

FTTH Council Carbon footprint project: a reporting model for the entire sector

Helping ensure FTTH sector companies
and supporting organisations can meet
CSRD carbon reporting requirements

About the FTTH Council Europe

The FTTH Council Europe's vision is that fibre connectivity will transform and enhance the way we live, do business, and interact, connecting everyone and everything, everywhere. Fibre is the future-proof, climate-friendly infrastructure which enables an unparalleled fixed and wireless experience as well as new innovative digital technologies and services, empowering a leading Digital Society in Europe. This is a prerequisite for safeguarding Europe's global competitiveness while playing a leading global role in sustainability. The FTTH Council Europe consists of more than 160 member companies.

About the FTTH Council Europe sustainability committee

The European Commission's European Green Deal has the ambition of making Europe the first climate-neutral continent by 2050, boosting the economy, improving people's health and quality of life, caring for nature, and leaving no one behind. Digitalisation will be at the core of this ambitious program and fibre is key to align the digital and sustainability agendas. As the most sustainable telecommunication infrastructure technology, full-fibre is a prerequisite to achieving the European Green Deal and making the European Union's economy more sustainable.

The need to work collectively towards a more sustainable society has become a strategic objective of policy makers and the vast majority of private organisations alike. With this context in mind, the sustainability committee of the FTTH Council Europe has been created with two key objectives:

1. Promote full fibre as the most sustainable access network technology and enabler of multiple applications which can contribute to reducing the carbon footprint of our activities. Remote working and learning being the most obvious examples.
2. Support all stakeholders of the Fibre to the Home value chain in their efforts to make their respective activities more carbon neutral.

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Management Summary

Meeting increased transparency and reporting requirements: are you ready?

Like many other industries, the FTTH sector is subject to a range of regulatory and market forces. From 2025, the Corporate Sustainability Reporting Directive (CSRD) will require large companies to report much more specifically on their impact on people and the environment. From 2027, this new EU directive will also apply to numerous smaller companies, often suppliers to large parties. This brings challenges. FTTH providers need to disclose information related to environmental impact, such as carbon footprint, raw material sourcing, waste management, and energy consumption.

Carbon assessment is currently becoming mandatory for organisations of varying sizes. However, it can be complex to organise and process. The FTTH Council Carbon footprint project aims to ensure companies can use the same standardised methodology and enhance the quality of sustainability information available to investors and partners throughout the chain, as demanded by legislation and guidelines such as the CSRD. This approach also makes it possible to communicate on the decarbonisation of the entire FTTH sector and create synergies around greenhouse gas (GHG) emission mitigation. The more companies take part, the greater the accuracy of reporting and the easier it becomes to identify improvement opportunities and levers for individual companies and the sector.

The focus is on “scope 3” of a company's carbon footprint: this refers to all indirect emissions that occur in a company's value chain, excluding those from scope 1 and scope 2 sources. Given the wide range of activities covered by scope 3 emissions, accurately measuring them can be challenging. However, addressing scope 3 emissions provides significant opportunities for reducing overall carbon footprint and building more sustainable and resilient supply chains.

Introduction

The Corporate Sustainability Reporting Directive (CSRD) requires companies to report on the environmental and societal impact of corporate activities. Furthermore, it requires reported information to be audited. Sector-specific sustainability reporting in accordance with the standards is proposed to be adopted by June 2026. The CSRD provides separate agendas for large as well as for small and medium companies.

The GHG protocol

More than 9 out of 10 Fortune 500 companies use the GHG Protocol for CDP* reporting. The Science Based Target Initiative (SBTi) which aims to host company decarbonation is using the same standards to assess the progress. The methodology is not complicated but does require dedicated training. Furthermore, organising the collection of data is complex. Although smaller organisations that supply to larger organisations should be able to provide the required data, they often don't have the resources required to organise this in-house. It encompasses emissions from the activities of the company itself as well as other companies that supply it with goods and services, as well as the use of its products and services by others.

The GHG Protocol categorises carbon emissions into three 'scopes'.

- Scope 1 covers direct emissions from owned or controlled sources.
- Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling
- Scope 3 includes all other indirect emissions that occur in a company's value chain

Scope 3, the most complex and often the largest share of a company's carbon footprint, refers to:

- Upstream (related to what the company purchases)
- Downstream (related to how the customers use or dispose of the products, until the end of life)



* Carbon Disclosure Project

Upstream Activities

- Purchased goods and services
- Capital goods
- Fuel- and energy-related activities (not included in scope 1 or 2)
- Upstream transportation and distribution
- Waste generated in operations
- Business travel
- Employee commuting
- Upstream leased assets

Downstream Activities

- Downstream transportation and distribution
- Processing of sold products
- Use of sold products
- End-of-life treatment of sold products
- Downstream leased assets
- Franchises
- Investments

Examples of Scope 3 emissions

- Emissions from the extraction and production of purchased materials and fuels
- Transportation of purchased fuels
- Emissions from product use on client's side
- Emissions from the disposal of products
- Employee travel and commuting
- Outsourced activities
- Waste disposal

The importance of a sector-wide approach and accurate approximations

New European standards, which will become mandatory for all large companies, not only require measurement and reporting, but also require an independent auditor to validate the figures. Supply chain reporting must be detailed and consumption across the supply chain must be examined.

As part of this, calculating scope 1,2, and 3 is becoming mandatory. That means companies need to provide environmental data to their customers, who can integrate this into their scope 3 emissions reporting. Furthermore, addressing scope 3 emissions can often lead to significant opportunities for reducing a company's overall carbon footprint, promoting sustainable practices across its supply chain, and may also lead to innovation and improved collaboration with suppliers and customers.

Scope 3 often represents the largest portion of a company's total carbon footprint, Comment: Even with manufacturing activities, scope 3 remains the main part. Measuring scope 3 emissions can be quite challenging due to the lack of direct control over relevant activities and the need to gather data from multiple sources, often outside a company's direct influence.

Because CSRD reporting will soon be mandatory, it is essential that companies and the sector act fast. Accurate, timely and fact-based approximation will be an important accelerator. In most cases, organisations in a value chain are buying and selling to other organisations in the same value chain. Therefore, to calculate SCOPes, each organisation needs to:

- Obtain data from other organisations within the value chain or use external recognised data.
- Provide data to other organisations within the value chain.

This needs to be done instantly and accurately. Only a sector-wide approach can make this happen.

Environmental Product Declaration (EPD)

Eventually, to provide data to other organisations, the EPD methodology is to be used. However, this requires more time than the FTTH sector can afford.

The GHG protocol and the Life Cycle Assessment (LCA) methodology (which is used to build an EPD) both provide carbon emissions that consider the entire lifecycle (from material extraction to end of life). Scope 1, 2 and 3 of the GHG Protocol is more expansive than EPD. However, it is not all that different if we consider it as a calculation at company level, including all products, while EPD is carried out at the product level. Assuming a certain homogeneity in the manufactured products or services for a given organisation, emissions from the GHG Protocol – albeit related to a single product - can be considered as an alternative to LCA to provide an accurate first approximation.

Any organisation can calculate the environmental footprint of their products using an EPD methodology. However, implementing EPD methodology takes long, can be expensive when sub-contracted, and is not mandatory. As a result, it will take quite some time until all offerings are accompanied by an EPD.

The International Organization for Standardization (ISO) 14025 defines an EPD as a Type III declaration that "quantifies environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function." The EPD methodology is based on the Life Cycle Assessment (LCA) tool. This in turn follows ISO series 14040.

Why a sector-wide approach?

Sector-wide carbon reporting is crucial for developing strategies to reduce carbon emissions, contributing to global efforts to combat climate change. Carbon reporting can lead to more sustainable business practices. By understanding where and how emissions are generated, FTTH manufacturers, operators, and other stakeholders can optimise processes, use resources more efficiently, and potentially reduce operational costs. Reporting also helps FTTH companies ensure they are compliant with these regulations, thereby avoiding potential fines and penalties.

With accurate sector-wide carbon reporting, companies can make more informed decisions about their operations, supply chain management, and future investments, all of which can contribute to reduced carbon footprints. Sector-wide carbon reporting also allows for the benchmarking of performance against industry standards and peers.

How the FTTH Council Europe can facilitate sector-wide carbon assessment

The FTTH Council Europe currently has 160 members across the value chain representing a wide range of activities from different stages in FTTx development, rollout, and operations. Members are mostly organisations deploying FTTH, and manufacturers of FTTH solutions, as well as several academic institutions and sectors such as media and eHealth. The FTTH Council has also created a dedicated Sustainability Committee which consists of experts from member companies, shares information, publishes articles, and more.

The FTTH Council Global Alliance, consisting of FTTH Council Europe, FTTH Council Africa, FTTH Council Americas, FTTH Council Americas LATAM Chapter, FTTH Council Asia Pacific and FTTH Council Middle East and North Africa, can compare situations in various countries. The annual Global FTTH Ranking classifies countries according to the penetration of their households with FTTH/B.

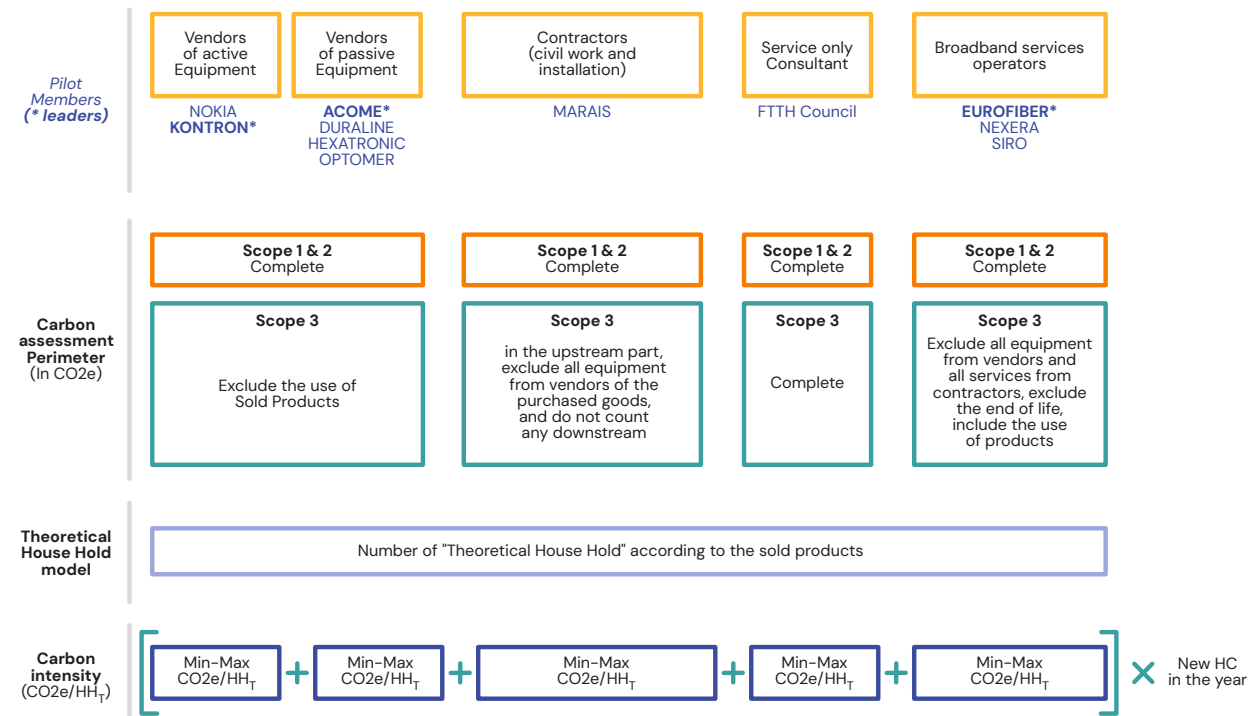
Not only do we have access to significant expertise from companies throughout the value chain, but we also have a deep understanding of every step in a variety of FTTx processes. We have developed platforms and tools that allow members to access and share information. This places us in a unique position to align and support the entire sector when it comes to reporting on carbon. When determining an acceleration methodology for carbon assessment, who better than industry peers to find solutions? After all, these people can find smartest approaches and prevent problems based on relevant, up-to-date know-how and experiences?

FTTH Council Carbon Footprint (FCCF) Project

Delivering a sector carbon database & a sector emission model

The FTTH Council Carbon Footprint (FCCF) Project is a pilot initiative launched in February 2023, together with 11 representative members representing the Fibre value chain. The participants consist of mature members as well as members at various stages of carbon assessment expertise. The group is supported by external experts and specialised tools.

Fibre sector observatory principles & extrapolation



The pilot intends to validate:

- whether the FTTH Council could help organisations to build their scope 1,2,3
- whether a consensus on a sector data format could be found so that organisations would agree to share
- whether this would allow to build a sector database
- whether a carbon sector model could be built on top

For a sector organisation such as the FTTH Council, this would make it possible to:

- communicate on the decarbonisation of the fibre sector
- onboard more companies to make their carbon assessment and identify their main levers
- create synergies and dynamics around GHG emission mitigation in the FTTH sector
- estimate the carbon footprint of the organisation itself
- emulate and follow the sector progress
- offer the biggest European group of sustainability experts dedicated to the fibre sector
- allow peers to share practices, ideas and create sustainability synergies
- support and accelerate the European green deal through a sector initiative

Members can obtain an initial estimate of the main emission categories prior to their first formal carbon assessment. They also have access to complementary data that helps them achieve a fast, realistic carbon assessment or contribute to complete an existing assessment. The collective approach with peers also means all members can develop and optimise methodologies and learn faster.

For an initial estimate, transparency and honesty are key. All assumptions for data collection and choice of emission factor should be recorded. Including information on how data were obtained and consolidated is valuable for updating. What is particularly important is to set an accuracy level for each data, leading to a global accuracy level.

The 80/20 approach to data collection on significant emissions is used to prioritise effort and resources on the most significant sources of emissions within a company's inventory. It's based on the observation that, in many cases, approximately 80% of effects come from 20% of the causes.



How the process works

For companies making their first carbon assessment, the process is based on a collective approach, consisting of four separate sessions of three hours each, plus individual support.

We have chosen a powerful cloud-based tool which converts physical flow into CO₂ equivalent, relying on public databases and taking into consideration the country of origin where activities take place. Information remains confidential. Over the course of just four months, all members have carried out a first carbon assessment for their Organisation.

The approach brings several huge benefits:

- Accurate figures can be shared with reporting bodies, peers, and value chain partners.
- Commercial data remains confidential.

Examples of usable public data and sources

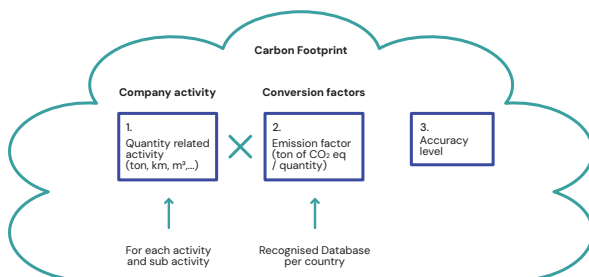
- Energy and fuel bills
- Employee travel information (especially air travel, e.g. travel agency or expense reports).
- Travel information (e.g., mobility survey)
- Information on the transport of goods (if goods)
- Surface area of buildings and car parks
- Main purchases/inputs/consumption of raw materials significant in volume or quantity
- Information on waste

Examples of usable sector data

- OLT/ONT
- Optical Cables
- Ducts
- Etc.

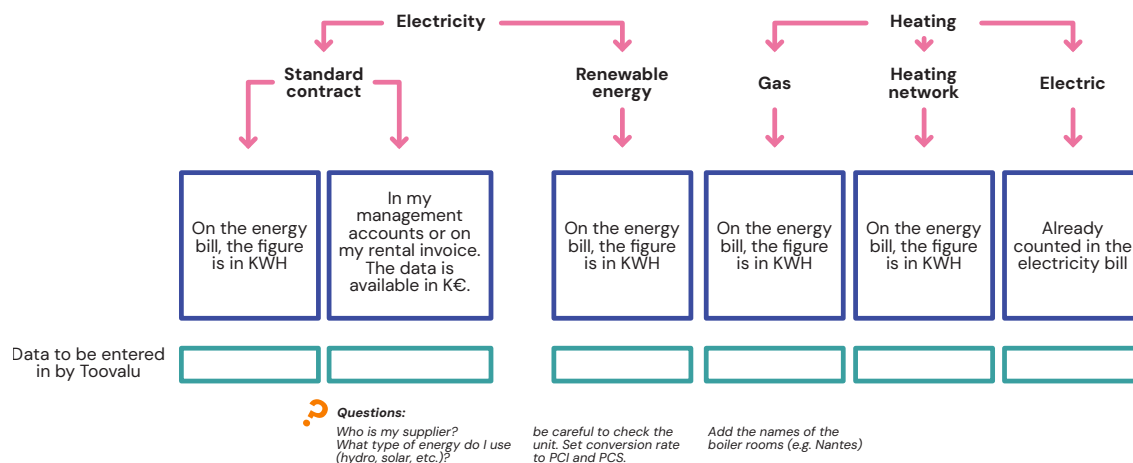
The conversion methodology

All of a company's activity flows are translated into physical metrics. This data is not always readily available. Automating collection of this data can be challenging. The frame of the study introduces another challenge. Companies can deliver to other markets in addition to FTTH and other geographies besides Europe. Production sites are usually organised by means rather than by market. Therefore, distribution key needs to be discussed and agreed internally. Once available, such data is converted into CO₂ equivalent through proven conversion factors.



Depending on the company's activity, a list of relevant data covering all its GHG emissions is defined. And each activity data is then converted to kgCO₂e using emission factors drawn from public databases (e.g. : ADEME carbon base in France or DEFRA database in UK). The result is eventually expressed in CO₂e (CO₂ equivalent), categorised per scope, emission categories and different greenhouse gases.

Example: What data should be collected in the tool?



Source: Toovalu

Carbon Intensity metrics

Carbon emissions are now being assessed according to the GHG protocol, and each organisation can start its journey to greater carbon sobriety. Of course, a large company will emit more than a small company, even if they are both manufacturing the same range of products. Comparing them make no sense. Calculating a range of emission per product type could be meaningful if we look at the evolution of this range based on several players, over time. As mentioned previously, this can be achieved by dividing the carbon emissions of the entire organisation by the number of products sold, but the calculation would require sharing the volume of sold products, which is very sensitive and does not respect confidentiality legislation.

To avoid this, a model which converts volumes of sold products into what has been named "Theoretical Households" was created with the FTTH Council D&O Committee. This model was implemented in a unique FTTH Council tool and provided to members, so that they could independently enter their carbon emissions and sold product volumes. Subsequently, the tool provides a Carbon Intensity value, given in a range of kg of CO₂ eq per Household. Those Carbon intensities are then aggregated by member type and averaged, so that it becomes impossible to know the volume of sold products per company.

Another benefit of the new metric is the fact that Carbon intensity of each activity can be summed so that the total represents the total Carbon emission per household of an entire FTTH link for a given year.

The issue with this methodology is that the Scope 3 of different companies overlaps to a considerable extent and is then counted multiple times. This would lead to significant over-assessment. To avoid this, the Carbon Intensity tool defines which part of the Scope 3 shall be included and excluded for each type of members, so that overlap is reduced to almost zero.

As an example, it had been decided that the emissions related to the use of OLT and ONT shall not be provided by the manufacturers, but by the ISP. The ISP has indeed a direct influence by selecting the equipments and an indirect influence by educating end users (helping them to decrease the electricity consumption of their setup box).

In this way companies can provide the following information without giving away certain critical details:

- Companies that don't mind communicating CO₂ equivalent figures per product can share this as soon as those figures are aggregated and averaged
- Alternatively, companies can share CO₂ equivalent per Theoretical HouseHold, which is referred to as 'Carbon Intensity'. This information can't be linked back to the business. This data can be made 'public' within the FTTH Council.
- A range (minimum, maximum) of Theoretical HouseHold Connected per actor activity has then been determined by FTTH council experts.



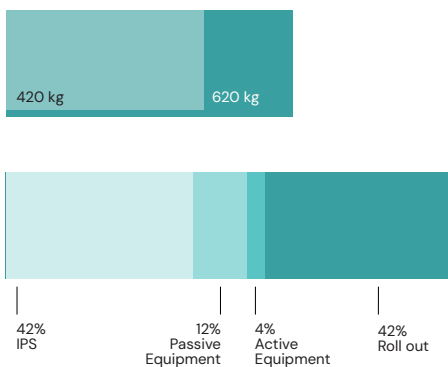
Outcomes

Although the number of participating members was limited, we were still able to achieve the following sector outcomes:

Building a single FTTH Connection and operating it, emits between 420 to 620 kg CO₂eq per Household.

42% is emitted by the IPS, 12% is emitted by the passive equipment, 4% is emitted by the active equipment and 42% is emitted by the roll out itself

Distribution of CO₂eq emissions



Limits of the model

The main and significant GHG emission categories have been considered only once over the value chain, to prevent double counting. Nevertheless, some double counting may inadvertently occur in limited areas.

Carrying out a carbon footprint via the GHG protocol is generally neither exhaustive nor very precise the first time, especially on Scope 3 and getting it right requires several years of maturity. The theoretical Home connected approach also leads to an accuracy level by a factor of 2-3.

So far, no data from contractors has been introduced, which means figures related to this aspect are 100% based on extrapolation. Also, the relatively small number of members results in a higher standard deviation – as more members join and data volumes increase, this will become much more precise. However, consequently, to date the observatory has been made with orders of magnitude.

Conclusion

The pilot project demonstrated that it was truly efficient to work collectively to build a confidential company carbon assessment, and that this could be achieved within few months.

A group of experts found ways of sharing figures without disclosing confidential materials. This accelerates the carbon assessment of other companies within the sector.

Despite some limitations (relatively small number of participating members, error from the assessment or from the model), it was possible to extrapolate FTTH sector emissions, providing order of magnitude.

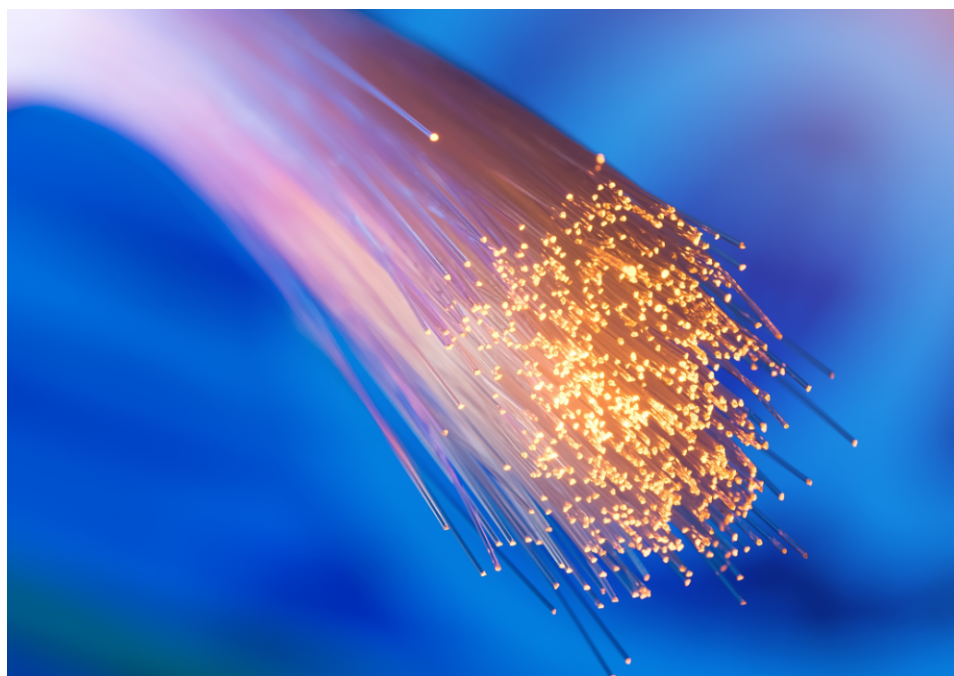
The next step: embracing the entire sector

The model is currently based on input from 11 members and will require more members to become more accurate. The more members participate and assess their organisation's carbon footprint, the more precise the model will become, and the greater the benefit for all involved. The FTTH Council is now working to convert this pilot into a real program, enabling all FTTH Council members as well as external organisations to participate.

This FTTH sector approach is fully in line with the ITU initiative named "Green Digital Action» at COP28. For this, the FTTH Council co-led one the pillars dedicated to ICT Sector GHG emissions. In a Call to Action, companies are encouraged to contribute to an ICT sector database.

The COP28 Green Digital Action Track calls for the following:

1. Companies commit to setting (or have already set) 1.5 degree aligned science-based targets, and also create and publish transition plans outlining how decarbonisation trajectories and net-zero targets will be achieved.
2. Companies commit to publicly report data on all GHG emission scopes and categories yearly, and submit results to a public (ITU) database.
3. Companies express interest in contributing to an ICT sector database creation, on the emission factors of products and services.



Find out more

Scope 3 Calculation guidance

https://ghgprotocol.org/sites/default/files/2023-03/Scope3_Calculation_Guidance_0%5B1%5D.pdf

Corporate Value chain (Scope 3) Accounting and reporting standard

<https://ghgprotocol.org/corporate-value-chain-scope-3-standard>

GHG Protocol website

<https://ghgprotocol.org/>

Project Management

The FTTH Council Europe promotes a sustainable future through ubiquitous fully fibre-based connectivity in Europe. This initiative was managed by the Sustainability Committee, chaired since June 2023, by Jeroen Kanselaar, ESG manager at Eurofiber. The Committee initiated the development of two Product Category Rules (PCRs), for active and passive fibre optic products, with which manufacturers can prepare a Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD). Jeroen has held the position of Chair Sustainability Committee of the FTTH Council since June 2023. In this role, he is also involved in the calls of actions of the Green Digital Action Program at COP28.

This initiative was also led by Xavier Renard, director of the Board, relying on his personal experience at Schneider-Electric and ACOME's expertise in carrying out Product Life Cycle Assessment since 2006. ACOME was a founding member of PEP ecopassport® association. This was launched in 2009 and is currently an internationally recognised EPD with 500 EPDs available online.

The Toovalu Impact tool, an innovative software solution developed since 2012, was selected to help the organisations evaluate their CO₂ emissions, and subsequently define and pilot their climate strategy in accordance with to the 2°C goal.