

Industry Agenda

---

# More with Less: Scaling Sustainable Consumption and Resource Efficiency

In collaboration with Accenture, January 2012

---



© World Economic Forum

2012 - All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, including photocopying and recording, or by any information storage and retrieval system.

# Contents

3	Foreword
4	Acknowledgement of Project Board CEO Participants
5	Executive Summary
7	Introduction
8	1. The Imperative for Action
14	2. The Size of the Prize
18	3. The Challenges of Scale
24	4. A Vision of Scale
27	5. Solutions for Scale
34	6. A Commitment to Move Together
36	Appendices
36	Tools for Business in a Resource-scarce Economy
38	Approach and Methodology for Oxford Economics Analysis
39	Acknowledgements
41	References

# Foreword



**Sarita Nayyar**,  
Managing Director,  
Head of Consumer  
Industries, World  
Economic Forum  
USA

## Harnessing the Impatience for Change

There is growing impatience at the lack of speed and scale at which we are moving towards achieving sustainable growth. This frustration can be seen in the boardrooms of companies, in government corridors and in the offices of non-governmental organizations.

In the four years since the World Economic Forum's Sustainable Consumption Initiative started, an estimated 450 million people have been lifted out of poverty,<sup>1</sup> and the number of households in the emerging and developed world living on an income of more than US\$ 3,000 per annum increased by 28%.<sup>2</sup> At a global level, this encouraging progress has come at the cost of higher resource consumption, continued environmental degradation, and greater social and health imbalances.

Over the same period, about 21 million hectares of forest were lost,<sup>3</sup> 9.1 billion tonnes of municipal solid waste were generated<sup>4</sup> and some 50 billion tonnes of fossil fuels were consumed.<sup>5</sup> This pattern of economic growth and development does not have to continue.

There is both an opportunity and an imperative, especially in emerging markets, for a much more resource-efficient economy in which economic value creation is not coupled with environmental depletion and degradation. Innovations are appearing in products, processes and business models from large and small companies alike and a host of initiatives are under way to increase sustainable sourcing.

However, despite these efforts, we are stuck in a case of "pilot paralysis" where achievements are only creating incremental progress: intergovernmental processes are slow and not creating the scale of action needed; citizens, consumers and "the 99%" are confused, often angry and demanding change; and ahead lies a decade of economic and societal turbulence. It is a gross understatement to say that action is needed urgently at a greater scale.

This report reveals the opportunities that exist for countries and companies to act. At least US\$ 2 trillion of economic output could potentially be protected in 2030 if the world adapts more rapidly to an increasingly resource-constrained economy. The "size of the prize" – in economic terms – therefore, is large.

The report also highlights the leading role business can play in transforming demand, supply and the "rules of the game". Business can catalyse scale through improving interactions with citizens and consumers, transforming business itself through strategies, value chains and operations, and playing an active role in shaping the policies and investments that define the rules of the game. This will not be achieved by a small vanguard of leading companies or countries; decoupling needs to happen in every business and every country through a commitment to action.

The work of the Forum's Sustainable Consumption Initiative will continue to evolve and be shaped by input and dialogue from the private sector and other stakeholders. The Forum will work with companies and others to aggregate and scale up the impact of business and specific initiatives, putting the consumer at the centre of considerations. This will involve scaling up existing supply-side initiatives (such as sustainable sourcing of palm oil, soy, cotton, timber, etc.) to ensure products are sustainable by default, increasing momentum through stronger business and industry association collaboration, and specific new initiatives to engage with consumers, such as common disclosure of information and development of new social platforms.

Chief executive officers and business leaders who participated in this work see both commitment and action as must-haves, needed to drive long-term competitive advantage for individual companies, industries and society. It is hoped that by shifting the focus from defining the case for sustainable consumption to identifying and accelerating the various actions needed to achieve it will drive the change that is required.

The following Industry Partners of the World Economic Forum provided leadership to the Sustainable Consumption Initiative: Aegis Media, Agility, Alcoa, A.P. Møller-Maersk, Best Buy Co., BT Group, DuPont De Nemours International, Edelman, Kraft Foods, Marks & Spencer, Metro Group, Nestlé, Nike, Novozymes, Omnicom Group, Publicis Groupe, Royal DSM, SABMiller, S. C. Johnson & Son, SAP, SAS Institute, Sealed Air, Tesco, Unilever, Wal-Mart Stores, Wesfarmers and WPP. Collectively, their insights have been invaluable.

The report has been produced with the support of Accenture, the project adviser for the initiative.

# Acknowledgement of Project Board CEO Participants

We would like to thank the following chief executive officers, chairpersons and presidents for their support and involvement in this initiative. While the views expressed in this study do not reflect the totality of opinions, their participation and guidance have been critical.

**Nigel Morris**, Chief Executive Officer, Aegis Media North America, USA\*

**Tarek Sultan Al Essa**, Chairman and Managing Director, Agility, Kuwait\*

**Klaus Kleinfeld**, Chairman and Chief Executive Officer, Alcoa, USA\*

**Brian Dunn**, Chief Executive Officer, Best Buy Co., USA

**Michael Rake**, Chairman, BT Group, United Kingdom\*

**Ellen Kullman**, Chair of the Board and Chief Executive Officer, DuPont, USA

Richard W. Edelman, President and Chief Executive Officer, Edelman, USA\*

**Irene B. Rosenfeld**, Chairman and Chief Executive Officer, Kraft Foods, USA

**Nils Smedegaard Andersen**, Group Chief Executive Officer, A.P. Møller-Maersk, Denmark

**Marc Bolland**, Chief Executive, Marks & Spencer, United Kingdom\*

**Paul Bulcke**, Chief Executive Officer, Nestlé, Switzerland

**Mark G. Parker**, Chief Executive Officer, Nike, USA\*

**Steen Riisgaard**, President and Chief Executive Officer, Novozymes, Denmark

**John D. Wren**, President and Chief Executive Officer, Omnicom Group, USA

**Maurice Lévy**, Chairman and Chief Executive Officer, Publicis Groupe, France

**Feike Sijbesma**, Chief Executive Officer and Chairman, Managing Board, Royal DSM, Netherlands\*

**H. Fisk Johnson**, Chairman of the Board and Chief Executive Officer, S. C. Johnson & Son, USA

**Graham MacKay**, Chief Executive, SABMiller, United Kingdom

**Jim Hagemann Snabe**, Co-Chief Executive Officer, SAP, Germany

**Jim Goodnight**, Chief Executive Officer, SAS Institute, USA

**William V. Hickey**, President and Chief Executive Officer, Sealed Air, USA

**Philip Clarke**, Chief Executive Officer, Tesco, United Kingdom

**Paul Polman**, Chief Executive Officer, Unilever, United Kingdom\*

**Mike Duke**, President and Chief Executive Officer, Wal-Mart Stores, USA

**Richard Goyder**, Chief Executive Officer and Managing Director, Wesfarmers, Australia\*

**Martin Sorrell**, Chief Executive Officer, WPP, United Kingdom\*

\*Chief executive officers, chairpersons and presidents interviewed as part of the research of the Sustainable Consumption Initiative.

# Executive Summary



There is an imperative for countries and companies to act to reduce the environmental consequences of consumption. This report demonstrates that over US\$ 2 trillion in global economic output in 2030 is at stake, so the need for rapid action to shift towards a resource-efficient economy is high. Despite some success to date, change is now urgently required at scale and greater pace than current initiatives, policies or strategies are likely to achieve.

This report highlights the leading role the private sector can play in scaling sustainable consumption. Business can catalyse scale through transforming interactions with citizens; rethinking business models, value chains and operations; and playing an active role in shaping the policies and investments that define the rules of the game. However, this transformation will not be achieved by the usual group of leading companies or countries: delivery of more resource-efficient growth needs to happen in every business and every country through the aggregation of impacts and a commitment to action.

## The Imperative for Action

Industry economics are being fundamentally recast not just by the financial challenges that are at the top of the global agenda, but also increasingly by pressure on natural resources and environmental constraints. Current trends clearly show that business-as-usual no longer works. Unless the present link between growth and consumption of scarce resources is severed, our resource base, governance and policy structures are unlikely to sustain the standard of living societies have grown accustomed to and aspire to.

This report examines the challenge through the lens of consumer engagement (demand), value chains and upstream action (supply), and the policies and enabling environment to accelerate change (rules of the game). Consumers are key to sustainable consumption. They increasingly want companies to behave more responsibly, and provide sustainable products at the right price and performance. The power to grow demand lies in their hands. Meanwhile, price volatility and the interdependence between resources such as food, energy and water continue to contort supply. At the same time, governmental processes remain slow and are delivering only incremental results.

In the current paradigm, growth is linked with consumption of scarce resources and negative impact on the environment. These trends are exacerbating an already volatile business environment and putting future growth opportunities at stake. Action to decouple business and economic growth from resource intensity and environmental impact has never been more critical to the long-term success of business.

## The Size of the Prize

Increasing constraints on carbon emissions and amplified scarcity of resources such as metals could lead to a loss of future economic output. These losses can be reduced through greater investment in technology, increased materials substitution and higher rates of recycling, among other measures.

For this report, Oxford Economics – a leading provider of global economic research and consulting to governments and companies – analysed the economic impact of existing emission reduction commitments and a possible resource scarcity scenario in some of the world's largest economies (US, EU, BRICs and Japan):

- **Resource efficiency:** A “peak metals” scenario could put US\$ 2 trillion (1.7% of GDP) of economic output at risk in 2030 if major global economies fail to respond to shortages in the supply of steel and iron. To meet projected steel demand under such a scenario, recycled content of world steel would need to increase from 38% to 51% in 2030.
- **Energy efficiency:** The costs associated with agreed and necessary regulatory constraints around carbon could be up to US\$ 1.8 trillion across major global economies (US, EU, Japan and BRICs) in 2030. However, with faster innovation, more investment in technology and greater deployment of advanced technology in emerging economies, potentially US\$ 1 trillion of these losses could be avoided.

The impact of resource efficiency and sustainability on long-term growth is backed up by the World Economic Forum's *Global Competitiveness Report*, which this year integrated the management of natural and social wealth on national competitiveness. According to the results, India, the US and China, applying these new measures, fell more than 10 places while Brazil, Kenya and the Philippines rose more than 10 places on the Sustainable Competitiveness Index when compared with the standard Global Competitiveness ranking.

In the consumer-focused industries and along their value chains, individual companies will need to consider making resource efficiency and environmental competitiveness a core element of their strategy and business models. This will bring new capabilities and stimulate innovation with far-reaching implications for efficiency and future growth. The analysis by Oxford Economics suggests the following:

- **Resource efficiency:** Steel costs could reach over 2.3% of consumer goods industry output in 2030 in the event of a “peak metals” scenario. Under such a scenario, more resource-efficient approaches to manufacturing and increased recycling rates would deliver savings of as much as US\$ 46.9 billion in 2030, equivalent to a more than 50% reduction in steel costs.

- **Energy efficiency:** If consumer goods companies took action to increase their energy efficiency to match those in Canada, considered the most energy efficient in the world, they could save US\$ 37 billion in 2030, equivalent to 1% of projected sector output in that year. With a 50% increase in energy costs, the 2030 figure could be as high as US\$ 55.5 billion.

Although this analysis focuses on the consumer goods sector, greater resource efficiency will create similar opportunities for businesses across the board.

Organizations that effectively weave resource efficiency into their core strategy and operations can drive revenue growth, cost reduction, better risk management and improve brand and reputation.

## Challenges of Scale

Despite success to date, a step change is required at a larger scale and higher speed than current initiatives, policies or strategies will achieve.

Society remains unable to contain the production of carbon, manage water scarcity or dampen speculative fluctuations in the price and availability of basic foodstuff. There has been progress towards decoupling resource consumption from economic output. However, technical improvements are not keeping pace with rising consumption. Similarly, in other areas of concern, current approaches such as certification of fisheries, forestry, palm oil and soya are delivering results, but not at the speed required.

Consumers are not demanding more sustainable forms of consumption. Supply chains are complex. Technology remains inadequate. Policy incentives remain weak and focused on the short term. Rather than focus on sustainable consumption, it perhaps makes more sense to focus on scale where it is already happening.

## A Vision of Scale

We live in an era of scale. The US\$ 65 trillion global economy is powered by US\$ 210 trillion of financial assets; over five billion mobile phones are in circulation with penetration rates rising by 35% each year; and over a period of just two weeks in August 2008, 4.7 billion people (70% of the world's population) tuned in to watch the Beijing Olympics on television.

Four elements demonstrate and drive scale in today's world: the reach and mass of citizens and consumer action; business initiatives and assets; national and city governments' soft and hard power; and the connectivity of technology. These elements, particularly with the consumer and citizen placed at the head of considerations, can be harnessed to unlock the necessary decoupling of growth from resource impact.

## Solutions for Scale

It is clear from conversations with chief executive officers, government ministers, business leaders and experts that there is no silver bullet for achieving sustainable consumption. Different stakeholders will have different roles to play to trigger scale. However, business can play both a leading and an enabling role. Leveraging the power and reach of business to achieve scale, while securing competitive advantage in a resource constrained world, is not straightforward. It will require change across three dimensions:

- **Transform demand through interactions with the consumer.** Businesses must reshape demand by making sustainable consumption more personal and relevant to consumers, leveraging the power of technology to drive engagement and transparency, and redesigning products and services to deliver increased value with fewer resources; thus making the sustainable choice the default choice.

- **Transform value chains through new business models.** Three essential factors will drive these new business models: visionary leadership and seamless integration across the organization; relentless pursuit of a range of strategic options to eliminate inefficiency, tap into new markets and create an ecosystem of collaboration and scale around key activities that are beyond the remit or reach of any one organization; and shaping finance and investments to enable a longer term perspective in markets and cash-flows.
- **Transform the rules of the game through public-private partnerships.** Business leaders have a pivotal role to play in creating substantive policy interactions with governments to unlock the barriers and inertia in the rules of the game, establishing the framework for a sustainable economy. Key areas where business leaders can help shape the policy landscape will be the greening of public procurement, reform of subsidies that are harmful to the economy and environment, improving regional trade agreements, and measuring progress and the role of long-term investments.

## A Commitment to Move Together

Judging from the series of conversations over the past six months, chief executive officers care about making sustainable growth and consumption mainstream and are committed to taking action to scale up sustainable consumption. Three actions were discussed during this project where companies could take a leadership role and move forward with commitments to scale up actions across demand, supply and rules of the game:

1. **Demand:** Collaboration is needed to incentivize sustainable consumption and make it the simplest and cheapest choice for consumers. Technology and brands will be critical enablers of consumer and business engagement.
2. **Supply:** A concerted, scalable plan of action across key areas of supply will enable multiple suppliers, manufacturers and retailers to aggregate their sustainability efforts and provide greater clarity to consumers.
3. **Rules of the Game:** More sustained public-private partnerships will increase trust and create the right enabling environment for the sustainable choice to become the default choice for consumers and businesses alike.

# Introduction

This report focuses on how consumption can be made more sustainable through decoupling growth from environmental impact at the scale and speed required. It builds on four years of engagement by the World Economic Forum with leading businesses around the issue of sustainable consumption. Through this engagement with chief executive officers, business leaders and experts, the report aims to answer six key questions:

1. What are the key trends in sustainable consumption?
2. What is the size of the opportunity for countries, companies and consumers?
3. What are the barriers to scaling existing models of sustainable consumption?
4. What does getting to scale look like?
5. What new solutions are needed to get to scale in sustainable consumption?
6. How can we achieve scale by working collectively and creating action on new fronts?

A systems view of sustainable consumption has been taken throughout the report. Rather than focusing just on the demand side, the discussions that informed this work have taken the lens of consumer engagement (demand), value chains and upstream action (supply) and the policies and enabling environment to accelerate change (rules of the game). However, in this report the narrative always begins with demand as the consumer and customer are at the heart of sustainable consumption.



Table 1: Report structure

The Imperative for Action	The Size of the Prize	Challenges of Scale	A Vision of Scale	Solutions for Scale	A Commitment to Move Together
1	2	3	4	5	6
What are the key trends in sustainable consumption?	What is the size of the opportunity for countries, companies and consumers?	What are the barriers to scaling existing models of sustainable consumption?	What does getting to scale look like?	What new solutions are needed to get to scale in sustainable consumption?	How can we achieve scale by working collectively and creating action on new fronts?
<b>Headlines</b>					
<b>Competition for increasingly scarce resources are creating an imperative for action</b>	<b>Proactive adaptation to shift to a resource efficient economy could potentially protect US\$2tn of GDP</b>	<b>Weak market pull, supply chain complexity, inadequate technology and short term/limited policy are key barriers</b>	<b>Governments, business and consumers are the agents for scale powered by technology</b>	<b>Three key solutions areas are identified for business to lead on to transform demand, supply and rules of the game</b>	<b>A set of actions are outlined that could be enabled through the World Economic Forum</b>

# 1. The Imperative for Action



## Summary

- The imperative to sever the connection between economic growth and resource intensity is critical
- Sustainability concerns are changing industry economics, as well as the forces of demand, supply and the “rules of the game”
- These trends are likely to exacerbate an already volatile business environment, putting future growth opportunities at stake

In the last 30 years global life expectancy has risen by six years,<sup>6</sup> global GDP has increased six fold<sup>7</sup> and the proportion of people living in extreme poverty has halved.<sup>8</sup> However, the resource-dependent models that enabled these achievements can no longer be sustained, nor can we expect further advances like this in times of sluggish economic growth and increased societal turbulence. Continued growth is needed, but it can no longer be at the expense of the environment and scarce resources.

Resource and environmental constraints are already beginning to shape industry economics. Business-as-usual approaches to supply, demand and rules of the game are likely to create a major gap between what is needed for growth and the ability of our resource base and governance and policy structures to sustain prosperity.

**Demand:** Billions of new consumers in emerging markets present an opportunity for more sustainable consumption, yet uptake of sustainable products by consumers in more mature markets is limited

### Rapid urbanization in emerging markets

- The global population is projected to reach over nine billion people by 2050.<sup>9</sup>
- Due to continuing urbanization, the proportion of the population living in cities will increase from 50% at present to almost 70% by 2050 (See Figure 1.1).<sup>10</sup>

**Business implication:** As cities generate 70% of the world’s CO<sub>2</sub> emissions and consume over 75% of the earth’s resources,<sup>11</sup> they represent a central hub for the solutions needed to address challenges of supply, demand and rules of the game.



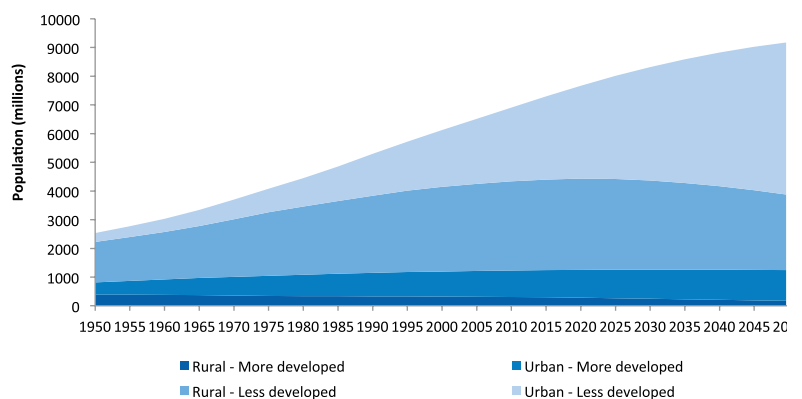
“

**Given population growth, the limitations on the planet, changes in the climate, and the scarcity of water and other essential supplies, responsible consumption is critical.**

”

Sir Martin Sorrell, Chief Executive Officer, WPP

Figure 1.1: Growth in urbanization (1950-2010)



Source: UN World Urbanization Prospects, 2009



### Three billion new middle class consumers by 2030

- Each year until 2030, at least 150 million people will be entering the middle class (in purchasing power parity terms).<sup>12</sup> If this projection plays out, over three billion people will have joined the global middle class by 2030, bringing almost 60% of the world's population into a middle income bracket (See Figure 1.2). Over the same period, energy demand is projected to increase by 40%.<sup>12a</sup>

**Business implication:** Opportunities exist for business to capture these new markets – using new business models based on value delivered and scarcity of resources.

### Growing appetite for sustainable consumption in emerging markets, while mature markets lag

- A recent National Geographic survey suggests that consumers in emerging markets are increasingly inclined to buy environmentally friendly goods; 45% of Chinese respondents said they were willing to pay a 5-10% premium for green products.<sup>13</sup>
- In developed markets, aspirations and actions are often mismatched. A 2011 European Commission survey suggests that 72% of European respondents were willing to buy green products. However, only 17% actually did so in the month preceding the survey (See Figure 1.3).<sup>14</sup>
- At a global level, Aegis Media's Consumer Connections Study surveyed 10,000 people in over 40 countries and revealed a similar trend. While 50% of those surveyed stated they do everything they can to protect the environment, fewer were willing to pay a premium for organic and fair trade products. Only 12% were willing to take measures such as avoiding air travel (See Figure 1.4).<sup>15</sup>

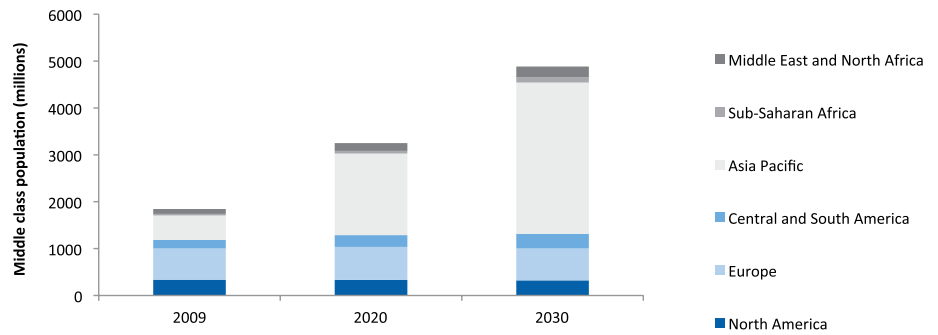
**Business implication:** In mature markets, identifying levers to converge citizen and consumer attitudes will provide growth potential and opportunities for product differentiation. In emerging markets, capitalizing on the latent demand presents opportunities for business to leapfrog to more sustainable forms of consumption.

### Consumer preferences are driven by price, not sustainability

- Cost continues to be the largest influence in consumer behaviour.
- 88% of consumers surveyed by Accenture see cost reductions as the main driver for better energy practices in their homes; only 66% also value the environmental benefits (See Figure 1.5).
- Consumers increasingly want companies to behave more responsibly and provide sustainable products at the right price and performance.

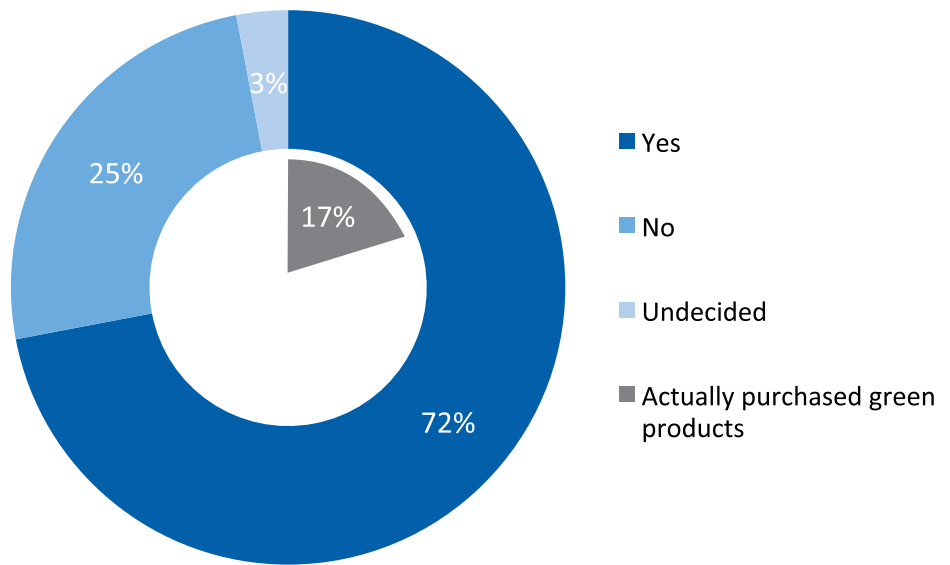
**Business implication:** As real earnings are squeezed by a prolonged recession, any price premium for addressing resource and environmental challenges will restrict the growth of products and services. Reaching price parity or delivering more cost effective alternatives (such as services instead of goods or collaborative consumption) could create lucrative new markets.

Figure 1.2: Growth in the global middle class (2009-2030)



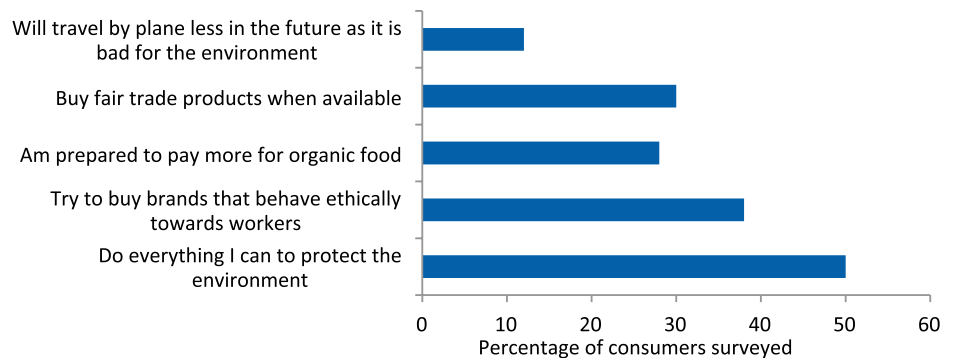
Source: OECD, 2010  
 Note: Middle class is defined as people with expenditures ranging from US\$ 10 -100 per day (PPP)

Figure 1.3: Misalignment between consumer attitudes and action in Europe



Source: European Commission, 2011  
 Note: 26,825 individuals from different social and demographic groups responded to this survey

Figure 1.4: The gap between consumer attitudes and behaviours at a global level



Source: Aegis Media, 2011  
 Note: 10,000 individuals from 40 different countries responded to this survey

## Supply: Price volatility and squeezed supply

### Commodity price volatility creates uncertainty and limits growth

- Short-term volatility of key commodity prices remains high. In July 2011, cotton prices were the highest they have been in about 300 years, at 290% higher than those of the March 2009 mid-recession low (See Figure 1.6).<sup>17a</sup>
- Between 2000 and 2010, prices of widely used commodities such as cotton, palm oil and cocoa grew by 75%, 230% and 246%, respectively. In July 2011, cotton prices were the highest they have been in 300 years.

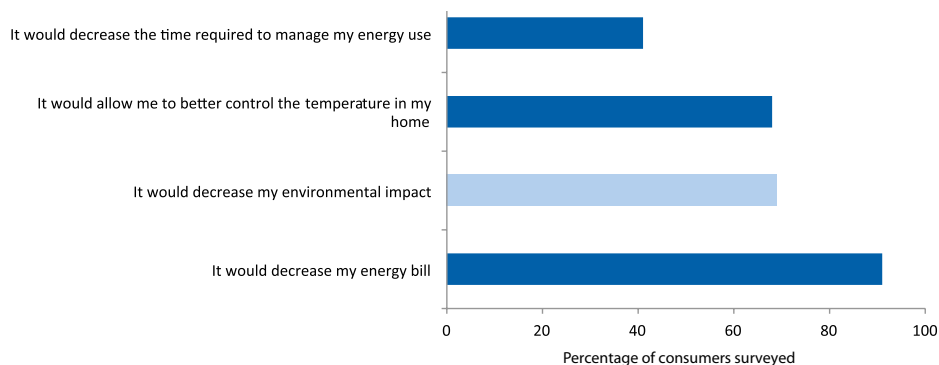
**Business implication:** This volatility presents uncertainty and rising costs for companies and governments alike. The impact of these variations could, however, be limited through decoupling growth from raw material intensity across the value chain.

### Water supply will not keep up with demand under business-as-usual

Analysis suggests that the world will face a 40% global shortfall between forecast demand and current estimates of available supply by 2030 (See Figure 1.7).<sup>18</sup>

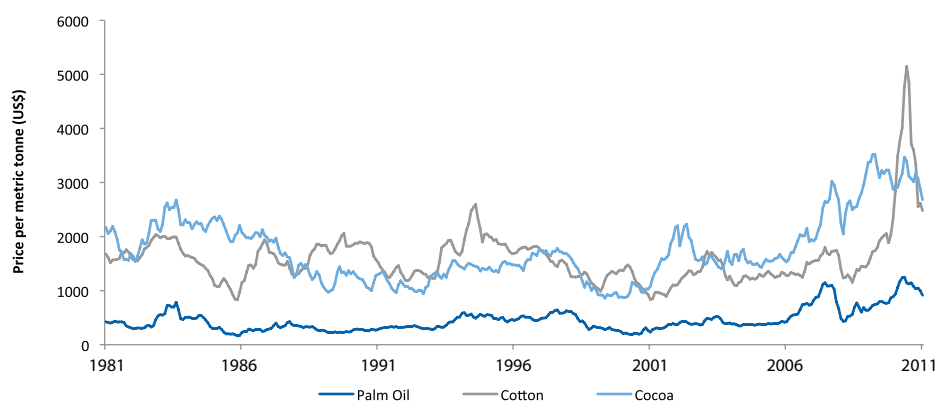
**Business implications:** Water is fundamental to survival and key to business operations. Pre-emptive, locally-relevant actions will be required across the value chain to secure the flow of water needed for long-term growth.

Figure 1.5: Consumer motivations for using electricity management programmes



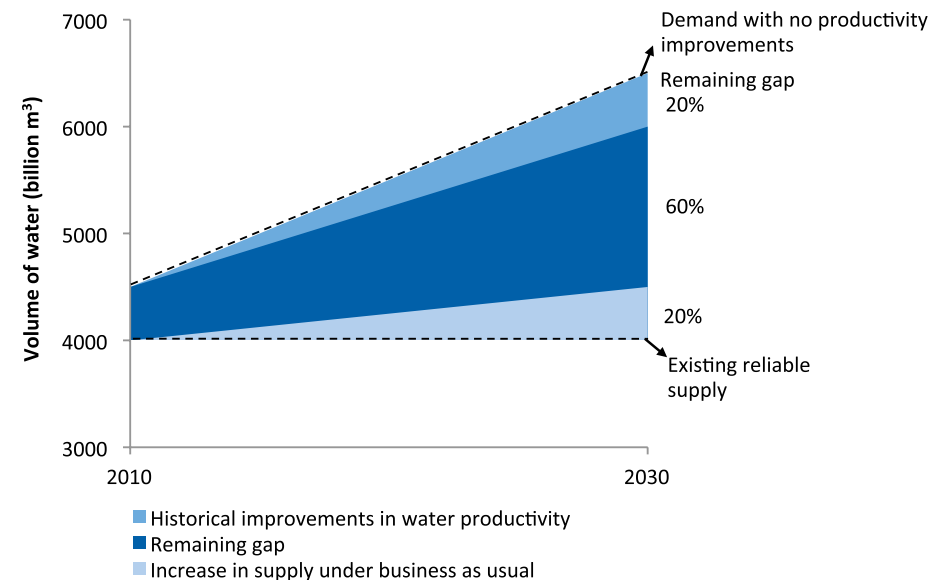
Source: Accenture End-Consumer Observatory, 2011

Figure 1.6: Palm oil, cotton, cocoa price volatility (1981-2011)



Source: IndexMundi, 2011

Figure 1.7: Water supply and demand (2010-2030)



Source: Water Resources Group, 2009

## Rules of the Game: Markets, innovation drivers and society's resource-dependent model of growth show change is needed at a systems level

Some subsidies continue to distort markets and investment portfolios

- In 2010, US\$ 409 billion of subsidies were provided to assist fossil fuel consumption globally.<sup>19</sup>
- An IEA study estimates that by 2020 the continued use of such subsidies will boost global oil consumption by 3.7 million barrels per day, resulting in an additional 1.7 gigatonnes of CO<sub>2</sub> emissions (See Figure 1.8).<sup>20</sup>

**Business implications:** Amid growing pressure for the relaxation of such subsidies, companies will need to ensure their investments and infrastructure can be sustained, both in terms of their area of activity and for long-term viability.

### Limited growth in environmental innovation

- Between 1999 and 2009 on average only 2.7% of all applications for technology patents under the Patent Cooperation Treaty were for environmental innovations (see Figure 1.9).<sup>21</sup>
- Despite the creation of patent commons such as the GreenXchange, there have been few breakthrough changes in recent years.

**Business implications:** Leadership and investment are required in environmental innovation to create solutions and infrastructure to mainstream sustainable growth.

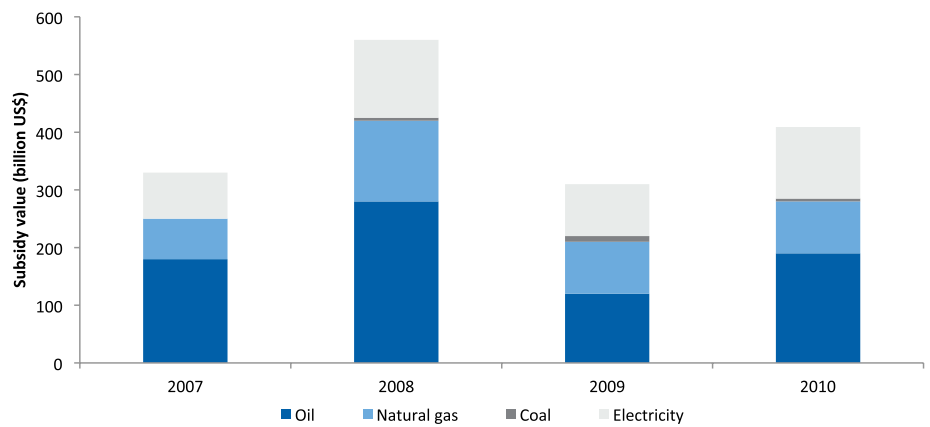
### GDP growth, resource extraction and environmental impact continue to be linked

- Historical models of GDP growth have depended on fossil fuel consumption, the extraction of material resources,<sup>22</sup> and growing carbon dioxide emissions, which has led to negative environmental impacts across the world.
- Despite innovations, resource efficiency has not improved enough to counter the impact of growth in demand (see Figure 1.10).

**Business implications:** A paradigm shift is required in business models to enable growth through resource efficiency, closed loops and decoupling at a systems level.

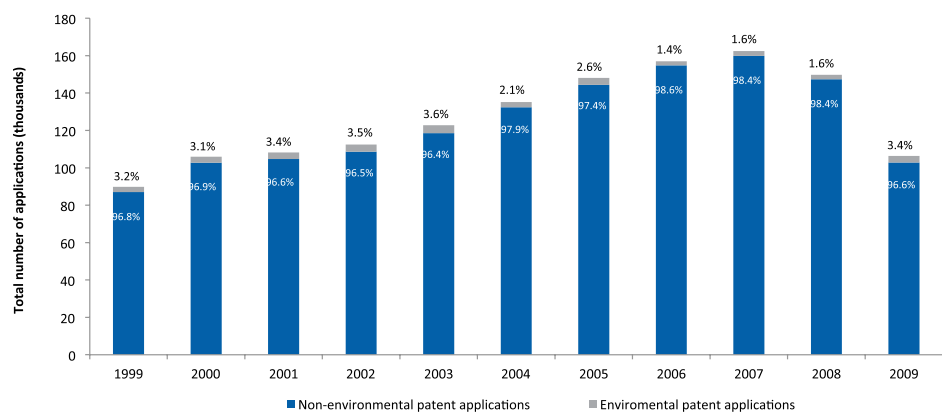
Trends across demand, supply and the rules of the game, as summarized above, show that current models of managing supply-side constraints and growth are inadequate. There is an increasing awareness among chief executive officers and government leaders that action is urgently needed to decouple growth from resource intensity and environmental impact (see Box 1.1). This represents a core strategic imperative for any company that intends to thrive and grow in the years ahead.

Figure 1.8: Global fossil fuel subsidies (2007-2010)



Source: International Energy Agency, 2011

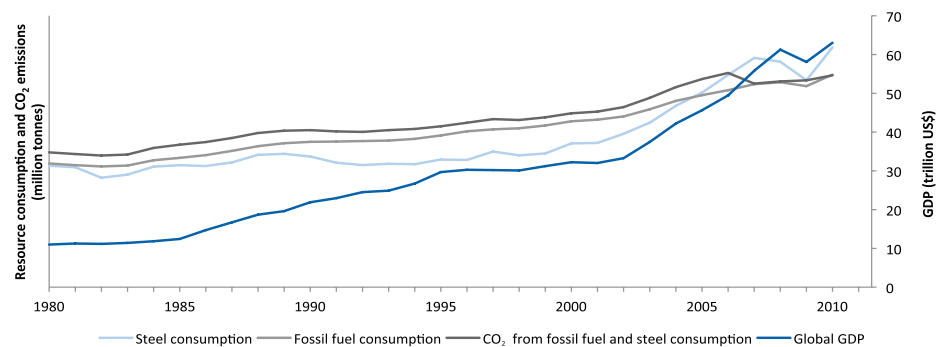
Figure 1.9: Environmental and non-environmental patent applications (1999-2009)



Source: OECD, 2011

Note: For the purposes of this analysis, patent applications were considered environmental if they were in the following fields: Pollution abatement, waste management, renewable energy, electric & hybrid cars, and energy efficiency in building and lighting

Figure 1.10: Global GDP and resources extraction (1980-2010)



Sources: World Bank, 2011.; World Steel Association, 2011.; BP, 2011

## What is decoupling?

**Decoupling** is the process of breaking the links between economic growth and environmental degradation. It can enable sustained advancement in economic growth and quality of life, while simultaneously reducing resource extraction and its environmental impacts.<sup>17</sup>

We have thus far seen two different types of decoupling: resource decoupling, where the focus is on material throughput, and impact decoupling, which covers actual environmental damage (See Figure 1.11).

- **Resource decoupling** is reducing the resources used to generate a unit of GDP.<sup>23</sup> For example, between 1990 and 2005, the OECD reduced the fuel used per unit of GDP by 19%.<sup>24</sup>
- **Impact decoupling** is reducing the negative environmental impacts of GDP.<sup>25</sup> For example, between 1990 and 2005, the United Kingdom reduced its nitrogen oxide emissions per unit of GDP by 54%.<sup>26</sup>

Despite all the undoubted progress that has been made around issues like fuel efficiency, total resource consumption continues to grow and impact on the environment continues to be negative. In most cases, efficiency actually increases total resource use with consumers buying more cars or driving for longer distances. For example, over the last 10 years or so, 166 million additional passenger cars have entered the roads across the OECD.<sup>27</sup> Any improvements made in resource efficiency should also account for increases in demand to ensure lower

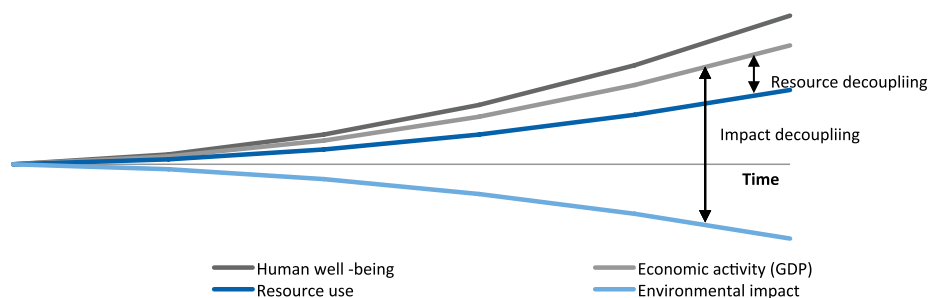


“A number of trends are coming together: the rapid growth of people on the planet and, with it, a need for more energy and more efficient food production. History will judge us not just by what we produce but also by what we preserve. It is time to rethink tomorrow.”

”

Steen Riisgaard, President and Chief Executive Officer, Novozymes

Figure 1.11: Decoupling



Source: UNEP, 2011

**Only 2.7%**  
of all applications  
for technology  
patents are for  
environmental  
innovations

**72%**  
of Europeans are  
prepared to pay a  
premium for  
green  
products

**\$409bn**  
of fossil fuel  
subsidies were  
distributed globally  
In 2010

**\$21bn**  
value of the e-waste  
recovery market  
in 2020

**290%**  
the increase in  
cotton prices  
between  
March 2009 and  
July 2011

**\$2tr**  
the potential savings  
generated by adapting  
to resource  
constraints  
in 2030

**80%**  
of emerging market  
consumers say they have  
more trust in a brand that  
is ethically and socially  
responsible

**\$37bn**  
the savings generated  
by the consumer goods  
industry in 2030  
through **energy  
efficiency!**

**1.2bn**  
people live  
in **water  
scarcity**

**35%**  
the annual growth  
in global mobile  
phone  
subscriptions

**6th**  
Ranking of the top 50  
consumer goods  
Companies and their value  
chains by CO<sub>2</sub> emissions  
when compared  
with countries

**150m**  
the number of  
people joining the  
global middle class  
each year until  
2030

**54 to 179%**  
the increase  
in agricultural yields  
if sustainable  
farming practices  
are  
adopted

## 2. The Size of the Prize



### Summary

- Rethinking business for resource and environmental constraints creates significant opportunity, but there are also risks and costs associated with inaction
- At the macro level, preparing for a resource-constrained economy across carbon and key metals such as steel and iron could preserve US\$ 0.9-1.9 trillion in major economy output in 2030, in 2010 US dollars
- More proactive seeking of efficiencies by consumer goods firms could result in savings of US\$ 7.1 billion in 2020 (equivalent to roughly 0.3% of projected sector output in that year), rising to US\$ 37 billion in 2030
- Long-term growth with reduced resource impact depends on action today from individual companies: optimizing supply chains and efficiency, creating new growth opportunities through existing capabilities, innovating to create new business models and partnering with key stakeholders

### Opportunities at a Global Level

Analysis by Oxford Economics of the economic impact of existing emission reduction commitments and a possible resource scarcity scenario in the major economies (US, EU, Japan and BRICs) suggests:

- **Resource efficiency:** US\$ 2 trillion (1.7% of GDP) of economic output is at risk in 2030 if a “peak metals” scenario emerges and the response is “business as usual” (i.e. business behaviour and regulatory measures in major global economies continue in line with current practices and do not adapt effectively to shortages of supply of steel and iron). To meet demand in such a scenario, recycled content of world steel would need to increase from 38% to 51% by 2030.
- **Energy efficiency:** The economic losses imposed by already agreed constraints on carbon emissions could be up to US\$ 1.8 trillion across major global economies (US, EU, Japan and BRICs) in 2030 under business-as-usual assumptions. However, with a “progressive” response, including targeted policy and regulatory measures, faster innovation, more investment in technology and greater deployment of advanced technology in emerging economies, potentially US\$ 1 trillion of these potential losses could be avoided.

This analysis reflects the output that could be preserved in 2030. In general terms, the earlier that companies and countries embed resource efficiency into the core policies and strategies, the more



**Making your business sustainable in today’s world is an absolute imperative. The business case for sustainable growth is clearer than ever and the urgency of the issues we face means that business leaders have no choice but to act.**



Paul Polman, Chief Executive Officer, Unilever



gradual the changes. The later companies and governments respond, the greater the magnitude of change and disruption. Furthermore, this analysis reflects the value at stake in relation to only carbon, steel and iron. If the analysis was extended to other key resources such as water the numbers could be much larger.

This data is corroborated by the Forum’s *Global Competitiveness Report*, which this year integrated the management of natural and social wealth into its rankings in the form of a Sustainable Competitiveness Index. The impact on national rankings of introducing new measures as drivers of long-term competitiveness has been in many instances dramatic, with long-time leaders falling down the table and others emerging as potential winners in the long-term race for economic health and competitiveness. India, the US and China, applying these new measures, all fell more than 10 places last year, while Brazil, Kenya and the Philippines rose more than 10 places on the Sustainable Competitiveness Index when compared with the standard competitiveness ranking.<sup>28</sup>

The goal has to be managing resources – materials, energy, food, forests and water – better across the board, using an integrated approach to environmental strategy and action. Some of the additional opportunities and value at stake from other resources are highlighted in Box 2.1.

## Opportunities at a National Level

At a national level, resource efficiency can secure the growth of new markets, industries and jobs. Based on existing studies, we can see potential for more sustainable growth in both developed and emerging markets.

- In the **Republic of Korea**, the Green New Deal is expected to create 960,000 jobs while the country's policy of Extended Producer Responsibility (for products such as tyres and packaging such as paper and glass) is expected to have an economic benefit of US\$ 1.6 billion.<sup>34</sup>
- **Brazil's** recycling already generates returns of US\$ 2 billion a year while avoiding ten million tonnes of greenhouse gas emissions and landfill waste, according to some estimates. A fully recycling economy in Brazil could be worth 0.3% of GDP.<sup>35</sup>
- In **India**, a drive towards resource efficiency through the development of a green sector could generate 821,000 new jobs by 2020 and boost growth. With appropriate regulation, skills development, investment incentives and technology spillovers, this sector could raise India's GDP by 458 billion Indian rupees (US\$ 10 billion) by 2020, 0.3% above the current trajectory.<sup>36</sup>
- In the **United Kingdom**, savings opportunities from low- or no-cost investments in resource efficiency have been estimated at a total of about US\$ 35.9 billion, with US\$ 28.1 billion savings opportunity in waste and US\$ 6.2 billion savings opportunity in energy. Savings opportunities with a payback greater than one year have been estimated at around US\$ 51.5 billion. This gives a total opportunity of about US\$ 86 billion.<sup>37</sup>

## The Size of the Prize for the Consumer Goods Industry

In the consumer goods industry, individual companies will need to consider making resource efficiency and environmental competitiveness a core element of their strategy and business models. This will bring new capabilities and stimulate innovation with far-reaching implications for efficiency and future growth. The analysis by Oxford Economics suggests that:

- **Resource efficiency:** Steel costs could reach over 2.3% of consumer goods industry output by 2030 in the event of a resource scarcity scenario. More resource efficient approaches and increased recycling rates would deliver savings of as much as US\$ 46.9 billion in 2030, equivalent to a more than 50% reduction in steel costs.
- **Energy efficiency: Energy costs are projected to be 8% of consumer goods industry output in 2010.** If consumer goods companies took action to increase their energy efficiency to match those in Canada, considered the most energy efficient in the world, they could save US\$ 7.1 billion in 2020, and US\$ 37 billion in 2030, a cost savings equivalent to 1% of total sector output in that year. If energy costs increase by 50% (which is quite possible given current geopolitical stresses and rising demand), the 2030 figure could be as high as US\$ 55.5 billion.

Although the analysis focuses on the consumer goods sector, greater resource efficiency will create opportunities for businesses across the board. For details on assumptions used for the macro and consumer industry analysis, please see the Appendices.

## Box 2.1: The Value at Stake from Investments in Agriculture, Forests and Water

**Agriculture and Food:** According to the United Nations Environmental Programme (UNEP), sustainable or green farming practices could increase yields between 54% and 179%, generating an additional US\$ 1.5 trillion to US\$ 6.4 trillion for the global economy.<sup>29</sup> Increased crop yields mean that farmers not only have enough food to feed themselves and their families, but they also have a surplus that they can sell at local markets, promoting economic growth. Estimates indicate that for every 10% increase in farm yields, the poverty rate can be reduced by 7% in Africa and by more than 5% in Asia. Additional opportunities lie in limiting crop and food waste.<sup>30</sup>

**Forests:** Halving deforestation rates by 2030 would reduce global greenhouse gas emissions by 1.5- 2.7 gigatonnes of CO<sub>2</sub> per year (equivalent to halving the CO<sub>2</sub> emissions of the US in 2008), thereby avoiding some of the damages associated with climate change estimated at more than US\$ 3.7 trillion in net present value terms.<sup>31</sup>

**Water:** Green investments of US\$ 100-300 billion per year over 2010-2050 could reduce demand for water by about a fifth by 2050, according to UNEP.<sup>32</sup> This would reduce pressure on groundwater and surface water in both the short and long term, and create a sustainable supply for both citizens and businesses. In India, the National Rural Employment Guarantee Act underwrites at least 100 days of paid work for rural households; under the Act, close to US\$ 6.4 billion is invested in water conservation, irrigation and land development. This investment has generated more than three billion working days worth of employment, benefiting close to 60 million households.<sup>33</sup>



“Sustainability is synonymous with the prudent use of our natural resources, which for all practical purposes, is a primary objective of our business.”

”

William V. Hickey, President and Chief Executive Officer, Sealed Air

The size of the opportunity available and actually realized will depend on a range of uncertainties. For example, regulation and targets could become increasingly stringent, or new sources of supply and innovation could emerge. The size of the opportunities also depends on each major world economy's ability to switch to more resource-efficient technologies and the ability of companies to innovate. However, the bottom line is that the greater the scale of action taken now to prepare for an uncertain future, the greater the opportunity and benefits in terms of preserving economic growth.

## Driving Competitive Advantage at a Company Level

For individual businesses, the emerging resource constraints have urgent implications that demand action. By adjusting business practices and products to be more resource efficient, companies can create new business opportunities and gain the benefits of improving the environment at the same time.

To survive in the long term, organizations must weave solutions to resource scarcity and environmental challenges into the core of their strategy and operating models. This will enable companies to create the new capabilities and process innovations they need to stay in control of costs and revenues (see Figure 2.1).

**Revenue:** In a more resource-constrained world, companies can protect revenue by closely examining and responding to shifts in consumer attitudes, particularly in emerging markets and pre-empting regulatory pressures.

Resource and environmental issues also open doors to new markets and increase revenues for forward-looking companies. Estimates suggest that the global market value of low-carbon environmental goods and services in 2007-2008, for example, was over 3 trillion Pound sterling (US\$ 4.5 trillion) and is expected to grow by half by 2015.<sup>46</sup>

**Costs:** The threat to costs today comes from inefficiencies and waste across the supply chain. A cost increase in commodities such as oil, coal, wheat and cotton has more impact on consumer goods than any other industry. Recent analysis suggests that a 10% increase in the price of these commodities corresponds to a 13% impact on earnings before interest, tax, depreciation and amortization.<sup>47</sup> By tackling this situation head on, companies can make very worthwhile cost reductions.

In the future, greater pricing of externalities and intensifying competition for resources are both likely and will drive up company overheads. Shoe company Puma and its parent company PPR have responded, for example, by integrating an economic valuation of their environmental impact to create an environmental profit and loss account.

Figure 2.1: Key value drivers from resource constraints



Source: Various sources, Accenture analysis, 2011.



## Creating Value for the Consumer

Resource efficiency creates value not just at a macro or national level, but the benefits are passed down to the individual consumer. New business models can include rewarding consumers for specific behaviours, and/or offering cost savings and other financial incentives on greener products. As countries and companies scale up their efforts, these benefits will be amplified.

**Rewarding sustainable consumption:** Consumers can extract a lot of value from their waste goods through recycling. RecycleBank, for example, creates a multistakeholder win-win by bringing together consumers, communities, municipalities and consumer goods in a range of programmes.<sup>48</sup> Consumers can gain reward points for curbside recycling, for using the RecycleBank digital platform, as well as for walking and cycling in a congested city. The amount of recycling done is monitored using radio frequency identifier (RFID) technology. Mobile phones are used to track how much walking and cycling people do, thereby reducing pollution and congestion. The points that reward these responsible behaviours can be redeemed for discounts and other benefits from companies such as S. C. Johnson & Son, The Coca Cola Company, Unilever and Marks & Spencer. In the US, Recyclebank members save, on average, upwards of US\$ 133 a year by taking everyday green actions, demonstrating that it can pay to be sustainable at a corporate and individual level.<sup>49</sup>

**Creating cost savings:** Online market places can reduce both costs and resource use, and create opportunities for collaborative consumption, not just between consumers but also between consumers and businesses. Shiply, for example, is a company that runs an online market place for couriers. Consumers can decrease their costs of shipment by up to 75% by shopping around on the site, and small courier firms that are already taking items on a given route can expand their load to reduce their carbon per kilogram quotient.<sup>50</sup>



**True environmental advances come when companies take a holistic approach to responsibility and commit to progress in the long term – when they consider opportunities from products to processes to power sources.**



Fisk Johnson, Chairman and Chief Executive Officer, SC Johnson



### 3. The Challenges of Scale



#### Summary

The last 30 years have seen successes in scaling up solutions to environmental challenges, often involving complex sets of stakeholders with conflicting interests, for example in addressing acid rain and chlorofluorocarbons (CFCs)

- Despite this progress, society is still not equipped to fully address the challenges of sustainable consumption of finite resources. Solutions such as certification of fisheries or forest products are unlikely to decouple growth from resource intensity and environmental impact at the scale and speed needed
- Barriers to scale include weak consumer pull, supply chain complexity, and inadequate technology, limited policy incentives and short-termism

Stakeholders have jointly created some successful responses to resource scarcity and environmental degradation. Regulatory driven multistakeholder actions have tackled systems challenges like acid rain and CFCs. Currently, we are seeing bottom-up initiatives led by business, such as the Forest Stewardship Council and the Roundtable on Sustainable Palm Oil.

#### Tackling Systems Challenges: Examples from Recent History

##### US Acid Rain Programme and Cross-State Air Pollution Rule

It was proven in 1966 that sulphur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) released during the combustion of fossil fuels were key contributors to acid rain and hence damaging US forests and freshwater ecosystems. In response, the US Environmental Protection Agency (EPA) spearheaded the development of a cap and trade market for SO<sub>2</sub>.<sup>51</sup> Written into the US Clean Air Act in 1990, it required energy businesses to reduce their SO<sub>2</sub> emissions by half, but let them decide how to do it. Businesses were incentivized to act by the ability to sell extra allowances if their emissions reduced by more than required. Following the success of this programme, a similar approach for NO<sub>x</sub> emissions was launched in 2003.<sup>52</sup> These market-led initiatives have contributed to a reduction in SO<sub>2</sub> and NO<sub>x</sub> atmospheric concentrations of 76% and 50%, respectively (see Figure. 3.1).<sup>53</sup>



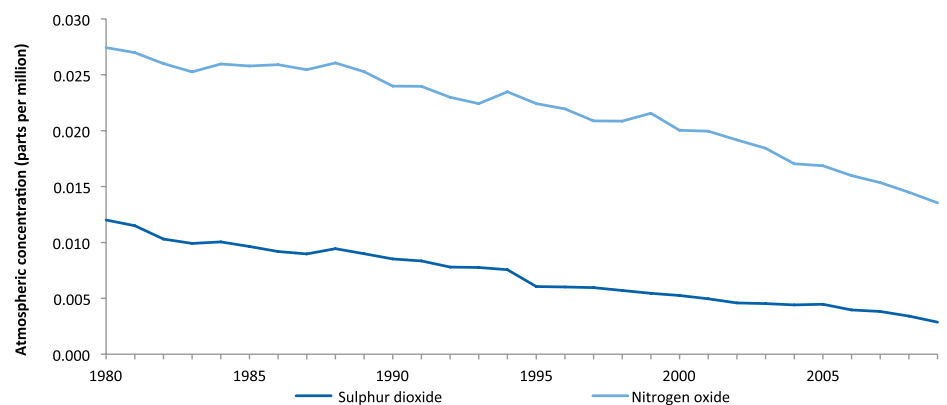
“

**“The first step towards addressing the barriers to sustainable consumption is to articulate ambitious goals and not merely incremental ones. The second step is to adopt transformational technologies and techniques since business as usual will not give radical results.”**

”

Kris Gopalakrishnan, Executive Co-Chairman, Infosys

Figure 3.1: SO<sub>2</sub> and NO<sub>x</sub> atmospheric concentrations in the US (1980-2009)



Source: US Environmental Protection Agency, 2011

### The Montreal Protocol

Since their invention in 1928, CFCs were used to increase the performance of refrigerators, aerosols and circuit board cleaners. However, their severe ozone depleting impacts were detected in the 1970s. This sparked an international regulatory response. Governments joined in multilateral environmental agreements to eradicate their use, encouraging business to develop new alternatives. These actions led to critical stabilization and reduction of CFC emissions (see Figure. 3.2).<sup>54</sup>

### Current Initiatives

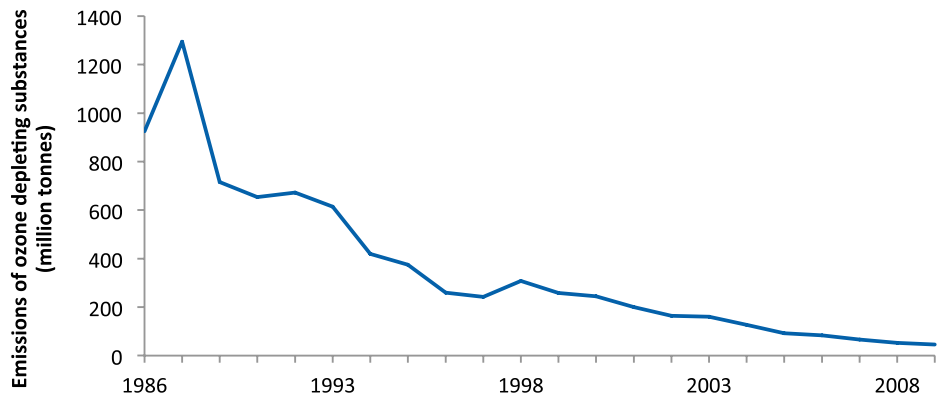
The Forest Stewardship Council (FSC) and the Roundtable for Sustainable Palm Oil (RSPO) are two examples of successful initiatives created over the last 20 years to establish sustainable sources of essential raw materials, create new supply chains and commercial models, and drive demand.

**FSC:** Global deforestation rates reached a peak of 8.3 million hectares per year in the 1990s.<sup>55</sup> In response, concerned business representatives, social groups and environmental organizations formed the FSC to improve forest management worldwide. The FSC's notion that higher profits would incentivize responsible forest management has been effective. In 15 years the area of FSC-certified forest has grown to 144 million hectares (see Figure. 3.3).

**RSPO:** Global demand for palm oil has grown annually at 13% per year since 1990.<sup>56</sup> However, it can only be cultivated in tropical regions.<sup>57</sup> Producing enough to meet rising demand has contributed to acute deforestation in Indonesia and Malaysia. Companies such as Unilever and Nestlé from the private sector and NGOs such as WWF established the RSPO to promote low impact palm oil cultivation. Other corporate members include DuPont, Kraft, Marks & Spencer, Metro Group, S. C. Johnson & Son and Tesco. In seven years the RSPO has certified 10% of all palm oil production as sustainable (see Figure. 3.4), and with time-bound commitments from major palm oil producers its success looks set to continue.

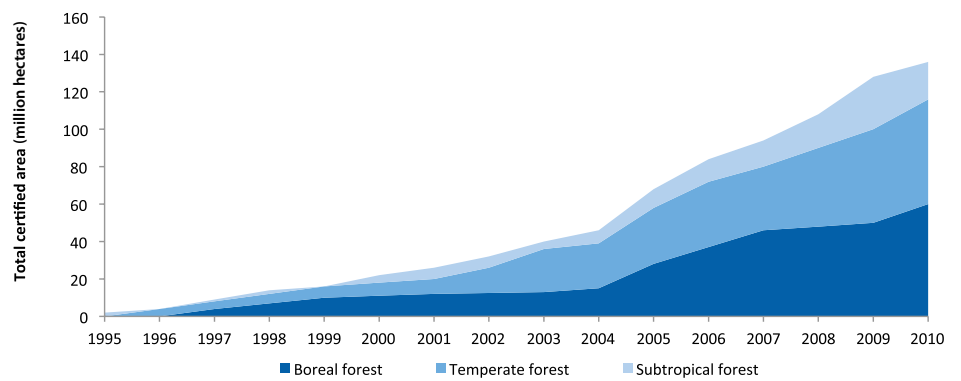
These initiatives are important steps in the process of scale. But forward projections of FSC-certified timber and certified sustainable palm oil show that in the next 10 years supply from these sources is likely to remain modest. If trends over the last five years continue FSC will account for roughly 12% of the market in 2020.<sup>58</sup> RSPO-certified palm oil could make up around 20% of the total supply (based on existing company commitments and some uptake in key emerging markets) in 2020.<sup>59</sup> Such proportions are not enough to make sustainable products mainstream and alone are unlikely to have the impact needed. However, in combination with approaches that aim for system changes, they could help to scale up decoupling and sustainable consumption.

Figure 3.2: Global CFC emissions (1986-2009)



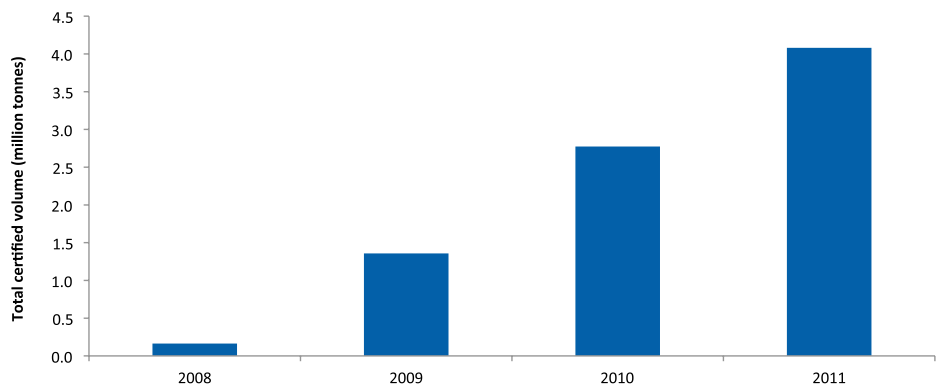
Source: UNEP, 2011

Figure 3.3: FSC-certified forest area by forest type (1995-2010)



Source: Forest Stewardship Council, 2011

Figure 3.4: RSPO sustainable palm oil supply (2008-2011)







Source: RSPO, 2011

## The Barriers to Scale

Sustainable consumption has reached its own “valley of death” – stuck between proof of concept and reaching mass markets and scale. Consumers today are offered greener choices through dematerialization, rentalized markets, renewable power, environmental standards and other innovations, but examples remain isolated. Current and past efforts are not yielding solutions at the right scale, creating a serious case of “pilot paralysis”. Society remains unable to contain its production of carbon, manage the scarcity of water, or dampen speculative fluctuations in the price and availability of basic foodstuff. While political and business leaders increasingly recognize the challenge, we are still not equipped to deliver change at scale. Transformation is needed, but we are stuck in incremental change.

Interviews with chief executive officers and research conducted for this study have uncovered a common set of barriers to scale across the sectors represented in this project (e.g. palm oil, cotton, electronic waste, plastics and forests). The five barriers identified have their roots in demand, supply and the rules of the game (see Figure 3.5)

Figure 3.5: Barriers to scale

Demand		Low consumer pull and engagement: Limited pull all along the value chain from consumers often due to cost and convenience and confusion caused by mixed messaging and the proliferation of ecolabels.
Supply		Insufficient technology/infrastructure: In some cases the technology or infrastructure is not yet in place for scaling up initiatives. In other cases the challenge is to ensure best practices are used across the board.
		Complex supply chains: Multiple links in supply chains, and inability to track components across them, present difficulties in accurately assessing the scale of challenges and the ability to assure sustainable sourcing.
Rules of the game		Perverse subsidies and limited trade incentives: Trade systems and tariffs rarely differentiate between unsustainable and more sustainable alternatives. Perverse subsidies and mixed market signals are also a barrier.
		Short-termism, lack of a systems view and traction in emerging markets: Lack of long-term focus among governments, business and investors, and a continued focus on the symptoms rather than systemic challenges with limited traction in emerging markets, continue to hamper progress.

**1. Demand: Low consumer pull and engagement.** Consumers say “buying green” matters to them, but demand for sustainable products from consumers, companies and governments is low. The lack of consumer pull denies business and governments the license to scale up these products and solutions. So, they remain a fraction of total revenue streams or a peripheral policy platform. For example, in 2011, purchases of certified sustainable palm oil accounted for just over half the total certified sustainable palm oil produced, with the rest remaining unsold (see Figure 3.6).<sup>60</sup> Companies said their demand for palm oil was influenced by low consumer visibility (palm oil is a “hidden” ingredient found in over 50% of packaged goods in supermarkets).<sup>61</sup> Low visibility means low-consumer pull; combine this with the additional costs of certified sustainable palm oil and companies lose interest.

Even worse, consumers are being alienated by mixed messaging and a proliferation of standards and green labels (see Figures 3.7 and 3.8).<sup>62</sup> Survey results show that despite the presence of eco-labels, 70% of British consumers remain uncertain about the environmental performance of the products they buy.<sup>63</sup> Consumers want the new products, services, cost savings and value delivered by radical thinking from the brands they trust. But they also need greater clarity and transparency around labelling systems, and they need competitive pricing.



“ Society needs sustainable consumption but each customer has a different response. A lot of people say ‘we support your activities’ but this is often not matched by action in our stores.

” Takeshi Niinami, President and Chief Executive Officer, Lawson

**2. Supply: Insufficient technology and infrastructure.** To transition to a world in which growth is delinked from resource intensity and negative environmental impacts, technologies and infrastructure are needed that are currently capital intensive and/or not used at scale.

Many of the technologies needed for resource efficiency and more sustainable forms of consumption are already available, as can be seen by the range of options for energy efficiency, recycling, generating renewable energy, and sustainable farming and forestry techniques. But to jump-start the shift to a resource-efficient economy, these technologies need to be improved to make them relevant, affordable and accessible across industries, geographies and locally.

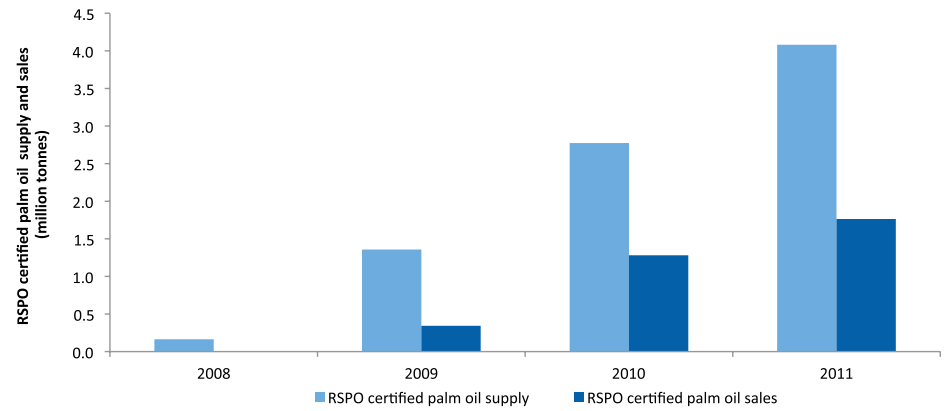
Consider the recycling of e-waste. The Massachusetts Institute of Technology (MIT) recently noted that only 13 facilities in the world are certified to melt down and recycle the cathode ray tubes of old television sets, and all are in Asia<sup>64</sup>. Electronic waste therefore needs to travel across multiple continents for disassembly, and then certain parts are sent off to various certified locations around the world. While this process focuses on price and competitive advantage, it does mean a significant amount of resources are consumed during the recycling process, putting the net environmental impact of recycling into question.

**3. Supply: Complex supply chains.** Supply chains are becoming even more global and interdependent, and increasingly complex. Multiple layers can lower visibility across supply chains, so it is harder to assure the implementation, certification and segregation of sustainably sourced inputs. This barrier is particularly prevalent in commodities. In the cotton industry, for example, there are eight stages between the field and shop floor (see Figure 3.9).<sup>65</sup> During the production stages there are many opportunities for different types of cotton to be blended, thus limiting assurance around the sustainable sourcing credentials.

**4. Rules of the game: Subsidies and limited trade incentives.** Financial support packages for fossil fuels, transport and water continue to distort markets in favour of unsustainable consumption and growth. Arguably, many (not all) subsidies create a negative price for resources that are increasingly scarce or more costly to extract, making such subsidies harmful to both the economy and environment. Furthermore, trade systems and tariffs rarely differentiate between unsustainable and more sustainable alternatives. Better understanding of the true cost of unsustainable products could deliver an increase of 7-13% in the traded volumes of sustainable products.<sup>66</sup>

**5. Rules of the game: Short-termism, lack of a systems view and traction in emerging markets.** Current approaches to boost sustainable consumption too often fail to address the central issues because of short-term thinking, lack of a systems view and limited traction in fast-growing markets.

Figure 3.6: RSPO sustainable palm oil supply and sales (2008-2011)



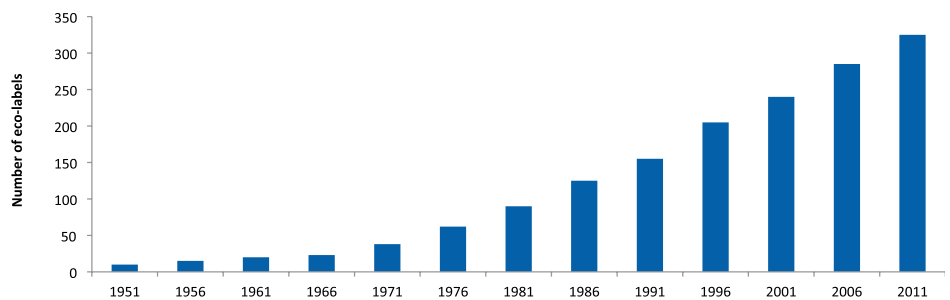
Source: RSPO, 2011

Figure 3.7: How standards proliferate



Source: XKCD.com

Figure 3.8: The proliferation of standards and labels (1950-2011)



Source: Ecolabel Index, 2011

Note: This graph records the total number of eco-labels recognized by the Ecolabel Index

Figure 3.9: Stages in the cotton value chain, stages in general public awareness (in green).

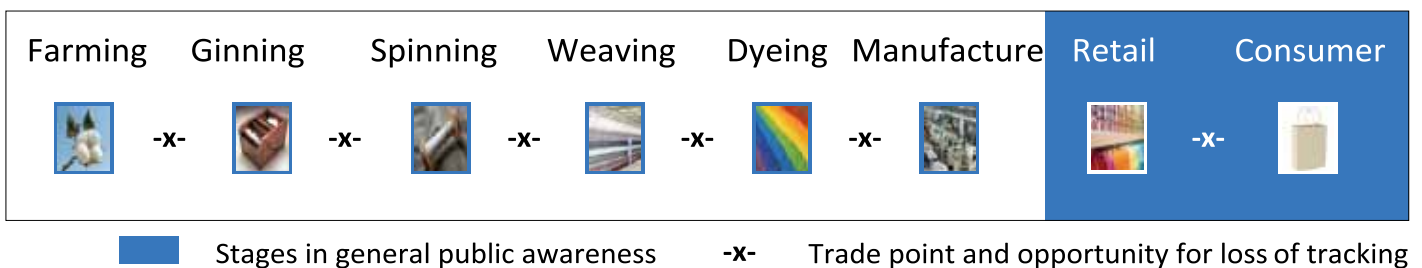
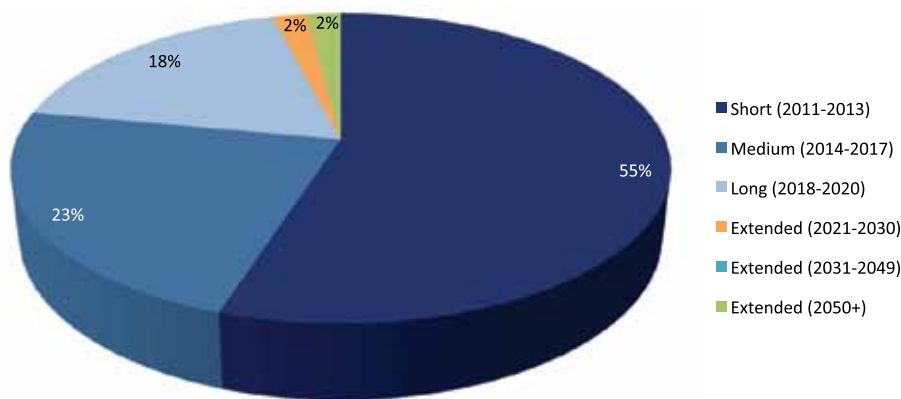


Figure 3.10: Timeframes for sustainability targets of the FTSE 100



Source: The Carbon Trust, 2011

*Short-termism:* A recent study showed that 55% of FTSE 100 company sustainability targets were to be achieved within 1-2 year timeframes while only 4% looked beyond 2030 (see Figure. 3.10).<sup>67</sup> These quick wins and short-term returns must be complemented by longer term planning and goals to drive up sustained growth.<sup>68</sup> As Alistair Ulph, Acting Director of the Sustainable Consumption Institute, suggests: “Without a long term framework, it is difficult to justify short-term costs to the general public”.

*Lack of a systems view:* Business, government and society more broadly tend to overlook the interdependences that exist between different challenges. They lack the systems view that is needed when designing solutions. Consider bioplastics, which is a promising and viable solution. If all plastics in the world were replaced by bioplastics (assuming necessary improvements in quality, performance and cost) and the energy used in the process came from renewable sources, the fossil fuel savings would be equivalent to approximately 3.49 million barrels of oil a day. That is 4% of the world’s fossil fuel usage. However, if only food feedstocks were used in making the plastic there could be tremendous implications for agriculture and food security.<sup>69</sup> Technologies do exist that enable the use of non-food feedstocks, which could address many of these trade-offs, but this example highlights the systems view that is required when developing solutions.

Figure 3.11 presents some of the interconnections between the challenges that emerged during interviews with chief executive officers, stakeholder dialogues and workshops and research for this project.

Another example that highlights the lack of a systems view can be found in how electronic waste is addressed. The European Union has one of the most ambitious targets for recycling e-waste, with targets to ensure that 85% of Europe’s annual e-waste generation will be collected by 2020.<sup>70</sup> However, this target deals only with an outcome of consumption. Action is also needed to address the high number of products “consumed” and the design of future generations of these products (see Figure 3.12).

Figure 3.11: The interdependence between supply, demand and rules of the game

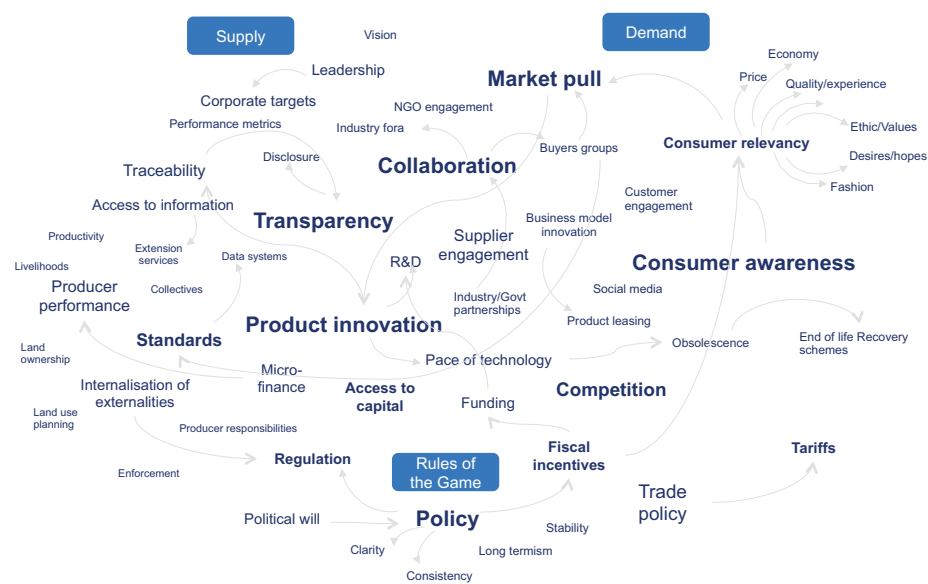
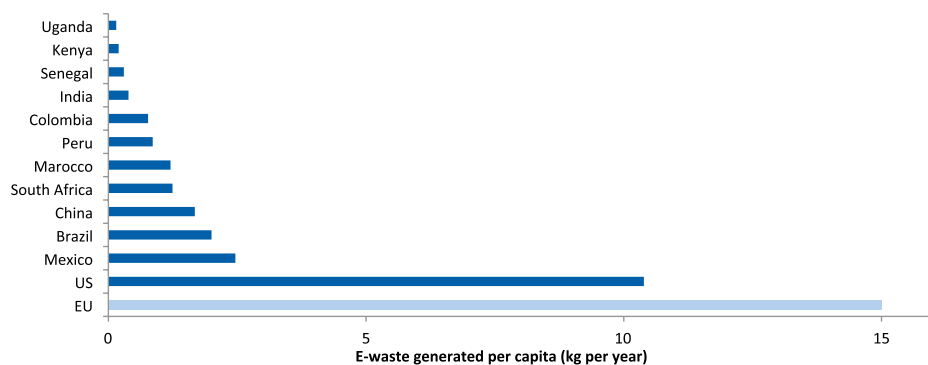


Figure 3.12: E-waste per capita in selected countries

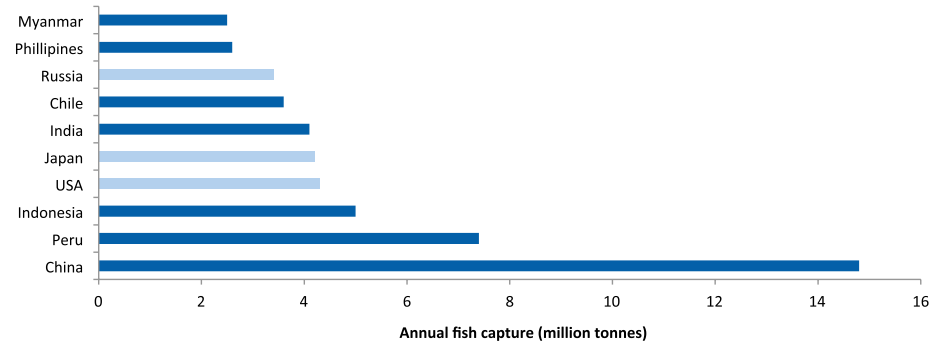


Sources: UNEP, 2007 & 2011.; IndexMundi, 2011

*Limited traction in fast-growing markets:*

Any approach to sustainable consumption needs to focus on areas of greatest impact. The Marine Stewardship Council (MSC), for example, promotes sustainable fisheries management, yet only operates in 3 of the 10 largest fishing countries: Russia, Japan and the US (see Figure 3.13). Despite efforts, MSC has not gained significant traction in the most prolific fisheries in countries such as China, which catches over three times as much fish as the US.<sup>71</sup> This could change with the first Chinese fishery currently undergoing assessment for MSC certification.<sup>72</sup> However, there is still a long way to go.

Figure 3.13: MSC operations in the world's 10 largest fisheries



Source: Food and Agricultural Organisation, 2010



“

**If business looks at sustainability on an end-to-end basis, so from the design of a product to production and sales, it can create a win-win scenario. Companies can develop better products at the right price that people want to buy with less negative impacts on the environment.**

”

Mike Rake, Chairman, BT Group



“

**Individual companies may take voluntary initiatives to further improve protection of the environment, but what really matters are international rules that commit the whole industry.**

”

Nils Smedegaard Andersen, Group Chief Executive Officer, A.P. Møller-Maersk

## 4. A Vision of Scale



### Summary

- Historically, society has achieved scale as a result of action by citizens and consumers, companies and governments, and the application of technology
- Citizens and consumers are at the centre of the interaction between government, market forces and technology, and are the real powerhouses of what is needed to drive scale
- Business has throughout modern times been the driving force behind much of society's economic dynamism, catalysing technological as well as institutional and financial innovation
- Governments drive scaled change in large part by establishing through law what behaviours are deemed acceptable, and creating long-term ambitious targets
- Technology has been a key instrument for scale, from the industrial revolution to the Internet revolution and beyond

As a society, we must continue to scale up existing initiatives and examples of more sustainable consumption, but we still face a critical question: How can we rapidly enable countries, companies and consumers to achieve growth with significantly less resource intensity and environmental impact at scale?

To answer this question, scale needs to be understood in the context of modern society, rather than through the lens of sustainability.

### Living in an Era of Scale

We live in an era of scale. Our US\$ 65 trillion global economy is powered by US\$ 210 trillion of financial assets. Over five billion mobile phones are in circulation with penetration rates rising by 35% each year.<sup>73</sup> In August 2008, 4.7 billion people, or 70% of the world's population, tuned in to watch the Beijing Olympics over a period of just two weeks.<sup>74</sup>

A new vision of scaling up efforts to decouple growth from resource impact requires using the existing impact of public policy, business initiatives and citizen action, and putting the citizen at the heart of efforts.

### Leveraging Business, Governments, Citizens and Technology

**Citizens and consumers**, markets, governments and technology have been society's four historic instruments for achieving scale (see Figure 4.1).

**Citizens and consumers** are at the centre of the interaction between government, market forces and technology, and are the real powerhouses of what is needed to drive scale. Companies and governments are catalysts and enablers for citizen action through policies, products and services, long-term commitment and action, but ultimately the consumer is "king or queen" of scale.

Citizens and consumers acting in concert are society's way of disrupting and replacing whatever is no longer considered acceptable. In 2004, demonstrations in over 125 US cities, as well as the launch of a paid media campaign featuring the rock band R.E.M., encouraged Staples to adopt an environmentally friendly paper policy and reverse the impact previous paper purchasing policies were having on endangered forests in the country.<sup>75</sup> Today, an explosion in citizen action is being witnessed from Cairo to London on some of the causes and consequences of an unsustainable economy. Within months of its first appearance on 17 September 2011, Occupy Wall Street had spread to over 600 communities across the US and is present in over 1,500 cities worldwide.<sup>76</sup> In China, within days of a tragic train crash in mid-2011, 26 million micro-blogs were posted.<sup>77</sup> Similar citizens' actions have erupted in the face of contaminated milk, the collapse of poorly built schools during the Szechuan earthquake and other events.

**Business** has been the driving force behind much of society's economic dynamism in modern times. Of the world's 100 largest economic entities in 2009, 44 were corporations.<sup>78</sup> Business can rapidly sell billions of packets of food products, tens of millions of cars and millions of mobile phones. Different industries demonstrate scale in different ways. In the consumer goods industry there is a direct line to the consumer. For example, globally one in three households use a Unilever laundry product – if they all used concentrated variants, it would save four million tonnes of CO<sub>2</sub> per year, equivalent to taking one million cars off the road.<sup>79</sup> Financial markets make millions of dollars of investments every minute. Every minute the global foreign exchange markets turn over US\$ 2.8 billion.<sup>80</sup>



Figure 4.1: Four elements for driving scale



In just two months, the occupy protest had spread from New York to 1500 cities world wide

In 2009, 44 of the world's top 100 economic entities were corporations

There are more than 2 billion internet users world wide

Public procurement amounts to US\$ 4-5trillion annually

**Governments** drive scaled change in large part by using regulatory tools (i.e. law, taxation and markets to dictate what should and should not be done) and creating long-term ambitious targets. The South Korean government, with its powerful culture of leadership and collective action in the national interest, is driving forward with the nation's business community an integrated green economy, with every intention of taking global markets by storm. More broadly, countries as diverse as China and Switzerland have envisioned how their development interests are aligned to sustainable growth outcomes and have successfully mobilized diverse interests to this cause.



“  
**A swelling chorus of voices is calling for businesses to be smarter and more conscientious in their use of all their resources – human, economic and environmental.**  
 ”

John Wren, President and Chief Executive Officer, Omnicom Group

Governments have soft as well as statutory and fiscal instruments that drive consumer behaviour. The decline in smoking throughout wealthier nations resulted from a combination of public education and a gradual restriction in the social space for exercising the habit. Governments are also big spenders, with public procurement globally accounting for 6-8% of GDP, amounting to US\$ 4-5 trillion annually.<sup>81</sup> Some, like the member states of the European Union, have moved (albeit slowly) in greening this large purchase of goods and services.



“  
**Big companies can actually bring scale to the problem and deliver sustainable solutions globally.**  
 ”

Lucy Neville-Rolfe, Executive Director, Tesco

Just as economic power begins to shift from the West, changes in centres of political power are also being seen. It is not just national governments that have scale at their fingertips. The 21st century is often heralded as the urban century. With more than half of the world's population now living in cities, urban areas hold significant political and people power. The mayors of the world's 25 largest cities are each responsible for more people than many national leaders. London has more residents than countries like Paraguay, Denmark, New Zealand or Ireland. If Karachi, the most populous city in the world, was a country it would be bigger than Greece, Portugal or Hungary. The combined population of the world's 11 megacities – cities with more than 10 million inhabitants – roughly equals that of Japan.<sup>82</sup>

**Technology** has been a key instrument for scale, from the Industrial Revolution to the Internet revolution and beyond. Growing Internet penetration is shifting the fabric of the world's economies and societies. As of March 2011, there were over 2 billion Internet users around the world.<sup>82a</sup> It took the radio 38 years to reach a market of 50 million people, the television 13 years, and Facebook just two years.<sup>83</sup>

Today, technology and social networking sites are further planting the citizen in the centre of the action. The flow of information is no longer one way. Instead, we see a complex interplay of knowledge cross-flows and access to information, allowing consumers to make more informed and ethical decisions. Technology affords transparency and power to the citizen, as witnessed by events like the Arab Spring, which can promote the activities of businesses and governments, but also lead to their downfall.

These four elements of scale highlight what is required to mobilize change at the scale and speed required. Collective experiences of scale to date show us four key lessons and insights into some important systemic triggers of scale and models of change (see Box 4.1 and Figure 4.2)

## System Triggers

The potential for consumers, business, governments and technology to deliver systems change is significant (see Figure 4.2 for examples of the scale that is possible). The challenge we face is harnessing these wide-scale processes to decouple consumption and growth from resource intensity.

Figure 4.2: Systemic triggers and examples of scale

Actors	Systemic triggers for scale	Examples and ideas of scale
<b>Consumers</b>	Consumer emotions and values: These drive behaviour and are reinforced in different ways	<ul style="list-style-type: none"> <li>– Millions of protestors came together in Tahrir Square in Egypt for 18 days in 2011 to bring down the regime of Hosni Mubarak</li> <li>– The Campaign for Safe Cosmetics is “liked” and followed by 52,873 people on Facebook; more than 1,500 companies have pledged to meet the campaign’s goals to eliminate harmful chemical from cosmetics and personal care products. Consumers have been pushing Johnson &amp; Johnson to remove potentially dangerous chemicals from all its personal care and baby products</li> </ul>
<b>Business</b>	<p>Business coalitions:</p> <p>Businesses can act collectively to aggregate the scale and impact of their actions</p> <p>Finance and investment: Financial markets have great transformational power and billions of assets at their disposal</p>	<ul style="list-style-type: none"> <li>– The Consumer Goods Forum (CGF) brings together CEOs and senior management of over 650 retailers, manufacturers, service providers and other stakeholders across 70 countries. Forum Member companies have combined sales in excess of US\$ 2.8 trillion. The CGF has far-reaching targets to work towards ending deforestation and to phase out the use of many refrigerants<sup>84</sup></li> <li>– The five largest sovereign wealth funds (UAE, Norway, two from China and Saudi Arabia) are estimated to have assets of approximately US\$ 2.7 trillion<sup>85</sup></li> </ul>
<b>Government</b>	<p>Government purchasing power: Public procurement can create significant markets and tip the economy as a whole towards sustainability</p> <p>Subsidies: In some cases, the use of subsidies creates market failure; however, the use of subsidies can also promote new markets and job creation</p>	<ul style="list-style-type: none"> <li>– Governments are the largest consumers in an economy; in many Asia-Pacific countries government consumption can represent as much as 20-25% of GDP<sup>86</sup> while OECD member countries spend on average 12% of their GDP on public procurement<sup>87</sup></li> <li>– Reducing fuel subsidies by 80% globally (mainly in the Middle East, Venezuela and Mexico) could reduce global demand for road transportation fuel by 5%, reducing demand for oil by just under three million barrels per day<sup>88</sup></li> </ul>
<b>Technology</b>	Social media and the Internet: Technology enabled communication channels can connect billions of people around the world	<ul style="list-style-type: none"> <li>– 80% of Fortune 500 companies are using Web 2.0 (e.g. Facebook, Twitter, company-generated social media platforms)<sup>89</sup></li> <li>– On average, more than 250 million photos are uploaded onto Facebook per day; every month, more than 500 million people use an app on Facebook or experience the Facebook platform on other websites<sup>90</sup></li> </ul>

## Box 4.1: Key lessons from existing scale

1. Understand that scale brings risk and opportunities; there are always winners and losers
2. Start with scale as the end goal of sustainable consumption when designing initiatives
3. Understand and exploit the respective capacity, capabilities and resources of citizens and consumers, governments, businesses, technologies and citizens
4. Focus on commercially viable, genuinely scalable, market-driven initiatives; enable interaction between different instruments of scale such as using technology and citizen action, or government purchasing power and business actions to create a multiplier effect

## 5. Solutions for Scale



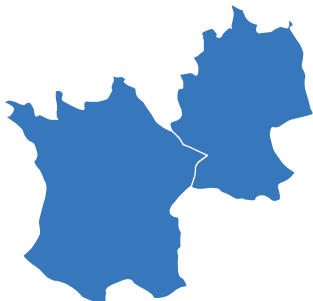
### Summary

- Business leaders increasingly recognize the enabling role that companies can play in achieving scale
- Transformational change is needed to leverage the power and reach of business to achieve scale while securing competitive advantage in a resource constrained world
- Action will be required across demand, supply and rules of the game

Over the past year, chief executive officers, government ministers, business leaders and experts were asked what could be done to decouple growth from resource and environmental impact at increased speed and scale. These discussions, through interviews and regional events, clearly show that there is no single solution.

Different stakeholders must get involved and collaborate to trigger scale. Governments will need to provide clear, stable and long-term policy frameworks, and use their scale to enable the creation of new markets. Consumers will need to engage more actively in redefining consumption and growth. And technology developments must continue to drive efficiency and connectivity.

### Box 5.1: The potential impact of business actions



When combined, the top 50 consumer goods and retail companies have a carbon footprint across scope 1, 2 and 3 equivalent to the combined footprint of Germany and France. If the industry was a country it would be ranked the 6th largest emitter in the world



Looking specifically at consumer goods companies the top 50 companies in this sector have a carbon footprint across scope 1, 2 and 3 similar to that of the United Kingdom and Ireland, and a reduction of 25 percent would have an equivalent effect to removing the emissions of the Netherlands

Business, however, does have a leading role to play. If the consumer goods industry, for example, aggregate their impact, it could have an effect as large as many countries. The impact of businesses across sectors moving together will be even greater (see Box 5.1).

Discussions uncovered an impatience for change and desire for more action-orientated engagement. Business leaders increasingly recognize that their companies can and must act to enable scale, and to ensure the success of businesses themselves. Harnessing the power and reach of business to achieve scale while securing competitive advantage in a resource-constrained world will require transformational change across three dimensions:

- Transform demand through interactions with consumers
- Transform supply through value chains and new business models
- Transform the rules of the game through public-private partnership

Behind each of these business imperatives sits a set of required actions to achieve speed to scale (see Figure 5.1). Successfully shifting the forces of demand, supply and rules of the game will not happen without collaboration across sectors and elements of society. None of these dimensions is new in its own right, yet the holistic approach involving different stakeholders to bring solutions to scale is silently absent. Business must – and can – play a leading role.

Source: Various sources, Accenture analysis (2011)

Figure 5.1: Business imperatives for scale



## Transforming Demand through Interactions with the Consumer

- **Make sustainable consumption more emotional:** When criticized for lack of action on more sustainable consumer goods, both companies and governments often hide behind survey results showing that consumers increasingly want more sustainable products but do not match this with their buying patterns. This viewpoint is misguided as it isolates the consumer's decisions at the point of purchase from their values as citizens. Opportunities lie in converting these aspirations into action at the point of purchase/consumption through aspiration, emotion and relevance.

Making sustainable consumption as simple as price and quality for consumers and communicating this in a simple way will be key to engage with consumers at an emotional and value-based level. Emerging research on this topic focuses on leveraging the reach and trust of NGOs, demand-side messaging, linking to practices in the home such as washing and cooking, and using the experiences and design of games to engage consumers (see Box 5.2). Businesses are approaching this issue today in many ways, including creating a direct link between the outcomes for consumers and desired business outcomes.

Clothing retailer Patagonia is asking consumers to match its pledges to reduce, repair, reuse, recycle and re-imagine Patagonia products before buying a new one. The company's offers include free repairs of damaged equipment, supporting product re-sale through a partnership on eBay and donating unsold clothing. Patagonia placed an advertisement in the *New York Times* on "Black Friday", the day after Thanksgiving and the largest shopping day in the US, with the tag line: Don't buy this jacket. This bold move reflects Patagonia's commitment to reducing consumption through innovative business models and in turn, reducing harmful impacts on the environment.<sup>94</sup>

Creating shared value is a fundamental part of Nestlé's way of doing business, focusing on shared outcomes for shareholders and society. The company forges partnerships with communities to improve societal and environmental benefits at each step of the value chain, creating a link between the outcomes for the consumer and the outcomes for the company. This shared approach is reflected in Nestlé's approach to food security through a focus on tackling food waste and improving nutrition. By consuming Nestlé products, society gains access to safe, quality, nutritious food and a greater knowledge of health issues, while Nestlé gains deeper understanding of nutrition and diet as well as greater links with key stakeholders and brand recognition.<sup>95</sup>



“

**To build and sustain brands people love and trust, one must focus not only on today but also on tomorrow. It's not easy...but balancing the short and long term is key to delivering sustainable and profitable growth.**

”

Irene B. Rosenfeld, Chairman and Chief Executive Officer, Kraft Foods



“

**NGOs are the most trusted institution – they fill a void in trust. Now they need to be sufficiently branded to appeal to the masses and shift behaviour.**

”

Richard Edelman, President and Chief Executive Officer, Edelman

- **Drive transparency through technology:** Technology enables companies to engage with millions of consumers, presenting both opportunities and risks. Innovations such as machine-to-machine technologies can help build transparency around the performance of products. Technology can be used to program all devices in the home to operate at more efficient levels, as well as provide meaningful information to the consumer in simple terms that can cut through the noise created by the proliferation of labels and standards.

Consumers can already download smartphone applications that, through a barcode scan, rate particular brands and products in terms of their corporate, environmental and social practices, and other useful information. Technology also opens up the entire value chain to public scrutiny where a disgruntled worker can transmit a picture of poor environmental conditions to a mass audience within seconds. There will soon be ample competition in this new consumer space.

The GoodGuide iPhone app (available in the US) rates over 140,000 consumer products against criteria such as the environmental sustainability and ethics of the companies that produce them. The consumer is informed with ease and speed about the values embedded within their selected products. To retrieve the sustainability rating of their selected product, the user of the app simply has to scan the barcode on the product packaging.

Another example uses the idea of a “trust seal”, which makes public information that companies wish to share on their environmental performance. The “Blue Butterfly” logo is the seal of approval from Positive Luxury, though which consumers can see a description of why a chosen brand or product is deemed to have a positive impact. Whether it is through the ingredients used in a particular product or how the product is sourced, manufactured or sold, this start-up chooses brands that are demonstrating a commitment to sustainable excellence to make the consumer’s choice easier.

- **Redesign products and services:** Sustainable consumption means goods will have to be made, sold and used in new ways. Rather than producing alternatives that stand side-by-side with unsustainable products, companies will increasingly need to make the sustainable choice the default choice at the same price and level of quality.

Kingfisher, an international home-improvement retail business, is an industry leader in making the sustainable choice the default choice. All timber products in Kingfisher’s B&Q stores in the United Kingdom are sourced from “proven well-managed” forests and supply chains, which are audited to third-party standards such as the Forest Stewardship Council (FSC). On a global scale, Kingfisher sources 81% of its timber from sources independently certified to sustainability standards. In this way, it offers the most cost-effective home-improvement choices across a wide range of product lines at the same time as providing the most sustainable choice to customers across its 900 stores. By making the sustainable choice the default choice, Kingfisher has taken a first mover stance and made it the easy choice, accessible to all.

Focusing only on products and services is not good enough. Close attention is needed on how consumers consume and how needs and wants are defined and fulfilled. Creating new products using fewer virgin resources in production and use, and shifting from ownership of products to enable the collaborative consumption of services, are two ways in which businesses can create new markets and also reduce the harmful effects of consumption on the environment.

## Box 5.2: Emerging research and trends in how to make sustainable consumption more emotional

**Learn from NGOs:** Non-governmental organizations are key to building trust and engagement. Increased co-branding will be one way to increase trust in the future, even more powerfully if done through consortia rather than one to one.

**Use demand-side marketing:** Advertising is a key form of news consumption for billions of the world’s consumers. Connecting sustainability issues to the intimate relationships people have with their favourite products is a smart way to get the word out. Demand-side campaigns can focus on shifting behaviours and steering demand towards more sustainable forms of consumption. Such campaigns encourage consumer demand for new, healthier, resource efficient products that they never thought possible.

**Understand social practices:** Rather than looking at consumers and products at an individual transactional level, researchers are increasingly focusing on social practice theory, which looks at cultural norms, and the regulations, technologies and infrastructures that shape them. Eating and washing habits, for example, are often born from cultural habits, incomes and norms that differ from country to country. These are, in turn, affected by an interdependent global economy, which links business, governments and other actors. So strategies that only focus on individual choices are unlikely to have much impact. Looking at social practices in combination with technological innovations based on people’s way of life is likely to reap greater rewards.

**Engage through games:** An emerging trend in engaging with consumers around sustainable consumption is that of “gamification”. Game design thinking for non-game applications is being used to build on the powerful and positive emotions that arise when playing games, to engage consumers around sustainable consumption. The use of points, badges, levels, challenges and rewards to engage users can make sustainable behaviours viral and increase take-up and brand recognition.

SAP has recently been exploring the idea of engaging people in sustainability through gamification using online competitions and rewards systems. For example, SAP launched the Facebook app Green Soap, which calculates the carbon value of online shopping and creates competition amongst participants. The Seeds app targets the consumer as citizen, enabling friends, neighbourhoods and communities to recognize and reward sustainable behaviours with seeds that are grown in virtual flowerpots.<sup>94</sup>



“  
Technology will drive ever greater transparency throughout supply chains, empowering customers and asking for greater levels of engagement between sustainable business models and consumers.  
”

Marc Bolland, Chief Executive Officer, Marks & Spencer

Shared access to products and services (or collaborative consumption) can provide as much value as ownership in many instances. RelayRides, for example, currently available in the US, is a car-sharing business model that allows people to rent out their own personal vehicles. General Motors (GM) is now partnering with the company. Through the partnership, the owners of GM cars equipped with OnStar communication systems ( a form of telematics) can list their cars for rent when they are not planning to use them. Cars are rented out, insured by RelayRides, for a few hours at a time via an online programme run by the car-sharing company. The renters can even unlock the cars via apps on their phones. In just under 12 months of operations in Boston and San Francisco, RelayRides has over 5,000 users with plans for national expansion. The company has benefitted from this innovative approach, attracting investment from Google Ventures, August Capital and GM. Consumers also win with a typical user earning around US\$ 200 per month from renting their car when it would have otherwise stood idle.

## Transforming Supply through Value Chains and New Business Models

- **Implement visionary leadership and seamless integration across the organization:** Sustainable consumption at scale will not be achieved unless leadership is shown from the very top. Business-as-usual leadership will not win the day. Leadership must be visionary, fuelled by ambition, and driven by the business imperative for scale. The business leaders ahead of the pack need to inspire other leaders to build momentum and unleash the power of business.

Decoupling growth from resource intensity and negative environmental impact also requires horizontal and vertical integration, such that every employee's day-to-day responsibilities and reward structures reflect the transformation (for some of the key actions needed for integration see Box 5.3).

Unilever's Sustainable Living Plan is a prime example of the ambition and leadership required to decouple revenues and resource intensity to achieve sustainable growth. Unilever's new business model has set a company-wide target to double sales while halving environmental impact. The plan has two other key targets: to help people take action to improve their health and well-being, and to source 100% of agricultural raw materials from sustainable sources.

### Box 5.3: Embedding sustainability through organizational change:

Every business needs to plan for a more uncertain future, embedding sustainable consumption and resource efficiency into company DNA and how they do business. Chief executive officers have told us that five key things are required to achieve this:

- 1. Lead from the top:** Direction and intent is set from the top and reinforced with key stakeholders: employees, consumers, investors and partners
- 2. Align issues with the core aims of the business:** The strategic rationale is clear with public targets that integrate sustainable consumption into every product, service, factory, truck, office and shop
- 3. Establish financial incentives:** Bonuses and performance appraisals across management and the whole company are linked to measures and rewards around carbon and resource efficiency
- 4. Embed resource efficiency into operations:** Champions sit in different parts of the company to help employees innovate and integrate activities into their day-to-day jobs
- 5. Measure and track progress:** Comprehensive and frequent reporting shows how companies are performing on an ongoing basis, driving tangible business outcomes

“



**Infinite resource intensive growth is simply not possible, and we are already living off our future capital. We need to think now about how business services will evolve in the next two decades and beyond.**

”

Ian Cheshire, Group Chief Executive Officer  
Kingfisher

- **Embrace a range of strategic options for the future:** Four strategies will help businesses drive resource efficiency across both the value chain and the organization (see Figure 5.2):
  - Optimize supply chains, operations and product processes to eliminate inefficiency to avoid and reduce costs
  - Apply existing capabilities to opportunities beyond core strengths to identify new sources of growth in an uncertain resource future
  - Invest in efficient and disruptive technologies to tap into new markets in the developed and emerging world
  - Partner with governments and industry to create an ecosystem of collaboration and scale around key activities that are beyond the remit or reach of any one organization

Wal-Mart has replaced nearly two-thirds of its logistics fleet with more efficient vehicles since 2008. In 2010, this enabled Wal-Mart to deliver 57 million more cases of products while avoiding 40,000 metric tonnes of CO<sub>2</sub> emissions, equivalent to taking 7,600 cars off the road. The company is looking to double its fleet efficiency by 2015 and is also road testing a diesel hybrid truck for potential future implementation.<sup>99</sup>

DuPont's new technology, Zytel® PLUS nylon, replaces metal in applications and with other nylons eliminates 11 kilogrammes of weight per vehicle while doubling the life of parts exposed to high heat generated by engines. If this one product was integrated into the estimated 72 million cars that were manufactured in 2011, this would eliminate the need for 144 million gallons of gasoline – or three million barrels of crude oil.<sup>100</sup>

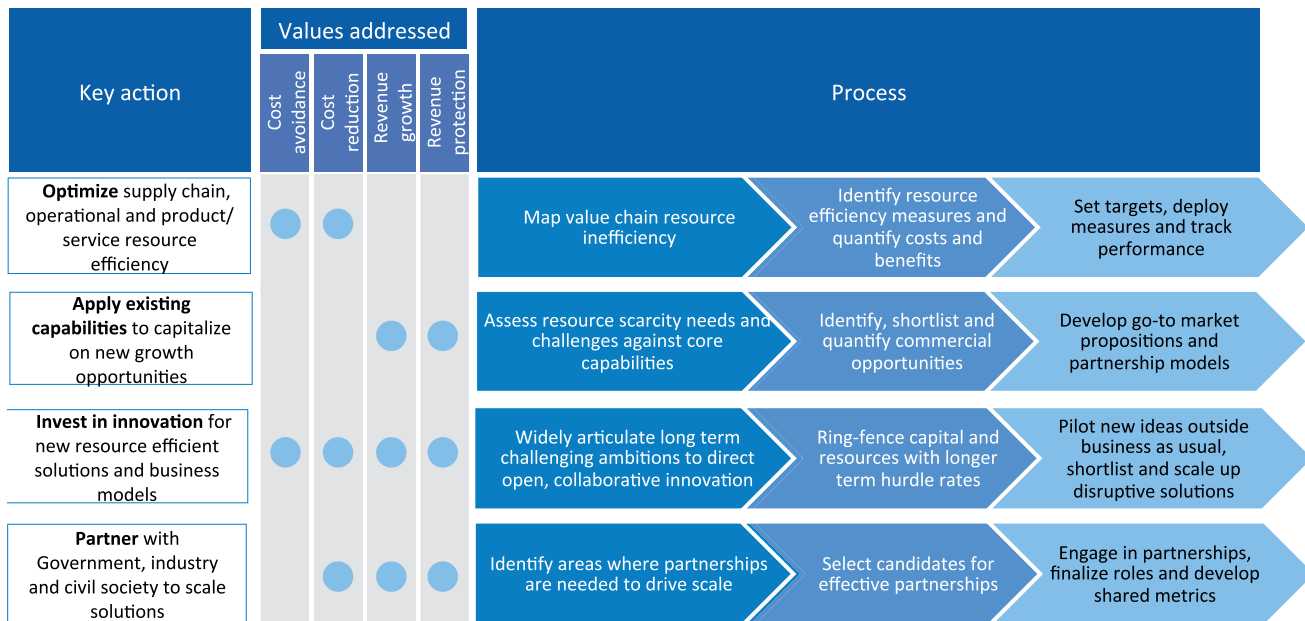


“  
**It’s time to move forward with building a more socially and environmentally responsible supply chain. We are expecting more of ourselves at Wal-Mart, and expecting more of our suppliers.**  
 ”

Mike Duke, President and Chief Executive Officer, Wal-Mart Stores

Decreasing use of fossil energy sources across operations is critical to scaling up sustainable consumption. S. C. Johnson & Son has been a long-standing pioneer regarding green power generation. Currently, the company sources over 40% of its total electricity usage worldwide from renewable energy. An on-site wind turbine at the company's largest European facility can generate up to two-thirds of its annual electricity. And, the company's Medan factory in Indonesia uses waste palm shells as a substitute for diesel fuel, cutting greenhouse gas emissions by more than 15% while reducing diesel fuel use by 80%. Recently, the company announced that it is pursuing a new goal to build wind turbines at its largest global manufacturing facility in Wisconsin, which, when approved and combined with other efforts, should enable on-site production of 100% renewable electricity.

Figure 5.2: Strategic options for capturing value



## Transform the Rules of the Game through Public-Private Partnership

**Fix finance and investment:** Financial markets can accelerate the transition towards more sustainable business practices and value creation through actions such as: internalizing externalities to reflect true environmental costs; setting new standards and expectations for business leadership; linking incentives in the investment value chain more with financial performance over the long term; identifying the key performance indicators to measure the value of sustainable consumption; and fostering greater collaboration between asset holders to boost disruptive innovation and share risk.

**Reshape public policy:** The right rules of the game can catalyse citizen behaviour, promote sustainable sourcing, create new opportunities for sustainable development and create new markets.

In South Africa, the Waste Management Strategy was formulated jointly by the public and private sector and has envisaged creating 300,000-400,000 jobs by 2020. The Waste Implementation Act calls for a “waste hierarchy” to minimize and recycle waste where possible, and produce energy out of biomass. Progress to date includes the establishment of waste exchanges and mechanisms to improve waste efficiency.<sup>102</sup>

Business leaders need to work not just with national governments but increasingly with regional authorities and city mayors to unlock the barriers and inertia in the rules of the game, and create the framework for a sustainable economy.

If business and different levels of government are together going to deliver more than incremental success, they have to do much better than historic best practice. New models of collaboration are needed. The toolbox currently used for public-private interaction is not enough for the coming disruptive growth. The private sector needs to be involved in most phases of policy-making, along the lifecycle of policy development (i.e. policy formulation, strategy and implementation). At the international level, such collaboration should be forged as a productive adjunct to more traditional inter-governmental arrangements.



“

**We have to move away from the dominant logic that looks at the pure investment cost to one that looks at the entire life cycle of an investment. Business leaders have to ask themselves: ‘How will this work in 50 years time?’ ‘In that way, we can ensure that longer-term sustainability principals are appropriately influencing our investment decisions.**

”

Klaus Kleinfeld, Chairman and Chief Executive Officer, Alcoa

“

**We need a platform where we can work across industries and cultures to get integrated policy directions, find sustainable solutions and accelerate innovation.**



”

Mikael Hagstrom, Executive Vice-President, Europe, Middle East, Africa and Asia Pacific, SAS Institute





The China Greentech Initiative, founded in 2008, is the only international collaboration platform offering green technology insights and partnering opportunities to over 100 organizations, including technology buyers and sellers, service providers, investors and policy-makers. The initiative is currently focused on identifying areas where private companies can innovate to help deliver governmental targets around the 12th Chinese Five-Year Plan. One such area is water. The Chinese government has made clean water a major priority (US\$ 615 billion will be invested to 2020). Investments will be made in waste water treatment, improving water efficiency and ensuring adequate supply, presenting opportunities for private sector participation and innovation.<sup>103</sup>

The Clean Energy Ministerial Forum, as an informal adjunct to the ongoing international climate negotiations, is one of a growing number of attempts to advance blended approaches, leveraging both the strength of collaboration and the rule-making and fiscal capacities of governments and intergovernmental platforms.

Key areas where business leaders can help shape the policy landscape will be: the greening of public procurement; removal of subsidies that are harmful to the economy and environment; improving regional trade agreements; measuring progress; and the role of long-term investments.



“

**There are many private corporations involved in public-private partnerships aimed at addressing a variety of global issues but more action is needed. The private sector has an enormous wealth of unique expertise that should be shared to help realize global aims.**

”

Feike Sijbesma, Chief Executive Officer and Chairman, Managing Board, Royal DSM

## 6. A Commitment to Move



Whether it is driven by resource constraints or shifting consumer demand, or whether recognized by strategists of chief executives, there is a new understanding of how sustainable consumption is changing the landscape of business. The imperative for change is clear.

The questions that will take this project to the next level are: How do we enact that change deeper into corporate strategies? How do we collaborate across industries and sectors to bring existing solutions to scale?

No one doubts the severity and complexity of the resource challenge and the potential for this to hamper a company's ability to thrive. Widespread action is being taken and is delivering some success, but it is clearly not enough to move us beyond the incremental, beyond "pilot paralysis".

Over the past year many insights have shown what success might look like. These insights are useful only if they drive action across demand, supply and the rules of the game: transforming the interaction between citizens and business, transforming business and business models, and transforming the enabling environment set by policy-makers and investors. The business community can only move forward from dialogue to concerted business action by building on existing initiatives and focusing on specific targeted deliverables.



“

**We are living in a resource-constrained world in which we need to look at fundamentally new business models. This platform is not about rhetoric, it's about action.**

”

Mark Parker, Chief Executive Officer, Nike

Chief executive officers have spoken about how they care about making sustainable growth and consumption mainstream, and are committed to action. During the course of this project, three actionable ideas were explored. These actions could help to catalyse progress to deliver results that support growth without negative impacts on the environment. Over the next year the World Economic Forum, with others, will enable such action so that companies can take the lead and use their scale:

- **Demand:** Collaboration is needed to incentivize sustainable consumption and make it the simplest and cheapest choice for consumers. Technology will be critical enablers of consumer and business engagement. Companies can also collaborate with media agencies and NGOs to make a step change in consumer engagement. Engaging with consumers to link their consumption decisions with their values as citizens could open a tide of consumers towards sustainable consumption.
- **Supply:** A concerted, scalable plan of action across key areas of supply will enable multiple suppliers, manufacturers and retailers to aggregate their sustainability efforts – and provide greater clarity to consumers. Having concrete targets for resource efficiency and sustainable supply can be a first step to achieving scale through industry associations and partnerships.
- **Rules of the Game:** More sustained public-private partnerships will increase trust and create the right enabling environment for the sustainable choice to become the default choice for consumers and businesses alike. At the same time governments will need to be challenged (particularly the US, EU, Japan, as well as Brazil, South Africa, India, China and other emerging economies – the BASIC+ nations) to commit to legal and traceable supply chains, and to substantial and rapid increases in the production and uptake of sustainable, renewable sources of energy and materials.

To stimulate the speed to scale required, the World Economic Forum, together with its Industry Partner companies and key stakeholders, is committed to applying the necessary time, effort and resources to play a leading role.



“  
**If we want to have an impact, it is important that we turn our intentions into actions.**

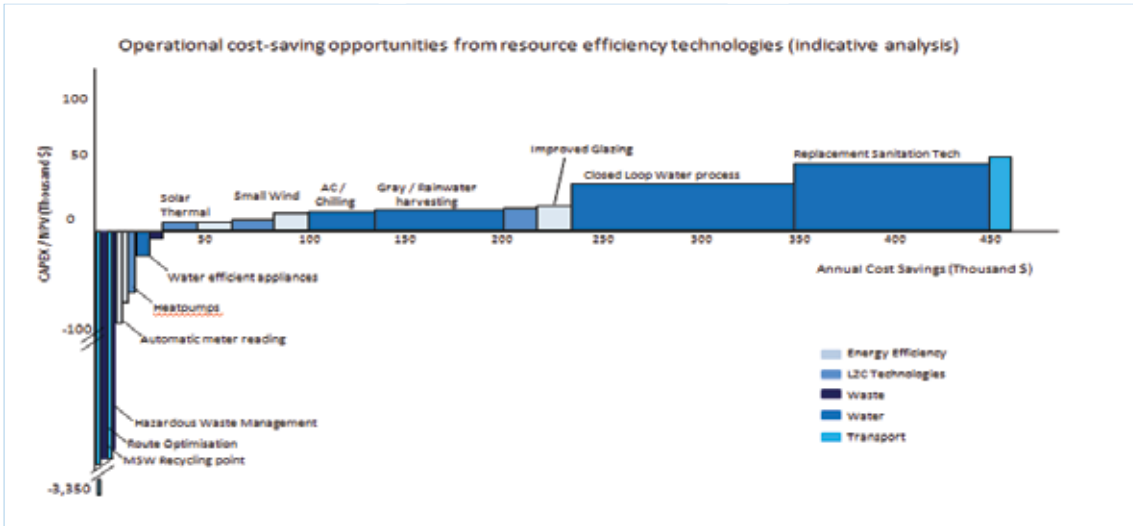
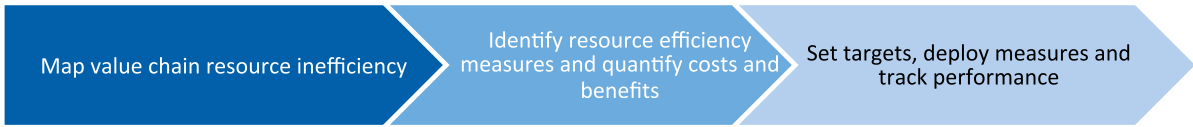
”  
Ben Verwaayen, Chief Executive Officer,  
Alcatel-Lucent



# Appendices

## Tools for Business in a Resource-scarce Economy

**Optimize supply chain, operational and product/service resource efficiency**

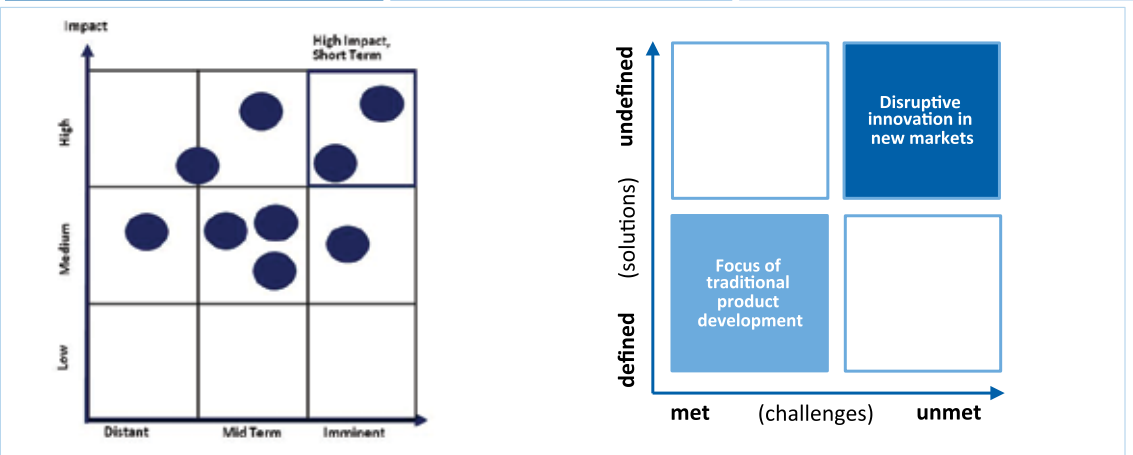
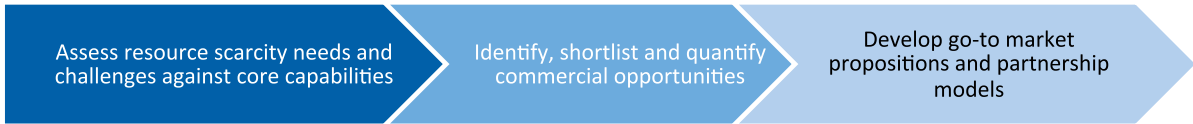


- Assess resource and carbon efficiency across value chain
- Quantify resource and carbon intensity for high impact materials across value chain
- Build business as usual projections

- Identify full spectrum of measures to drive resource and carbon efficiency
- Assess costs & benefits
- Determine means of influence through core business activities

- Set targets across value chain
- Engage & communicate across the value chain
- Select and deploy measures to drive the greatest benefit across value chain
- Track performance

**Apply existing capabilities to capitalize on new growth opportunities**



- Assess market landscape for challenges in resource scarcity
- Assess business capabilities
- Identify potential applications for capabilities to target resource scarcity challenges

- Screen opportunities for commercial & resource efficiency benefits
- Quantify market potential of shortlisted opportunities

- Develop a go-to-market strategy to capture opportunities
- Build internal and external engagement
- Launch and track progress

**Invest in innovation for new resource efficient solutions and business models**

Widely articulate long term challenging ambitions to direct open, collaborative innovation

Ring-fence capital and resources with longer term hurdle rates

Pilot new ideas outside business as usual, shortlist and scale up disruptive solutions

**Resource efficiency across carbon, materials and water**



**New markets**



**Cost savings (million US\$)**



Smart Logistics Smart Grid Smart Cities Dematerialisation Smart Manufacturing

- Identify and articulate ambition for resource scarcity
- Publish criteria of desired projects and outcomes
- Invite ideas from broad group of stakeholders incl. suppliers

- Ring fence innovation fund for resource efficiency
- Cluster ideas into concepts
- Screen concepts against commercial and resource efficiency criteria

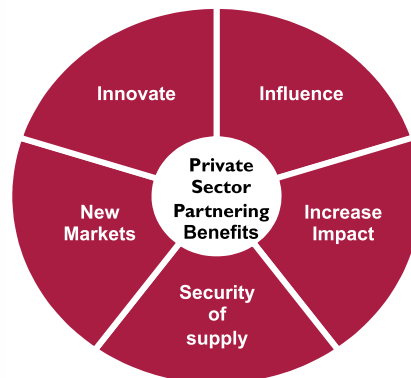
- Refine concepts and pilot prototypes
- Select disruptive and impactful prototypes as solutions
- Commercialize successful solutions at full scale

**Partner with Government, Industry and civil society to scale solutions**

Identify areas where partnerships are needed to drive scale

Select candidates for effective partnerships

Engage in partnerships, deliver outcomes and track progress



- Identify and research areas ripe for partnership
- Consult with stakeholders
- Create requirements map for partnership
- Identify and shortlist partners

- Compare mission, area of activities and strategic fit to identify compatible partners
- Select optimum partner and develop a joint value proposition

- Agree goals and objectives
- Plan and deliver engagements
- Develop and report on shared metrics
- Create review process and ideas for scale

## Approach and Methodology for Oxford Economics Analysis

The analysis by Oxford Economics assumes:

### Major Economy Analysis

- Energy-related carbon emissions follow a path outlined in the International Energy Agency's "new policies" scenario, which reflects policies that enable governments to meet their currently-stated commitments on climate and energy
- A range of adaptation costs that could be incurred based on this emissions path
- The potential "value at stake" for the major world economies reflects the difference between the output loss created at the low and high end of this adaptation cost range
- A "peak metals" scenario for steel is assumed based on peak metal theories, historical steel output and current US Geological Survey estimates of global iron reserves
- The metals market is assumed to behave in a similar way to the energy market

### Consumer Goods Analysis

- The consumer goods sector is defined to include food, beverages and tobacco; textiles, textile products, leather and footwear; and consumer electronics
- The macroeconomic scenario assumes that carbon emissions are restricted. Adjusting to this low-carbon future is likely to require increases in energy efficiency
- We calculate the energy cost savings that result from increasing energy efficiency by assuming that the consumer goods sector adjusts towards the level of efficiency of the sector in Canada in 2030
- This assumption is then applied to 2020 and 2030 projections for the sector using input-output tables
- The macroeconomic scenario further assumes that steel availability is restricted. Adjusting to this resource-scarce future is likely to require increased recycling rates or materials substitution
- To estimate the impact on input costs if companies fail to increase recycling rates, the impact of a "peak metals" scenario on world steel prices in 2030 was calculated using the Oxford Economics Global Model
- These steel price impacts were then applied to 2020 and 2030 projections for the sector using input-output tables

### Business-as-Usual Scenario

- Assumes policies, business practices and technologies continue in line with current practice

### Progressive Scenario

- Assumes a mix of businesses processes, technologies and policies that are more effective, and integrate resource scarcity as a permanent economic constraint

# Acknowledgements

We would like to thank the following chief executive officers, company representatives on the Project Board and Members of the Global Agenda Council for their input

## Project Board Members

John Kornerup Bang, Lead Advisor, Environment and Climate Change, A.P. Møller-Maersk, Denmark

Frank Clary, Senior Manager, Corporate Social Responsibility, Agility, Kuwait

Kevin McKnight, Director, Alcoa Europe, Switzerland

Mary Capozzi, Senior Director, Corporate Responsibility, Best Buy Co., USA

Niall Dunne, Chief Sustainability Officer, BT Group, United Kingdom

Christopher Deri, Chief Executive Officer and Market Leader, Burson-Marsteller, People's Republic of China

Tara Moss, Managing Partner, Clownfish, United Kingdom

Dawn Rittenhouse, Director, Sustainable Development, DuPont, USA

Robert Christopher Knott, Global Practice Chairman, Edelman, USA

Perry Yeatman, Senior Vice-President, Corporate Affairs, Kraft Foods, USA

Mike Barry, Head of Sustainable Business, Marks & Spencer, United Kingdom

Britta Gallus, Director, Head of Regulatory Affairs, Metro Group, Germany

Claus Conzelmann, Vice-President, Safety, Health and Environment, Nestlé, Switzerland

Santiago Gowland, Managing Director, Sustainable Business & Innovation Mobilization, Nike, USA

Claus Stig Pedersen, Head, Sustainability Development, Novozymes, Denmark

Eve Magnant, Vice-President, Corporate Social Responsibility Director, Publicis Groupe, France

Fokko Wientjes, Director Corporate Sustainable Development, Royal DSM, Netherlands

Cynthia Drucker, Director of Sustainability, S. C. Johnson & Son, USA

Kelly M. Semrau, Senior Vice-President of Global Corporate Affairs, Communication and Sustainability, S. C. Johnson & Son, USA

Andrew Wales, Head, Sustainable Development, SABMiller, United Kingdom

John Mayerhofer, Vice-President, Technology Strategy, Open Innovation SAP America, USA

Alyssa Farrell, Product Marketing Manager, SAS Institute, USA

Mary Coventry, Vice-President, Communications and Government Affairs, Sealed Air, USA

Helen Fleming, Director, Climate Change, Tesco, United Kingdom

Thomas Lingard, Global Advocacy Director, Unilever, United Kingdom

Andrea B. Thomas, Senior Vice-President, Sustainability, Wal-Mart Stores, USA

Andrew Charlton, Manager, Business Development, Wesfarmers, Australia

## Additional Chief Executive Officer Insights

Ben Verwaayen, Chief Executive Officer, Alcatel-Lucent, France  
Kris Gopalakrishnan, Executive Co-Chairman, Infosys, India

Takeshi Niinami, President and Chief Executive Officer, Lawson, Japan

Gao Jifan, Chairman and Chief Executive Officer, Trina Solar (TSL), People's Republic of China

## Global Agenda Council – Sustainable Consumption

**Global Agenda Council Chair:** Simon Zadek, Senior Visiting Fellow, Global Green Growth Institute (GGGI), Switzerland

Helio Mattar, President and Board Member, Akatu Institute for Conscious Consumption, Brazil  
Ted Howes, Director, Consumer Products/Innovation, BSR

David Runnalls, Distinguished Fellow and Acting Director, Environment and Energy Program, Centre for International Governance Innovation (CIGI), Canada

Malini Mehra, Founder and Chief Executive Officer, Centre for Social Markets (CSM), India

Mindy S. Lubber, President, Ceres, USA

John Wilbanks, Vice-President, Science, Creative Commons, USA

Steve Howard, Chief Sustainability Officer, IKEA Group, Sweden

Mark Halle, Executive Director, International Institute for Sustainable Development (IISD), Switzerland

Mohan Munasinghe, Chairman, Munasinghe Institute for Development (MIND), Sri Lanka

Santiago Gowland, Managing Director, Sustainable Business & Innovation Mobilization, Nike, USA

Helen Mountford, Deputy Director, Environment Directorate Organisation for Economic Co-operation and Development (OECD), Paris

Bonnie Nixon, Executive Director, Sustainability Consortium, USA

Michael Kuhndt, Head, Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP), Germany

## Additional Interviewees

Shannon Herzfeld, Vice-President, Government Relations, Archer Daniels Midland (ADM), USA

Daniel Lutz, Communications Manager, The Better Cotton Initiative (BCI), Switzerland

Lise Melvin, Executive Director, The Better Cotton Initiative (BCI), Switzerland

Aron Cramer, President and Chief Executive Officer, Business for Social Responsibility (BSR), USASabine Ritter, Executive Vice-President, The Consumer Goods Forum, France

Greg Norris, Executive Director, Earthster (New Earth), USA

Mark Halle, Executive Director, International Institute for Sustainable Development (IISD), Switzerland

Oshani Pereira, Programme Officer, International Institute for Sustainable Development (IISD), Switzerland

Liana Bratasida, Assistant Minister for Global Environmental Affairs and International Cooperation, Ministry of State for Environment, Indonesia

Duncan Pollard, Sustainability Advisor, Nestlé, Switzerland

Michael Washburn, Director of Sustainability, Nestlé Waters North America, USA

Eraina Duffy, Sustainable Material Expert, Nike, USA

Jim Goddard, Director of Considered Innovation, Nike, USA

Sarah Severn, Director, Horizons, Nike, USA

Randolf Hager, Director, Sustainability Management and Strategy, SAP, Germany

Caroline King, International Government Relations, Global Communications, SAP Germany

Bob Bonham, Director of Information and Technology Services, SAS Institute

Stephen Sanger, Information Technology Manager, SAS Institute

Thomas Spiller, Vice-President, Global Public Policy, SAS, USA

Dan Lawson, Manager Sustainable Innovation, S. C. Johnson & Son

Katharina Kummer-Peiry, Executive Secretary, Secretariat of the Basel Convention (SBC), Switzerland

Alistair Ulph, Executive Director, Sustainable Consumption Institute, The University of Manchester, United Kingdom

Lucy Neville-Rolfe, Executive Director, Corporate and Legal Affairs and Member of the Board, Tesco, United Kingdom

Gavin Neath, Senior Vice-President, Communications and Sustainability, Unilever, United Kingdom

Jan Kees Vis, President, The Roundtable on Sustainable Palm Oil and Global Director Sustainable Sourcing Development, Unilever, United Kingdom

Matthias Kern, Senior Programme Officer for Persistent Organic Pollutants, United Nations Environment Programme (UNEP), Nairobi

Bill Guyton, President, The World Cocoa Foundation (WCF), USA

## Project Lead

Randall Krantz, Director, Head of Sustainability Initiative, World Economic Forum

## Lead Author

Nijma Khan, Sustainability Services, Accenture, United Kingdom (seconded to the World Economic Forum)

## Project Team

Marie Lam Frendo, Project Manager, Sustainability Initiative, World Economic Forum

Kiana Ranjbar, Team Coordinator, Environmental Initiatives, World Economic Forum

Adrian Wain, Analyst, Accenture

## Project Advisors

Peter Lacy, Managing Director, Sustainability Services, Europe, Africa and Latin America, Accenture, United Kingdom

Justin Keeble, Senior Executive, Sustainability Services, Accenture, United Kingdom

## Additional thanks to:

Sarita Nayyar, Dominic Waughray, Belinda Bonazzi, Laura Crivelli and Jason Shellaby from the World Economic Forum

Anne St-John Hall, Guy Hudson and Mark Purdy from Accenture

Adrian Cooper, Scott Livermore, Abby Samp and Sam Wilkins from Oxford Economics



# References

1. Brookings Institution (2011): Poverty in Numbers: The Changing State of Global Poverty in Numbers from 2005 to 2015.
2. Economist Intelligence Unit (2011), \$ values are at market exchange rates and current prices.
3. Food and Agriculture Organization (2010) Global Forest Resources Assessment & Accenture analysis (net forest loss).
4. United Nations Environmental Programme (2009) Developing Integrated Solid Waste Management Plans.
5. BP (2011) Statistical Review of World Energy
6. World Bank (2011) World Development Indicators: Life Expectancy at Birth.
7. World Bank (2011) World Development Indicators: Gross Domestic Product.
8. Brookings Institution (2011) Op.cit Defined by the World Bank as people with living on less than US\$ 1.25 per day.
9. United Nations Population Division (2010), World Population Prospects, The 2010 Revision.
10. United Nations Population Division (2009) World Urbanization Prospects, The 2009 Revision.
11. UNEP (2011) Division of Technology, Innovation and Economics.
12. Organisation for Economic Cooperation and Development (OECD) (2010) The Emerging Middle Class in Developing Nations.
- 12a IAE (2010). World Energy Outlook.
13. National Geographic (2010) Greendex 2010: Consumer Choice and the Environment : A World Tracking Survey.
14. European Commission Directorate General (2011) Special European Barometer 365. Attitudes of European Citizens towards the Environment (Provisional Summary).
15. Clownfish Research (2011) Growth of Eco-friendly Products.
16. Accenture (2011) Smart Metering.
17. IndexMundi (2011) Commodity Price Indices
- 17a Index Mundi (2011), Accenture Analysis..
18. Water Resources Group (2010) Charting Our Water Future.
19. International Energy Agency (IEA) (2010) World Energy Outlook 2011: IEA Analysis of Fossil Fuel Subsidies.
20. Ibid.
21. OECD (2011) Global Patents Database
22. UNEP (2011) Decoupling Natural Resource Use and Impacts from Economic Growth; World Steel Association (2011) Crude Steel Production; BP (2011) Statistical Review of World Energy; US Energy Information Administration (2006) World Carbon Dioxide Emissions from the Consumption of Petroleum.
23. UNEP (2011) Towards a Green Economy: Pathways to Sustainable Development.
24. OECD (2008) Key Environmental Indicators.
25. UNEP (2011) Op.cit.
26. Gray et al. (2006) Decoupling the link between economic growth & carbon emissions in Scotland.
27. Economic Intelligence Unit (EIU) and Accenture Analysis (2011).
28. World Economic Forum (2011), Global Competitiveness Report
29. UNEP (2011) Green Economy. Agriculture – Investing in Natural Capital.
30. Ibid.
31. Kindermann et al. (2008) Global Cost Estimates of Reducing Carbon Emissions Through Avoided Deforestation. PNAS. 105. 30. pp. 10302-10307, and Accenture analysis.
32. UNEP (2011) Op.cit.
33. Ibid.
34. UN News Centre (2009) “Green Stimulus Plans by Japan and Republic of Korea Hailed by UN Environment Chief”, <http://www.un.org/apps/news/story.asp?NewsID=29505&Cr=climate&Cr1=change> [Date accessed 02/12/2011].
35. UNEP (2011) How Two Percent of Global GDP can Trigger Greener, Smarter Growth While Fighting Poverty.
36. Accenture (2011) New Waves of Growth for India: Unlocking Opportunities.
37. Department for Environment, Food and Rural Affairs (DEFRA) (2011) The Further Benefits of Business Resource Efficiency.
38. McKinsey Global Institute (2011), Op.cit.
39. Puma (2011) “Puma Announces Results of Unprecedented Environmental Profits and Loss”, <http://vision.puma.com/us/en/2011/05/>, Figures quoted are US\$ conversions based on Euro to dollar exchange rate on 05/12/2011 <http://www.oanda.com/currency/converter/>,
40. Wal-Mart (2011) Sustainability, <http://walmartstores.com/sites/sustainabilityreport/2007/environmentSupply.html>
41. [Date accessed 30/11/11].
42. Tata Consultancy Services (2011) [http://www.tcs.com/thought\\_leadership/Pages/Sustainable\\_supply\\_chain\\_emerging\\_model.aspx](http://www.tcs.com/thought_leadership/Pages/Sustainable_supply_chain_emerging_model.aspx). [Date accessed 2/12/2011].
43. UK Government Department for Business and Innovation (2010) Low Carbon and Environmental Goods and Services: An Industry Analysis. Update for 2008/09 Figures quoted are US\$ conversions based on GBP to dollar exchange rate on 05/12/2011 <http://www.oanda.com/currency/converter/>.
44. World Economic Forum (2011) Consumer Industry Emerging Trends and Issues.
45. Edelman (2010) Good Purpose Study.
46. AT Kearney (2010) Rattling Supply Chains: The Effect of Environmental Trends on Input Costs for the FMCG Industry.
47. UK government Department for Business and Innovation (2010), Op.cit.
48. AT Kearney (2010), Op.cit.
49. RecycleBank (2011) <http://www.recyclebank.com/>. [Date accessed 20/11/2011].
50. Ian Yolles, Chief Sustainability Officer, Recyclebank (E-mail 1 December, 2011).
51. Shiplly (2011) “Shiplly Matches you with Rated Delivery Firms Going There Anyway”, <http://www.shiplly.com/how-it-works2.php>. [Date accessed 29/11/2011],
52. Environmental Defense Fund (2011) “Acid Rain: The Power of Markets to Help the Planet”, <http://www.edf.org/approach/markets/acid-rain>. [Date accessed 20/11/2011].
53. US Environmental Protection Agency (2011) Clean Air Markets, [http://www.epa.gov/airmarkets/progress/ARPCAIR10\\_01.html](http://www.epa.gov/airmarkets/progress/ARPCAIR10_01.html). [Date accessed 17/11/2011].
54. US Environmental Protection Agency (2011) Air Trends, <http://www.epa.gov/airtrends/nitrogen.html#nonat>. [Date accessed 17/11/2011].
55. UNEP (2011) Key Environmental Indicators
56. FAO (2010) Global Forest Resource Assessment.
57. US Department of Agriculture (USDA) (2010) Foreign Agricultural Service: Commodity Intelligence Report.
58. World Wildlife Fund (2011) Palm Oil: For the World Forum on Enterprise and the Environment.
59. Accenture analysis (2011).
60. Accenture analysis (2011).
61. Round Table on Sustainable Palm Oil (RSPO) (2011) <http://www.rspo.eu/market/> [Date accessed 5/12/2011].
62. DEFRA (2011) Mapping and Understanding the UK Palm Oil Supply Chain.
63. World Resources Institute (2010) Global Ecolabel Monitor.
64. Ibid.
65. Technology Forecasters Inc (2011) <http://www.techforecasters.com/archives/e-waste-recyclings-wasted-logistics-costs/> [Date accessed 7th December 2011].
66. CottonConnect (2011) Map your Cotton supply chain, <http://www.cottonconnect.org/what-we-do/step-2-map-your-cotton-supply-chain.aspx>. [Date accessed 15/11/2011].
67. UNEP (2011) Op.cit.
68. Carbon Trust (2011) Raising the Bar - Building Sustainable Business Value through Environmental Targets.
69. The Guardian (2011) City Short-termism: Stifling Progress on Sustainability in the Financial Sector, <http://www.guardian.co.uk/sustainable-business/blog/financial-city-short-termism-barrier-sustainability>. [Date accessed 16 November 2011].
70. Worcester Polytechnics Institute (2009) Assessment of the Impact of Bioplastics.

71. The Financial Times (2011) "Sustainability: Market Increases Focus on Good Corporate Citizenship", <http://www.ft.com/> [Date accessed 7 December 2011].
72. FAO (2010) State of the World's Fisheries and Aquaculture.
73. Marine Stewardship Council (2011) "First Chinese Fishery enters Marine Stewardship Council assessment", <http://www.msc.org/newsroom/> [Date accessed 7 December 2011].
74. EIU and Accenture Analysis (2011).
75. Hall J.R et al. (2010) Handbook of Cultural Sociology.
76. <http://www.sdearthtimes.com>; <http://www.thefreelibrary.com/> and <http://www.forestethics.org/article.php?id=800> [Date accessed 7 December 2011].
77. Occupy Wall Street (2011) "From Tahrir Square to Times Square: Protests Erupt in Over 1500 Cities Worldwide", <http://occupywallst.org/article/tahrir-square-times-square-protests-erupt-over-150/> [Date accessed 7 December 2011].
78. The New York Times (2011) "In Baring Facts of Train Crash, Blogs Erode China Censorship", [http://www.nytimes.com/2011/07/29/world/asia/29china.html?\\_r=1&pagewanted=all](http://www.nytimes.com/2011/07/29/world/asia/29china.html?_r=1&pagewanted=all) [Date accessed 7 December 2011].
79. Global Trends (2011) Corporate Clout: The Influence of The World's 100 Largest Economic Entities.
80. Unilever (2011) Sustainable Living Plan.
81. Triennial Central Bank (2011) "Survey of Foreign Exchange and OTC Derivatives Market Activity", <http://www.bis.org/press/p100901.htm> [Date accessed 30 November 2011].
82. UN (2011) Input to the High-level Panel on Global Sustainability: The use of market tools and investments to support sustainable development.
- 82a Internet World Stats (2011) <http://www.internetworldstats.com/stats.htm> [Date Accessed 9 January 2012].
83. City Mayors (2011), <http://www.citymayors.com/statistics/largest-cities-mayors-intro.html> [Date accessed 9 December 2011].
84. Digital Stats (2011) <http://digital-stats.blogspot.com/2011/04/it-took-radio-38-years-to-reach-50.html> [Date accessed 7 December 2011].
85. Consumer Goods Forum (2009) [http://www.ciesnet.com/pfiles/press\\_release/2010-11-28\\_TCGF\\_final\\_press\\_release.pdf](http://www.ciesnet.com/pfiles/press_release/2010-11-28_TCGF_final_press_release.pdf) [Date Accessed 10 December 2011].
86. Sovereign Wealth Fund News (2011) <http://www.sovereignwealthfundsnews.com/ranking.php> [Date accessed 24 November 2011]
87. United Nations ESCAP (2009) Background Paper, The 4th Policy Forum of the Seoul Initiative Network on Green Growth:
88. "Promotion of Green Industry for Green Growth".
89. OECD (2011), Government at a Glance.
90. McKinsey Global Institute (2011) Op.cit.
91. SustainAbility (2009) Enhancing Stakeholder Engagement through Web 2.0.
92. e Facebook (2011) <http://www.facebook.com/press/info.php?statistics> [Date accessed 7 December 2011].
93. Scope 3 emissions assumed to be 75% of the total emission of the sector (based on the average of scope 3 emissions as reported by 79 companies in consumer discretionary and consumer staples sectors to the Carbon Disclosure Project), no adjustments made for potential double-counting across value chains. Top 50 companies are based on the top 50 that report carbon footprint data. Sources used: Various company reports, websites and Carbon Disclosure Project (CDP); United Nations Statistics Division, Deloitte (2010) Global Powers of the consumer products industry and Global Powers of retailing.
94. Patagonia (2011) <http://www.patagonia.com/us/common-threads> [Date accessed 7 December 2011].
95. Nestle (2011) <http://www.nestle.com/CSV/Nutrition/Pages/Nutrition.aspx> [Date accessed 7 December 2011]
96. SAP (2011) <http://www.sdn.sap.com/irj/scn/weblogs?blog=percent2Fpubpercent2Fwlgpercent2F26698> [Date accessed 7 December 2011].
97. Goodguide (2011) "GoodGuide Mobile App for iPhone and Android – Shop your Values. Anytime. Anywhere. For Free", <http://www.goodguide.com/about/mobile>. [Date accessed 30 November 2011],
98. Kingfisher (2011) "Enabling Sustainability in all our Product and Service Categories", <http://www.kingfisher.co.uk/responsibility> [Date accessed 30 November 2011].
99. RelayRides (2011), <http://blog.relayrides.com/?tag=infographic> [Date accessed 9 December 2011].
100. Unilever (2011) Op.cit.
- 101 Wal-Mart (2011) Sustainability, [http://walmartstores.com/sites/ResponsibilityReport/2011/environment\\_energy\\_Fleet.aspx](http://walmartstores.com/sites/ResponsibilityReport/2011/environment_energy_Fleet.aspx)
102. [Date accessed 30 November 2011].
103. Dupont (2011) Executive Speeches [http://www2.dupont.com/Media\\_Center/en\\_US/speeches/kullman\\_11\\_18\\_10.html](http://www2.dupont.com/Media_Center/en_US/speeches/kullman_11_18_10.html) [Date accessed 30 November 2011].
104. Wal-Mart (2008) Supplier Summit in Beijing, China.
105. World Economic Forum (2011) World Economic Forum on Africa. Policy Innovation Platform for Sustainable Consumption.
106. China Clean Tech Initiative (2011) The China Green Tech Report 2011.
107. Clean Energy Ministerial (2011) [http://www.cleanenergyministerial.org/our\\_work/ppe.html](http://www.cleanenergyministerial.org/our_work/ppe.html) [Date accessed 7 December 2011].





---

COMMITTED TO  
IMPROVING THE STATE  
OF THE WORLD

---

The World Economic Forum is an independent international organization committed to improving the state of the world by engaging business, political, academic and other leaders of society to shape global, regional and industry agendas.

Incorporated as a not-for-profit foundation in 1971 and headquartered in Geneva, Switzerland, the Forum is tied to no political, partisan or national interests.

---

World Economic Forum  
91–93 route de la Capite  
CH-1223 Cologny/Geneva  
Switzerland

Tel.: +41 (0) 22 869 1212  
Fax: +41 (0) 22 786 2744

[contact@weforum.org](mailto:contact@weforum.org)  
[www.weforum.org](http://www.weforum.org)