

envIMPACT[®]

The Carbon Investment Optimizer

Background
Approach
Methodology



CENTRE INFO

The challenge of climate change for governments, companies and investors

Climate change is the biggest challenge faced by governments, companies and investors in the 21st century. Climate change already has observable consequences: polar ice caps are melting faster than ever, more and more land is being devastated by drought, and rising waters are drowning low-lying communities. According to a report written by Sir Nicholas Stern¹, an economic adviser to the British government, “climate change presents very serious global risks: it threatens the basic elements of life for people around the world, such as access to water, food production, health and use of land”. The report also states that “if no strong, early action is taken, there are risks of major disruption of economic and social activity”.

However, even if increased greenhouse gas emissions are driven by economic growth, the stabilisation of greenhouse gas concentration in the atmosphere is feasible and consistent with continued growth. The transition to a low-carbon economy will raise challenges for competitiveness and bring opportunities for growth. The companies facing the lowest carbon risks, as well as companies already active in low carbon activities, are much better prepared than their competitors to handle this transition.

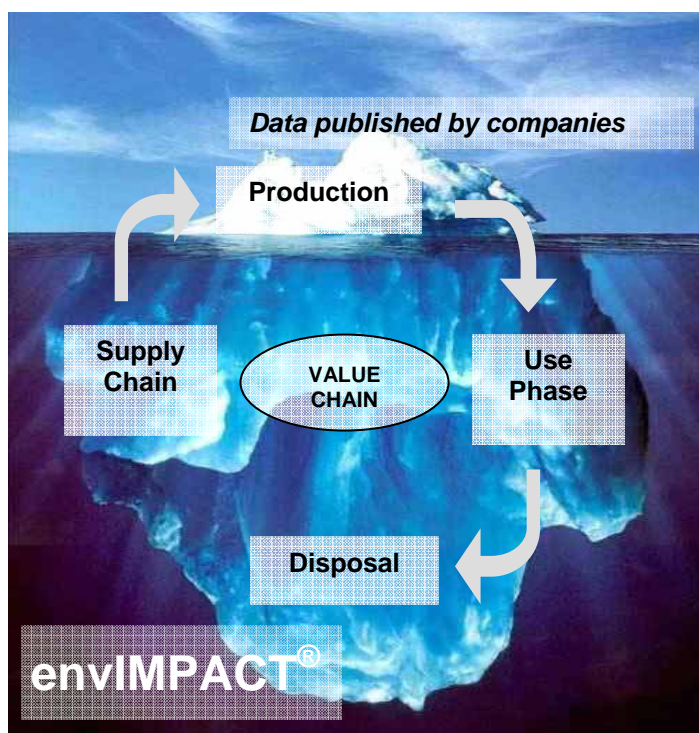
Despite investor initiatives such as the Carbon Disclosure Project, investors willing to factor in carbon risks into their investment decisions face practical challenges, since only a minority of greenhouse gas emission data published by companies is consistent and comparable.

¹ “Stern Review on the Economics of Climate Change” presented by Sir Nicholas Stern, Head of the Government Economics Service and Adviser to the Government on the economics of climate change and development, October 2006, accessed from <http://www.hm-treasury.gov.uk>.

envIMPACT[®] Assessing carbon intensity of companies over the entire value chain

Companies release greenhouse gases, either directly through their own production processes, or indirectly through their supply chain and the use of their products. Companies are major contributors to climate change and they obviously have a significant role to play in greenhouse gas emission reduction.

In order to assist investors in assessing the carbon risks of their investments, Centre Info SA developed envIMPACT[®], a totally innovative approach that measures carbon intensity of companies over the whole value chain of their activities². Companies having the highest exposure to carbon constraints are those with business models based on high carbon intensive activities. In this respect, companies' product and services are not simply analysed during the supply chain and production phase but during the use of products and their disposal as well. In fact, for some goods like cars, aircrafts, and trucks, most of the greenhouse gas emissions occur during the use of products.

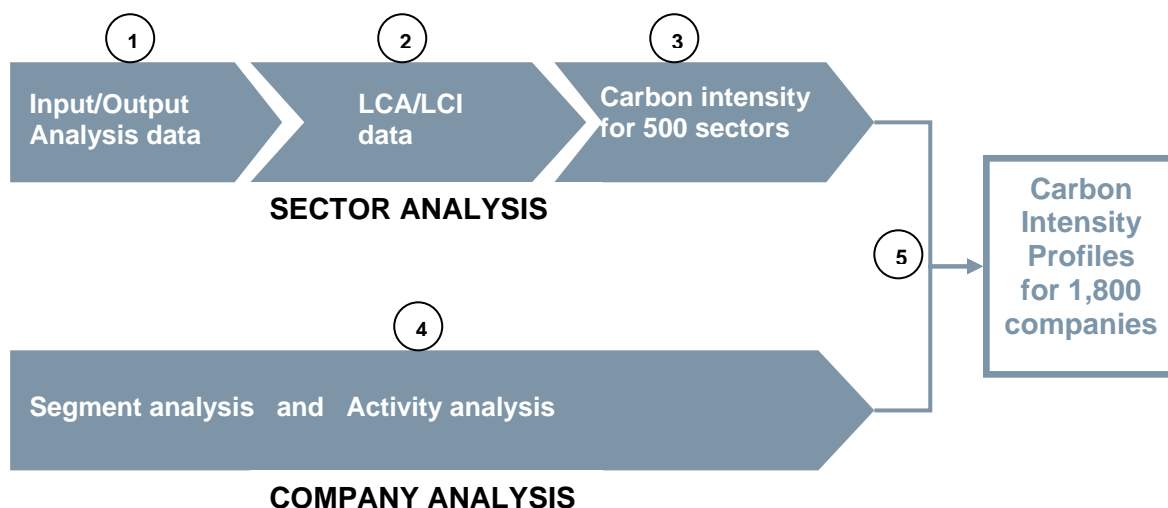


Graph 1 : Measuring the hidden part of the iceberg through envIMPACT[®]. While emission data published by companies describe the greenhouse gas emission during production (and in some cases, emission from electricity providers), envIMPACT[®] analyses the whole value chain of an activity.

Companies do not have the same impact in terms of climate change, because they are active in different activities, have different production processes or manufacture different products. Thanks to envIMPACT[®], investors are now able to identify the least carbon intensive industries or the least carbon intensive companies within a given industry.

² envIMPACT[®] has been developed on the basis of a feasibility study commissioned by Centre Info SA to the Life Cycle Systems Group from the Swiss Federal Institute of Technology (EPFL), in Lausanne (Switzerland). This feasibility study showed that Input/Output Analysis data, Life Cycle Inventories and Life Cycle Analysis are of the utmost importance for the environmental evaluation of companies taking into account the whole products' life cycle. Moreover, envIMPACT[®] has been developed in close collaboration with and successfully tested by key investment professionals (Pictet Asset Management and ethos, both based in Geneva, Switzerland). It is currently used for the management of assets in excess of EUR 1.2 billion.

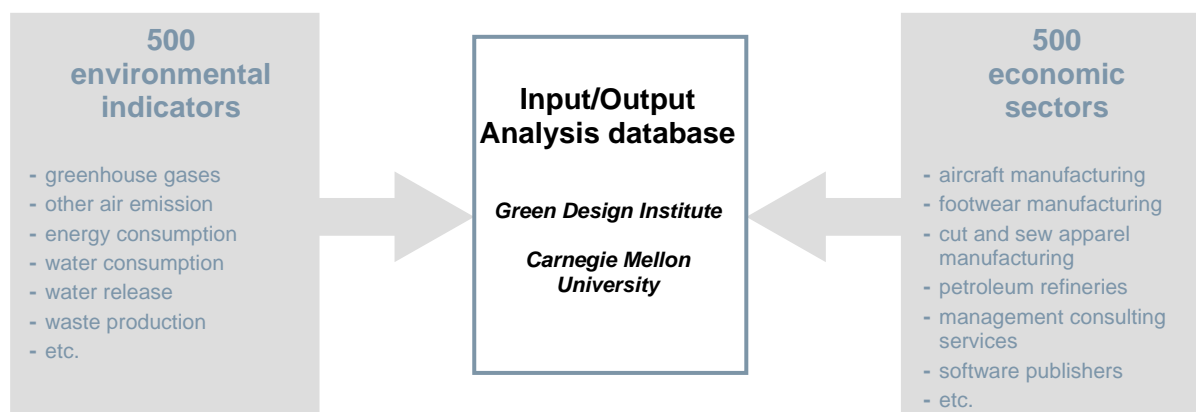
envIMPACT® Assessing carbon intensity of sectors and companies



STEP 1: Assessing the impact of the supply chain and production phase

The Input/Output Analysis is a method based on the monetary flows induced in the economy and through all the supply chain by a product or a service. It quantifies resource consumption and pollutant releases that are linked to monetary transactions according to the sectors to which these transactions are related.

In order to account for carbon intensity of the supply chain and production, envIMPACT® integrates Input/Output Analysis data from the Green Design Institute (Carnegie Mellon University, Pittsburgh), the world’s most comprehensive environmental dataset on economic sectors.

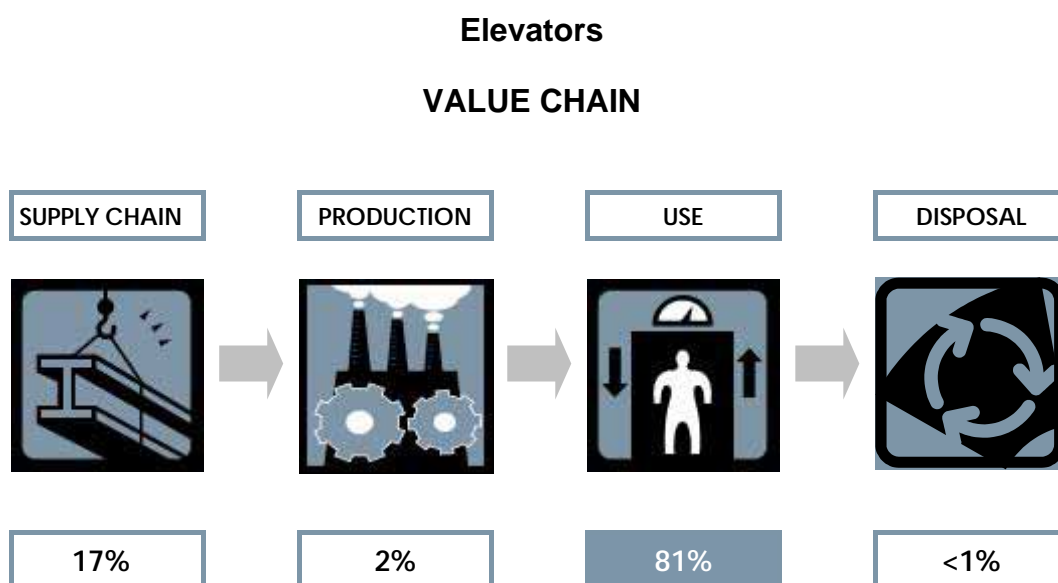


The Input/Output Analysis provides data on environmental impacts occurring during the production and supply phase of all existing economic sectors.

STEP 2: Extending Input-Output Analysis with LCA and LCI

While Input/Output Analysis is very helpful in quantifying the carbon intensity of the supply chain and of the production phase of economic activities, some specific sectors require data from Life Cycle Assessments³ (LCA) and Life Cycle Inventories⁴ (LCI), if one wants to account for the carbon intensity of the use of products and their disposal.

envIMPACT® uses the definition of “passive” and “active” products as employed by LCA practitioners to determine whether products may have a significant environmental impact during the use phase. “Active” products are defined as products that use energy and/or supplementary materials during the use phase (cars, aircrafts, household appliances, etc), while “passive” products do not (e.g. cement, footwear, kitchen utensils, wine, books, etc.).



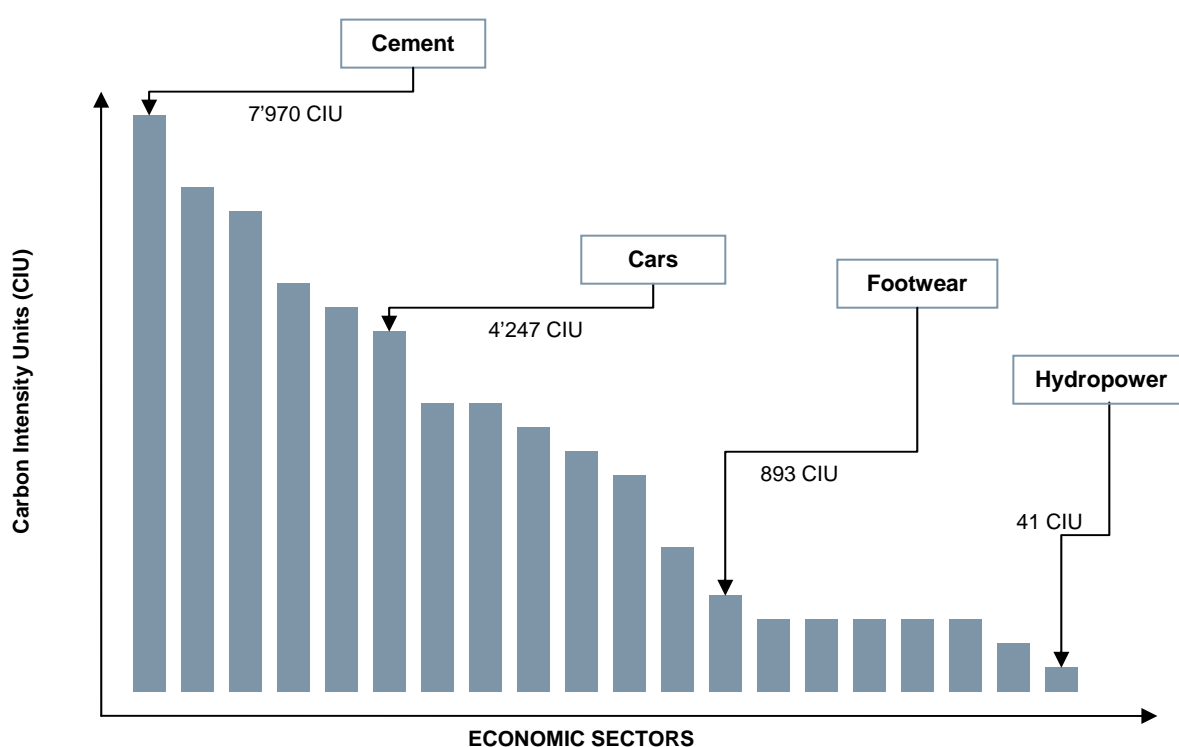
The example above on elevators highlights the combination of Input/Output Analysis with LCA and LCI for calculating the impacts over the whole value chain. This combination is a fundamental step as the impacts from the use of many active products are much bigger than the impacts from production or supply chain.

³ A Life-cycle assessment (LCA) is a process of evaluating the effects that a product has on the environment over the entire period of its life. This technique also is “cradle-to-grave” in scope. It can be used to study the environmental impact of either a product or the function the product is designed to perform.

⁴ A Life Cycle Inventory (LCI) is a scientific technique for assessing the potential environmental impacts of industrial systems (like power generation, transportation, buildings, etc.) and their associated products. This technique is “cradle-to-grave” in scope.

STEP 3: Expressing carbon intensity of sectors in units

The carbon intensity of sectors (such as oil, gas, cars, books, power, etc.) is analysed over the entire value chain. Carbon intensity of a sector is defined as the total amount of greenhouse gas emission over the entire value chain per one unit of turnover of this particular sector and is expressed in Carbon Intensity Units (CIU). Carbon intensity allows comparing sectors between each other. For example, the carbon intensity of the cement sector can be compared with the carbon intensity of the footwear sector. envIMPACT® allows the comparison of a total of 500 sectors.

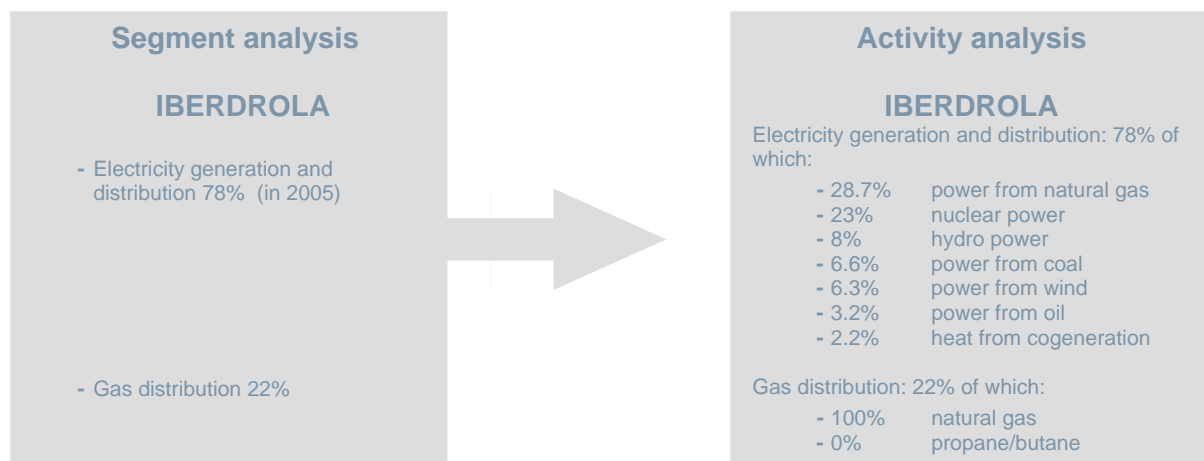


From the figure above, one can observe that the footwear sector is approximately nine times less carbon intensive than the cement sector.

All subsectors within a given sector have the same carbon intensity. For instance, oil drilling, oil transporting, and oil refining all have the same carbon intensity, as they are part of the same value chain (the value chain of oil).

Step 4: Company activity analysis

The analysis of segment sales is an important step since it defines the company's exposure to particular economic sectors in terms of carbon intensity. The objective is to research in-depth the activity mix of companies, in order to be able to attribute to each activity its respective carbon intensity. In many cases, information on segment sales is not sufficient. A more in-depth analysis of the activities is needed.

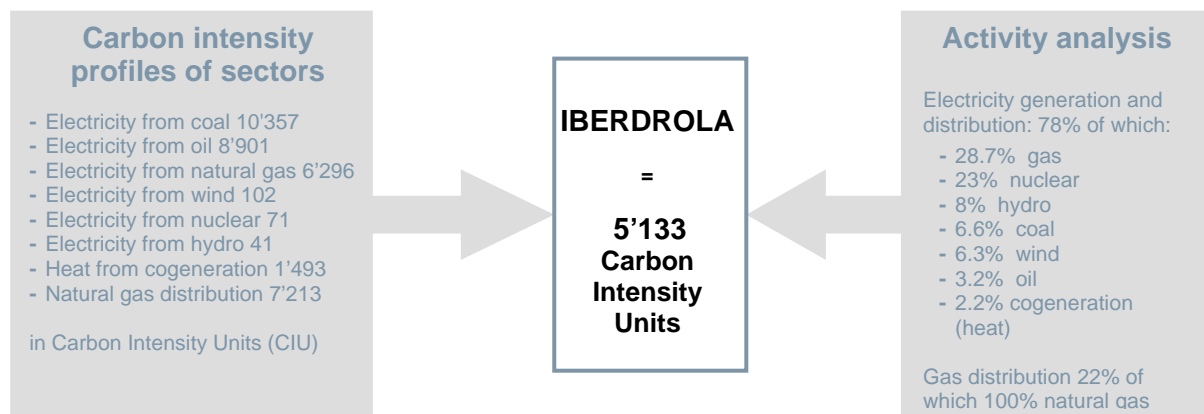


This example shows that segment analysis is not sufficient to make a detailed analysis of the carbon intensity of Iberdrola. It is necessary to assess the energy sources used to generate power, as different energy sources have different impacts in terms of greenhouse gas emission per kWh electricity.

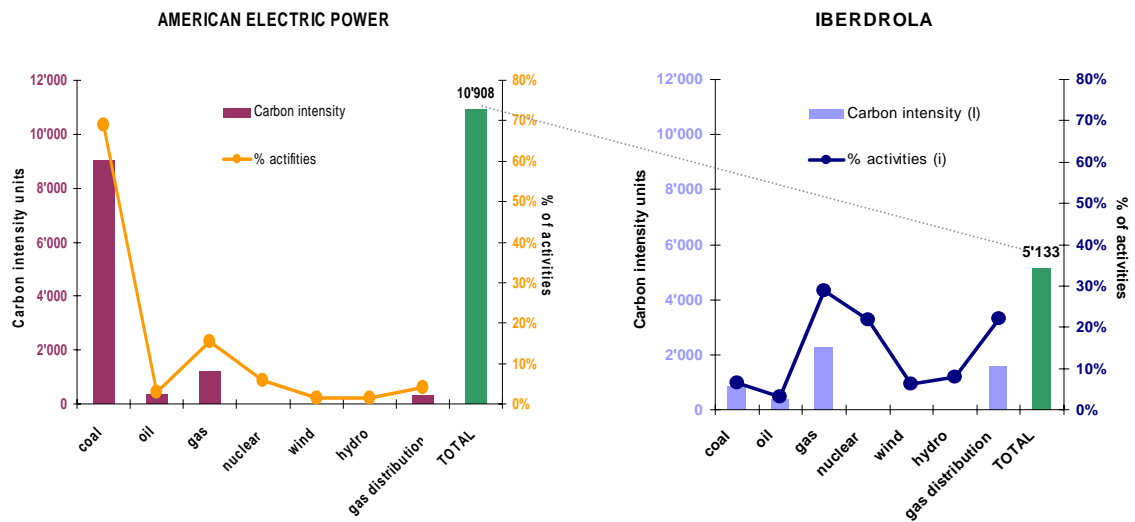
An assessment of which gases are distributed is also necessary, since natural gas has a lower carbon intensity than propane or butane (per unit of energy delivered).

STEP 5: Linking company activity analysis to carbon intensity of sectors

Step 5 involves the matching of company activity analysis (step 4) with the carbon intensities of economic sectors (step 1 to 3). This allows assigning a precise carbon intensity to each activity of a company, that, when aggregated for all company activities, provides the total carbon intensity for that company.



The 5'133 Carbon Intensity Units (CIU) of Iberdrola represent the greenhouse gas emission (over the entire value chain) resulting from a unit of turnover of the company.



From the graphic above, one can observe that American Electric Power has a carbon intensity of 10'908 CIU that is more than twice as high as the carbon intensity of Iberdrola at 5'133 CIU. This is due to the fact that 76% of American Electric Power activities have high carbon intensity (i.e. electricity generation from coal, natural gas and oil) while Iberdrola has a diversified energy mix focused more on nuclear, hydro and wind power (three energy sources with very low carbon intensity).

Conclusion

The five steps process described above constitutes the foundations of envIMPACT®. This unique methodology results in a deep understanding of the carbon intensity of 500 economic sectors over the entire value chain. Based on envIMPACT®, investors are now able to identify the least carbon intensive industries or the least carbon intensive companies within a given industry. envIMPACT® opens new horizons for investors in the optimization of their investments against carbon constraints.



Centre Info SA

Founded in 1990, Centre Info SA is the first European research and consultancy firm entirely devoted to environmental, social and governance (ESG) issues. Building upon research provided by SiRi Company – in which Centre Info SA holds a controlling stake – Centre Info offers solutions to SRI and mainstream investors who wish to integrate ESG issues into their investment processes. Centre Info SA also provides advice on SRI product concept and design, on SRI investment strategy formulation and undertakes specific research projects related to sustainability and ESG issues.

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