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THE CLIMATE GROUP



This is part of  
**THE CLEAN REVOLUTION**

# UNLOCKING LOW CARBON INNOVATION

Insight Briefing | Analyzing the issues that matter to the Clean Revolution

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## ABOUT

This Insight Briefing, prepared for the meeting of The Climate Group's International Leadership Council at the World Economic Forum in Davos, focuses on the role of major corporations and cities in scaling up low carbon innovation. It explores three case studies - UK retailer Sainsbury's, apparel company Nike, and the Agile Cities initiative - and proposes key principles for effective harnessing of low carbon innovations.

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## EXECUTIVE SUMMARY

Fostering low carbon innovation is a core element of competitiveness, both for companies and the public sector. In a resource-constrained world, the ability of large organizations to innovate towards a low carbon model is a key differentiator between those that thrive and those that fall behind. Innovation takes many forms, but critical in this context is business model innovation - the ability of large organizations to identify, source and deploy disruptive new technologies and ideas in an effective manner, to transform markets. Those that succeed are defined by their ability to **source** new ideas, **pilot** them and **integrate** them, rapidly and efficiently. Many are working with third parties to assist in the process, including venture capital investors, government-backed programs and nonprofits that help match entrepreneurs to 'early adopter' companies and governments.

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## LOW CARBON INNOVATION IN PRACTICE

**“IF THERE'S GOING TO BE DISRUPTION IN YOUR SECTOR, YOU ARE BETTER OFF DISRUPTING YOURSELF THAN WAITING FOR OTHERS TO DO IT TO YOU.”**

**IAN CHESHIRE, CEO, KINGFISHER**

We believe that disruptive innovation is the new benchmark for low carbon leadership, in systems, services and technologies that enable emissions reductions. If we are to peak global CO<sub>2</sub> emissions by 2020 (they continue to grow today faster than at any point in human history) and foster economic growth, then pace of change in the next seven years requires a truly non-linear progress. Looking out further, transformational change to business models is required to reconcile the projected doubling of urban infrastructure and consumer economy by 2050, with radical reductions in CO<sub>2</sub> emissions, water and resource use. For today, low carbon innovation is about positioning for effective competition. In an increasingly resource-constrained world, leaders are looking to reap the benefits of first-mover advantage from business model, product and service innovation.

## EXAMPLES OF INNOVATIVE SOLUTIONS

### ENERGY:

**Cella Energy** (UK/US) – Developing low cost nanotechnology for producing hydrogen fuel pellets as a safe fuel. Shell Springboard winner 2011.

[www.cellaenergy.com](http://www.cellaenergy.com)

**GreenTEG** (Switzerland) – Thermoelectric technology that efficiently converts heat to electricity. Winner of the Climate-KIC Venture Competition 2012.

[www.greenteg.com](http://www.greenteg.com)

**Naked Energy** (UK) Combined solar thermal-photovoltaic system with enhanced conversion of light into electricity. Winner of the Climate-KIC venture competition 2011 and the EIT Entrepreneurship Award 2012. Now working on a pilot scheme with Sainsbury's.

[www.nakedenergy.co.uk](http://www.nakedenergy.co.uk)

### MATERIALS:

**Ecovative** (US) – Developer of a mycelium-based biomaterial substitute for styrofoam. Has secured investment from 3M and developed a partnership with Sealed Air, a global leader in food packaging. Winner of the €500,000 Postcode Lottery Green Challenge 2009.

[www.ecovatedesign.com](http://www.ecovatedesign.com)

### RESOURCE EFFICIENCY:

**CINTEP** (Australia) – Developer of a water-recycling domestic shower unit capable of delivering 70% water and energy savings, for the same shower experience. Winner of the €500,000 Postcode Lottery Green Challenge 2011.

[www.recyclingshower.com.au](http://www.recyclingshower.com.au)

What does success look like? In the private sector, we believe that it is critical that every major company develops a well-resourced, low carbon business play by 2015. From Philips' LED lighting business and GE's Ecomagination to the Toyota Prius (now the best-selling car in America's largest auto market, California), we see this trend emerging rapidly. For governments to take the lead in creating a low carbon economy, we believe that rethinking procurement is now more important than funding research and development. The transition to a low carbon economy is being held back by the failure to commercialize new business models fast enough, rather than a failure to invent them in the first place,<sup>1</sup> and enlightened procurement models can play a key role in addressing this shortfall.

For businesses and governments alike, successful innovation also means tracking the work of entrepreneurs. Partnerships, green prizes and competitions can play a key role in helping to identify and support promising new start-ups. Climate-KIC runs an annual venture competition to identify promising European low carbon innovations, and The Climate Group has been working with the Netherlands Postcode Lottery's Green Challenge ([www.greenchallenge.info](http://www.greenchallenge.info)) since 2009 to find and support green innovations internationally, and with LLGA | Cities Pilot the Future (previously Living Labs Global Award) since 2010, to connect innovations to major cities.

## INNOVATION CASE STUDIES

### SAINSBURY'S

**“PEOPLE ARE INCREASINGLY LOOKING TO BUSINESSES THAT GIVE THEM VALUE AND VALUES.”**

**JUSTIN KING, CEO, SAINSBURY'S<sup>2</sup>**

One of Sainsbury's five core values is 'Respect For the Environment' which has five key deliverable target areas for 2020 including a 30% reduction in absolute carbon and 65% reduction in operational carbon relative to store area (against a 2005 baseline). To support its journey to achieve its 20x20 Sustainability Plan (published in 2012), Sainsbury's creates activity programs and seeks partners from business and academia to help innovate and pilot new ideas, and challenge the way they do business, completing detailed trials and evaluation of the outcomes. Naked Energy is one such business, which is piloting combined solar heat and power generation on the roofs of Sainsbury's supermarkets. Once proven to hit their sustainability business case requirements, Sainsbury's aims to roll back successful initiatives into the store estate, and to become a part of the company DNA moving forward. This provides its partners with the opportunity to test their ideas in live situations. The engagement with new partners enables Sainsbury's to continually evolve and make real differences to customers and colleagues, ultimately helping the company to deliver its 20x20 Plan.

<sup>1</sup> e.g. Joe Romm (2009) The breakthrough technology illusion. Think Progress blog <http://thinkprogress.org/climate/2009/04/06/203917/breakthrough-technology-illusion-global-warming-solution>

<sup>2</sup> Terry Macalister (2012) Sainsbury's boss welcomes grilling on green values and ambitions. Guardian Business <http://www.guardian.co.uk/business/2012/sep/30/sainsburys-boss-justin-king-green-values>

## ABOUT THE CLIMATE GROUP

The Climate Group is an independent, not-for-profit organization working to inspire and catalyze leadership for a Clean Revolution: a low carbon future that is smarter, better and more prosperous for all. We work internationally with a coalition of companies, states, regions, cities and public figures. Together with our partners, we are building a successful low carbon future of opportunity that boosts economies, creates jobs, enhances energy security, improves the quality of life of communities around the world, and averts the crippling impacts of runaway climate change. Our operations are in Australia, China, Europe, India and the US.

## ABOUT CLIMATE-KIC

Climate-KIC is one of three Knowledge and Innovation Communities (KICs) created in 2010 by the European Institute of Innovation and Technology (EIT). Our aim is to accelerate and stimulate innovation in climate change mitigation and adaptation, by integrating a network of European partners from the private, public and academic sectors. Our activities are driven by four high-level themes of climate change and we aim to provide new solutions by education, innovation and entrepreneurship. We operate across Europe through our co-location centres and regions.

## NIKE

**“THE AGE OF ABUNDANCE IS OVER. INNOVATION IS BEING REDEFINED. EXPECTATIONS ARE BEING REDEFINED.”**

**MARK PARKER, CEO, NIKE<sup>3</sup>**

Nike manages its sustainability and innovation programs under a single Sustainable Business & Innovation (SBI) unit. In 2009 Nike partnered with NGO Creative Commons, Best Buy and other industry partners in GreenXchange, a web-based marketplace that allows organizations to collaborate and share intellectual property around sustainable innovation. GreenXchange now contains 463 patents (predominantly Nike's) and has allowed Nike to 'learn by doing' in creating new innovation systems. In 2011, SBI published the Nike Materials Sustainability Index with software start-up Earthster. The Index helps the apparel sector to benchmark and lower the impact of materials in product design. One outcome of its sustainable innovation push is Nike's development of Flyknit, a technology that reinvents the production of shoe uppers by reducing weight 19% from previous products, as well as cutting production waste. Another is the piloting of an innovative technology that eliminates water use from the textile dyeing process, which was developed by four year-old company DyeCoo.

## AGILE CITIES

The Climate Group and its partners have studied the innovation procurement practices of some 60 cities from across five continents. The research revealed barriers to the procurement of innovative solutions that are faced by cities. Barriers include the lack of a formal process for cities to receive unsolicited approaches, skepticism about information provided on solutions, challenges around interdepartmental collaboration within cities, and limited access to funding for piloting and roll-out. These internal challenges are compounded by market failures: the lack of a centrally accessible marketplace for city solutions (CityMart.com is being developed to address this) and of validated information on solutions. The Living Labs Global Award (The Climate Group partner [www.llga.org](http://www.llga.org)) was developed in part to address these market failures, creating a centralized forum for cities to access and pilot innovative solutions. Through the Agile Cities ([agilecities.org](http://agilecities.org)) partnership, The Climate Group is helping to identify new pre-procurement tools and good practices, which cities and solution-providers need to accelerate the uptake of high-impact innovations.

## CONCLUSIONS

Key components of success for major companies (and cities) are:

- (1) making the conscious choice to prioritize low carbon innovation, including establishing the right organizational structure, targets and investment commitment for success.
- (2) creating partnerships that help identify and access credible solutions from start-ups and SMEs.
- (3) structuring effective models for working with solutions providers, including procurement agreements, investment, and/or acquisition.

For start-ups entering the market, success can also lie in creating the right initial connection with the major businesses or governments that can provide scale and access to markets, as well as accessing support in developing and structuring these relationships. We believe that third party support, from investors, government institutions and NGOs, is critical to the success of this process.

<sup>3</sup> Oliver Balch (2012) Nike reveals a new, innovative game plan for sustainability. Guardian Professional Network <http://www.guardian.co.uk/sustainable-business/nike-sustainability-report-social-environmental-impact>



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