

We have a few but they are clearly insufficient. Environmental impact statements are one example, but this tool is easily corrupted; it lacks professionalization at the local level; and even more important, the process does not grant enough importance to social impacts, particularly when a project entails forced displacement. Thus, we need new assessment technologies to screen impacts comprehensively and imaginatively and new social technologies that leave room for the point of view of different stakeholders; to implement social accountability tools to reduce corruption among project promoters; to modify a project before it is launched; to compensate those communities that will inevitably suffer negative side effects, particularly those who are vulnerable (women, children, and the aged); and to condition funding sources for those initiatives that have unacceptable costs.

Some of these are already in use in other countries. This is the case of “social licenses to operate,” resettlement action plans, and operational rules that have been drafted by international agencies like the World Bank, which have had long and painful experience with these kinds of issues.<sup>8</sup> Others will require a sort of Promethean creativity before they are invented or before they are adapted to the Mexican context. We cannot talk of win-win solutions until we have these other tools in hand. ■■

## NOTES

<sup>1</sup> Wiebe E. Bijker, “Why and How Technology Matters,” in Robert Goodin and Charles Tilly, eds., *The Oxford Handbook of Contextual Political Analysis* (Oxford: Oxford University Press, 2008), pp. 681-706.

<sup>2</sup> John Dryzek, *The Politics of the Earth*, 2<sup>nd</sup> edition (Oxford: Oxford University Press, 1997).

<sup>3</sup> Dryzek, op. cit., p. 49.

<sup>4</sup> One example is Mario Molina who has stated, “If we adopt the appropriate measures, Mexico could —without sacrificing economic growth— enjoy sustainable development, guaranteeing our wellbeing and the wellbeing of future generations, and contributing as well to solve a world problem of utmost importance.” See INE and PNUD, *Impactos sociales del cambio climático en México* (Mexico: INE/PNUD, 2008).

<sup>5</sup> It is noteworthy that Semarnat’s (the Ministry of Environment and Natural Resources) *Programa especial de cambio climático, 2009-2012* already considers this kind of projects as part of the mitigation and adaptation to climate change (MACC) strategies that Mexico should launch.

<sup>6</sup> The “crown of cities” refers to the main urban centers surrounding the Mexico City Metropolitan Area, which have a strong functional relationship with it, particularly economically. These include Pachuca, Toluca, Querétaro, and Cuernavaca, and other minor towns.

<sup>7</sup> In fact, one of the main reasons why the infrastructure program of President Felipe Calderón (2006-2012) did not achieve all its goals is precisely because of the difficulty of negotiating rights of way, in particular for new roads and highways.

<sup>8</sup> See, for example, World Bank, “OP 4.12 —Involuntary Resettlement,” 2001, <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064610~menuPK:64701637~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html>. [http://picturesstatic2.reuters.com/Doc/RTR/Media/TR3\\_UNWATERMARKED/A/C/E/4/RTR1NCCY.jpg](http://picturesstatic2.reuters.com/Doc/RTR/Media/TR3_UNWATERMARKED/A/C/E/4/RTR1NCCY.jpg)

# What Is the Carbon Footprint? Impacts on Mexico

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## DEFINITION OF THE CONCEPT

Although the term “carbon footprint” has only recently come into use, it is more and more common among specialists and

the general populace as a result of the importance that climate change has taken on worldwide. But, what does it mean? Generally speaking, we can say that it is the calculation of all the greenhouse gas (GHG) emissions that a product, service, event, company, person, or state generates directly or indirectly, produced mainly by burning fossil fuels like oil, coal, and natural gas.

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There is considerable literature about this. One more specialized definition, recognized by the experts, is penned by Wright, Kemp, and Williams:

A measure of the total amount of carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) emissions of a defined population, system, or activity, considering all relevant sources, sinks, and storage within the spatial and temporal boundary of the population, system, or activity of interest. Calculated as carbon dioxide equivalent (CO<sub>2</sub>e) using the relevant 100-year global warming potential (GWP100).<sup>1</sup>

It is interesting to note that this definition not only considers CO<sub>2</sub> emissions, but also methane gas emissions, and emphasizes the potential for causing global warming as well, which in turn creates climate change.

The carbon footprint is often identified and confused with the ecological or environmental footprint, as though they were synonymous. However, the first is much more specific than the others, since it is a very well defined measurement centered on the gases that cause climate change (which are included according to the definition picked). In this sense, the Kyoto Protocol includes the regulation of six gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride. All these can be included

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in the carbon footprint and each has a different potential for global warming. The ecological footprint includes more variables, among them the water footprint, which, as its name indicates, refers to the total amount of water used in the production and commercialization of a good or service. The carbon footprint is measured in tons of equivalent carbon dioxide (tons of CO<sub>2</sub>e); that is, the rest of the greenhouse gases are measured in equivalent quantities in order to simplify the reports.

#### INTERNATIONAL REGULATION AND STANDARDIZATION

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sources (solar, wind, geothermal, and bio-fuel, among others). These two points have been the center of the debate in UN climate change negotiations since 1992, which have moved forward slowly because the issue involves many opposing interests.

Despite the difficulty of negotiating worldwide agreements, several pieces of legislation exist, mainly in Europe, requiring companies to report on their products' carbon footprint (both goods and services). One example is France's Grenelle Law, which came into effect January 1, 2011, centered on imported products. In the United Kingdom, since March 2007, some manufacturing sectors began including a CO<sub>2</sub> label on their products through the Carbon Trust. In general, the European Union is a good example of strict legislation about greenhouse gas emissions. Different bills have been prepared worldwide to regulate the carbon footprint, which means that this will be a reality globally in the near future.

In other words, this is all about including in the final price of a product the cost of environmental externalities caused by its production, distribution, and commercialization that are not reflected in the market price. Climate change is only one of these costs. So, people who consume products that are too "dirty" (with a high carbon footprint) will have to pay more.

One of the main difficulties in calculating the carbon footprint is the absence of a standardized methodology. This has created a great deal of mistrust and uncertainty worldwide, since if each actor (the state, a company, a chamber of commerce, etc.) uses a different methodology, there will be no way of comparing the data.

The lack of measurement, reporting, and verification standards for GHG emissions mean the possibilities for negotiating among the stakeholders decline. Some of the first efforts to harmonize the measurement methodology were launched in 2012 through international norm ISO 14067 for products' carbon footprint, and ISO 14069 for organizations'. Nevertheless, given the weight of the issue, ideally, governments, not corporations, would determine norms and procedures.

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The other problematic issue is fixing the price of a ton of carbon, seen as a key for companies' competitiveness, since in the short or medium term, the carbon footprint will become a reference point for commercializing goods and services. Until recently, the public was not very aware of this because the environment was not seen as valuable as it has been since the 1990s. To the extent that environmental discourse has permeated different areas of life like politics, the market, society, health, etc., it has been put on the list of priorities.

All this is aimed at developing a sustainable economy and fostering technological transition. However, just as the effects of climate change are not the same for everyone, neither are its costs. In this sense, the effects on countries like Mexico that are considered developing nations will be reviewed. These are countries that survive based on exploiting their raw materials and do not have either the resources or the research and development capabilities needed to implement clean technologies, among other problems.

#### MYTHS AND REALITIES OF THE CARBON FOOTPRINT

When we talk about ecological debt, we recognize that those most responsible for the environmental crisis are the industrialized nations and that, therefore, they are the ones with the greatest obligation to deal with that crisis. This is the reason that both the UN Framework Convention on Climate Change (1992) and the Kyoto Protocol (1997) establish the principle of *common but differentiated responsibilities*. This principle implies that the developed countries are obligated to reduce their GHG emissions, but the less developed nations are exempt from that obligation. However, in practice, the idea of ecological debt has undergone a transformation, since today's mechanisms transfer the costs of climate change from the industrialized to the developing countries.

To the extent that product prices reflect the cost of climate change, the carbon footprint will become the new form of commercial discrimination. This is one more reason for Mexico to look for effective mechanisms for implementing its recent General Law on Climate Change, which establishes the first steps for moving toward a low-carbon economy. However, it still lacks regulations and effective state and local enforcement.

Countries with strict environmental legislation that demands that products include carbon footprint information

labels are the main destinations for developing countries' goods, and this is beginning to limit the entry of products with a high carbon footprint. Most of the developing nations have neither the resources nor the research and development capability to use alternative sources of energy. Therefore, their products have a higher carbon footprint than those from developed countries.

The problem for Mexico and other developing countries without clean technologies and for whom it is cheaper to continue using fossil fuels is that some countries are planning to tax goods and services with a carbon footprint greater than that established in their laws. The environmental discourse consolidated in the 1990s centered on the idea that everyone was responsible for caring for the environment, but to differing degrees. Today it seems this principle has been put to one side and the costs of climate change are being transferred to the less developed countries that, in principle, are the least responsible for environmental deterioration.

#### WHAT WILL HAPPEN TO MEXICO?

In the Mexican case, the consolidation of the carbon footprint can bring both benefits and disadvantages. Among the benefits is the pressure to effectively enforce the new climate change law, which will create great advantages, like the reduction of dependence on oil and investment in clean technology projects. Among the disadvantages is the fact that climate change has emphasized local and regional commerce, since transportation is one of the sectors that creates the most GHG emissions. This would contribute to Mexico continuing to do the vast majority of its trade with the United States (78.6 percent, according to the *CIA Factbook 2011*), and not seeking to diversify its markets. On the other hand, this has the advantage of fostering a stronger domestic market, since the prior state of affairs, in which long distances existed between where products are made and their destination market, would make them lose competitiveness. In addition, the carbon footprint could become a new kind of protectionism, which would have a negative impact on Mexican companies trading abroad.

To the extent that carbon footprint information is included on products' ecolabels, this piece of information will become a key aspect of competition for final consumers since, at the same time that governments and companies come to consensus about managing GHG emissions, these discussions are permeating civil society through the media.

Just as the effects of climate change are not the same for everyone, neither are its costs. In this sense, the effects on countries like Mexico that are considered developing nations need to be reviewed.

Although the United States does not have a federal law on climate change, several states do have local legislation. Given the fact that our foreign trade is concentrated there, Mexico cannot be passive, and it has not been. Proof of this are the several measures taken under the administration of Felipe Calderón (2006-2012). However, Mexico has been characterized by being very efficient in legislating on many issues, but very ineffective when enforcing those laws. This will be much clearer once Enrique Peña Nieto announces his administration's environmental priorities.

There are Internet sites that can calculate an individual's carbon footprint: they use data like the number of inhabitants in each household, the efficiency of the transportation they use (whether by land, air, or sea), and their consumption of LP or natural gas and electricity. This is done to create awareness about the individual contribution to climate change, as well as to reflect on our life styles and how to decrease our environmental impact, since climate change is not only a problem of companies and states, but also of individuals.<sup>2</sup>

Undoubtedly, the term has taken on great importance, and in the coming years, it will be a decisive element for decision-making by governments, business, and individual consumers. Internationally, from 2012 to 2015, the terms of a new agreement to succeed the Kyoto Protocol will be negotiated, as determined in December 2012 in Doha, Qatar, where the steps that will be taken to consolidate a new international climate change regime were set out. ■■■

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#### NOTES

<sup>1</sup> L. Wright, S. Kemp, and I. Williams, "Carbon footprinting: Towards a Universally Accepted Definition," *Carbon Management* vol. 2, no. 1, 2011, pp. 61-72.

<sup>2</sup> A couple of recommended sites for calculating our carbon footprint are [www.calculatusemisiones.com/main.html](http://www.calculatusemisiones.com/main.html) and <http://calculator.carbonfootprint.com/calculator.aspx?lang=es>.