RIVERSE

Methodological framework – Avoidance of greenhouse gas emissions

Revision 3 – May 2022

1. General presentation

a. Introduction to the methodological framework

The different methodologies that exist to frame the certification of greenhouse gas (GHG) emission reduction solutions have a very important common thread. Emission reductions can be quantified in a uniform way by analyzing the different phases of a process. The 5 fields of analysis are defined by the ISO 14040-44 standard, which governs the rules of Life Cycle Assessment: Extraction, Manufacturing, Transport, Use and End of Life. The inputs to be taken into account are raw materials and energy, and the outputs, i.e. all emissions of substances into the water, air and soil. In addition, the ongoing work on carbon accounting for companies and their processes, an ISO 14068 project, will advance maturity on these subjects, working towards the transversality of measurement systems.

With this in mind, Riverse has developed this methodology to allow any GHG emission reduction solution to be eligible for certification and to be financed by voluntary carbon credits issued by Riverse, *Carbon Contribution Credits (CCC)*. Through our Eligibility Criteria, Riverse ensures that the project has no negative externalities, and that all funded projects are consistent with the sustainable world we are all working to build.

Companies using this methodology or purchasing CACs should follow the GHG Protocol recommendations for assessing their emissions presented in the documents: GHG Protocol Corporate Standard, and the Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Other emission reduction strategy formalisms will be accepted such as Bilan Carbone© or SBTi.

Riverse also operates with simplicity, efficiency and understanding in mind. The methodology and the certification and verification processes are designed to be rigorous but simple to understand and use, both for the low-carbon solutions and for the emitting companies and the ecosystem - customers, employees, investors - that they wish to engage through participatory actions and transparent communication.

With these criteria, Riverse guarantees the reliability of our carbon credits and their impact by :

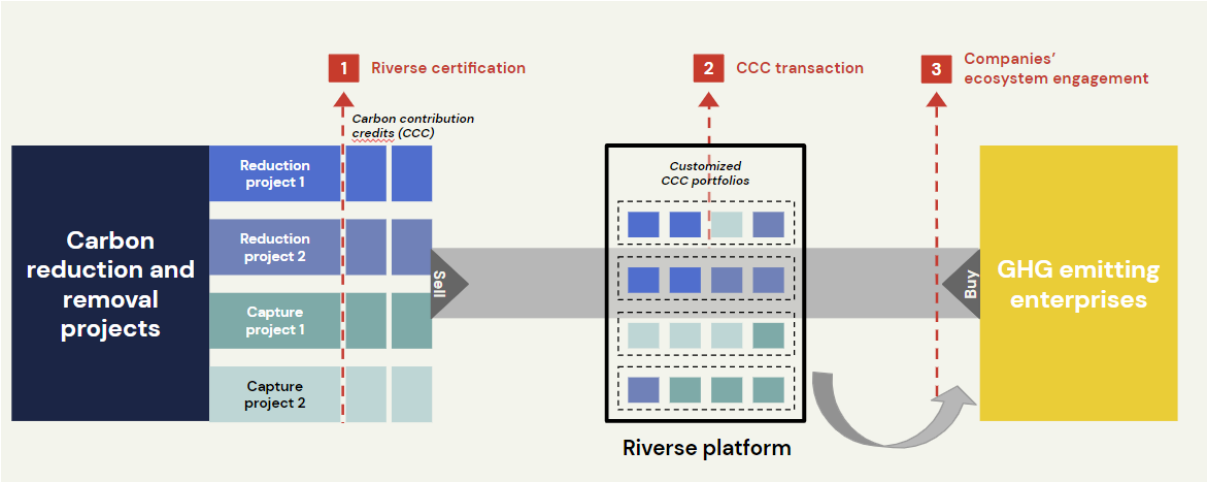
- The ability to certify any low-carbon, viable and positive-impact solution, to enable them to accelerate their deployment, and thus meet the urgent challenges
- The distinction between capture, emission reductions without opposing them
- Long term vision but a guarantee of short term impact
- Exceeding international reduction targets
- Scalability of the supported solutions

Finally, all the rules of additionality, permanence, uniqueness and verification by independent and competent third parties of the Carbon Contribution Credits issued by Riverse meet the requirements of ICROA[2], and are therefore consistent with the quality levels of the best existing standards for carbon credits.

b. Summary diagram of Riverse's role

Riverse wants to bring together all the necessary actors to make an impactful contribution:

1. Riverse selects projects that are relevant to the avoidance (reduction or capture) of GHG emissions and allows them to certify *Carbon Contribution Credits* (CCC), which will allow them to finance their deployment.
2. Riverse manages the transaction of CCCs by issuing companies that select a relevant portfolio of projects to be financed.
3. Riverse enables companies to intelligently engage their ecosystem around their fundraising efforts.



c. Governance

Riverse offers a solution to facilitate the financing of our society's low-carbon transition to comply with the Paris Agreements. The Paris Agreements have been translated in the European Union by the "Fit for 55" plan for 2030 (target of 55% emission reduction compared to 1990 levels) and by the *Science Based Targets* organization at the level of each sector in order to achieve carbon neutrality in Europe by 2050. Riverse is drafting this methodological framework for reduction solutions in line with the above-mentioned target references and in coordination with all the stakeholders involved: low-carbon solutions, emitting companies, green transition consultancies and experts in carbon credit mechanisms.

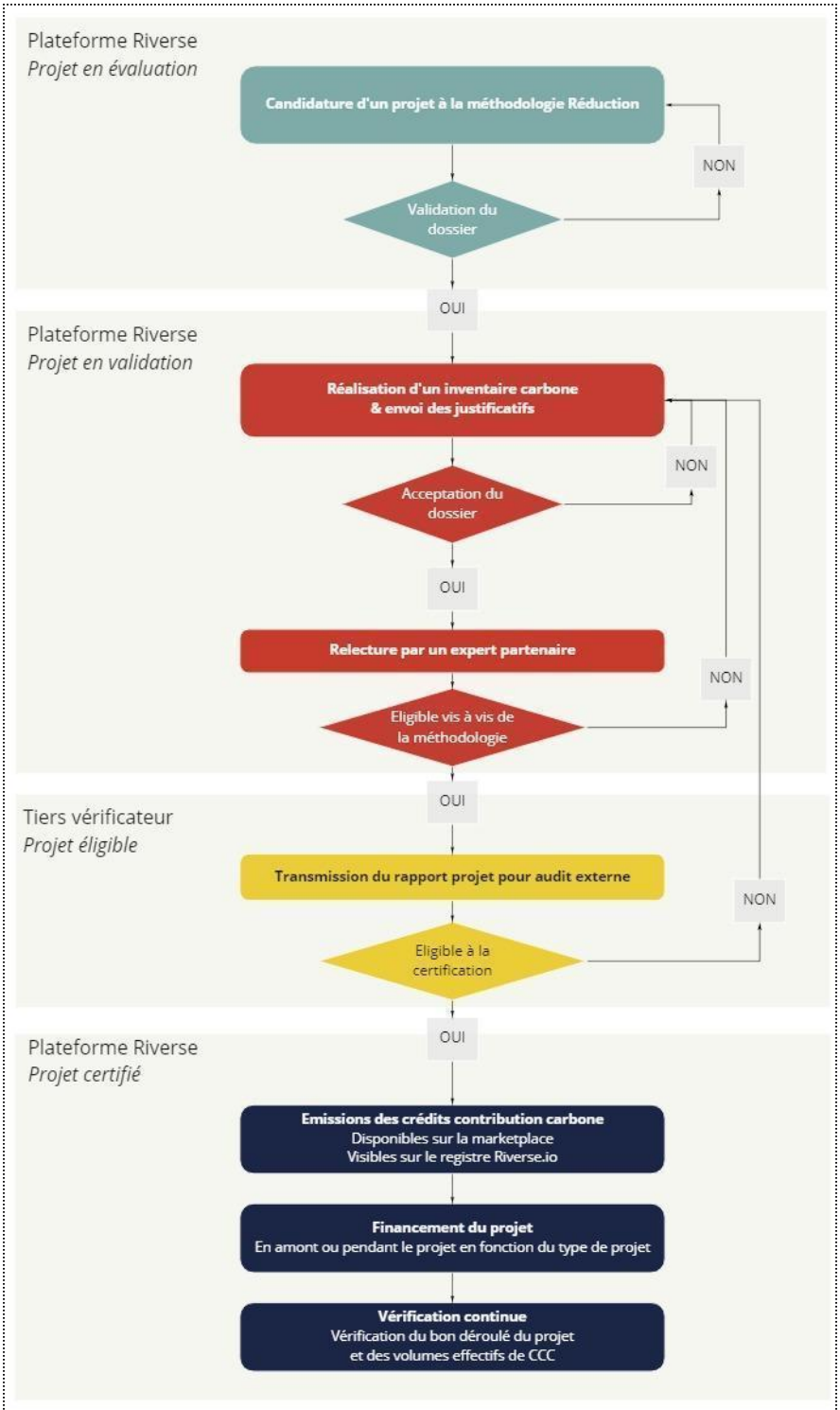
Regarding the scientific relevance of our eligibility criteria, we have built them with our group of sector experts (PhD students, engineers, teacher-researchers) to ensure the right balance between the requirement for low-carbon solutions to ensure that they are part of a sustainable world, and the applicability of this methodological framework. These same experts are working with us to build thematic sheets by sector to facilitate the application of this methodological framework to relevant reduction solutions.

To ensure the impartiality and quality of *Carbon Credits*, when a project applies the Riverse methodology as part of its financing, its application will be validated by an independent and competent third party, as recommended by international carbon credit standards, including ICROA.

The valuation of *Carbon Contribution Credits issued* within the framework of this methodology will have to be done in compliance with the recommendations of the Net-Zero Standard SBTi, pending a broader international agreement, i.e. **by keeping a separate accounting of the carbon accounting of the company's activities**.

Riverse actively follows the discussions of state and private actors around carbon impact and carbon neutrality, and takes the liberty of evolving this methodology according to the evolving scientific consensus.

d. Procedure for the appraisal of a project



e. Scope of the methodological framework

The scope of the method covers the GHG emission items of a process or product, called project scenario, compared to a scenario without the project, called baseline scenario, for these 5 stages: Extraction, Manufacturing, Transport, Use, End of life.

The GHGs studied are the 6 monitored by the IPCC[4]: carbon dioxide (CO2), methane (CH4), nitrogen dioxide (NO2), and to a lesser extent, except in some specific cases (notably the case of refrigerant gases), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF6). Water vapour and ozone are voluntarily not monitored, according to the IPCC recommendations.

- Extraction: emissions related to the extraction of raw materials used
- Manufacturing: emissions related to the transformation of raw materials into processed products
- Transport: emissions related to the transport of materials and products
- Use: emissions related to the use of products generated during their life
- End of life: emissions related to the end of life of the products generated

Note: When calculating the emissions, some steps may be considered as equivalent between the baseline and the project scenarios, and therefore not taken into account in the comparative analysis. In this case, it will be necessary to prove the similarities between the two scenarios (see §3.b).

1.Eligibility Criteria

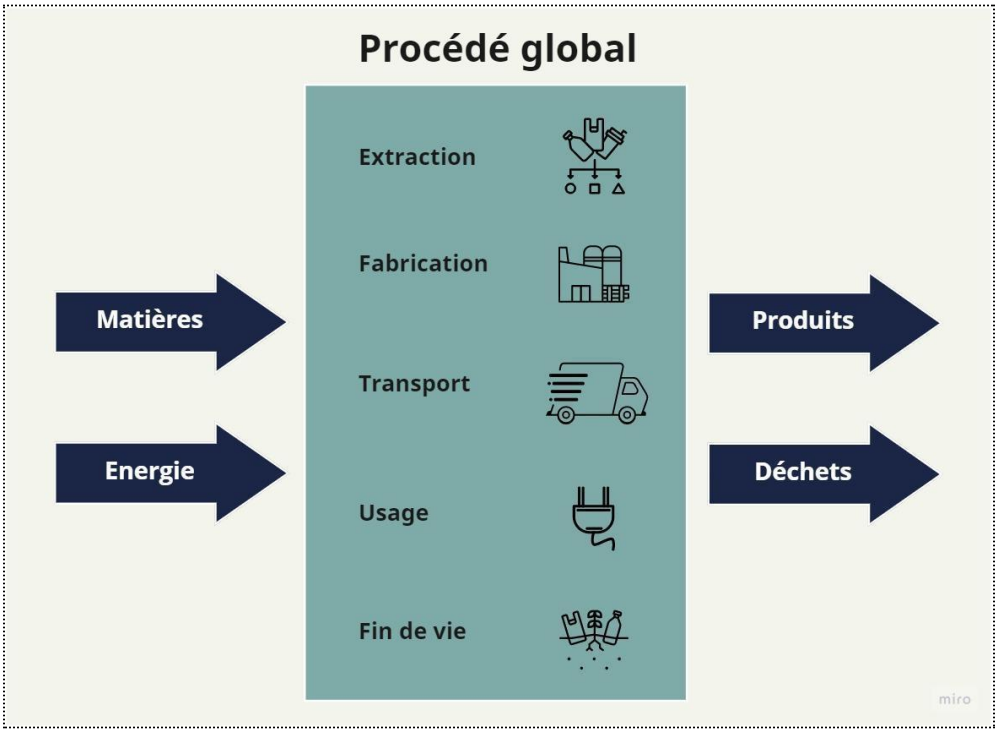
a. Introduction to eligibility criteria

In order to be eligible for this methodology, the project must meet general criteria to ensure that the overall process Riverse is helping to deploy is compatible with the challenges of a low-carbon society.

Thus, Riverse ensures that the project complies with :

- standard criteria for carbon credits
- quantitative environmental criteria
- qualitative environmental criteria

Finally, the auditing of GHG reduction project criteria is done at each stage of the project process, and on the process as a whole.



b. Sectors and fields of application

This methodology applies only to projects that achieve substantial reductions in critical sectors, including

- Energy sector
- Transportation sector
- Construction and building
- Raw materials industry and waste treatment
- Agriculture
- Electronics industry
- Health

This methodology also applies to projects or technologies that capture greenhouse gases over a short period of time (less than 50 years).

c. Additionality of the financial valuation (C1)

C1 – CCCs must fund the emergence of solutions and substitution of carbon products that would not have been possible without this funding.

A project is therefore considered additional if it cannot be implemented without the carbon contribution mechanism. Additionality is a key criterion to ensure that the **financing provided has a real impact on the fight against climate change**.

To be eligible, the project must therefore prove its **financial additionality**, by demonstrating 1 of the 4 points below:
The project must demonstrate that it does not have sufficient profitability conditions to be developed in the following manner:

i. Justify a price difference between the baseline and the project scenario that prevents or significantly delays its deployment
ii. Justify administrative or technological constraints that could be overcome by additional funding

The project must justify that additional funding would increase the impact of the solution in the short term:

iii. Prove that the current funding of the project does not allow for its wider deployment

iv. Demonstrate that the project's current funding reduces or limits its potential impact

d. Co-benefits (C2)

C2 - All Riverse certified projects must have a positive systemic impact to ensure that they are part of a sustainable world by having two quantifiable and verifiable co-benefits.

Thus, in order to be consistent with the United Nations Sustainable Development Goals and the axes of the European Taxonomy, we ask the project to **prove at least 2 co-benefits and not to harm any of them.**

Riverse will use the following list of possible co-benefits during certification (see details in the Appendix):

- Preservation of resources,
- Pollution prevention and abatement,
- Socio-economic benefits,
- Protection and restoration of biodiversity and ecosystems,
- Increasing societal resilience

For reasons of sharing an international frame of reference, the co-benefits will be categorized according to the Sustainable Development Goals:

- 1 - No poverty
- n°2 - Zero Hunger
- 3 - Good health and well-being
- 4 - Quality Education
- 5 - Gender Equality
- n°6 - Clean water and sanitation
- 7 - Clean and affordable energy
- 8 - Decent Work and Economic Growth
- n°9 - Industry, innovation and infrastructure
- n°10 - Reduced Inequality
- n°11 - Sustainable Cities and Communities
- n°12 - Responsible consumption and production
- n°13 - Fight against climate change
- n°14 - Aquatic life
- n°15 - Life on earth
- n°16 - Peace, justice and effective institutions

Any quantification of these benefits, such as a full Life Cycle Assessment (LCA), is an asset for a better valuation of *Carbon Credits* (CCC), but is not an obligation in the framework of this methodology.

e. Risk of non-permanence (C3)

C3 - The number of CCCs associated with the project must take into account the risk of non-permanence of avoided emissions by selecting funding consistent with the nature of the project and a rebate associated with the risk.

To ensure that the avoided emissions valued are real and to avoid the number of CCCs issued exceeding the reductions, Riverse incorporates two levels of precaution in its methodology:

- for all projects: **a 10% rebate is systematically applied to the evaluation of emissions avoidance,** the risk of project failure

  Thus, NB CCC = 0.90* NB Avoidances

- for projects whose CCCs are issued prior to their verification, the so-called "ex-ante" mechanism: **an additional 10% rebate is applied, i.e. a total rebate of 20% compared to the evaluation of emission avoidance**. This rebate allows to cover the risk that the project stops before the planned end or does not achieve the planned objectives

  Thus, NB pre-CCC = 0.80* NB Avoidances

Projects will be able to use both CCCs to obtain funding consistent with their activity:

- **Continuous project financing**: the project decides to issue only CCCs and reports actual emission reductions, month after month. The risk of non-permanence is 10%.
- **Upstream project financing**: the project decides to issue a portion of the credits in pre-CCC. The 20% rebate is then applied. The pre-CCC are issued upstream and will be verified during the life of the project. The financing obtained by this means **cannot exceed 33% of the total financial risk of the project**.

The difference between the emissions actually avoided and the emissions valued in the form of CCCs is used to fund an insurance fund set up by Riverse to compensate for the possible failure of a project despite the guarantees taken (see CCC Insurance Fund section).

Verification is carried out throughout the certified years of the project based on the criteria defined at the time of certification (see Verification chapter).

Notes:

- *This methodology only covers reduction or avoidance projects, so there is no need to guard against the release of possible captured emissions.*
- *The safety rebate is called Rs in the formulas.*

f. Quantitative environmental criteria

The quantitative environmental criteria for reduction are as follows:

- C4 - The carbon inventory of the project scenario must induce emission reductions that exceed the national reduction targets of the project sector during the life of the project, the criterion is set at 4.5%/year (i.e. 20% over 5 years)
- C5 - At each stage of the process, the consumption of non-renewable resources in the project scenario must remain less than or equal to that in the baseline scenario.
- C6 - At each stage of the process, the emissions of the project scenario shall not exceed the emissions of the baseline scenario for that stage by more than 50%.
- C7 - The process must be powered by low-carbon energy, and if fossil fuels are used, the process must demonstrate efficiency with GHG emissions reduced by at least 25% compared to the base case process.
- C8 - The transport of materials, products and waste must not result in an increase in tonne-kilometres travelled of more than 25% compared to the baseline scenario.

g. Qualitative environmental criteria

The qualitative environmental criteria for reduction are:

- C9 - The process must not significantly impair any of the following objectives:
    a. Sustainable use and protection of resources
    b. Pollution prevention and control
    c. Protection and restoration of biodiversity and ecosystems
    d. The transition to a circular economy
- C10 - The potential rebound effects of the solution are explicitly listed and an action plan is proposed to control these effects.
- C11 - If it is a technological process in industrialization phase, the process must justify a TRL (*Technology Readiness Level*) of at least 7

- C12 - The products or services generated must comply with the intended use, and must effectively allow for an **efficient substitution** with the products of the basic scenario, or with the performance presented upstream in the case of a new product.
- C13 - The main outlets for the products or services created must be made explicit, and must not be ethically or environmentally objectionable.
- C14 - The outcome of co-products and waste from the project scenario must be **manageable in a sustainable manner** under current conditions; a specific treatment plan must be provided for the use or co-production of harmful materials.

Note: Topic sheets are created by Riverse, in collaboration with industry experts, to help different solutions apply the eligibility principles to their business setting.

h. Uniqueness of Carbon Contribution Credits (C15)

C15 – Any project wishing to have its GHG emission reductions certified using this methodology must contractually commit to not using another certification body or label for the project in question.

Uniqueness refers to the unique sale of carbon credits. Ensuring the uniqueness of credits is one of the fundamental criteria for the environmental integrity of the carbon contribution.

In order to ensure transparency on our uniqueness process, all CCCs are visible on the Riverse registry, which is accessible online along with all project information and the associated CCC lifecycle.

Riverse reserves the right to verify that suppliers or customers of the project do not value the same emission reductions for voluntary carbon credits.

3. Carbon inventory and greenhouse gas reduction estimates

Carbon inventories are based on - or reduced to - the principles of life cycle assessment, following the steps :

- definition of a functional unit and the basic scenario
- definition of system boundaries
- measurement of material and energy flows
- evaluation of their environmental impact (at least the carbon weight).

The carbon inventories performed for the baseline and project scenarios will have to follow the GHG Protocol standards or equivalent. The accepted list of carbon accounting methodologies is as follows:

- Project Protocol
- Corporate Value Chain Standard
- Bilan Carbone© (carbon footprint)
- GHG inventory (as defined in ISO 14065-1)
- Life Cycle Assessment (in the sense of standard 14040)
- EHSF (according to the NF EN 15804+A1 standard)

All measurements must be verifiable and scientifically documented, i.e.: the emission factors of inputs, products, co-products and processes must be derived from reference carbon standards (e.g. ADEME's Base Carbone [4] in France).

- the quantities (volume, mass, number) of products/materials must be justified
- In the case where a carbon standard does not exist, documented scientific research can be proposed to establish a reference measurement. This measurement will then be evaluated by our experts and validated by an external third party if necessary.

Data quality requirements

i. Quality of the sources

It seemed essential to ensure the reliability of the data by choosing the most recognized sources. The EcoInvent database was chosen because of its reputation: it is cited in most specialized publications, and the processes studied are the most numerous among the available databases.

ii. Obsolescence

In all cases, we will choose the most recent data available: current for that coming from the Project, at most 3 years old for those coming from world statistics (INSEE, World Bank...).

All data dated after the certification year - 3 years must be justified.

iii. Geographic compliance

Whenever possible, the measure should opt for data that apply to geographic areas corresponding to the assumptions and locations of operation or use.

a. Scope of the study and functional unit

A "complete" LCA in the literal sense would analyze the impacts of all global processes: it would be necessary to inventory the impacts of the production of the machines that made it possible to produce a good, and then those that made it possible to manufacture it, and so on. It is therefore necessary to agree by convention on consistent boundaries for the inventory for both scenarios.

For the study of each project, it will be necessary to define

- reference flow or functional unit (FU)
- system boundaries
- the process to be studied
- the limits of the system

The functional unit is the unit of measurement used to assess the service provided by the product or service. The baseline and the project can be compared in terms of the same number of functional units.

The carbon inventory analysis will have to define a functional unit (FU), i.e. a service rendered expressed with a reference quantity in a metric unit and/or in a time frame. The functional unit is common to both scenarios.

Example of a functional unit:

For a bulb :

- Functional unit: illuminate with a brightness of 400 lumens for 1,000 hours.

For a pen:

- Functional unit: cover a writing length of 20 km.
- Example of application here: if a pen A generates half as much impact on the environment as a pen B, but pen A has to be renewed after 10 km of writing while pen B covers a writing length of 20 km, we have to multiply the impacts of pen A by two to be able to compare them to those of pen B. The result is that the actual impacts of the two pens are equivalent.

b. Basic scenario

The baseline scenario chosen for reference will have to fulfill primary and secondary functions equivalent to those of the project scenario.

The baseline scenario through a market analysis to determine the most representative alternative(s). This analysis could combine statistics from recognized institutes such as INSEE, EuroStat or World Bank Open Data with an LCA-type analysis as described in this chapter.

The default should be chosen from the **Best Available Technologies** (BAT) [6] of the most likely reference solution.

As the projects are certified for a maximum of 5 years, the baseline scenario will be re-evaluated regularly to take into account technological developments in each sector.

c. Conditions for comparing scenarios

The products or services generated must be in conformity with the intended use, and must effectively allow for an **efficient substitution** with the products of the basic scenario, or with the performance presented upstream in the case of a new product.

A low-carbon solution can provide an innovation on all the steps or only some of them compared to the baseline scenario. In the case where the innovation covers only some of the steps, for the calculation of emissions, some steps may be considered as equivalent between the baseline and the project scenarios, and therefore not taken into account in the comparative analysis of carbon inventories. In this case, it will be necessary to prove the similarities between the two scenarios.

If the choice of the baseline scenario leads to consider a process step as equivalent, it will have to be verified that the orders of magnitude impacting the step are equivalent for this one:

- for extraction and transport: mass
- for the use : life span
- for end of life: type of materials

Example of equivalence:

- Project scenario: the project consists in the production of a product (tables for example) from industrial waste (plastic or wood directly recovered from waste collection centers)
- Basic scenario: production of the same product from new or directly extracted materials or produced from virgin fossil resources
- In the case of a table, for example, where the distribution system and usage are identical between the two scenarios, Riverse may consider that there is equivalence between transport and usage. In this case, the carbon inventories will be carried out only on the raw materials used, the manufacturing process and the end of life (processing of the table materials).

e. Cut-off criteria & assumptions

Data exclusion rules / Cut-off criteria
Environmental significance is chosen as the cut-off criterion and the exclusion rule will be defined as follows: impacts smaller than 1/10,000 are considered insignificant and are not included in the results.

Calculation assumptions
The calculation assumptions must be clearly defined and explained.

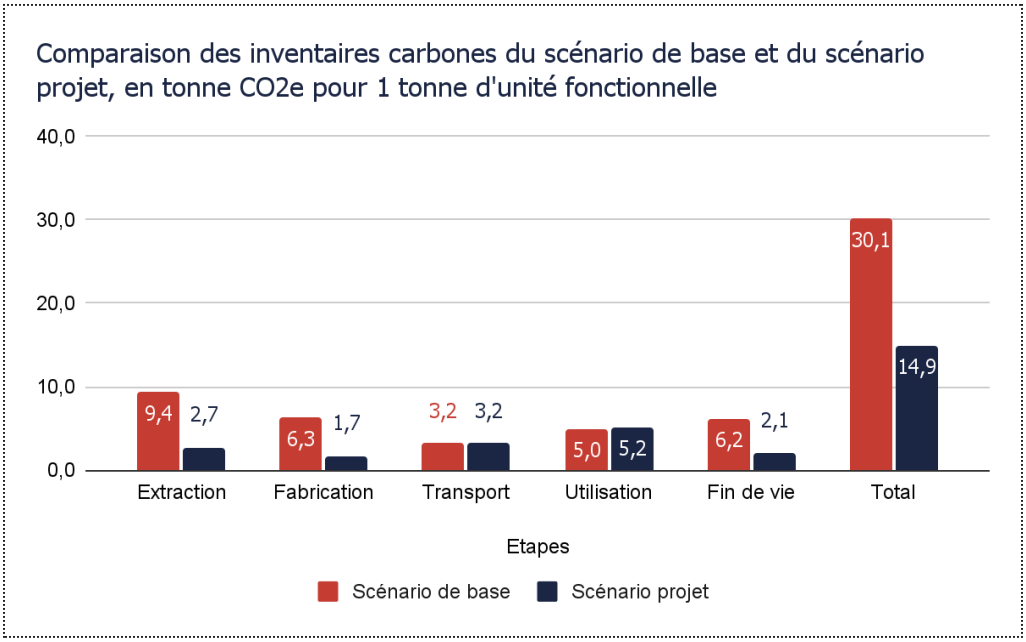
d. Summary of calculations

The baseline and project scenarios include emissions for the following 5 components:

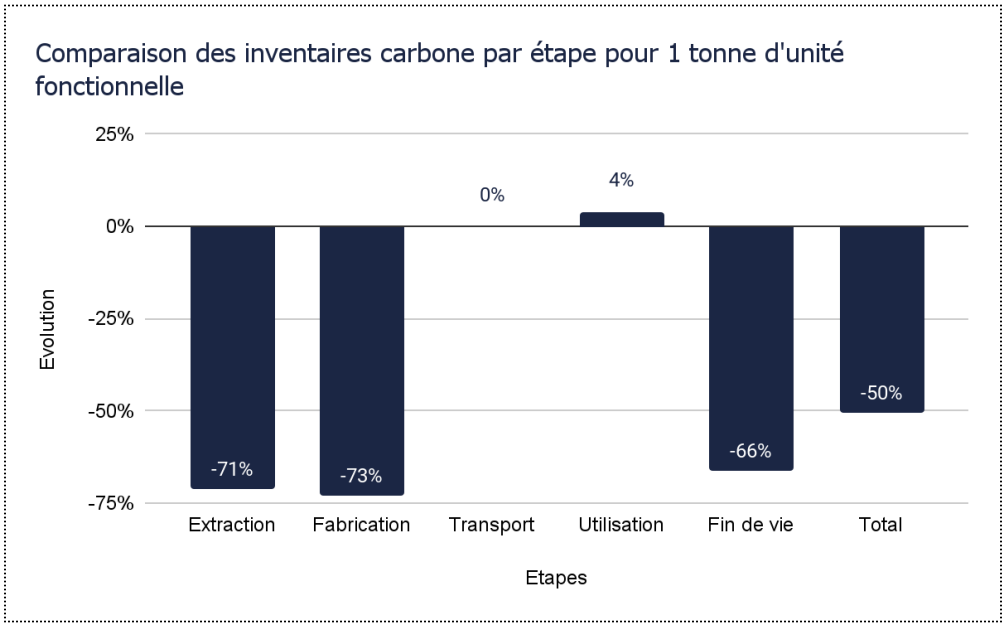
- Extraction: emissions related to the extraction of raw materials used
- Manufacturing: emissions related to the transformation of raw materials into processed products
- Transport: emissions related to the transport of materials and products
- Use: emissions related to the use of products generated during their life
- End of life: emissions related to the end of life of the products generated

The carbon inventory is used to validate the quantitative criteria C4 to C8 as well as to evaluate the volume of BCCs that will be associated with the project.

For example, here is the result of a fictitious project expressed in CO2eq per UF, powered only by low-carbon electricity, and using only waste as feedstock:



The developments per stage are therefore as follows:



This project is considered valid for the carbon inventory because it meets the following characteristics:

- C4 - The total evolution of the process induces a 50% reduction of the baseline scenario, in line with the Paris Agreement trajectories, in the project sector and country.
- C5 - The consumption of non-renewable resources in the project scenario remains lower than in the baseline scenario, with the only inputs being waste, and the energy used being low-carbon electricity in lower quantities.
- C6 - None of the steps in the project scenario induce an increase in emissions greater than 50% compared to the baseline scenario.
- C7 - GHG emissions from the use of fossil fuels are reduced by XX% in the project scenario compared to the baseline scenario
- C8 - Transportation does not increase the tonne-kilometres of the baseline scenario.

→ If the project is renewed after 5 years, these elements will be checked again, with an update of the baseline and project scenarios.

Note to auditors:

- *In cases where certain data is missing from the reference carbon standards, or where certain proofs do not allow for a sufficient level of granularity, our experts will allow themselves to set up additional safety rebates, or to not take into account certain reduction or capture fields without additional proof.*
- *If the materials are of recycled origin, the impact of these will be counted between 0% and 10% of the impact of the original material depending on the durability of the material in question, to which is added the impact of revalorization.*
- *If the process uses waste as an input (which otherwise would not be treated), it will be counted with a zero impact.*
- *For the end of life, no negative impact can be counted (in case of possible revaluation at the end of the life cycle). Even if the project provides evidence of end-of-life recovery, the benefits will be counted outside the system (of the life cycle studied) and therefore outside the scope of the carbon inventory.*
- *If allocation rules are used for co-products, the project must provide the necessary justification. Subsystem breakdown rules will be favored over mass or economic rules.*

e. Details of the formulas used

The final calculation of GHG emission reductions can be detailed as follows, with each step reviewed in the remainder of the methodology:

$$CCC_{Tot} = (E_{sB} - E_{sP}) \times (1 - R_s)$$

Where

- CCC_{Tot} : Number of total Carbon Contribution Credits
- E_s : Emissions related to a scenario (base E_{sB} or project E_{sP}) as

$$E_s = (E_{Es} + E_{Fs} + E_{Ts} + E_{Us} + E_{Vs})$$

With

- E_E : emissions related to the extraction of raw materials used
- E_F : emissions related to the transformation of raw materials into processed products
- E_T : emissions related to the transport of materials and products
- E_U : emissions related to the use of products generated during their life
- E_V : emissions related to the end of life of the products generated
- R_s : safety rebate in the face of the risks of non-permanence and possible uncertainties of certain reference carbon standards

As a reminder, if a step is not relevant to the project, proof of equivalence between the two scenarios or of the non-applicability of this step to the process will allow it to be excluded from the calculations

We detail below the 3 formulas for each step, applicable for both the base scenario and the project scenario.

Raw material emissions

Formula 1: $E_m = \sum_{materials}^{i} [Qm_i \times E_{refi}]$

Energy-related emissions

Formula 2: $E_e = \sum_{energy}^{i} [Qe_i \times E_{refi}]$

Emissions related to waste treatment and released co-products

Formula 3: $E_d = \sum_{waste}^{i} [Qt_i \times E_{refi}]$

Variables and characteristics:

- Qm_i :
  - Quantity of raw material i
  - Obtained by declarative
  - Validated by receipt
- Qe_i :
  - Amount of energy i
  - Obtained by declarative
  - Validated by receipt
- Qt_i :
  - Quantity of waste treated by treatment method i
  - Obtained by declarative
  - Validated by receipt
- E_{refi}
  - Reference emissions
  - Obtained according to the type of raw material, energy or waste treatment method
  - Validated by carbon reference standard

4. Verification

a. Definition of audit criteria

The verification criteria are defined during the certification process. They are selected from the most important parameters in measuring the impact of the project and must allow for the recalculation of the emissions actually reduced.

b. Audit process

Audit processes occur throughout the life of the project and are segmented as follows:

- Upstream verification of project eligibility
- Project certification
- Verification of actual emission reductions
- End of project or renewal

Verifications associated with these emission reductions are performed at least annually during the life of the project.

The verified information ensures that each project meets the criteria for Carbon Credits and that the actual reductions are in line with the volumes funded.

For each stage of the process, the categories studied are as follows:

- Characteristics of the project (Uniqueness)
- Standard eligibility criteria (Additionality, Permanence, Co-benefits)
- Quantitative environmental criteria (Measure)
- Qualitative environmental criteria (negative externalities)

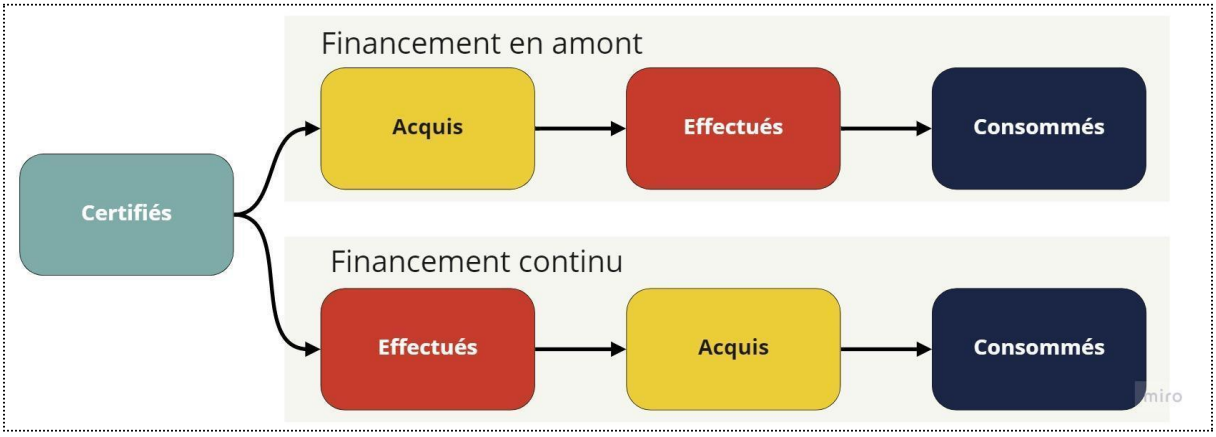
For each step of the process and each category, a summary table of all required supporting documentation is provided in Appendix (a).

c. Life cycle of a Carbon Contribution Credit

Each Carbon Contribution Credit goes through 3 phases in its life cycle:

- Certified CCCs: the project has been validated, a number of CCCs are issued but have not been acquired by a company
- CACs achieved: Emission reductions associated with CACs are achieved and verified. The company can then claim it fully
- Consumed CCC: The CCC has been claimed by the company; therefore, it is reported as consumed in Riverse's record. It can no longer be claimed.

Note: CACs may be acquired by a company as part of a project financing before or after the CACs are completed, if and only if the CACs have been certified. CACs acquired by a company must be valued according to the Net-Zero Standard SBTi. Criteria C28 and R10 of this standard state that a company may not use carbon credits in its own carbon footprint.



d. End of project or renewal

In the case of a non-renewal project, the last emissions are verified and the project is closed. In the event of actual reductions exceeding the volumes of the issued CCCs, these emission reductions are not offered for sale, but integrated into the Riverse guarantee reserve. They may be used in the event that another project fails and the actual reductions are less than the certified forecast.

In the event of a project renewal, the project owner must again provide the necessary documents for the "Project Certification" stage. An update of the basic and project scenarios, as well as uncertainty rebates, may be taken into account in order to generate a CCC volume that may be more in line with reality.

Each project has a maximum lifespan of 5 years, but projects may be renewed as long as the conditions of additionality, permanence and uniqueness remain proven, and the baseline and project scenarios are reassessed and updated accordingly.

e. CCC Insurance Fund

After verification of the emissions actually avoided by the project, the insurance fund is replenished in CCC with the amount of the rebate that was taken when the credits were issued, i.e. :

- 10% of the volume of emissions avoided if the credits are issued ex-post
- 20% of the volume of emissions avoided if the credits were issued ex-ante

The carbon credits from this insurance fund could be used to replace credits issued ex-ante and purchased that have not been verified, either due to the project's failure or because the project did not meet the objectives set at the time of certification.

Annexes

a. Audit summary tables

i. Upstream verification of project eligibility

This stage verifies that the project will meet the requirements of the Carbon Credits through a few preliminary questions. If the project passes this stage, Riverse will contact the project owner to enter the certification phase.

Presentation – Information	Verification
Entity of the project owner	Name of the entity
Location of the project	Address
Type of project	Short description
Presentation of the project	Long description
Project start date	Format dd/mm/yyyy
Uniqueness of the project	Confirmation of the uniqueness of carbon credits

Standard criteria – Information	Verification
Additionality of the project	Explanation of financial additionality
Permanence of the project	• Explanation of the permanence of the project • Method of financing
Project co-benefits	List of project co-benefits

Quantitative environmental criteria – Information	Verification

Measurement of project emission reductions	• Estimated carbon inventory per functional unit • Estimated number of functional units per year • Number of years of project life
The carbon inventory of the project scenario must induce emission reductions at least in line with the national reduction objectives of the project sector.	• Estimated carbon inventory of the project scenario • Description and justification of the choice of the base scenario
In none of the stages should the project scenario lead to a higher consumption of non-renewable resources than the baseline scenario.	• List of non-renewable resources used in the project scenario • List of non-renewable resources used in the baseline scenario • Comparison of volumes between the two scenarios if relevant (>, =, <)
At each stage of the process, the emissions of the project scenario must not exceed the emissions of the baseline scenario by more than 50%.	For each stage, estimates of the emissions of the project scenario compared to the baseline scenario (>, =, <)
The transport of materials, products and waste must not result in an increase of more than 25% in tonne-kilometres travelled compared to the baseline scenario.	• Transport estimates for the project scenario in ton.km • Base Case Transportation Estimates in Tons.km
The process must be powered by low-carbon energy, and if fossil fuels are used, GHG emissions from the transformation process must be reduced by at least 25% compared to the base case process.	• Energy used in the manufacturing process of the project scenarios • Energy used in the manufacturing process of the basic scenarios

Qualitative environmental criteria - Information	Verification
The process must not involve negative externalities or major environmental rebound effects.	• Confirmation of the absence of major rebound effects • Details of the environmental areas of concern
If the raw materials used contain rare materials whose availability is not guaranteed in 2050, an alternative future plan must be proposed.	• List of rare materials used • Details of future alternatives (if relevant)
If harmful materials are used, the project must demonstrate the controlled use of these materials.	• List of harmful materials used • Details of their control (if relevant)

The products or services generated must be in conformity with the intended use, and must effectively allow for an efficient substitution with the products of the basic scenario, or with the performance presented upstream in the case of a new product.	List of products replaced by the generated products, or uses of the generated products
The main outlets for the products or services created must be made explicit, and must not be ethically or environmentally reprehensible*.	Same as
The outcome of the co-products and waste of the project scenario must be manageable in a sustainable way under the current conditions; a specific treatment plan must be foreseen in case of harmful elements.	• List of co-products and waste generated • Treatment method for each co-product and waste

ii. Project certification

This step validates that the project meets all the requirements of the CACs, and that its responses are documented, so that the CACs associated with the emissions reductions induced by the project can be created.

Notes:

- *The same document can be used to verify several pieces of information. If so, simply specify the element of the document that provides the answer.*
- *A document can be a support produced by the project leader, a support produced by a third party, or a detailed explanatory text.*
- *Once reviewed by Riverse, and a dedicated expert if needed, the file is submitted to an independent third party to finalize the certification of the file.*

Presentation - Information	Verification
Presentation of the project	Presentation document
Uniqueness of the project	Contractualization on the registration of future CACs in the Riverse Registry

Standard criteria - Information	Verification

Additionality of the project	• Justification of financial additionality • List of available and received grants
Permanence of the project	• Justification for the permanence of the project • Project financing plan • Project development plan
Project co-benefits	Justification of the project's co-benefits

Quantitative environmental criteria - Information	Verification
Measurement of project emission reductions	• Detailed carbon inventory with data and baselines • Evidence of estimated functional unit volumes per year • Proof of the number of years of life of the project
The carbon inventory of the project scenario must induce emission reductions at least in line with the national reduction objectives of the project sector.	• Carbon inventory of the project scenario • Base Case Carbon Inventory
In none of the stages should the project scenario lead to a higher consumption of non-renewable resources than the baseline scenario.	• Justification of the resources used in the project scenario • Justification of resources used in the base scenario
At each stage of the process, the emissions of the project scenario must not exceed the emissions of the baseline scenario by more than 50%.	• Carbon inventory by stage of the project scenario • Carbon inventory by stage of the baseline scenario
The transport of materials, products and waste must not result in an increase of more than 25% in tonne-kilometres travelled compared to the baseline scenario.	• Justification of the transport of the project scenario in ton.km • Transport justifications of the base scenario in ton.km
The process must be powered by low-carbon energy, and if fossil fuels are used, GHG emissions from the transformation process must be reduced by at least 25% compared to the base case process.	• Justification of the energy used in the manufacturing process of the project scenario • Justification of the energy used in the manufacturing process of the baseline scenario

Qualitative environmental criteria - Information	Verification
The process must not involve any negative externalities or major environmental rebound effects.	Explanation of the non-hazardousness of the environmental areas of concern
If the raw materials used contain rare materials whose availability is not guaranteed in 2050, an alternative future plan must be proposed.	• Quantities of rare materials used • Documents explaining the use of these materials and presenting future alternatives
If harmful materials are used, the project must demonstrate the controlled use of these materials.	• Quantity of harmful materials used • Documents explaining the use of these materials and presenting future alternatives • Documents explaining their control
The products or services generated must be in conformity with the intended use, and must effectively allow for an efficient substitution with the products of the basic scenario, or with the performance presented upstream in the case of a new product.	Documents explaining the opportunities produced
The main outlets for the products or services created must be made explicit, and must not be ethically or environmentally objectionable.	Same as
The outcome of the co-products and waste of the project scenario must be manageable in a sustainable way under the current conditions; a specific treatment plan must be foreseen in case of harmful elements.	• Justification of the co-products and waste generated • Justification of the treatment methods for each co-product and waste

iii. Verification of actual emission reductions

This evidence is required annually to verify that the expected emissions reductions are achieved, and thus activate the CACs. Additional site visits or continuous verification technology can be incorporated to facilitate these verification steps.

Standard criteria - Information	Verification
Additionality of the project	Continuous monitoring of the legislative context

Permanence of the project	Validation of business continuity

Quantitative environmental criteria - Information	Verification
Measurement of project emission reductions	• Evidence of the quantities of raw materials, energy, waste and co-products used or produced each year • Evidence of the quantities of functional units generated each year
In none of the stages should the project scenario lead to a higher consumption of non-renewable resources than the baseline scenario.	Proof of the quantities of raw materials and energy used each year
At each stage of the process, the emissions of the project scenario must not exceed the emissions of the baseline scenario by more than 50%.	GHG emissions by stage of the project scenario
The transport of materials, products and waste must not result in an increase of more than 25% in tonne-kilometres travelled compared to the baseline scenario.	Project Scenario Transportation Justifications
The process must be powered by low-carbon energy, and if fossil fuels are used, GHG emissions from the transformation process must be reduced by at least 25% compared to the original process.	Justification of the energy used in the manufacturing process of the project scenario

Qualitative environmental criteria - Information	Verification
If the raw materials used contain rare materials whose availability is not guaranteed in 2050, an alternative future plan must be proposed.	Evidence of the quantities of rare materials used each year
If harmful materials are used, the project must demonstrate the controlled use of these materials.	• Justification of the harmful materials used • Justification for putting them under control
The products or services generated must be in conformity with the intended use, and must effectively allow for an efficient substitution with the products of the basic scenario, or with the performance presented	Proof of the outlets produced

upstream in the case of a new product.	
The main outlets for the products or services created must be made explicit, and must not be ethically or environmentally objectionable.	Same as
The outcome of the co-products and wastes of the project scenario must be manageable in a sustainable way under the current conditions; a specific treatment plan must be foreseen in case of harmful elements.	• Justification of the co-products and waste generated • Justification of the treatment methods for each co-product and waste

b. Definitions

Basic scenario:
GHG emission reductions from projects are determined relative to a baseline scenario, which is the amount of GHGs that would have been emitted in the absence of the project.

Substances harmful to the environment :
All chemical substances whose use or storage may involve risks to human health and the environment. In accordance with the current European REACH regulation, European companies must identify and manage the risks associated with the substances they manufacture and market. The project leader will therefore be required to provide the list of substances subject to the CLP regulation.

Ethically and environmentally objectionable:
In defining what is ethically or environmentally objectionable we use the 17 UN Sustainable Development Goals. If any behavior or process observed during the project audit violates any of the 17 goals, Riverse reserves the right to reject the project.

List of critical raw materials [3] :
Antimony, Baryte, Beryllium, Bismuth, Borate, Cobalt, Coking coal, Fluorspar, Gallium, Germanium, Hafnium, Heavy rare earths, Light rare earths, Indium, Magnesium, Natural graphite, Natural rubber, Niobium, Platinoids, Natural phosphate, Phosphorus, Scandium, Silicon metal, Tantalum, Vanadium, Bauxite, Lithium, Titanium, Strontium

List of possible co-benefits:

In the table below is a non-exhaustive list of possible co-benefits, with a higher level of detail.

Categories	Co-benefits
Preservation of resources	- Reduction of fossil fuel consumption - Reduction of the consumption of metallic or mineral materials - Reduction of water consumption - Reduction of energy consumption
Prevention and reduction of pollution	- Reduction of fine particles - Reduction of soil pollution - Reduction of water pollution - Reduction of toxic products - Reduction of carcinogens - Reduction of harmful radiation - Reduction of ozone-depleting products
Socio-economic benefits	- Employment of people in priority areas - Jobs for people in social reintegration - Employment of people with disabilities
Protection and restoration of biodiversity and ecosystems	- Protection of protected natural areas - Protection of biodiversity - Protection of the oceans - Sustainable use and protection of aquatic and marine resources
Increasing societal resilience	- Adaptation to climate change - Transition to a circular economy

c. References

[1] Paris Agreements, 2015, United Nations

[2] ICROA standard review criteria for endorsement to the ICROA code of best practice, ICROA

[3] Resilience of critical raw materials: the way forward for enhanced security and sustainability, 2020, European Commission

[4] AR6 Climate Change 2021: The Physical Science Basis, 2021, IPCC

[5] Base Carbone, 2020, ADEME

[6] BREF (Best REFerences), IPPC

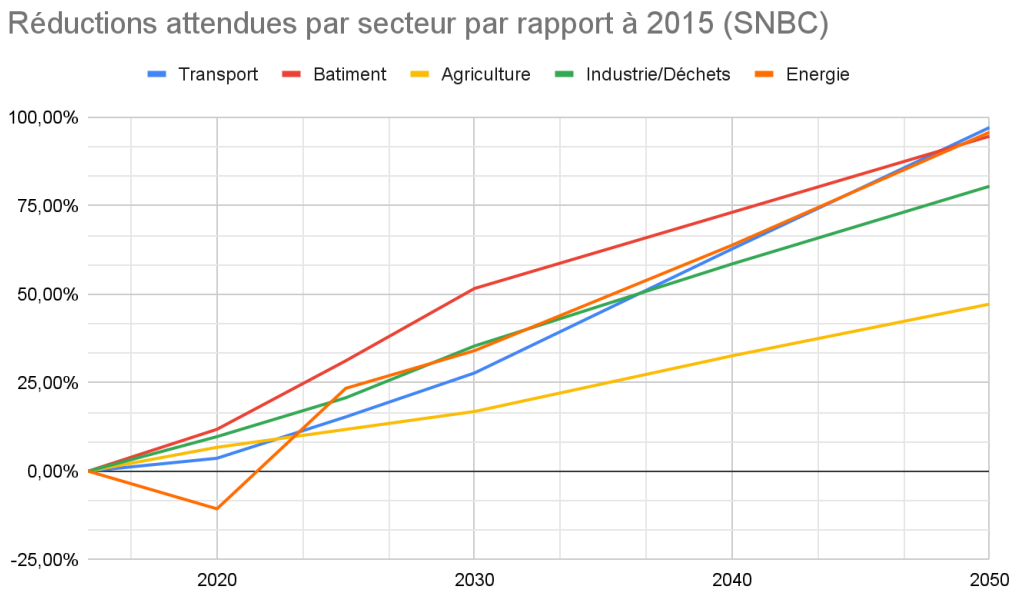
List of reference carbon bases (not exhaustive)

Name	Country of validity	Publisher	Specialization
Carbon base	France	ADEME	Global
EF database 3.0	Europe	European Commission	Global
ecoinvent Life Cycle Inventory v3.8	World	Ecoinvent	Global
Exiobase3	World	EXIOBASE	Global
Agri-Footprint	Europe	Blonk Consultants	Agriculture
PlasticsEurope	Europe	PlasticsEurope	Industry
worldsteel LCI study	World	World Steel	Industry
cm.chemicals	World	CarbonMinds	Chemistry
WEEE LCI	France	Ecosystem	Electronics

AGRIBALYSE 3.0	France	ADEME/INRIA	Agriculture

National Low Carbon Strategy - Sectoral breakdown

Expected reductions by sector compared to 2015:



Annual averages of expected reductions :

Sector	Average annual reduction
Transport	**2,77%**
Building	**2,70%**
Agriculture	**1,35%**
Industry/Waste	**2,30%**
Energy	**2,74%**

d. Presentation of Riverse

Riverse is a solution designed to facilitate the financing of our society's low-carbon transition to comply with the Paris Agreements.

As a company with a mission, we enable projects that have a significant impact on the reduction or capture of greenhouse gas (GHG) emissions to accelerate their deployment by financing them with certified Carbon Credits.

We also allow emitting companies wishing to contribute to collective carbon neutrality to finance virtuous projects, if possible in their sector or value chain, and to benefit from an understandable framework and transparent communication supports, to ensure a coherent approach.

We focus our project research efforts on the 6 priority reduction sectors: Agriculture, Construction, Waste, Energy, Industry and Transportation. Regarding the capture issues, we focus on ambitious natural projects and relevant technological approaches.

All our Carbon Credits (CCC) respect the following rules, common to all major standards:

- Measurability: all our CACs are quantified using standard and recognized measurement processes, databases and tools.
- Additionality: GHG reductions or removals must be additional to the baseline scenario, i.e., they would not have occurred without the project, to ensure that the financing provided by the CCCs makes a definite contribution to the fight against global warming.
- Verification: Each project is verified by an independent and competent third party, in addition to our own internal verifications. All information about these audits is available on the Riverse platform to ensure full transparency on the subject.
- Permanence: Each project must provide guarantees of the permanence of GHG reductions or captures over time, to ensure that they are sustainable. Precautions are taken on the volumes committed to all projects to limit the risk of reversibility and to protect against it if necessary.
- Uniqueness: all CCCs and transactions managed by Riverse are registered in a registry, and shared in open access to ensure full transparency on the uniqueness of each carbon credit sold. The same transparency work is carried out in the case where we work on existing registries (such as the Low Carbon Label for example), guaranteeing the uniqueness of all CCCs for sale on the platform.