

## White Paper



### Green Growth

#### Changing the Climate of Consumer Buying

The need to bring environmental impact in consumer buying decisions

---

Arun Viswanathan, Vijay Mishra

#### Abstract

Faced with the climate change crisis, several companies are striving to adopt a 'green' approach to lower the carbon footprint and conserve the environment. However, most companies are unaware of how to implement climate change initiatives in their business model. They must overcome the challenge of transforming the drive to lower greenhouse gas emissions in the supply chain into a business benefit.

An effective green campaign enables a company to track and measure its carbon footprint, minimize carbon-heavy processes, and popularize green products. In order to achieve this, companies must first develop robust techniques, change regulations governing environmental sustainability, and educate consumers on the importance of environmental protection.

This paper serves as a guide to understand the goals and boundaries of a green campaign, the certified methods to measure and reduce carbon footprints, and how to meet the challenge of appealing to the environmentally conscious consumer. The authors suggest a SAP-based solution to track, measure and report the carbon footprint. Companies can leverage these eco-friendly methods to maximize business and environmental benefits and change consumer buying decisions, thereby increasing their competitive advantage.

For more information, contact [askus@infosys.com](mailto:askus@infosys.com)

## Introduction

Climate change is one of the biggest threats currently facing our generation. Increased energy costs and media coverage of the threats of global warming have made it imperative to think 'Green'. The movement to reduce carbon footprint is at the forefront of the sustainability agenda for consumer product manufacturers and retailers. Further, the desire to make a dedicated effort to conserve the environment comes with an attractive environment friendly image. All the above factors combined with the potential for standards and upcoming regulations have put pressure on businesses and their clients across sectors to look at effectively tracking, publishing and delivering carbon reductions within their life cycle costs as a serious commercial and environmental proposition.

Towards this extent companies are now engaging in ways to measure and release information regarding their products' carbon footprint. A recent survey of 92 companies from various industries revealed that about 75 percent of companies are actively measuring their carbon footprint while a few are measuring the footprints of their competitors as well. Organizations of all types are launching 'green' campaigns. For example, the city of London has imposed a congestion charge on automobiles and Wal-Mart stores are pushing organic foods.

However, in the current scenario, companies still struggle to ensure that climate change initiatives do not interfere with their business growth. They remain unsure of the financial feasibility of measuring, communicating and reducing the carbon footprint of their products. In order to align going green with growth, [companies should start considering environmental protection as a strategy to gain business benefits through increased energy efficiency and not as an unavoidable exercise to save their skin.](#)

The uncertainty about carbon footprints or carbon-rated products hinders progress in environmental sustainability. Industry leaders/ forums can take the lead to overcome uncertainties by applying the following steps:

- Clearly define the importance of measuring the carbon footprint
- Clearly define goals and boundaries, i.e. lower greenhouse gas emissions, map out the baselines across the supply chain and set targets for cost effective carbon reductions to derive business benefits
- Educate consumers on the importance of environmental protection
- Develop robust processes/ standards to measure carbon footprint
- Liaise with government and non government agencies to create regulations/ certifications that support environmental protection
- Communicate with consumers to foster consumer buying decisions based on environmental impact and thereby increase brand value

## The Carbon Footprint

A [carbon footprint](#) measures the environmental impact of our activities and, in particular, climate change. It refers to the amount of greenhouse gases (GHG) produced in our daily lives by burning fossil fuels for electricity, heating, transportation, etc. The carbon footprint can be defined as the sum total of all greenhouse gases individually produced and is measured in tonnes (or kilograms) of carbon dioxide equivalent.

A carbon footprint comprises the sum of two parts - the primary footprint and the secondary footprint.

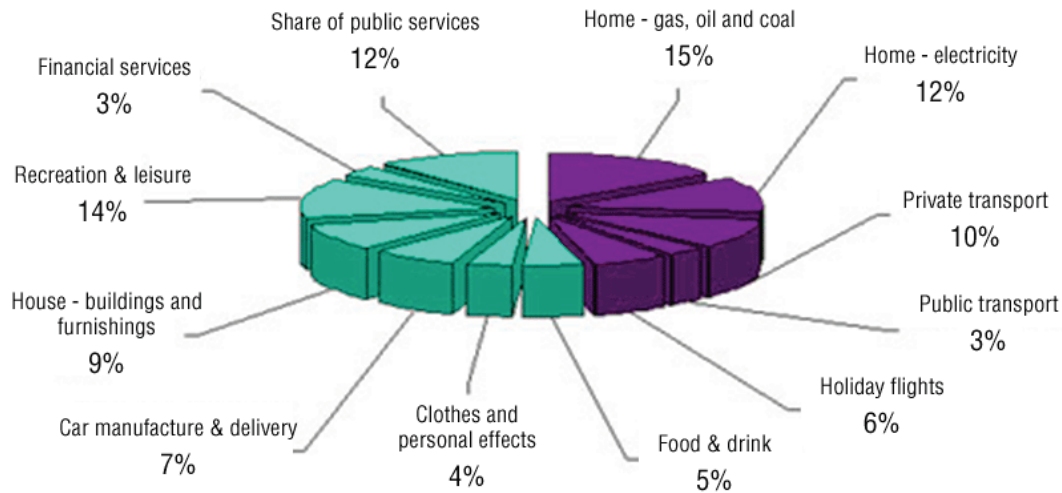
- The [primary footprint](#) is a measure of direct emissions of CO<sub>2</sub> from the burning of fossil fuels and includes domestic energy consumption and transportation (e.g., car and plane). We have direct control over these.
- The [secondary footprint](#) is a measure of indirect CO<sub>2</sub> emissions from the lifecycle of product manufacture and its eventual breakdown.

Simply put, the carbon footprint of a product is the overall amount of carbon dioxide (CO<sub>2</sub>) and other greenhouse gas emissions (CH<sub>4</sub>, N<sub>2</sub>O, HFCs, etc.) associated with its entire life cycle, i.e., production, use and destruction.

## Why Measure the Carbon Footprint

The common response on how to limit the impact of global warming on climate change is to reduce greenhouse gas (GHG) emissions. This response, though, is deceptively simple. Unless there are radical changes to our entire energy supply, the demands for reduction will clash with the very foundations of our consumerist society. Almost everything we eat, purchase and consume requires energy for production, transportation and storage and is responsible for releasing CO<sub>2</sub> and other GHG.

The pie chart below illustrates the main elements that amount to a typical person's carbon footprint in the developed world.



Since stopping consumption is not a realistic solution the focus leans towards popularizing products with a smaller carbon footprint. This requires a standard auditable and certifiable way of measuring the carbon footprint and of informing the consumer about it.

Besides enabling environmental consciousness, some of the drivers pushing companies to identify the carbon footprint of their products are

- Legal standards and regulations
- Investor expectations (operating cost efficiency)
- Consumer/ market advantage
- Company reputation and brand image

Market leaders need to define ways to consider these factors before being forced by either regulators or competitors.

## Defining Goals and Boundaries

Despite valid reasons for companies to measure and reduce their carbon footprint, the process is fraught with great challenges. Companies must:

- Ensure that their efforts to reduce emissions do not compromise business growth
- Consider the threat of losing business to competitors who are more environment-friendly
- Comply with upcoming standards and regulations which may force them to reduce their emission levels

To overcome these challenges organizations need to clearly define their goals and boundaries. This will provide a focused approach to reduce GHG emissions in a cost-effective manner giving them an edge over competitors and helping them realize business benefits.

However, setting goals and defining boundaries alone will not guarantee business growth. It may increase the operating efficiency but companies will gain real benefits only when consumers share the same understanding, appreciate the brand value and choose products with lower carbon footprint over other equivalent products.

This challenge of changing consumer perceptions places another demand on companies – devising a new approach in communicating with consumers.

## Educating Consumers – Need and Challenges

According to an opinion poll (McKinsey, 2007) of 7,751 people in Brazil, Canada, China, France, Germany, India, the United Kingdom, and the United States, consumers indicated concern about climate change and connected the dots to their own purchases. The poll showed that 87% of the consumers worry about the environmental and social impact of the products they buy.

However, a Climate Group survey (2007) discovered that two-thirds of US and British consumers cannot name a single green brand. Similarly the National Technology Readiness survey (2007) of 1,025 US adults found that although more than two-thirds prefer to do business with environmentally responsible companies almost half find it difficult to access green goods and services.

These surveys indicate a lack of consumer knowledge about green products and companies, which translates into the need for an altered approach in dealing with customers. Such an approach requires companies to educate consumers about their green products and explain the larger issue of pollution, climate change and other environmental problems. Poor awareness reflects why a consumer's environmental consciousness does not translate into appropriate green consumer behavior.

Therefore companies must first strive to educate their customer thereby encouraging purchase of environmentally sensible products, which will invariably generate increased sales. The barriers in this method are lack of awareness, negative perceptions, distrust, high prices, and low availability. The significance of each barrier varies with the product, industry and geography. Some of the ways to overcome these barriers are:

- **Consumer profiling:** Companies can determine which products are preferred by different consumers and then examine purchasing decisions of each marketing segment.
- **Product communication:** Companies looking to leverage the low carbon footprint of their products should ensure that the related information is available right at the point of purchase, i.e., retail shelf: This can be done for example by launching in-store campaigns and including carbon footprint data on the product labels.
- **Transparent production:** Companies should back up the education initiative by creating better products and maintaining a transparency about green initiatives being undertaken by them as part of the product communication to consumers.

Several companies such as Tesco, Walkers, and Timberland have adopted such initiatives and publicize their efforts to demonstrate their environmental credentials. Tesco, one of the UK's largest retailers, has announced that, among other initiatives, it will develop carbon labeling that can help consumers understand the ecological impact their consumption habits have on the environment.

Programs such as the Energy Star label and P&G future friendly campaign are a few striking examples where companies can profit by educating consumers. Such campaigns need to be standardized in order to provide real carbon footprint data as part of product labels.

## The Measurement Challenge

While measuring and releasing information about a product's carbon footprint is becoming a trend, questions regarding the measurement techniques being raised.

The difficulties the Companies face are due to the uncertainties involved in determining

- How to measure their GHG and carbon footprints
- How to effectively convey this information to consumers
- What will be the future purchase behavior of consumers
- What will be the role of future regulations and their effect on consumption patterns, i.e., whether consumers will become more environmentally conscious or whether government regulations will be necessary to change consumption habits.

The solutions to these challenges will determine how a company performs on the strategic playing field for the next several years.

Industry leaders should take the lead to overcome these challenges. They can

- Develop robust techniques to measure carbon footprints
- Work with government and non-government agencies to define regulations/ certifications that support environmental protection
- Communicate with consumers to enable consumer buying decisions based on environmental impact and thereby increase brand value

Adopting a good carbon footprint measurement & communication approach yields the following benefits:

- Measuring carbon emissions at every step of the supply chain generates valuable energy and cost saving opportunities
- Displaying a carbon footprint with the Carbon Reduction Label enhances brand reputation and sales appeal
- A formal process of certification of carbon footprint and ability to track carbon credits/ debits in its supply chain and other initiatives enables companies to take advantage of carbon exchanges and thereby promote green initiatives in independent areas

## Measuring Carbon Footprint

The 2006 report released by Carbon Trust titled “[The carbon emissions generated in all that we consume](#)” established the view that the emissions embodied in any consumer product or service originate from each link of the supply chain.

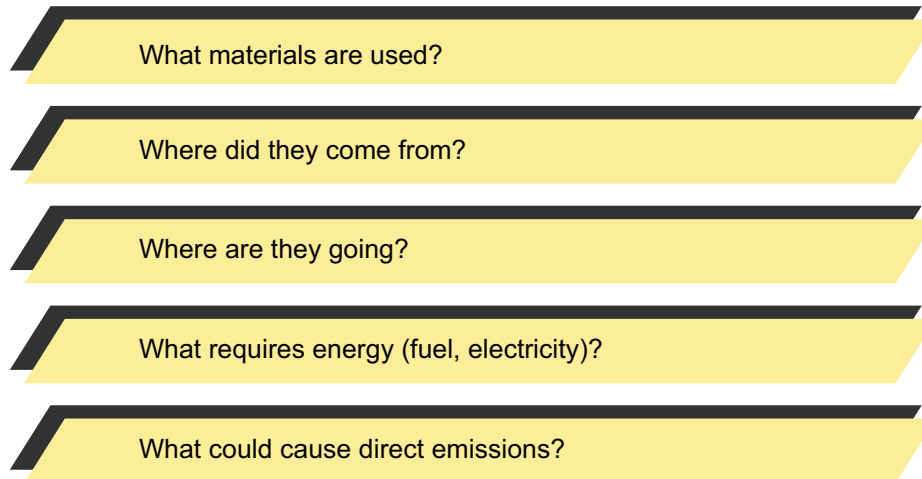
The report showed that by examining their supply chains companies can identify areas with the greatest potential for reducing carbon and costs. Further as climate change and carbon emissions become a bigger consumer issue, companies can benefit from a future competitive advantage by implementing steps to reduce total supply chain emissions.

Through its work on supply chain analysis, the Carbon Trust developed a methodology to measure a product's carbon dioxide and GHG emissions across every stage of the lifecycle, i.e., production of raw materials, processing, transportation, storage, preparation, use, and disposal.

Companies can follow the [5-step foot printing process](#) in accordance with BSI PAS 2050 (British Standards Institute Publicly Available Specification) to deliver a final footprint for their product or service which can then be put forward for certification. The five steps of the process are:

- Build a process map that includes setting boundaries, understanding the available data and identifying sources/ contacts
- Collect primary data from members of the supply chain and collate secondary data
- Assess materiality (an iterative process)
- Build the carbon footprint
- Certify the product carbon footprint model (which can require more than one iteration)

As part of this methodology, the whole supply chain should be assessed as detailed below. Key questions to be asked should include:



The constituent parts that make up the product carbon footprint can be examined to determine opportunities to reduce it. Companies can then analyze and re-engineer their processes, collaborate with supply chain partners to achieve reductions, and investigate alternative sources of supply. Further, companies can take credit of Carbon Credit bought by sponsoring green initiatives such as forestation drives in remote areas.

## Carbon Footprint Certification

Various standards are available to certify the carbon footprint profile of a company/ product.

### *PAS 2050*

The methodology developed by the Carbon Trust became the founding document for the Publicly Available Specification (PAS 2050) that has been developed by BSI British Standards and other stakeholders worldwide. Launched in October 2008 this is now freely available for public use.

### *The Code of Good Practice*

Developed by the Carbon Trust and other partners, the Code helps businesses communicate the lifecycle GHG emissions of products clearly and credibly with sufficient supporting information. The Code also supports emissions-reduction claims.

### *The Carbon Label Company's Comparability Rules and Secondary Data*

The precise interpretation of the PAS 2050 and what it is used to measure is subjective to the particular practitioner. The Carbon Label Company (CLC) overcomes this disadvantage by applying a set of proprietary data and comparability rules to the PAS 2050. Certification by the CLC ensures that consumers can compare similar products and services with each other and to the standard required for the Carbon Reduction Label.

The unique advantage of the Carbon Label Company lies in its futuristic nature and its comparability rules and secondary data standards, which provide a level playing ground for all companies. Only companies that are certified by comparability rules and secondary data provided by the Carbon Label Company can use the Carbon Reduction Label. This strict policy ensures that:

- A company's product/ service carbon figures are directly comparable to those of other products and services which have the Carbon Reduction Label or have been certified by the Carbon Trust
- A company can benchmark against those other numbers
- A company can compete fairly on green credentials based on its carbon footprint.

These rules maximize comparability as the data tables are continuously updated to meet new standards and requirements published by British Standards Institution, World Resources Institute, International Organization for Standardization, etc., or through the outputs of their research.

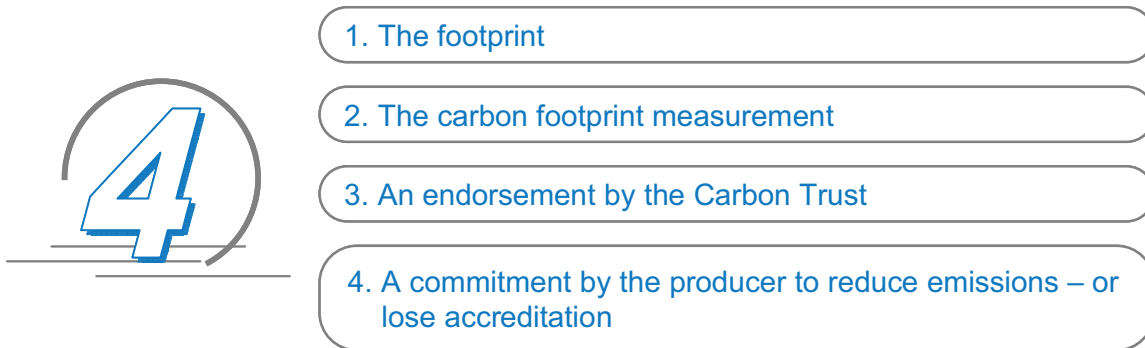
## The Carbon Reduction Label

The Carbon Reduction Label is designed by the Carbon Label Company and reflects the extensive consumer research conducted, which has subsequently generated a positive desire for the label and an understanding of its elements.

The label is designed to let businesses communicate to their consumers:

- Their commitment to reduce their product's carbon footprint.
- How their product's carbon footprint compares with that of other products within the same category
- How consumers can reduce their own carbon footprint by preparing, using, washing, or disposing of the product in the most efficient way

The four core elements include:



Optional elements include:

- An educational element explaining how the footprint is created and whether the measurement includes associated GHG emissions (e.g., during food preparation, the washing of a garment, etc.).
- Product comparison information between different items produced by the same company and within the same category.
- Customer action tips on appropriate products, empowering consumers by showing them how they can reduce emissions such as when they use, prepare or wash the product.

## Communicating with the Consumer

Recent research studies carried out for the Carbon Trust and other organizations indicate that companies believe that climate change is one of the factors most likely to affect their corporate reputation. There is evidence to show that the Carbon Reduction Label could be a deciding factor in customer choice. Carbon Labeling is thus a valuable way for companies to demonstrate their green commitment to consumers. The carbon label supports

### *Public display of the carbon footprint of a product or service and is Effective across multiple media*

The Carbon Reduction Label displays the total GHG emissions from every stage of the product's lifecycle, including production, transportation, preparation, use and disposal. For a B2B product that is manufactured for use in another product's manufacture the carbon footprint measurement is upto the factory gates. While it is essential that the footprint calculations take every greenhouse gas into account, the figure is given as their total CO<sub>2</sub> equivalent and is consistent with other recognized GHG reporting.

Contrary to popular belief, carbon labeling refers to more than just on-pack labeling. There are other effective channels that service/ product providers can employ to display their carbon labels, including:

- Point of Purchase display
- Websites belonging to the product manufacturer or service provider
- Online reseller product catalogues (products) and online directories (services)
- Advertising, mail packs, product brochures, catalogues, business cards, local directories and other sales materials
- Product manuals – where advice to reduce carbon usage can be explained

## *A Conceptual Solution for Tracking and Reporting of Carbon Footprint*

In today's collaborative business environment, IT solutions play a key role in supporting the end-to-end business processes across the supply chain right from the vendor to the end-consumer. Companies' backbone IT systems or Enterprise Resource Planning systems (ERP) need to support the traceability of carbon footprint calculation through the entire supply chain by

- Supporting data capture at every step of supply chain
- Analyzing data captured and calculating the carbon footprint of a supply chain
- Supporting distribution of captured carbon points from supply chain and miscellaneous activities over the product units
- Supporting creation of reports/ documents needed for compliance
- Supporting creation of carbon reduction labels and other communication material

Typical lifecycle stages of a product that form part of the carbon footprint calculation are

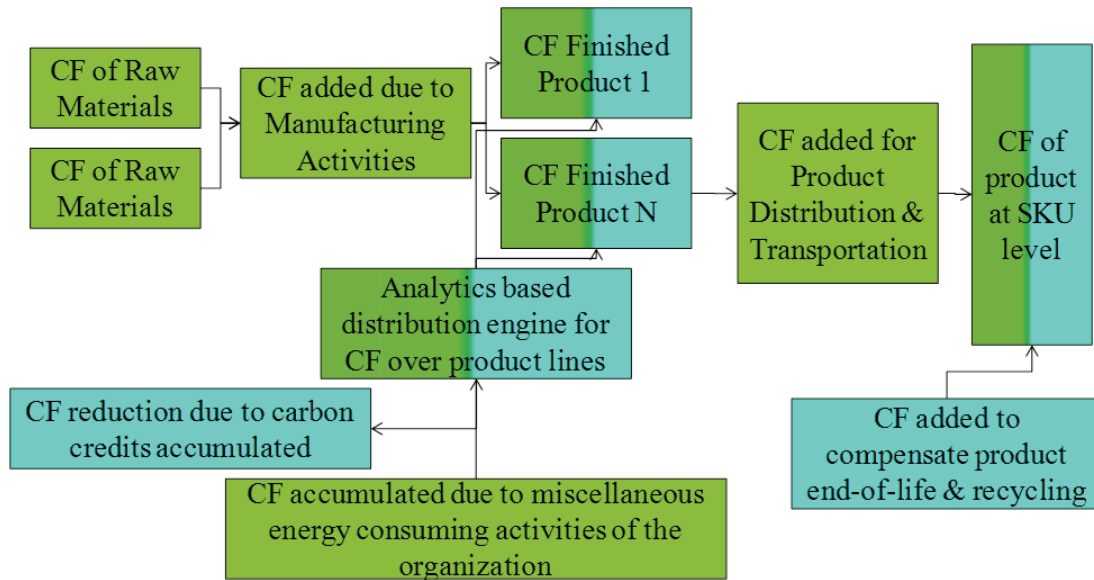
- Raw and packaging material production/ procurement
- Product manufacturing and storage
- Product distribution – wholesale and retail
- Consumer usage, product and packaging material disposal
- Miscellaneous activities leading to accumulation of carbon footprint of an organization, which cannot be directly linked to a product

The measurement of carbon footprint involves the capture of data relevant for calculation of overall emissions via the following steps:

- Emission data related to raw and packaging material production can be obtained from the vendor(s) of these materials. Where raw materials are involved, the emission data per unit can be maintained against the batch of the raw material. For packaging material the emission data per unit can be maintained against the material directly.
- The distance of the manufacturing facility from the vendor's location can be maintained in the vendor material information record
- The direct energy consumption for manufacturing the product can be maintained against the batch of the product and the indirect energy consumption can be proportioned per unit
- Energy consumption related to storage of the finished product can be proportioned per unit
- Energy consumption related to transporting the finished product to the customer can vary depending on the distance to the customer. In case a dynamic calculation of the emission data is required, the actual distance can be calculated by using the postal code information of the customer and the same can be maintained against the delivery document. Alternatively the emission information can be requested from the logistics provider and can be proportioned per unit
- Emissions related to disposal of product and packaging material can be obtained via declarations made to the recycling partners

## Architecture of a High-level Solution to Enable Measurement of Carbon Footprint

Given the near monopoly of SAP as the backbone ERP system in the consumer products business, it is worthwhile to discuss a possible high-level solution to enable the measurement of carbon footprint in an SAP-centric landscape. The diagram below depicts the high-level architecture of the solution required to calculate the carbon footprint of a product.



To maintain credibility it is important to track the carbon footprint of all raw materials and value added activities across the supply chain. There are two kinds of carbon footprint impact that need to be tracked and distributed appropriately:

- **Direct Carbon Footprint Contribution:** This includes the impact of direct input materials, dedicated production processes, and dedicated value-added processes like distribution, packaging and transportation on the carbon footprint
- **Indirect Carbon Footprint Contribution:** This includes a company's energy consuming activities that cannot be directly attributed to a specific product such as energy consumption in offices, miscellaneous travel and transportation, etc. This also includes carbon credits accumulated/ bought by organizations by sponsoring/ promoting Green Initiatives.

The solution framework suggested is similar to that for calculation of cost of goods in an organization. In an SAP-centric landscape the solution will need Carbon Footprint data captured at each stage of the product life cycle via application components like Supplier Relationship Management (SRM) and ERP Central Component (ECC). The carbon footprint of input material will need to be captured during procurement process and the Carbon Footprint of other activities like production and logistics will need to be captured in various processes supported by the ECC. The Carbon Footprint will need to be a core attribute of the material and will have an associated Unit of Measure. The Carbon Footprint due to indirect items will need to be accumulated at an enterprise level and distributed across products using a rules-based engine that can be developed in a data warehouse / analytical tool like SAP-BW. Such a solution, together with reference data such as legal standards and company targets and master data relevant for carbon footprint calculation such as bill of material (BOM), will facilitate the calculation of carbon footprint and generation of analytical reports.

Companies can also use readily available software solutions such as Greenstone's Acco<sub>2</sub>unt product suite, Zerofootprint's Enterprise Carbon Management software, etc., instead of an in-house developed data warehouse-based solution.

Currently none of the leading enterprise software product vendors provide a comprehensive software solution to measure and manage carbon footprints. One of the reasons for this is the ambiguity and complexity involved in the process. Industry leaders should collaborate with IT vendors from an early stage to design robust, consistent and comprehensive software solutions. Such a collaborative approach can ensure that the designed solution fits seamlessly within the existing IT processes of the organization, thereby providing the advantage of carbon footprint display and enhanced brand appeal.

## Challenges for Future

As companies and retailers rush to provide carbon accounts of their products, debates may arise between governments, companies and environmental groups regarding ethical and appropriate methods for measuring a carbon footprint. However, currently there are no legally binding requirements for producers of consumer goods to measure or provide their carbon footprint. In future many companies may make unsubstantiated claims to improve their environmental credentials - a process dubbed “green washing.” Governments may manipulate environmental regulations and use variations of carbon footprinting to protect domestic industries from international competition. Consumer confusion may increase over the credibility of products labeled ‘green’. These challenges might prove difficult to tackle for the World Trade Organization.

On the other hand, businesses alone cannot translate consumers’ intent into action. As demonstrated by the success of the Energy Star program, government and non-profit organizations must often participate actively to achieve long-lasting changes in consumer behavior. Nevertheless businesses can play a leading role in the green movement in order to shape their market opportunities and manage potential regulation of their industries.

## The Green Imperative

Today green products and services make a niche market that is poised for strong growth. Already 33% of consumers who took part in McKinsey’s 2007 survey state that they would pay a premium for green products while 54% care about the environment and want to help mitigate climate change. Entry into the green market can improve a company’s reputation, thereby increasing the value of its brands. Companies that have a strong position in this market can protect their market share from competitors. More than 80% of 2192 executives in a McKinsey quarterly survey (2007) expect some form of climate change regulation within the next five years in countries where their companies operate. The most active businesses will try to shape these regulations and may even push for stricter ones that would be disadvantageous to less environmentally savvy competitors. Newcomers, in turn, can steal market share from established companies by appealing to the expanding legion of green consumers.

Going green while staying competitive can be challenging and companies may rightly wonder whether cultivating green consumers is worth the trouble. The growing belief is that more than being worthwhile such an initiative is imperative for success. Once businesses remove the obstacles that currently hinder consumers from acting on their environmental beliefs the sales of green products could explode. A company that builds a reputation for eco-friendliness can increase its revenue, improve its brand reputation, attract talented employees, build loyal consumers, and charge premium prices for its products.

## References

- “Helping Green Products Grow” at [www.mckinseyquarterly.com](http://www.mckinseyquarterly.com)
- “Draft Code of Best Practice for Carbon Offset Providers Accreditation requirements and procedures” at [www.defra.gov.uk](http://www.defra.gov.uk)
- “Carbon Footprint measurement of goods and services: methodological recommendations and ongoing activities at the JRC” presented on 4th March 2008 in Bruxelles during the 2008EU Coordination meeting on CF measurement of products
- <http://www.carbonfootprint.com>
- <http://www.carbon-label.com>
- Global Warming: The Carbon Footprint Challenge and the Consumer at [www.iff.dk](http://www.iff.dk)
- <http://www.emra.gov.uk>
- Help Would-Be “Green” Customers Walk Their Talk By Gail Nickel-Kailing

## About the Authors

[Arun Viswanathan](#) is a Principal Consultant with the SAP Consulting Unit of Infosys Limited. He is a lead consultant for an SAP Implementation program for a large consumer goods company. He can be contacted at [Arun\\_Viswanathan@Infosys.com](mailto:Arun_Viswanathan@Infosys.com)

[Vijay Mishra](#) is a Senior Principal Consultant with the SAP Consulting Unit of Infosys Limited. He leads the SAP solution delivery for Retail Consumer Goods and Logistics industry vertical for Infosys Limited. He can be reached at [VMishra@Infosys.com](mailto:VMishra@Infosys.com)



For more information, contact [askus@infosys.com](mailto:askus@infosys.com)

### About Infosys

Many of the world's most successful organizations rely on Infosys to deliver measurable business value. Infosys provides business consulting, technology, engineering and outsourcing services to help clients in over 30 countries build tomorrow's enterprise.

For more information about Infosys (NASDAQ:INFY), visit [www.infosys.com](http://www.infosys.com).