

THIS REPORT
HAS BEEN
PRODUCED WITH
RESEARCH FROM:



Sustainable Business Innovations



[Restorative] [Dematerialisation] [Low Carbon] [Open Loop]

ABOUT THE REPORT

ABOUT THE GREEN GAME CHANGERS INITIATIVE

“The WWF-UK’s Green Game-Changers programme (www.wwf.org.uk/innovation) promotes disruptive innovations that stimulate new thinking across the private sector and light the way to future nature-friendly business models. We asked Cognoscere Consulting, a student-run pro bono consultancy from the London School of Economics (LSE), to add to our collection of case studies. They have come up with some interesting examples and these will help further inform how businesses can act as stewards of natural capital in new and innovative ways. Many thanks to the team.”



– Dax Lovegrove, Head of Business and Industry, WWF UK

METHODOLOGY

We employed a combination of primary and secondary research to detail out aspects of case studies that show game changing potential. This included but was not limited to:

- Extensive desk research and review of strategic innovations in key sectors
- Personal interviews with more than 12 organisations identified for case studies
- Survey among LSE post-graduate students in sustainability, management and innovation courses
- Close collaboration with postgraduate students of Sustainability at Arizona State University

ABOUT COGNOSCERE CONSULTING

Cognoscere Consulting is a student-run management consultancy operated by students from the London School of Economics and Political Science (LSE). Initiated in late 2011, we aim to provide pro-bono consulting services to not-for profit organisations and charities in and around London. Our objective in doing so is to offer our student consultants a valuable experience in consulting and to put our academic knowledge into practice by supporting a good cause.

The project during which we compiled the Sustainable Business Innovations report received overall leadership and guidance from Raffael Scheibner (Principal, MSc Management) and was led operationally by Himanshu Kapoor (Senior Consultant, MSc Accounting and Finance) and Jan-Joost van den Bogert (Senior Consultant, MSc Management). Compiling the report would not have been possible without the hard work and valuable input from Consultants Barbara Gonzalez (MSc Development Management), Flore de Taisne (MSc International Political Economy), Francesco Malatesta (MSc Management), Maxwell Scott (MSc International Relations) and Nana Yaa Pokuaa Antwi-Gyamfi (MSc Organizational Behaviour). Also, the cooperation with postgraduate students of Sustainability at Arizona State University Kevin Keleher, Vladimir Batalion, Frank Trombino, Hannah Laluzerne, Abdelhakim Akki, Jaleila Brumand and Hans Zamora was much appreciated.

KEY INSIGHTS

The global sustainable business economy has reached considerable size and is at a crucial point in its growth. An increasing number of established companies but also newly founded start-ups strive to combine a profit-seeking business idea with sustainable ways of implementing it. This activity can be observed across industries, be it manufacturing, consumer goods or agriculture, just to name a few. By compiling some of the most impressive of these business ideas in form of case studies, we hope to contribute to a necessary awareness creation. Business leaders have to recognise the importance of sustainable business innovation as a pre-requisite for long-term growth and industry change.

Our business innovation case studies can be categorised into four broad areas of sustainability:

Restorative:

Restorative initiatives in this report focus primarily on making operational changes to existing business models. They illustrate how operating businesses can increase allocation efficiency and be safeguarded for future generations, which is vital when looking at resources such as clean water (Sarvajal, p. 6) or building materials (Co2 Bamboo, p. 8). Driving changes in non-core businesses potentially creates additional excess value for the firm and promotes sustainable industries.

Dematerialisation:

We highlight ventures that seek to innovate some of the most essential products required for households, such as kitchen paper (FenuGreen, p. 11), and industrial consumption, such as pesticides (Real IPM, p. 12). These innovations will make our systems more sustainable and cost-efficient at the same time. They are introduced within existing markets implying that business leaders do not need to change market demand or create new markets.

Low Carbon:

Business innovations in the low carbon space have graduated to a whole new level within start-ups, which strive to accelerate the pace of a transformation into a carbon neutral/negative society (TecEco, p. 14). Some business cases promote the idea of a carbon neutral lifestyle at the household level which is well received by consumers (Green Toys, p. 15; Ennesys, p.16). If this trend continues, it will become increasingly insightful for large corporations to adopt and innovate as well. Unharnessed potential also lies in using loyalty schemes to reward such a carbon neutral lifestyle (CitéGreen, p. 17).

Open Loop:

Within the last few years, many sources of waste output have been identified as new opportunities for creating economic value, e.g. in the waste industry (Attero, p. 21; Rubicon, p. 22). Acknowledging a global system that maximizes the re-use of its resources, e.g. turning cardboard into bicycles (Cardboard Technologies, p. 23), is essential. Our cases show that opportunities lie in implementing ideas in both the developed and developing world.

We hope that our effort helps inform entrepreneurs and businesses about potentially game-changing ideas and help strengthen the pace of their adoption and growth for a better future of our planet.

- Cognoscere Consulting Team (London, March 2013)

Should you have any questions, please do not hesitate to contact us via email (info@cognoscereconsulting.org) or on our website www.cognoscereconsulting.org

SUMMARY OF CASE STUDIES

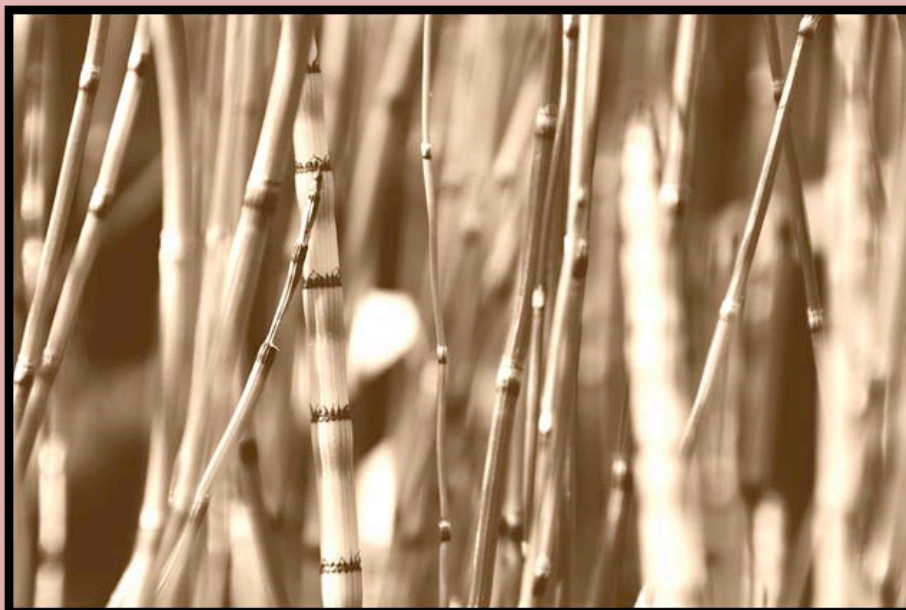
INNOVATION	ORGANISATION	REGION	INDUSTRY	TYPE OF INNOVATION	PAGE
Tracking Clean Water Consumption	Sarvajal	India	Consumer Staples and Water	Restorative	6
Sustainably Farmed Salmon	Patagonia	Canada	Consumer Staples and Water	Restorative	7
Locally Sourcing Disaster Relief From Bamboo	CO ₂ Bambu	Nicaragua	Construction and Materials	Restorative	8
Reusing Shower Water	Pontos	France	Utilities	Restorative	9
Organic Dry Sheet For Keeping Produce Fresh	Fenugreen	United States	Consumer Goods	Dematerialisation	11
Growing Flowers With Natural Agents	Real IPM	Kenya	Agriculture	Dematerialisation	12
CO ₂ Absorbing Cement	TecEco	Australia	Construction and Materials	Low Carbon	14
Manufacturing Toys From Sustainable Materials	Green Toys	United States	Consumer Goods	Low Carbon	15
Turning Buildings Green With Algae	Ennesys	France	Energy	Low Carbon	16
Rewarding Sustainable Lifestyles	CitéGreen	France	Consumer Goods and Utilities	Low Carbon	17
Creating Sustainable Lifestyle Alternatives	Greenhouse Project	South Africa	Consumer Goods	Low Carbon	18
Developing Affordable Lighting For Low Income Households	Lighting Africa	Africa	Energy	Low Carbon	19
Recycling E-Waste Using C2B Approach	Attero	India	Non-Ferrous Metals	Open Loop	21
Facilitating Growth Of Recycling Industry Using Online Platform	Rubicon	United States	E-Commerce	Open Loop	22
Recyclable Bank Transportation	Carboard Technologies	United States	Transportation	Open Loop	23
Insulation Created from Recycled Denim	Bonded Logic	United States	Construction	Open Loop	24
Bringing Design to Home Grown Produce	Back to the Roots	United States	Consumer Staples and Water	Open Loop	25
Turning Food From Waste	Ecocraps	United States	Agriculture	Open Loop	26
Fashionable Bags From Plastic Wastes	Trashy Bags	Ghana	Consumer Goods	Open Loop	27

RESTORATIVE



Making the correct choices on natural resource allocation, while maximizing usage efficiency is an uncompromising end towards which the global sustainability movement is targeted. However, this challenge comes at a time when a significant part of the world population is poised to see a considerable growth in standards of living and is demanding access to a larger share of shrinking resources. WWF-UK defines 'Restorative' as '*net positive environmental impacts such as a business saving more emissions or water than it produces*'. If these ideas continue to enjoy vast consumer support, the global economy could be saved from falling under its own weight.

Thus we sight cases of businesses that are determined to meet resource needs of their customers and ensure preservation and restoration of natural resources. For example, Sarvajal provides facilities and tracks consumption of clean drinking water, allowing to constantly monitor water consumption and production. Patagonia is an example of a clothing company which is supporting sustainable farming of salmon by cooperating with an NGO, illustrating that restorative effort can reach across industries. Co2 Bamboo is utilising bamboo as building material in disaster areas which helps avoid massive deforestation and the destruction of local ecosystems. Lastly, Pontos showcases how household water systems can be equipped for a sustainable re-use of waste water.



TRACKING CLEAN WATER CONSUMPTION



DESCRIPTION	A combination of technologies enables the instalment of ‘water ATMs’ - devices that provide clean drinking water for communities, accessible with a top-up card or coins - and monitors water production in real time through a ‘Soochak’ device. In this way, water production is monitored, and water quality is assured.
WHO ARE THE INNOVATORS?	Piramal Water Private Limited Co. was established in mid-2008 to find viable mass-market solutions to India’s drinking water crisis.
FACTS	Sarvajal is franchised to 150 rural franchisees providing drinking water to more than 80,000 people.
WHO ARE THE ADOPTORS?	Sarvajal franchisees are local entrepreneurs selected after a rigorous due diligence process and trained to operate the Sarvajal technology. Qualities sought include business acumen, reliability, social values and ambition. Piramal also looks to partner with companies and charitable organisations who seek efficient and transparent means of providing drinking water for rural communities.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	The water ATM incorporates real-time monitoring to ensure that clean drinking water is made accessible to rural communities. The water is cleaner and its provision more sustainable than that from digging wells.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>In places where the average adult earns less than £1.20 a day, Sarvajal’s 0.3 Rupee (0.30p) per litre product could potentially disrupt the thriving 10 Rupees (11p) per container private water provision industry. Secondly, Sarvajal dramatically enhances accountability of organisations allocating subsidised water.</p> <p>Over-extraction from natural sources, though a burgeoning concern for India’s water provision industry, is largely ignored in the face of the current water crisis. Sarvajal’s potential as a game-changer rests on its ability to not only supply, but also source water sustainably.</p>



“Every Soochak and every RFID device we install deepens our understanding of how to reach poor rural and urban communities – in India and globally. We hope to share these solutions as widely as possible.”

Source: Sarvajal Website

SUSTAINABLY FARMED SALMON



DESCRIPTION	Sourcing fish locally and harvesting selectively to protect endangered species, facilitating a healthier food system, and creating jobs for impoverished communities.
WHO ARE THE INNOVATORS?	Patagonia is a clothing company out of Ventura, California. By partnering with Skeenawild, a Canadian fish conservation NGO, Patagonia has revolutionized the salmon industry by using native workers to selectively harvest only prime mature salmon allowing others to swim free upstream and spawn. Partnering with Skeenawild, Patagonia identified native Canadian fisheries that use sustainable upstream means to selectively harvest only high quality salmon and spare non-target fish and endangered salmon populations.
FACTS	For Patagonia's branch into the fish industry they built their very own localized processing facility near the Skeena river creating over 15 jobs for a community where unemployment is as high as 50%. Patagonia is the first fish industry business working in active partnership with conservation NGO's. Patagonia is currently pursuing MSC certification for their new product by adhering to the commonly agreed upon principles of sustainable fisheries.
WHO ARE THE ADOPTORS?	Fisheries around the world are making efforts to source their catch, harvest selectively, and provide sustainable alternatives. More than 80 members of the Lake Babine nation are employed by Patagonia's sustainable fishing operation and many more locals are employed either by the processing plant or Skeenawild.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	The arrangement has directed sales away from environmentally harmful salmon fisheries, created new employment opportunities for impoverished Canadians, and allowed endangered wild salmon stocks to repopulate. Furthermore, the resulting salmon replenishment facilitates a healthier ecosystem and the selectively harvested fish are free from the disease and sea lice which plagues farmed salmon thereby creating a healthier food system.
WHY IS IT POTENTIALLY GAME-CHANGING?	The program offers a socially and environmentally equitable product for the consumer that is not only healthier for them but also healthier for ecosystems, simultaneously addressing poverty issues in the Canadian interior. In addition, it's scalable and can be easily replicated in the developing countries.



"Unless you catch a salmon in its natal river, you don't know where it came from. The Patagonia provisions salmon project is our effort to change the fishing industry, the same way we've changed how we make our clothes."

– Yvon Chouinard, Founder Patagonia

LOCALLY-SOURCED DISASTER RELIEF



DESCRIPTION	Low-cost, sustainable housing is created out of highly-renewable bamboo resources by prefabricating stackable panels for structures in communities affected by natural disasters.
WHO ARE THE INNOVATORS?	Founded in 2008, CO ₂ Bambu started working in Rosita, Nicaragua to provide shelters to people recovering from Hurricane Felix. In addition to Nicaragua, it has expanded into Haiti and Vietnam to work on earthquake reconstruction and creation of bamboo plantations making it a viable and sustainable building material in the area.
FACTS	CO ₂ Bambu has planted 60,000 bamboo plants for carbon sequestration and reforestation in Nicaragua. It has also constructed 84 low-impact homes in Rosita, Nicaragua. Additionally, it employed more than 70 workers at a local bamboo processing plant reinvigorating the local economy of Rosita.
WHO ARE THE ADOPTORS?	Currently the product is being used at reconstruction sites for building shelters for homeless people. However, the company plans to expand into mainstream residential construction.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	By carefully planting bamboo, CO ₂ Bambu contributes to carbon sequestration, avoids deforestation of trees for building material, and reduces desertification by mitigating soil erosion. This is all accomplished while providing permanent shelter, income and facilitating self-sufficiency in impoverished communities.
WHY IS IT POTENTIALLY GAME-CHANGING?	The business model makes construction business environment friendly and a carbon negative business. Furthermore, it has several positive community implications such as education of impoverished children in the disaster relief area. Furthermore, the company sources all relief materials from local bamboo plantations, even using bamboo as a material for building their own factory.



"Bamboo is the ultimate regenerative asset in that it behaves as a raw material like wood, but the more you cut it, the more it grows."

- Ben Sandzer-Bell,
Founder & CEO,
CO₂ Bamboo

RE-USING SHOWER WATER



DESCRIPTION	A water recycling system which turns bath and shower water into hygienically clean processed water for non-drinking usage.
WHO ARE THE INNOVATORS?	Hansgrohe is a Germany-based multinational company which produces high-quality, design-oriented products around the world, as well as trendsetting bathroom concepts and environmentally-friendly sanitation technologies. The Hansgrohe Group operates in 37 countries (including UK, USA, China, France, Netherlands) and has over 3,000 employees; approximately two-thirds of them based in Germany.
FACTS	<p>PontosAquaCycle utilises a 6-stage process in transforming shower, bath and hand-basin waste water into clear, hygienic and odourless water that can be reused for toilet flushing, cleaning, irrigation and other non-drinking applications.</p> <p>Additionally, the PontosAquaCycle 2500 can be combined with an advanced heat recovery system or with a rainwater harvesting system to reap additional energy and water savings. The PontosAquaCycle 2500 has a special interface which means it can be seamlessly integrated into the central building management system.</p>
WHO ARE THE ADOPTORS?	Halls of residence, hotels, private residences. Live examples: Yerres Municipality (France); Akwasolv Water Recycling Solutions (South Africa).
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	PontosAquaCycle reuses approximately ½ of potable water - a second time. This represents a savings of up to 50% in potable water usage, and likewise reduces sewer (blackwater) waste by up to 50%.
WHY IS IT POTENTIALLY GAME-CHANGING?	Water sustainability is an issue of great concern - especially in light of the UN's prediction that two-thirds of the world's population will live under water-stressed conditions in 2025. The widespread adoption of Pontos technology could lead to remarkable reductions in water usage, as well as kindle global interest in water reuse technologies.



“Because assuming corporate responsibility and living sustainably are part of Hansgrohe’s self-image and company goals. Our passion for water continually spurs us on to extend our range of energy-saving and water-saving products”

- Source: Pontos Website

DEMATERIALIZATION



The value of natural resources is exponentially increasing due to escalating global demand, in combination with the realization that these resources are limited. This requires a reduction of the usage of natural resources which will be vital for a sustainable future. To reduce the strain on natural resources, it is essential to find successful dematerialisation business models. WWF-UK defines dematerialisation as *'the process by which businesses decrease their dependency on continual resource supply by embracing models based on sharing, collaboration and services'*.

This report incorporates examples of successful dematerialisation measures that can play an essential role in reducing the pressure on natural resources. The documented cases describe unique efforts of dematerialisation by use of natural agents and recycled materials. Real IPM have developed natural predators that can be used instead of pesticides, alleviating harmful effects of pesticides while increasing the yield of the natural resources. Fenugreen manufacture organic dry sheets for keeping produce fresh, decreasing wastage of fresh organic food while increasing the accessibility to fresh organic products without the need of a fridge.



ORGANIC DRYER SHEET TO KEEP PRODUCE FRESH

DESCRIPTION	Fenugreen freshpaper keeps organic produce fresh for long periods of time and therefore encourages buying organic produce and can alleviate spoilage without the use of refrigeration in the developing world. Freshpaper is made of entirely organic biodegradable paper infused with natural herbs.
WHO ARE THE INNOVATORS?	Kavita Shukla and Swaroop Samant founded Fenugreen in 2010 in the United States in order to address the issue of produce waste created by food spoilage. Freshpaper started by selling at a small produce market in Cambridge, MA, but by now the company sells its product in over 130 stores across the US and Canada, and the company is rapidly expanding to new locations.
FACTS	By placing fresh produce upon a sheet of Freshpaper fruits and vegetables can stay fresh for up to 4 times longer than normal, regardless of refrigeration. Prices range from \$5.95-\$69.95 and the product shelf life is at least 6 months. For every pack bought between thanksgiving and new year's 2012, Freshpaper delivered a pack to communities in need. The company plans to expand charitable operations to the developing world.
WHO ARE THE ADOPTORS?	Over twenty different food cooperatives, farmers markets, and health stores throughout the US and Canada are now offering Freshpaper for their customers. Supplementing this number is over 100 Whole Foods stores in the US that now carry fresh paper for purchase with fresh produce.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Freshpaper encourages sustainable food systems by combating spoilage and increasing the shelf life of healthy organic produce. This also prevents waste as the food is more likely to be eaten and the product itself is 100% recyclable. Freshpaper has implications for impoverished communities and the developing world as well by offering a low cost solution to food spoilage for those who lack refrigeration. The technology is disrupted to the refrigeration industry whose technology is too expensive for much of the developing world.
WHY IS IT POTENTIALLY GAME-CHANGING?	By making produce more convenient, Fenugreen makes healthy organic produce more appealing, creating competition for inorganic environmentally harmful alternatives. For impoverished areas where food spoilage can be life-threatening, Fenugreen offers inexpensive relief that can save lives.



We're addressing this enormous, yet often overlooked, global challenge with a simple innovation. Our mission is to improve access to fresh, healthy food, and boost the lives of farmers and communities worldwide"
 - Kavita Shukla (Co-Founder, FenuGreen)

GROWING FLOWERS WITH NATURAL AGENTS

realIPM

DESCRIPTION	Predatory spiders, known as DuduTech, are cultivated to eat pest (spidermite), eliminate it and completely abolish the need for chemical pesticides.
WHO ARE THE INNOVATORS?	Real IPM is a Kenya-based company. Pest (spider-mite) is produced and spiders (<i>Phytoseiulus Persimilis</i>) are introduced in order to multiply and being harvested. The predator was discovered in the 1960s in an Orchid brought to the UK from Perù. Sold in tubes containing approx. 1000 spiders; to be mixed with vermiculate (a carrier) and spreaded evenly on flowers.
WHO ARE THE ADOPTORS?	Exported to flower companies in RSA, UK, Ethiopia, Italy, Canada but mostly Kenya. Demand is growing, driven by Northern consumers and supermarket chains. However, the cost is high, thus use is limited to large companies with multinational operations.
WHAT ARE THE ENVIORNMENTAL SUSTAINABILITY BENEFITS?	Radical, 100% elimination of chemical, artificial pesticides in agriculture. The predatory spiders eat the pest and then become cannibalistic, therefore eliminating themselves with no artificial residues being released onto the plants.
WHY IS IT POTENTIALLY GAME-CHANGING?	The DuduTech is showing rapid growth: it is used and self-produced in most European countries. Moreover, it allows a better quality compared to if chemicals were used, because chemicals have solvents that stress the plants and ruin the leaf; with the predatory spiders, flowers shine more and have a 10 to 20 cm longer stem, thereby increasing market value. As technological improvements, increased competition, and larger production volumes diminish costs, and given its environmental and quality benefits, the DuduTech is likely to become a fundamental component of the horticultural industry worldwide in the future.



“Demand is increasing, because it’s a new product and farms are becoming more and more sustainable.”

- Mr. Henry Wainwright, CEO, Real IPM

LOW CARBON



The effects of carbon emissions require a decreasing reliance on energy sources that are not sustainable and encouraging evaluation of ways to change current behaviour. More than in any other area, cooperation is key to achieve low carbon emissions. This cooperation must also be global, even as individual responsibility and influence in solving this problem is emphasized. Some companies might have the technology while others might have the power to implement. WWF-UK states in relation to low carbon sustainability that *'renewable energy and low-carbon technologies are crucial to achieving a sustainable economy'*.

TecEco has developed permeable concrete that allows the creation of structures that can naturally absorb Co₂, decreasing their negative impact on the environment and combating climate change. Green Toys produce toys from 100% recycled material, contributing to waste management and decreasing the impact of toy production on the environment. Ennesys make buildings more self-sufficient by decreasing their energy need with the use of algae that recycle this energy from the waste products of the building. CitéGreen have created a rewards ecosystem for adoption and scale-up of green businesses. Additionally, Non-Profits such as Greenhouse Project and Lightning Africa are contributing strongly towards creating solutions that can be easily replicated into for-profit models by entrepreneurs.



CO2 ABSORBING CEMENT



DESCRIPTION	'Permeable concrete' (Permecrete) is manufactured by combining reactive magnesia with cement and building waste such as crushed pavement. The resulting concrete absorbs Co2 from the environment as it hardens and allows water to pass through its large aggregates to recharge aquifers while trapping pollution.
WHO ARE THE INNOVATORS?	Tececo was founded in 1999 by an Australian geochemist named John Harrison. Tececo manufactures and develops a number of earth conscious building materials and is currently in the process of developing "gaia engineering", a process that will allow emission free concrete production.
FACTS	Tececo began selling their products in 2007. The company is involved in a number of homebuilding projects around the world and is recently moving into building commercial works in Australia. They now offer 8 different concrete and cement products available for sample or sale in bricks or 20lb bags. Techeco cements are invulnerable to salt damage and last considerably longer than conventional binders such as bitumen or Portland cement.
WHO ARE THE ADOPTORS?	Sustainably minded construction companies such as Rob Peagram Builders and Micheal Watson designs in Australia as well as the non-profit Low Carbon Trust in the UK have been using Tececo products to build low carbon homes.
WHAT ARE THE ENVIORNMENTAL SUSTAINABILITY BENEFITS?	Permecrete removes Co2 from the atmosphere reversing the effects of global warming, and protects humans from natural disasters such as super storms and floods. Also, it naturally filters water back into aquifers and reduces the urban heat island effect.
WHY IS IT POTENTIALLY GAME-CHANGING?	Permecrete has the potential to revolutionize the construction industry by allowing for the creation of structures, which are not only functional but also pivotal in combating climate change and its effects through both absorption of Co2 and protection from natural disasters.



"Almost every aspect of the built environment from bridges to factories to tower blocks could be turned into structures that soak up carbon dioxide – the main greenhouse gas behind global warming. All we need to do is change the way we make cement." – Fred Pearce (New Scientist Magazine)

MANUFACTURING TOYS USING SUSTAINABLE MATERIALS



DESCRIPTION	Toys made from sustainable materials can substantially reduce plastic consumption and contribute to waste management.
WHO ARE THE INNOVATORS?	Green Toys Inc. was founded by a VC manager and a marketing executive determined to incorporate sustainability principles as basic values and as key elements of their corporate strategy. They have created a company that has single-handedly revolutionized toys manufacturing.
FACTS	Selling the first product in 2010, Green Toys now has 3,000 customers in the US and Canada and has experienced a 70% average sales growth over the past three years. Other companies, including Spring Toys and Preserve, have based their business models on the utilisation of waste and recycled materials to produce not only toys, but a variety of other products.
WHO ARE THE ADOPTORS?	Its natural customers are parents who are seeking healthy products for their babies and young children, including food, equipment, and toys. Green Toys is totally transparent about its products, for instance providing a clear explanation of the company's materials choices on its website, and this has driven tremendous customer interest.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Green Toy's production activity utilises no new materials and reduces carbon emissions to the essential ones. For instance, recycled milk jugs and recycled plastic grocery bags are the only materials used. Every pound of recycled milk jugs saves energy corresponding to 3,000 AAA batteries. In addition, the production is entirely in-house, meaning that transportation has virtually been eliminated, thus eliminating carbon emissions.
WHY IS IT POTENTIALLY GAME-CHANGING?	Green Toys are 100% produced by recycled waste, thus satisfying customers' desire for sustainable lifestyles. "Greening" the toys value chain entirely has meant increased recognition from consumers and demand from retailers. Products are simple, safe, environmentally sustainable and socially responsible. Green Toys created a 100% sustainable model for the toys industry, and given its success in terms of customer and sales growth, it sets a valuable example: a completely sustainable business model is efficient and valued by consumers, thus could inspire similar initiatives in other industries.



"In choosing materials for our toys, we wanted to make sure that we did not choose green without a practical purpose, just for the sake of being green. We wanted to choose green that fit in with people's everyday lives."

—Robert von Goeben (CEO, Co-founder)

CONSTRUCTION TURNS GREEN WITH ALGAE



DESCRIPTION	A system that uses algae to make buildings self-sufficient in terms of their energy requirements. Algae cultivation in wastewater enables both wastewater treatment and the production of hydrogen, algae oil and biomass that supply energy.
WHO ARE THE INNOVATORS?	In 2010, Pacific Junction Corporation and OriginOil founded the joint venture Ennesys SAS, to be the vehicle to develop the algae project, which consists in growing algae that feed off the chemicals in the wastewater and absorb carbon dioxide emitted from the building - for example, from the central heating system.
FACTS	<p>In a theoretical model of a 10,000 meters squared building, covering 3,000 to 4,000 square metres of the external walls with Ennesys' algae system can generate a combined heat and power energy equivalent to 40 kilowatt-hours per square metre per year - up to 80 per cent of the building's energy requirements.</p> <p>There are still several unknowns to be uncovered by Ennesys, including the exact process through which hydrogen, algae oil and biomass are turned into energy. The lack of comprehensive information is associated with the early stage of development of Ennesys' algae system.</p>
WHO ARE THE ADOPTORS?	France has recently established severe environmental regulations for buildings, to be enforced within 2020 – and it is anticipated that other countries will follow in doing so. The adopters will thus be both residential and commercial buildings of all kinds.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Algae treat the wastewater and produce hydrogen, algae oil and biomass. The energy generated can be used to heat or power the building. Firstly, algae fuels will be available at competitive prices (\$100 per barrel, comparable to Brent oil). Secondly, the wastewater is cleaned enough to be used for watering plants or in the bathroom. Lastly, CO ₂ emissions are significantly reduced.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>This innovation substantially reduces buildings' energy consumption – which has been pegged at 40% in Europe. The system developed by Ennesys works with algae that are produced by the buildings' waste system, so it is an economically viable option. In addition, unlike other alternative energy solutions for buildings, the energy generated can be stored.</p> <p>It is anticipated that this or similar systems will become widespread in France before 2020, year by which government regulations require commercial and residential buildings to be self-sustainable in terms of energy requirements. As other countries follow France's initiative and large-scale production reduces costs, the algae system has the potential to become the industry standard, if alternatives are not devised.</p>



"We're replicating what happened naturally hundreds of millions of years ago. Algae in the oceans captured carbon dioxide from the atmosphere, grew, fossilized and turned into fossil fuels. We're doing the same, but making the cycle much shorter."

- Jean-Louis Kindler, co-founder, Ennesys

REWARDING SUSTAINABLE LIFESTYLE



DESCRIPTION	Platform encouraging sustainable practices within communities/cities through a reward points system for a listed green lifestyle alternative choice by a consumer. These rewards can be redeemed at sustainable business partners.
WHO ARE THE INNOVATORS?	Three Frenchmen are at the forefront of the concept: Julien Schweickardt, Emmanuel Touboul and Nicolas Kahn launched the platform in 2012. The platform tracks how members get around, recycle and conserve electricity through partnerships with companies operating in these services. Then, the users are rewarded with points that are redeemable for gifts or discounts at environmental concerned local partners (e.g. restaurants, spas, etc.).
FACTS	Within the first 9 months of inception, the company has reached 25,000 members and nearly 4 million points have been issued to consumers for adopting sustainable lifestyles.
WHO ARE THE ADOPTORS?	Currently the service is available to citizens of Paris. But the company plans to extend the product to other cities in upcoming years.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Citegreen claims to reduce members' carbon emissions by 5 per cent each year. Also, it contributes actively towards growth of sustainable lifestyle businesses and carbon neutral/negative partners who redeem the reward points.
WHY IS IT POTENTIALLY GAME-CHANGING?	Citegreen brings a revolution to the sustainable businesses market by acting as a catalyst for adoption of sustainable lifestyles and as a marketer and growth boosting agent for green businesses. It seeks to provide an extra incentive to make sustainable living less of a resolution and more of a everyday lifestyle.



"Environment is too much of a constraint - sick of the stick, let's try the carrot to promote recycling"

- Mr. Schweickardt, CEO, CitéGreen

GREENHOUSE PROJECT - MODELLING GREEN LIFESTYLE ALTERNATIVE



DESCRIPTION	A sustainability farm, modelling green lifestyle alternatives in building, waste management and sustainable energy alternatives to individuals.
WHO ARE THE INNOVATORS?	The GreenHouse Project is a South-African non-profit established in 2000. GHP runs a sustainability farm: a place where the various sustainability projects such as green building, energy, recycling and organic farming are exhibited to general public. GHP provides opportunities for locals to gain practical experience in creating and using environmentally friendly lifestyle alternatives.
FACTS	From 2001 to 2004, an old potting shed was converted into an office building, utilising environmentally friendly processes and resources from start to finish.
WHO ARE THE ADOPTORS?	Communities and cities (e.g. the city of Johannesburg); individuals and professionals. Architects and builders, for instance can easily access resources documenting GHP's 2004 green office building project.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	GHP tackles the fundamental aspects of environmental degradation: building, waste management, farming and energy holistically, encouraging lifestyle changes, rather than isolated actions.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>The GreenHouse project facilitates sustainable lifestyle changes providing opportunities for locals to participate in and experience green living. Similar ideas are being converted to theme parks and knowledge banks for cost effective sustainable solutions to be leveraged by industry</p> <p>GHP's primary school partnership exposes young South Africans to sustainable, organic methods of farming. On a larger scale, this particular initiative could serve as a powerful tool for eradicating harmful farming methods such as 'Slash-and-Burn' approach.</p>



"Our aim is to share, teach and inspire. The emphasis has been on testing and sharing methods with GreenHouse Project staff, project partners, decision-makers and interested members of the public" (Dorah Lebelo, Executive Director)

Source: GHP Green Building Manual (2004)

LIGHTING AFRICA-OFF GRID PRODUCTS



DESCRIPTION	A public program enabling the development of affordable and clean energy to Africa.
WHO ARE THE INNOVATORS?	Lighting Africa is a joint World Bank-IFC program, which was launched in September 2007 with the aim of improving access to clean, affordable lighting in Africa by assessing the quality of products and developing a big network to spur demand. In addition, the programme supports the scale-up and replication of successful businesses.
FACTS	Sales of solar lanterns that meet industry quality criterions designed for low-income households and micro-businesses in Sub-Saharan Africa grew by more than 300% between 2008 and 2012. Additional 3,8 million of people in Africa have access to electricity.
WHO ARE THE ADOPTORS?	Lighting Africa runs in Ethiopia, Ghana, Kenya, Mali, Senegal, and Tanzania, with the will to grow further. They work with manufacturers and distributors providing complete market research, consumers, financial institutions, development partners, and governments to remove market obstacles.
WHAT ARE THE ENVIORNMENTAL SUSTAINABILITY BENEFITS?	8,000 tonnes of greenhouse gas emissions have been avoided – this is the CO ₂ equivalent of taking 15,000 cars off the road.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>Lighting Africa strongly emphasis educating people to green energy, and negotiating with government to enhance the development of off-grid green products.</p> <p>Lighting Africa enhances the importance of low-tech instead of high tech that helps scaling in developing countries.</p>



“1,200 + village forums in Kenya and Ghana organised by Lighting Africa to educate rural populations about the benefits of solar light over kerosene”

Source: Lighting Africa Website

OPEN LOOP



Waste production and the stockpiling of waste have already reached historical highs. The growing global population will increase the severity of this problem. For instance, the total non-recycled waste generated across all sectors in the UK for 2008 was 145 million tonnes. Furthermore, there are new forms of waste that are becoming a severe problem - for example, the world is producing nearly 50 million tonnes of e-waste, which is growing at an alarming rate due to the mobile devices revolution. WWF-UK defines open loop innovations as *'the old adage in practice as companies transform the waste of another firm into new products'* which has become critical to allow a circular economy.

Attero is changing the nature of recycling e-waste by operating a consumer-to-business model rather than the standard business-to-business model, greatly increasing the scope of e-waste recycling. Rubicon is linking companies to waste collectors who have the knowledge to recycle the waste more efficiently, allowing more waste to be recycled in a more efficient and cost-effective way. Trashy Bags is turning the plastic waste problem in Ghana into a business opportunity by converting plastic waste into fashionable bags. Cardboard Technologies revolutionise cardboard recycling by using an organic lacquer to transform cardboard waste into low-cost bicycles.



RECYCLING E-WASTE



DESCRIPTION	E-waste recycling through a B2C model by sourcing electronic e-waste through consumers and selling metals extract to businesses.
WHO ARE THE INNOVATORS?	Created in 2007 by Nitin Gupta and Rohan Gupta in India to find a way to convert millions of tonnes into re-usable, recycled energy. Valuable materials such as copper, nickel, zinc, and lead can be extracted from electronic scrap. The company makes e-waste disposal a hassle free process by taking care of logistics, data security and final de-manufacturing.
FACTS	Attero has established an efficient process for recycling e-waste that extracts more than 99% of the pure precious and base metals found in electronic waste. The company handles 500 tonnes of e-waste per month. This model is made possible by collaboration with existing network of post offices, bank branches and other local business tie ups.
WHO ARE THE ADOPTORS?	Indian households and companies in over 100 cities across 22 states.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Around 50 million tons of e-waste are produced each year and the United States Environmental Protection Agency (EPA) estimates that only 15-20% of e-waste is recycled. Attero enhances the number of recycled items, especially in a growing region like India.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>Firstly, the process can be replicated at small capacity levels (40 tonnes/day) around the world.</p> <p>Secondly the company has devised an innovative approach to collect waste from households (charging a small fee) using <i>Atterobay</i>: an online platform facilitating recycling for individuals.</p> <p>More than separating and recovering non-ferrous metals, Attero has become a pioneer in transforming non-recyclable plastic to carbon black: a high potential but less competitive market at present.</p>



“We at Attero, look at e-waste not just as waste, but as an important resource that can be made useful instead of shunning it as a social and environmental burden.”

FACILITATING GROWTH OF RECYCLING INDUSTRY



DESCRIPTION	Comprehensive approach to reducing waste for corporate businesses by establishing a system of bidding linking recycling companies and corporations.
WHO ARE THE INNOVATORS?	<p>Founded in 2008, Rubicon is a virtual marketplace that enables companies with waste products to meet with recycling and hauling companies on a bidding system.</p> <p>In addition, Rubicon Global looks at the back-end of a company supply chain, providing consulting advise on how to reduce waste. This can go as far as inventing new uses for end of life products, such as turning pizza dough into ethanol. Moreover, it implements software that easily calculates companies' savings, as well as working with public policy actors to be at the top of regulations.</p>
FACTS	With landfill diversion rates of up to 65%, Rubicon Global often saves its clients 20-30 % on waste and recycling fees.
WHO ARE THE ADOPTORS?	Rubicon Global helps America's companies (large and nationally franchised retailers, construction companies, hospitals, restaurants and manufacturers) to reduce costs and implement original closed loop answers.
WHY IS IT POTENTIALLY GAME-CHANGING?	<p>It seems that the major players in the recycling industry not only share the majority of the market but they do not have the required specific expertise that is needed for many products. Thus, allowing local recycling companies to bid both reduces consequently the costs for corporations and permits a better tailored recycling process.</p> <p>Having the possibility for customers to experience a competitive and transparent bid process is the central game changing potential in the recycling industry.</p>



"As a certified B Corporation, we believe in harnessing the power of private enterprise to create public benefit."

- Source: Rubicon Website

CARDBOARD TECHNOLOGIES - RECYCABLE BICYCLES



DESCRIPTION	Bicycles made of cardboard treated with organic lacquer, which makes it lighter and stronger than carbon fiber. By bypassing the conventional supply chain, the product can provide cheap transportation to the people by using solely recycled products.
WHO ARE THE INNOVATORS?	Cardboard Technologies is an innovative company based in Israel that utilizes recycled materials to construct lightweight durable bicycles and wheelchairs. Cardboard Technologies began in 2009, and as of the start of 2013 is in the last phase of development before beginning mass production.
FACTS	A proposed production facility can produce bikes for as little as \$9 each and the consumer cost is only \$20. The bike has a 10 year life span, and is also fire and water proof.
WHO ARE THE ADOPTORS?	E.R.B. is an Israeli investment firm that is working with Cardboard Technologies to successfully mass produce the products.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Manufacturing materials are recycled and therefore diverted from landfills. The end product can be recycled at the production facility. Lower cost encourages bicycle ridership that potentially mitigates CO ₂ emissions from motor vehicles. This cheap transportation can also empower social mobility in impoverished nations.
WHY IS IT POTENTIALLY GAME-CHANGING?	Bypassing the conventional supply chain and offering cheap, 100% recycled transportation options can alter the way transportation systems operate in the world towards a more sustainable model. Easy availability of cardboard encourages local manufacturing, and creates jobs for communities. Since the product is so inexpensive, it can be subsidized and be given for free to impoverished nations, enabling economies of scale. Embedded advertising allows Cardboard Technologies to acquire an income.



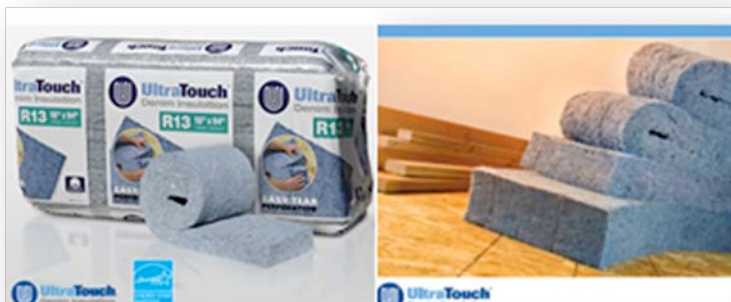
“Low cost, high quality, and mass produced bikes, wheelchairs, strollers/prams and other vehicles, made from recycled material in plants located in the markets where they are most needed.”

- Izhar Gafni, Founder, Cardboard Technologies

INSULATION FROM RECYCLED DENIM



DESCRIPTION	UltraTouch Insulation is made from post-consumer natural denim has created an attractive substitute to available insulation from plastics.
WHO ARE THE INNOVATORS?	Bonded Logic Inc. markets and manufactures several thermal and acoustical insulation products made from recycled denim waste products. All their products are made from natural fibers to meet the needs the contractor will keeping the household and the environment safe,
FACTS	UltraTouch Denim Insulation contains 80% post-consumer recycled natural fibers making it an ideal choice for anyone looking to use a high quality sustainable building material. It also has the highest ASTM testing standards for fire and smoke ratings, fungi resistance and corrosiveness.
WHO ARE THE ADOPTORS?	Contractors, architects and households that need and use building insulation.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	UltraTouch Denim Insulation contains 80% post-consumer recycled natural fibers and contains no chemical irritants and requires no warning labels compared to other traditional products. The natural fibers used to manufacture UltraTouch are 100% recyclable, reducing landfill waste. Requires minimal energy to manufacture, aiding the environment with energy conservation and a reduction in pollution.
WHY IS IT POTENTIALLY GAME-CHANGING?	Insulation made from recycled denim has potential to significantly reduce denim wastes, and reduce consumption of plastics. It also requires minimal amount of energy to manufacture aiding the environment with energy conservation and a reduction in pollution compared to other types of traditional insulation that use petrochemicals. Traditional insulation manufacturers consume considerably more energy while creating additional unwanted pollution and landfill waste. The insulation contains no harmful airborne particulates eliminating health concerns regarding particulates in the surrounding environment unlike its competitors.



"We are proponents of a plastic free insulation industry and strongly believe that our technology will significantly reduce plastics consumption"

- Source: Bonded Logic Website

BRINGING DESIGN TO HOMEGROWN PRODUCE



DESCRIPTION	Back To the Roots (BTTR) upcycles waste and turns it into a useful food-producing product.
WHO ARE THE INNOVATORS?	BTTR was created by two UC Berkeley graduate entrepreneurs who were inspired by the idea of bringing design to homegrown organic produce out of what would have been an urban waste stream. BTTR takes coffee waste and repurposes it into a “grow your own mushroom” kit. Customers can grow 1.5 lbs of delicious all organic oyster mushrooms in 10 days simply by misting the box twice a day. In the UK and around the world similar companies such as Fungi Futures now produce similar products. BTTR also is in the final stages of developing a home aquaculture kit which allows consumers to grow home produce from a fish tank without ever watering their vegetables.
FACTS	Founded in 2008, BTTR is on course to make \$5.4 million in revenues while diverting 3.6 million lbs of coffee grounds for reuse in 2012. They helped US families grow over 135,000 lbs of food in 2011 and sell their products at over 300 “Whole Foods” stores nationwide.
WHO ARE THE ADOPTORS?	Clever entrepreneurs are finding ways to make organic produce more appealing and exciting through taking the “grow-your-own-food” concept to market and make organic produce more exciting and accessible for consumers. This technology is yet to be fully articulated.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Upcycling coffee waste prevents hundreds of thousands of tons of methane gas from being emitted as a result of landfill disposal and prevents climate change. “Grow at home” harvesting reduces the need for deforestation to make room for large agriculture and doesn’t require pesticides.
WHY IS IT POTENTIALLY GAME-CHANGING?	Easy to use, “grow your own food” products reduce the hassle of home gardening as well as mitigate the problem of vegetable shelf life. At the same time waste is being diverted from landfills and customers get the satisfaction of preventing climate change.



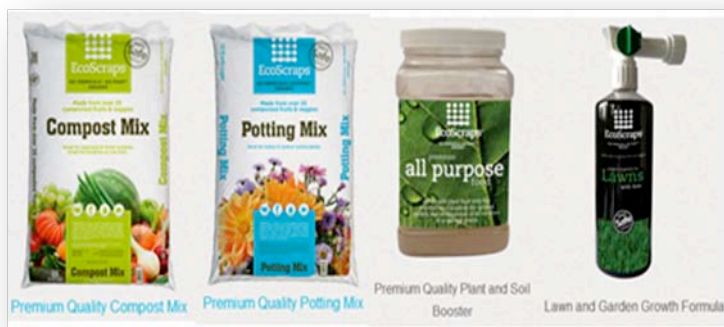
“The world production of coffee is nearly 7 million tons a year. Only 1% ends up in the cup, while 99% ends up in a land fill. The possibility of diverting this waste stream, into something of value, was something we just couldn't let go.”

- Mr. Velez, CEO, Back to the Roots

FROM SPOILED FOOD TO GREEN FERTILIZER



DESCRIPTION	Ecscraps up-cycles food waste to create useful soil and compost products for sustainable growers.
WHO ARE THE INNOVATORS?	Ecscraps was created by three entrepreneurs who wanted to do something about the food waste coming out of big box stores like Walmart and Costco. The company upcycles spoiled food waste from 96 different produce outlets in the US to be repurposed into all organic, pesticide free compost and soil products. Ecscraps is currently an industry leader in sustainable waste stream compost production.
FACTS	Since its foundation in 2010, Ecscraps has recycled 15.2 million tonnes of food waste and prevented over 9.16 million pounds of methane from being released into the atmosphere.
WHO ARE THE ADOPTORS?	Ecscraps outsources production to existing agricultural facilities like Agromin in Oxnard, CA, and sells their finished product to big box stores instead of independent nurseries. By doing this, Ecscraps fills a previous void in the industry utilizing previous infrastructure to provide a unique product to home consumers. Big chains like Costco have already started working with Ecscraps for produce waste disposal.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	Upcycling food waste prevents climate change by reducing methane gas emissions. The composting process breaks down the pesticides and herbicides that may be present. The finished product is not only high in nutrients but free of the externalities associated with using manure including the risk of exposure to salmonella and/or E. coli.
WHY IS IT POTENTIALLY GAME-CHANGING?	Ecscraps has shown that waste stream composting can be not only scalable and profitable, but also useful in meeting the waste needs of big produce firms. Diverting food from the waste stream promotes healthier food systems and prevents climate change.



"I see Ecscraps leading the trend toward creating a solution for the growing waste problem while also allowing people to improve the quality of their plants. We've carved a niche where we really have an opportunity to make a difference"

- Mr.

Hooton, CEO, Ecscraps

PLASTIC WASTE TO FASHIONABLE BAGS



DESCRIPTION	Plastic waste, e.g. mineral water and ice cream sachets and discarded billboard banners, are remodelled into bags, other fashion accessories and gift items.
WHO ARE THE INNOVATORS?	Trashy Bags, a non-profit organisation founded in 2007, employs over 60 individuals to collect, clean and stitch plastic trash into bags and gift items. Products include laptop bags, messenger bags, e-reader sleeves, purses, hats and wallets.
FACTS	By 2000, plastics accounted for over 9% of waste stream (by weight) in Ghana. Estimated waste produce from plastic packaging in Accra alone is over 80,000 tonnes annually; with only about 2% recycled. Trashy Bags has re-used over 20 million plastic sachets since 2007. Nearly 200,000 plastic bags are collected monthly.
WHO ARE THE ADOPTORS?	Trashy Bags has received wide appeal from tourists, expatriates and students, as well as clientele in foreign markets, notably the UK.
WHAT ARE THE ENVIRONMENTAL SUSTAINABILITY BENEFITS?	<p>Open Loop: Plastic sachets and billboard banners, the end products of a production process (for drinks, ice cream and other liquid products) are channelled into a new production process.</p> <p>Recycling: The remodelling of plastic trash into durable bags mitigates the effects of the non-biodegradability of plastics. The use of already existing material reduces pressure on other commonly used raw materials for bags; including: cloth, leather and synthetic fibres.</p> <p>Awareness creation: Through film festivals and campaigns such as the Smart Ghana Initiative (April 2014): a cooperative effort with CHF International, French Embassy and Australian High Commission</p>
WHY IS IT POTENTIALLY GAME-CHANGING?	Trashy Bags provides a unique way for Africa to rethink its waste. Responses to calls for recycling have been relatively slow on the continent. Trashy Bags employs an ingeniously simple business model which has the potential to both change perceptions about recycling; and spark similar innovations in the African sustainability business.



"We don't run a sweat shop. We're not product-oriented, we're people oriented"

- Stuart Gold, CEO, Trashy Bags

REFERENCES AND PICTURE CREDITS

Page	Source
5	WWF –UK, 2012. <i>Green Game Changers</i> [pdf] Available at: http://assets.wwf.org.uk/downloads/1121_1_wwf_greengamechange_aw_web_2_.pdf [Accessed 24/02/2013]
6	Sarvajal, 2009. <i>Company homepage</i> [online] Available at: http://www.sarvajal.com [Accessed: 03/01/2013]
7	River Wild Salmon Inc. , 2012. <i>Company homepage</i> [online] Available at: http://www.riverwildsalmon.com/who-do-we-get-our-fish-from.html [Accessed 10/02/2013]
8	[Building a bamboo house] n.d. [image online] Available at: http://assets.inhabitat.com/wp-content/blogs.dir/1/files/2011/06/co2-bambu.jpg [Accessed 10/02/2013]
9	Hansgrohe United Kingdom, 2012. <i>Company homepage</i> [online] Available at: http://www.hansgrohe.co.uk/134.ht [Accessed 10 February 2013]; Hansgrohe Group, 2012. Pontos AquaCycle 2500, <i>Company Homepage</i> [online] Available at http://pro.hansgrohe-int.com/4282.htm [Accessed 10/02/2013]
10	WWF –UK, 2012. <i>Green Game Changers</i> [pdf] Available at: http://assets.wwf.org.uk/downloads/1121_1_wwf_greengamechange_aw_web_2_.pdf [Accessed 24/02/2013]
11	[Fruit on top of Fenugreen’s fresh paper] n.d. [image online] Available at: http://www.shft.com/thumbs/615x350/files/700_fresh-paper-4-4807.jpg [Accessed 10/02/2013]
12	Real IPM, 2012. <i>Company homepage</i> [online] Available at: http://www.realipm.com [Accessed 10/02/2013]
13	WWF –UK, 2012. <i>Green Game Changers</i> [pdf] Available at: http://assets.wwf.org.uk/downloads/1121_1_wwf_greengamechange_aw_web_2_.pdf [Accessed 24/02/2013]
14	Humtechnet, 2010. TechEco's Permeconcrete Pervious Pavement, <i>Humanitarian Technology Network</i> . [online] Available at: http://humtechnet.com/content/techecos-permeconcrete-pervious-pavement [Accessed 10/02/2013]
15	Green Toys Inc. , 2013. <i>Company homepage</i> [online] Available at: http://www.greentoys.com [Accessed 10/02/2013]
16	Algae Industry Magazine, 2012. Ennesys Launches ‘Green Building’ Demo in France, <i>Algae Industry Magazine</i> , [online] Available at: http://www.algaeindustrymagazine.com/ennesys-launches-green-building/ [Accessed 10/02/2013]
17	Cite Green Beta, 2013. <i>Company homepage</i> . [online] Available at: https://www.citegreen.com [Accessed 10/02/2013]
18	Global Oneness Project LLC, 2013. Dorah Lebelo, <i>Global Oneness Project</i> . [online] Available at: http://www.globalonenessproject.org/people/dorah-lebelo [Accessed 10/02/2013]
19	Walk Out Walk on, 2013. The Greenhouse Project, <i>Walk out Walk on</i> . [online] Available at: http://www.walkoutwalkon.net/south-africa/video-greenhouse-project [Accessed 10/02/2013]
20	Lighting Africa, 2007. <i>Company Homepage</i> [online] Available at http://www.lightingafrica.org [Accessed 10/02/2013]
21	WWF –UK, 2012. <i>Green Game Changers</i> [pdf] Available at: http://assets.wwf.org.uk/downloads/1121_1_wwf_greengamechange_aw_web_2_.pdf [Accessed 24/02/2013]
22	Attero Recycling, 2013. <i>Company homepage</i> . [online] Available at: http://www.attero.in [Accessed 10/02/2013]
23	Rubicon Global Holdings, LLC, 2012. <i>Company homepage</i> . [online] Available at: http://rubiconglobal.com/about.php [Accessed 10/02/2013]
24	[Man holding a cardboard bike] n.d. [image online] Available at: http://www.blogcdn.com/www.engadget.com/media/2012/10/israel-cardboard-bike.jpg [Accessed 10/02/2013]
25	Bonded Logic, 2013. Ultratouch Denim Insulation, <i>Bonded Logic</i> . [online] Available at: http://www.bondedlogic.com/construction-products/ultratouch-denim-insulation [Accessed 10/02/2013]
26	[Box with mushrooms growing out of it] n.d. [image online] Available at: http://media.abesmarket.com/media/vendor/415/New%20Back%20to%20the%20Roots%20Mushroom%20Kit.jpg [Accessed 10/02/2013]
27	[Three men standing on piles of organic compost] n.d. [image online] Available at: http://www.inc.com/uploaded_files/image/feature-93-EcoScraps-Dan-Blake-Brandon-Sragent-Craig-Martineau-pop_8424.jpg [Accessed 10/02/2013]
27	Trashy Bags Project, 2013. <i>Company homepage</i> . [online] Available at: http://www.trashybags.org/ [Accessed 10/02/2013]

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