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**CARBON FOOTPRINT ITALY:  
A COMMUNICATION TOOL SUPPORTING  
ENVIRONMENTAL AND CLIMATE EFFORTS**

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## **Abstract**

This work reviews the opportunities to make the communication of Carbon Footprint of Products (CFP) more effective, starting from the experiences of Carbon Footprint Italy (CFI) and Carbon Footprint international.

In view of the implementation of the ambitious policies set globally, requiring a quick and irreversible decarbonization of all the sectors, it is crucial to guarantee that transparent, reliable, and effective information is provided to the public.

The ISO 14067 standard is the internationally recognized tool for the CFP quantification. Nowadays, it is broadly adopted by companies aiming at providing reliable results.

The analysis is focused on CFI, the Italian initiative. First, it values credibility, only allowing the participation to products/organizations owning a verification statement issued by an accredited independent third-party. It promotes transparency, making all the information publicly available on a dedicated webpage for each registered product, easily accessible through a QR code that can be printed on the product itself.

In addition, it valorizes reliability by using the blockchain technology, that stores the data in an unmodifiable way, allowing for solid and credible performances tracking over time.

The review also covers the global scenario of existing initiatives, gathered in the international network created to boost the global recognition of carbon footprint.

Another aspect the analysis assesses are the opportunities for collaboration between different actors of the value chain, as crucial to encourage virtuous cycles. The example of the tannery and leather supply chain is reported, with involved realities ranging from raw materials suppliers, tanneries, and final product users.

*Keywords:* Carbon Footprint, climate, communication, sustainability, neutrality, leather, supply chain

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## List of Abbreviations

CFI	Carbon Footprint Italy
CFO	Carbon Footprint of Organizations
CFP	Carbon Footprint of Products
GHG	Greenhouse Gases
PO	Programme Operator

### 1. Introduction

Climate change is one of the most complex challenges that humankind has ever had to face. It is now evident how this challenge is becoming more and more compelling, and how the efforts must be global, quick, and resolute. This is confirmed by the recent publication of the contribution of Working Group I to the Sixth Assessment Report of the United Nations Intergovernmental Panel on Climate Change, namely the *Climate Change 2021: The Physical Science Basis*, that thoroughly analyses the physical basis of the climate systems, provides evidence of how climate is changing and how this is strictly related with human activities.

The awareness of this urgency is not only widespread within the scientific community, but within all the sectors of our society. More and more ambitious policies are being adopted all over the world, regulating climate actions, setting ambitious targets, and boosting virtuous actions and market mechanisms. A remarkable example is represented by the European Green Deal, a comprehensive policy that sets carbon neutrality goals, and recognizes the relevance of integrated actions from several sectors (as climate, industry, energy, transport, agriculture, etc.).

This revolution is also occurring at a social and economic level. In this context, the market urges companies to embark serious actions towards sustainability. Massive investments to reduce the impact on climate change are made. Many companies have already undertaken pathways in this direction, by using innovative efficient technologies and by adopting advanced environmental management systems. Nowadays, these efforts towards sustainability are becoming even more intense, and companies are introducing specific tools for carbon management within their strategies.

Several voluntary methodologies for the quantification of greenhouse gas emissions are already available on the market. Some of them are extremely reliable and internationally recognized, as for example the quantification of Carbon Footprint of Products (CFP) in accordance with the ISO 14067, or the Greenhouse Gas (GHG) inventory of organizations in accordance with the ISO 14064-1.

Anyway, implementing technical improvements and adopting carbon management strategies in accordance with the recognized standards is not enough to ensure the massive market adoption of products with a low carbon footprint; another key element is the effective communication of the results achieved, combined with a close relationship between producers and consumers.

It should be noticed that, without the presence of a recognized Programme<sup>2</sup> dedicated to the communication of carbon footprint, it is not easy for companies to select the proper pathway to be followed to ensure a serious communication of the efforts undertaken. In fact, they can opt for using self-declarations, that are not easy to justify in a credible way to the market, even if based on trustworthy efforts. They thus risk to fall into the so-called *greenwashing*, either consciously or not. At the same time, the same difficulties are faced by consumers or clients, to understand how serious the information communicated is, and thus to take informed decisions.

Hence, there is a need for clarity in this sense, by using a serious, reliable, transparent but simple and effective CFP Programme able to complement the technical and management efforts, from a communication point of view (Vizzoto et al, 2021).

### **1.1 Objectives of the Study**

In this context, in the past few years several Programme Operators (POs) on carbon management were launched, aiming at simplifying and regulating the complex communication framework characterizing the carbon management claims. These initiatives, nationally managed, started a collaboration pathway within the *Carbon Footprint International* network.

This work is focused on the Italian experience, *Carbon Footprint Italy*: it provides an overview of the innovative features that led it to be the first initiative ensuring such level of guarantees and reliability on the market, due to its flexibility and its ability to follow the market needs, potentially involving all the actors

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<sup>2</sup> Also known as Programme Operator, or PO.

along the leather value chain. In addition, it is also taking advantage from the introduction of best available technologies that provide a high-quality tracking of the reduction over time of the carbon emissions in a guaranteed, reliable, and effective way, giving a new shape to the carbon management communication scenario.

## **1.2 Outline of the work**

After an introduction on the main elements ensuring credibility and reliability to the CFI Programme, and of the innovative technologies implemented, this work is divided in four main parts:

- Overview of the communication context, often based on self-declaration where the risk of greenwashing is significant, and of the need for Programmes regulating and ensuring the reliability of the climate claims.
- Outline of the structure of Carbon Footprint Italy, including the rules on which it is based and the requirements to be fulfilled to register, the guarantees that it offers in the voluntary market and of the different types of labels available.
- Overview of the opportunities offered by CFI through the leather sector case.
- Presentation of the international network in which it operates, that is moving towards the mutual recognition of the single initiatives to promote the consistent implementation of these concepts globally.

## **2. Materials and Methods**

Carbon Footprint Italy (CFI) is the Italian Programme Operator on Carbon Management. The goal is to enable companies to communicate credible and reliable information on their GHG inventory and on the Carbon Footprint of Products (CFP) of their products to all the actors of the value chain, and to the users and customers.

To participate in the Programme, companies must fulfill a set of requirements.

First, organizations and products shall own a verification statement issued by an accredited independent third party. The international standards that should be fulfilled to achieve the registration in CFI are the following:

- ISO 14067 for products (ISO, 2018);
- ISO 14064-1 for organizations (ISO, 2018);

- PAS 2060, for carbon neutrality statements (BSI, 2010).

The third-party verification represents a guarantee on the reliability of the values of CFP and of GHG inventory. Anyway, additional elements are needed to ensure an effective and transparent communication.

As mentioned, the first thing to be provided is a complete information. This is to be ensured considering that all the background information supporting the study cannot be directly depicted on the single marks that are printed on the products, because of space constraints and of clarity reasons.

That is why in CFI the use of a label is combined to a unique QR code. Each QR code is associated to a single registration realized in the Programme and is linked to the dedicated webpage on the CFI website especially created for the specific product or organization.

The webpage reports all the useful background information, that are relevant to be communicated, as indicated in the ISO 14026 (ISO, 2017). For example, for the Carbon Footprint of Products, the following data are reported:

- Organization name;
- Organization address;
- Phone number, website and contact person;
- Product name;
- Product description;
- Registration date;
- Declared/functional unit;
- Value of CFP. It is reported both as a comprehensive value, and as values split per type of emission, namely net fossil GHG emissions, biogenic GHG emissions, biogenic GHG removals, GHG from dLUC. In addition, the aircraft GHG emissions are reported also separately, as requested by the reference ISO standard;
- Reference year;
- System boundaries;

- Stages excluded from the lifecycle;
- Production plants included;
- CFP Study report name and version;
- Additional notes;
- Verification body;
- Link to blockchain;
- Copy of the verification statement.

Another technology adopted by CFI is blockchain. Blockchain technology enables actors to verify and audit transactions and track them in ledgers (Saber et al, 2018). Once the transactions are approved, they can be added as a new block in the blockchain. Smart contracts then increase the credibility of transactions. In this way, values are assigned to the original information, and the system tracks them over time. It should be noted that, although new blocks can be added, it is not possible to delete the existing ones, that remain saved and tracked in the system. Blockchain technologies are thus becoming increasingly helpful to implement climate action.

In this way, thanks to this technology companies are made accountable for their CF claims through unmodifiable information reported in the Programme; consequently, it is also possible to control in a reliable way the evolution over time of the companies' GHG reduction pathways.

### **3. Results**

The communication of climate data is becoming more and more important at the market level.

Many companies are embarking decarbonization pathways, by investing into innovative technologies, materials, engineering to develop low carbon products. It is crucial for them to combine the technical advancements with a proper communication of the commitments taken and of the results obtained.

A significant interest was in fact demonstrated by the market (Whelan et al, 2019), where the choices of consumers and clients are also depending on the level of engagement and credibility of the company offering

a product. Because of this, in parallel, also the number of initiatives and labels available on the market has been quickly increasing.

This is creating a complex and rich framework, offering several possibilities and pathways to organizations willing to communicate their efforts. Within this broad availability there are also some companies that decide to go for self-declarations, that often are not related to recognized schemes, thus intensifying the confusion on these topics. The consequence is that there is a high risk of greenwashing.

The topic of voluntary disclosure of the commitments made and of the results obtained is thus becoming crucial, and so is the need of responding to these needs.

This cannot be addressed through self-declarations, but through a communication able to give guarantees to the markets and recognized by accredited third parties, namely the Programme Operators (POs). This is also indicated in the ISO 14026 on environmental labels and declarations, that provides requirements and guidelines for footprint communication Programmes.

For this number of reasons, CFI represents an important tool to guarantee that the communication of the efforts undertaken be clear, transparent, and certified. Carbon Footprint Italy also represents a credible and effective network, capable of pushing different actors, along the whole supply chain, to follow similar paths. It is, in fact, a powerful tool that involves and influences the decisions taken at different stages of the value chain.

### **3.1 Specific opportunities offered by the Italian PO**

As mentioned above, this initiative represents one of the most interesting and innovative responses to the need for reliable communication tools highlighted by the market, applying technologies with the perspective of guaranteeing transparency and credibility (Evercity, 2020).

In detail, CFI aims at working with the broad definition of carbon management, that is not a univocal concept. In fact, several pathways and strategies are available and can be selected and combined, depending on the possibilities, on the specific sector, on the level of ambition, and thus on the stage of the decarbonization pathway in which a company is.

CFI was thus structured to reflect this complexity, offering the opportunity to track the actions undertaken and the results achieved at different levels.



At the beginning, the focus was on the quantification of carbon footprint. Two labels were available:

- CFP (in accordance with ISO 14067), for products;
- CFO (in accordance with ISO 14064-1), for inventories at organization level.

The interest of the market is quickly evolving, and it was noticed that quantification is now only the first step of a broader pathway. Many organizations are now committing to reduce their CFP/CFO. Therefore, a new label was introduced, for both products and organizations: carbon reduction. This allows to keep the enhancements monitored over time, also thanks to the blockchain technology, ensuring that serious efforts have been undertaken and that the results are noticeable. Another application is to monitor the GHG inventory over time, that can be also used to value the data disclosed with other international initiatives (as the Science Based Target initiative, or SBTi), that require organizations to yearly disclose their results.

Currently, more and more companies are committing to carbon neutrality: this led CFI to introduce an additional label, namely the carbon neutrality one, to give reliable information about these commitments, that is issued when the organization decides to offset the residual GHG emissions remaining after the mitigation actions.

## **4. Discussion**

### **4.1 The leather value chain**

The leather value chain is an excellent example to understand CFI potentialities, since several companies have adhered to the programme. They often represent at the same time customers and suppliers that, interacting among themselves, affect each other's market decisions.

Within it, CFI encloses:

- **Chemical pre-processing:** companies that produce chemicals used in tanneries for the processing of leather.
- **Leather manufacturing:** companies that process hides have developed not only CFP and EPD studies, but also drafted the PCR for "Finished bovine leather", which now defines the rules to be followed for all studies in the sector.

- **Use of leather:** companies that buy processed leather and use it to produce high-quality products, by focusing on the transparency of their suppliers. Some EPDs have been published, which are based on certified products registered on CFI.

As a matter of fact, it is unequivocal how customers are more and more asking for information of Carbon Footprints. Carbon Footprint Italy represents, in this market, the common point between the actors that recognize the reliability and professionalism of the studies made to take part in the PO. By doing so, they are pushed to reach the same level of seriousness and are encouraged to take the same measures. Companies already registered on CFI, on their side, will be led to choose to work only with actors that are sensitive to the same environmental issues, avoiding those who are not pursuing a decarbonization path. There is in fact a growing interest in moving towards Carbon Neutrality, especially in the leather sector. Suppliers that can seize the opportunity will stand out from competitors and gain an advantageous position on the market.

It thus appears clear how these mechanisms are generating a virtuous cycle along the leather value chain, that benefits the totality of the actors involved and, nonetheless, our planet.

#### **4.2 An International Network**

It is important to highlight that CFI is not a single case; in fact, there are other POs active globally. An international network was created in 2018, named Carbon Footprint international (<https://carbonfootprintinternational.com>). The goal is to create a structure, allowing for closer connections between these initiatives, that can support each other facilitating and promoting the exchange of knowledge, lessons learnt, achievements and ideas. On top of this, as mentioned, it is crucial to ensure recognition between initiatives. In fact, many multinational companies work in several markets: there is the necessity to ensure that the achievements communicated in one country are recognized all over the world. The advantage is that CFI, as other POs, are based on the ISO standards, that have a global recognition. In case the rules at the base of the POs are compatible, it is possible to develop some pathways in direction of mutual recognitions. CFI is engaged in promoting MoU (Memorandum of Understanding) agreements between different initiatives. Recently, a MoU was signed between CFI and *The Climate Registry*, and other agreements are in the pipeline. The goal is to move towards a consistent structure, where a mark will be fully recognized in the associated markets. Therefore, for example, the dedicated page of a product can be assessed and is fully recognized in the other markets.

This is also encouraged by the presence of multilateral agreements (MLA) between different accreditation bodies (International Accreditation forum), that ensure an international recognition of the verification activities realized under a certain accreditation scheme in a specific country.

## **5. Concluding remarks**

The paper highlights the quick evolution that the carbon management sector is undergoing and the need for reliable and recognized tools for communicating voluntary efforts embarked by organizations. The ability to support climate claims in a credible way – by using internationally recognized ISO standards – is, and will be even more in the future, a key factor for a successful transition towards decarbonization.

The Italian experience Carbon Footprint Italy, namely the national Programme Operator on carbon management, is drawing an important interest thanks to the innovative application of new technologies to the specific sector, providing a transparent and credible communication Programme. Indeed, it only accepts for registration accredited verified claims. It is an easy-to-use tool, providing unambiguous and unmodifiable information to the public.

It is also important to ensure collaboration and trust along the whole value chain to achieve a real sector transformation, involving and aligning all the interested parties. Transparent communication fosters cooperation along the value chain and boosts market mechanisms based on virtuous actions. It can also provide guidance to organizations undertaking the challenge of decarbonization. Within the leather sector, there is a growing demand for transparency coming from customers, and using carbon footprint labels is one of the most effective ways to address this need.

In parallel, it appears crucial to move towards an international recognition of the existing initiatives. Carbon Footprint International represents the first network at the global level that gathers carbon footprint Programme Operators, fostering the exchange of good practices and experiences. The review shows how this experience is effectively moving the context towards this direction, improving the coordination and the recognition of initiatives.

## References

Carbon Footprint International, *The International Network for Carbon Footprint Communication Programmes*. <https://carbonfootprintinternational.com>

EP 2003, DIRECTIVE 2003/87/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, European Parliament, Bruxelles

Evercity 2020, Carbon Footprint Italy and Evercity launched the first blockchain-based solution to store carbon footprint data, available at: <https://evercity.medium.com/carbon-footprint-italy-and-evercity-launched-the-first-blockchain-based-solution-to-store-carbon-bd8d8fe7b205>

ISO 2000, ISO 14020:2000 Environmental labels and declarations — General principles, International Organization for Standardisation (ISO), Geneva

ISO 2006, ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures, International Organization for Standardisation (ISO), Geneva

ISO 2017, ISO 14026:2018 Environmental labels and declarations — Principles, requirements and guidelines for communication of footprint information, International Organization for Standardisation (ISO), Geneva

ISO 2017, ISO/TS 14027:2017 Environmental labels and declarations — Development of product category rules, International Organization for Standardisation (ISO), Geneva

ISO 2018, ISO 14064-1 Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals, International Organization for Standardisation (ISO), Geneva

ISO 2019, ISO 14064-3:2019, ISO Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements, International Organization for Standardisation (ISO), Geneva

ISO 2018, ISO 14067:2018, Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification, International Organization for Standardisation (ISO), Geneva

ISO 2020, ISO 14065:2020 General principles and requirements for bodies validating and verifying environmental information, International Organization for Standardisation (ISO), Ginevra

BSI 2010, PAS 2060 Specification for the demonstration of carbon neutrality, British Standards Institution (BSI), London

UNI 2018, ISO 14044:2018 Environmental management – Life cycle assessment – Requirements and guidelines, International Organization for Standardisation (ISO), Ginevra.

UNI 2012, UNI EN 15804:2012 Sostenibilità delle costruzioni - Dichiarazioni ambientali di prodotto - Regole quadro di sviluppo per categoria di prodotto, Ente Nazionale Italiano di Unificazione (UNI), Milan

Vizzoto et al, 2021, *Are Consumers Ready for a LCA-Based Sustainability Facts Panel? Insights From an Online Experiment*, Academy of Management, available at: <https://journals.aom.org/doi/10.5465/AMBPP.2021.10555abstract>

Whelan et al, 2019, *Research: Actually, Consumers Do Buy Sustainable Products*, Harvard Business Review, available at: <https://hbr.org/2019/06/research-actually-consumers-do-buy-sustainable-products>