumers need to sign up to the study using their Pall Center customer card. The study will run for 12 weeks commencing October 2022.

In this methodology document we describe:

- how we developed the sustainability indicators
- how we chose which food products to include in the App
- the technical and content development of the App
- how we developed the self-assessment questionnaire for suppliers
- how we disseminated the questionnaire and collaborated with suppliers on their answers
- the procedure for analysing the questionnaires and how we awarded indicators to each product.

The project has Ethics Committee approval from the University of Luxembourg, *Ref. No. ERP 21-049 GG.*

Full information about the research project is available on https://food.uni.lu/projects/research-projects/sustainable-shopping-app/ *and for consumers* https://food.uni.lu/goodness.groceries/

Contents

Four main sustainability themes and their indicators

We created a framework with four main sustainability themes (cf. Figure 1), covering socio-political, socio-economic, socio-cultural and socio-environmental aspects of sustainability. Within each theme, we created a set of sustainability indicators, with their respective sub-indicators. For each of the sustainability themes and its indicators, we designed unique icons (cf. Figure 2). This sustainability framework forms the backbone to the project, enabling us to develop a set of questions for a self-assessment questionnaire for food product suppliers as well as allow us to review their answers according to the agreed definitions, award indicators to products who show evidence meeting that indicator and display food products according to these indicators in the app.

We used a mixed approach for developing the framework:

- We analysed existing scientific food and agriculture related sustainability indicators as elaborated in the SAFA framework by the FAO[i].
- We analysed common sustainability criteria used within food labelling schemes (via analysis of their production sheets (*cahiers des charges/Lastenhefte*)[ii].
- Further inspiration was rooted in the qualitative interviews undertaken by Dr Rachel Reckinger within the University-funded IDENT2 research project[iii].

We developed definitions for each indicator (cf. Figure 3) by drawing on the relevant references and by discussing their meaning and potential consequences when analysing responses. Once we developed the indicators for each of the four sustainability themes, we subdivided them into their respective sub-indicators, which were then turned into a set of questions, which would enable product suppliers to provide answers about each set of indicators in a self-assessment questionnaire. The indicators and sub-indicators are defined in detail in Figure 1 and Figure 3.

Figure 1: The four sustainability themes

Figure 2: List of indicators per sustainability theme

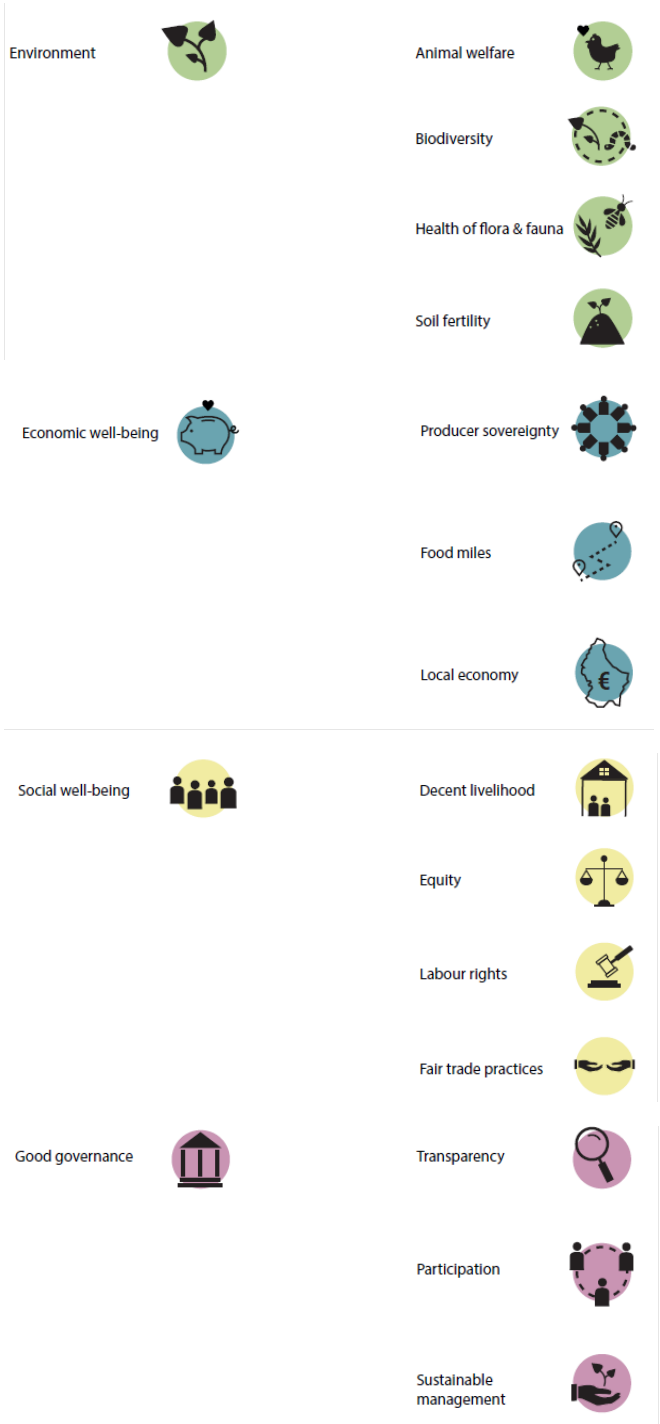

Figure 3a: The four sustainability themes with their respective indicator definitions

Environment

Figure 3b: The four sustainability themes with their respective indicator definitions

Economic well-being

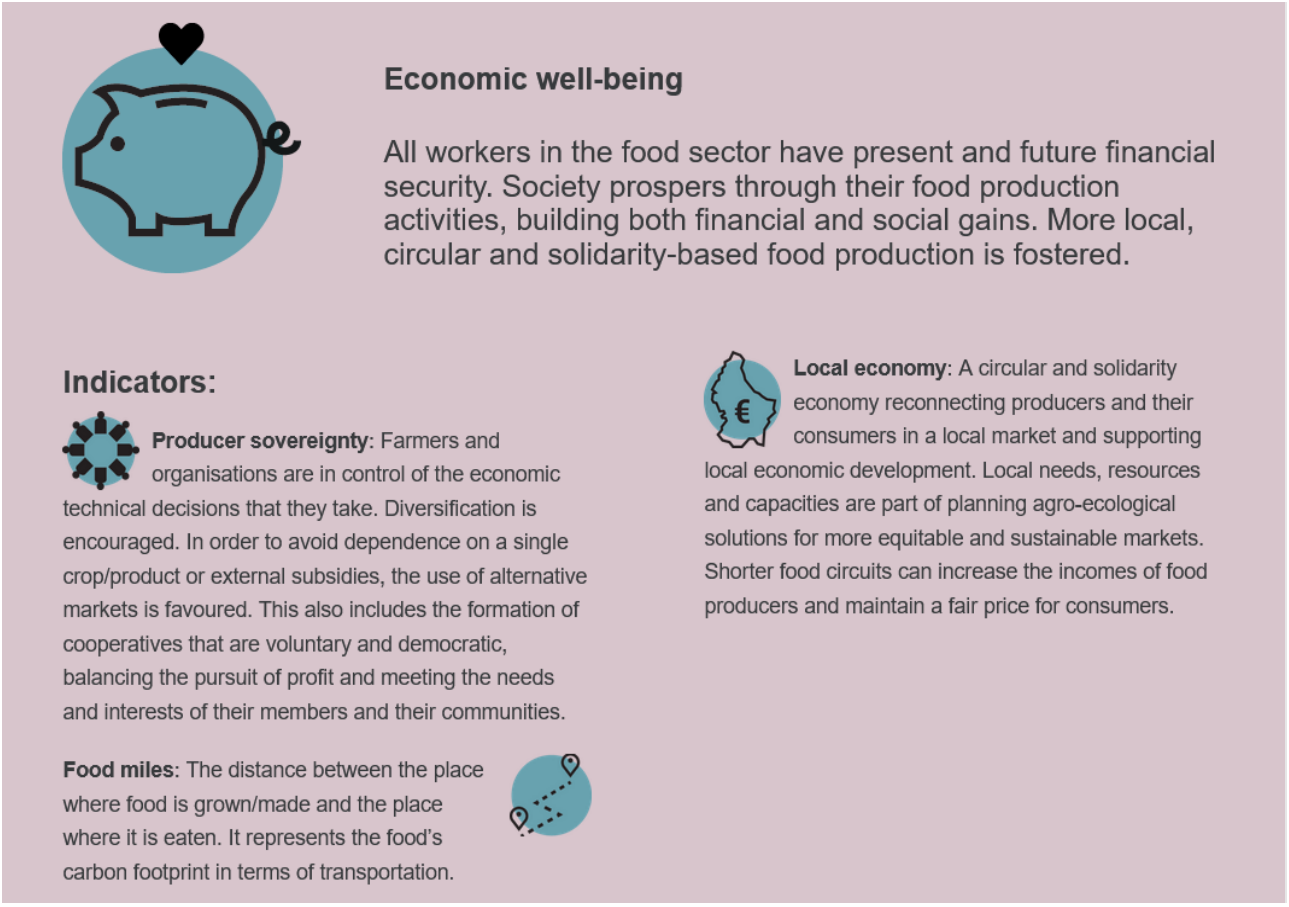

Figure 3c: The four sustainability themes with their respective indicator definitions

Social well-being

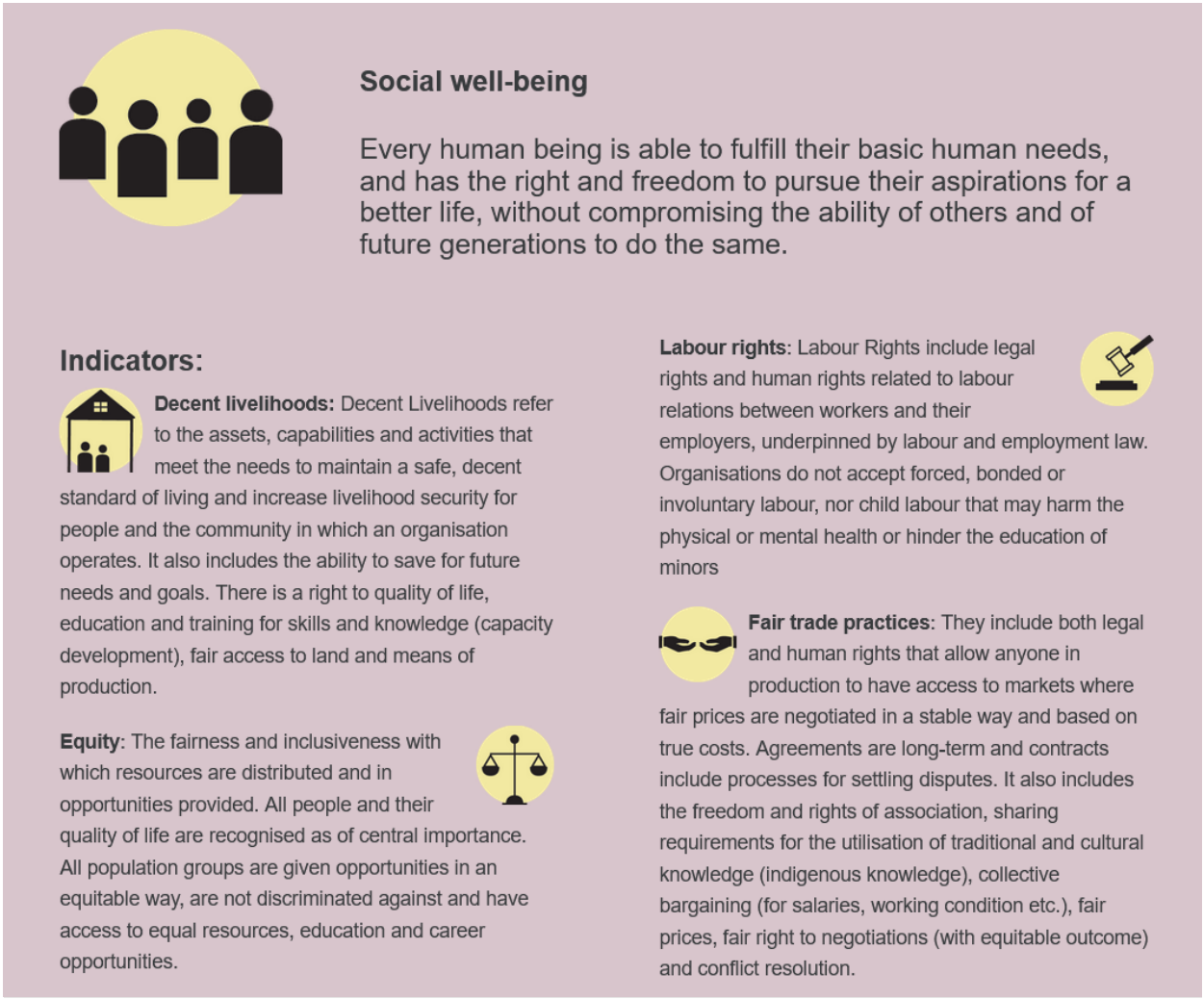

Figure 3d: The four sustainability themes with their respective indicator definitions

Good governance

Product Selection: which food products to include in the application

As the App will be piloted in a field study in collaboration with Pall Center, the food products included in the App must be products sold at Pall Center Oberpallen and Steinfort (the two shops selected as study locations).

Food types: Everyday food products

We chose everyday food products for inclusion into the App; coffee, eggs, milk, yoghurt, flour, pasta, chocolate spread, honey, apple juice, potatoes and one meat product; ham.

Four product categories per food type

Whenever possible, we tried to include four different categories of products for each food type in the App: a local organic one, an organic imported one, a local conventional one, and an imported conventional one (cf. Table 1). This goal was not always reached due to difficulties of recruiting suppliers and retracing knowledge in supply chains (see below for more details).

Table 1: Definitions of the four product categories

Term	*Definition English*	*Definition French*
Local organic *fr.* Biologique local 	'Local products' are produced or processed in Luxembourg. They can be made from nationally produced ingredients, imported ones or from a mixture of both. 'Organic products' are produced, distributed and marketed according to the criteria of public organic certification, and must comply at least with EU organic legislation defining the use of pesticides and fertilisers, animal welfare standards and considerations for biodiversity etc. Some products may have voluntarily additional criteria defined by private organic certifications.	Les « produits locaux » ont été produits ou transformés au Luxembourg. Ils peuvent être fabriqués à partir d'ingrédients issus de la production nationale, d'ingrédients importés ou d'un mélange des deux. Les « produits biologiques » sont produits, distribués et commercialisés selon les critères de la certification biologique publique. Ils doivent respecter au moins la législation biologique de l'UE définissant l'utilisation des pesticides et des engrais, les normes de bien-être animal, les considérations pour la biodiversité, etc. Certains produits peuvent avoir des critères supplémentaires volontaires, définis par des certifications biologiques privées.
Local conventional *fr.* Conventionnel local 	'Local products' are produced or processed in Luxembourg. They can be made from nationally produced ingredients, imported ones or from a mixture of both. 'Conventional products' are produced, distributed and marketed according to any other criteria than the ones of organic methods, following general standards laid out by EU and Luxembourgish legislation. They may have additional criteria defined in specific programmes and labels.	Les « produits locaux » ont été produits ou transformés au Luxembourg. Ils peuvent être fabriqués à partir d'ingrédients issus de la production nationale, d'ingrédients importés ou d'un mélange des deux. Les « produits conventionnels » sont produits, distribués et commercialisés selon des critères autres que ceux de la certification biologique. Ils sont conformes aux normes générales, définies par la législation européenne et luxembourgeoise et peuvent avoir des critères supplémentaires, définis dans des programmes et des labels spécifiques.

Imported organic *fr.* Biologique importé 	'Imported products' have entirely been produced or processed outside of Luxembourg. They travel by air, sea or land to Luxembourgish wholesale and retail markets. The distance travelled is referred to as 'food miles'. 'Organic products' are produced, distributed and marketed according to the criteria of public organic certification, and must comply at least with the legislation of the importing country defining the use of pesticides and fertilisers, animal welfare standards and considerations for biodiversity etc. Some products may have voluntarily additional criteria defined by private organic certifications.	Les « produits importés » ont été entièrement produits ou transformés en dehors du Luxembourg. Ils voyagent par voie aérienne, maritime ou terrestre vers les marchés de gros et de détail luxembourgeois. La distance parcourue est appelée « kilomètres-assiette ». Les « produits biologiques » sont produits, distribués et commercialisés selon les critères de la certification biologique publique. Ils doivent respecter au moins la législation du pays importateur définissant l'utilisation des pesticides et des engrais, les normes de bien-être animal, les considérations pour la biodiversité, etc. Certains produits peuvent avoir des critères supplémentaires volontaires définis par des certifications biologiques privées.
Imported conventional *fr.* Conventionnel importé 	'Imported products' have entirely been produced or processed outside of Luxembourg. They travel by air, sea or land to Luxembourgish wholesale and retail markets. The distance travelled is referred to as 'food miles'. 'Conventional products' are produced, distributed and marketed according to any other criteria than the ones of organic methods, following general standards laid out by EU and the producing country's legislation. They may have additional criteria defined in specific programmes and labels.	Les « produits importés » ont été entièrement produits ou transformés en dehors du Luxembourg. Ils voyagent par voie aérienne, maritime ou terrestre vers les marchés de gros et de détail luxembourgeois. La distance parcourue est appelée « kilomètres-assiette ». Les « produits conventionnels » sont produits, distribués et commercialisés selon des critères autres que ceux de la certification biologique. Ils sont conformes aux normes générales, établies par l'UE et la législation du pays producteur et peuvent avoir des critères supplémentaires, définis dans des programmes et des labels spécifiques.

When selecting products, one difficulty was finding product types which exist in all four categories presented in Table 1, in order for the comparative feature of the app to work. This was particularly a problem with the Imported Conventional category, as these products are often provided by large multinational companies making it difficult to contact an individual with adequate knowledge about a specific product by email or phone in order to answer the product questionnaire However, smaller companies were sometimes also difficult to get in touch with, as a smaller workforce –sometimes even just one or two staff members – means that it is difficult for individuals to find time to get involved in additional responsibilities outside their ordinary tasks. A further, general, problem was the fact that both larger and smaller companies were not always able to answer the questionnaire due to lack of knowledge about the production details of ingredients, especially when the ingredients are purchased via a wholesaler. Subsequently there are some product types that have fewer categories represented.

The purpose of showing a type of product in four categories was to provide an opportunity for consumers to compare foods of one type (e.g., coffee) to one another and read about the potential differences in sustainability methods and processes undertaken by suppliers. (Read later about comparing products in section "Focus on concrete aspects of Sustainable Production").

Providing different types of foods in the App will allow us to compare the purchase choices before and during App usage for different products selected for the study (and featured in the App) and products from the same type available in store but not featured in the App. For the purpose of this before-after comparison of shopping behaviour of different product categories of the same type in the App, and of other products of the same type but outside the App, we analyse till receipts and additionally ask for feedback about purchasing choices via push notifications. To describe this in practice, we have two brands of flour in our App, but there are many other brands of flour in store. Till receipts will tell us if a customer scanned a food product available on the App, if they subsequently purchased it or if they purchased another brand of flour available in store. Through a push notification a few hours later, we will ask them to tick or briefly state the reason for their choice. For the food types that are represented in more than one of the four categories (cf. Table 1), we can additionally inquire if the fact that the product was available in different qualities (for example local and imported or conventional and organic) had an influence on the purchasing choice.

Developing the questionnaire for suppliers

Based on the four sustainability themes, their respective indicators, and sub-indicators, we developed a detailed questionnaire using LimeSurvey (in English and French). It asks product suppliers to self-assess their product for inclusion into Goodness Groceries using qualitative responses to explain how they meet any given indicator. The questionnaire was disseminated via email to existing Pall Center suppliers, along with the indicator definitions (cf. Figure 3), a study information sheet and an informed consent form for agreement of inclusion into the study and App.

As we are relying on self-assessment by suppliers to award indicators, and we did not undertake an audit of practice, but we carefully reviewed all the evidence submitted to us. The goal was that suppliers would each time argue and describe how they think they meet an indicator that they checked. We worked in several feedback-loops with them, to point out where the argument was insufficient, thus asking for more precision.

Technical and content development

Technical development of the App was led by BicsLab at the University of Luxembourg at the beginning of the project. The development work included postgraduate students who, as part of their course work, developed the technical look and feel of the App. As the project progressed with developing the requirements of content, the technical development and content development progressed simultaneously. Once the IT student programme came to an end, the technical development was transferred to the University IT services team, called “Service Informatique de l’Université (SIU)”. Benjamin Fornage and Renaud Carpentiers were responsible for bringing the App to its final stages and going live on the App Store and Play Store.

Collaboration with Suppliers

We approached the existing food suppliers of Pall Center, because of their existing commercial relationship, and to utilise existing trust between the suppliers and Pall Center for the expectation we placed on suppliers in providing information and drawing on their knowledge in production of the specific food item.

Focus on positive aspects of sustainable production

One of the features of the App is the ability to compare several products and at a glance see comparative information side by side. This feature is not destined to show that one product is superior to another product. Instead, the App is about focusing on describing the concrete aspects of sustainable production and processing. By highlighting qualifications of criteria in the four main sustainability themes, the App enhances consumer literacy and hopes to foster heightened reflexivity among consumers at the moment of making their shopping decisions. The App and its features also allow study participants to choose which sustainability themes are more important for them.

The comparison screen is not for comparing like for like, but rather to compare how different suppliers approach sustainability for their product, and this will differ between types of products, categories of products (local, imported, organic, conventional) and countries of origin for the ingredients. This is because there are many factors that determine which indicators are met, depending on product type, number of ingredients, its production locality, their production methods, the company size etc.

For example, if one product meets both social and economic well-being indicators, and another product meets only environmental indicators, it doesn't mean that the first product is superior, but that their sustainability approach is different. The App does not intend to pass judgement on any producer or product, but to encourage transparency in relation to their sustainability efforts.

The objective is that study participants learn more about the production methods of a given product and refine their capacity to interpret the specific actions of suppliers to meet the different sustainability indicators. This educational component, combined with own personal beliefs and reasoning towards making a purchasing decision (for example, only buying fair trade products) is more important than providing a simple indicator checklist. Indeed, the provision of qualitative explanatory texts explaining *how* a sustainability indicator is met rather than the mere provision of performance scales or similar quantitative assessments of sustainability performance is a highlighting characteristic of this App compared to many sustainability assessment apps on the market.

Awarding the different indicators

We awarded an indicator where there was sufficient evidence from the supplier of how they meet that indicator and by comparing the evidence provided with the indicator definitions. The decision is not based on any legal audit. There were many reiterative rounds with suppliers where we had questions, and they provided further evidence. In the case of insufficient information or doubt about an indicator, the decision was made to not award it, in agreement with the supplier.

The product information provided within the App is a qualitative text with exact facts, after carefully having checked suppliers' claims in the questionnaire. In general, the four sustainability themes and their indicator definitions are the benchmark for evaluation, not laws. If there was evidence that the product meets regulations/laws or even goes beyond it, it is stated in the qualitative text. Or, if we awarded an indicator just because a basic law is met (see explanation for the labor right indicator below), this is stated in the qualitative text as well.

Descriptive texts for the App

The questionnaires were reviewed by several project team members, and descriptive texts were written summarising the main evidence. Any problematic areas related to evidence and awarding indicators were discussed by at least three team members, and with the suppliers.

Final texts for the App had to be short (360 characters per indicator) to fit within the App environment, be fair to all suppliers and not be overwhelming to read t. All final texts were approved by the project team and the suppliers.

Suppliers retain the right to have the information about their product amended during the study, should anything change in relation to the production of their product.

Throughout the development of the study and the App, we have revisited the products on several occasions to confirm their availability, their names, and details such as photos and EAN numbers etc.

Specific indicators

For some indicators, the attribution had to be adapted slightly from the usual methodological approach. As explained above, the usual approach consisted in the analysis of the answers to the questions in the questionnaire, where the questions reflect the dimensions of the sub indicators, that were derived from the indicators, and these in turn from the four sustainability themes (cf. Figure 1, Figure 2 and Figure 3).

Below we describe the adaptations in the attribution procedure for each indicator where such an adaptation was necessary.

Local economy and Labour rights

The indicators Local Economy and Labour Rights were **always** awarded to locally produced food products, based on the fact that they are produced under EU and Luxembourgish labour regulations, and that they are embedded in the local economic tissue.

- In some cases, a local product contains ingredients with a provenance that is uncertain or remote. When the transformation stage takes place in Luxembourg (e.g., processing cocoa or roasting coffee beans), we opted for classifying such exotic products as local products in the App – even though they depend on primary ingredients from exotic origin. At the same time, we fully endorse primary producers' initial and central role in producing those raw ingredients, and valorise them accordingly in the App.
- In the case of local family farms that do not hire additional workforce and that only produce primary, non-processed foodstuff like for example potatoes, the indicators for social equity, decent livelihoods, and participation generally do not apply, due to the specific composition of these farms.

Food miles

Local products based on exotic ingredients could not be awarded the indicator Food Miles, because ingredients such as coffee or cocoa, may come from far away but be processed locally, which contradicts the indicator requirements for being truly local in terms of 'food miles'.

Sustainable management

Sustainable management is attributed to companies that meet all indicators in each of the four sustainability themes, or otherwise provide evidence of clear management strategies that address and take action in the four themes at the same time.

Transparency

The indicator for Transparency is met when a company clearly demonstrates that they communicate with the public through websites, social media, market fairs, etc., and when they have a policy for consumers contacting them.

Animal welfare

The animal welfare indicator is used in the case of animal products (meat, dairy, honey, eggs, etc.) and refers to the precise treatment and welfare of said animals throughout the production chain. For company practices that emphasize sustainability or biodiversity of wild species, flora and fauna, planting wildflowers for pollination, pesticide use, etc. these practices of indirect influence on animals are addressed under the indicators of 'biodiversity' and 'health of flora and fauna'.

- END OF REPORT -

References in this document:

[i] FAO (2014) SAFA guidelines: Sustainability Assessment of Food and Agriculture Systems, Version 3.0. Available at: https://www.fao.org/nr/sustainability/sustainability-assessments-safa/en/

[ii] https://food.uni.lu/projects/research-projects/clarifying-food-labels/

[iii] https://wwwfr.uni.lu/recherche/fhse/ident2