WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

# Sustainability for Tomorrow's Consumer

## The Business Case for Sustainability

Report was prepared in collaboration between Deloitte Touche Tohmatsu and the World Economic Forum

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# Preface

The World Economic Forum's Consumer Industries community is pleased to present this report as part of the *Sustainability for Tomorrow's Consumer* initiative. The Consumer Industries community comprises leading companies from the agriculture, food and beverage, retail and consumer goods industries. This initiative was kicked off in response to the mandate of consumer industry chief executives at Davos in January 2008. These chief executives had the vision to view sustainability as an opportunity for innovation and growth, and with support from the consumer industries community, this initiative has spent the past year exploring these opportunities in more depth.

The three pillars of this initiative are:

1. The Business Case for Sustainability: Understanding the implications of increased consumption and resource volatility on cost structures and business models and establishing the need for disruptive innovation
2. Design Innovations for Consumer Industries: Exploring breakthrough lifecycle innovations towards a sustainable consumer basket
3. Shaping the Framework Conditions: Having an impact on the future playing field for sustainability by engaging stakeholders such as investors and regulators

This report aims to present the business case for sustainability for consumer industries. The analysis conducted as a part of this project suggests that supporting sustainability is not only responsible, but also makes good business sense. In addition to presenting the change imperative for businesses, the report shares learning explored through this initiative to guide companies along the path to sustainable consumption and growth.

A broad network of partners has contributed to the ongoing success of this project. We express appreciation for the Project Board and Advisory Board for their input to the initiative and specifically their attendance at the workshops held throughout the year. Along with numerous meetings and calls, three workshops were conducted, in Beaverton, Oregon, in May (hosted by Nike); New York City in September as part of the Forum's Industry Strategy meetings; and New Delhi in November in conjunction with the Forum's India Economic Summit. This report represents the collective input of more than 100 individuals who attended these and other meetings to discuss this issue. Partner companies also provided input to the in-depth life cycle analyses conducted for a basket of consumer products as part of background research and analysis.

The initiative's Project Board includes: Best Buy Co., Estée Lauder Companies, Nestlé, Nike Inc. as chair, PepsiCo, S. C. Johnson & Son, Sealed Air Corp., The Coca-Cola Company and Unilever. Special thanks to Kraft Foods, Nestlé, Nike Inc. and Unilever for providing specific data to support business case analyses.

The Advisory Board includes Aron Cramer of Business for Social Responsibility (BSR) as chair, Susan Burns of the Global Footprint Network, Brian Collins of Collins Design, David Cook of The Natural Step, Helio Mattar of The Akatu Institute for Conscious Consumption, Malini Mehra of Center for Social Markets (CSM World), Ted Howes of IDEO, Mindy Lubber of Ceres, Simon Zadek of AccountAbility, Jimmy Wales of Wikipedia.org and Bill McDonough of McDonough & Partners.

This report was produced in partnership with Deloitte – our project adviser for this initiative – and special thanks are due for their support of both content and the year-long process that has produced this new insight on business and sustainability.

Robert Greenhill
Managing Director, Chief Business Officer
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# Executive Summary

## The Issue

There will be a tripling of the global middle class[1] by 2030. Each year, at least 70 million people will be entering this income bracket in purchasing power parity terms. If this projection plays out, almost two billion people will have joined the global middle class by 2030, bringing almost 80% of the world's population into a middle income bracket.[2]

On the other hand, three planets Earth would be required were everyone to adopt the historic consumption patterns and lifestyles of the average citizen in the United Kingdom; and five planets if they were to live like the average North American.[3]

This conundrum creates a systemic challenge to our world economic system and the business community: how is it possible to create wealth for tomorrow's consumer and value for tomorrow's businesses in an environmentally sustainable manner?

## The Dialogue

This question inspired chief executives of the Consumer Industry community at the World Economic Forum Annual Meeting 2008, to launch a 12-month discussion: What does sustainability for tomorrow's consumer mean? What is the business case to start meeting tomorrow's consumer demands today?

The community developed four hypotheses for consumer industry executives and experts to challenge:

1. Global consumption patterns are out of balance, with demand for resources and commodities growing more rapidly than supply despite the current recession
2. Resource use intensity of the consumer industries and associated supply chains is commensurate with underpricing of natural resources, and not reflective of true resource costs
3. The financial sensitivity of consumer industry companies to resource volatility and constraints is severe
4. New business opportunities will emerge through a fundamental rethinking of what successful business models may look like in the future

Over the course of 2008, a series of workshops was held in the US and India to explore these themes. Over 100 consumer industry executives and experts in sustainability, business strategy and product design took part in the discussions. Additionally, quantitative analysis of resource intensity and business impact of resource scarcity on business profitability was conducted to evaluate the scale of the challenge faced by companies.

During the 12 months of discussion, the financial crisis took hold and the threat of economic slowdown became a reality. Executives remain convinced of the underlying growth potential of consumption from the new middle class, but felt that the financial crisis held critical lessons for the sustainability agenda: 1) there is a need to address systemic risks (financial, social, environmental) before they fracture the imperfect institutions and governance that currently restrain them; 2) the crisis creates an opportunity to build back new and different business management approaches; 3) in today's global system, wider collaboration, although difficult, is the only effective way to address a systemic crisis.

## Findings

Four business imperatives for a more sustainable tomorrow emerged from the dialogue:

- **Meaningfully engage consumers** – Consumers are confused about sustainability, and new ways to reshape the role of consumers will be required to proactively engage them in an experiential relationship, beyond the purchase of a product. As consumers remain price sensitive, the onus will be on business innovation to meet tomorrow's demands.

- **Innovation is the only way forward** – There is a long-term need to dematerialize the economy and shift to new value-driven relationships which focus on meeting consumer needs, and selling value rather than just selling more "stuff". Incremental improvements will not be adequate to meet the challenge of sustainability.

- **Rethink core business models** – With more value placed on externalities, a change from a build, buy, bury mentality is inevitable. There will be no "going back to normal" as the relationship between product, service and consumer irreversibly evolves.
- **Collaborate along the value chain and close the loop** – New forms of collaboration such as open sourcing will be required with supply chain partners and consumers, based around resource efficiency, product take-back, and reverse logistics. Information sharing will become more common, for example, through standardization of packaging materials to boost recyclability.

In addition, shaping the policy to support and align incentives acts as a fifth imperative and a catalyst for these four.

## Next Steps

The implications of these findings are clear: there are systemic risks to sustainability which are embedded in the current economic structure, which will need to be addressed in a breakthrough manner rather than through incremental improvements. It is up to the consumer facing industries to be proactive, and they will need to engage with their entire markets and supply networks. New forms of collaboration will be required to create a competitive commercial environment that enables room for innovation and value creation for all.

During the World Economic Forum Annual Meeting 2009, the Project Board which has led this work is discussing its implications with a wider group of chief executives in the Consumer Industries. The aim is to gain feedback and support to design and launch a major new initiative for the Forum, centred on the business innovations that will be required to meet the demands of tomorrow's consumer and tomorrow's stakeholders in a sustainable manner.

A further session at the Annual Meeting 2009 is inviting executives from other industries to discuss this issue, exploring whether these imperatives resonate with leaders from consumer facing industries such as automotives, aviation, ITC, media; and from industries within the supply chain such as chemicals, mining and metals, logistics and transport. Is there appetite from other companies in the value chain to help build such an initiative?

**A working proposition for the new sustainability initiative: Tomorrow's Consumer**

- What does a good future look like? Create a normative vision of a sustainable world in 2030, and the systems that will enable it, building on economic and environmental trends to challenge current assumptions
- Explore in depth the new business models that will be needed to deliver this breakthrough system, the new collaborations required, the new types of consumer relationship to develop, especially in different cultural contexts
- Engage key stakeholders (business, government, investors, consumers) to illustrate how this new system will create wealth for tomorrow's consumer, value for tomorrow's company and lower systemic risks in tomorrow's economy
- Based on the evidence above, use the collaborative power of collective stakeholders to pull the structural levers which will change industry, financial sector and governmental agendas to prepare for tomorrow's needs

Companies that take the lead on sustainability will be market makers rather than market takers. By showing the consumer that there is no need to sacrifice price and quality for sustainability, tomorrow's successful businesses will meaningfully engage the next two billion consumers, the largest new market the world has ever known. In doing so, they will secure stronger markets and a better business tomorrow. Politicians and governments are looking for ways to regulate a better world and price externalities without compromising development or living standards. If business can build sustainability without compromise to the consumer and voter, they will pave the way for better and more welcome regulation.

## Getting involved

As this initiative expands through 2009, interested partners should please contact:
**Sarita Nayyar**, Senior Director, Consumer Industries, Sarita.Nayyar@weforum.org
**Randall Krantz**, Associate Director, Environment Initiatives, Randall.Krantz@weforum.org
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*"This is not the same old sustainability challenge. This is not a fringe discussion any more about using soft power. We're beyond that. Sustainability is no longer a 'nice to have'. It has become a human security and survival issue. We need a progressive risk management agenda to help improve the lives of everyone who participates in tomorrow's global economy."*

Environmental and sustainability cluster summary report (incorporating the viewpoints of 120 international sustainability experts from public, private and academic sector), Inaugural Meeting on the Global Agenda, Dubai, November 2008

# Business Case Rationale

## Sustainability as an issue of relevance

Sustainability has received an unprecedented amount of attention over the last several years. Chief executives have aggressively set priorities and goals; companies have issued sustainability reports and undertaken numerous initiatives focused on enhancing environmental performance; and new reports and articles are released on the topic every week. Given this focus and attention, why the need for yet another initiative and report highlighting the risks and opportunities associated with sustainability?

Consumer industry chief executives, in partnership with the World Economic Forum, undertook this initiative, "Sustainability for Tomorrow's Consumer", because they recognize the need to view sustainability as an opportunity for innovation and growth rather than a new campaign or a response for the purpose of regulatory compliance. This initiative represents the recognition by industry leaders that there is a need to go beyond the historical response to sustainability – largely focused on incremental improvements – to achieve a desired future state where human consumption is in balance with natural systems.

Sustainability in the context of this initiative is focused primarily on environmental impact, but not at the expense of the social or economic fundamentals. As such, it is important to take a broader view than just environmental sustainability. The 1987 UN Brundtland Commission developed one of the first definitions of sustainability: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[4]

Several factors are contributing to heightened interest in sustainability by business: increasing volatility in commodity and energy prices, more public and investor scrutiny of the traditional supply chain, the flattening world of information and complexity of value webs, and the inevitable long-term need for the economy as a whole to innovate to improve resource use efficiency in order to both deliver wealth for tomorrow's consumer and sustain value creating companies. These factors mean that some forward-thinking business leaders are becoming more interested in sustainability as an issue right across the economic system, and how they can collaborate to make this shift, rather than just how they each might be able to reduce cost or meet regulatory requirement within their own company.

## The immediate economic environment

"This is not the same old sustainability challenge; this is not a fringe discussion about soft power: we're beyond that. This now requires hard power. It is a security and survival issue." This was the conclusion of more than 120 environmental and sustainability experts who met across 12 Global Agenda Councils at the World Economic Forum's global brainstorming event held in Dubai in November 2008[5]. The current refrain, "a crisis is a terrible thing to waste", seems particularly apt.

Given the current state of the global economy, many consumer industry company leaders will have no choice but to focus in the short term on cost cutting and even business survival. However, the sustainability challenge is a shakeout in the making. The current economic environment offers a wonderful opportunity for companies to reflect on how they are run today, and what needs to be different to be prepared for the future. As the framework conditions that govern business are not within the direct scope of just one company, a collaborative setting provides not only the leverage of scale, but also the opportunity to redefine how performance is measured.

Economies moving out of the downturn and into a recovery cycle will present very compelling situations for sustainable technologies and products, though some challenges may remain, particularly in developing economies. As companies plan ahead, there is the question, "When will things return to normal?" It is increasingly likely that there will never be a return to the "normal" of the past two decades. Prices will stabilize over time and parts of the economy will be picking up again bit by bit, but it may take years before economies return to previous levels and when they do, the landscape will look very different than it does today.

## Guiding hypotheses

The realization by industry leaders that there is an increasingly strong business case for sustainability set the tone and agenda for this work. This premise resulted in the development of a guiding set of hypotheses which are addressed in this paper:

1. **Consumption imbalances:** Despite the current economic downturn, global consumption patterns are out of balance – with demand growing more rapidly than supply – and this imbalance is likely to grow exponentially in the future

2. **Resource efficiency:** The resource intensity of consumer industry products and business models is significant, not well understood, and not reflective of "true" resource costs

3. **Bottom line:** The financial sensitivity of consumer industry companies to resource constraints is severe and will likely be exacerbated in the future when resources begin to be priced more accurately

4. **New opportunities:** There is a remarkable opportunity associated with fundamentally re-evaluating and innovating how we do business and who we do business with as significant new markets open up globally

New business models are needed to respond to these challenges. Companies that embrace these emerging realities will be best positioned to succeed over the medium and long term.

## Need for systemic change

We are a consumption-oriented society. The success of individuals, businesses and societies as a whole has historically been linked with growth in consumption since the industrial revolution. Supply and demand patterns, fuelled by current economic paradigms and continued population growth, put into serious question the long-term viability of continued growth in consumption-oriented behaviour. Even though currently there is a significant drop in global demand in response to the economic slowdown, consumption levels are expected to pick up again once economic activity resumes.

Two influences or triggers have the potential to shift behaviours: scarcity and value creation. Whether it is shortage of oil, water, financial liquidity or imagination, we are entering a new era where scarcity will influence the architecture of society and business. As business increasingly looks at meeting the future needs of consumers, there is a new shift towards value creation and innovative business models that extend available resources. This combination of "sticks" and "carrots" will result in increasing wealth and value for tomorrow's consumers and businesses in an environmentally sustainable manner.

These influences and triggers are not future events for deliberation; they represent the reality to be dealt with today – a journey on which leading innovators are already embarking. Consumer industry companies are experiencing an unprecedented period of change and volatility; even the underlying assumptions on which current business models were built are changing. Access to cheap resources and labour, predictable consumption growth, stakeholder expectations, and traditional business roles and accountabilities represent dynamic business conditions that require new thinking.

Globalization, developing market demand, resource constraints and broader environmental concern have created a higher level of inter-connectedness between business and society. The evolution of this global, interconnected model, combined with the volatile business conditions we face today, is challenging the business strategies of many companies.

Volatile input costs, greater societal expectations and evolving policy directions are possible early signals of a transition from a historically consumption-based model to one of sustainable production and consumption. Work through this initiative is intended to facilitate (and hopefully accelerate) the industry's movement through this transition.

The analysis, recommendations, and insights in this report are intended to represent a balanced view of risk and opportunity and highlight the need for companies to fundamentally rethink their value proposition. While it is unlikely that this work will serve as the tipping point for achieving sustainable

growth, it is hoped that it will serve to accelerate industry's understanding of the key issues required to shift environmental concerns into the core of business.

The long-term trends of resource scarcity along with rising consumer markets in emerging economies will endure the current economic crisis, and so it is critical not to allow the urgent overtake the important. Much as business adapted quickly to globalization, the challenges of sustainability present an opportunity for new investments, new businesses and new business models. Collaborative innovation and a common understanding can increase momentum towards a new future for consumer industries.

# Macroeconomic View of Supply and Demand

It is useful to look first at the economic elements that are shaping the argument for sustainability.

## Globalization

Until the current global economic crisis, the world economy had grown for 20 years at a pace unprecedented in economic history. Unlike previous economic cycles, this growth was driven by rapid development in emerging economies, allowing many of them to narrow the historic gap with the developed world. It also enabled hundreds of millions of people to move from poverty into a new global middle class with material disposable income.

The primary cause of this growth was the integration of several major emerging countries into the global economy – China, India and Russia, among others, went from self-sufficient economic policies to embracing globalization. This meant freer movement of goods, capital and even people across international borders. It also marked the adoption of market-oriented policies, the end or reduction of internal and external trade restrictions, a reduction in subsidies and price controls, and even the encouragement of entrepreneurship.

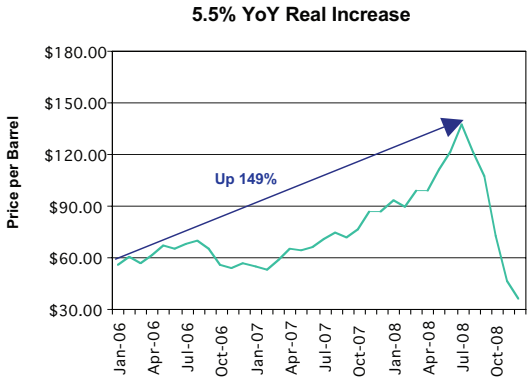
This economic growth was additionally driven by a number of specific events: the collapse of communism in Eastern Europe, privatization trends of the 1980s and 1990s which started in Margaret Thatcher's United Kingdom, "demonstration effects" of the success of market-oriented policies in developed countries, and success of export-oriented policies in the newly industrializing countries of East Asia.

These changes had a huge impact on the larger global economy. With roughly a billion new workers, globalization put downward pressure on wages and costs – and also downward pressure on prices. This contributed to the low inflation of the past 20 years and increased purchasing power globally. Those billion new workers also became a billion new consumers in the global economy. This increased the size of the market into which global companies could sell and also contributed to their efficiency gains.

Globalization, it seemed, was a very good thing. Some, however, have now suggested that the benefits of globalization are waning and costs are increasing, signalling perhaps that the era of low inflation is coming to an end. Nevertheless, there are, and will continue to be, consequences to globalization.

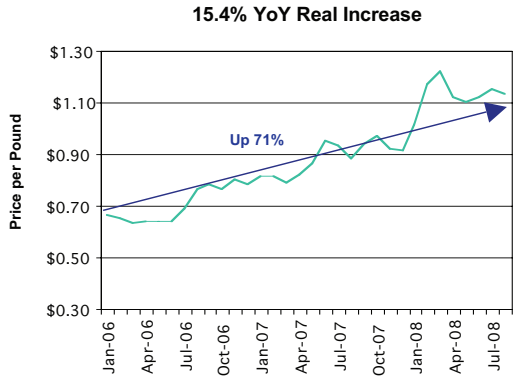
First, and most notably, the huge increase in demand in emerging countries has put upward pressure on global prices of commodities such as petroleum and many types of food and minerals (Figures 1 and 2). This has caused redistribution of global income, rising inflation and, in the case of food commodities, potential hunger. The recent drop

**Figure 1: Crude oil price volatility**




Sources: Energy Information Administration, http://www.eia.doe.gov/

**Figure 2: Coffee price**




Source: ProPurchaser

in commodity prices is in response to a dramatic decline in economic growth globally. When economic activity begins to pick up again, so will the demand forces that are expected to drive up the commodity prices.

Second, globalization has contributed to increasing income inequality in developed countries. The increased supply of low-wage labour has reduced the demand for such labour in developed countries, thereby increasing the gap in pay between skilled and unskilled workers. This has given some basis to protectionist sentiment in developed countries.

Third, rapid economic growth in emerging countries has placed enormous pressure on the physical environment. Pollution in many emerging countries has become exceptionally bad and is already adding to public health costs and reduced life expectancy. In China, it has been estimated that a "Green GDP", which incorporates the health and social costs of the environmental degradation, ends up costing 3% of China's 2004 economic output – more than half a trillion yuan[6]. Environmental damage is often exacerbated by subsidies to food, fuels and energy use designed to create jobs, increase consumption and encourage economic growth.

It is estimated that one third of China's emissions are due to exports.[7] Can the global economy continue to reap the enormous benefits of globalization while simultaneously dealing with the increasingly evident environmental and social costs? Society wants to sustain economic growth and lift billions more out of poverty, especially given that we will have one billion more consumers by 2020. They will expect to drive cars, travel by airplane, buy major electric appliances, and live in larger homes with air conditioning[8,9]. But we cannot afford to be as inefficient in the future in how we use resources and create waste as we have been in the past. We need to create new technological and management approaches, and entire new ways of doing business.

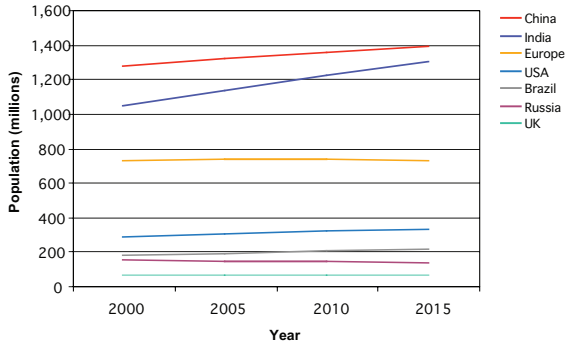
**The Rise of Washing Machines in India**

As women's roles have changed in Indian society and as the middle class has grown, washing machines have increasingly found their way into Indian homes. The washing machine industry grew by 22% in 2007, with sales of approximately 2.2 million units. The fully automatic category is particularly attractive to manufacturers and retailers because of its 40% growth rate in 2007. One large consumer electronics company has introduced a US$ 66 washing machine that caters to the unique preferences of Indian families by eliminating the drying cycle and also programming the machines to automatically resume the washing cycle after power returns from an outage.

As appliance manufacturers refine their product offerings and marketing activities, more and more middle class Indians will likely purchase washing machines, which will have significant impact on the environment. Almost every washing machine replaces hand-washing of clothes, requiring more water and more energy. There are opportunities as well, as countless hours of women's time will be liberated, offering a potential to increase economic output and productivity.

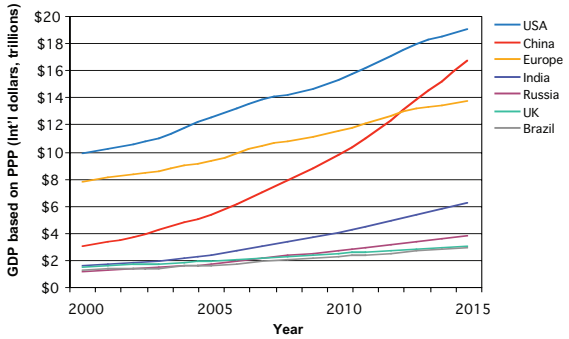
By 1940, 60% of the 25 million wired homes in the United States had an electric washing machine. By contrast of scale, India currently has over 100 million homes with televisions, and washing machines are rapidly catching up. In 2008, the University of Leeds created a washing machine that uses only a cup of water to carry out a full wash. The machine leaves clothes virtually dry, and uses less than 2% of the water and energy otherwise used by a conventional machine. The challenge that presents itself is how to embrace the lifestyle aspirations of these new consumers, while incorporating the next practices and technologies the world has to offer in the interest of the local and global environment.[10]

**Figure 3: Population projections**




Source: UN Statistics and Population Divisions

**Figure 4: GDP projections***




Source: IMF World Economic Outlook, *2014 & 2015 estimated

With increased information flows and greater transparency brought about by the spread of information technologies, the rising middle class will be perhaps less tolerant of societal failures. They will likely rebel against environmental pollution, be more attentive to the health and safety of the products they purchase, and be more focused on issues of public health and societal well-being in general. Thus, a process of globalization that does not address these issues will likely be deemed a failure not only to policy-makers, but by consumers as well.

## Consumption patterns

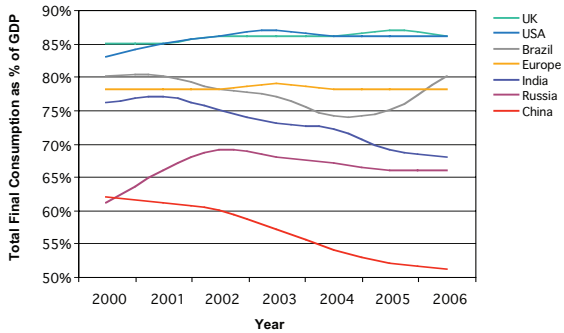
Historically, energy and resource use have been strongly coupled with economic and population growth. In the coming years, a disproportionate share of both economic and population growth will take place in developing countries as their economies strive to catch up with traditionally Western technology and lifestyles. Figures 3 and 4 show the projections for population growth and GDP growth for key economies. As these economies grow, consumer markets will rise rapidly as a result – as will consumer spending, which will rise as a share of GDP in many emerging markets, especially China.

As disposable income continues to increase, traditionally exporting economies like China will likely shift away from growth based on exports and towards growth based on domestic consumer spending.

Figure 5 compares consumer spending as a percentage of GDP and indicates the current gap between developed markets and emerging markets. This variation in consumer spending as a percentage of GDP will converge as the economies of the emerging markets grow further and mature. Note that the drop in consumer spending as a percentage of GDP for China in the last decade confirms that its GDP growth is not the result of growth in local consumption; however, this will change as China's middle class expands further.

As consumption growth takes place, the number of households moving from poverty to middle class will rise faster than the growth of the economy itself. When households grow out of poverty towards a new middle class with disposable income, the resource intensity of consumption – including food, energy, and raw materials – increases dramatically.

**Figure 5: Consumption as % of GDP**




Source: UN Statistics Division

Thus, as emerging countries grow rapidly, the corresponding demand for basic resources – such as water, food and energy, as discussed below – also rises rapidly.

## Water

Water security is the gossamer that links together the web of food, energy, climate, economic growth and human security challenges that the world economy faces over the next two decades. In many places around the world, water has been consistently under-priced, and has been wasted and overused as a result. Stocks of groundwater have been unsustainably depleted at the expense of future water needs. In effect, the world has enjoyed a series of regional water "bubbles" to support economic growth over the past 50 years or so, especially in agriculture. A number of these regional water bubbles are now bursting in parts of China, the Middle East, south-western US and India; more will follow. The consequences for regional economic and political stability will be serious.

From 1900 to 2000, global freshwater withdrawals grew ninefold against a population increase of factor four.[11] According to the OECD, 2.8 billion, or 44%, of the world's population lives in areas of high water stress. This figure is expected to rise to 3.9 billion by 2030 under a business-as-usual scenario. If present trends continue, the livelihoods of one-third of the world's population will be affected by water scarcity by 2025, and could impact annual global crop yield to the equivalent of losing the entire grain crops of India and the US combined (30% of global cereal consumption)[12].

With agriculture remaining a thinly-traded good, gains from trading so-called "virtual" water are limited. Agriculture as a share of exports in international trade decreased from 46% in 1950 to 9% in 2000. Changes in the geopolitical landscape will start to occur, as water-scarce countries seek their own water solutions. The global water forecast for the next two decades, if no reform actions are taken, is chilling; water scarcity will have a profound effect on global and regional systems, whether from an economic growth, human security, environmental or geopolitical stability perspective.

## Food

Food production needs to rise by 50% by the year 2030 to meet the rising demand, according to a speech by Ban Ki-moon, calling on world leaders to increase food production and revitalize agriculture to ensure long-term food security.[13]

When households in emerging economies enter the middle class, they often shift from grain-based diets to diets dominated by foods that are more resource intensive such as meats, fruits and fresh produce. Given, for example, the large grain requirements for meat production, this leads to a disproportionate increase in the demand for grain, one factor affecting grain prices in recent years.

Additionally, the dynamics of food are inextricably linked to water use, as more than 70% of global freshwater withdrawals are used for agriculture,[14] but inefficiencies in water use are high. Traditional irrigation, in most water-scarce countries, consumes only a fraction of the water it withdraws (about 50%); the rest is wasted or evaporates. Trade is also a complicating factor, and as society looks to biofuels and biomass for a solution to energy security, food supplies are likely to be affected. Domestic reform of water for agriculture is therefore urgently required in many water-stressed countries to produce "more crops with fewer drops". Engaging in global trade can also help countries to manage water security issues, but the global trade system for agriculture is outdated and in urgent need of reform. Systems thinking will be required to ensure that strategic long-term solutions are developed and implemented.

The volume of food production depends on a number of key factors – market pricing, protection of private property rights for farmers, availability of energy and water, cross-border trade, and impacts of climate change. Despite advances in agricultural technologies and land productivity, most of these factors augur low increases in food production in developing economies.

Long-term economic growth will result in continuing increases in the demand for grain and other agricultural commodities, creating upward pressure on food prices, despite the current recession. To

feed tomorrow's consumers, there will be a need for freer trade, transparent pricing, encouraged investment in agricultural infrastructure, and more efficient use of the food that is already grown.

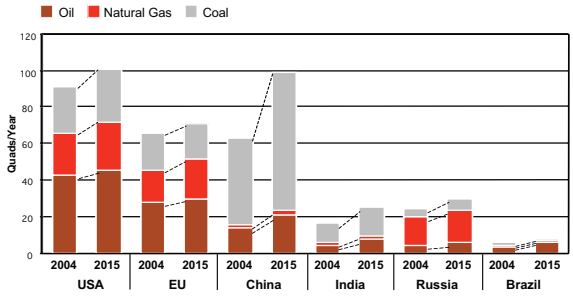
## Energy

Today, energy usage is inefficient in many emerging markets, as well as in most of the OECD with the notable exception of Japan. Although developed nations may use more energy per capita, many developing nations use more energy per dollar of GDP. Using the most recent available data, the US (not generally the world's role model on efficient energy policy), is nearly five times more efficient than China in terms of energy consumed per dollar of GDP.[15]

These inefficiencies are often the result of subsidies, which discourage conservation and investment in efficiency,[16] creating, in many cases, an unsustainable economic burden while exacerbating environmental damages. Energy subsidies in the 20 largest non-OECD countries reached US$ 310 billion in 2007. In the past, efforts to change such policies have been politically very unpopular; meaning, it is often difficult to shift towards market pricing of energy. Still, such pricing of environmental and social externalities is a necessary ingredient in shifting to clean energy supply and more efficient use of all energy.

In coming years, energy demand is expected to grow rapidly, especially as the effects of higher prices are not permitted to influence demand, often the case for energy used in transportation. Energy supplies will rise, although not necessarily commensurately with demand, in part because many countries with large potential supplies of energy are not actively encouraging investments in new capacity. The lack of encouragement for efficient energy use and demand-side management will compound supply shortfalls. This gap will lead to long-term increases in energy prices worldwide, despite current oil prices reflecting the economic downturn. If unregulated, this higher energy usage will likely drive continued price volatility and have negative effects on both business and the environment.

**Figure 6: Current and projected fossil fuel demand**




Source: Energy Projections: World Energy Outlook 2006, International Energy Agency

While energy demand increases globally, the US and EU will be simultaneously seeking to improve energy security. Energy policy decisions have strong connections to water, climate and food security policy, which can spin negatively or positively, and energy policy must take into account these interlinkages. To add a level of complication, domestic energy security can be seen as a decision to switch from relying on foreign oil to relying on domestic water. Fast-growing economies, especially in the Middle East and Asia, will likely allocate less water to agriculture over the next two decades and more to the growing demands of their urban, energy and industrial sectors. Under business-as-usual, water consumption for energy production is expected to grow by as much as 165% in the US and by as much as 130% in the EU over the same period, with serious consequences for water and food security.

## The business imperative

Considering that resource prices have recently dropped dramatically, many business and political leaders may wonder why they should now bother with investing in resource efficiency. The current drop in resource prices is related to extreme weakness in demand given the downturn in the global economy, and many leading economists expect the global economy to begin recovery by the end of 2009[17]. Once a sustained recovery is under way, it is likely that resource prices will rise quickly. Investments in efficiency can begin to pay off immediately and will position a company better as the global economy recovers.

Resource prices are likely to rise even higher and remain more elevated than in the past. If improperly addressed, policy decisions for resource security could lead to resource crises or even collapse. Business and governments will need to act together to ensure systemic solutions are put in place for the long term. Additionally, changes in pricing and the perception of environmental risk will likely change consumer behaviour, especially in developed countries.

Consumer industry businesses can act pre-emptively to meet such uncertainties by making some fundamental and mutually reinforcing changes such as:

- Investments in improved efficiency of resources
- Diversification of resource sourcing
- Changes in packaging and waste management
- Changing supply chain patterns to minimize transport costs
- Efforts to emphasize environmentally positive actions in brand positioning

To address these challenges and to avoid an escalation of personal interests at the expense of public goods, there is a need to have a clearer view of shared resources and interests. In game theory, this is referred to as the Prisoner's Dilemma, while in environmental circles it is commonly known as the "tragedy of the commons", in reference to a 1968 paper by ecologist Garrett Hardin.[18] Companies across different sectors will need to work together to shift the boundaries of their thinking from single companies and products or lifecycles to systems and interlinkages along the whole value network and beyond.

## Consumer response

Consumers play a big part in the calculus, especially since they tend to respond to economic incentives more than moral arguments. Looking at recent history, it will primarily be higher resource prices that lead to changes in consumer behaviour. Businesses tend to respond to consumers – if consumers change, then businesses will change. The challenge for business is to know when best to anticipate consumer behaviour and lead accordingly, and when to follow existing trends. The complexity of this dilemma from a sustainability standpoint is highlighted in the struggles of the North American automotive industry in recent months.

Looking forward, it is likely that permanently higher commodity prices will alter consumer behaviour in favour of lower energy consumption, fewer material purchases, and more efficiently grown food. This happened before in the 1970s, when consumers shifted to smaller cars and more energy-efficient homes. Similar shifts in consumption patterns are likely to happen again, only permanently this time, reflecting that the world is a very different place than it was 30 years ago. When oil prices spiked in 1973 and 1979, global demand decreased by 2% and 7%, respectively. By contrast, during the unprecedented oil price increases in 2008, global demand continued to rise, driven in part by demand in China and India.[19]

While the degree to which consumer and business behaviour shifts will depend largely on regulatory policies, farsighted companies need to help shape political will and consumer opinions. Ultimately, there is a common benefit in acting with long-term interests – for the consumer, business and government.

Consumer industry companies have long understood the importance of environmental resources to their business models. Companies have undertaken significant initiatives to improve resource efficiency and many have invested substantial effort developing lifecycle assessments (LCA), an analysis used to understand all inputs for making and using a product. These LCAs quantify the resource consumption and associated impact of products through both the supply chain and the consumer experience to the end of a product's life.

The focus on resource intensity and LCAs is not intended to replicate work that has already been done, nor is it intended to provide a precise and detailed level of accuracy associated with resource intensity. Instead, this work focuses on using existing data to highlight unique aspects of resource intensity of consumer industries' business models for sustainability considerations.

As part of this initiative, LCAs were evaluated across a range of consumer industry products and businesses. A set of specific products were chosen to represent elements of a consumer basket. Availability of information in certain product categories, for example white goods and appliances, proved to be a hurdle, highlighting the need for more research in this area. Items assessed were a bottle of water, a cotton T-shirt, a cup of coffee, an athletic shoe, powder detergent, a polyester jacket, running shorts and a package of cream cheese.

Based on these assessments, several recurring themes emerged which represent unique aspects of consumer industry companies:

- The large majority of resource consumption is not within companies' direct scope of control – an extended lifecycle perspective is critical to understanding true resource intensity
- Resource views of consumption do not align with economic views – many critical resources are significantly underpriced
- Resource consumption may be decreased not only through technology, but also through business model innovations such as closed loop systems for recovery of waste and product at end-of-life

## Extended value chain

Most consumer industry companies measure basic types of aggregate environmental information, such as levels of energy usage, carbon emissions and water usage. It is often difficult to calculate adequately the full resource footprint for a given product whose scope of impact, by definition, cuts across the entire value chain. Indeed, most companies are only able to focus such measurement "within their four walls" without taking into account elements of a product's lifecycle beyond their own scope of control.

Even though a company can control only direct-input materials, its product will be directly affected if the supply of critical inputs is affected anywhere in the value chain. One challenge in any LCA is to use meaningful input boundaries; for example, whether just the direct inputs should be included or whether these should instead reflect the basic raw materials used, irrespective of where the input enters the value chain. Companies will need to look as broadly as possible when conducting LCAs for their products.

In the example of a cotton T-shirt, a manufacturer needs cotton, water and energy as resource inputs. It takes roughly 1,500 litres of water in a typical T-shirt batch manufacturing process. But a broader view of the inputs is that growing the cotton required to make the T-shirts consumes 6,500 litres of water. And another 2,700 litres of water are used by the end consumer in washing the same T-shirts in their estimated lifetime use. Water is a key input for many other commonplace examples. Nestlé estimates that the amount of water that goes into a cup of coffee ranges, depending on whether rain water is accounted for or not, from 5 (non irrigated coffee, rain water excluded) to 140 litres (irrigated coffee, rain water included).

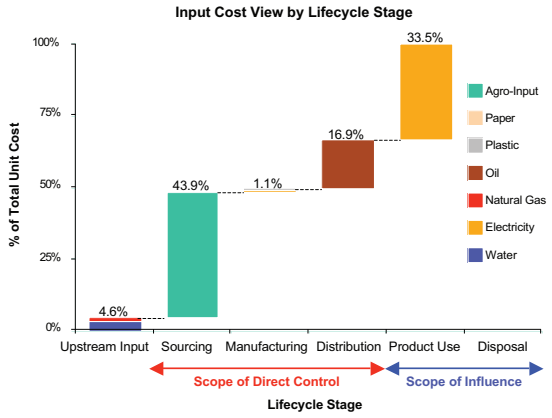
## Product usage considerations

Product usage is a critical step that drives resource intensity for specific products, as indicated above in the need for water for washing a T-shirt. For example, analysis by Unilever in Western Europe suggests that to wash a load of clothes using a washing machine is almost three times more energy-intensive than to manufacture and distribute the needed detergent.[20] Other examples – like running shorts or a polyester jacket – further highlight the energy and water intensity involved with the repeated washing of everyday products. Both use far more energy in their product use phase than the energy cost to make them.

Such simple objects underscore the challenges that so many consumer industry companies regularly face – to design products that minimize their environmental impact beyond the boundaries of the company itself. These considerations will have a direct impact on the price of manufacturing as well as the price of ownership of the product, which in turn will affect a company's bottom line.

Looking at an example from the food and beverage industry, the LCA view for a month's consumption of coffee, shown in Figures 7 and 8 below,

**Figure 8: Resource intensity in equivalent dollars by lifecycle stage for a month's consumption of coffee**




Sources: Consumer goods company data and public sources
*Based on average usage pattern for 30 days

demonstrates the impact that upstream input, product use and end-of-life issues can have on the overall "footprint" of a product – activities which are not directly controlled by a consumer company. In this illustration, the energy used in the product-use phase, to heat the water required to make the coffee as well as wash the coffee cup, is a larger cost driver than the energy used in manufacturing it.

**Figure 7: Material view by lifecycle stage for a month s consumption of coffee**

| Material View | Upstream Input | Sourcing | Manufacturing | Distribution | Product Use | Disposal | Total |
|---|---|---|---|---|---|---|---|
| **Water (L)** | 900 | - | 10 | - | 50 | - | 960 L |
| **Electricity (kWh)** | 0.5 | - | 2 | - | 80 | - | 82.5 kWh |
| **Natural gas ($m^3$)** | 0.6 | - | - | - | - | - | 0.6 $m^3$ |
| **Oil (L)** | - | - | - | 4.3 | - | - | 4.3 L |
| **Plastic (g)** | - | - | 30 | - | - | - | 30 g |
| **Paper (g)** | - | - | 25 | - | - | - | 25 g |
| **Agro-input (kg)** | - | 3.4 | - | - | - | - | 3.4 kg |

Sources: Consumer goods company data and public sources *Based on average usage pattern for 30 days

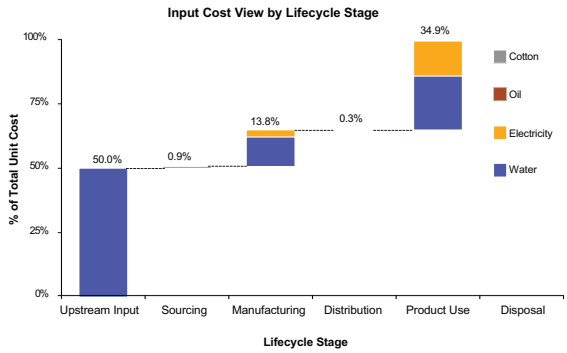
## Aligning resource and economic views of consumption

Lifecycle assessment results in a calculation of resource intensity for a specific product and, by extension, businesses involved at various stages of the product's manufacture and sale.

The LCA view for a cotton T-shirt (Figures 9 and 10) was developed using publicly available information. For simplicity, the key inputs evaluated are water, electricity, oil and cotton, while disposal and recycling costs are assumed to be negligible. The absolute amount of water consumed in making a single cotton T-shirt, 10,700 litres, far exceeds any other input. In this example, it is apparent that, while water is the key resource consumed in making the product from a material standpoint, it is not the critical cost driver – the oil use associated with its distribution is. The reason? The vast difference in the price of both inputs – water is cheap by comparison.

The material view of an LCA looks very different from the economic view; and accordingly, prioritization of resource versus process steps generally is different. The economic view of product LCA is highly sensitive to the pricing of the input commodities. The same economic view is also quite sensitive to pricing of the impact of waste and by-products. If carbon emissions and landfill waste had a price tag associated with them, they would be significant in the design and usage considerations of a T-shirt. This again goes beyond the boundaries of manufacturing, as a consumer will think about the trade-off between washing it often versus its ultimate disposal. In a future with higher prices on externalities like water and waste, a consumer may buy a synthetic alternative with different properties, or indeed not buy a T-shirt at all. Consumer behaviour in turn will affect manufacturer behaviour, and companies will need to be prepared to manage the reprioritization driven by resource price changes.

**Figure 10: Resource intensity in equivalent dollars by lifecycle stage for a cotton T-shirt**




Sources: Public Sources[21]

**Figure 9: Material view by lifecycle stage for a cotton T-shirt**

| Material View | Upstream Input | Sourcing | Manufacturing | Distribution | Product Use | Disposal | Total |
|---|---|---|---|---|---|---|---|
| **Water (L)** | 6,500 | - | 1,500 | - | 2,700 | - | 10,700 L |
| **Electricity (kWh)** | - | - | 2.8 | - | 16.0 | - | 18.8 kWh |
| **Oil (L)** | - | - | - | 0.03 | - | - | 0.03 L |
| **Cotton (g)** | - | 70 | - | - | - | - | 70 g |

Sources: Public Sources
Carbon: http://www.eoearth.org/media/approved/5/52/Textile_total_energy_input2.gif
Water: www.wetstyle.ca/en/faq_bathtubs.html
Energy: http://www.wupperinst.org/de/publikationen/wuppertal_spezial/uploads/tx_wibeitrag/ws27e.pdf; http://www.sciencealert.com.au/news/20080809-17917-2.html
Conversions: http://www.cs.umu.se/~thomash/seapac1.htm

## Industry consumption

Given both their direct and indirect impacts, consumer industry companies play a critical role in building a more sustainable future. The scale of resource usage of many consumer industry companies gives them tremendous leverage to have a meaningful impact on the use of key resources. To get a sense of the scale of consumer industry consumption, it is estimated that a US$ 80 billion consumer industry company uses the energy equivalent of 40 million light bulbs over one year and as much water in a single day as 5,000 Indians use in a year.

Consumer industry companies do not often have all of a product's resource drivers in their scope of control. The ability to change what is within their scope of control has led to a strong "incremental improvement" mindset – making the same product with lower inputs and with improved efficiency. Given the scale of consumption that is within their direct control, companies are right in doing this. At the same time, the current challenge will additionally require that business models be fundamentally redefined to include collaboration across value chains to address these present and future resource constraints. Companies will urgently need to redefine their product and process models in light of sustainability consideration, and align their supply chains to support them.

It is clear that consumer companies can use full lifecycle views of their business as a strategic means of optimizing their operations and value chains in ways not otherwise possible. The added benefit to consumer industry companies of innovating products and services through a broader lifecycle view is that they can better balance market and environmental impact of their activities. The prioritization of areas for improvement may be driven by most economic benefit, more resource use reduction, or simply ease of change. Another lens for prioritization may be driven by consumer need – is this resource input critical to meeting consumer needs and adding value they are willing to pay for, or does it just end up as waste?

Nevertheless, the effort required for better resource efficiency through integration along the value chain is significant. Breakthrough thinking is needed to adapt existing operational strategies and to develop new supply chains that achieve sustainability goals while still optimizing cost and service levels. This thinking will require additional collaborations upstream and downstream in the value chain with both existing and indirect partners.

**Figure 11: Scale of consumption in consumer industry**

The energy footprint for an average Indian is comparable to burning seven *60W light bulbs* for a year

- An average German: 80 light bulbs*
- An American: 160 light bulbs
- An $80 billion consumer company: 40 *million* light bulbs**

*Per capita energy number includes energy required to manufactureconsumed products
**Only includes direct energy used by company

Source: http://www.worldpopulationbalance.org
Estimates based on publicly available information and company inputs

The average Indian uses 135 liters of water per day

- A German: 200 liters per day
- An American: 500 liters per day
- An $80 billion consumer company: 250 *million* liters per day, more than what 5,000 Indians use in a year

Source:
http://www.data360.org/dsg.aspx?Data_Set_Group_Id=757
Company sustainability report

### Water usage of a consumer industry company

Looking at businesses instead of products (Figure 12), the cost structure and resource intensity of an illustrative consumer goods company underscores the basic driver of our product-based economy – raw materials – which inherently need to be converted to finished products in what is currently a one-way stream. Few companies track the magnification of per-unit input into their business-level input. However, most companies do track the total amount of input for key resources.

In this example of water usage, based on publicly available information for this consumer industry company, it is evident that even though this company has been reducing its water-per-ton usage each year, its processes still require a considerable amount of water.

**Figure 12: Water usage in a consumer goods company**

| | 2005 | 2006 | 2007 |
|---|---|---|---|
| **Total Company Production (tonnes)** | 18,802,000 | 20,660,000 | 21,742,000 |
| **Specific Water Usage (litres / tonne)** | 5,000 | 4,400 | 4,200 |
| **Total Water Usage (litres)** | 6,561,358,035 | 6,344,577,075 | 6,373,360,227 |
| **Price per litre** | $0.0008 | $0.0008 | $0.0008 |
| **Total Water Cost** | $74,512,326 | $72,050,510 | $72,377,379 |
| **Water Cost as % of COGS** | 0.22% | 0.20% | 0.18% |

Sources: Company Sustainability Report, 10K (2007),
Price of Water (http://www.hcmud186.com/water_issues/water-rates.pdf)

# Financial Considerations for the Future

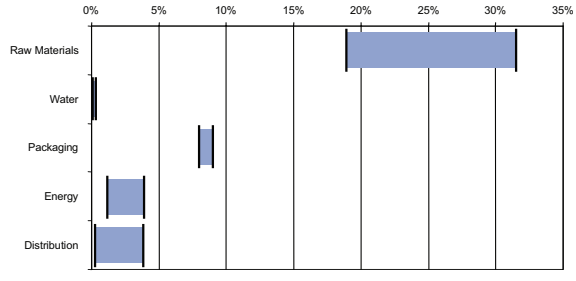
The above analysis of resource intensity highlights the breadth and scale of consumption within consumer industries. However, economic viability must be a core component of any discussion of sustainability. To be prepared to serve tomorrow's consumer, consumer industry companies must approach business model innovation and sustainable growth in a manner informed by the current and likely future economic realities associated with resource consumption.

Many companies have looked at sustainability through the lens of risk mitigation, responding to rising pressure from stakeholders, including consumers, retailers, regulators and non-profit organizations. Based on the changed outlined here, it is clear that the next wave of sustainability will be driven from the inside outwards, with a focus on fast-changing economic imperatives.

## The global business model

Business models have evolved over the past several decades to take advantage of opportunities associated with globalization. Successful global business models have been largely predicated on the availability of inexpensive resources and labour. These models are based on taking in globally sourced, lowest-cost raw materials, converting them into products and selling them for a profit – back into global markets. Macro-level assessment of supply and demand would indicate that these historical assumptions will continue to be challenged in the short and long term.

**Figure 13: Range of corporate resource cost (% revenue) in consumer industry companies**




Source: Estimates based on publicly available information and company inputs. Included companies represent food & beverage and diversified consumer goods sector of consumer industries

Figure 13 shows the key raw materials and inputs for a typical consumer company which are directly tied to constrained resources. These are agriculture-based inputs and other raw materials, water, packaging, energy and distribution costs. Others costs include labour as well as indirect costs. The latter are indirectly affected by resource price increases but for simplicity sake are not included here.

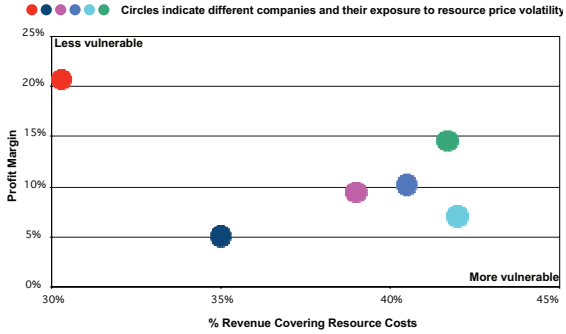
Although different companies use varying portions of their revenue to cover the costs of these resources, one can clearly see in Figure 13 that agricultural input and other raw materials constitute the largest portion, while water cost is generally the smallest of all (agricultural water is highly subsidized by the public sector). Irrespective of the variation across categories, most consumer companies use approximately 40% of their net-sales revenue to cover the cost of resource-based inputs – typically yielding gross profit margins in the 10% range. This is demonstrated in Figure 14, which shows the resource dependence and profit margin of a sample set of companies in the consumer industry.

## Bottom-line sensitivities

Now let's take a closer look at the bottom-line sensitivity to rising energy costs for a specific company. For this company, with a revenue base of US$ 80 billion, a 1% increase in the price of energy will represent an income loss of US$ 9.5 million, unless these cost increases could be passed through to consumers. A similar 1% increase in the price of water would remove "only" US$ 700,000

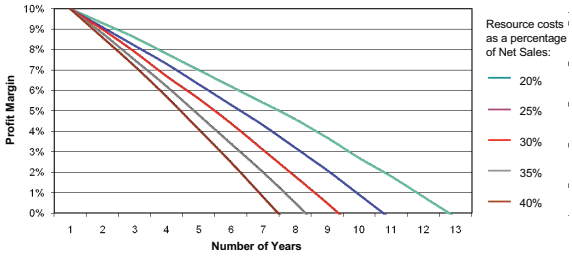
**Figure 14: Resource dependence (% Revenue) of consumer industry companies**

**Typical companies have 40% of their revenue tied to covering costs of resource-based inputs**




Source: Estimates based on publicly available information and company inputs

**Figure 15: Impact of 3.5% year-on-year resource price increase on profit margins**




Source: Publicly available company data, Deloitte analysis

from the bottom line. Though these amounts represent a rather small percentage of the total profitability of this company (0.05% and 0.005%, respectively), they are nevertheless significant in absolute terms. And the effects of these price increases would begin to compound quickly if the input price increases were several percentage points, as has been the case recently.

Other things being equal, and with no pass-through of costs or with limited pricing power, a company can find itself squeezed surprisingly quickly. For a typical company with profitability of 10%, the year-over-year impact of a 3.5% increase in the price of resource-dependent inputs could erode that company's entire profit margins within a decade (Figure 15).[22] The trend is hard to ignore. For companies using a conventional global business model, i.e. companies relying on resource-constrained global inputs, the bottom-line impact of rising input costs over time will be dramatic, regardless of the profit and cost assumptions illustrated here. Furthermore, if all else remains unchanged in these cost scenarios, the profitability of companies will slowly evaporate just to cover the increased cost of inputs in an alarmingly short time frame.

## Who bears the costs?

Who really bears the cost of increased resource input – producers or consumers? Figure 16 illustrates several scenarios that reflect possible valuations of a company based on various responses to rising input costs. The valuations are estimated assuming a company with US$ 40 billion in annual revenue, and the illustrated cost structure.

Control Scenario: Resource prices stay the same

Scenario 1: Company absorbs all of the resource price increases

Scenario 2: Demand halves in response to price increase of the product

Scenario 3: Consumer absorbs the resource price increase, maintaining the margin

**Figure 16: Company valuation scenarios**

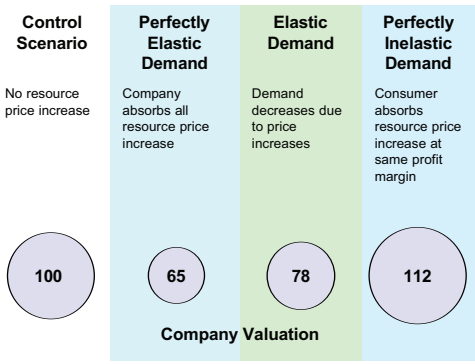
**We attempted to estimate a company's valuation based upon who bears the burden for resource price increases**

**Illustrative Cost Structure**

| | |
|---|---|
| **REVENUE** | |
| **Net Sales** | **$40 billion** |
| **EXPENSES** | |
| **Cost of Goods Sold** | 50% |
| Raw Materials | 26% |
| Packaging | 9% |
| Water | 1% |
| Energy | 4% |
| Distribution | 3% |
| Other Costs | 7% |
| **SG&A** | 30% |
| **Interest Expense** | 2% |
| **Income Tax Rate** | 25% |
| **CORPORATE PROFIT** | **10%** |

**Cost categories impacted by resource volatility**

**Varying Company Valuations Due to Different Responses to Price Increases**




Assume 3.5% annual resource price increase and 3% revenue growth

Needless to say, the net present value of the company, based on projected future cash flows, is lowest in Scenario 1, where the company absorbs all of the price increases. It is also lower than the Control Scenario in Scenario 2, when the company passes on the cost increase to the consumer which results in a drop in demand. In the unlikely Scenario 3, the company valuation appears higher than even the Control Scenario, as consumers would have to pay a higher price to maintain the existing margin. While this is common for extractive industries, in particular oil and gas companies, consumer industry companies face hurdles from both consumers and regulators when it comes to passing on price increases.

This analysis reflects that the profitability drop in the future will pull down the current valuation of companies once the marketplace accounts for projected resource challenges. The goal of this analysis is not numerical precision, but rather to serve as input in defining strategic priorities so that businesses can prepare for the imminent future.

Despite the drop in resource demand given the current recessionary environment, resource price increases appear likely over the medium and long term. Indeed, as economies emerge from this recession and demand begins to pick up, the input price response may be quicker than some companies might anticipate.

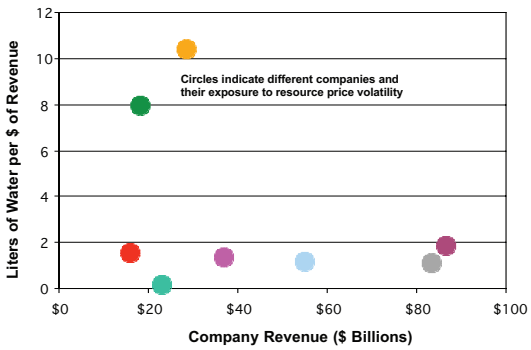
## The true costs of resources

Looking beyond price increase trends for products that actually have a price tag, what if the true cost of some of the inputs began to be reflected? What if water was charged at 1 cent per litre, or if a price tag on carbon emissions became the norm? What if there was a significant charge for waste or anything that was sent to a landfill? These are not idle questions, but real and spreading challenges which are already a reality in certain geographies and industries.

The current price of water varies across the globe, driven in part by the localized supply and demand equation for the area. Nevertheless, for many products, the price of three dollars per 1,000 gallons (US$ 0.08 cents/litre) is negligible compared to the cost of other inputs. As a result, the cost of water is rarely seen as a priority when taking an economic view of a product. The management of water consumption is often attributed to growing interest in sustainability and social responsibility rather than the business case. This may be changing.

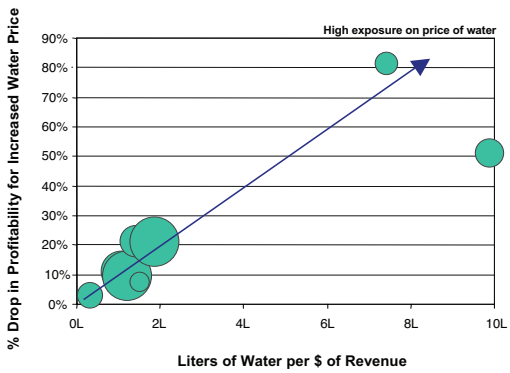
Within consumer industries, the amount of water used towards generating a dollar of revenue varies widely based on the product in question. Of the companies evaluated, this ratio ranged from 0.13 litres to more than 10 litres per dollar of revenue generated (Figure 17). The potential impact of rising water prices will affect some producers dramatically more so than others.

**Figure 17: Water use per dollar of revenue in a sample set of consumer industry companies**




Source: Publicly available company data, Deloitte analysis

**Figure 18: Impact of a water price increase of one cent per liter on company profitability**




Source: Publicly available company data, Deloitte analysis

An additional 1 cent per liter of water being used could have a dramatic impact on the profitability of these companies. Figure 18 quantifies the percentage drop in the profitabiltiy of the same sample set of companies as in Figure 17 as a result of this change.

These illustrations are intended to inform business thinking on the overall sustainability of their products and services in tomorrow's consumer environment, and help add to the framework with which business leaders and policy-makers can think about the business case for sustainability.

Financial considerations dictate that consumer industries can no longer take a business-as-usual approach, with incremental improvement in response mainly to stakeholder pressure, at its centre. Instead, tremendous economic consideration will be required by businesses to think through how their products and services can and should evolve to deliver on the promise of sustainability. More exploration of best practices and potential actions to drive this necessary innovation is found later.

# Social and Economic Aspects of Sustainability

In addition to the direct financial considerations of sustainability, the discussion is incomplete without acknowledging the equal importance of the social and economic aspects of sustainability. The complexity and the enormity of these challenges makes it difficult, if not impossible, to quantify their impact in financial terms. The impact, however, is real and affects business decisions directly. This section aims to provide a brief perspective on the interlinkages of these issues in business decision-making.

When exploring social injustice and its linkages with health and environment, there has been a longstanding mindset that contamination or pollution would occur in communities or regions with no social or political power to stop it. Within countries then, there was a disparity between social strata and environmental impact. With global challenges such as climate change, the concept extends to developed versus developing countries and emitters versus those who suffer the impacts of climate change. In a discussion about resources and public goods such as clean air and water, this raises questions about who pays either for contamination or for the protection of natural resources and ecosystem services provided by nature.

The willingness to pay to correct these societal and environmental injustices is inherently becoming a bigger business issue. In a broader view, the social and economic aspects of sustainability are tied to the fundamental baseline of "resource" itself – be it oil, water, land, etc. There are many complex system interlinkages, for instance, between water use and energy extraction, which makes for difficult policy choices.

The choice to build a dam on a river to generate electricity, for example, may seem like the right choice for supporting sustainable energy generation. At the same time, the dam can have a negative impact on the local ecosystem of the river and agricultural use of the river water for irrigation downstream. Such tradeoffs have consequences beyond just the financial case for sustainability, and it is clear that one must avoid scenarios in which one need, energy, directly competes for a resource with another, in this case, water for growing food. Such decisions will impact local decline or development, and future ramifications will be complex to manage.

Adding to the complexity, a recent global study was undertaken by the IPCC to explore the impacts of climate change on water.[23] The study highlights the social as well as the economic challenge of leaving what may be our most precious global resource to traditional market forces, showing why water is an excellent example to use in the context of social and economic aspects of sustainability.

As a commodity, water is already complex and controversial, with inevitable pricing shocks and economic impact. When addressing social and economic tradeoffs, the subject of water becomes more involved. Water is not a commodity in most geographies but rather a human right. Businesses exploring new markets often need access to public water supplies, and looking at pure economics ignores additional layers of both politics and potential solutions.

If natural resources are not priced appropriately and are not being recognized at their true cost, they will not likely be conserved accordingly. There are global trends towards pricing of externalities such as water or carbon, and the fairness issue is still highly contentious. There are those who believe that in many countries, if water is priced appropriately, there will emerge a whole new income stratification and a broader class of people facing basic survival challenges.

From a social perspective, extractives, including oil, are another classic example of resource tradeoffs. Drilling and mining often take place in economically deprived geographies, and present many challenges associated with labour and resource contracts. In what is often known as the resource curse, or the "paradox of plenty", regions with an abundance of extractive natural resources tend to have lower economic growth than countries with fewer natural resources. This is often attributed to poor governance or corruption, volatile resource markets, and declines in competitiveness due to lack of technologies and investment associated with the transformation of the natural resources.

Balancing these social pressures with environmental ones can add another level of complexity to a business that wants to be ethically sound. The juxtaposition of social investment does not necessarily need to cost a company more if it

recognizes the importance of supporting its workforce and local communities for the long term.

The same can be said about interlinkages with the environment. The Club of Rome commissioned a study almost four decades ago which explored the impact of economic and population growth on finite supplies of resources. Titled "Limits to Growth",[24] it was a seminal study for the environmental movement and its predictions on the challenges of industrialization, pollution, food production and resource depletion have today been largely fulfilled. The world of 2009 and the next 10 years will be very different that the decade from 1974 to 1984, not least because of a global population increase of more than 50%.

Taken separately, social, economic and environmental issues all may appear to compete for the same investment and attention. In fact, these cannot be regarded as separate issues, but a single one involving long-term systemic thinking. By thinking about the interactions among society, economies and the environment, businesses can plan more efficiently for the future and look beyond its shareholders to its broader stakeholders. By investing in the local community and environment, stakeholders will ultimately be part of a win-win plan.

**Water: Innovative approaches to balancing business needs with societal implications**

A beverage company expanding into India, for example, must resolve the issue of water use efficiency from an operational standpoint but must also coexist within a community or area that may already have severe water access issues.

At a recent innovation workshop conducted in India to support this work, one of the teams was provided with retail bottled water as the product to "redesign" for the future. Balancing the consumer need of having potable water with the need to reduce waste in the form of a disposable container, the team came up with a fundamentally new business model based on an innovative rain water harvesting system which eliminates the need for water bottles themselves.

While removing one part of a consumer business and the sale of bottled water to local communities, the group came up with a business model built on the installation and leasing of the required infrastructure, with empowerment of local women to manage the water through micro-franchising. This solution provides access to meet the need of the local community – in this case water – while making the business solution more relevant to local needs and also helping support the local community by providing the much needed resource.

Businesses have such opportunities to bring creative solutions using their economic strength to invest in infrastructure that meets both their own and wider public needs.

# Emerging Solutions for Business

The business case for sustainability reinforces the need for action and for fundamental, breakthrough change. Companies and their chief executives need to focus on specific behaviours and actions that can be undertaken now and in the future to accelerate the pace of change towards sustainable growth and consumption.

This initiative intends to provide equal perspectives on both the change imperative and the way forward. Through a combination of analyses, discussions and design workshops conducted as part of this work, a set of design principles has emerged to guide companies along the path to sustainable growth:

- **Consumer engagement:** Consumers must be a part of the solution; however, they remain confused as to the definition and impact of sustainability. As such, any future innovation must have a significant component of capacity-building to proactively engage consumers
- **Breakthrough innovation:** Step changes in performance can come about as readily through innovative application of existing best practices as with new and emerging thinking
- **Reinventing business models:** Businesses need to be proactive in reinventing their business models and challenging historical assumptions – inclusive of fundamentally rethinking their value proposition, products and service offerings, and traditional roles along the extended value chain
- **Closing the loop:** The most powerful solutions will be created through collaboration across the extended value chain – involving manufacturers, suppliers, customers, retailers and consumers – from raw materials through product take-back and recycling
- **Role of policy:** Private sector will need to engage with government, civil society and media and help shape policy that supports and aligns incentives for migration towards a sustainable economy

Even though the discussion has been focused on resource intensity, the next steps for companies aren't necessarily to discourage consumption *per se*, but instead to consume in a more sustainable way themselves and offer products and services that allow for sustainable consumption by tomorrow's consumer, reflective of environmental, economic and societal points of view.

## Consumer engagement

While consumers are increasingly sensitive to sustainability issues, many do not comprehend the impacts of their individual actions and consumption. Bridging this gap in understanding will be critical as society shifts into a more sustainable track, and in particular with consumer industries that have the opportunity to influence demand. In learning to better understand and better meet the needs of consumers, there is also an opportunity to reshape corporations.

Consumers are often confused or find sustainability considerations important only until money, availability or convenience gets in the way. Do consumers like ethical spending, for example? Or fair trade practices? The answer is certainly yes to both – as long as it doesn't cost too much more. The reality is that consumers remain very price-sensitive despite the fact that, for all practical purposes, they have in many markets already delivered a sustainability mandate to consumer companies. Exceptions to this rule might provide interesting lessons in behavioural shifts: for example, more than half of all bananas purchased in Switzerland are Fair Trade certified, compared to less than 5% in many other OECD markets.[25]

Sustainability is increasingly influencing the brand image and consumer perceptions of consumer industry companies themselves. An informed consumer can also be good for business – there is evidence that motivated consumers are willing to shift their brand loyalties to "green" companies. And as green product availability and environmental awareness increase, sustainability may become a key consideration factor in choosing a brand, in addition to price and performance.

A leading retailer in the United Kingdom was able to achieve a 6% increase in sales in its stores by implementing a sustainability programme. Careful analysis attributed this increase to an improved brand image, centred largely on sustainability, in the eyes of the consumer.[26] On the other hand, heightened media attention on negative publicity stemming from unsustainable practices (e.g. unethical sourcing, human rights issues, oil spills and

other environmental damage) have adversely impacted consumer perceptions of some companies and dampened sales for others.

In spite of the increased sensitivity and awareness, consumer companies still need to encourage a sustainability transformation in consumer behaviour. Consumers may indicate a willingness to take actions to reduce their environmental impact, but very few act accordingly. The reasons for this are multiple: lack of education on how to act, confusion on where to prioritize efforts, understanding of the cost benefits of living more sustainably. From this perspective, it becomes clear that individual consumers face many of the same hurdles of businesses looking to act more sustainably.

As companies continue to learn about sustainability, there is an ongoing need to educate consumers on the implicit and explicit value of conscious consumption. This virtuous circle of learning will help meet the social imperative of sustainable society. Consumers themselves play a very important part in supporting sustainable consumption, and will need to be engaged beyond the purchase of a product. At the same time, new incentives can change behaviour around product usage and end-of-life, which contribute significantly to the overall resource intensity of a product. This presents certain challenges, but also an opportunity to redefine consumer loyalty and the experience of engagement.

To be successful in the future, the consumer industry will need to balance growing consumer demand for sustainable products with demands for convenience and price sensitivity. The onus of sustainable markets must not lie entirely on the consumer, as companies will need to continue to innovate to meet the demands of tomorrow's consumers in a sustainable manner.

## Breakthrough innovation

It is apparent that incremental improvements alone will not deliver the step change required to meet increasing demand with the limited resource base available worldwide. Historical evidence shows that incremental improvements have been able to initiate changes in consumption patterns but not necessarily bring about fundamental shifts to offset increases in global consumption. It is important to note that this is not an issue of diminished consumption, but rather of increasing value to the consumer with less impact on the environment.

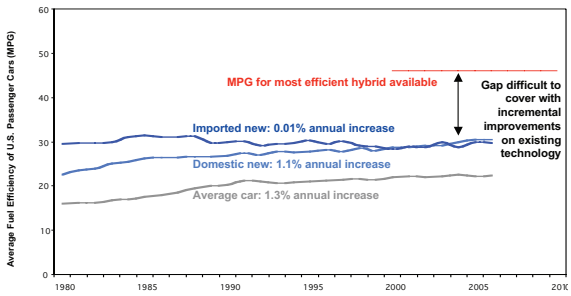
Though often counter-intuitive, the role of collaborative innovation has proved successful in certain technology markets and shows potential to share critical solutions towards achieving sustainable consumption and production. Exploring win-win strategies whereby collaboration offers critical mass, reduces risk to first movers or helps set standards suddenly starts to make business sense.

Innovation does not need to be limited to the "invented here" edict. Companies should be embracing open-sourced innovation – choosing from and giving back to the open-source pool of ideas and resources. One concept that received some attention in a recent workshop was the use of "copyleft" – as opposed to copyright – to open new ideas for common use and further improvement.

While copyright licensing generally prevents others from copying, adapting or reproducing a piece of software, document or art, copyleft, a play on the word copyright, gives everyone the right to copy and adapt a work as long as the result is bound by the same copyleft scheme. Copyleft is a type of open sourcing and such examples can be used to learn how to share ideas and progress on sustainability.

For many businesses, sharing information is against the competitive instinct, but when it comes to sustainability, there are new lines being drawn as to what is a competitive advantage and what information is a greater public good. Consumer companies are particularly sensitive to sharing ideas, as much of the industry has been built on protecting brands and products across all premier consumer companies. While sharing knowledge is a new

**Figure 19: Average improvements in fuel efficiency for US passenger cars**




Source: U.S. Department of Transportation

concept for consumer industries, the industry can take the lead from information technology and other industries where the open sourcing of ideas has accelerated development.

For example, shared information on packaging material technology may help standardize materials used across the industry and value chain, which in turn would help increase recyclability.

Often, innovation is just the application of an existing practice in a new situation or environment. The case of improving fuel efficiency in automobiles, for example, demonstrates how an existing product – the battery – put to a novel use by adding an electric motor to a car in hybrid technology, provided the step change necessary to improve the fuel efficiency of vehicles. This innovation can dramatically increase the mileage of cars (Figure 19).

Further, although innovation is explicit in the business solution going forward, it does not necessarily require "new technology". Many technology solutions exist today that could innovatively be put to use towards sustainable consumption. For example, many consumer industry companies have started to use their waste as fuel for generating energy. Kraft Foods now uses whey, a by-product of cheese production, to supply 30-35% of the fossil fuel needed to produce it.[27] Not only is the cost of energy saved, but the company does not have to manage whey disposal. In this case, anaerobic digestion, a technology available for some time, has been put to innovative use.

## Reinventing business models

Consumer industry companies should also be ready to reinvent themselves in order to meet consumer needs in a more sustainable manner. By focusing on meeting consumer needs rather than on delivering product, there are opportunities to fundamentally change the global business models being used today.

Forward-thinking companies will be prepared to challenge themselves and encourage disruptive innovations, even if these may appear to threaten existing revenue streams. Leading companies can embrace the challenge of sustainability as an opportunity to design outdated products into obsolescence and replace them with new business models. Moving a step further, companies can begin to explore dematerializing the consumer experience. While this might not work for many food and beverage products, it certainly applies to their packaging and associated waste.

It is important for companies to be prepared for tomorrow's economic paradigm that is already on its way. By offering products and services supported through new business models, companies can set themselves up to become more viable in a resource-constrained world. Tying together some of the ideas generated in a recent innovation workshop, the business model of a clothing company could change from selling products to services.

For example, a typical T-shirt today is predominantly made of cotton. As noted, the supply chain for this T-shirt extends beyond the manufacturing company to the cotton-grower on the supply side, and the consumer who washes the T-shirt on the product use side. The total embedded water of a T-shirt can be up to 10,700 litres. Even a point-in-time analysis by Nike projects that at least 7,000 litres of water are required to make a T-shirt.

The T-shirt could potentially be made of post-consumer waste instead of cotton: Consumers might bring their refuse to a store where their T-shirts are made to their specifications while they wait. The experience can be more than a financial transaction, but also a learning experience about sustainability for the consumer and an opportunity to learn more about trends for the business. As such,

**A living experiment on collaboration**

A potential platform for collaboration identified during one of the workshops of the project was a platform for the exchange of products, ideas, challenges and solutions. Sharing could also help minimize overlap in research and development costs of new technologies. One small company, Innocentive, serves as a clearinghouse for companies looking for solutions to specific problems, often solved by independent researchers or scientists from completely different fields.

Another example of sharing information is being seen in a new database of chemicals which will be made public, attempting to document all the health, safety and environment characteristics for tens of thousands of chemicals in much the same way that Wikipedia has done this for information on the Internet. Technology solutions like this should help facilitate collaboration in a more transparent manner.

Taking a lead to create such a platform, Nike and Creative Commons are leading the initiative to create a system for "open collaboration". This project will develop strategies for using patents and know-how, within a community network framework, to facilitate and promote open innovation. Other contributors can also join the network by committing their patents or unpatented knowledge to the network. Collaborations with Science Commons and others will ensure that the network grows in ways that promote community-based innovation and sustainable research policies.

the consumer is directly involved in supporting sustainable consumption while drastically reducing the impact of a new product.

Though some of this may sound futuristic, the technologies to spin new fibres from post-consumer waste are already in use[28]. In this case, hurdles to wider implementation are associated less with technology than with availability and pricing of machinery and recycled materials. With a critical mass creating appropriate demand, deployment of technologies such as these can be accelerated.

## Closing the loop

A systems view of resource efficiency confirms the need for collaboration along the value chain. Everyone along the chain of sourcing, manufacturing, consumption and end-of-life will need to be coordinated for optimization of raw materials, product design, packaging, product use and end-of-life. Ultimately, there needs to be an aspiration to retire the traditional supply chain and the "build, buy, bury" ethos to be replaced by a collaborative model which enables resources to go full circle.

The current model of a one-way stream of raw material to factory, user, then landfill, "build, buy, bury" is fundamentally unsustainable. Since product use and waste reduction are key levers in lowering the resource impact of consumer products, the consumer experience will be key in shifting to sustainable consumption. One role consumers will play in the future will be getting the product back for recycling and reuse at the end of its natural life. For example, Best Buy has been expanding its e-waste recycling programmes and in-store recycling kiosks, making consumers an ally in the sustainability programme.[29] The concept of "take-back", although simple, is very powerful in closing the loop on production to consumption and back again.

Building on waste minimization is an easy priority for business and does not threaten conventional business paradigms. Recycling and re-use are key steps that can help reduce the demand for inputs by making a system more self-sustaining. Companies should also support product and business model design whereby meeting consumer needs is not tied to direct resource consumption or environmental impact in traditional ways. Utilizing take-back mechanisms, the consumer can become a part of sustainable consumption.

## Role of policy

Sustainability is a complex issue, and in addition to the compelling arguments of the business case, many actions by business will be guided by policy signals. Business will need guidance in terms of a more consistent and predictable regulatory environment, and governments will need the investments and infrastructure financed by the private sector. As externalities such as waste, water and emissions are gradually priced into business models, there will be a need for better understanding of the true costs of society's consumption. Currently, the burden of sustainability lies in the indirect degradation of public health, goods and services, and shifting this will require systems thinking and stronger cooperation between public and private sectors.

Past experiences of efficacy of environment-related policy to achieve the desired business response may not be used as the indicator of future reaction in a world with changing paradigms. As the landscape changes rapidly, successes in environmental solutions will need to be scrutinized and adapted to the new business environment. The challenges of maintaining the thin balance of human existence with the resources of the planet are increasingly apparent and the need for action is hard to ignore.

At the same time, policy intervention will be needed to pre-empt a system failure and irreparable damage. The damage is not just to the environment, but also to businesses reliant on natural resources and ecosystem services, affecting the lives of employees, families and communities. Policy will be important in establishing tools to provide incentives for business and consumers to move in the right direction. The failure of policy-makers to allow prices to respond to changing supply and demand conditions is already leading to resource shortages, excess consumption, and continued environmental damage.

Regulation can have a positive influence in levelling the playing field for businesses engaging in activities supporting sustainability. New tools may include structures for pricing of externalities using market mechanisms, new markets for environmental services, promotion of infrastructure for renewable energies and recycled materials, subsidy correction and implementation of new incentives.

One of the foundational pieces for policy and regulation is common metrics for measuring direct and indirect environmental impacts. Leading businesses and NGOs have worked together to voluntarily develop their own norms for measurement, disclosure and reporting on sustainability actions and progress. However, there continues to be a lack of uptake and consistency in the definition, measurement and monitoring of these metrics. This has a direct impact on the financial viability of investments in sustainability as these are not generally acknowledged by financial markets and investors that are generally focused on short-term results.

Each of these tools may be voluntary, mandatory or a mixture of both "carrots" and "sticks", and all will require support from both business and government to create tools that work for the environment and for the economy. By working together with policy-makers, business leaders can gain the support of their stakeholders on sustainability issues and address them with support from their executive boards, their shareholders, employees and communities. More importantly, regulation can leverage these tools to create a level playing field, in which businesses taking the long-term view in terms of sustainable behaviour are not competitively disadvantaged versus those that take a shorter-term view.

Structured properly, regulation can ensure that all businesses, not just foresighted companies, get on the right trajectory for sustainable consumption and production. It is the leading companies that will help shape future policy and create the new businesses that will thrive in tomorrow's economy.

## Integrating sustainability into the business model

In a world defined by resource constraints and changing consumer behaviours, leading companies are exploring sustainability as a catalyst of transformational change towards credible new growth perspectives. For businesses to innovate, leaders need to collaborate in creating a common vision of possible solutions.

Beyond a common vision, the crux of success ultimately lies in execution and it is imperative that businesses incorporate sustainability as a principle into their core practices and decisions. Within a company, building blocks that are needed are: incorporating sustainability in the strategic intent, giving it teeth in the form of targets and metrics, monitoring progress and rewarding successes.

Companies need to evaluate every step of their supply chain against the sustainability criteria – is the product designed to use minimal resources, is the manufacturing energy efficient, is the packaging low impact, is the product use efficient, and can it all be recycled at the end? Furthermore, is my business model aligned to support such a set-up? And the bottom line – does it meet consumer needs?

Ultimately, consumer businesses are successful not by making and selling products, but by anticipating and meeting the needs of their consumers. Businesses need to re-evaluate how they meet consumer needs in the light of sustainability, and not be limited by existing paradigms.

# Concluding Thoughts

Consumer industry leaders are rapidly adapting their businesses to a very different economic situation in which we now find ourselves. At the same time, business leaders must also align the long-term components of their business models, including critical sustainability dimensions, for the future. The business-case framework for sustainability demonstrates the imminent financial pressure on existing business models, and the opportunities which can be created for new markets. Building on this framework, this report can be used as a tool to demonstrate to management teams and other business stakeholders that actions taken by a company which are significantly driven and shaped by sustainability requirements do make good business sense.

Looking forward, there are systemic risks to sustainability which are embedded in the current economic structure. These will need to be addressed in a breakthrough manner rather than through incremental improvements. It is up to the consumer facing industries to be proactive, and they will need to engage with their entire markets and supply networks. New forms of collaboration will be required to create a competitive commercial environment that enables room for innovation and value creation for all.

This broader collaboration will require feedback and support from across many industries and stakeholders. There is a need to broaden the discussion, to explore how these ideas resonate with leaders from consumer facing industries such as automotives, aviation, ITC, media; and from those industries within the supply chain such as chemicals, mining and metals, logistics and transport.

In economic terms, sustainable business is an endogenous issue – it is driven by the champions that shape the issue and the business landscape. Companies that take the lead on sustainability will be market makers rather than market takers. By showing the consumer that there is no need to sacrifice price and quality for sustainability, tomorrow's successful businesses will meaningfully engage the next two billion consumers, the largest new market the world has ever known. In doing so, they will secure stronger markets and a better business tomorrow.

Politicians and governments are looking for ways to regulate a better world and price externalities without compromising development or living standards. Business can make this easier by building sustainable products and services without compromise to the consumer and voter. In doing so, they will pave the way for better and more welcome regulation. These inevitable business innovations will proactively meet the demands of tomorrow's consumer and tomorrow's stakeholders in a sustainable manner, shaping the landscape for the coming decades.

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# Glossary

**Brundtland Report***
The report of the Brundtland Commission, formally the World Commission on Environment and Development, that deals with sustainable development and the change of politics needed for achieving it. The commission was convened by the United Nations in 1983 to address growing concern about the accelerating deterioration of the human environment and natural resources and the consequences of the deterioration for economic and social development

**Closed Loop**
A self-sustaining system in which any and all waste and output is recycled back as input

**Cradle to Cradle**
As an opposite to "Cradle to Grave", the concept of product design, manufacture and use in which "technical" elements are extracted and recycled back at the end-of-use phase and "biological" elements are disposed of in a natural environment

**Copyleft***
A play on the word copyright and describes the practice of using copyright law to remove restrictions on distributing copies and modified versions of a work for others and requiring that the same freedoms be preserved in modified versions

**Ecosystem Services***
The resources and processes supplied by natural ecosystems that mankind benefits from

**Externality***
Impact not directly involved in an economic decision, e.g. price of water, pollution

**Resource Footprint**
Term used to describe the measure of inputs required and impact on the environment for making, using and disposing a product

**Lifecycle**
A view of all the steps – from creation to disposal or recycle – for a product – extraction of raw materials, processing, transport, use, reuse, recycling or disposal

**Lifecycle Assessment***
The investigation and valuation of the environmental, economic and social impacts of a product or service caused or necessitated by its existence. Also known as LCA

**Limits to Growth***
A 1972 book modelling the consequences of a rapidly growing world population and finite resource supplies, commissioned by the Club of Rome and authored by Donella H. Meadows, Dennis L. Meadows, Jørgen Branders, and William W. Behrens III

**Open Source**
Initially used to refer to computer software for which the source code is freely available. Now being use broadly to suggest sharing of designs and ideas in a collaborative environment for collective progress towards sustainable consumption

**Public Good***
In economics, a public good is a good that is non-rivalled and non-excludable. This means, respectively, that consumption of the good by one individual does not reduce availability of the good for consumption by others; and that no one can be effectively excluded from using the good

**Resource Curse***
Refers to the paradox that countries and regions with an abundance of natural resources, specifically point-source, non-renewable resources like minerals and fuels, tend to have less economic growth and worse development outcomes than countries with fewer natural resources

**Resource Intensity***
A measure of the resources (e.g. water, energy, materials) needed for the production, processing and disposal of a unit of good or service, or for the completion of a process or activity

**Sustainability***
In a general sense, the capacity to maintain a certain process or state indefinitely. In an ecological context, sustainability is defined as the ability of an ecosystem to maintain ecological processes, functions, biodiversity and productivity into the future. In a social context, sustainability is expressed

as meeting the needs of the present without compromising the ability of future generations to meet their own needs. When applied in an economic context, a business is sustainable if it has adapted its practices for the use of renewable resources and is accountable for the environmental impacts of its activities

**Tragedy of the Commons***
Describes a dilemma in which multiple individuals acting independently in their own self-interest can ultimately destroy a shared resource even when it is clear that it is not in anyone's long-term interest for this to happen

**Value Web**
A broader view of "value chain" to represent the interlinkages across the value chains of different products

**Water Stress**
Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. There is not enough water for all potential uses, whether agricultural, industrial or domestic. Annual availability of renewable fresh water is between 1,000 and 1,700 cubic metres or less per person

*Source: Wikipedia

# Endnotes

## Endnotes

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