



MINDFUL LIVING

Compendium of LiFE Practices Around the World






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प्रधान मंत्री
Prime Minister
MESSAGE

Climate change is today a pressing global challenge for nations the world over. A crisis that impacts the whole world needs a collective, comprehensive and collaborative response.

When the response is based on an integrated approach that has a global scale, no action is small and no effort is inconsequential. The actions of every individual towards sustainable lifestyle practices can make a big difference at a planetary level.

In India, concern for the planet and ecology has always been a part of culture. Our scriptures say, 'माता भूमिः पुत्रोऽहं पृथिव्याः', meaning: 'The Earth is my Mother and I am her child.' Our culture has also transmitted many nuances of sustainable living as traditions that continue to encourage us to be mindful about our impact on the environment.

Certainly, across the world, there would be many such sustainable practices passed on as traditional wisdom. Further, as consciousness about climate change has risen over the past few years, the people have also begun to introspect and come up with behaviour changes that further sustainability. India is playing a pivotal role in bringing together such concepts through Mission LiFE - Lifestyle for Environment.

Worldwide, 'pro-planet people' and communities are adopting innovative environmentally sustainable practices in areas like water conservation, waste management, sustainable food systems, energy conservation, reducing single-use plastics usage and e-waste management.

By creating a repository of such best practices, everyone can learn from everyone else, fostering a united approach towards fighting climate change.

The initiative of NITI Aayog to bring out a publication titled 'Mindful Living: Compendium of LiFE practices around the world', bringing together the best of global sustainable lifestyle practices helps in creating a cleaner and greener planet for the coming generations.

Best wishes for the success of this effort. May it inspire people across the world to make environmentally-conscious behaviour changes a part of their lives.

(Narendra Modi)

New Delhi
ज्येष्ठ 10, शक संवत् 1945
31st May, 2023



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The acceleration of climate change since the early 1800s is indisputably attributed to human influence through activities including the burning of fossil fuels and deforestation. The Intergovernmental Panel on Climate Change's Synthesis Report (2023) has established that more than a century of burning fossil fuels as well as unequal and unsustainable energy and land use have led to global warming of 1.1°C above pre-industrial levels. While the Paris Agreement sets a temperature goal of 1.5°C above pre-industrial levels, the current rate of global warming is estimated to breach the goal between 2030 and 2052. Impacts of climate change, in the form of temperature and rainfall anomalies, extreme weather events including droughts, floods, heatwaves etc, are being felt across the globe, and the most vulnerable people and ecosystems, particularly in developing nations, face the greatest challenges in coping with it. Subsequently, the increase in weather and climate extremes has irreversibly impacted humans and natural systems, as their resilience and ability to adapt have been affected. To achieve the Paris Agreement's goals and prevent the growing multiple risks to ecosystems and human life, urgent and ambitious efforts are required to reduce greenhouse gas emissions over the next few decades.

The inadequacy of current actions to reduce the severity of the climate crisis calls for re-looking the way emissions reduction strategies are framed. Despite the consensus over the need for rapid and sustained climate action, the resultant focus of solutions has been more towards the supply side of emissions and its management while demand side management has gained relatively lesser traction. Demand-side solutions for climate change mitigation modifies demand for goods and services through strategies that target "technology choices, consumption behaviour, lifestyles, coupled production-consumption infrastructure and systems, service provision and associated socio-technical transitions" (Creutzig 2018). IPCC's Sixth Assessment Report (AR6) estimates that the indicative potential of such strategies to reduce emissions of direct and indirect CO₂ and non-CO₂ greenhouse gas emissions is 40–70% globally by 2050 across three end-use sectors alone: buildings, transport and food.

The emerging thinking around demand-side management is reflected in the debates over the past few decades surrounding sustainable consumption and production (SCP), i.e., reducing negative environmental impacts from consumption and production systems without losing the quality of life for all. Over the years, SCP has emerged as a recurrent theme in global environmental discussions, including climate change. Through these conversations, it has been established that to effectively mitigate climate change, it is crucial to break the feedback loop between unsustainable consumption and production patterns of goods and services, which requires a systemic shift towards sustainable practices, policies, and technologies that reduce the demand for and supply of environmentally harmful products.

To that end, the Lifestyle for the Environment (LiFE) concept was introduced by Hon'ble Prime Minister Narendra Modi at the twenty-sixth session of the Conference of Parties,

COP26, to draw attention to the role of individual behaviour in the larger climate change discourse. Subsequently, the global launch of the LiFE movement took place on 5th June 2022, World Environment Day movement to nudge individual and community action to protect and preserve the environment.

This report "Mindful Living Compendium of LiFE Practices Around the World" is developed as part of LiFE movement to showcase case studies which embody the ethos of behavioural change facilitating sustainable consumption and addressing climate change. It is written with the deep conviction that small but significant grassroots initiatives by individuals, collectives, communities, and institutions have great potential to inspire and mobilise larger segments of society and ultimately drive critical mass.

The report compiles case studies across seven thematic areas: Water Saving, Waste Management, Sustainable Food Systems, Energy Conservation, Plastic Waste Management, Sustainable Lifestyles, E-Waste Management. Each case study examines the unique challenge faced by a region or its communities, the interventions implemented to address these challenges, their resulting impacts, and the valuable lessons learned from them.

Several overarching lessons emerge from exploring these case studies that can be applied to emissions reduction efforts in various contexts. Firstly, targeted interventions tailored to the specific needs of the community are more likely to be effective than broad, one-size fits-all solutions. Secondly, effective demand-side management often requires nudging behavioural change through innovative, personalised and periodic communication interventions. A variety of communication methods available like emails, newsletters and stickers are low-cost interventions that make them adaptable to a wider range of communities and stakeholders. Thirdly, the case studies underscore the critical role of stakeholder engagement and collaboration in driving successful interventions. Effective partnerships with stakeholders involve working closely with them, understanding their unique perspective and needs and involving them in decision-making and management. By developing these collaborative relationships from the inside, interventions can be effectively designed, communicated, and implemented. Finally, traditional practices and ways of life offer important insights on demand-side management of emissions, as these practices have often been developed over generations, with a focus on long-term sustainability and the health of ecosystems. Recognising and respecting the environment-friendly practices of local communities will also help build holistic, effective and culturally sensitive interventions.

Thus, the cases together provide a comprehensive review of possible demand-side management of emissions and its potential, while each case hearteningly illustrates how individuals and communities are uniquely positioned to be powerful drivers in the global fight against climate change.



LIST OF ABBREVIATIONS

AFOLU	-----	Agriculture, Forestry, and Other Land Use
AWD	-----	Alternative Wetting and Drying
COP	-----	Conference of Parties
DESA	-----	Department of Economic and Social Affairs
DMC	-----	Domestic Material Consumption
ESB	-----	Energy Saving Behavior
EPR	-----	Extended Producer Responsibility
GHG	-----	Greenhouse Gases
IPCC	-----	Intergovernmental Panel on Climate Change
IPL	-----	Interfaith Power and Light
LFHW	-----	Love Food, Hate Waste
LIFE	-----	Lifestyle for Environment
MoEFCC	-----	Ministry of Environment, Forest and Climate Change
MSC	-----	Marine Stewardship Council
NDC	-----	Nationally Determined Contribution
NFU	-----	National Farmers Union
NITI Aayog	-----	National Institution for Transforming India
R&CA	-----	Restaurant and Catering Australia's
SCP	-----	Sustainable Consumption and Production
SDG	-----	Sustainable Development Goal
UN	-----	United Nations
UNEP	-----	United Nations Environment Programme
WRAP	-----	Waste and Resources Action Programme

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01

**THE GLOBAL
CLIMATE CRISIS**





1.1

Climate Change Context

Change in global climate is a natural phenomenon marked by several warming and cooling phases of the Earth in the past. Today, it has become a matter of serious concern owing to the alarming rate at which it has occurred in the last ~200 years, primarily due to emissions from fossil fuel burning. As global warming increased by 1.09 degrees Celsius in 2011-2020 than pre-industrial levels, scientists have cautioned that the continued warming will have catastrophic impacts on human society, especially in developing countries which are more vulnerable. Some of the key climate impacts on human life and wellbeing are categorise into the five interrelated aspects as shown below.

Key Climate Impacts on Human Life and Wellbeing



Food security

Changes in temperature, precipitation and extreme weather events are factors that reduce yield, decline water availability, increase pests and diseases, and disrupt transportation and distribution networks. The resultant impact on food production and distribution could create food shortage and threaten food security of vulnerable communities.



Water security

Climate impacts on water sector are manifested through limited availability and poor water quality that subsequently leads to water scarcity, contamination and even conflict over the resource, thereby threatening water security of communities. Similarly, damage to water storage infrastructure caused by extreme events may further contribute to water insecurity.



Human health

Climate change has profound impacts on human health visible in the rising incidents of heat related deaths, respiratory illnesses, waterborne and vector borne diseases and cases of malnutrition.



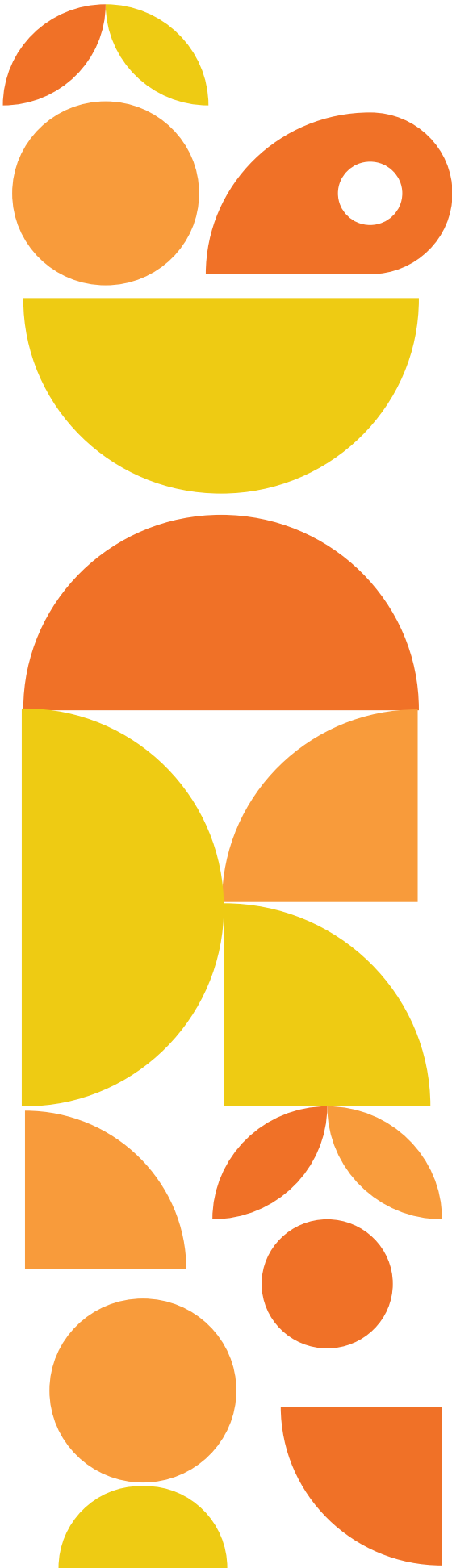
Economic loss

As natural resources continue to deteriorate due to climate change, communities dependent on climate sensitive sectors such as agriculture, fisheries, tourism, etc. for income are at the risk of losing their livelihoods. Furthermore, communities and businesses have an additional cost of addressing the impacts of climate change, which also have substantial economic implications.



Migration and displacement

Climate change induced resource scarcity and conflict, exposure to extreme events and disease outbreak are contributing factors in migration and displacement of people thus creating many climate refugees.



1.2

Consumer Demands Contribution to GHG Emissions

Global Greenhouse Gases (GHG) emissions from different sectors (energy supply, industry, transport, buildings and agriculture, forestry and other land-use change (AFOLU) have collectively shown an upward growth since 1990s and are expected to keep growing in future. This trend of rising emissions is positively correlated to human activities related to consumption and production of goods and services (such as use of fossil-based energy to power buildings and to produce goods and services).

Most of these global emissions are emitted by large corporations with individual consumption forming only a small share. Despite the latter's negligible share, it is still important to highlight the role of individual consumers in driving emissions. Irrespective of any negative environmental impact during the production and/or use of a good or service, demand for it among consumers will always act as an incentive to keep producing them. This demand may be determined by factors such as price, lack of alternatives and low levels of awareness. Therefore, such patterns of unsustainable consumption and production directly and indirectly leads to higher emissions.

1.3

Actions for Addressing Climate Change

Significant climate change impacts can be avoided by limiting global warming to 1.5 degrees Celsius above pre-industrial levels the end of this century to avoid (IPCC 2018). Emissions will have to be reduced by 45% by 2030 (compared to 2010 levels) and become carbon neutral by 2050 to achieve 1.5 degrees Celsius target. This scenario calls for drastic reduction through rapid and sustained transformations across all systems in this decade.

In efforts to combat climate change, actions are directed towards decoupling economic growth from emissions, reducing cost of renewable energy technologies, and promoting shift away from fossil fuels. Most of these climate actions nowadays are anchored by the Nationally Determined Contribution (NDC) under the Paris Agreement. As part of this many countries have set ambitious targets to cut emissions by 2030 and implement measures to adapt to climate impacts.

Based on current policies, GHG emissions in 2030 is estimated at 58 GtCO₂e. However, the latest Emissions Gap Report (2022) shows that the pace of transition is not fast enough to meet the 1.5 degrees temperature limit target. In fact, even with the updated NDCs targets, we do not make significant difference to emissions projection for 2030. At current pace, there is an implementation gap is about 3 GtCO₂e for the unconditional NDCs, and 6 GtCO₂e for the conditional NDCs.

1.4

Framing Demand- Side Emission Reduction Strategies

Human activities have altered the planet beyond reasonable variations. Data from the UN agencies shows that human actions have profoundly altered most terrestrial ecosystems: around 40,000 species are documented to be at risk of extinction over the coming decades, 10 million hectares of forest (an area the size of Iceland) are being destroyed each year and more than half of key biodiversity areas remain unprotected.

The inadequacy of current actions to reduce the severity of today's environmental crisis calls for a change in the way emissions reduction strategies are framed. Broadly, the focus of such programmes has leaned more towards supply side management. However, unsustainable consumption and production of goods and services will continue as long as there is demand from consumers. We must rethink the approach to emission reduction to integrate demand side management that promotes shifts away from unsustainable consumer habits along with better supply chain management strategies.



Combating Climate Change- Paris Agreement (2015)

One of the most significant global efforts in the space of climate action is the Paris Agreement (2015) adopted in the Conference of the Parties (COP) 21. This legally binding international treaty aims to limit warming to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit at 1.5 degree Celsius. To achieve this goal, each party to the Paris Agreement is required to develop a climate action plan called the Nationally Determined Contribution (NDC) to cut emissions and adapt to climate impacts.

02

**NEED FOR RESPONSIBLE
PRODUCTION AND
CONSUMPTION**





2.1

Conceptual Understanding of Sustainable Consumption and Production (SCP)

The debate around sustainable consumption and production (SCP) has emerged over the years as a result of growing concern about the negative impact of human activities over the environment. Fundamentally, this concept is rooted in the dilemma that our current consumption and production patterns are heavily dependent on the extraction, processing, use and disposal of finite natural resources that drive environmental degradation and perpetuate social inequalities.

The concept of SCP gained momentum with the publishing of 'Our Common Future' report in 1987, and its subsequent recognition in the UN Conference on Environment and Development in 1992. Prior to this, environmental issues were primarily linked to production. However, this changed after the two landmark events recognised the relationship between consumption and environmental degradation, while calling for fundamental changes in both these patterns to achieve sustainable development.

Over the years, SCP has emerged as a recurrent theme in global discussions on environment, including those on climate change. Several multilateral commitments (summarised in Table 1) have been made to improve cooperation at national, regional and global levels to decouple economic growth from environmental degradation and resource depletion by:

Box 2: What is Sustainable Consumption and Production?

“

The use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardise the need of future generations.

- *The Oslo Symposium (1994)*

”

“

A holistic approach to minimising the negative environmental impacts from consumption and production systems while promoting quality of life for all.

- *UNEP (2011)*

”

Reducing emissions and waste from extraction, production, consumption and disposal and energy and material intensity of current economic activities.

Promoting a shift in consumption patterns (habits, behaviors and lifestyles) towards goods and services with lower energy and material intensity without compromising quality of life.

Table 1: International Discourse on SCP

Year	International Partnership	Key Highlights
1987	World Commission on Environment and Development report, Our Common Future	Highlighted that the basis of our consumption and production patterns were finite resources which leads to environmental degradation and perpetuate social inequalities
1992	UN Conference on Environment and Development (Rio de Janeiro, Brazil)	Formally recognised unsustainable consumption and production as a reason for continued deterioration of the environment.
1994	Oslo Symposium on Sustainable Consumption (Oslo, Norway)	First international conference to focus on SCP. It adopted the Oslo Statement- a vision document on the SCP- which is still an important guiding document.
1997	Kyoto Protocol	Calls for countries to reduce GHG emissions, which could be achieved through sustainable consumption and production practices.
2002	World Summit on Sustainable Development (Johannesburg, South Africa)	Adopted the Johannesburg Plan of Implementation which sets out a framework for action on sustainable development and SCP was identified as a priority area.
2003	First meeting of the Marrakech Process, a global multi-stakeholder platform to develop the 10FYP (Marrakech Morocco)	The United Nations Environment Programme (UNEP) and the UN Department of Economic and Social Affairs (DESA) spearheaded the development of the 10YFP.
2012	World Summit on Sustainable Development (Rio de Janeiro, Brazil)	Adopted the 10YFP as part of a global commitment to accelerate the shift towards SCP
2015	UN Sustainable Development Summit (New York, US)	Adopted 17 SDGs, including SDG 12 which focused on "Ensuring sustainable consumption and production."

2.2

Exploring Links between Climate Change and Patterns of Unsustainable Consumption and Production

Despite having these global commitments in the space of SCP and climate change, dependence on natural resources has only accelerated, which is demonstrated by-

- The continued global growth in the amount of materials used in production and consumption exhibited by more than 65% increase in total Domestic Material Consumption (DMC) between 2000 to 2019 (accounting 95.1 billion metric tons in 2019).
- The increase in the rate of resources extraction by more than three times since 1970s in 2017.

A pressing concern resulting from the above trends is the impact on the global climate as approximately 50% of total GHG emissions in the world is derived from natural resource extraction and processing. While it is widely accepted that unsustainable consumption and production practices play a significant role in driving climate change, it's important to recognise the self-reinforcing nature of these patterns, where unsustainable consumption exacerbates unsustainable production and vice versa, leading to a vicious cycle that perpetuates environmental degradation and aggravates the impacts of climate change.

For instance, unsustainable production practices, such as the use of fossil fuels in manufacturing processes, can lead to increased greenhouse gas emissions. These emissions contribute to climate change, which in turn can drive changes in consumption patterns, such as a higher demand for air conditioning, thus increase demand for more unsustainable production practices. These impacts are neither localised nor equitably distributed.

2.3

Consumption Patterns Driving Climate Change

In the past, addressal of climate change focused more on interventions on the supply-side that aimed to make production processes cleaner and more efficient (resource efficiency, clean energy production, eco-design, etc). But consumption patterns which offset the environmental gains achieved through these measures are frequently overlooked.

There is a strong correlation between an individual's consumption pattern and socio-economic factors, which is evidenced by the significant increase in resource use over the last few decades as a result of rise in individual desire and capacity to consume products and services. This change in individual aspirations can be attributed to a combination of factors, including rapid global population growth, increased economic activity worldwide, higher living standards and improved well-being. To summarise, the world is faced with a larger problem of increasing demand for goods and services and overconsumption, which constantly necessitates more natural resources, leading to higher emissions and negative climate impacts. To effectively address climate change, we must break this feedback loop between unsustainable consumption and production of products and services.



03

**MANAGING DEMAND-SIDE
ASPECTS OF CONSUMPTION
THROUGH BEHAVIOURAL
CHANGE**





3.1

Role of Individuals and Communities in Addressing Climate Change

In the context of mitigating climate change, stakeholders such as governments and businesses have large-scale resources to influence policies, introduce structural and technological changes to alter manufacturing processes and determine land use patterns. However, the role of individuals and communities is also crucial, and their potential must also be accounted for.

Individuals and community-level behavioural changes that encourage shifts towards a sustainable and low-carbon lifestyle can alter unsustainable consumption and production patterns. The collective shift towards sustainable consumer practices will reduce demand for unsustainable goods and services, therefore leading to per capita emissions reduction. Simultaneously, it will also change how other stakeholders (government, business, amongst others) mitigate climate change and subsequently encourage systemic changes in other aspects like policies, technologies, finance, etc.

There are very few scientific assessments that have quantified the mitigation potential of behavioural solutions at individual and community level. One such study, based on the drawdown research project, has identified 30 solutions requiring changes in human consumption patterns at the individual and community level (summarised in Table 2). These solutions are arranged in 4 categories- food, agriculture and land management, transportation, and energy and materials and their implementation is dependent on a combination of technological shift and willingness among people to adopt them. Between 2020 to 2030, these solutions have the potential to reduce 393 GtCO₂-eq in plausible scenarios and up to 729 GtCO₂-eq in optimum scenario.

Table 2: Adopted Solutions Linked with Human Habits to Reverse Global Warming

Sector	Solution	Description	Emissions Reduction* (GtCO ₂ -eq)
Food	Reduced food waste	Minimising food loss and wastage throughout the food supply chain from harvest to consumption	70.5 - 93.7
	Plant-rich diets	Eating more plant-based foods and fewer animal proteins and products (e.g., meat, dairy)	66.1 - 87.0
	Clean cookstoves	Using cookstoves that burn fuel more efficiently	15.8 - 24.3
	Composting	Converting biodegradable waste into a useful soil fertiliser instead of sending it to the landfill	2.3 - 3.6
Agriculture & Land Management	Silvopasture	Adding trees to pastures to increase productivity	31.2 - 65 .0
	Tropical staple trees	Growing trees and other perennial crops for staple	20.2 - 47.2

Sector	Solution	Description	Emissions Reduction* (GtCO ₂ -eq)
	Tree intercropping	Growing trees together with annual crops in a given area at the same time	17.2 - 37.0
	Regenerative agriculture	Adopting at least four of the following six agricultural practices: compost application, cover crops, and/or organic production	23.2 - 32.4
	Farmland restoration	Restoring degraded, abandoned farmland to grow crops or native vegetation	14.1- 30.8
	Managed grazing	Adjusting stocking rates, timing, and intensity of grazing in grassland soils	16.3 - 27.9 in grassland soils
	System of rice cultivation	Adopting low-methane rice production methods for small intensification or large operations	14.5 - 26.1
	Conservation agriculture	Adopting crop rotation, cover crops, and reduced tillage practices on agricultural land	17.4 - 10.3
	Nutrient management	Reducing the use of fertiliser use on farmland	1.8 - 2.7
	Farmland irrigation	Installing water and energy saving irrigation systems, such as drip irrigation	1.3 - 2.3
Transportation	Electric Vehicles	Driving battery and plug-in vehicles instead of conventional vehicles	10.8 - 52.4
	Ridesharing	Using ride-sharing services and/or carpooling	6.9 - 29.5
	Mass transit	Using public transportation for commuting in cities instead of individual vehicles	6.6 - 26.3
	Telepresence	Using video-conferencing technologies in place of commercial flights	2.0 - 17.2

Sector	Solution	Description	Emissions Reduction* (GtCO ₂ -eq)
	Hybrid Cars	Driving hybrid cars instead of conventional cars	4.0 - 15.5
	Bicycle infrastructure	Biking to destinations in cities instead of using cars	2.3 - 7.4
	Walkable cities	Walking to destinations in cities instead of using cars	2.9 - 11.1
	Electric Bicycles	Using electric bikes for urban transport instead of using cars	1.0 - 7.1
Energy and Materials	Rooftop Solar	Installing rooftop photovoltaic systems under one megawatt	24.6 - 40.3
	Solar Water	Using solar radiation to pre-heat or heat water for building use	6.1 - 17.7
	Methane Digesters	Adopting technologies that produce biogas for household heating through anaerobic digestion of organic waste Using energy efficient lighting in households	1.9 - 9.8
	LED lighting	Using energy efficient lighting in household	7.8 - 8.7
	Household Water Saving	Using water saving devices in homes such as low flow showerheads	4.6 - 6.3
	Smart Thermostats	Using devices that reduce heating and cooling demand through sensors and settings in the home	2.6 - 5.8
	Household Recycling & Recycled Paper	Recycling paper, metal, plastic, and glass materials	3.7 - 5.5
	Micro wind	Installing small wind turbines to provide household electricity needs	0.2 - 0.1
Total (GtCO₂ -eq)			393 - 729

3.2

Application of Behavioural Change Techniques to Make Sustainable Choices

It is common for people to resist adopting new behaviours and habits. While it can be challenging to introduce behavioural changes towards adopting sustainable habits, there are few strategies that can facilitate this process:

- **Information and awareness:** Educating consumers on the environmental implications of their choices can help raise awareness levels and encourage informed decision making. For instance, media campaigns, advertisements on media platforms, articles in magazines and newspapers.
- **Incentivise sustainable options:** Incentives on sustainable options can motivate consumers to adopt sustainable habits. For instance, subsidies on clean cookstoves can provide the motivation to shift to clean cooking options.
- **Access to sustainable options:** Easy physical, financial and locational access to sustainable options can encourage consumers to make the shift. For instance, financing options for electric vehicles, creating systems that make recycling more convenient for consumers.
- **Providing social proof:** Rewarding and appreciating sustainable behaviour of others can encourage consumers to adopt similar practices. For instance, the Indian Government's campaign on voluntary surrender of LPG subsidies.
- **Changing how choices are presented:** The way choices are presented can significantly affect the consumer's decision-making process. For instance, labelling a product as "environmentally friendly" versus a product that is not labelled. Differentiating products in this manner highlights the benefits of the product as an eco-friendly one. This shifts focus of decision making from the product's functionality and cost to one on whether the product is eco-friendly or not.

By introducing interventions from the behavioural change perspective, it is possible to change unsustainable consumer habits and decrease the demand for goods and services that have negative impacts on the environment.



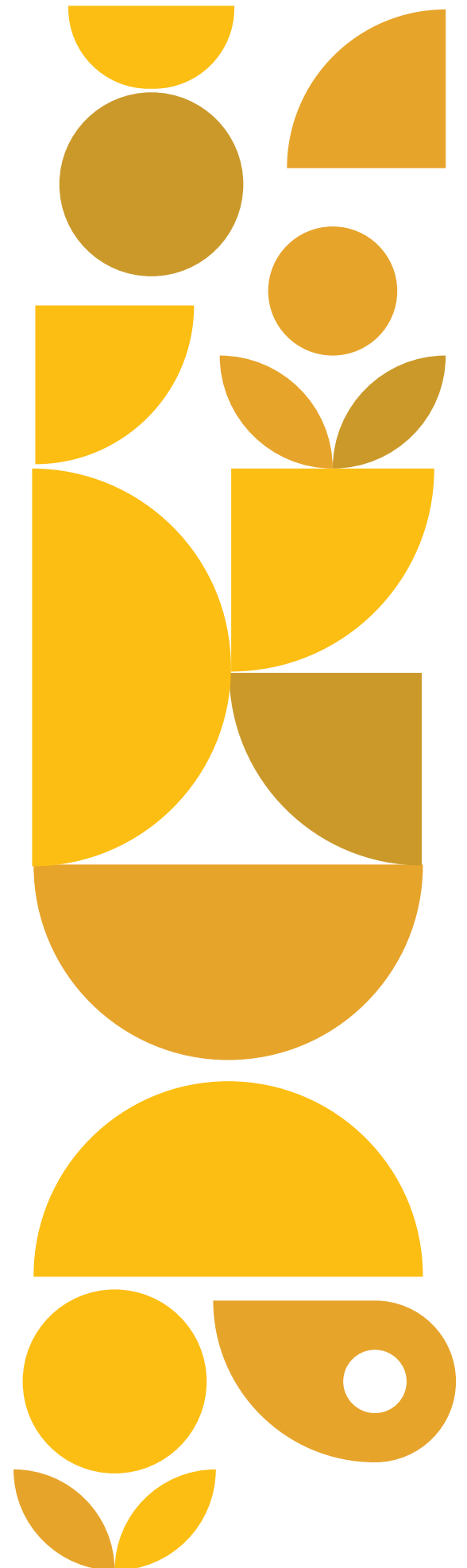
3.3

About LiFE (Lifestyle for Environment)

The concept of Lifestyle for the Environment (LiFE) was introduced by the Honourable Prime Minister of India, Narendra Modi at the twenty-sixth meeting of the Conference of Parties (COP26) to draw attention to the role of individual behaviour in the larger climate change discourse. The initiative recognises that individual choices and actions can have a significant impact on the environment and seeks to inspire and empower individuals to make conscious decisions that minimise their ecological footprint.

LiFE initiative leverages India's expertise in implementing effective mass behavior modification campaigns to tackle issues and provides illustration on how individuals can integrate into their daily routines to safeguard energy and water resources, minimise waste and plastic consumption, foster healthier lifestyles, and embrace sustainable food practices.

India is fervently promoting the Lifestyle for Environment (LiFE) initiative by actively engaging in multilateral fora. It has strategically included LiFE as a crucial component of the country's updated Nationally Determined Contribution underscoring its commitment to sustainable practices. Furthermore, India has elevated LiFE to an overarching theme during its G20 Presidency, emphasizing the significance of adopting environmentally friendly lifestyles on a global scale.



3.4

About the Compendium

This compendium is developed as part of LiFE movement, to showcase a range of national and international case studies which embody the ethos of behavioural change resulting in sustainable consumption. The matrix in Table 3 summarises the key highlights of the case studies.

Table 3: Thematic Mapping of Case Studies

Theme	Name of Case Study	Location	Key Highlights
Water Saving	Applying Water Audits Agricultural Operations	United Kingdom	<ul style="list-style-type: none"> • Water Conservation and Audit • Monitored Agricultural Operations
	Bogota Water Fund	Colombia	<ul style="list-style-type: none"> • Investments in a Conservation of Watershed through Public Private Partnership
	Zaragoza - A Water Saving City	Spain	<ul style="list-style-type: none"> • Water Saving Culture • Change in Water-Saving Techniques
	Water Consumption in Belén	Costa Rica	<ul style="list-style-type: none"> • Influencing Household Water Consumption • Comparison with Neighborhood
	Employing Feedback Mechanisms to Conserve Water	Switzerland	<ul style="list-style-type: none"> • Promotes Showering Behaviour to Reduce Energy and Water Use
	Behavioural Interventions to Encourage Water Conservation	Spain	<ul style="list-style-type: none"> • Increasing the Adoption of Drought Resistant Plants for Landscaping
	WaterSmart Home Water Reports	United States of America	<ul style="list-style-type: none"> • Climate Resilient Agricultural intervention
	Social Media for Social Good: Raising Awareness of Jordan's Water Crisis	Jordan	<ul style="list-style-type: none"> • Creative Use of Social Media for Spreading Awareness
	Effects of Real - Time Feedback on Hot Water Use	Netherlands	<ul style="list-style-type: none"> • Smartphone App for Real-Time Tracking of Water & Energy Use
Waste Management	Love Food Hate Waste Campaign	United Kingdom	<ul style="list-style-type: none"> • Marketing Strategies & Tools to Influence Behaviour Change to Decrease Food Waste
	Repair Café	Netherlands	<ul style="list-style-type: none"> • Encouraging Sustainability over Convenience of Single-Use
	Improving Food Waste Recycling	United Kingdom	<ul style="list-style-type: none"> • Personalised E-Messaging to Reduce Food Waste & Improve Recycling
	Kamikatsu Zero Waste Campaign	Japan	<ul style="list-style-type: none"> • Associating Value to Waste through Collective Action
	Sakiori (Rag Weaving) Practice	Japan	<ul style="list-style-type: none"> • Repurposing Old Fabrics to Create New Textiles
Green Table Education and Certification Program	Australia	<ul style="list-style-type: none"> • Incentivising the Food Service Industry towards Sustainable Diets 	

Theme	Name of Case Study	Location	Key Highlights
Waste Management	Composting to Boost Waste Diversion	United States of America	• Diverting Waste from Landfills through Composting
	Composting to Reduce Food Waste in South Korea	South Korea	• Government-led Mandatory Composting with Incentives
	Leveraging Social Norms, Salience and Commitment Devices to Decrease Littering	Netherlands	• Behavioural Interventions to Decrease Littering
	Green Defaults to Save Resources	United States of America	• Introduction a Cost of Additional Time to Discourage Single Side Prints
	Green Footprints Intervention	United Kingdom	• Self-Adhesive Footprints to Direct People toward the Nearest bin
	Behavioural Insights for Household Waste Segregation	Bhutan	• A Behavioural Field Experiment Using Bins and Labels
	Increasing Compliance with Reporting Obligations	Australia	• Legislation Toward Increased Compliance & Reporting
	Framing Product Lifespan Information	Europe	• Promoting Longer-Living Products through Lifespan Labelling
	Don't Mess With Texas Campaign	United States of America	• Anti Littering Awareness Ad Campaign using TV, Outdoor and Outreach
	Keep Indianapolis Beautiful	United States of America	• Deadline-Based Communications to Coordinate Heavy Trash Pick up
	Reducing Food Waste in the Cafeterias	United Arab Emirates	• Regulating Portions & Communicating to the Customers to Reduce Food Waste
	Gamification for Enhanced Waste Sorting	Finland	• Communal Video Game to Encourage & Review Recycling Habits
	Swedish Return System	Sweden	• Replace Single Use Crates with Reusable Packaging System
	Danish Deposit & Return System	Denmark	• Encourage Re-Use & Recycling through Financial Incentives
	Sustainable Food Systems	WRAP - Most People Recycle Me	United Kingdom
Tackling Gum Litter in Known Hotspots		United Kingdom	• Visual Communication to Effect Behaviour Change
Improving Hampshire's Recycling through Behavioural Insights		United Kingdom	• Digital and Offline Tactics to Increase Recycling
Milpa Farming		Mexico	• Reintroducing Indigenous Agricultural Systems
Cilento Bio - District		Italy	• Developing Collaborative Biospheres

Theme	Name of Case Study	Location	Key Highlights
Sustainable Food Systems	Ginza Honey Bee Project	Japan	• Urban Revitalisation through Beekeeping
	Healthier Takeaway Food	United Kingdom	• Online Takeaway Platform for Influencing Food Choices
	Encouraging Sustainable Food Consumption by Using More-Appetizing Language	United Kingdom	• Sustainable Food Choices Involving Plant-Based Diets
	Reducing Overfishing	Indonesia	• Behaviour Change Campaign for Sustainable Fishing Practices
	Sikkim – The Organic State	India	• Organic Agricultural Practices & Mandatory Composting
	Bonus - Malus System	France	• Climate Instrument to Reduce Passenger Car Emissions
	Cool Congregations	United States of America	• Turning Faith Communities into Climate Leaders
	Green Roofs in Basel	Switzerland	• A Two Way Solution for Mitigation & Adaption
Energy Conservation	Energy Demand Research Project	United Kingdom	• Studying Consumers' Response to Energy Efficiency Devices
	Shamba Chef	Kenya	• To Motivate Households to Adopt Modern Cookstoves
	Framing Fuel Efficiency, Emissions and Running Cost Information	Europe	• To Motivate Households to Adopt Modern Cookstoves
	Car Labelling for Fuel Efficiency	Israel	• Impact Assessment of Labels on Fuel Efficiency, Emissions & Costs
	Reducing the UK Governments' Buildings and Estates' Emissions	United Kingdom	• Energy Savings in Government Buildings & Estates
	Energy Efficiency Labelling for Online Retail	10 EU countries	• Energy Efficient Labels for Household Appliances
	Shifting Commuter Behaviour	Australia	• SmartRider cards to encourage use of Public Transportation
	Reducing Peak Transit Demand	United States of America	• Text updates to Alleviate Public Transport Congestion
Plastic Waste Management	Portland's SmartTrips Welcome Program	United States of America	• Addressing Indoor Pollution Arising from Traditional Cooking Fuels
	Room to Breathe Campaign	India	• Reintroducing Indigenous Agricultural Systems
	Providing a Substitute for Single-use Plastics in the Pacific	Solomon Islands	• Addressing Indoor Pollution Arising from Traditional Cooking Fuels

Theme	Name of Case Study	Location	Key Highlights
Plastic Waste Management	Garbage Medical Insurance	Tanzania	• Segregated Garbage as Payment for an Insurance Scheme.
	Plastic Mukht Abhiyan	India	• Sensitising School Children About the Dangers of Single Use Plastic
	Keeping Streets Cigarette Butt Free	United Kingdom	• Visual Campaign to Educate & Reduce the littering of Cigarette Butts
Healthy Lifestyles Adopted	Food Dudes Healthy Eating Programme	United Kingdom	• To Inculcate a Healthy Eating Lifestyle Among School Going Children
	Community - based Marine Conservation	Indonesia	• Create Awareness About Environmentally Responsible Fishing
	Nature Urbane Agriponis	France	• Goal to Create More Green Spaces in the City
	Eliminating the Use of Trays in the Cafeteria	United States of America	• Abandoning Food Trays to Reduce Food WasteClimate Leaders
	Tackling Food Waste: DC Central Kitchen	United States of America	• Unsold food from Caterers to Balanced Shelter Meals
	Food Waste and Imperfect Produce	Italy	• Social Experiment to Increase Acceptance of Imperfect Produce
	Choosing Greener Campaign	United Kingdom	• Incentive & Reward-Based programme for hospital staff
	Green Rewards	United Kingdom	• Digital Sustainability ProgrammeModern Cookstoves
	Alipay Ant Forest	China	• Mini Program to Inspire Users to Reduce Carbon Emissions
	Eco Challenges Dot Org	United States of America	• To Engage the Public on ways to Drive Sustainable Habits
Healthy Lifestyles Adopted	Instituto De Montaña - Participatory Action Research	Peru	• A Low-cost Bio-remediation system to Clean Drinking Water
	GForest	Phillippines	• Encouraging people to earn Energy Points to Plant Trees
	Conservancy Rhino Ranger Incentive Programme	Namibia	• Community Based Approach to Protect & Conserve Rhgino's
	Wild Meat Consumption	Brazil	• Information Campaign to Decrease Wild Meat Consumption
	Greening of Supermarket Stores	Austria	• Biodiversity Measures at Supermarkets to aid Greening
	Nokia's E-waste Management	India	• Increased Collection with Mass Advertising & Recycling Campaigns
	Electronic Waste Recycling Increases Waste Diversion	United States of America	• Increased e-Waste Diversion and RepurposingTransport Congestion
E-Waste management	Changing Default Options to Decrease Electronic Waste	Sweden and Denmark	• Understanding Patterns to Reduce Electronics Consumption from Traditional Cooking Fuels
	bE-Responsible Initiative	India	• Creating Awareness for Proper Disposal of E-WasteSystems

04

CASE STUDIES
ON LIFE





“

When people become conscious that simple acts in their daily lives are powerful, there will be a very positive impact on the environment. ”

Shri Narendra Modi
Prime Minister

4.1

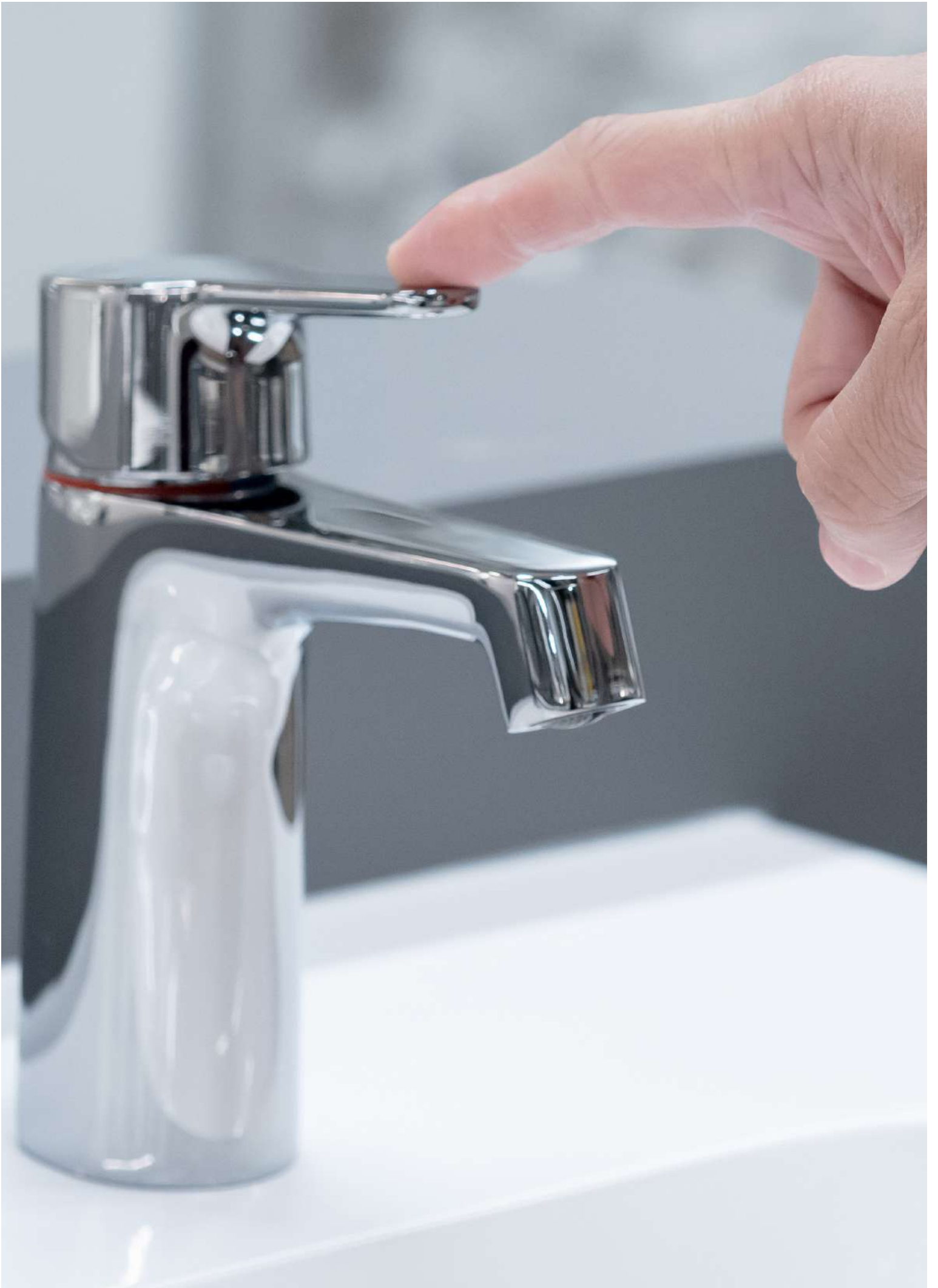
Water Saving

Availability of freshwater for human consumption is a critical global issue and one that will be exacerbated by the impacts of climate change, reducing river flows and dam storage volumes. Water plays a pivotal role in society, and it serves multiple purposes, including agricultural needs, domestic uses, recreation, industry, and public health. However, only three percent of the earth's total water is fresh and of that only a small portion is available for human use. Water security is critical in highly variable, unpredictable water environments where demand for this resource is increasing. Water demand management is defined as any actions that reduce the amount of water used or enable water to be used more efficiently; hence, the term water conservation is often used synonymously with water demand management. Consistent with this definition we adopt the term “water saving behaviour” to define and measure the broader concept of water demand management. In further defining water conservation, we differentiate between two types of water conservation behaviours: efficiency behaviours and curtailment behaviours. Efficiency behaviours refer to one-off behaviours such as installing water-saving shower heads or rainwater tanks that facilitate ongoing water savings. In contrast, curtailment behaviours refer to individuals' actions that conserve water such as only washing full loads of clothes, taking shorter showers, and turning off the tap while brushing teeth.

Conservation behaviour is heavily dependent on a broad social shift towards an environmentally responsible lifestyle, which can be aided by encouraging individuals to engage in sustainable behaviour, that can help policymakers devise more efficient demand management and behavioural measures.

In this section, we'll use some model case studies on water-saving behaviour to illustrate how attitudes, beliefs, routines, personal capabilities and contextual factors can all affect people's behaviour in water conservation.





Applying Water Audits to Agricultural Operations

Region/Country: United Kingdom

Year: November 2000

About the Case Study/ Summary

The 'Water Wise Campaign' was launched in the United Kingdom in 2000 by the National Farmers Union (NFU) to promote efficient water use on farms and to demonstrate and discuss best irrigation practices. In 2001, a survey conducted to document water use on farm operations indicated that farmers were taking the initiative to improve the efficiency of water management on their farms.

Challenge

Devise a mechanism to improve water management and irrigation practices on farms in the UK.

Intervention

In order to conduct a water assessment and create a water management plan, the "Water Wise on the Farm" programme outlines five straightforward intervention steps. The stages include identifying water consumption and its relative costs, interiorizing water use, calculating water use, developing mechanisms to compare and identify different water uses, and developing, reviewing and putting into practice a water-wise action plan detailed in Table 4.

Table 4: Intervention Steps under "Water Wise on the Farm"

Step	Key Highlights
Step 1: Identify how much water you are using and its costs	Water for farm use can be supplied by a water company or abstracted from natural sources such as rivers, streams, canals, springs, boreholes and ponds. It is also important to include the use of re-used water such as cooling water or rain harvested water.
Step 2: Water use Inventory	An inventory of water use documents the allocation of water to various activities on the farm. This exercise requires the farmer to identify all water-consuming activities, the amount of water used, and the type of water used. A water map can be used to illustrate the inventory visually.
Step 3: Calculate how much water you are using	When the amount of actual water use is more than 10% greater than the expected use, then it is an indication that water is being used inefficiently on the farm.
Step 4: Identify and compare water efficiency activities to reduce water use	If the amount of water used is greater than the amount of expected water use, then it is necessary to adopt water efficiency activities. Choosing the most cost-effective activity can be difficult, and it is important to calculate and compare the costs of each activity to choose the most appropriate technology.
Step 5: Create, implement, and review your Water Wise Action Plan	A water-wise action plan must be created and implemented. The action plan includes a plan to save water, targets for water savings, targets for financial savings and who is responsible for each action.



Impact

The "water wise on the farm" initiative resulted in the development of a water management plan and raised awareness in the community, where more than 50% of respondents have made plans to improve water efficiency over the next few years, and more than 65% of respondents said they are more efficient with their water use now than they were five years ago; In order to store water for use later in the year, 70% of respondents have invested in reservoirs or storage tanks. 50% of respondents use irrigation scheduling techniques to ensure they are using water at the right time of day to avoid waste. 80% regularly test soil moisture levels to ensure delivery of appropriate levels during irrigation. Nearly 40% of respondents either collect rainwater or recycle water for use on the farm.

Key Takeaway

- Social and institutional learning: Water accounting and auditing seeks to understand the social, political and economic factors that affect success of strategies or plans.
- Problem-driven learning: Stakeholder engagement in water auditing enables adaptation and innovation to lead to politically acceptable solutions.
- Financial learning: Long-term funding is needed for user groups and platforms, with higher levels in areas of high-water scarcity and lower levels in areas with limited scarcity.
- Technology Learning: Improving forecasting of weather to optimise water storage and application.

Bogota Water Fund

Region/Country: Colombia

Year: 2008

About the Case Study/ Summary

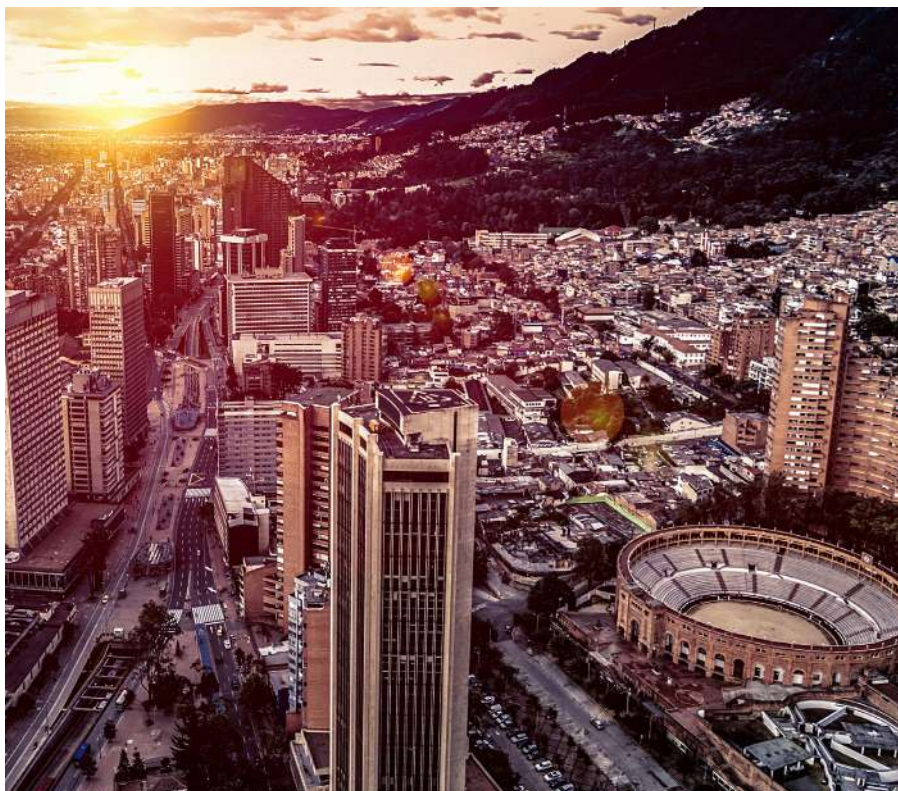
The Bogota Water Fund safeguards the drinking water of 8 million people in the city of Bogota and its surrounding regions, by helping to protect the city's watershed characterised by riparian forests and high-altitude grasslands (Páramos). These ecosystems were under threat from changing land-use due to activities like agriculture and ranching, affecting its abilities to maintain water quality and quantity. The fund established in 2008 protects these ecosystems through investments in the conservation of the watershed through initiatives like funding more park guards in the protected forest region and supporting residents in the region to shift to sustainable livelihood practices.

Challenge

To conserve the ecosystem and protect the water at its source while providing alternative sustainable livelihood options for the local communities.

Intervention

The Bogota Water Fund mobilised resources from both the public and private sectors to achieve its conservation goals and initiatives. Some of the activities supported by the fund were reforestation of the forests on a community-wide scale, financial incentives to farmers and ranchers to protect and restore riparian forests, providing alternative means of sustainable livelihoods like eco-friendly cattle ranching and ecotourism initiatives to communities in the region, influencing water governance through reliable research and building partnerships with key water security stakeholders.





Impact

The conservation efforts by the water fund have resulted in improving water security, promoting biodiversity and creating opportunities for sustainable livelihoods. By ensuring higher water quality levels through conservation initiatives within the watershed, the Water Fund helps avoid the exorbitant costs of industrial water filtration, which are estimated at \$4 million every year. The fund has helped in protecting about 10 km of riparian forests, reforesting 20 ha of land, and conserving 1200 ha of forest and high-altitude grasslands.

Key Takeaway

The key lesson learned is the importance of developing partnerships with multiple stakeholders, including the public and private sectors and the people of the region, to achieve conservation goals. The fund was also successful in employing innovative ways to mobilise public and private financial resources, which helped in providing sustainable and long-term funding for the conservation initiatives.

Zaragoza - A City Saving Water

Region/Country: Spain

Year: 1997-1999

About the Case Study/ Summary

The case study focuses on the water issues in the city of Zaragoza owing to insufficient rainfall and excessive water use by city inhabitants. The rules of effective water administration were absent. To tackle the problem, the city created a new "water culture" to deal with this problem and ensure proper management of this limited natural resource that supports life. Its objective was to encourage families in Zaragoza to save a total of 1000 million litres of water in a single year. Ultimately, the city saved 1176 million litres of water over the course of the initiative and changes in behaviour also had an impact on Spanish neighbouring cities.

Challenge

To establish a new 'water culture,' so that water as a scarce natural resource that is necessary to life could be handled properly. Its specific goal was for families in Zaragoza to conserve a total of 1000 million litres of water over the course of a year.

Intervention

As a first intervention, the existence of water-saving goods was made public, and their usage was encouraged through information and awareness-raising initiatives. A few techniques had been proposed to attain the aim of conserving 1000 million litres such as, purchasing new water-saving sanitaryware (toilets, taps, showers, etc.), installing water-saving devices in old equipment; purchasing water-saving domestic appliances (washing machines and dishwashers); and introducing individual domestic hot-water metres.

Apart from suggesting techniques, it was vital to engage individuals to bring about behavioural change because part of the mission was to engage all individuals who 'made' the water culture. As a result, a variety of target audiences were identified: water-industry experts, key customers, children, youth and the general public who were mobilised and capacitated to bring about this change in the way "water" was being looked at and utilised.





Impact

The initiative saved 1176 million litres of water during its duration, compared to the amount consumed over the same months, the previous year. In Zaragoza, cooperation agreements were signed with 150 different groups including 183 schools, 474 instructors and 70,000 students. The City Council of Zaragoza voted to create a water-saving strategy for the city. More than 140 businesses were involved in water-saving products. In all, 65% of enterprises offering sanitaryware, taps, home appliances, or metres participated actively in the initiative. Water-saving appliance sales increased by 15%. Individual metres increased fourfold, while water-saving faucets increased sixfold. Prior to the start of the program, one out of every three families saved water in some way. By the end of the program, two out of every three families had saved water. During the project's year, 3990 households in the city installed some type of water-saving gadget. That same year, 300,000 individuals (half of the city's population) adopted a water-saving practice at home. Prior to the program, 60% of the city's residents were unaware of any means to save water. This number dropped to 28% at the conclusion.

Key Takeaway

Some behaviourally oriented design ideas may be applied in a variety of places and cultures, and simple innovations can successfully give solutions to conserve millions of litres of water over the course of a year. It was also necessary to work on both the demand and supply side of the problem to address the issue. A positive message to conserve water and influencing behaviour change wouldn't have been possible without the availability of water-saving options in the market, thus both sides were properly balanced in this case.

Water Consumption in Belén

Region/Country: Costa Rica

Year: 2014

About the Case Study/ Summary

The monthly average water consumption in the town of Belén, Costa Rica was 1.25 times higher than the national average. If the rate of consumption were to continue at its current rate, it was expected that Belén will face acute water shortages by 2023. To reduce the water consumption of the town, three behaviorally informed one-time interventions were carried out. Consequently, it was seen that household monthly water consumption in the households that received the intervention came down by 4.5% (1.2 cubic metres) in comparison with other households.

Challenge

The challenge was to find a simple and cost-effective solution to address the water usage in the town to prevent an impending crisis of water shortage.

Intervention

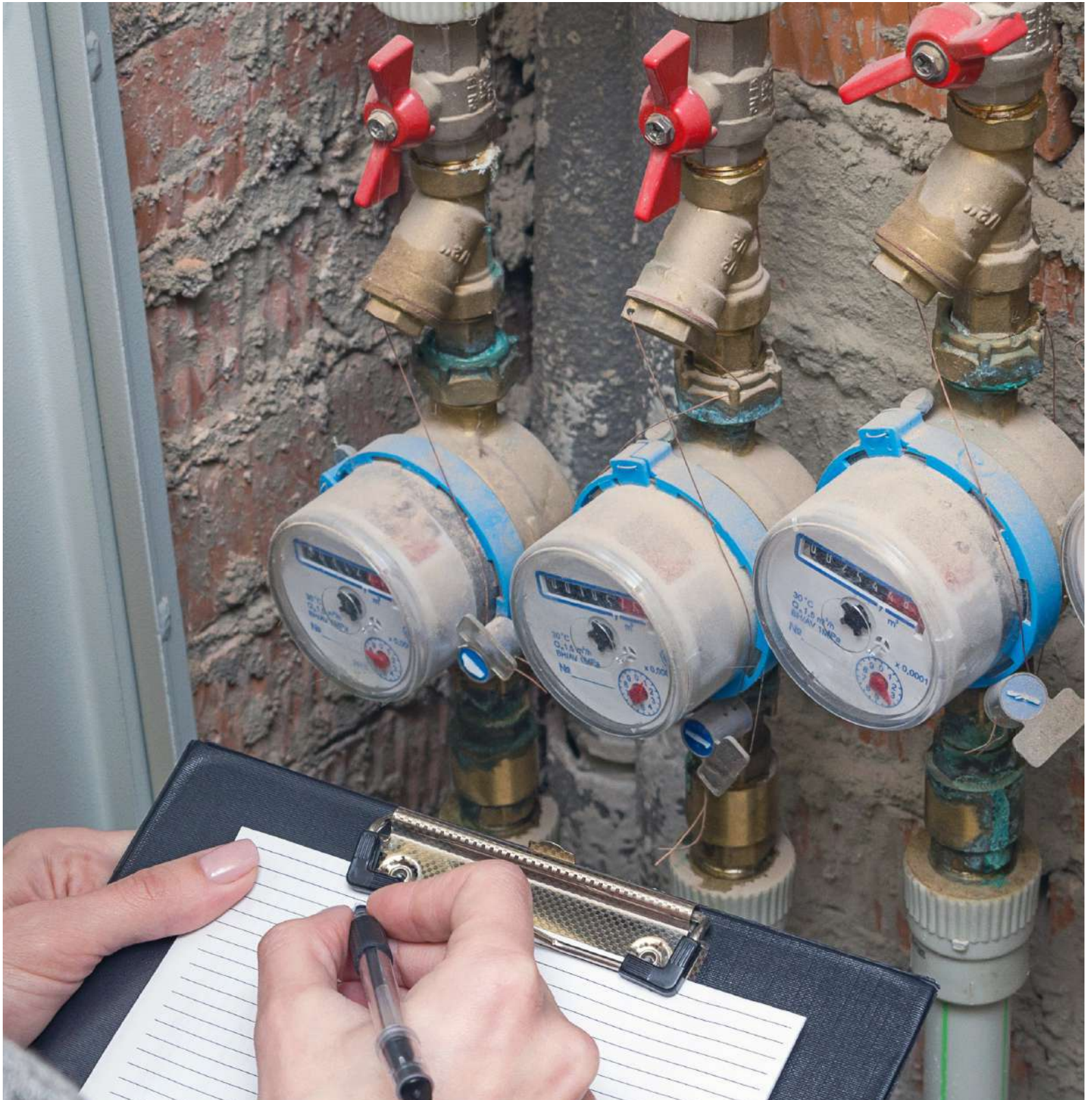
Based on a set of focus group discussions with the residents of Belén, three behaviourally informed interventions, or “nudges”, were carried out:

- Neighbourhood Comparison: Coloured stickers were pasted on the monthly water bill. Each sticker compared the household’s water use with the median water use of their neighbourhood. The sticker had a smiley or frowny face image to convey how the household fared in terms of water consumption, along with tips on how to save water given in Figure 1.
- City Comparison: In this nudge, stickers similar to those for “Neighbourhood Comparison” were sent out. Here, household water usage was compared with average city-wide use instead.
- Plan-Making Intervention: Postcards were sent to households in which they could record details related to their water use, including water consumption, goals for water use or a checklist of actions they could follow to reduce water use. The idea behind this nudge is to set goals and intentions regarding implementation and bring to prominence the idea of personal responsibility in saving water.

Residents of the town were divided into three groups that received the nudges and a control group that received no intervention.

Figure 1: Example of Different Nudge Techniques Used as Part of the Intervention





Impact

In general, the household groups that received the nudges were seen to conserve more water than those in the control group. However, some nudges proved to be more effective than others. The "Neighbourhood Comparison" group was observed to save more water than the "City Comparison" group. Together, the "Neighbourhood Comparison" and the "Planning Postcard" groups reduced water consumption significantly for about four months after the nudge. Overall, the three interventions together were able to achieve an average water reduction of 4.6%.

Key Takeaway

The interventions in Belén illustrate that behaviorally informed interventions can influence or change the decisions people make and the habits they practise. It also shows us that nudges can be a cost-effective and useful tool for influencing behaviours that can be easily adapted to other low-income countries.

Employing Feedback Mechanisms to Conserve Water

Region/Country: Switzerland

Year: 2012

About the Case Study/ Summary

In Switzerland, in 2012, water heating was the second largest residential energy end use (after space heating) and showering accounted for more than 80% of hot water demand. The Swiss Federal Office of Energy commissioned a field experiment to assess the impact of real-time feedback on hot water consumption on individual showers. Real-time information was provided to 697 households via a metre. Results showed that average water and energy consumption reduced by 23% with a marked decrease in shower duration by 20%.

Challenge

To promote showering behaviour that reduces energy and water use by providing engaging, non-judgmental feedback to the consumers.

Intervention

In 2012, ETH Zurich recruited 697 households from the utility company, ewz. A survey was first conducted to characterise the sample population. It included questions about environmental attitudes and habits. The first treatment group was provided real-time feedback about the water and energy consumption of their ongoing shower via an in-shower smart metre. The second treatment group had in-shower metres showing temperature, current water and energy consumption and relative consumption to the previous shower. The control group only had a metre showing shower temperature. The baseline information was based on the first ten showers, during which all users were exposed to the same information before being given varying information depending on their treatment groups.



Impact

The experiment resulted in statistically significant energy savings per shower. Analysis of the behavioural drivers of the reduction revealed that changes in behaviour were primarily driven by a change in the duration of the shower, and other margins of adjustment such as flow rate, water temperatures, or stops of water flow, failed to have a clear and important contribution to the observed outcome.

Key Takeaway

- The intervention seemed to be more effective among individuals with higher baseline consumptions but predisposed to goal-setting and monitoring.
- Environmental attitudes of participants were not shown to significantly affect the impact of the intervention.
- Consumers did not seem to react to the negative psychological pressure induced by new metres.
- Peer pressure was not an important driver of behavioural change.



Behavioural Interventions to Encourage Water Conservation

Region/Country: Spain

Year: 1997-1999

About the Case Study/ Summary

The San Antonio Water System (SAWS) - a water utility based in Texas, deployed intervention to encourage households to reduce water consumption and replace lawns with resource efficient plants that not only provide financial savings to households, but also reduce the risk of droughts. To this end, SAWS encouraged their "WaterSaver" landscaping that uses drought-resistant plant species and can survive with sparse irrigation.

Challenge

Encouraging households to reduce water consumption and replace lawns with water efficient plants that can provide savings for households as well as reduce the risk of drought.

Intervention

Letters incorporating social norm messaging, pro-social rewards and financial incentives were designed into four treatments and tested in a randomised controlled trial. These letters were sent to approximately 23,000 residential homes and included pro-social messaging on saving water along with reminders and information on existing rebates for partially replacing lawns with drought resistant plants.



Impact

Results of the experiment found that financial incentives increased uptake of 36% of drought resistant plants. Additionally, the social norm messaging reduced water consumption by 1.4%, but did not increase the adoption of drought resistant landscaping and plants.

Key Takeaway

- Different framing of information can induce large shifts in efficient technology adoption behaviour.
- Pro-social messaging and social norm messaging can positively impact behaviour, leading to environmentally conscious actions.



WaterSmart Home Water Reports

Region/Country: United States of America

Year: 2012 - 2013

About the Case Study/ Summary

An independent evaluation of the East Bay Municipal Utility District's (EBMUD) year-long pilot project (Pilot) of WaterSmart Software's Home Water Reports (HWRs) service was conducted by researchers David L. Mitchell and Thomas W. Chesnutt. The California Water Foundation, East Bay Municipal Utility District, M. Cubed, and A & N Technical Services supported this evaluation. HWRs provide households with periodic information on their current water use and compare it to their past use, the average use of similar households, and the use of the most efficient similar households – this study was primarily aimed at evaluating measurable reductions in household water use due to WaterSmart. Secondly the study investigated if it would increase rates of participation in other EBMUD conservation programs. Thirdly, would households using WaterSmart have an increased knowledge and awareness of water consumption and ways to use water more efficiently.

Challenge

To assess the efficacy of social-norm based intervention programme to increase awareness on the need of water conservation in households and intervention.

Intervention

The EBMUD Pilot was the first large-scale implementation of a social norm based efficiency program by a large urban water utility, providing HWRs to 10,000 homes and ran from June 2012 to June 2013. The pilot was comprised of two experiments:

Random Group Experiment: Consists of households representative of EBMUD's overall service area.

Castro Valley Group Experiment: A much more homogenous group of homes with characteristics thought to make them good candidates for HWRs.

The reason for two experiments was to see the effectiveness of HWRs on a targeted group (Castro Valley Group) as well as what the effectiveness of HWRs would be if it expanded into the entire EBMUD area (Random Group). In both experiments, households were selected to be in either a treatment group or a control group. Households in the treatment groups received HWRs while households in control groups did not.



Impact

Analysis found a mean reduction of residential water use by 4.6% and 6.6% for the Random Group and Castro Valley Group experiments respectively. Additionally, reports delivered by mail (paper) save 1% more water than households where electronic reports were delivered by email. Lastly, households in the treatment group were 52 to 80% more likely to score EBMUD as "Excellent" in terms of explaining household water use, showing ways to save money on water bills by conserving water, and giving useful tips and tools needed to use water efficiently.

Key Takeaway

- The experiments prove that HWR reports like WaterSmart effectively use social-norm based techniques to make consumers save water, reinforcing a hopeful future for similar feedback programmes.
- The study uncovered strong evidence of consumers feeling more educated and aware of their water needs and how to save water due to effective HWR



Social Media for Social Good: Raising Awareness of Jordan's Water Crisis

Region/Country: Jordan

Year: 2019- present

About the Case Study/ Summary

The USAID Water Management Initiative is supporting the Government of Jordan to address the country's water scarcity and conservation issue through a variety of projects. The Water Management Initiative and Miyahuna – a local water utility company, devised a summer water conservation campaign based on a social marketing model to increase knowledge of Creative design and social media campaign, the social media campaign was able to not only inform, but also encourage behaviour change in Jordanian residents to conserve water resources.

Challenge

To address Jordan's most pressing water challenges and avoid a looming crisis by developing critical capacity and improving sector performance through behaviour change.

Intervention

The campaign included three phases: Teaser phase, Reveal and Information phase and Call to Action phase.

- Teaser phase: Involved designing a creative angle which was required to both create awareness about water scarcity and was able to stand out amongst other advertisement campaigns in Amman. A simple and cryptic slogan without "drops" was posted on social media and on billboards across Amman. The cryptic slogan generated large amounts of interest as the public tried to decipher the messaging behind the boards. The slogan was broadcasted on local television channels and soon gained a large media following. More than 800 prominent companies based in Jordan also removed the Arabic diacritic marks ("drops") from their advertisements from their slogans and names in support of the campaign and water conservation.
- Reveal and Information phase: 3 days after the Teaser Phase, the Arabic diacritic marks ("drops") were added back onto the campaign's slogan, thereby, making it readable and giving information on who is behind the campaign. New animations of water droplets were posted online and individuals interacting with posts were redirected to a website where information on knowledge gaps and misperceptions regarding water scarcity in Jordan were addressed. They were earlier identified in a prior survey and tackled issues such as Jordan's dependence on rainfall and the rapidly depleting water reserves.
- Call for Action phase: This phase involved use of creatives for circulating information on actions individuals can take to conserve water. The creatives also included information on how the public can report water leakage and inspect their roof tank valves to ensure no water loss. It also included incentivizing Jordanian households to use retrofit water fixtures and roof tanks with water-saving devices.



Impact

After the campaign was completed, the USAID Water Management Initiative conducted a survey to determine the effectiveness of the campaign. Results showed that people's knowledge of Jordan's water crisis increased to 79 percent compared to 60 percent reported in the initial survey. Additionally, 24 percent of people checked their roof tank valves within 3 days of the campaign and calls received by Miyahuna's water company's customer service number increased by 70% as the number was advertised in the campaign.

Key Takeaway

- The use of cryptic messaging generated interest in the public, increasing participation and the outreach of the campaign.
- Sustained communication can help address the gaps effectively and timely
- Participation of other large brands ensure a wider spread of the campaign and message.

Effects of Real-Time Feedback on Hot Water Use

Region/Country: Netherlands

Year: 2015

About the Case Study/ Summary

A field study was conducted by a research team at the University of Bamberg, ETH Zurich and the University of Bonn in the Netherlands in order to investigate how real-time consumption feedback influences hot water use. Participants in 637 Dutch households were given a smart shower display which directly recorded information in the shower on the amount of water and energy used. With feedback information, on an average, participants saved 19%-21% of their energy consumption in the shower, with an absolute savings per shower amounting to 0.6 kWh.

Challenge

In the Netherlands, hot water consumption is the second largest in a household's energy budget. The challenge was to investigate how real-time consumption feedback, the provision of information directly in the shower on the amount of water and energy used, influences hot water use.

Intervention

Participants from 637 Dutch households were randomly assigned to a control and treatment group, which received group-specific devices. Participants were also asked to install a smartphone app that collected the shower data from the feedback devices and uploaded the data for analyses. The devices would turn on automatically as soon as water flowed and provided information on water and energy consumption. This design allowed the researchers to investigate changes in consumption once the intervention (feedback on consumption) becomes active by observing the difference between baseline and intervention phase. Shower data was collected over a period of three months.





Impact

- The results showed that real-time feedback on shower water-use led to large saving effects.
- The feedback intervention was compatible with the vast majority of showers.
- The study confirms the previous results of field trials conducted in Switzerland, with savings on an average of 22-24% and 100 EUR respectively.
- With the onset of the intervention phase, the treatment group participants immediately reduced their energy consumption.

Key Takeaway

The study confirmed that real-time feedback on a specific, energy-intensive behaviour can produce large saving effects.



“

Reduce, reuse and recycle, and circular economy have been part of the lifestyle of Indians for thousands of year. ”

Shri Narendra Modi
Prime Minister

4.2.

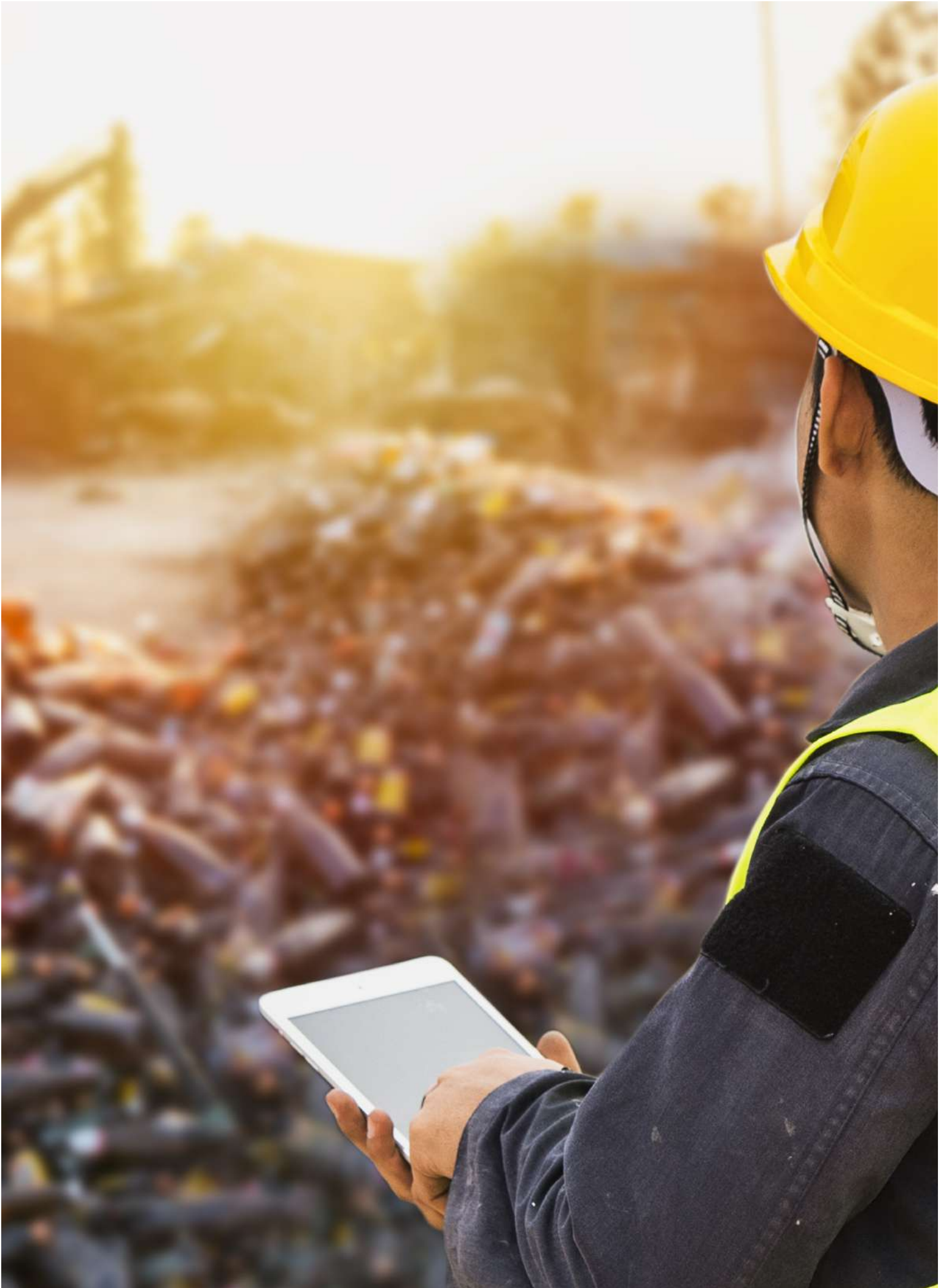
Waste Management

Global annual waste generation estimates are pegged at almost 2 billion tonnes, and are expected to grow to 3.4 billion tonnes, an increase of 70% by 2050. Countries like India that fall in the world's fastest growing regions of South-Asia and Sub-Saharan Africa, are projected to witness a much higher, three-fold rise in waste generation by 2050. The indiscriminate dumping of solid waste in landfills has dire consequences not only for residential dwellings but also for the civilisation as a whole because of its contribution to global warming. Biodegradable waste in landfills releases methane, which has a 34 times higher global warming potential over 100 years as compared to carbon dioxide.

The demand for materials is increasing, along with the environmental damage associated with raw material, processing transport and waste management. According to the "waste hierarchy" (reduce, reuse, recycle), which is the product life cycle approach on waste, the most effective means of reducing waste is to prevent waste in the first place (e.g., avoiding products with excessive packaging; consuming fewer products), followed by reusing or finding new uses for items, while recycling is the least effective strategy for reducing waste with a view towards adopting more circularity of products in economy rather than the linear principle of use and throw. While public awareness of waste-related problems (e.g., plastic pollution) is growing and recycling rates are increasing in many countries, there has been relatively less progress in reduce and reuse behaviours.

While businesses and governments need to play a part in reusing and reducing waste, a significant role can also be played by individuals across the various contexts in which they consume and use materials. In this backdrop, a pivotal shift in approach is needed to promote reduce and reuse as a part of behavioural change thus, promoting segregation and waste management at source.





Love Food Hate Waste Campaign

Region/Country: United Kingdom (England, Scotland, Wales, and Northern Ireland)

Year: 2007

About the Case Study/ Summary

In response to study conducted by Waste & Resources Action Programme (WRAP) on the quantity and types of food wasted in UK homes, WRAP launched the Love Food, Hate Waste (LFHW) campaign in 2007 to assist UK households in reducing food waste. As part of targeted campaigns, LFHW collaborates with retailers and brand owners, local government agencies, corporations, and community and campaign organisations to provide advice, recipes, messages, graphics and customer insights. The initiative aimed to lessen the yearly production of 7 million metric tonnes of food waste, 60% of which could have been consumed.

Challenge

To address food waste in households through marketing and communication strategies bringing heterogenous stakeholders together.

Intervention

The program's partners (retailers, brand owners, local governments, corporations, nonprofit organisations, and campaign groups) developed marketing strategies and tools to influence the behaviour of particular target populations and decrease food waste. The main emphasis of these initiatives was to reduce household food waste. Phase-wise strategies were examined to promote behavioural change which revolved around planning, purchasing, storing and preparing. Various modes of communication channels (through partners or direct usage) were also put to use. Working with retail and manufacturing partners resulted in changes to labelling and packaging that assisted households in fully using the food they bought. Buying more than is needed, lack of clarity around storage and labelling and over-estimating portions were identified as few reasons for the waste.





Impact

Overall, since 2007, there has been a 1.1 million metric tonne reduction in domestic food waste (2.3 million metric tonnes of total waste prevented). Participants in targeted trials of the community involvement strategies were able to cut their food waste by 50%. 2.3 million metric tonnes of total garbage weren't disposed of between 2007 and 2013, saving landfill space and additionally conserving 1 billion tonnes of water and 4.4 million tonnes of greenhouse gases.

Key Takeaway

The programme has illustrated a crucial path for advancing the notion of reducing food waste through behavioural change, public awareness, and stakeholder partnerships (working from the inside, creating better campaigns through understanding partners' perspectives, reaching different and more numerous audiences, and sharing resources). In order to reach new households, expansion (which can be difficult in hard economic times), integration with alterations in the retail environment to support initiatives and behaviour change, and adjustment of the programme in light of new data, would lead to building of the programme upon its current framework.

Communities with Similar Programs

- Food – Too Good to Waste in King County, Washington
- Program planned for York Region, Ontario

Repair Café

Region/Country: Netherlands

Year: 2009

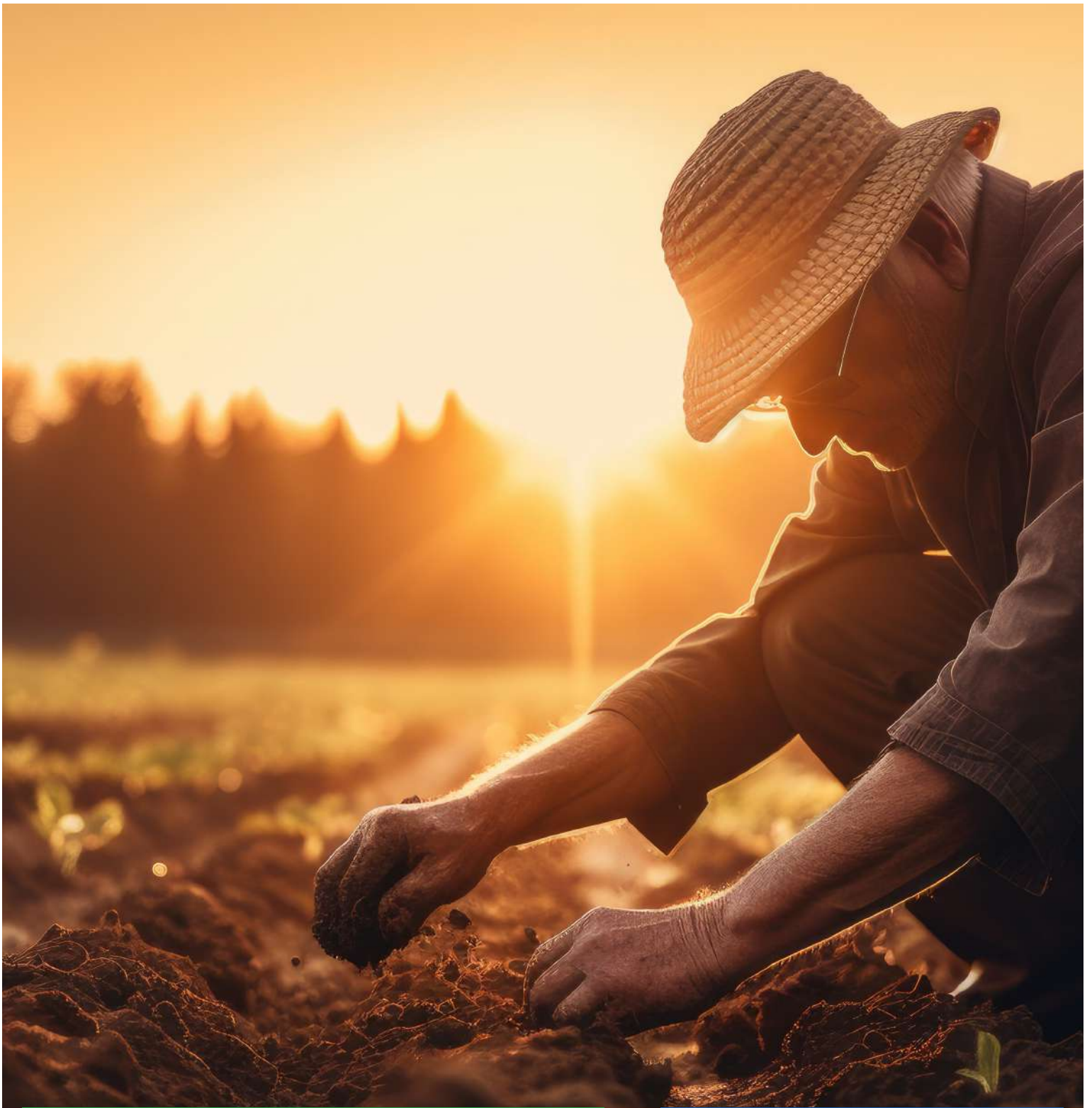
About the Case Study/ Summary

To address the growing challenge of waste through unsustainable consumer habits, in turn leading to overflowing of landfills, contamination of water sources, deterioration of soil quality and increase in GHG emissions, Repair café came out with a unique idea. The idea rested on encouraging people to repair and repurpose old items and possessions over a cup of coffee or tea. Through the initiative, people learnt the skills of repairing, reusing and repurposing products, leading to lesser waste and promoting conservation.

Intervention

People come together to communal venues with their broken possessions. With the support of volunteer technicians available there, they fix them. The venue and tools and materials are provided by Repair Café to repair a variety of products such as clothes, furniture, electrical appliances, bicycles, crockery, appliances, toys, etc. This initiative has succeeded in encouraging people to choose sustainability over convenience of single use of products. Currently, there are more than 2,500 Repair Cafés worldwide today and in 2010, the Café International Foundation expanded the principles promoted by Repair Café.





Impact

This community-driven initiative promotes sustainability which leads to several social and environmental impacts. It also promotes sustainability by creating collective awareness among people to transition away from unsustainable consumption habits. The repairing skills learnt through the interactions in the café build capacities of common people that help them undertake minor repair work and thus shift away from the culture of single use of products. Finally, reusing and repurposing products help increase the life of resources and promote conservation which lead to several environmental and climate benefits such as reduced GHG emissions and pollution levels.

Key Takeaway

The importance of bringing the community together to a common platform to bring about behavioural change has been showcased through the concept of Repair Café. It not only has been widely accepted by people across the Netherlands, but it has resulted in a massive decrease in the waste disposal rates. Repair Cafés end up making people realise that things are to be used for a longer period and don't have to be thrown away.

Improving Food Waste Recycling

Region/Country: United Kingdom

Year: 2019

About the Case Study/ Summary

In a bid to reduce the residual waste sent to landfills, the Wokingham Borough launched a campaign in 2019 targeted at its residents. The aim behind this campaign was to reduce the residual waste sent to landfills and help reach a recycling rate of 50% by the year 2020. It also aimed to collect 5000 tonnes of waste per year which would roughly be 1.46 kilograms of waste per household per week. The Wokingham Borough Council, through its communication and awareness strategy, was able to achieve the goals stated above.

Challenge

The Wokingham Borough sought to reduce the overload of general waste when limited disposal was available. It also wanted to address the limited awareness among its residents about environmental issues.

Intervention

The intervention consisted of sending weekly emails to residents and targeting monthly campaigns that overlapped with the local council's initiatives. It aimed at increasing local participation in recycling.

This campaign was executed through periodic emails, prompts and reminders, tips and FAQs, fun and interactive activities, videos, blogs, and quizzes. It included the following components:

- Messaging and activities that targeted residents to waste less food.
- Monthly themes to continue the conversation and ensure that people were still interested and following the topic
- Regionally specific messaging, ongoing campaign monitoring, and measurement.
- Region specific messaging, along with ongoing campaign monitoring and measuring





Impact

The campaign's initiative to distribute frequent and personalised content motivated the residents to alter their behaviour. Recycling grew by 9.8%, which increased the Borough's residual waste recycling by 50.3%. It was the second highest in the UK as a result.

Key Takeaway

- Personalised and periodic messaging can motivate residents to change behaviour
- The resident's carbon footprint is affected through environmental and behavioural change

Kamikatsu Zero Waste Campaign

Region/Country: Japan

Year: November 2003

About the Case Study/ Summary

During Japan's postwar economic boom, factories and construction sites started producing large volumes of waste. In a span of just 20 years, the country has witnessed extreme growth in its waste volume from 8.9 million tons in 1960 to 43.9 million tons in 1980. To address this problem of growing waste, the Japanese government invested heavily in the construction of incinerators for waste disposal. However, this strategy was discontinued as a result of health concerns about the dioxins it produced. In this backdrop, this case study showcases the waste management efforts of Kamikatsu municipality and its residents that were geared towards reducing waste, avoiding incineration and increasing recycling rate.

Challenge

To improve community awareness and incentives of citizens to make them active participants in waste management.

Intervention

Kamikatsu adopted a comprehensive Recycling Town Project plan in 1994 that focused on reducing waste. The approach to waste management in this town consisted of structured governance support and collective action taken by the residents. Some of the key initiatives undertaken by the local government are:

- **Composting at household level:** The local government encouraged composting raw garbage (accounting almost 30% of the total waste) instead of incinerating it because of the high moisture content, which would have required additional fuel (mostly in the form of fossil fuel) to burn. Residents were given government financial support to purchase household raw garbage processors which boosted the adoption rate to 97%. This strategy was able to dispose of raw garbage at household level, thus drastically reducing the volume of garbage received by the state.
- **Push towards recycling:** Kamikatsu municipality started waste stations for sorted waste deposited by residents for a price. If the sorted waste is in good condition, then the resident who brought it receives a higher price. These centres have expanded from 34 types of sorted waste in 2002 to 45 types in 13 categories in 2015. And in 2016, the town was able to recycle 81% of all their refuse.
- **Legislation to prohibit toxic chemicals:** Kamikatsu has imposed a legislation that prohibits toxic chemicals that are used in the incineration process.

Support received from the local government in the form of infrastructure, and financial incentives and aid and legislations were positive reinforcements that changed residents' outlook towards waste to 'something of value.' This in turn was helpful in bringing out positive shifts in the people's habits evident in the high recycling rate and uptake of composting.



Impact

Due to Kamikatsu's people centric waste management strategy, residents now associate value to waste. As a result, recycling has increased, recorded to be 81% of all total refuse in 2016. The waste stations have expanded from 34 types of sorted waste in 2002 to 45 types in 13 categories in 2015. The town has seen an overall decline in the volume of waste generated which have larger environmental benefits.

Key Takeaway

Contextual understanding of the challenge is important to introduce solutions that are relevant. For instance, in this case, raw garbage was a considerable part of total waste. Introducing household level composting contextualised the problem.



Sakiori (Rag Weaving) Practice

Region/Country: Japan

Year: approx. between 1603 and 1867- present

About the Case Study/ Summary

Sakiori is a traditional Japanese practice of repurposing old fabrics into strips or yarns that are woven to create new textiles. With the rise of mass-produced textiles and clothing, there was a decline in this practice. However, as a form of sustainable and eco-conscious method of textile production that minimises waste, the practice of Sakiori weaving has gained popularity. The weaving practice has become increasingly relevant as the global textile industry industrialised with a corresponding increase in waste and pollution associated with it.

Challenge

Promote sustainable and eco-conscious methods of textile production that minimises waste and revive local traditions and economy.

Intervention

The practice of sakiori was initially used by Japanese peasants to resolve the scarcity of new cloth to wear and for household purposes. The word sakiori comes from two words: "saki," which means to tear or rip up, and "ori," which means weave. The former indicates the preparation of the fabric by stripping it into pieces, and the latter refers to the process of weaving it together. This process of recycling and reusing old fabric into sakiori weaving aligns with the Japanese principle of "mottanai", which imbues a sense of regret for production of waste.



Impact

Modern society produces and discards an excessive amount of cloth. It is estimated that 92 million tonnes of textile waste are generated globally. The existing production model has significant negative effects on the environment and requires a high volume of resources such as water and petroleum.

Key Takeaway

The practice of Sakiori illustrates how to make the most of resources and upcycle them for reuse. It is also a behavioural practice that can offer a sense of satisfaction for those who engage in it as it allows them to creatively produce something from what otherwise might have been disposed of as waste.



Green Table Education and Certification Program

Region/Country: Australia

Year: 2008

About the Case Study/ Summary

The Restaurant and Catering Australia's (R&CA) Green Table Australia Education and Certification Program is a food sustainability initiative designed to educate and certify food services. The program focuses on promoting sustainable food practices in the food service industry.

Challenge

Educating and incentivizing the food service industry on the linkages between sustainable diets and environment conservation and steps that the industry could adopt in this direction.

Intervention

A certification procedure is used to grant Green Table Australia certifications. Accredited companies must affirm on a self-assessment form that they actively lessen their environmental effect and plan to do so going forward in the following ways:

- Recycling all paper, glass and metal
- Composting food waste or sending it to green waste
- Appropriate use of stock management techniques to reduce overall waste
- Using natural gas to run stoves and ovens (where gas is used); or using a minimum of 20% green electricity or offsetting a minimum of 20% green electricity
- Using energy efficient globes in all light fittings
- Installing water-efficient/low-flow taps on all faucets
- Installing dual flushing toilets or dual flushing cistern valves in toilets
- Undertaking actions to reduce water use
- Undertaking actions to reduce energy consumption
- Use biodegradable and non-toxic cleaning products
- Use products that are recycled, that can be recycled and that are biodegradable wherever possible.





Impact

The program had several positive impacts on the food service industry, the environment and local communities. These are summarised below:

- Increased awareness and understanding of sustainable and responsible sourcing among hospitality professionals, which helps to reduce the industry's negative impact on the environment.
- Promoting the use of locally sourced, seasonal and sustainable ingredients, leading to a reduction in food waste and a more eco-friendly food supply chain.
- Encouraging the development of environmentally responsible practices and policies in the hospitality industry, including reducing energy and water usage and minimising the use of single-use plastics.
- Providing a benchmark for sustainability and responsible sourcing for hospitality businesses, helping them to improve their reputation and attract customers who are conscious about sustainability.
- Creating job opportunities for individuals with sustainable and responsible sourcing knowledge, helping to further advance the industry's sustainability efforts.

Overall, the Green Table education and certification program plays a crucial role in promoting sustainability and responsible sourcing within the hospitality industry in Australia, benefiting both the environment and the industry itself.

Key Takeaway

- Techniques for reducing food waste, such as menu planning and inventory management.
- Strategies for reducing energy and water usage, and minimising the use of single-use plastics in the hospitality industry.
- Awareness of certifications and labels that indicate sustainable and responsible sourcing practices, such as Fair Trade, Organic, and Marine Stewardship Council (MSC) certified seafood.
- Skills for communicating the benefits of sustainable and responsible sourcing to customers, suppliers, and employees.

Composting to Boost Waste Diversion

Region/Country: United States of America

Year: 2008

About the Case Study/ Summary

The U.S. Navy's Naval Station Great Lakes increased its recycled material by 114 percent through composting, reusing construction and demolition debris and increasing the number of collection bins. The biggest challenge faced by the NSGL was financing the composting program, given that the market for composted materials is inconsistent.

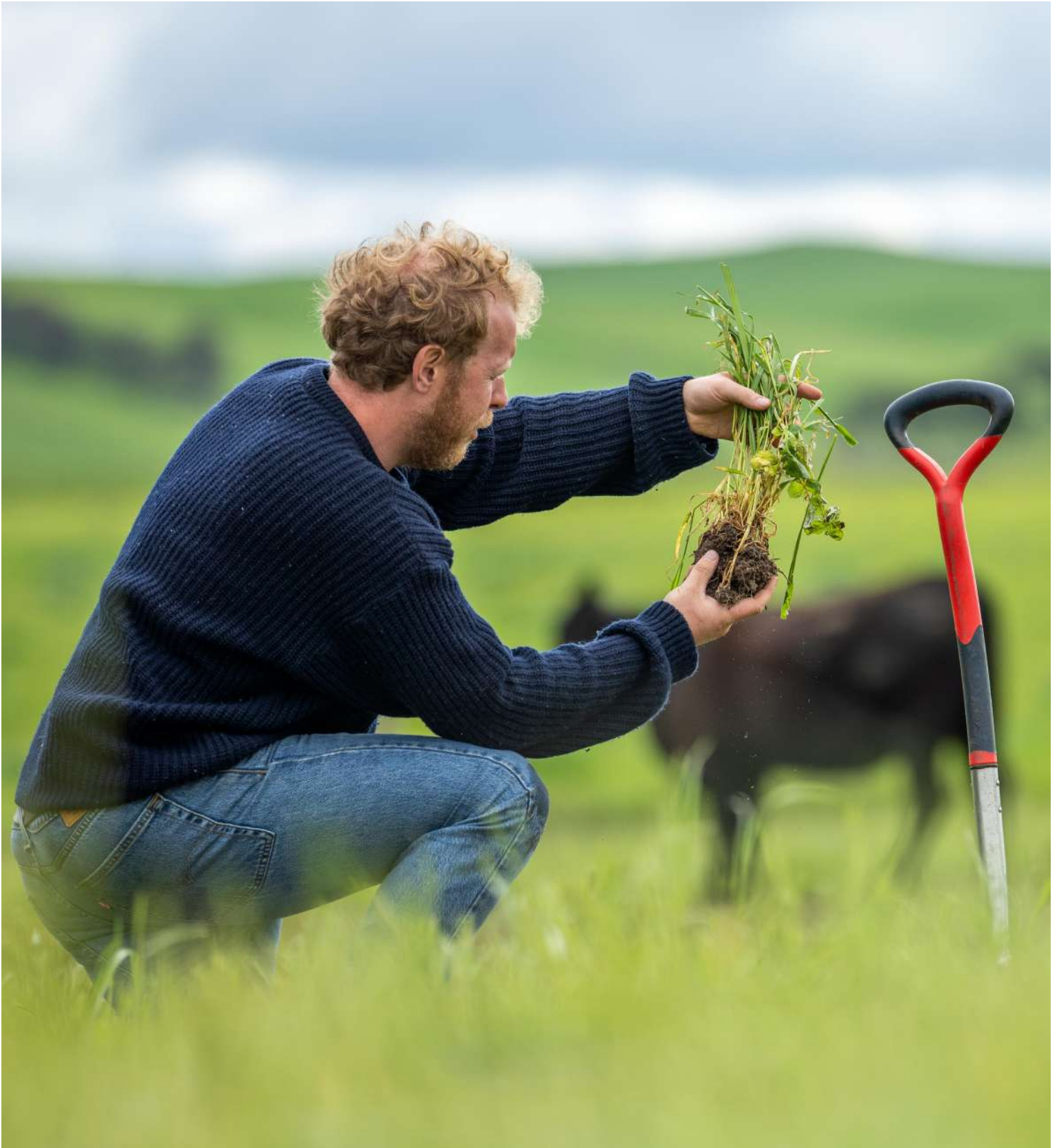
Challenge

To manage waste, and divert it from entering landfills through composting methods.

Intervention

The NSGL increased their diversion rate through several methods. The most important of these was the active participation of employees and trainees to increase collection and minimise contamination of recyclable material. The NSGL also asked their recycling and composting vendors to track and report on the amount of material produced at each collection point, and switched to using biodegradable cutlery, plates and napkins.





Impact

The composting project resulted in more than 300 tons of food waste and landscape waste being diverted from area landfills. Composting is important as it helps to regenerate poor soils, suppresses plant diseases and pests, and boosts yields of agricultural crops.

Key Takeaway

- Achieving active participation of the employees and trainees in recycling efforts was important to their success, which was done by educating them on the importance of recycling within domestic and foreign policy.
- Attaining support of senior officers and managers proved to be key to the success of the recycling and composting programs as changes could be integrated easily through the chain of command.

Composting to Reduce Food Waste

Region/Country: South Korea

Year: 2005-2013

About the Case Study/ Summary

As is the case with many countries, in South Korea, the rapid acceleration in urbanisation in the last few decades brought with it industrialised food systems and new waste scales. Since the 1990s, the country has focused on taking initiatives that put the onus of food waste on their producers. In 2005, the government prohibited burying organic waste in landfills, and in 2013, it prohibited dumping leachate - the putrid liquid squeezed from solid food waste - into the ocean. That same year, universal curbside composting was mandated, requiring everyone to separate their food from general waste. As part of the country's mandatory composting scheme, residents in South Korea have been required to use bags to dispose of uneaten food since 2013. These yellow bags are transported to a processing facility where the plastic is removed and the contents are converted into biogas, animal feed or fertiliser. Apartment complexes in certain localities now feature automated food waste collectors that let residents pay the weight-based cost at the machine without using bags or cash.

Challenge

To deal with food waste and improve soil health through mandatory composting in households.

Intervention

Mandatory composting of food waste in South Korea was a government-led initiative aimed at addressing the environmental and economic challenges associated with food waste disposal. The intervention, aimed at growing food waste in the country, was launched in 2005 and it required all households in South Korea to separate their food waste from other types of garbage and dispose of it in designated food waste bins.

The government introduced financial incentives to households that separated their food waste and penalties were imposed on those who did not in order to ensure successful implementation of the programme. These incentives also included subsidies for composting equipment and discounts on waste disposal fees for compliant households. The penalties ranged from fines to public shaming for households caught violating the regulations.

The government also made large investments in infrastructure development specifically for food waste recycling. The government built composting facilities across the country to process the collected food waste. The compost produced from food waste is used as fertiliser in agriculture and landscaping.





Impact

The intervention has had a significant impact on South Korea's waste management system. According to government statistics, food waste has decreased by over 30% since the intervention was launched, and over 95% of households comply with the regulations.

Additionally, mandatory composting has created economic opportunities for businesses involved in the food waste recycling industry. The compost produced from food waste can be used as fertiliser, which is a key component always in demand in South Korea's agricultural sector. This has created a new market for compost producers and has helped to support the growth of the agriculture sector. In 1996, South Korea recycled just 2.6% of its food waste. Today, South Korea recycles close to 100% annually.

Key Takeaway

Implementing mandatory food composting through behavioural change is a crucial component of its success. By changing people's behaviours and attitudes towards food waste, they become more aware of the environmental impacts of their actions and more motivated to reduce waste. Waste management at household also leads to a greater understanding of the value of composting and its role in promoting soil health.

Leveraging Social Norms, Salience and Commitment Devices to Decrease Littering

Region/Country: Netherlands

Year: 2010

About the Case Study/ Summary

In 2010, 8 municipalities in the Netherlands participated in a project aimed at reducing littering in the surroundings of waste containers. Six behavioural interventions were tested through the field experiments with 3 interventions showing a statistically significant effect. The 'descriptive social norm' intervention reduced littering from 50% to 30%. 'Mechanism based on monitoring and penalties' intervention reduced littering from 51% to 29% and 'commitment devices' intervention reduced littering from 45% to 28%.

Challenge

To reduce waste and litter by carefully designed mechanisms involving behavioural interventions.

Intervention

The experiment tested six behavioural interventions with a before/after design, i.e., in each treatment group, waste containers and their surroundings were monitored for two weeks (baseline), followed by two weeks of treatment. The six behavioural interventions were self-correction through self-reflection (placing a mirror next to a waste container), injunctive social norms (placing a picture of a littering individual next to waste containers and a request to behave properly), descriptive social norm (placing a sign next to the waste containers stating that most individuals do not litter around containers), monitoring and penalties (placing a warning that littering may result in a fine), commitment and consistency (prompting individuals to maintain cleanliness and suggesting hints to honour the commitment) and setting the right norm (by emptying containers frequently).



Impact

Three of the six interventions had statistically significant effects. The descriptive social norm intervention led to a reduction in littering frequency from 50% to 30%. The monitoring and penalties-based mechanism resulted in a reduction from 51% to 29%. The intervention highlighting commitment devices led to a reduction from 45% to 29%. No significant effect was found for the remaining interventions.

Key Takeaway

- Individuals are more likely to be conscious of their actions when being compared to their peer group and communities.
- Individuals that are aware of being monitored are more likely to display better behaviour.
- Monetary incentives such as penalties and fines may have a higher impact on individual behaviour.



Green Defaults to Save Resources

Region/Country: United States of America

Year: 2016

About the Case Study/ Summary

The experiment implemented 'proof of concept' projects where behavioural insights could be done using minimal resources with large impacts. One such project focused on reducing printing paper at a Federal Government agency, resulting in the users being prompted to print on double sided paper as a default. This setting led to an increased likelihood of double-sided paper as the default setting on a print job. This result prompted the agency to extend the green default to all its printers.

Challenge

To reduce the use of printing paper in institutions through behavioural nudges aimed at employees.

Intervention

The intervention was a between-groups field experiment in which the treatment was randomised at the level of printers within the agency, therefore, different groups of users were exposed to the treatment based on their reliance on using different printers.

The treatment involved changing the default printing option by introducing a cost in terms of additional time associated with single-sided documents. Upon initiating a single-sided print job, employees were subjected to a dialog box on their screen prompting them to change their default setting to double-sided but allowing them to continue with the single-printing if preferred.





Impact

Individuals that were exposed to the dialog box prompt to switch to double-sided printing were found to be more likely to print double-sided. The prompt increased the likelihood of double-sided printing on a given job by 5.8%. Based on this result, the federal agency has changed the default of all of its printers to double-sided.

Key Takeaway

- The field experiment gives an example of how public institutions can green themselves by leveraging behavioural insights.
- It also shows the power of green defaults which build upon consumer inertia to promote sustainable consumption choices.

Green Footprints Intervention

Region/Country: United Kingdom

Year: 2014

About the Case Study/ Summary

In the UK, it was found that local authorities and other land managers spend large amounts of resources to clear up litter / trash. To prevent litter from being dropped in the first place became the top concern. Between August to November 2014, Keep Britain Tidy - along with local council, implemented the Green Footprints intervention. This intervention nudged people towards responsible disposal of litter/trash by increasing the salience of bins / garbage bins in prominent high footfall public area. The intervention helped reduced litter between 16 - 40%.

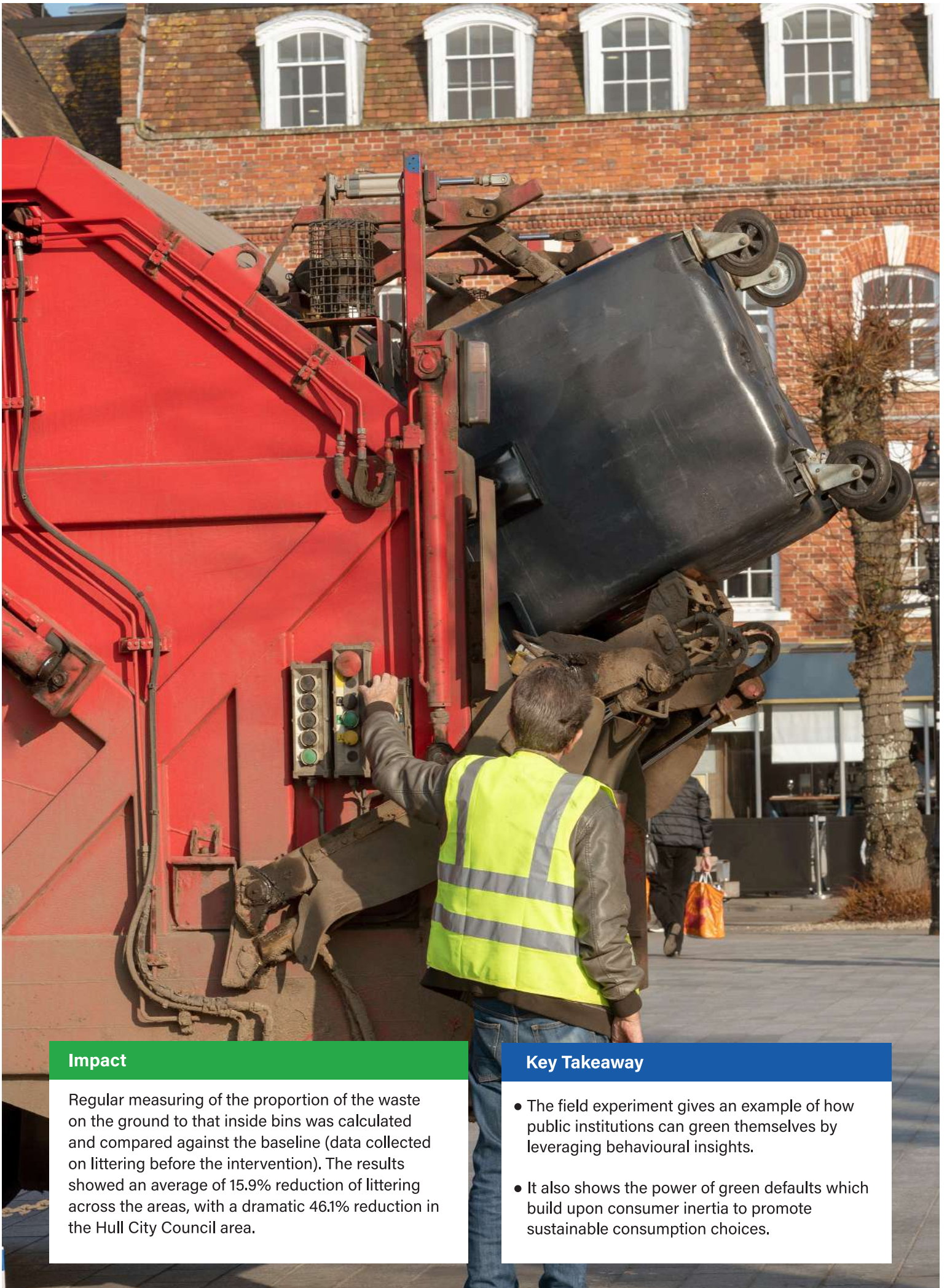
Challenge

To prevent littering and nudge people towards responsible disposal of litter and trash.

Intervention

The Green Footprints intervention uses self-adhesive footprints which are bright green, non-slip vinyl and are placed on the ground in a 'walking design' to highlight and direct location users towards the nearest bin. The theory behind these footprints is to increase the salience and prominence of bins / garbage bins for pedestrians. A minimum of three pairs of footprints were added in conjunction with a partner bin / garbage bin to a total of 150 over high footfall parks and streets in the 4 areas. Baseline monitoring of the proportion of waste / litter on the ground to the waste found inside the bins was recorded to ensure accuracy of the experiment.





Impact

Regular measuring of the proportion of the waste on the ground to that inside bins was calculated and compared against the baseline (data collected on littering before the intervention). The results showed an average of 15.9% reduction of littering across the areas, with a dramatic 46.1% reduction in the Hull City Council area.

Key Takeaway

- The field experiment gives an example of how public institutions can green themselves by leveraging behavioural insights.
- It also shows the power of green defaults which build upon consumer inertia to promote sustainable consumption choices.

Behavioural Insights for Household Waste Segregation

Region/Country: Bhutan

Year: 2021

About the Case Study/ Summary

The Bhutan's National Environmental Commission Secretariat (NECS), the Gross National Happiness Commission (GNHC), Thimphu Thromde and local waste management funded by the United Nations Development Programme (UNDP) implemented an experiment with an aim to improve the choice environment of waste segregation, i.e. reducing the uncertainty around segregating, as well as make it easier for households to segregate. Results show that an improvement of 6 - 10 % increase in waste segregation was observed and also led to informed policy action in Bhutan's Waste Management Flagship Program.

Challenge

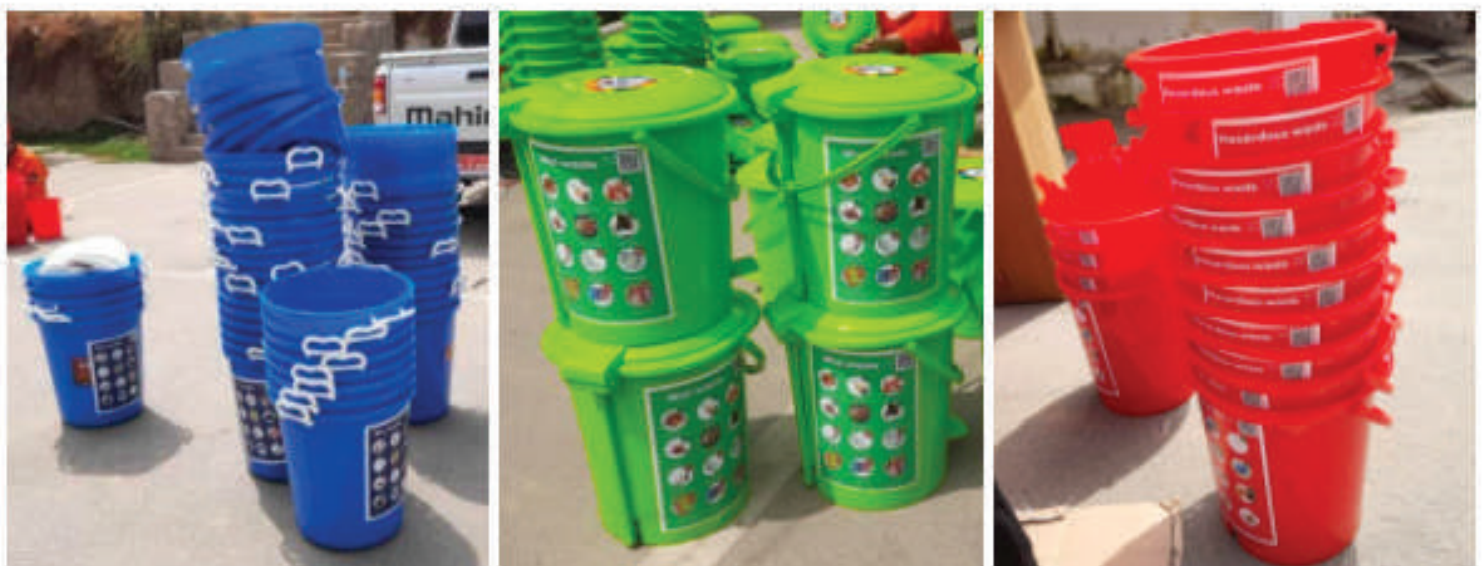
To manage waste, encourage better segregation of waste at household level, through reducing the uncertainty around segregating, as well as make it easier.

Intervention

A field experiment involving 600 households was conducted in two thromde (second level administrative division) in Thimphu where volunteers would collect, weigh and check the quality of the bags. Households were randomised into three conditions -

- 200 households received bins with stickers on what waste goes in which bin, making it easier for them to segregate.
- 200 households received bins with stickers as well as feedback messages to make it clear where households were making segregation errors so they could correct their behaviour.
- 200 households received nothing, as they were the control group.

The quality and weight of segregated waste was analysed and compared at the end of the field experiment.



Blue, green and red household bins with information stickers



Impact

Results found that compared to the control group, the group of households which received only bins with stickers and information regarding segregation the quality of their dry waste segregation by between 6.3 and 8.4%. Whereas the group which received bins with stickers and feedback, increased the quality of their dry waste segregation by between 7.2 and 10.7%. Variance in increase of quality of segregation was due to the error thresholds used in the weighing of garbage.

Key Takeaway

- The results of this experiment are helping to inform the next phase of Bhutan's Waste Management Flagship Program.
- Emphasises that a combination of two nudges: labelling and feedback, leads to the most effective results.

Increasing Compliance with Reporting Obligations

Region/Country: Australia

Year: 2015

About the Case Study/ Summary

Entities having a licence to import equipment containing ozone-depleting substances and synthetic greenhouse gases are required to submit quarterly import reports to the Department of Environment, under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989. The legislation was enacted to ensure that Australia meets its obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer and the UNFCCC. The Department of the Environment carried out a study in order to increase the reporting compliance of licensed entities by integrating behavioural insights into reminder notification processes. This led to an increase in 26% in-time compliance reporting.

Challenge

To strengthen compliance of licenced entities dealing with ozone-depleting substances and synthetic greenhouse gases, as per the rules.

Intervention

667 entities with a licence to import equipment containing ozone-depleting substances and synthetic greenhouse gases were included in a field experiment designed as a randomised controlled trial. The entities were randomly assigned to one out of 5 groups, where 1 was a control group and 4 were treatment groups. A “poor compliance” variable was made using data collected during the three reporting periods before the start of the trial, which ensured that all entities in the group had similar levels of experience with the reporting process. The control group was given a standard email reminder notification, while the treatment groups were given email with redesigns such as 1) simple text and photo banners, 2) a Government crest and a new hyperlink, 3) a combination of option (2) paired with an early reminder, 4) a combination of option (2) with an early and last-minute reminder.





Impact

The study measured the percentage change in compliance to the control group. The results indicated that entities having a poor compliance record were around 50% less likely to report on time than other entities. The most effective intervention was email redesign 2, with both an early and a last-minute reminder, which resulted in a 26 percent increase in in-time reporting.

Key Takeaway

- An increase of 26% in compliance means that there are 180 fewer non-compliant entities to follow up in each quarter.
- If half of these entities report after receiving a late reminder email and the other half receives a phone call from the Department, the Department could save telecommunications costs as well.

Framing Product Lifespan Information

Region/Country: Europe

Year: 2016

About the Case Study/ Summary

Designing longer-living products or modular products can decrease waste. Lifespan labelling is a method through which consumers can be informed of the expected lifespan of a product, thereby possibly reaching a more resource efficient choice. The European Economic and Social Committee commissioned a study in order to assess the extent to which consumers' product choices were affected by lifespan labelling.

Challenge

Framing product lifespan information to foster purchase of long-living products in order to curb waste.

Intervention

The experiment tested four different visual displays of lifespan labels for 9 categories of products, including suitcases, printers, trousers, sport shoes, coffee makers, washing machines, vacuum cleaners and smartphones. These were tested in 4 different geographical regions under different product price scenarios. The participants could select products from a simulated online retail platform.



Impact

The study showed that despite different displays, all lifespan labels led consumers to purchase products with a longer lifespan. On average, sales of long-living products increased by 13.8% relative to shorter-living ones in the same class. Moreover, lifespan labels were shown to steer purchasing decisions towards longer-living products regardless of their price. However, it appeared that these labels had a more important impact on purchases of more expensive products compared to low-end ones.

Key Takeaway

- The study shows that consumers would prefer to buy items that have a longer lifespan regardless of price or display.
- The study also supports the intuitive conclusion that consumers who invest in an expensive durable good may want to make sure that it has a long lifetime.



Don't Mess With Texas Campaign

Region/Country: United States of America

Year: 1985 - Present

About the Case Study/ Summary

To tackle the growing issue of littering in Texas, the Texas Department of Transportation (TxDOT) gave birth to the Don't Mess With Texas - an advertising campaign aimed at helping reduce litter in Texas. Often celebrated as one of the most successful anti-littering campaigns, the Don't Mess With Texas campaign has led to significant decrease of littering in the state.

Challenge

Addressing the issue of litter through advertising campaigns involving TV ads, messages on billboards, customer outreach, media to create awareness among people about harmful environmental impacts of waste and promote their active participation in reducing litter.

Intervention

The campaign focused on bringing eminent personalities comprising movie actors, sportspersons, influencers etc to create awareness on the anti-litter campaign through TV ads, iconic messaging, products, billboards and performances. As an example, the first TV ad featured blues guitarist Stevie Ray Vaughan during the Cotton Bowl.





Impact

The Litter Attitudes and Behaviours Study along with the Visible Litter Study have been conducted by the Texas Department of Transportation for more than 20 years. The latest Visible Litter Study (2019) show that when Tire Debris is excluded, Visible Litter decreased by 28% compared to the study done in 2013, and the latest Litter Attitudes and Behaviours Study (2020) showed that 98% of Texans support the campaign and 71% believe the program has had a “very positive” impact on reducing litter—a significant increase over 2017 (by 60%).

Key Takeaway

- Displayed the effect of effective and long term advertisement campaigns on behaviour change.
- The use of iconic personalities and relatable celebrities has enabled regular Texans to identify and internalise the objectives of the campaign.
- Consistent monitoring of attitudes regarding the campaign and surveys of littering have been essential in the campaign's success.

Keep Indianapolis Beautiful

Region/Country: United States of America

Year: November 2021

About the Case Study/ Summary

Intervention was designed to communicate with the residents to take part in the reducing litter by taking small steps including to encourage residents to take part in the city's heavy item pick up programme. Under this programme, citizens were motivated to coordinate with agencies for pick up of their heavy trash items on specific dates.

Challenge

To address rising waste and litter ending up in waterways, impacting not only the city but neighbouring states, rivers and even oceans, through communication strategy motivating citizens to help in heavy trash disposal.

Intervention

A randomised control trial was designed where residents would receive behaviourally informed mailers and a magnet about the programme. The mailer seen in the figure below, leverages deadlines among other behavioural insights to encourage proper waste disposal.



Impact

Data from the first collection after the intervention was introduced found that households who received the mailer were 55.1% more likely to properly set out their bulk and heavy items than the households that did not receive the mailer.

Key Takeaway

Using clear messaging and deadline based mailers allowed residents to easily keep track of which days the heavy item pick up programme was scheduled in their area.



Reducing Food Waste in the Cafeterias

Region/Country: United Arab Emirates

Year: 2022-2023

About the Case Study/ Summary

Food waste is a significant problem in the UAE: the annual cost of food waste has been estimated at \$3.5 billion, with around 38% of the food prepared daily in the UAE wasted. Under UAE's National Food Loss and Waste initiative a multi-component behavioural intervention trial to reduce food waste in Accuro's hotel staff cafeterias was deployed. An average of 44% reduction of food waste per diner was observed with 1.7 tonnes of food waste prevented during the duration of this trial without a reduction in customer satisfaction.

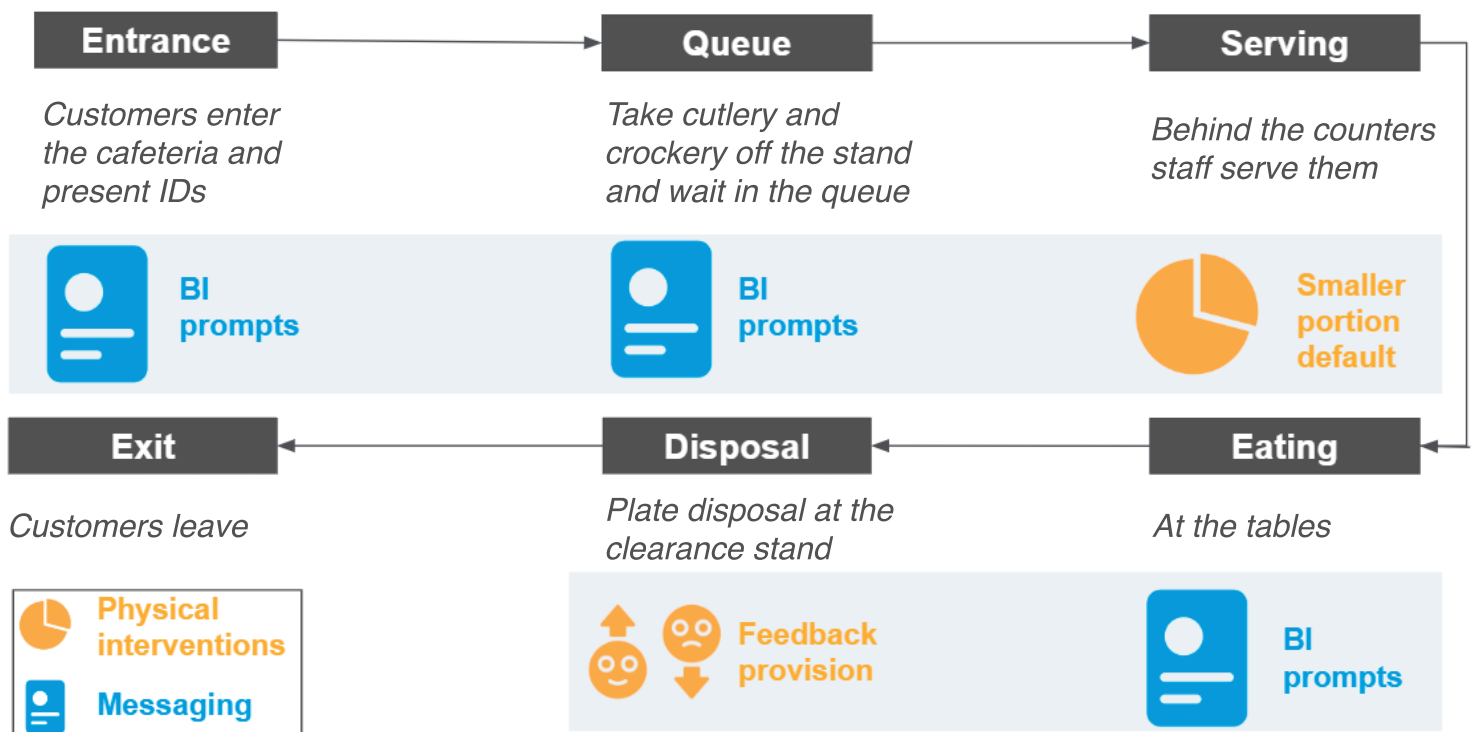
Challenge

Designing and testing interventions to tackle food waste in the hospitality sector and suggest ways for the sector to contribute to addressing the issue.

Intervention

The intervention comprised of three types of nudges:

- Reducing the default size of portions: smaller portions were served to diners who could come back for a second portion if they wanted.
- A series of behavioural prompts: posters and on-table messages encouraged customers to waste less food.
- Salient feedback provision using a "food waste tracker" (a poster tracking daily and weekly food waste) and a transparent food waste bin, to highlight how diner's individually contributed to waste as they dispose of their leftovers.



Note: Small variations to the exact placement in each canteen.

Impact

A 12-week evaluation of this intervention across the 7 Accuro cafeterias was done where food waste was compared between treatment and control groups (no intervention). An average of 44% reduction of food waste per diner was observed with 1.7 tonnes of food waste prevented during the duration of this trial without a reduction in customer satisfaction. Additionally, it was found that if scaled across the 7 cafeterias, it would save around 17 tonnes per year. If smaller portion sizes were scaled across hospitality in the UAE, it would save around 144,000 tonnes of food every year, equivalent to around \$0.2 billion of cost savings.

Key Takeaway

- Consistent nudging and feedback mechanisms can change consumer behaviour towards choosing sustainable options
- A guidebook or other communication material can upscale the impact of the intervention through advocacy to other institutions and arenas.



Gamification for Enhanced Waste Sorting

Region/Country: Finland

Year: 2018

About the Case Study/ Summary

In Kuopio, Finland, the student apartments (Kuopion Opiskelija-asunnot Oy), regional waste management and recycling company (Jättekukko Oy), and Savonia University of Applied Sciences set up an event to increase young adults' interests towards recycling through gamified solutions. Through the "Fox the Recycler", the study was piloted to test if recycling behaviour would increase in students after using the game.

Challenge

To inspire youth through gamified solutions to do waste sorting in order to enhance recycling.

Intervention

The game was piloted in the Kuopion Opiskelija-asunnot Oy student apartments where 90% of all young adults (250) installed the game with a daily rate of 30-40 users and a best rate of monthly users at 235 users. The game is a communal mobile game that encourages players to review their own recycling habits and compete with other users over higher quality and quantity of recycled material. The game provides tips and tricks on how to correctly recycle various materials. The game keeps track of correctly recycled items and awards points to the users for the same. Every two weeks, the top 20 individuals who recycled most carefully were awarded, and they could choose between culture and sports vouchers or uploading 10 € to their electronic bus tickets.



Impact

After the pilot, the recycling rate of biowaste increased from 76% to 97% and the recycling rate of plastic also increased significantly from 25% to 84%. Users also preferred to collect their award in the form of top-up of bus tickets.

Key Takeaway

- Mobile applications by independent developers are also effective in promoting recycling behaviour.
- Relatively harder to recycle items like biowaste can also be addressed through gamification.



Swedish Return System

Region/Country: Sweden

Year: 2018

About the Case Study/ Summary

The Swedish Return System (SRS) is a shared system of reusable crates and pallets used by the country's food and drinks industry. It was set up in 1997, with more than 1,500 participating businesses currently. The system replaces the model of single use cardboard or wooden crates with reusable packaging, in which pallets and crates can be used again and again. With this system, over 50% of all fresh produce in Sweden is delivered in reusable packaging.

Challenge

To replace a fragmented model of single use cardboard or wooden crates, with a reusable packaging system, where pallets and crates can be used over and over again, in order to promote re-use and circularity.

Intervention

Businesses taking part in the system would pay a user fee and/or daily rent. The system is jointly owned by the Trade Association for Grocery of Sweden and the Swedish Food and Drinks Retailers Association. The reusable pallets and crates created by the SRS are lightweight, protect produce from damage, decrease transport costs and are easy to handle.





Impact

In 2019, 150 million crates and 8 million pallets were cycled through SRS, reducing packaging waste generated by the grocery industry.

Each year, in comparison to cardboard packaging, the SRS eliminates 50,000 tonnes of material waste and reduces greenhouse gas emissions by 78%.

In 2022, the industry saved more than 36,400 tonnes of CO₂ by using SRS crates and pallets.

Key Takeaway

- The success of the system can be attributed to industry wide collaboration and high quality standardised design
- Businesses operations are optimised as packaging systems can be adjusted to precise crate dimensions.
- Transport costs are reduced as SRS crates are lighter and more durable than traditional crates.

Danish Deposit & Return System

Region/Country: Denmark

Year: 2002

About the Case Study/ Summary

Denmark's return and deposit system which came into effect in 2002, covering single use cans and bottles made from plastic, glass, and aluminium, has resulted in a consistent 90% collection rate. A private non-profit organisation known as the Danish Return System was approved by the Danish Ministry of Environment to operate the system. The entity is responsible for collecting, processing, and returning the empty bottles and cans to producers to be recycled. With the success of the deposit and return system, further elements are added to it, mainly the 'Drop and Go' machines, which are capable of handling up to 300 empties at a time.

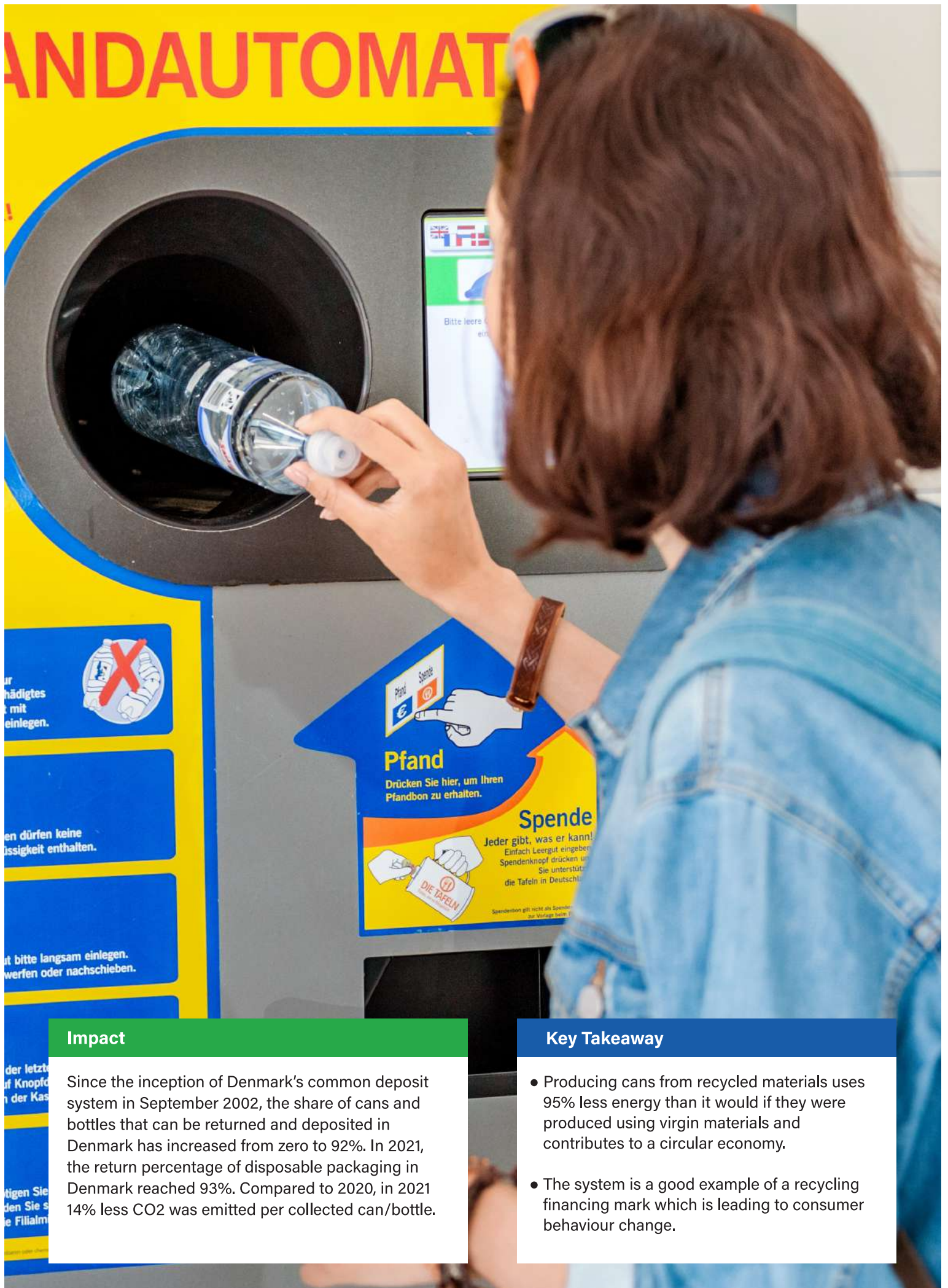
Challenge

To encourage consumers towards re-use and recycling of containers through financial incentives.

Intervention

Beverage producers in Denmark charge consumers the price of their product as well as an additional amount as a deposit. Consumers can then return the empty bottle or can if it has the symbol indicating that the receptacle participates in the return and deposit system to any supermarket or kiosk and receive their deposit in return as cash. Shops and supermarkets refund deposits to the consumers and then receive the corresponding amount from the Danish Return System once the empty bottles and cans are collected and counted. Refillable bottles that are sold and deposited in Denmark are reused up to 30 times, while the cans and single-use plastic and glass bottles are melted and used to produce new ones.





Impact

Since the inception of Denmark's common deposit system in September 2002, the share of cans and bottles that can be returned and deposited in Denmark has increased from zero to 92%. In 2021, the return percentage of disposable packaging in Denmark reached 93%. Compared to 2020, in 2021 14% less CO2 was emitted per collected can/bottle.

Key Takeaway

- Producing cans from recycled materials uses 95% less energy than it would if they were produced using virgin materials and contributes to a circular economy.
- The system is a good example of a recycling financing mark which is leading to consumer behaviour change.

WRAP – Most People Recycle Me

Region/Country: United Kingdom

Year: 2021

About the Case Study/ Summary

WRAPs created a behavioural nudge proven to increase household recycling of plastics. The intervention was created from the observation that one in three people who regularly purchase bathroom plastics at least occasionally put bathroom plastics in their household rubbish when they could have been recycled. There was a 7% increase in stated recycling behaviour.

Challenge

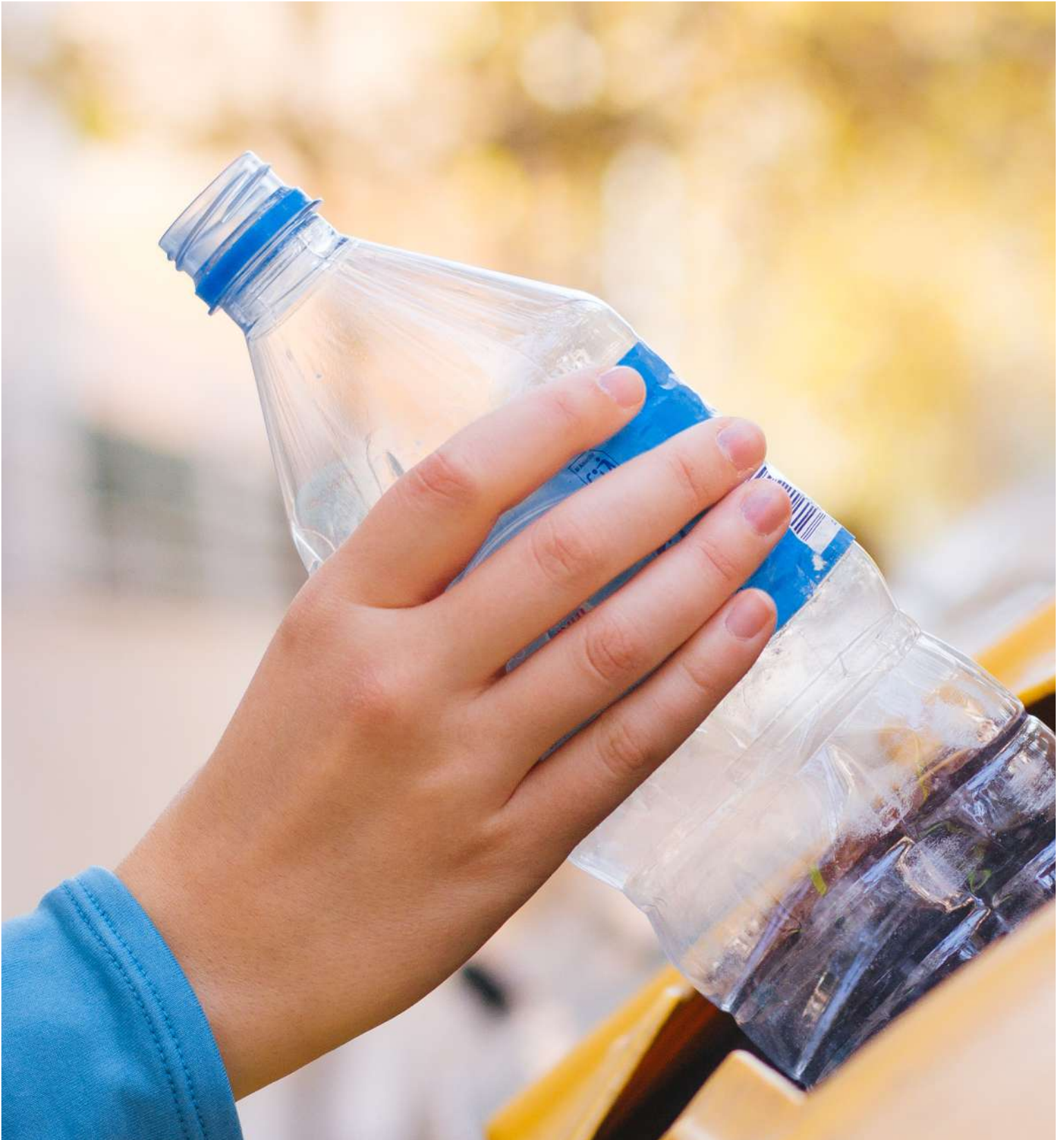
Designing a mechanism for delivering motivation, at the right time, that would then encourage people to recycle bathroom plastics more often.

Intervention

A trial was launched with the use of a Radox product and Boots' online consumer panel. The study used a quasi-experimental approach with 4,000 participants. The sample was split evenly into a treatment and control - both groups received the same product to test, but the bottle given to the treatment group had a sticker added to encourage recycling. The intervention was designed using three key behavioural tools; Social Norms, Salience and Prompts.

A sticker was designed to be placed at the front of a pack that read "Most people recycle me" with the addition of the Recycle Now Swoosh, a symbol which most people recognise as implying recyclability. Inspired by the success of the trial, a host of messages and images drawing on a range of motivational hooks including social norms, protecting nature and the environment, and personification.





Impact

The result of the trial showed those who received the stickered bottle were significantly more likely to have stated that they recycled the bottle. The cycling rate also increased in the sticker group - from 84% to 90%, proving a change in behaviour. The results of the experiment conducted following the trial showed that while some were almost universally effective, others resonated more or less depending on a range of sociodemographic factors. There was a 7% increase in stated recycling behaviour.

Key Takeaway

By understanding what motivates people, behavioural intervention can be effectively designed in promoting pro-environmental activities.

Tackling Gum Litter in Known Hotspots

Region/Country: United Kingdom

Year: 2017

About the Case Study/ Summary

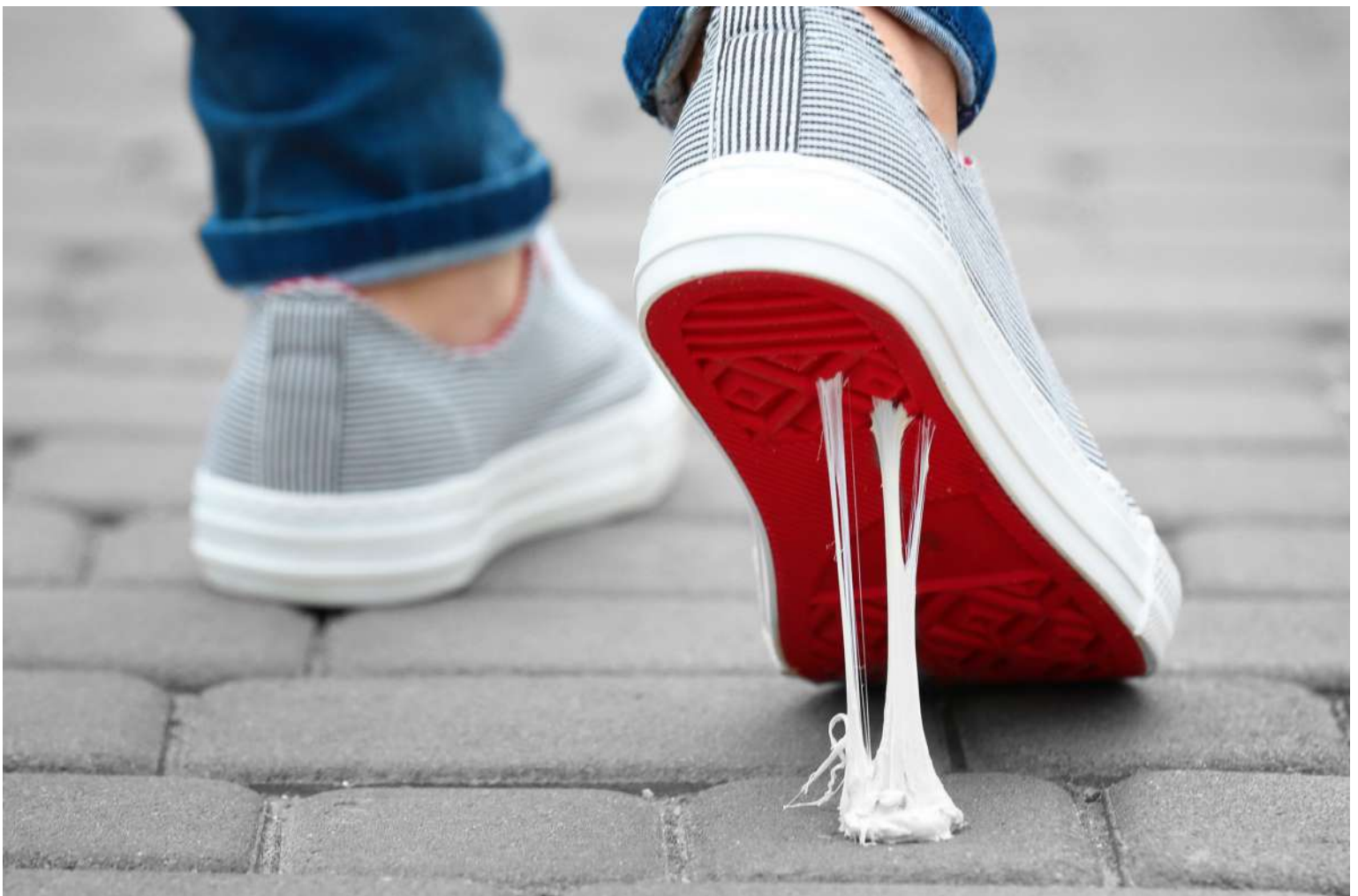
Islington Council, UK, piloted innovative method to help tackle the issue of littered gum in known hotspots such as shopping centres, train stations and transport hubs. The intervention involved using of signs and posters in an engaging way pointing to the bins. It halved gum littering by about 47% reduction over a period of a month and saved around £2,000 during the month on clean-up costs.

Challenge

In Islington, chewing gum litter was a constant source of complaints from residents and commuters. Also, cleaning up littered gum has always been a particularly difficult with traditional methods often being expensive and short-lived.

Intervention

Following extensive ethnographic research, it was found that people do not use bins for their gum because they don't see them. And so, in a pilot in January 2017 and then in a full rollout in September 2019, Islington Council installed several signs which point out the bins in a fun and engaging way. This intervention makes sure the bins are unmissable. It's about being in the right place at the right time, pre-empting that somebody might want to dispose of their gum and making the bin the obvious place to do it.





Impact

The signs and posters installed halved gum littering by 47% reduction over a period of a month. Additionally, around £2,000 was saved during the month on clean-up costs.

Key Takeaway

Visual communication through fun and attractive ways can modify consumer behaviour

Improving Hampshire's Recycling Using Behavioural Insights

Region/Country: United Kingdom

Year: 2019

About the Case Study/ Summary

To improve its citizen's recycling behaviour, the Hampshire County Council adopted a combination of digital and offline tactics which were delivered across three pilots, which included interventions such as pledge tools, bin wraps and volunteer outreach. Digital click-through rates reached six per cent, and the majority surveyed reported changing their recycling behaviours due to what they had seen. Additionally, contamination fell by four per cent in one pilot.

Challenge

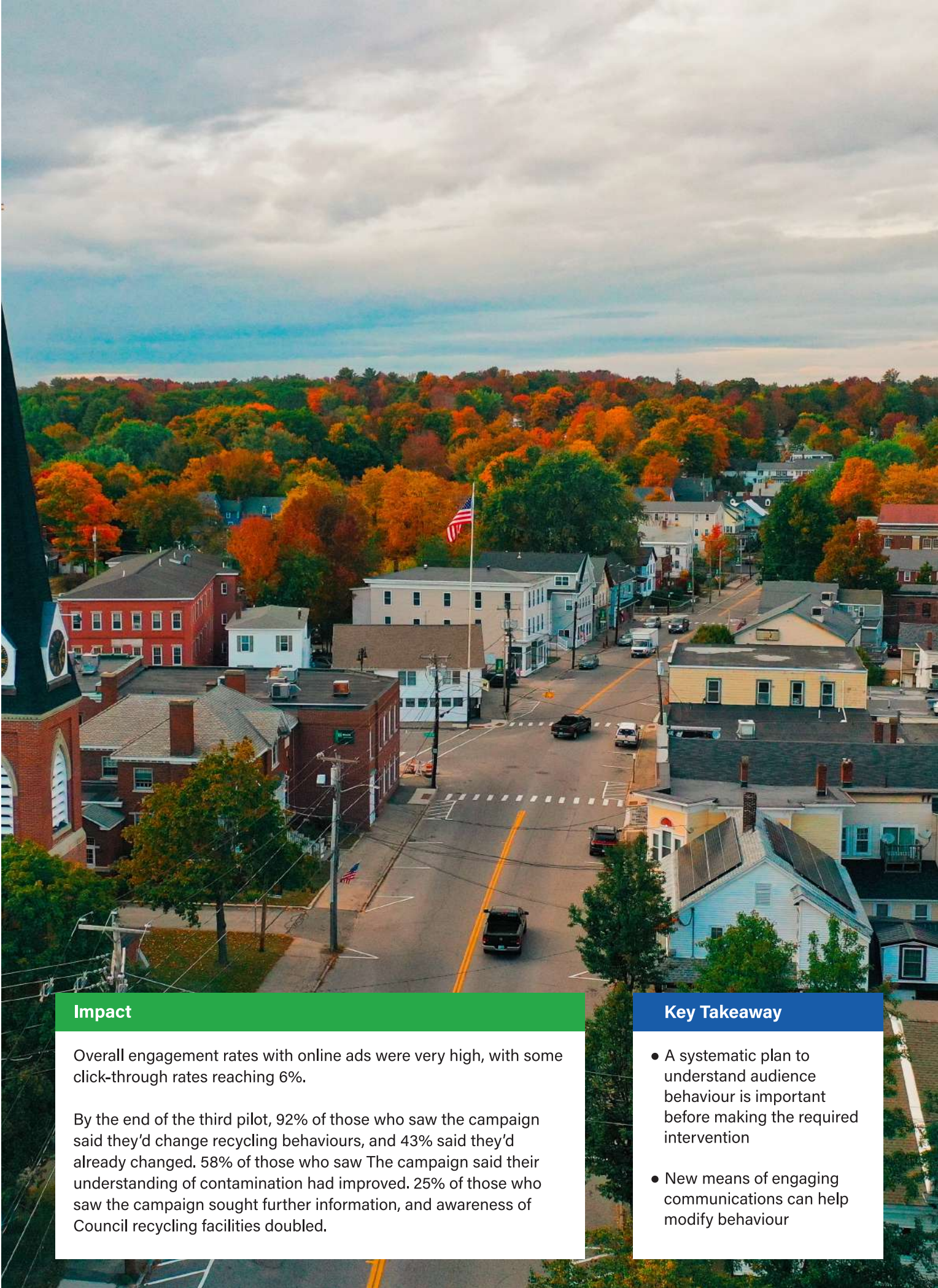
Hampshire's kerbside recycling systems have been in place since the 90s, with no major changes to the input specification. Yet recycling rates plateaued, and contamination levels were rising. Dealing with contamination from recycling presented a significant cost implication to the County Council.

Intervention

Hampshire County Council using audience insights gained through tele-depth interviews and focused group discussions, developed audience profiles based on values that drive behaviours rather than recycling behaviours alone. Audience groups were mapped on the Diffusion of Innovation curve, which prioritised those with the greatest potential for behaviour change and those with the potential to have the biggest impact.

The approach recognised that behaviour change is not a quick win. Mapping the audience's behaviours on the Transtheoretical Model of Change identified that getting some residents to 'contemplation' would be necessary before considering how to get them to 'action'. This model thus comprised steps including pre-contemplation, contemplation, preparation, action and maintenance. Three targeted pilots were developed, and measured through waste data, digital engagement and quantitative and qualitative surveys.





Impact

Overall engagement rates with online ads were very high, with some click-through rates reaching 6%.

By the end of the third pilot, 92% of those who saw the campaign said they'd change recycling behaviours, and 43% said they'd already changed. 58% of those who saw The campaign said their understanding of contamination had improved. 25% of those who saw the campaign sought further information, and awareness of Council recycling facilities doubled.

Key Takeaway

- A systematic plan to understand audience behaviour is important before making the required intervention
- New means of engaging communications can help modify behaviour



“

Climate change cannot be fought from conference tables alone. It has to be fought from the dinner tables in every home.”

Shri Narendra Modi
Prime Minister

4.3

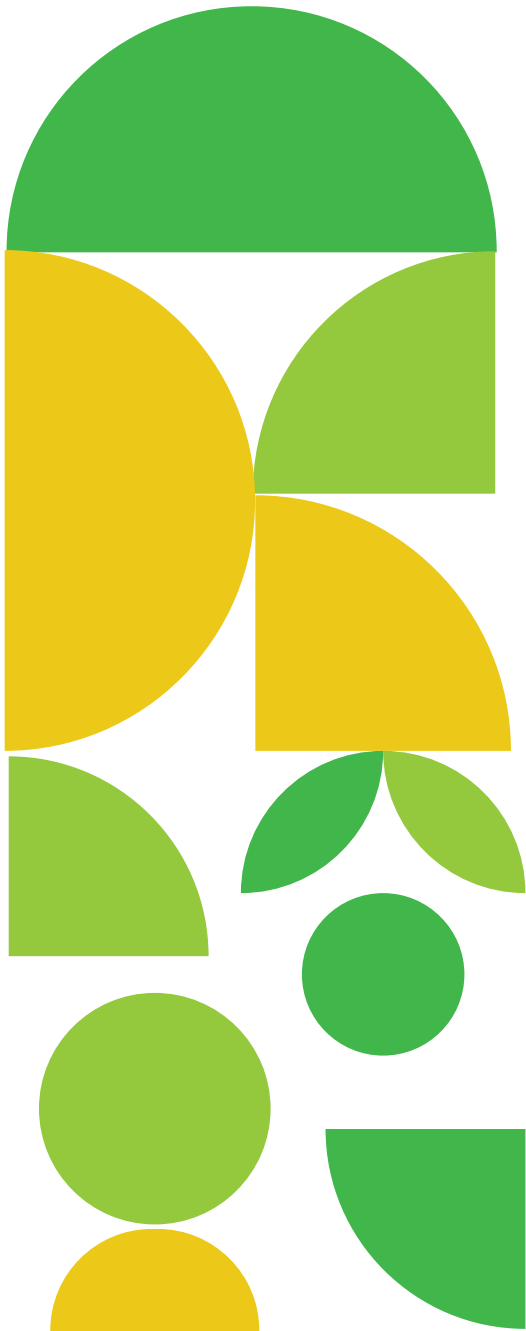
Sustainable Food Systems

A sustainable food system ensures that everyone has access to healthy food and nourishment while protecting the economic, social, and environmental pillars for future generations. Additionally, perhaps it would support natural sustainability and advance human health. Instead, our food poses a threat to both. The task at hand is to provide a growing global population with healthy diets based on sustainable food systems.

The goal of globalisation was to establish a multicultural "global village" where people from different cultures could interact and share ideas. While this goal was achieved, a great deal of people's sustainable lifestyles, especially those related to cuisine and culture, were negatively impacted. As a result of globalisation, for instance, various food products are almost always available, regardless of the season, which has significantly increased the distance that food travels. Consequently, consumers demanding food according to its place of origin, production process, or producers play an important role in the sustainability discourse.

As such, individuals choosing to eat locally harvested, seasonal, and/or organic food and follow a vegetarian diet have a lower per capita environmental impact than those relying on more customary diets. The transition towards sustainable diets basing on organic, local, and seasonal foods, thus, presents an opportunity to advance commitments to sustainable development. Thus, consumer behaviour has a significant impact on a sustainable food system because it tends to demonstrate the value of environmental protection through one's purchases and consumption. Green value consumer practices are like guiding principles for the purchase of traditional and environmentally friendly products, such as organic and locally grown foods, and seasonal foods with their optimum utilisation to save them from wastage.

In this section, we will concentrate on the environmental sustainability of food production as well as an aligned human behavioural system. However, the "food system" encompasses far more than these parameters. A transformation of the global food system must eventually involve multiple stakeholders, ranging from individual consumers to policymakers and actors along the food value chain, all working towards a common global goal of healthy and sustainable food systems.





Milpa Farming

Region/Country: Mexico

Year: 1521 CE - Present

About the Case Study/ Summary

Milpa farming, a traditional method of farming, is still practised by indigenous groups in Mexico. It refers to a farming method that involves cultivating a variety of plants in a single area, primarily Maize, Beans, and Squash. Together, a Milpa harvest provides all the food groups and nutrition needed for a healthy human diet and is therefore a nutritional lifeline for local and indigenous communities. In the Tojtíc area of Chiapas, Mexico, a series of interventions for preserving Milpa farming were implemented to support sustainable agriculture, protect biodiversity and preserve traditional farming methods.

Challenge

To address the spread of commercial agricultural techniques, which have negatively impacted indigenous agricultural systems and their biodiversity, soil health, and climate resilience.

Intervention

In the Chiapas region of Tojtíc, initiatives were taken to persuade farmers to reintroduce Milpa practices. Traditional Milpa farms use intercropping to mimic the actual diversity found in a natural setting. This enables long-term, sustainable cultivation without seriously compromising the health of the earth. The system supports biodiversity, food security, and sustainable land use and was created using agroecological principles. Several interventions were carried out to encourage Milpa farming in the neighbourhood. This included advertisements with a catchphrase, a comic book, a puppet performance, and a mural that were given in the Tsotsil language. These collectively expressed pride in preserving the ancient Milpa practice. Activities like the puppet performance, which was specifically designed for younger generations, helped to make the campaign understandable and accessible. Farmers could also learn useful knowledge about the Milpa cultivation at capacity-building and training sessions. Additionally, a nutritional fair was held where dishes made with Milpa products were served and seed fairs were also held so that farmers could trade their local seeds.



Impact

The efforts resulted in the celebration of regional cultural traditions and agroecological practices, which assisted in reviving the Milpa practice in the area. Farmers shared more seeds within a year of the programme, going from 35% to 80%. The initiative's participants, 65 percent of the Milpa farmers, also consented to take part in a 5-year seed conservation scheme. The use of glyphosate herbicide decreased by 95% among farmers who began implementing agro-ecological techniques. Additionally, 65% of the milpa producers engaged were able to increase the output of Milpa-related crops like Maize, Beans, Squash and others. Additionally, a rise in the consumption of these crops was noted, as well as a change in nutritional conditions.

Key Takeaway

This case of the revival of Milpa farming illustrates that meaningful change can begin with an understanding of societal norms and traditional practices. It shows that through knowledge exchange, peer exchange, and capacity-building initiatives, behavioural barriers can occasionally be overcome.



Cilento Bio-District

Region/Country: Italy

Year: 2009 - Present

About the Case Study/ Summary

The Italian Society for Organic Culture launched the idea of bio-districts more than ten years ago. A bio-district is a geographic area where farmers, municipalities, and residents come together. These three parties can work closely together to establish strategies around food production and agroecology in the bio-district, including boosting farmers' access to land and supporting sustainable and local food production. Some of these activities include enhancing land access for farmers, promoting sustainable and local food production and engaging in ecotourism ventures.

Challenge

Modernization of the agricultural sector where farmers could be provided the requisite support to market their produce.

Intervention

A bio-district is a network of producers, consumers, tourism operators, local institutions, and public authorities in a region that collaborates to work on sustainable management of local resources based on the principles of agroecology. Thus, each bio-district has its own distinctive lifestyle, diet, nutritional practices and societal dynamics and relationship with its ecosystems. The Cilento Bio-district covers an area of 3,196 square kilometres and includes 37 municipalities, 400 organic farms (this covers about 23% of the entire organic producers in Campania region). The Cilento bio-district area is recognized as a World Heritage Biosphere Reserve by UNESCO. In 2011, the non-profit association "Bio-distretto Cilento" was established to create a permanent platform for exchanging initiatives for territorial development based on fair trade and the organic model. The Cilento bio-district takes a multi-functional approach to improving the conditions of its stakeholders. The purpose was to create better market access for organic farmers while consumers benefited from greater transparency and quality of local produce. This project also improves local food security and boosts local employment. Initiatives undertaken under the bio-district include:

- Development of a pilot program for the certification of organic farmers.
- Creation of guidelines for organic farmers aimed at preserving and farming traditional local products.
- Implementation of an awareness campaign about organic food and traditional diets.
- Development of a pilot for the adoption of a Mediterranean diet-based menu in public and private canteens in the bio-districts. The model also allowed farmers to begin combining traditional foods and agricultural practices with cultural assets. The tourism stakeholders benefit from these new tourist activities that open in the region, including eco-stays and agro-tourism.

Some of the activities that are part of the initiative include:

- Bio-spiagge (Bio-Beaches): An initiative that promotes the inland territory and its products to the summer tourists that crowd the region's coast.
- Bio-sentieri (Bio-Trails): Eco-tourist routes that connect the coastal area with the internal rural zones. The intention is to guide tourists through local places of interest, including organic farms, village areas, certified public lands and areas of environmental and socio-cultural interest.
- Cilento Bio-district Guide: A resource booklet that contains details about the bio-district and its initiatives, its restaurants, specialised shops and details of all the products and services available in the region related to it.

Impact

The Cilento bio-district initiative has inspired more than 30 bio-districts to be implemented across Italy. It has helped shorten agricultural value chains, improved demand for organic produce and improved the social capital of the communities involved. The International Network of Eco-regions or I.N.N.E.R. developed a toolkit including guidelines to establish a bio-district including regulatory guidelines based on the Cilento initiative for easy replication across districts. In September 2022, the project also won the first ever EU organic awards and has been recognized as a model of sustainable rural development.

Key Takeaway

- The initiative highlights the possible role of local and regional authorities in making food systems more sustainable.
- Establishment of sustainable agriculture and local food system focused initiatives like the Cilento bio districts illustrates how rural areas can promote economic growth, sustainable resource use and social cohesion.



Ginza Honey Bee Project

Region/Country: Japan

Year: 2019

About the Case Study/ Summary

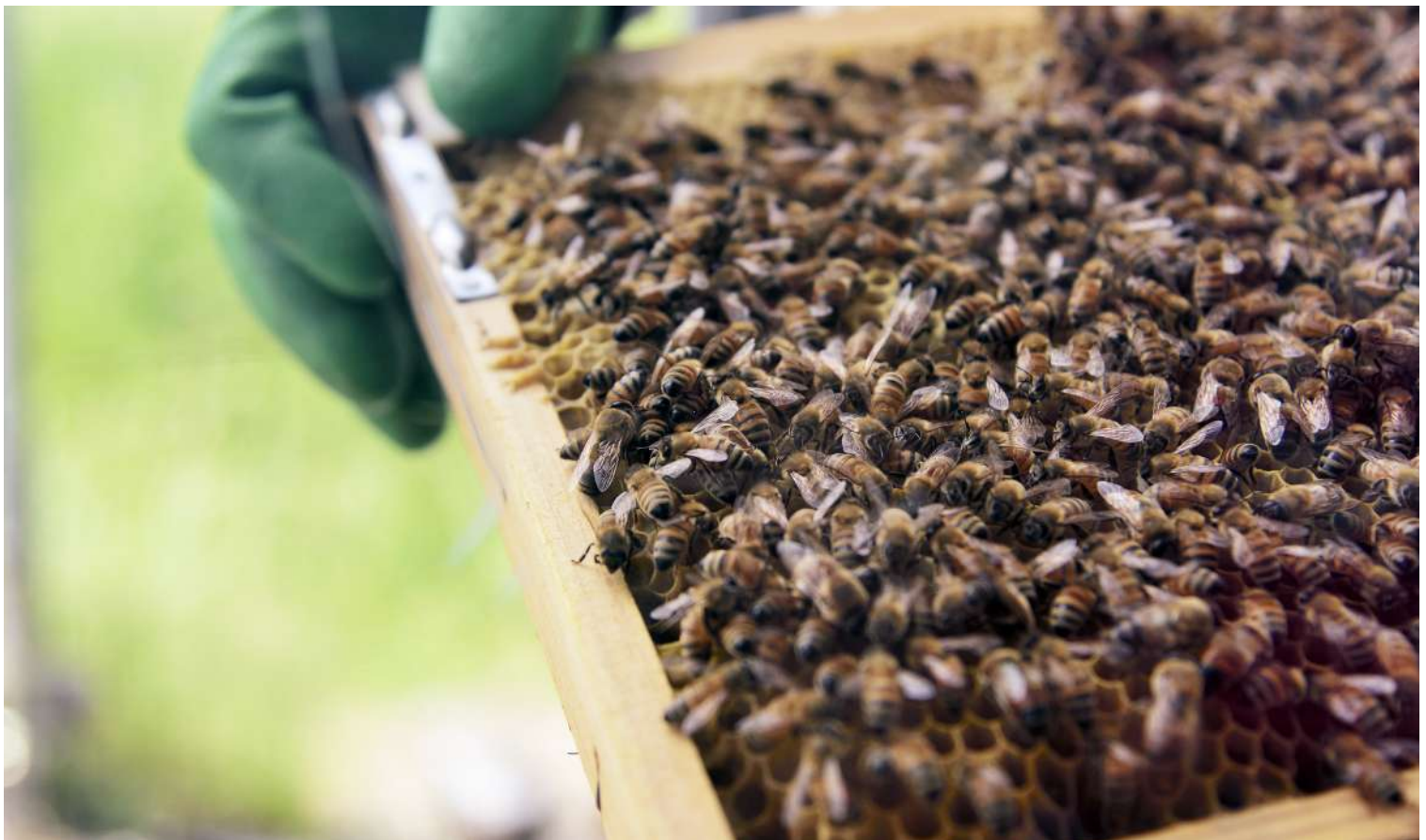
Ginza Bee Project, which started in 2006, aimed at increasing the interaction between the local environment and ecosystems through beekeeping. The project is run by volunteers from two local groups- Ginza Shokugakujuku and Ginza Town Study Group- that are focused on promoting local food culture and history. The project is a torchbearer of urban beekeeping initiatives and the varied socio-ecological benefits it provides including revival of local ecosystems, creation of local jobs and the rebuilding of a sense of community.

Challenge

To promote local food culture, traditions and ecosystems through community participation which can also boost jobs and rekindle a sense of community.

Intervention

The project began with the installation of three beehives on a building rooftop in 2006 and has continued to grow since then. The amount of honey collected by the project has increased steadily, from 150 kilograms collected in 2006 to over 1.6 tons per year by 2017. The honey is used in various commercial products in the Ginza district, leading to the promotion of local produce in the area, which is enjoyed by locals and tourists alike. Following the success of the Bee Project, in 2007, the Ginza Green Project was initiated. This project focused on creating vegetable and flower gardens on rooftops to increase the number of green spaces and sources for nectar for the bees. Employees from the building also engaged in the project as part-time volunteers. The aim of these projects was to promote the idea of “grow local, eat local”, where honey and produce harvested from the rooftops were used in making products in the community.





Impact

Since the introduction of bees to Ginza, it has been observed that the cherry blossoms, which had not previously been pollinated, have started producing cherries. The local ecosystem came alive when birds and insects started feeding on these cherries. Since its inception, it is estimated that the project has connected over 18,000 people within the community through apiary tours and honey-extracting activities. Additionally, it led the communities to gain more environmental awareness and understand the benefits of coexisting with nature. Thus, the project has greatly contributed to building a sense of community in Ginza. The project has also helped in building a favourable attitude towards creating green urban spaces and has influenced as many as 12 buildings in the area to start rooftop gardens, which can become local community spaces.

Key Takeaway

- The initiative illustrates a model of urban revitalization and shows a method that combines urban life, business and built spaces in the community.
- The project also illustrates the co-benefits of an urban beekeeping project, including deepening community relations and building environmental awareness.

Healthier Take-Away Food

Region/Country: United Kingdom

Year: November 2003

About the Case Study/ Summary

The UK Food Standards Agency estimates that 'out-of-home' meals are 21% more calorie dense than those cooked at home. Research also suggests that exposure to takeaways is associated with higher obesity prevalence. Several experiments explore how food ordered on online delivery platforms may become healthier.

Challenge

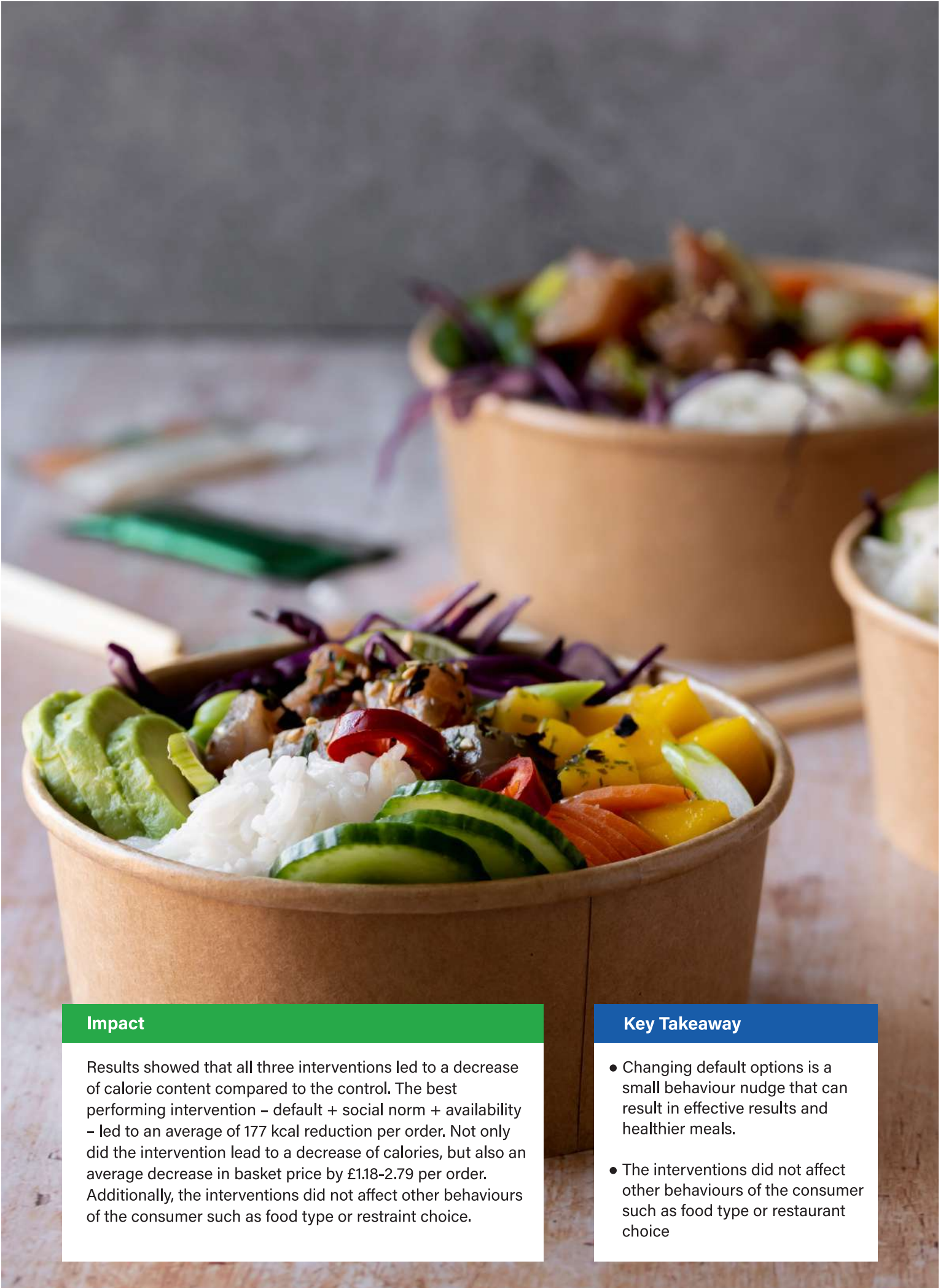
To curb obesity and calorie-dense food consumption and to explore what fresh opportunities online delivery platforms may present to help people make healthier choices in food options.

Intervention

A simulated online takeaway platform, 'Take a BITE' was created for the purpose of the experiment and three interventions were tested to see how default options can change consumer's food choices. The interventions aimed at nudging consumers to choose a smaller portion size:

- Default: When people are presented with a pre-selected option they are typically more likely to select it, so this intervention had the smaller portion as the pre-selected default.
- Default + social norm: People tend to prefer doing what they think others do (social norms) so on top of the pre-selected default, the smallest portion was labelled 'regular', the medium 'large', and the large as 'extra large' to signal that the smallest portion is the 'normal' choice.
- Default + social norm + availability: When people are presented with a list of options, they have a tendency to select central options. This intervention added an additional extra small portion option as the default that was labelled 'small'. This put the smallest original portion, now labelled as regular, in the centre of the list of size options.





Impact

Results showed that all three interventions led to a decrease of calorie content compared to the control. The best performing intervention – default + social norm + availability – led to an average of 177 kcal reduction per order. Not only did the intervention lead to a decrease of calories, but also an average decrease in basket price by £1.18-2.79 per order. Additionally, the interventions did not affect other behaviours of the consumer such as food type or restraint choice.

Key Takeaway

- Changing default options is a small behaviour nudge that can result in effective results and healthier meals.
- The interventions did not affect other behaviours of the consumer such as food type or restaurant choice

Encouraging Sustainable Food Consumption by Using More-Appetizing Language

Region/Country: United Kingdom

Year: 2019

About the Case Study/ Summary

An online study conducted in partnership with the World Resource Institute's (WRI) Better Buying Lab (BBL) and the Behavioural Insights Team (BIT) explored whether the way that food is described on menus can influence consumer choices. The study aimed to test the impact of alternative names for eight vegetarian dishes on the propensity of meat-eaters to order vegetarian food.

Challenge

To influence consumer behaviour to make healthy and sustainable food choices involving more plant-based diets.

Intervention

The study was composed of two phases:

In Phase 1, 727 online participants took different variations of 8 vegetarian dishes' names and asked to self-report the likelihood that they would order each dish based on that name.

Phase 2 involved selecting 3 - 4 of the most successful and popular names from Phase 1 and presenting them to 2,000 participants in mocked-up menus alongside four non-vegetarian dishes. The proportion of participants who chose the new alternative named vegetarian dishes was calculated and measured alongside the control dish (original name) for each dish.

An example of one of the 8 dishes is "Meat-free Sausage and Mash (Sainsbury's)" - the original name of the dish. The 3 alternate names decided by participants in Phase 1 for this dish were "Cumberland Spiced Sausage and Mash", "Better Sausage and Mash", and "Field Grown Sausage and Mash". The proportion of people who chose the alternate names were calculated over the participants choosing the original name (Meat-free Sausage and Mash (Sainsbury's)).



Impact

For all of the 8 dishes, the alternate names outperformed the original names although these were not always statistically significant for all the dishes. For example, the "Meat-free Sausage and Mash (Sainsbury's)" alternate names performed significantly better than the original name with "Field Grown Sausage and Mash" being 93% more popular than the original name. Statistically significant results were found in 3 of the 8 dishes.

Key Takeaway

- Displays how individuals' behaviour can be changed by innovative naming.
- Provides initial evidence that it is possible to significantly increase the selection of vegetarian food by changing how plant-based dishes are described on menus.
- Replication of this study can be done to make other healthier and sustainable food produce more attractive such as millets.



Reducing Overfishing

Region/Country: Indonesia

Year: 2018

About the Case Study/ Summary

Unsustainable fishing practices, overfishing and the lack of rights to fishing areas were creating major challenges for fishing communities in the Dampier Strait of Indonesia. A year-long effort supported by the United States Government through the United States Agency for International Development Sustainable Ecosystems Advanced (USAID SEA) project and Rare to encourage behaviour change from both local leaders, in creating a rights-based system, as well as fishers, to fish sustainability and manage fisheries through surveillance and reporting their catch. Between 2016-2018, an 11% increase in coral cover and a 71% increase in fish biomass was observed.

Challenge

To protect and conserve coastal resources in Indonesia, which are threatened by unsustainable fishing practices, degradation of critical marine habitats and non-fishing stressors such as climate change.

Intervention

Rare designed and launched a 12-month long behaviour change campaign targeted at fishers, village leaders and fish buyers. The Rare design team along with the provincial government, hosted a series of workshops where village, customary and religious leaders of the 19 communities in the Dampier Strait. The communities worked together to resolve conflicts, identify boundaries for each community and drew maps delineating their fishing grounds. The designated reserves and fishing areas are called Territorial Use Rights for Fishing (TURFs) and now legalise each community's exclusive access and customary rights.

Various behavioural nudges and interventions were used to inculcate sustainable fishing behaviours:

- Registration of fishers' boats
- Offering training sessions on sustainable fishing
- Organising pledges in the community to uphold the fishing regulations
- Launching community surveillance of coastal waters and providing fuel for those doing the surveillance
- Integrating an app called OurFish to track fish catch and sales
- Highlighting key messengers in the community who supported the new rights-based system

A variety of social marketing tools and materials were used to complement the interventions. Calendars were created that reinforced fishing regulations and contained campaign messages for each season, puppet shows for children, a fish game which demonstrated the need for sustainable fishing practices and rights-based fishing, along with small giveaway items which increased the project's visibility.





Impact

The results of the project were the development of a single map of 21 access areas called TURFs, one for each of the 19 villages as well as several common fishing areas that villages would share, along with no-take zones or marine reserves. There was a 44.5% increase in compliance with fishing regulations, an 82% increase in knowledge of rights-based fishing areas and a 29% increase in trust in local villagers. There was also an average of 34% increase in participation for the development, management and surveillance of the designated fishing areas. Additionally, between 2016-2018, an 11% increase in coral cover and a 71% increase in fish biomass was observed.

Key Takeaway

- Displays the importance of community participation in decision-making and eventually behavioural change.
- This case shows how providing communities with the tools necessary to achieve sustainable lifestyles can achieve results when accompanied with behavioural nudges and capacity building.

Sikkim – The Organic State

Region/Country: India

Year: 2010

About the Case Study/ Summary

Sikkim is a biodiversity hotspot, its fragile mountainous ecosystem is not well suited to intensive industrial or chemical based farming. In early 2003, to preserve its natural capital, the state's legislative assembly passed a resolution to adopt organic farming. The Sikkim Organic Mission was built on a vision shared by the people along with the state's support via adequate infrastructure, necessary policy and disincentivizing chemical fertilisers to achieve a 100% organic state.

Challenge

To deal with food waste and improve soil health through mandatory composting in households.

Intervention

Although the Sikkim Organic Mission was officially launched in 2010, the state's efforts towards becoming an organic state began in 2003 when the Chief Minister announced his vision for Sikkim to be India's first organic state along with an action plan which including a gradual phase-out of synthetic inputs and the support for the production and use of organic fertilisers and organic seeds. The next step of the intervention was ensuring that farmers adopt organic agricultural practices. While there was widespread support from the public regarding the decision for a completely organic state, capacity building and training was required to achieve this goal. Between 2003 and 2010, pilot programmes supporting organic farming were launched, which included the implementation of bio-villages. Bio-villages were camps where farmers were trained in organic farming practices and the production of organic inputs such as composting, organic fertilisers and organic pesticide using local plants and natural methods of farming. By 2009, more than 100 villages had benefited from these programmes, reaching 10,000 farmers in all four districts of the state.

Under the Sikkim Organic Mission a number of actions to change farmer behaviour in favour of organic farming were launched:

- Capacity building, organic seed and planting material production
- Setting up a seed and soil testing laboratory
- Launch of Sikkim Organic retail outlet at New Delhi
- Inclusion of organic farming in school curricula
- Two state government farms became Organic Centres of Excellence and became areas for conducting organic farming demonstrations and trials
- Three livelihood schools as training centres for unemployed youth were launched



Impact

Sikkim was the first state in the world that has all of its farmland certified as 100% organic. This transition has benefitted more than 66,000 farming families practising organic and agro-ecological farming on more than 76,000 ha of land. The three livelihood schools for organic farming have educated 836 unemployed people, 695 of whom are now employed as field supervisors in organic farmlands. For their efforts, Sikkim has been awarded the Future Policy Gold Award 2018, awarded by the World Future Council in partnership with the FAO and IFOAM – Organics International.

Key Takeaway

- Traditional ways of agriculture were already prevalent in Sikkim which helped further programmes and initiatives down the line.
- This is an ideal case of how behaviour change is complemented by capacity building through, providing infrastructure and state supported policy to ensure that a behavioural outcome is achieved.





“

India has decreased its carbon emissions by over 100 million tonnes since adopting LED bulbs nationwide.”

Shri Narendra Modi
Prime Minister

4.4

Energy Conservation

The world lacks safe, low-carbon and affordable large scale energy alternatives as fossil-induced energy is responsible for 80% of global greenhouse gas emissions. Until we scale up those alternatives, the world will continue to face today's two energy problems. The most prominent energy issue is the connection between energy access and greenhouse gas emissions. However, the world faces a similar global energy problem: hundreds of millions of people lack access to adequate energy, with catastrophic results for themselves. Humans are gradually damaging their habitat by harming the earth's capacity to support life. Especially due to fossil fuel burning, the levels of heat-trapping gases in the atmosphere rise, contributing to environmental pollution. This also leads to global warming, extinction of animals, deforestation, ozone layer depletion, loss of biodiversity and many more devastating impacts on earth. Besides the negative influences on nature, human health and well-being are negatively impacted as well. Hence, an urgent need for action and behavioural changes becomes inevitable.

Global energy consumption has been the major contributor to emissions. Therefore, only focusing on more sustainable energy production is not sufficient. Hence, the antecedents for behaviour requiring direct energy use performed by humans need suitable and tailored interventions and, consequently, reducing energy consumption, changing people's energy-consumption behaviour can potentially make a great contribution towards solving the problem by including actions, which humans can execute daily within their boundary. Energy saving behaviour often influenced by monetary incentives shall not be generalised into an office building context whereby the users have no financial responsibility for their utility expenses. At present, the challenge of how to encourage users towards energy-saving behaviour (ESB) is one of the emerging challenges in today's world.

This section focuses on representing energy conservation behaviours. For example, socio-demographics, moral norms, various incentives and barriers, energy-saving awareness and attitudes, regulations and policies, personal norms and experiences through some of the case studies on energy saving.



Bonus-Malus System

Region/Country: France

Year: 2008

About the Case Study/ Summary

In France, the transport sector is the largest emitter sector-wise, accounting for 29% of total emissions of the country as of 2015. The targeted reduction in GHG emissions from the transport sector is 29% by 2028 compared to a baseline of 2013, as per the National Low Carbon Strategy. The Bonus-Malus system is one of the successful climate instruments for the transport sector in reducing passenger car emissions. The scheme uses revenue generated from fees taken for emission-intensive vehicles to finance bonus payments for electric vehicles (EVs) that incentivize the EV purchase decisions. This feebate system, or a system combining a credit and a tax is designed to ensure that the credits paid out are offset by the tax revenue generated (i.e., revenue neutral for the government).

Challenge

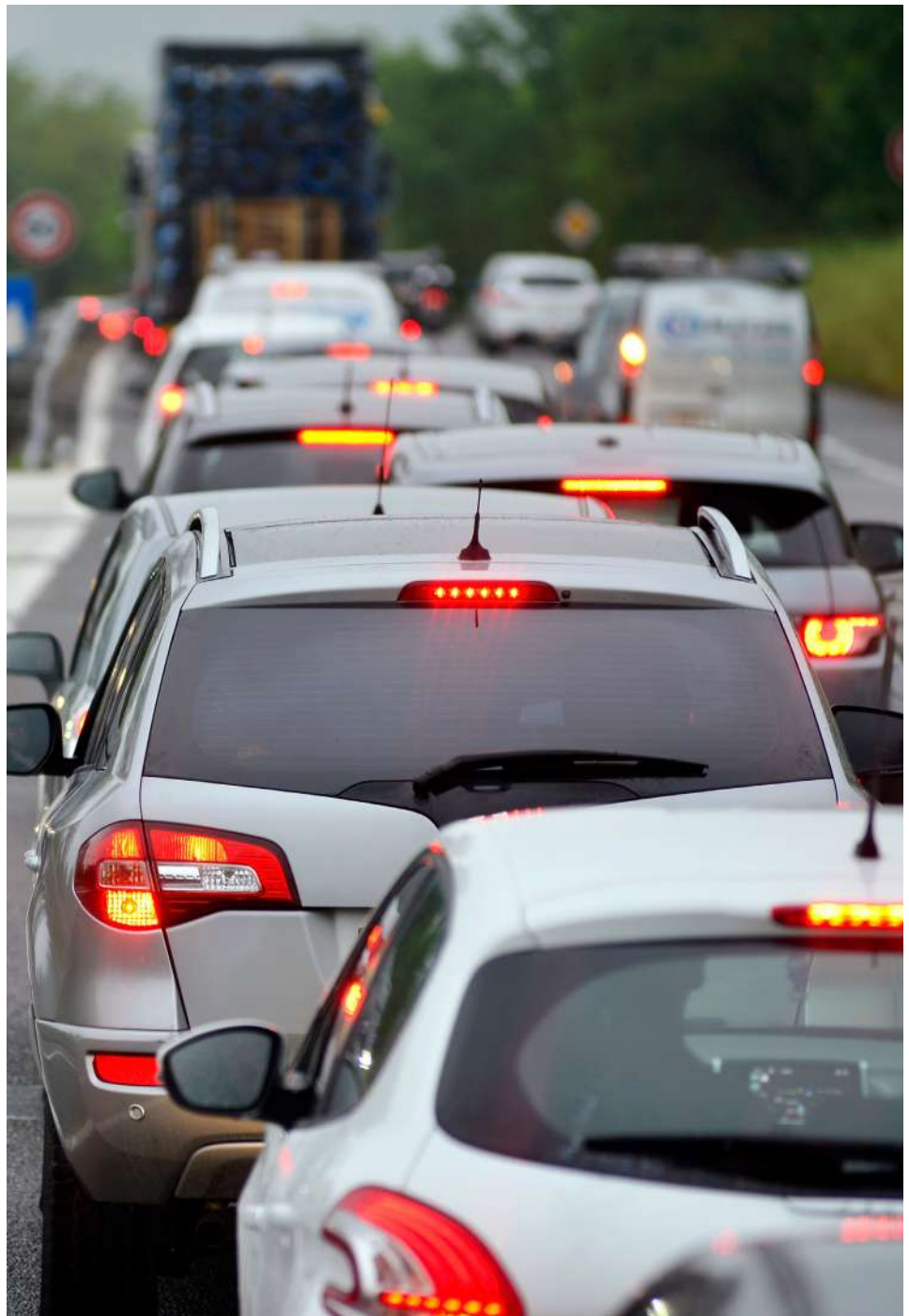
Reducing passenger car emissions in the transport sector in France through interventions in new vehicle purchases.

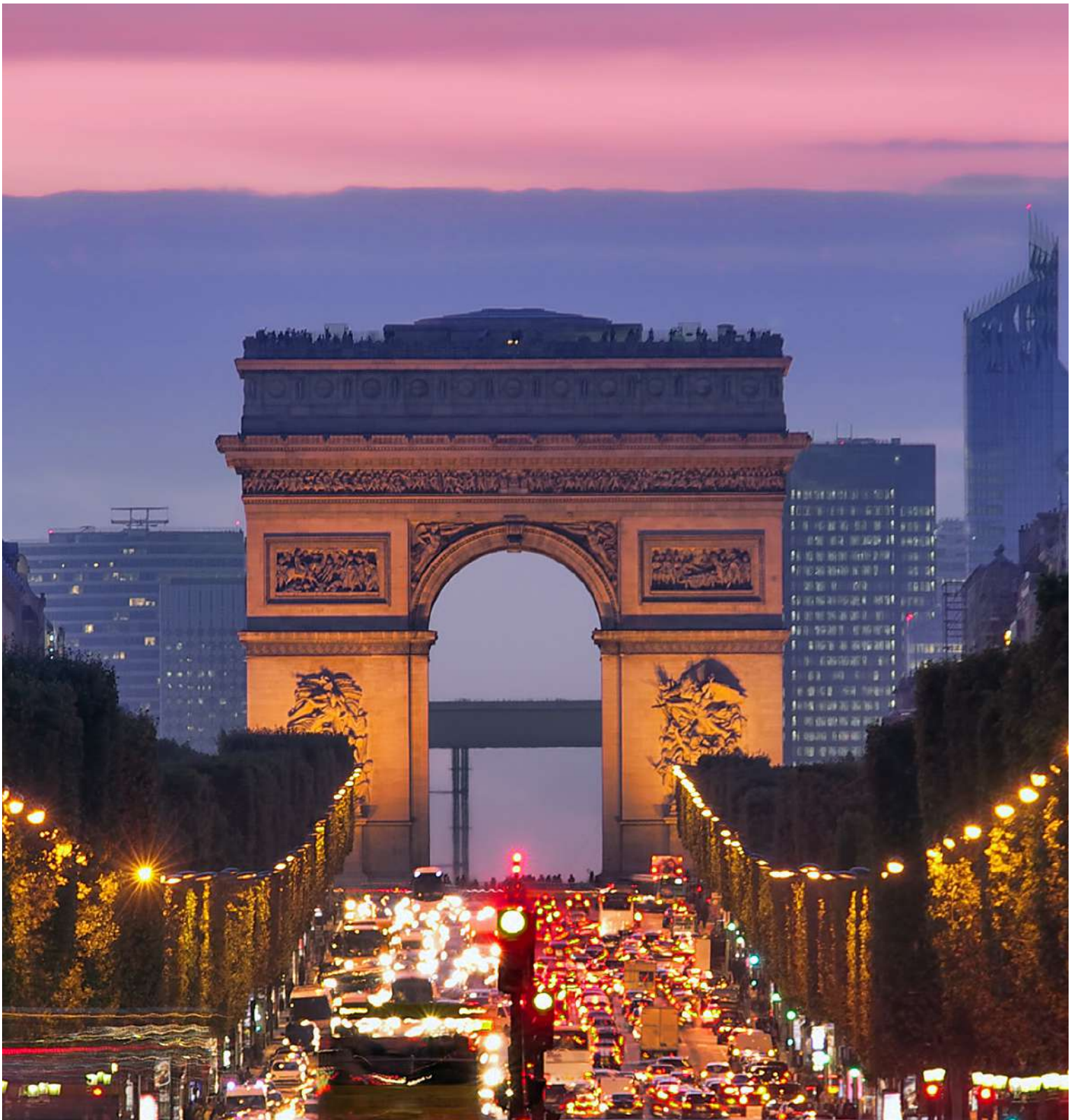
Intervention

The Bonus-Malus system, introduced in 2008 has been described as one of the key measures in achieving these GHG reductions while influencing long-term consumer behaviour.

Also known as a feebate scheme, this system has a combination of both fees and rebates for new vehicle purchases. A certain fee (malus) is applicable for the registration of vehicles that have been purchased or rented, having CO₂ emissions above certain levels. In case the vehicle's CO₂ emissions are below certain limits, car buyers are instead entitled to receiving a rebate (bonus).

The parameters of this system have been modified by the French government multiple times since the systems' inception. In 2018 for example, the CO₂ emission limit above which a fee must be paid for vehicles is 120 g/km and above. As of January 2018, the bonus of up to EUR 6,000 (27% of the acquisition cost) was only granted for electric vehicles emitting less than 20 gCO₂/km. Vehicles with emissions between 20 and 120 gCO₂/km are not affected by the Bonus-Malus System. The bonus is either granted directly to the buyer through a request form or deducted from the total price of the vehicle at the time of purchase.





Impact

The purchase of fuel-efficient vehicles rose from 30% in 2007 to 45% in 2008 and 56% in 2009. Reductions in CO₂ emissions due to increased efficiency estimated at 1.9 million tons of CO₂ (Mt CO₂) averted in 2008 and 3 Mt CO₂ in 2009. These CO₂ reductions are valued at €69 million in 2008 and €108 million in 2009 (based on the calculation of €32/tonne of CO₂ in 2010).

Key Takeaway

The system proved to be very effective in causing the shift of vehicle sales distribution towards more environmentally friendly vehicles and thus decreasing the average emissions of new vehicles. The critical stage is determining the appropriate bonus thresholds and malus is critical for the program's smooth operation and the scheme can successfully reduce consumer fuel costs and reliance on fossil fuel imports.

Cool Congregations

Region/Country: United States of America

Year: 2012- present

About the Case Study/ Summary

Interfaith Power and Light (IPL) began a behaviour change initiative aimed at lowering the carbon footprint of congregational buildings across America and turning into “Cool Congregations”, effectively turning faith communities into becoming leaders in fighting for climate solutions. The goal of Cool Congregations is to help religious organisations decrease their carbon footprint through various initiatives, such as converting to LED light bulbs and putting solar panels on roofs. The motivation behind the project was that witnessing change within congregations will motivate people to take similar initiatives in their homes. The underlying logic shows that sustainability that is based on shared ideals and offers practical solutions for members to improve their energy usage habits can lead to bigger and overarching sustainability actions.

The idea behind Cool Congregations is that each participating parish contributes to a significant, national decrease in GHG emissions, and that each member extends their lessons learned to their own lives.

Challenge

The challenge of lowering average new passenger car emissions while also encouraging the sale of more EVs.

Intervention

Cool Congregations and IPL are programs that focus on helping religious communities act on climate change and promote sustainability. These programs offer resources and support to religious organisations to help them reduce their carbon footprint and educate their congregations on environmental issues.

Intervention practices can refer to a range of actions that aim to address social or environmental issues. In the context of Cool Congregations and IPL, intervention practices may include implementing energy-efficient technologies, promoting alternative transportation, reducing waste, or advocating for policy changes that support sustainability. The Cool Congregations challenge has led to many innovative solutions and success tales. Examples range from Kentucky-based Buddhist communities upgrading the energy efficiency of their place of worship to the largest community-supported solar installation in West Virginia.



Impact

Even though Cool Congregations is motivated by a moral imperative, the program is very action oriented. The program has created a Cool Congregations Calculator, which assists in the calculation of the carbon footprint of congregations and also helps in determining the most effective strategies to minimise it. Through these contests, the project has been able to reduce greenhouse gas emissions for participating congregations by an average of 42%.

Just 20 congregations can reduce GHG emissions by more than two million pounds a year, which is the same as avoiding burning a million pounds of coal or driving 2.3 million fewer miles. To demonstrate the program's full potential, the Environmental Protection Agency noted that if all 370,000 congregations in America cut their energy use by just 20%, it would result in a 2.6-million-ton reduction in greenhouse gas emissions, or the equivalent of removing the emissions from 480,000 cars.

Key Takeaway

Overall, while energy efficiency practices have numerous benefits, there are several challenges associated with implementing them. Addressing these challenges will require a combination of policy changes, increased awareness, and technical support.



Green Roof Programme

Region/Country: Switzerland

Year: 1996-1997 and 2005-2007

About the Case Study/ Summary

The incentive programme created by the Swiss city of Basel promotes green roofs as a two-way solution for mitigation and adaptation. As a mitigation measure it offers to reduce energy use and emissions, while as an adaptation measure, it is associated with lowering temperatures of buildings and reducing flood risk by absorbing precipitation.

The Green Roof program aimed to increase the number of green roofs in Basel using a mix of financial incentives and building requirements. Because of their initial costs, green roofs are 10-14% more expensive than standard roofs during their lifetime (the cost of maintaining a green roof is comparable to that of a traditional roof). Thus, a 20% reduction in green-roof construction costs (as accomplished under the subsidy system) is deemed sufficient to bring the costs of green and regular roofs into line for investors. Green roofs are thus not just a sustainable solution, but also a financially viable option.

Challenge

Addressing climate change through options promoting mitigation and adaptation, and also complying to energy conservation rules, laid out by the state.

Intervention

The City of Basel established an ordinance to assist energy conservation measures in the early 1990s. With this funding source, the national Department of Environment and Energy opted to explore and promote green roofs. Basel's first green roof initiative, which was launched in 1996. Thereafter, 1711 extensive green roof projects and 218 intense green roof projects were developed. As a result, in 2006, green roofs covered around 23% of Basel's flat roof surface. The Energy Conservation rules mandates that 5% of all energy bills be deposited into an Energy Saving Fund, which is subsequently used to finance energy saving initiatives and campaigns.





Impact

Green roofs provide numerous direct benefits including absorbing rainwater and delaying runoff (thus reducing flood risk in high-intensity rainfall events); providing insulation for buildings; lowering indoor temperatures (by up to 5 °C), resulting in energy savings; fostering plant and wildlife habitats; and improving the aesthetics of urban landscapes.

Key Takeaway

Green roofs are one sort of green and blue space adaptation to climate change that has several uses. While energy conservation was the first entrance point, the attention later switched to biodiversity and finally to the role of green roofs in Basel's climate change adaptation. Native regional soils should be used as the growth medium, and the rule suggests contacting a horticulturist.

Energy Demand Research Project

Region/Country: United Kingdom

Year: November 2011

About the Case Study/ Summary

The British Office of Gas and Electricity Markets (OFGEM)-led Energy Demand Research Project was developed between 2007 and 2011 to illustrate the potential of behavioural insights applications to encourage energy conservation. It involved a number of behavioural mechanisms such as feedback mechanisms, changing the physical environment, and target setting with commitment devices. The project was aimed at studying consumers' response to improved information about their energy consumption through a set of behavioural interventions. The interventions involved over 61,000 households and were delivered by four different energy utilities.

Challenge

To address increasing energy consumption by consumers through behavioural interventions.

Intervention

The ERDP trials were undertaken by four energy supply companies. The UK government allotted 9.75 million euros for the trials, match-funded by the selected energy suppliers. The 4 energy suppliers were selected through a call for tenders, and they each divided their trials into a number of groups to test the impact of the different interventions etc. The trial used a simple behavioural change framework based on means, motive, and opportunity. The interventions were either assessed individually or in combination with each other and included energy efficiency advice, historic energy consumption information, benchmarking the consumption against comparable households, customer engagement using targets, smart electricity and gas metres, real-time display (RTD) devices, control of heating and hot water integrated with RTD and financial incentives to reduce and shift energy demand.



Impact

Smart metres were found to be the most successful intervention in reducing energy consumption, followed by installation of real-time information displays. The success of smart metres could be attributed to the fact that they provide actual feedback on historic consumption and enabling consumer learnings. Further, smart metres coupled with RTDs were more successful since RTDs make energy consumption more salient, frequent, and accurate than metres alone.

Key Takeaway

- Coupling behavioural levers can create larger impacts, such as the smart metre with a real-time display.
- Energy conservation policies can be driven by a range of behavioural insights.
- The project showcased the potential of feedback mechanisms for energy savings.



Shamba Chef

Region/Country: Kenya

Year: 2017

About the Case Study/ Summary

In 2016, over 85% of Kenyan households used wood, charcoal, and kerosene for their primary cooking fuel, all of which have an adverse impact on human health and are detrimental to the environment. To tackle this issue and to motivate Kenyan households to adopt modern cookstoves (modern biomass and LPG cookstoves), a behaviour change communication (BCC) reality show, 'Shamba Chef' was created. The results over the next 6 months showed that more than half of the sample audience comprising 1715 households, showed aspirations to use LPG and to buy a clean cooking stove.

Challenge

To move people from traditional cooking fuels such as wood and charcoal, which cause widespread environmental and health impacts that disproportionately affect women and children, into using clean cooking solutions.

Intervention

The hour-long show aired on both TV and radio once a week from September 2017 to December 2017 based on 4 themes: (1) health implications of current traditional stoves; (2) the savings associated with a modern cook stove; (3) demonstrations of modern cookstoves; (4) the benefits of modern cookstoves.

These themes were explored by participants through the show and engaged viewers by running cook-off shows against neighbours, home makeovers, along with transporting Kenya's top chefs to rural areas and making them cook on modern cookstoves and engage with local communities. Additionally, a digital mobile phone platform called iChef was developed, where viewers could text or phone for further information on modern cookstoves and its benefits. Viewers were also educated on how and where to purchase modern cook stoves along with how to finance their purchase.





Impact

Independent research conducted in 2018 with a total sample size of 1715 households, found that exposure to the program was associated with an awareness of improved biomass stoves. In all, more than half of the population aspired to use LPG for cooking and showed positive intention to purchase a clean cooking stove. Qualitative results of the study showed that Shamba Chef influenced purchasers' decisions in buying modern cookstoves and that the program was effective in explaining how the stoves work, outline and confirm their purported benefits, and engage with real people to encourage participants to trust and to purchase those cookstoves.

Key Takeaway

- Making the TV and radio show entertaining and interesting to watch was a key factor for the success of the campaign.
- Furthermore, the iChef application created a channel of communication where viewers could pose their questions and clarify information or processes regarding adoption of cleaner cookstoves.

Framing Fuel Efficiency, Emission and Running Cost Information

Region/Country: Europe

Year: 2014

About the Case Study/ Summary

The European Commission ordered an impact assessment of different types of labels and promotional materials that provide information on fuel efficiency, CO2 emissions and running costs. The study tested the effectiveness of the labels on willingness to pay and comprehension of green stickers. Results found that labels displaying indicators related to fuel economy were more effective than those displaying emission related indicators.

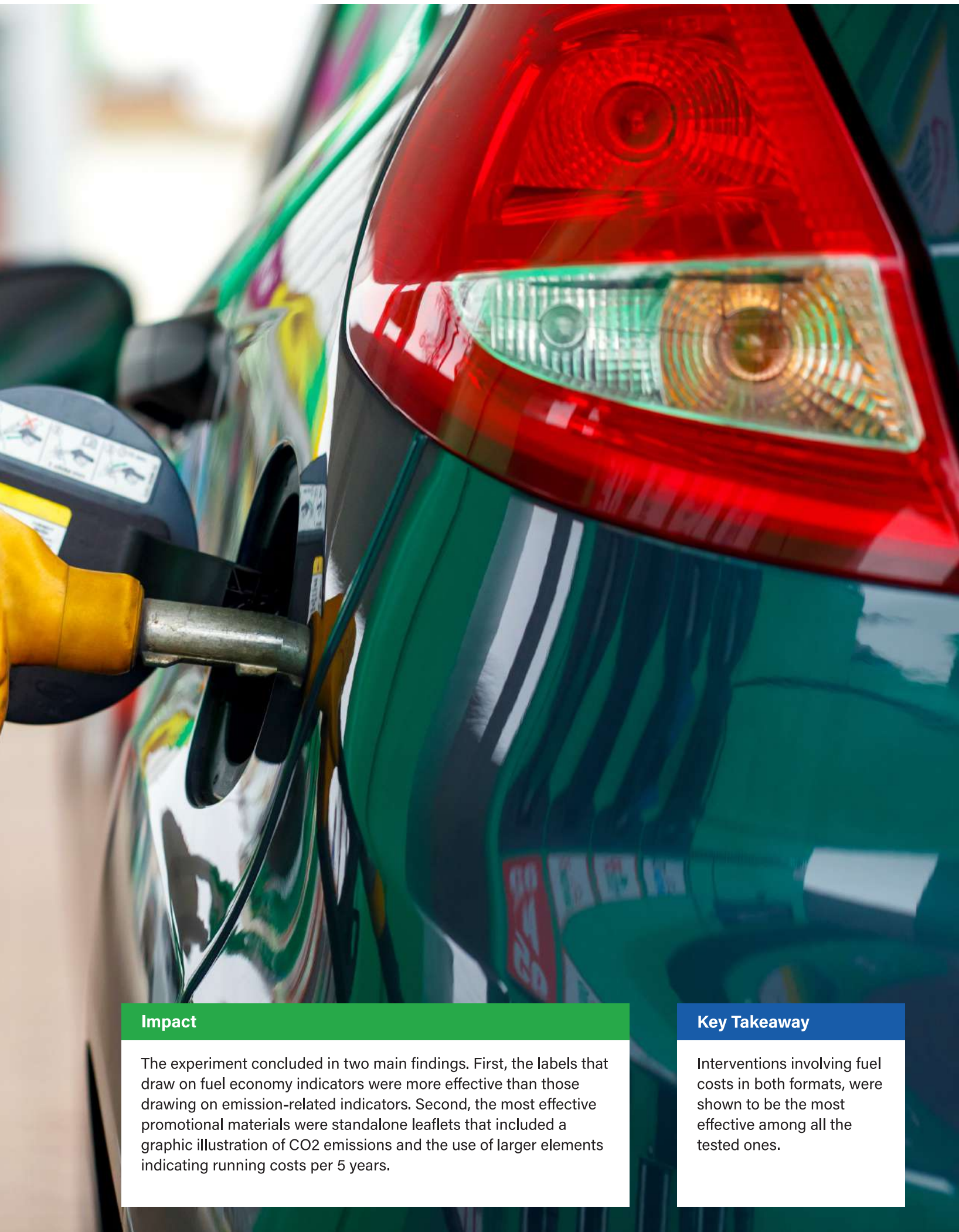
Challenge

To foster fuel efficiency through impact assessment of labels and promotional materials to understand their effectiveness.

Intervention

The study adopted a three-fold approach consisting of a cross-country survey, a stated choice experiment rolled out online, and a laboratory experiment. The effectiveness of the different treatments (labels and promotional materials) was measured through indicators such as willingness to pay, that highlights whether the information provided on labels will drive consumers to spend more on eco-friendly cars or spend less for eco-unfriendly cars; and self-reporting of cognitive measures of the noticeability, comprehension and recall of information, in which consumers were asked questions regarding car "greenness" and fuel efficiency.





Impact

The experiment concluded in two main findings. First, the labels that draw on fuel economy indicators were more effective than those drawing on emission-related indicators. Second, the most effective promotional materials were standalone leaflets that included a graphic illustration of CO₂ emissions and the use of larger elements indicating running costs per 5 years.

Key Takeaway

Interventions involving fuel costs in both formats, were shown to be the most effective among all the tested ones.

Car Labelling for Fuel Efficiency

Region/Country: Israel

Year: 2015

About the Case Study/ Summary

In June 2015, the Israeli Ministry of Environment Protection ran an experiment to test the impact of alternative fuel efficiency labels on the car choices of consumers. The experiment was designed to test the extent to which different types of fuel efficiency labels would induce consumers to purchase more fuel-efficient cars. Results showed that the label comparing long-term fuel costs to those for the best car in the same category was found to be more effective in inducing consumers to opt for more fuel-efficient models.

Challenge

To assess the role of labels in making customers opt for fuel-efficient car models in order to curb carbon emissions in the transport sector.

Intervention

Consumers were divided into various groups, i.e., the control group, and multiple treatment groups to be exposed to different combinations of information. The control group was shown solely the price tag and standard fuel efficiency label, including information on fuel consumption per 100 km and pollutant emissions. The consumers in the treatment groups were exposed to different combinations of information, such as the tax benefit to the car owner upon purchasing a fuel-efficient car, the estimated fuel costs for a period of 5 years, and a comparison of fuel consumption and costs with respect to the most fuel efficient or average car of the same category.

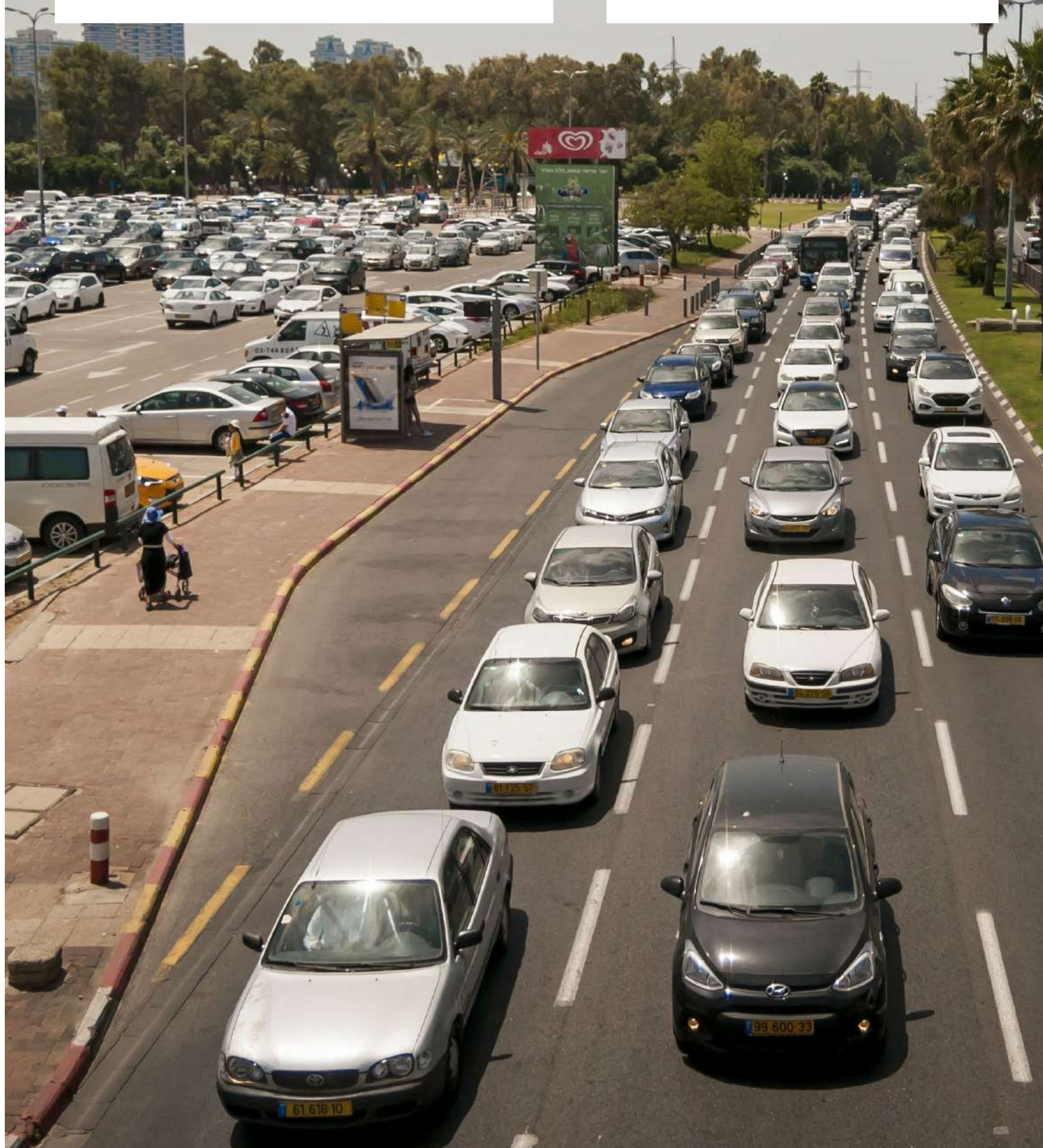


Impact

About 77% of consumers exposed to the label comparing long-term fuel costs to those required by the best-in-class car opted for the more efficient car, thus proving the higher effectiveness of these labels. The higher effectiveness of the fuel-costs comparison label is likely due to the impact of loss aversion. The comparison effectively underlines the financial costs of driving a car that is less fuel efficient than a given benchmark.

Key Takeaway

Scientific evidence on the advantages of making fuel costs more salient can drive concrete policy change. In 2011, the USEPA updated the regulations regarding fuel efficiency labels. The new labels are required to depict the fuel efficiency of vehicles with two linear measures: gallons per 100 miles and estimated annual fuel costs.



Reducing the UK Governments Buildings and Estates' Emissions

Region/Country: United Kingdom

Year: 2010-2011

About the Case Study/ Summary

The then Prime Minister of the UK, David Cameron, had committed the central government to cutting emissions from its office estate by 10% between 14 May 2010 and 13 May 2011 in order to demonstrate the Government's commitment to reducing carbon emissions. During this time period, the Cabinet Office and Department of Energy and Climate Change (DECC) led a programme of work focussed on government energy efficiency.

Challenge

To promote energy savings in government buildings and estates using behaviour techniques.

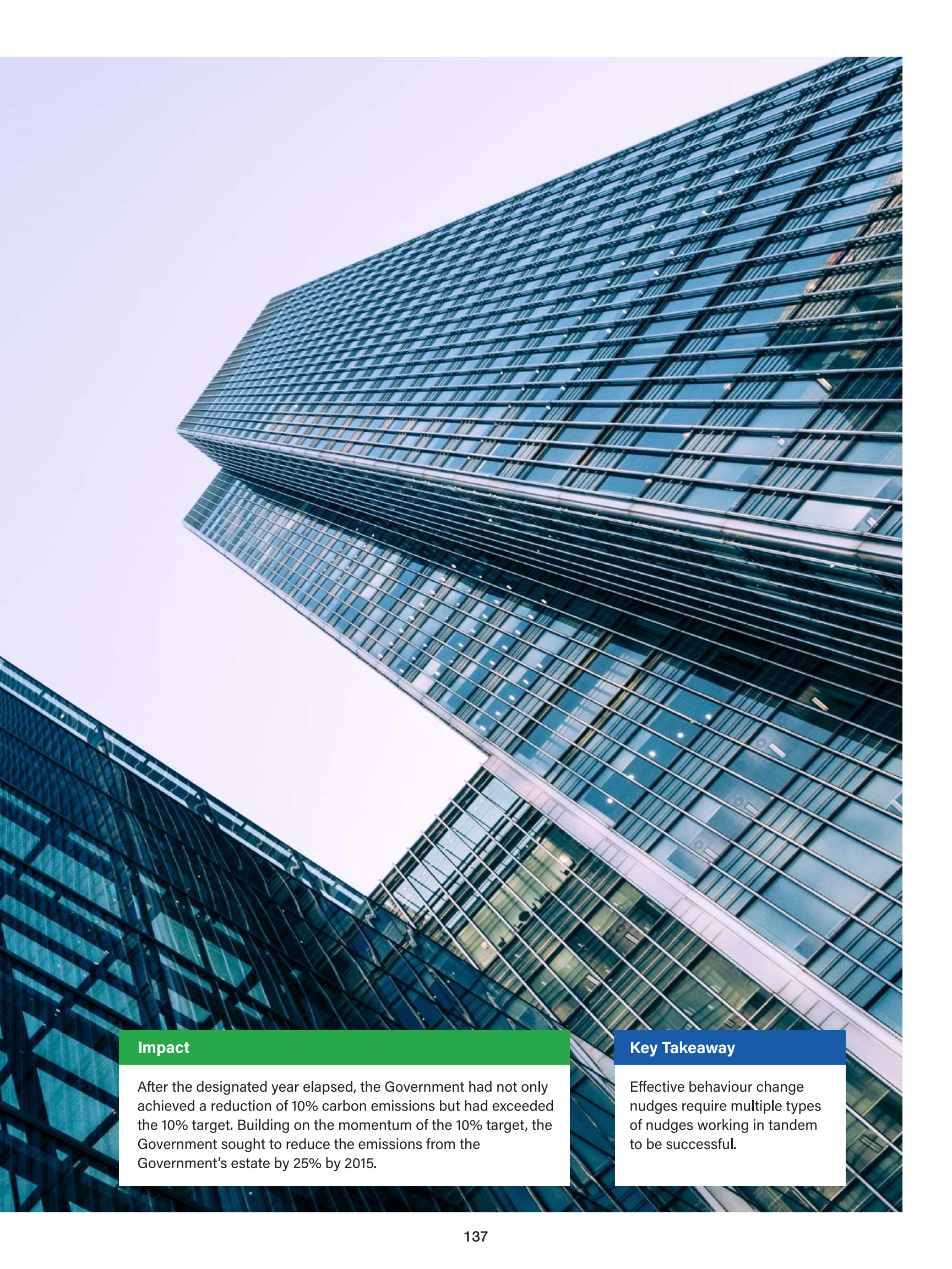
Intervention

Covering 300,000 civil servants in 3,000 buildings, the efforts drew upon behaviour change techniques which fell into two broad categories – changing defaults for lighting and heating, and encouraging behavioural change through social norms and competition.

Changing Defaults: Various defaults were changed across government buildings and estates such as ensuring that buildings were shut down effectively during relatively quiet periods (like between Christmas and New Years), identification of 'optimal core hours windows' and changing the defaults around this core, and ensuring that spaces should not be heated above 19°C or cooled below 24°C depending on the season.

Social Norms: Creating a competitive environment between buildings by publishing monthly performance league tables showing progress towards the pan-government target along with a competition which was held in October 2010 to see which HQ building could save the most energy, relative to the previous month. Additionally, real-time displays were installed in 19 Whitehall HQ buildings, feeding online reports of energy use.





Impact

After the designated year elapsed, the Government had not only achieved a reduction of 10% carbon emissions but had exceeded the 10% target. Building on the momentum of the 10% target, the Government sought to reduce the emissions from the Government's estate by 25% by 2015.

Key Takeaway

Effective behaviour change nudges require multiple types of nudges working in tandem to be successful.

Energy Efficiency Labelling for Online Retail

Region/Country: 10 EU countries (France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, and Sweden)

Year: 2014

About the Case Study/ Summary

A study was commissioned by the European Commission to examine how information on energy efficiency labels for household appliances can be improved to promote the choice of more energy-efficient products on online platforms.



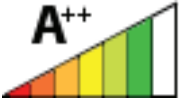

Challenge

To promote energy efficiency in household appliances through improved understanding of energy efficiency labels on online retail platforms.

Intervention

The study involved 11,764 online consumers from 10 countries and were chosen from GfK's online panels, ensuring nationally representative samples of active internet users. A stated choice experiment which simulated an online store was created to test the effectiveness of the 4 designs of energy efficiency labels. Participants were told to engage with the simulated environment selling four different appliances (refrigerators, televisions, washing machines, light bulbs). The participants were then randomly assigned to the following groups:

- Consideration experiment: participants were asked to form a consideration set out of several product alternatives.
 - Treatments: the four labels pictured below.
 - Control: no information on energy efficiency.
- Choice experiment: participants were asked to make a final product decision out of a restricted set of product alternatives.
 - Treatments: the four labels pictured below; the full EU energy label.
 - Control: non-prominent information on energy efficiency, written in the same font as other product attributes.

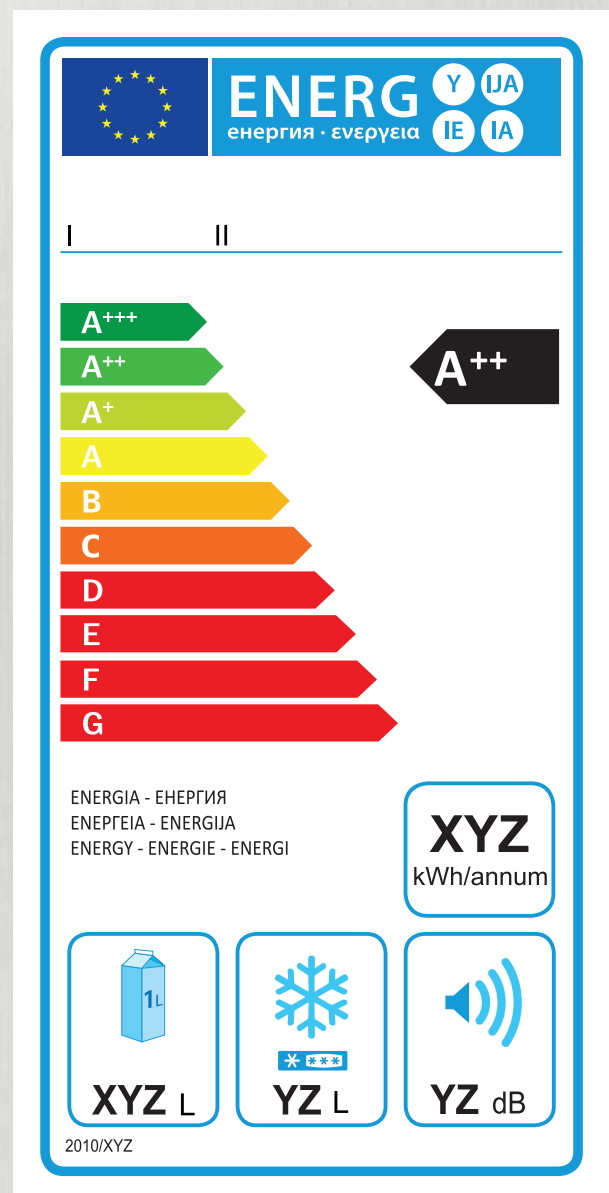
Label 1: Class-only label	Label 2: Meaning	Label 3: Frame of reference (FoR)	Label 4: Meaning + FoR
			

Impact

Both experiments showed that the simplified labels lead to a higher consideration of more energy efficient products than the information provided to the control groups. Among all the simplified labels, Label 3 was the best performing one as it was selected on an average of 61% in the Consideration experiment and 68% in the Choice experiment. While differences in impacts among labels were smaller at this stage, all four simplified labels outperformed the standard EU energy label normally shown in physical stores.

Key Takeaway

This experiment demonstrates the importance of simple and effective labelling that is easy for consumers to interpret. Arranging information in easily digestible forms ensures that consumers are making an informed choice.



Shifting Commuter Behaviour

Region/Country: Australia

Year: 2021

About the Case Study/ Summary

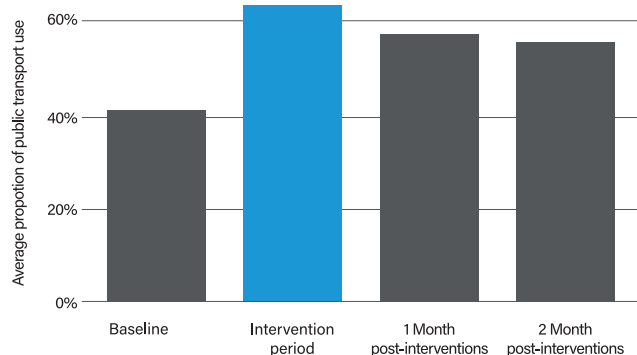
The Department of Transport in Western Australia aimed to shift retail staff at a large shopping centre in Perth from commuting via car to public transport.

Challenge

To curb increasing carbon emissions by use of private cars by commuters and increase use of public transport.

Intervention

134 staff at a shopping centre received a free SmartRider card – a card used for public transportation in Perth, and at the beginning of the next 4 weeks, 25\$ were uploaded onto their SmartRider cards. The participants also received weekly emails which incorporated behaviourally-informed messages to remind them that their commute was essentially free since their cards had been uploaded with money, and that they should try using them if they had not already. A control group of participants was created which was told that they too would receive similar SmartRider cards with a top up in the near future, but are on the waitlist as of now.

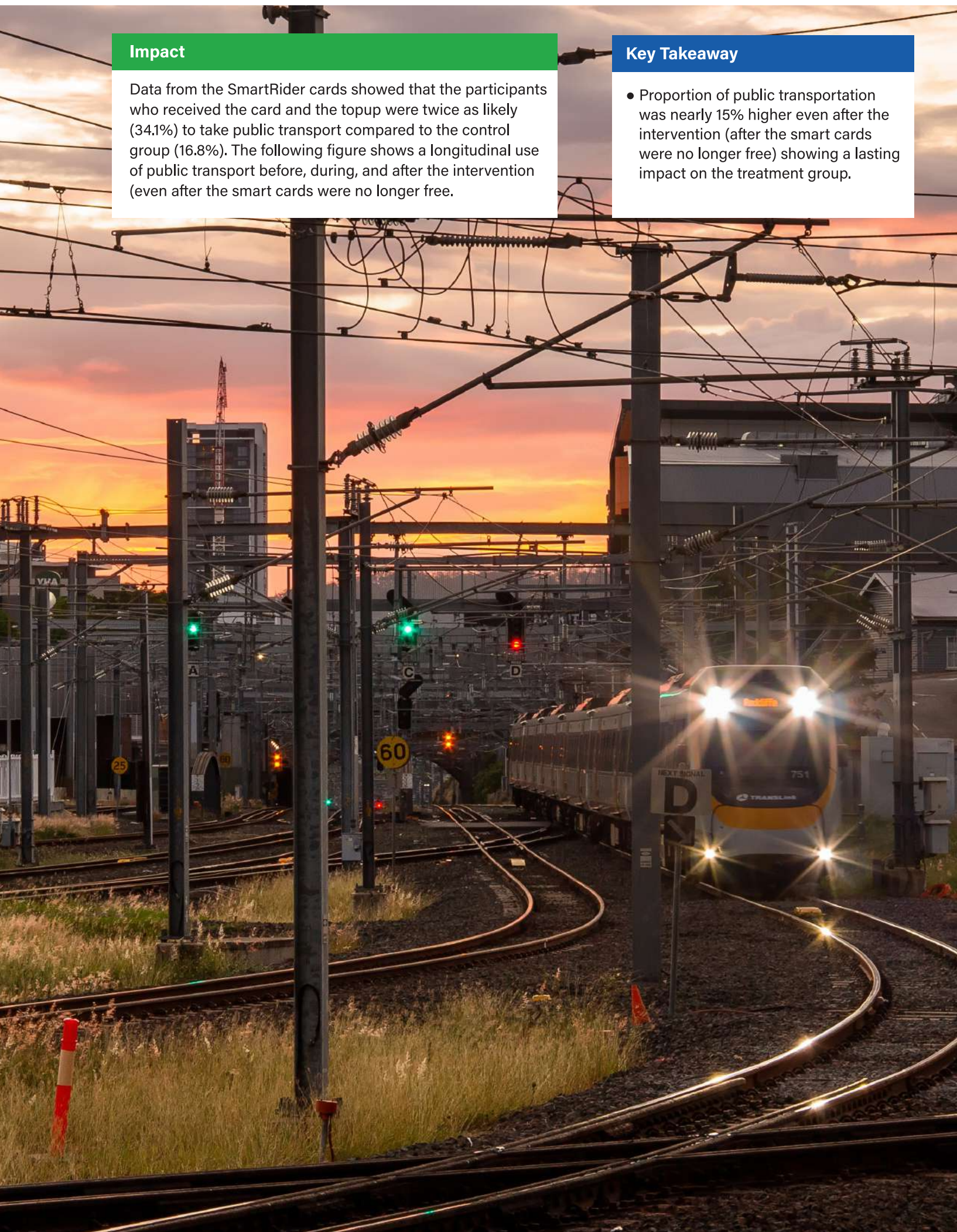


Impact

Data from the SmartRider cards showed that the participants who received the card and the topup were twice as likely (34.1%) to take public transport compared to the control group (16.8%). The following figure shows a longitudinal use of public transport before, during, and after the intervention (even after the smart cards were no longer free).

Key Takeaway

- Proportion of public transportation was nearly 15% higher even after the intervention (after the smart cards were no longer free) showing a lasting impact on the treatment group.



Reducing Peak Transit Demand – Cubs Games

Region/Country: United States of America

Year: 2017

About the Case Study/ Summary

The Chicago Transit Authority (CTA) and others created a consumer-friendly system that comprises devising and sending text messages to residents to alleviate public transit congestion on the CTA Red Line during Cubs professional baseball night games.

Challenge

Promote sustainable transportation using behaviourally informed interventions comprising consumer-friendly ways.

Intervention

The intervention involved sending 4 different text messages to over 2,000 opted in residents. The text messages were as follows:

- An alert reminding them a baseball game was occurring.
- Message encouraging them to use the Red Line outside of the peak hour 5-6pm window.
- Received a \$2.25 rebate when they avoided this window.
- A not pledging \$5 contribution to charity when they avoided the window.

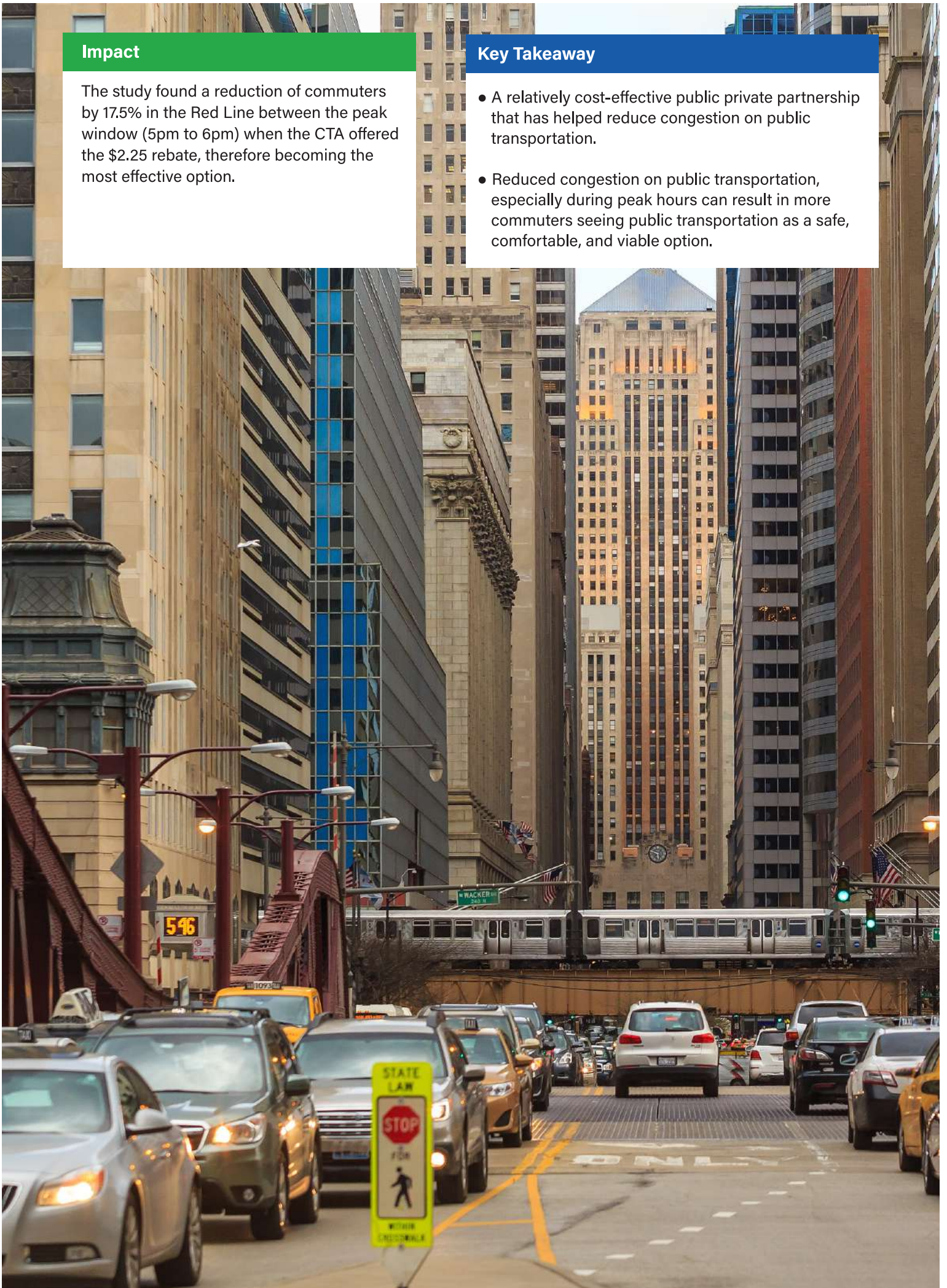


Impact

The study found a reduction of commuters by 17.5% in the Red Line between the peak window (5pm to 6pm) when the CTA offered the \$2.25 rebate, therefore becoming the most effective option.

Key Takeaway

- A relatively cost-effective public private partnership that has helped reduce congestion on public transportation.
- Reduced congestion on public transportation, especially during peak hours can result in more commuters seeing public transportation as a safe, comfortable, and viable option.



Portland's SmartTrips Welcome Program

Region/Country: United States of America

Year: 2011

About the Case Study/ Summary

The Portland Bureau of Transportation implemented an approach to help new residents develop environmentally-friendly transportation habits, partnered with the Metropolitan Planning Organization and Oregon Department of Transportation. The SmartTrips program had been in operation since 2003, and took a redefined strategy with the development of SmartTrips Welcome, which targeted transportation behaviour of new residents. The objectives of this program included reducing drive-alone trips, increasing awareness and use of environmentally friendly transportation modes, and engaging new residents to participate in the program.

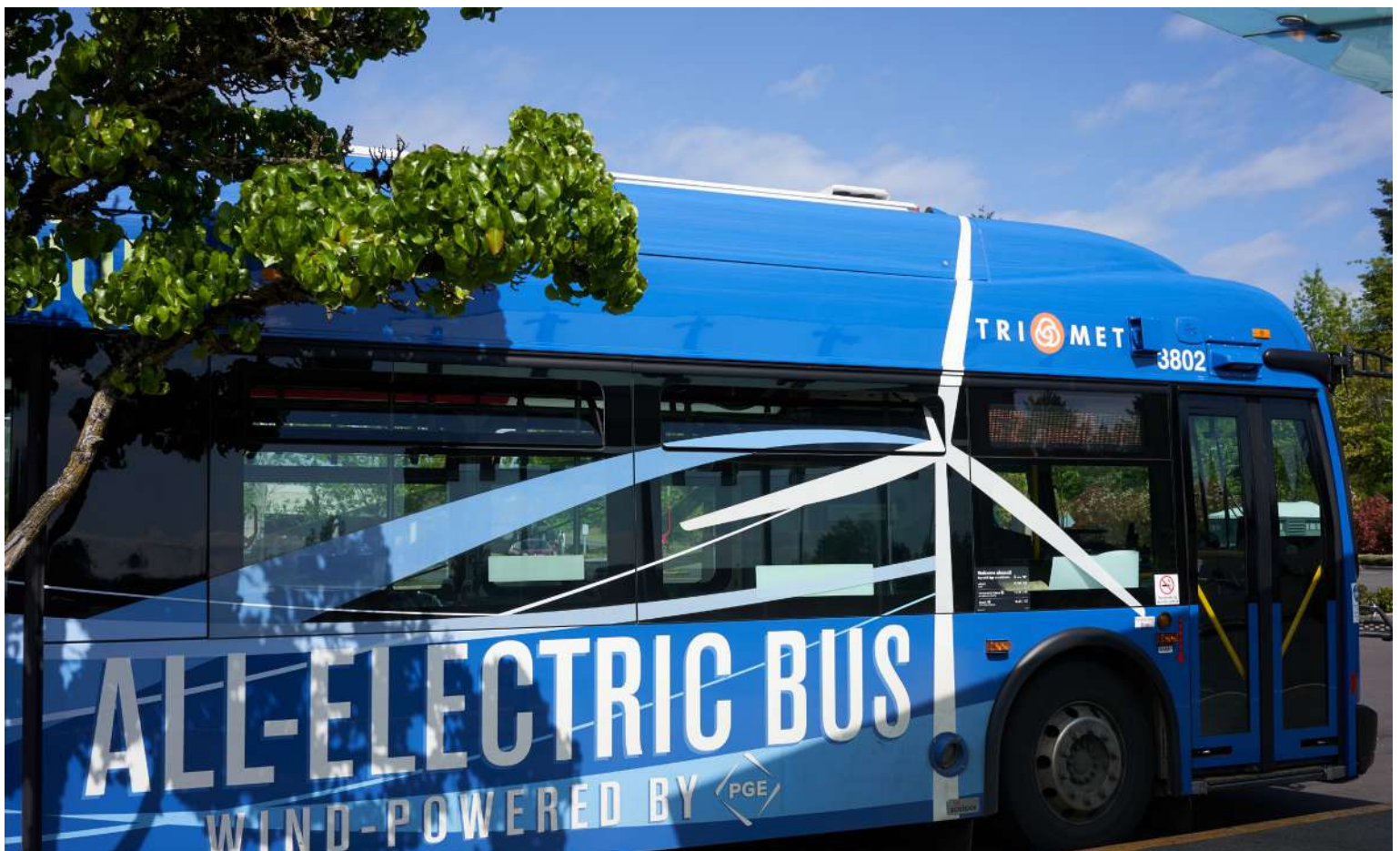
Challenge

To promote sustainable transportation through development of an innovative, effective, and replicable transportation behaviour change program.

Intervention

SmartTrips Welcome program began in 2011 and was based on: individualised marketing, customised communication, and reinforcement. They utilised behaviorally informed mailers and resources to raise awareness regarding the various forms of transportation available in Portland. The program also provided new residents with free resources as an incentive to make them adopt environmentally friendly transportation modes.

The success of the program was measured using regional analysis and long-term panel analysis via surveys.





Impact

About 5,400 participants took part in the program, and there was a reduction of more than 1 million VMT (vehicle miles travelled), approximately 200 miles per new resident per year. Drive-alone trips decreased by 10.4% initially among new residents, and by 7% one year later. Use of environmentally-friendly modes among new residents increased by 13.6% initially and by 9% one year later.

Key Takeaway

- Focused customised messages to individuals in order to overcome this issue.
- The most important messages were those that dealt with safety, ease and convenience of use.
- The program found that maximising use of newly-built infrastructure is important.

Room to Breathe Campaign

Region/Country: India

Year: 2010

About the Case Study/ Summary

Shell Foundation launched a 'Room to breathe' campaign in southern parts of India to tackle the problem of indoor smoke arising from using open fires and traditional biomass based cooking methods in the kitchens of communities in south India. The foundation partnered with district officials to build capacities of communities with focus on women to switch to cleaner cook stoves with greater energy efficiency. Results indicate that an improved stove reduced smoke levels by as much as 55%, while using at least 40% less fuel while being more affordable.

Challenge

To address the indoor pollution arising from traditional cooking fuels such as woods in developing countries causing health hazards and air pollution.

Intervention

The interventions involved awareness generation programmes through active outreach and securing support from the District Administration including the health and education infrastructure, village level health workers and demonstration of campaigns for Gram Panchayats. Together, they worked with communities with a focus on women demonstrating and generating awareness on hazards of indoor air pollution for health and the environment and how small and effective steps like 'keeping the kitchen windows open', 'installing a chimney or ventilator', 'keeping children away from smoke' or 'use of dry firewood' could make a significant difference in reducing indoor air pollution. More importantly, the focus was on promoting the internationally-recognised, most effective and sustainable method for tackling indoor air pollution through 'improved stoves', significantly reducing emissions and fuel use.



Impact

Estimates suggest that improved cook stoves reduced smoke levels by as much as 55%, used at least 40% less fuel, while being affordable.

Key Takeaway

- Capacity development and awareness generation programmes are positive ways to change behaviour and switch to alternative methods.
- Improved cook-stoves can be an important tool to save energy, reduce indoor air pollution causing health and climate hazards.





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Ultimately, for success, moderating our lifestyle is necessary, and possible, for a low carbon future.”

Shri Narendra Modi
Prime Minister

4.5 Plastic Waste Management

Globally, millions of tonnes of plastic waste enter the environment each year, between 19 and 23 million tonnes of plastic waste enter the environment each year. Plastic is so prolific that sedimentary deposits are now recognised as a geological proxy for the beginning of the Anthropocene. Single-use plastics are particularly problematic. First, they represent around a third of litter, which is harmful to the environment and costly to clean. Second, plastic breaks down into microplastics which can cause more environmental harm by entering the food chain. Third, single-use plastics are difficult to recycle, often ending up in landfill. As a result, after typically being used only once, often for a few minutes, single-use plastics can remain in landfill or the environment for hundreds of years.

Circular business models, extended producer responsibility and increased collection and processing have all been proposed as solutions to the problems associated with plastic waste. Few countries have vehemently advocated for a partial ban on plastic, but in most cases, it has proven to be a failure due to a huge array of exceptions, which have crept in the form of imports, exports and ossified human habits. Few countries provide incentives to organisations and citizens to reduce their use of plastic.

Although offering incentives was initially viable, and many organisations made genuine efforts to reduce their plastic footprint, motivation quickly lapsed despite the incentives being offered for a variety of reasons, one of which is that there is no sturdy and economical product like plastic as an alternative. Most remedies, though, involve some degree of behaviour change at the individual level. Theoretically, by presenting various circumstances, this behaviour can be unlearned. Numerous international studies have recognised that people's intentions to reduce single-use plastic would be influenced by their perception of behavioural control. When compared to attitudes and subjective standards, the research by Nur et al. (2015) found that perceived behavioural control was the most important factor in changing behaviour toward reducing plastic consumption. In this section, we will focus on lowering single-use plastic behaviour through model case studies on individual and group behavioural changes.



Providing a Substitute for Single-Use Plastics in the Pacific

Region/Country: Solomon Islands

Year: 2020

About the Case Study/ Summary

The Solomon Islands Government led an initiative to try and reduce use of single-use plastic on the islands. Solomon Islands' capital city, Honiara has a huge plastic waste problem, especially due to the generation of large amounts of plastic waste by local schools in Honiara. It was noticed that thousands of single-use plastics were being used and discarded by Honiara schools, and so BIT and UNDP aimed to apply an intervention which would shift the default away from using single-use plastic containers and instead towards reusable containers.

Challenge

Reducing single-use plastics in the wake of increasing plastic waste in roads and beaches in Solomon Islands.

Intervention

Two interventions were implemented across 5 schools in Honiara to encourage the use of reusable lunch containers:

- Deposit Return Initiative: Students would be refunded a dollar if they returned their reusable containers at the end of lunch.
- Discount Initiative: Students who brought reusable containers would get a dollar off their meal.

Three schools chose to implement the Deposit Return Initiative while the other two schools adopted the Discount Initiative.



Impact

The three schools which chose the deposit return initiative believed that it would be easier for them to change the behaviour of the food sellers rather than a mass behaviour change of individual students. This was indeed the case as essentially all students returned all the containers after the lunch service to receive their deposit back.

The other group which chose the discount scheme had less successful results. Out of the two schools, the primary school successfully implemented the scheme and saw reductions in single use plastic containers. However, the secondary school which chose this scheme did not successfully engage with students and food sellers, resulting in students going outside of their campus to buy food.

Key Takeaway

- Calculations estimate a return on investment in just 1 – 2 weeks for the food sellers if they purchased the reusable containers.
- However, the upfront cost of the containers is still relatively high and can act as a barrier.
- These trials directly contributed to the Solomon Island government's proposal to ban 5 types of single-use plastic in 2020 demonstrating how relatively small nudges and trials can result in wider policy and systemic action.



Garbage Medical Insurance

Region/Country: Tanzania

Year: 2021

About the Case Study/ Summary

EcoAct Tanzania, is a social enterprise established to address the challenges of post consumer plastic pollution, waste management, deforestation and climate change. With the aim of better plastic management in Tanzania, it has implemented a micro health insurance program which uses plastic waste as a financial resource and incentivizes communities to segregate and responsibly collect plastic waste.

Challenge

To promote reduction and better management of plastic waste through financial instruments, to address plastic pollution.

Intervention

EcoAct Tanzania implemented a “Garbage Medical Insurance” program. In this program, slum dweller communities in Tanzania were focused upon and community members would collect and segregate plastic garbage, after which they would submit the plastic garbage to EcoAct. Community members who submitted the garbage would be able to pay for their health cover, drugs and other clinical services by using garbage as payment to an insurance scheme. Essentially, community members would submit their garbage to EcoAct, and they would get medical health insurance coverage in return.

CHI - Community health Insurance, a government entity providing affordable medical insurance, partnered with EcoAct to enable an affordable premium option for the families offering plastic garbage.





Impact

The insurance program has helped solve a dual issue of plastic waste and sanitation in the slums of Tanzania as the incentive of insurance drives members to be mindful of the garbage they generate and dispose of at a household level.

Key Takeaway

- The intervention focused on a win-win situation for the poor community members and the enterprise.
- Understood that medical insurance is a need for the community and used it as an incentive.

Plastic Mukh Abhiyan

Region/Country: India

Year: 2022

About the Case Study/ Summary

Nagar Nigam Dehradun - the Municipal Corporation of Dehradun, partnered with the Social Development for Communities (SDC) Foundation, a Dehradun-based NGO, designed and implemented a community-driven campaign to reduce plastic waste. The 'Plastic Mukh Abhiyan' (translating to 'Plastic Free Campaign' in Hindi) followed the tenets of the national Swachh Bharat Mission and was aimed at sensitising school children about plastic waste management issues, along with a waste collection and reduction methodology which would be implemented to achieve tangible results.

Challenge

To address the issue of increasing plastic waste by sensitising school children on the harmful effects of single-use plastic and plastic waste management including waste collection and reduction methodology.

Intervention

The Plastic Mukh Abhiyan was designed as a three-pronged approach towards plastic waste – awareness, segregation, and behaviour change. Workshops and events were organised in each school to spread awareness about improper plastic waste management and how segregation can help. The aim was to not only reach children but also their parents. School children were taught how to identify and properly segregate waste. 'Plastic Banks' were set up in each school to collect the segregated waste from students.

A 'Plastic Sangrakshak' was appointed by the schools (in most cases the school principals), along with 'Plastic Yodhas' (senior teacher/staff) and 'Plastic Prahis' (plastic class monitors) to monitor and coordinate the activities of the program. This gave a sense of ownership and accountability towards the campaign and therefore at all levels of the school, responsibility was allocated to ensure correct segregation and disposal of waste. Behaviours slowly began to change and testimonials from the students show that they started to bring a positive impact back into their homes and neighbourhoods.

The segregated and collected plastic was recycled through a chain of Nagar Nigam approved recyclers.





विद्यालय: मन्वाला माफा
विकास खण्ड-रायपुर जिला देहरादून



Impact

Although the campaign ran for 2 months, more than 48,224 students from 105 Dehradun schools, teachers/staff and their families were involved in the Plastic Mukta Abhiyan. The campaign had a participation of 104 Plastic Sangrakshaks, 114 Plastic Yodhas and 1429 Plastic Prahris, who not only segregated and collected the waste but also conducted additional activities like street rallies, debates and clean ups in their campuses.

At the end of the campaign, the Plastic Bank had collected:

- 2,343 kilograms of single use plastic waste
- Close to 1.1 million packets of chips

Key Takeaway

- A straightforward campaign to reduce plastic waste which is dependent on institutions like schools but is also easily replicable.
- The use of assigning principles, teachers, and students' specific roles and responsibilities increased their ownership over correct methods of plastic waste disposal and segregation.

Keeping Streets Cigarette Butt Free

Region/Country: United Kingdom

Year: 2016

About the Case Study/ Summary

Environmental organisation, Hubbub, launched a campaign in parts of the UK to curb the challenge of littered cigarette butts which are one of the most common forms of litter in the world. The team recognised the importance of educating people that cigarette butts are made of plastic so as to ensure their proper disposal. To this end, they introduced a visually appealing communication campaign comprising billboards, posters and the most iconic of them all - ballot bins, to reduce litter by 46%.

Challenge

To curb the problem of littered cigarette butts where they leech harmful chemicals into the environment and break down into microplastics.

Intervention

Hubbub, in its polling, found that 57% of smokers would be more likely to look for an ashtray nearby if they knew their butts and filters were made from plastic. To build awareness of people and capacitate them, Hubbub team designed and came forth with a visually appealing communication campaign. This comprised billboards, posters, talking buds, newspaper standees and most crucial of them all- ballot bin. The ballot bin is a customisable ashtray, displays question and two answers. Smokers vote by putting their cigarette butt in the slots underneath their preferred answer. The litter stacks up behind the clear glass front in two columns, showing which answer is more popular. The questions can be easily changed by the Ballot Bin owner. They can be funny, topical, provocative – whatever works for your audience.



Impact

Smokers found the ballot bins were much more engaging than alternative ashtrays and used them more often, eventually curbing littered cigarette buds by 46%.

Key Takeaway

Designing and developing innovative engagement ideas with citizens helps change behaviour and established practices





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Mission LiFE makes the fight against climate change democratic, in which everyone can contribute.”

Shri Narendra Modi
Prime Minister

4.6

Healthy Lifestyles Adopted

The term "lifestyles" describes an array of expressed behaviour, usually in the form of consumption and behaviour patterns, that characterise how an individual or group fits into society. Although, with the advancement of science and the facilitation of human tasks in daily living, there is a reduction in mortality from infectious diseases and an increase in longevity, the appearance of chronic-degenerative diseases that negatively affect the quality of life has been found when some behaviour defined as "healthy" lifestyles are not considered. Lifestyles can be defined as a set of mediating structures that reflect a collection of related activities, attitudes, and social values that are influenced by socioeconomic conditions, education, and age, among other factors. Thus, lifestyle is revealed to be fundamental in the adoption and protection of health.

Healthy lifestyles include preventive health, good nutrition and weight control, leisure, physical activity, periods of rest and relaxation, the ability to face adverse conditions, adopting a posture of being and being content with the objective of living well. Historically, the study of healthy lifestyles has been marked by three major periods: the first in the 19th century, the second in the second half of the 20th century, and the third in the present. During the first period, studies showed that healthy lifestyles were dependent on a sociological view and individual factors. In the second period, studies showed an incorporation of healthy lifestyles into health and focused on what is conducive to a healthy lifestyle. In the third period, there has been a development of healthy behaviours integrated into different contexts, such as motivation or basic psychological needs, seeking to perceive self-determination for a given practice, and the adoption of healthy behaviours. Thus, the behavioural patterns that are learned in childhood are likely to persist into maturity, so, adolescents who complete their educational stage while incorporating a healthy lifestyle will typically be adults with a lower likelihood of exposure to risk factors. Considering this context, our attention will be drawn to the significance of a healthy lifestyle as well as the role of behaviour change through model case studies on the adoption of a healthy lifestyle by individuals and groups.



Food Dudes Healthy Eating Programme

Region/Country: United Kingdom

Year: 1992

About the Case Study/ Summary

In 1990's, consumption of fruits and vegetables by a British household was far below average as stated by the WHO. It was seen that families suffered serious illnesses like cancer and coronary heart diseases due to lack of consumption of fruits and vegetables. The Food Dudes programme was designed and developed essentially for school going children (4- 11 years old) to improve their consumption of fruits and vegetables. This programme was launched as a result of 18 years of research by psychologists at Bangor University, Wales. Consistent evidence showed that the eating habits of this age group improved gradually in 16 days and left a positive lasting impact on their attitudes towards eating fresh fruits and vegetables.

Challenge

To address the issue of unsustainable and unhealthy food habits among school going children and to develop a programme to inculcate a healthy eating lifestyle mainly concentrated on consumption of fruits and vegetables at an early age, towards healthy and sustainable living.

Intervention

'Food Dudes' uses three core principles of behavioural change – Role Modelling, Rewards and Repeated Tastings – in an innovative way by employing them in a school setting, whilst incorporating a home element that enables the family to participate and benefit from the programme.

Role Modelling: Emulation is a natural trait of the kids. Taking this in consideration, the Food Dudes programme introduced a series of DVD adventures featuring 'The Food Dudes', a group of children who act as positive peer models. These DVD's were shown to the kids for 15-20 minutes daily for 16 days. The videos showed that the 'Food Dudes' gained superpowers by eating fruit and vegetables, and they defeated 'General Junk' and his 'Junk Punks' who are taking away the energy of the world by depriving it of healthy food.

Rewards: Rewarding tends to bring out a positive attitude in oneself leading to sustained behavioural change. After watching the 'Food Dudes' DVD, children were encouraged to taste fruit and vegetables themselves. Children who succeeded earned 'Food Dudes Rewards' (such as small stickers or branded pens). These rewards were not only restricted to the school premises, but extend to the home environment as well by recruiting the support of parents in continuing to reward sustainable behaviours at home.

Repeated Tastings: According to the "Taste Acquisition Theory" a liking for new foods develops if they are repeatedly tasted. This allows the children to discover the intrinsically rewarding properties of fruits and vegetables. With increased liking of fruit and vegetables, children become more likely to eat these foods simply for their flavour, rather than for any external reward. They also develop a pride in being individuals who contribute to a school culture that is strongly supportive of fruit and vegetable consumption. This combination of biological and psychological factors is what maintains the children's change of eating behaviour over the long term.

The programme was covered in three phases covering each principle. This kind of phase-wise intervention showed remarkable results with respect to change in the attitude towards the consumption of fruits and vegetables by children. They readily adopted a healthy eating style which helped in reduction of child obesity and other diseases.





Impact

Initially started as a research programme in schools by Bangor University, Wales, the programme gained huge success and consistently delivered positive results. Owing to this success, the programme was commercialised and rolled out to many funded sites such as Ireland (2007 - Ongoing), England (2009-10), Italy (2009) and USA (2009). One of the key locations, Wolverhampton in England ran this programme in 93 schools over three years. It witnessed some remarkable changes over the course of time. It was seen that children increased their daily fruit consumption by 54% and vegetable consumption by 48% following implementation of the programme. The largest increase in consumption of fruits (358%) and vegetables (293%) across the day was shown by the poorest eaters. Similarly at home, children's consumption of fruit increased by 42% and vegetables by 55% and again the poorest eaters showed large increases for fruit (490%) and vegetables (385%). Overall, it was seen that some children who previously were fed a liquid diet now readily eat fruit and vegetables. The 'Food Dudes' were seen removing the barriers of weight and dietary problems by encouraging the children to try novel foods in a fun and rewarding way.

Key Takeaway

- Since many of our eating habits are formed early in life which continue to persist through adulthood, it becomes crucial and necessary to inculcate healthy and proper dietary habits in our lifestyle in one's childhood. This programme taught the basics of eating healthy through social networks and role models guided by praise, recognition, and rewards.
- Commercialising the programme helped gain investments for ongoing research and programme development. This helped standardise the programme for multi-site application; using local supply and distribution networks for fruit and vegetables; and providing training for all coordinators and staff involved in implementation. In the long run, for preserving the programme's efficacy, future projects will be overseen centrally rather than delegating authority to specific areas or sponsors. By conducting evaluations in this manner, execution will become even more uniform across regions, preventing dilution or overlap with other initiatives.

Community-based Marine Conservation

Region/Country: Indonesia

Year: 2000-2005

About the Case Study/ Summary

Les Village is a small fishing village in Indonesia's Buleleng Regency. Les Village has a 25.57 km long coastline that is made up of sand, gravel, and rock beaches.

Marine ornamental fish started to become a successful commercial item starting in the 1990s and continuing into the 2000s. Fishermen focused on providing for their families and making money while making use of Nature to supply markets for marine ornamental fish (Bryant & Sinead, 2005). Earlier, the usage of cyanide made it simpler to catch fish, fishermen started to notice environmental damage in the 2000s. The usage of cyanide had a detrimental effect on the local marine ecology, with living coral cover dropping below 10%, ornamental fish populations dropping below 20% and the overall population dropping to an estimated 10% of its 1986 level (Frey, 2012).

Challenge

To create awareness among fishing communities of the harmful effects of cyanide for marine resources and biodiversity and support them to adopt environmentally responsible ways of fishing.

Intervention

This circumstance lasted for about 20 years. The early 2000s saw further degradation of the ecosystem and damage to reefs spread; nevertheless, Yayasan Bahtera Nusantara (YBN), an NGO came forward to provide the fishermen with much-needed support. Fishermen switched from using cyanide to using only nets and barriers after YBN conducted training programmes to create awareness of the current situation and its long term repercussions. They gave them new equipment for environmentally responsible fishing. The method that the NGO assisted in putting into practice was very effective since it recognised the fishermen's worldview, assisting fishermen in Les Village in changing from destroyer to guardian.





Impact

The benefits of environmentally responsible fishing that were put into practice restored fishermen's awareness of the balance of life. They learnt that utilising cyanide meant destroying their own natural resources because they were already experiencing its negative impacts, such as declining fish populations, diminishing coral reefs and significant debt. In order to rebuild their maritime livelihood, the community of decorative fishermen in Les Village collaborated with the NGO. Below are a few key impacts of the initiatives:

- The founding of new marine ornamental fish groups dedicated to community-based marine environmental management and environmentally benign fishing methods (no cyanide).
- Building artificial reefs to increase the marine diversity in Les Village.
- Establishing a community-based no-take zone.
- Strengthening the conviction that "karma" exists and that "nature will provide us with good fish" if we treat our environment well.

Key Takeaway

- The NGO's leadership acted as a powerful tool for motivating communities to adopt a behavioural change .
- The community has very high social capital and unity due to its interrelatedness and common history. Together, they inadvertently degraded their marine environment, suffered, and then they recovered their livelihood. Togetherness and trust are the biggest part of this community's social capital.
- Through community-based initiatives and their capacity building - marine ecosystems or any other form of ecosystem which is on the decline, can be restored or conserved.

Nature Urbane Agriponis

Region/Country: France

Year: 2020

About the Case Study/ Summary

The Nature Urbane Agriponis is an urban agriculture initiative in the city of Paris developed with the goal of creating more green spaces in the city. Spread across 14,000 sq. metre, the Nature Urbane Agriponis is Europe's largest urban farm. The farm includes more than 20 market gardens that produce more than 2000 pounds of seasonal fruit and vegetables daily from about 30 different plant kinds. Aeroponic farming, a soil-free agricultural technique that feeds the produce with a mixture of nutrient-rich mist and precipitation, allows the plants to grow vertically and it uses only 10% of the water required in traditional agricultural settings. The farming method used, a hybrid of traditional market gardening and modern aquaponics, uses extremely small amounts of water and soil, further reducing the farm's resource and space requirements.

Challenge

To meet the challenge of a growing demand for fresh, locally grown produce which is hindered by limited available land and water resources.

Intervention

The farm, which is 14,000 square metres in size (about equal to two football fields), includes more than 20 market gardens that produce more than 2000 pounds of seasonal fruit and vegetables daily from around 30 different plant kinds. Aeroponic farming, a soil-free agricultural technique that feeds the produce with a mixture of nutrient-rich mist and precipitation, allows the plants to grow vertically. With proper planning and management, hydroponic systems are helping in producing fresh, healthy produce while minimising the use of natural resources.





Impact

The project is developed with the aim to save space and shorten supply chains, but its presence in the urban landscape also naturally cools the city's climate. The Nature Urbaine offers not just produce but a range of services related to urban agriculture such as educational tours and team-building workshops for companies. To foster a proper community spirit, local residents will be able to secure about 140 vegetable plots of their own. Fruits and vegetables are growing on an unused roof area of 15,000 m² through hydroponics and aeroponics. It is providing employment opportunities for professional gardeners, renters, and local sellers.

Key Takeaway

There are some challenges like: energy consumption, pest management and regulation but offers hydroponic agriculture sustainable solution to limited space and arable land.

Eliminating the Use of Trays in the Cafeteria

Region/Country: United States of America

Year: 2014

About the Case Study/ Summary

Rutgers University decided to eliminate trays from their dining halls in order to decrease food costs and food waste. The university joined a growing list of schools such as University of Michigan, Purdue and the University of Massachusetts Amherst in this move. It resulted in saving \$300K in food costs, as well as reducing food waste by 20%. Although the shift was difficult for a few students, most welcomed the change. From a financial perspective, the decision led to savings in food costs which could be reinvested into programs for students.

Challenge

To address food wastage and unsustainable resource use by students in University and school cafeterias.

Intervention

By eliminating trays in dining halls, the amount of food wasted can be reduced. This is because instead of loading a lot of food on a tray, students now had to decide what they wanted to eat, and get refills if they needed more food. While this does not impact the consumption of students, it reduces wastage of food that has not been eaten. This policy compliments a recycling policy that Rutgers already had in place, in which they would pay a farmer to take away food waste to use as animal feed.





Impact

After implementing the decision, Rutgers was able to save \$300,000 in food costs. This was a welcome change given that the cost of food is rising by 8-10% each year. They also saw a 20% decrease in food waste. While the switch was welcomed by many students, who claimed that the change helped them to make healthier food choices, some students admitted to feeling self-conscious while going for second or third servings.

Key Takeaway

- The decision to abandon dining trays was a great success for Rutgers given the amount of food waste they were able to decrease, which complimented their existing policy on recycling.
- The decision also improved to be economical given that it reduced food costs, allowed the university to keep up with rising food prices and react to any fluctuations in costs, and enabled them to save money and spend it on student programs.
- Although the students had a mixed reaction to the move, most of them supported it.

Tackling Food Waste: DC Central Kitchen

Region/Country: United States of America

Year: 2017



About the Case Study/ Summary

DC Central Kitchen was started in 1989 by Robert Egger as a means of tackling hunger and homelessness. He planned for a central kitchen that would turn high quality, unsold food from caterers into balanced meals for shelters, and train unemployed adults in the culinary arts as part of the process. Since its inception, the DCKK has grown and expanded into a multifaceted nonprofit organisation that focuses on reducing hunger, food waste, and creating job opportunities for communities.

Challenge

To address issues of food wastage and hunger by creating a replicable strategy to improve the efficiency of food rescue for hunger relief while creating meaningful career opportunities for at-risk individuals.

Intervention

DCKK began in 1989 with a van and a borrowed kitchen, where Egger began collecting surplus food and trained at-risk adults to prepare meals to donate to shelters. In 1992, the operations of the business expanded as its meal preparation increased from 400 to 2,000 a day. The kitchen relocated to the basement of a homeless shelter and provided a 14-week culinary training program. In 1996, DCKK began "Fresh Start Catering", a program that hired graduates from the culinary training program to begin a career in food services. In 2001, the "Campus Kitchens Project" was established in partnership with other schools and universities to build on their operations. In 2008, the "Healthy School Food" was launched to provide schools with healthy meals, and in 2011, "Healthy Corners" was created to supply corner stores with high quality fresh produce. In 2014, Egger also launched the L.A. Kitchen in Los Angeles, based on its model in D.C.



Impact

In 2016, DCCK's food service related revenues were able to cover more than half of their operating costs. They were also able to save 680,987 pounds of food in the same year, and prepare around 1.8 million meals. 91 culinary students graduated from their training program, and 88% secured a job placement. DCCK has diverted 372 tons of organic waste from landfills per year, avoided 1,562 metric tons of CO2 emissions, and saved 12,869,210 gallons of water per year.

Key Takeaway

- One of the most important reasons for the success of this project was that the core values and goals underlying it remained strong and clear, which was to alleviate food waste and food insecurity.
- The operational model for DCCK is replicable, as evidenced by the fact that L.A. Kitchens has also been established. A replicable model for sustainable practices can be implemented with relative ease across cities and increase chances for success.
- DCCK's model also shows how to adapt to change and continue to grow and expand through innovation and improvement.

Food Waste and Imperfect Produce

Region/Country: Italy

Year: 2015

About the Case Study/ Summary

A study was conducted by European Commission at discovering the factors that can increase consumer acceptance of imperfect food. An experiment was carried out as part of a broader behavioural study on consumer choices related to food sustainability.

Challenge

To conduct a behavioural study to examine consumer choices in relation to two aspects of food sustainability: consumer use of sustainability information and food waste.

Intervention

500 (mostly Italian) participants were randomly picked from the Milan 2015 Universal Exposition. Participants were shown one of the two types of messages in the context of purchasing apples and carrots, that combined 3 price scenarios:

1. no price reduction for imperfect food,
2. moderate price reduction (15%) for imperfect food, and
3. sharp price reduction (30%) for imperfect food.

The treatment selection was assigned randomly, while the control group was not exposed to any awareness-raising message. The units of measurement for the study were the percentage of consumers who were willing to buy imperfect food after being exposed to different messages/price reductions.





Impact

The findings showed that awareness-raising messages and price reductions were likely to increase the participants' intention to buy imperfect food. For instance, when perfect and imperfect food were sold at the same price, 74% of consumers would buy the perfect food and 26% the imperfect food, however, when imperfect food was sold at a sharp price reduction, 39% would buy it. Persuasive messages would increase the likelihood of consumers buying imperfect food from 26% (no message) to 41% (authenticity message) and 42% (anti-food waste message). Overall, combining price reductions with persuasive messages increased willingness to pay for imperfect food.

Key Takeaway

- People's perception and willingness to buy imperfect food changes according to reduction in price, presence of persuasive messages and the combination of both price reduction and persuasive message.
- Taking note of these results and implementing them in a strategy that can be used in a market economy can lead to sustainable outcomes such as reducing food waste.

Choosing Greener Campaign

Region/Country: United Kingdom

Year: 2022 - Present

About the Case Study/ Summary

University Hospitals Plymouth NHS Trust (UHP) launched the Choosing Greener Campaign in February 2022, a holistic programme for its staff which focuses on the areas targeted in the Trust's Green Plan, such as energy, waste, sustainable travel, health and overall wellbeing.

Challenge

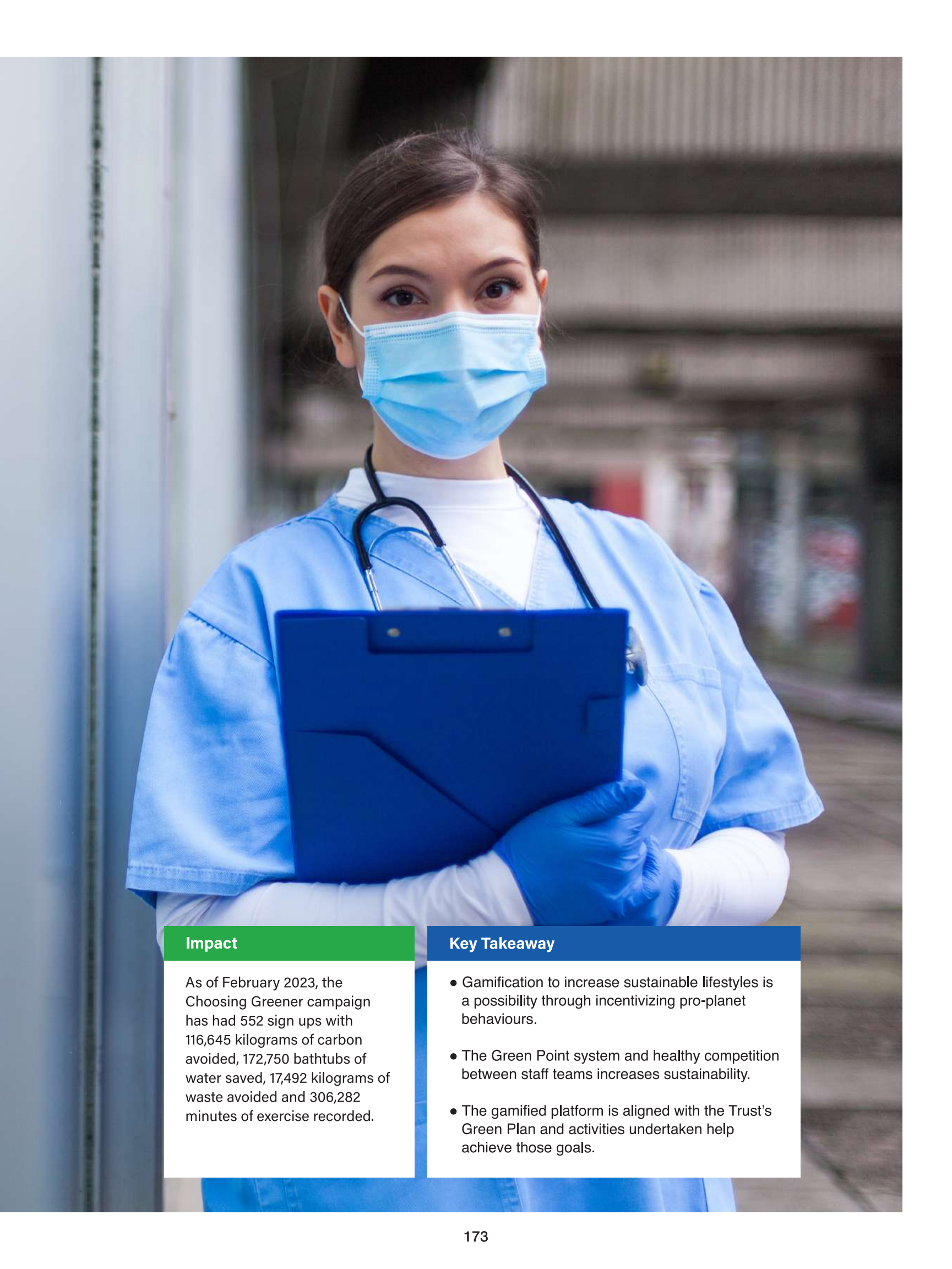
To develop an incentive and reward-based programme for hospital staff in order to motivate and promote sustainability behaviours in them which can be reported in an online platform.

Intervention

The Choosing Greener desktop application and mobile application encourages staff to register and share their sustainable actions, in order to earn 'green points'. Points are awarded according to the actions, and staff members compete as teams and check performance compared to others. Winners have the opportunity to win monetary vouchers or a donation to Plymouth Hospitals Charity. The Choose Greener application was implemented in 9 main sites and is a gamified platform aimed at:

- Increase staff understanding of sustainability through integrated learning resources and our add-on webinar service, Insight Series.
- Promote behaviour change and positive work culture through gamification.
- Create a forum for staff feedback and ideas on sustainability.
- Communicate the aims and objectives of the Trust's Green Plan and allow staff to see how they can play their part in achieving them.
- Be an all-encompassing hub where the Trust can share the latest sustainability projects they are working on.





Impact

As of February 2023, the Choosing Greener campaign has had 552 sign ups with 116,645 kilograms of carbon avoided, 172,750 bathtubs of water saved, 17,492 kilograms of waste avoided and 306,282 minutes of exercise recorded.

Key Takeaway

- Gamification to increase sustainable lifestyles is a possibility through incentivizing pro-planet behaviours.
- The Green Point system and healthy competition between staff teams increases sustainability.
- The gamified platform is aligned with the Trust's Green Plan and activities undertaken help achieve those goals.

Green Rewards

Region/Country: United Kingdom

Year: 2022 - Present



About the Case Study/ Summary

Nottingham Trent University (NTU) designed and launched a digital sustainability programme called Green Rewards. The programme allowed NTU to choose activities applicable to both target groups and they selected a holistic range of sustainability, community, health, and wellbeing activities. This led to a wider range of individuals signing up for the programme and meant that those disengaged with sustainability engaged with it through their interest in health or wellbeing.

Challenge

To motivate and engage University staff and students to develop environmentally friendly behaviours using gamification.

Intervention

Via an easy to use and free app students and staff are able to track their positive actions across 6 themes ranging from reducing food waste to more sustainable travel options in order to reduce individual carbon footprints. One can download the NTU Green Rewards app via the Play Store or App Store and start collecting points through various activities like calculating carbon footprints or taking plastic pledges. A leaderboard helps keep track of achievements and at the end of the month the top 2 staff and top 2 students win a £20 voucher.



Impact

As of March 2020, more than 217,500 positive actions have been recorded, 17,800 bath tubs of water saved, 434,200kg of CO2 avoided, 43,313 plastic bottles saved, and over 496,900 minutes spent exercising.

Key Takeaway

- A leaderboard and incentive helps maintain consistent engagement with the app.
- Framing the incentive - The voucher has a variety of uses (the university coffee store, NTU Smart Card top-up, bookstore, donation to charity, etc.)

Alipay Ant Forest

Region/Country: China

Year: 2016

About the Case Study/ Summary

Ant Forest is a mini program launched in the Alipay mobile application by Financial Services Group, an Alibaba affiliate. The aim of the program is to promote greener lifestyles by inspiring users to reduce carbon emissions in their daily lives.

Challenge

To promote green lifestyles across 10 provisions in China with focus on restoring forests, sustainable transportation and energy efficiency powered through digital applications.

Intervention

The program encourages users to record and upload their low carbon lifestyle behaviours in the Alipay application. Such actions include planting trees, using public transport instead of private vehicles and paying bills online as opposed to wasting paper on physical bills. These actions are recorded and then depending on the action, 'green energy' points are awarded to the user. After accumulating enough green energy points, an actual tree is planted by Ant Forest and associated philanthropic partners, turning users' virtual actions into reality. Users can also view their physical tree growing in real-time. The trees are planted in degraded and desertified landscapes which require reforestation. As of 2021, over 100 companies have chosen to work with the Ant Forest programme, offering green incentives for certain actions taken in the Alipay application.



Impact

As of 2021, the Ant Forest program has helped over 600 million users plant more than 326 million trees and has contributed to reforestation efforts in some of China's most arid regions. Through a multitude of partner NGOs, the program has helped provide shelter for over 1,500 species in 18 protected areas across 10 provinces in China.

Key Takeaway

- Awarding users with green points and then incentivizing them to keep doing sustainable behaviours by planting trees was a reason for the success of Ant Forest.
- Displaying real-time data allows peoples' participation and increases ownership



Eco Challenges Dot Org

Region/Country: United States of America

Year: 1993 - Present

About the Case Study/ Summary

Ecochallenges.org (previously known as the Northwest Earth Institute (NWEI)) is a non-profit organisation and platform to educate, entertain, and engage the public on ways to drive sustainable habits. The platform has two programs for user engagement, Eco Challenge Platform and Discussion Courses. Through these programs, Ecochallenges.org aims to provide users with research-backed actions and connect users with fellow humans who want to take these similar sustainable actions.

Challenge

To promote sustainable habits among people through public engagement activities such as discussions, events, research and outreach etc.

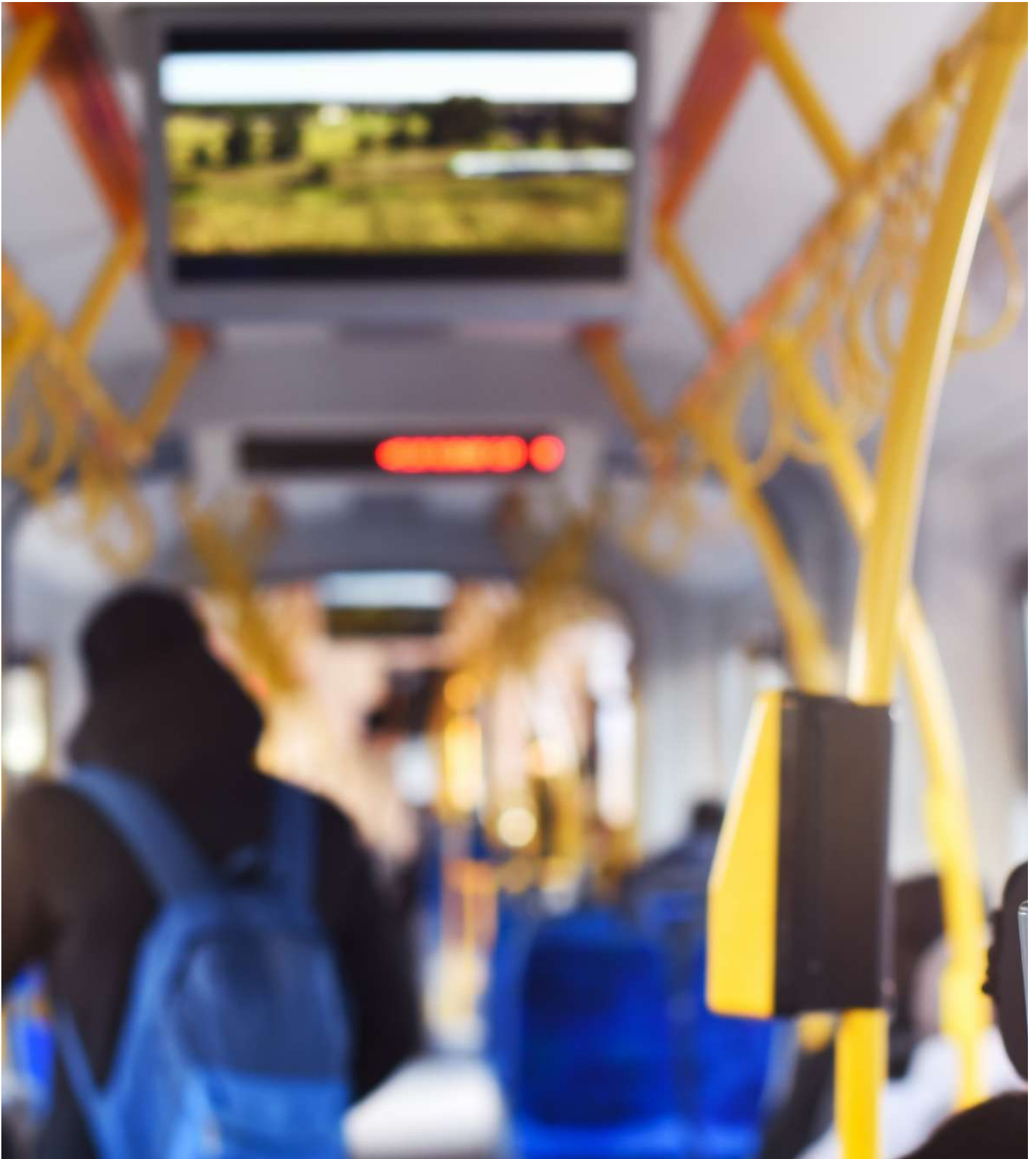
Intervention

Ecochallenges.org's programs are built on behavioural change best practices and involve: 1) rewarding; 2) social; 3) personally transformative; and 4) sequential by focusing on changing one habit at a time.

Eco Challenge Platform: Is an environmental and social change online platform where various challenges take place every year. These challenges offer participants the tools, research, and inspiration to practise changing their habits to live more sustainably. Through the Eco Challenge Platform, participants can join or lead a team and earn points for taking action (depending on the challenge). Participants then share their stories and experiences on the Platform's Participant Feed, thereby encouraging other users in their newly affirmed behaviours.

Discussion Courses: These are self-facilitated discussions in small groups within organisations such as with students, employees, or community members. The specific Discussion Course features content aimed at a particular sustainability issue, suggested discussion questions and activities, and action plans to help people move forward in addressing the issue. Discussion Course participants meet once a week for each session to discuss their current practices and progress.





Impact

Since 1993, Ecochallenges.org has saved 7.7 million pounds of CO2, saved 37.4 million litres of water, helped consume 1 million sustainable meals, helped plant 28,132 trees, travelled 1.1 million km through alternate and sustainable transportation, and refused 4.8 million plastic items in individuals across the world through their Eco Challenges Platform and the Discussion Courses.

Key Takeaway

- Online platforms can motivate shifts towards sustainable behaviour through approaches, studies and peoples feedback.

Instituto De Montaña - Participatory Action Research

Region/Country: Peru

Year: Ongoing



About the Case Study/ Summary

There are 8,791 mine tailing sites identified in highland Peru that contaminate freshwater sources with acid rock drainage (ARD) and metals not only leading to health and environmental issues but also social conflict. The Instituto De Montaña used a Participatory Action Research approach which reaffirms local knowledge and provides a technical solution designed by local researchers to create a low-cost bio-remediation system using simple techniques to sediment water and capture metals in artificial wetlands.

Challenge

To solve the problem of water contamination affecting irrigation systems, farming and health, arising as a result of discharge of Acid Mine Drainage (AMD) into water systems.

Intervention

Communities in Cordilla Blanca were suffering from acid mine drainage (AMD) from mine ailing leaking which was contaminating the water. They reached out to the Instituto De Montaña where a Participatory Action Research (PAR) approach was decided upon. PAR utilises active involvement of the community to provide reliable, usable and trusted solutions for the community itself. Creating an emotional appeal, the PAR process builds a sense of pride on local knowledge. The external facilitators from the institute placed local community members as students and established collegial relations between local researchers (students) and external experts. In this case the local researchers were called the Allin Yaku committee. The local researchers, or Allin Yaku, were taught how to conceptualise a problem and engage with the external experts to choose an ideal option - an option that is a best case for their own community. Social influences are utilised in this process to give local researchers the opportunity to display their own solutions in academic and governmental settings and also with other communities facing similar problems. Using these steps, the persona of a "proud" local researcher is created.

After researching, working, and getting trained by the institutes' experts, the Allin Yaku designed and implemented a remediation for the AMD problem in their community.



Impact

Water pH levels improved from a range of 3.4 – 3.8 at the point of entrance to the bio-remediation system to pH 5.7 at the point of exit where it was used to irrigate pastures. 40 hectares of agriculture land was recovered and could be irrigated. A qualitative survey of community members done at the end of the project found that 98% had general awareness of the PAR process and 56% expressed trust in the effectiveness of the solution adopted.

Key Takeaway

- Instilled a sense of pride through the PAR, ensuring that future solutions also come from local researchers.
- Since the solution is locally generated, it is more easily adopted in the community.

GForest

Region/Country: Philippines

Year: 2019

About the Case Study/ Summary

The Philippines' digital mobile wallet company GCash announced the GForest feature on their GCash app in 2019. The purpose of this feature was to contribute towards environmental sustainability through the involvement of citizens using the app. Using the GForest feature, people can collect green energy by participating in green activities and reducing their carbon footprint. With enough green energy, a tree can be planted at a specified location. Since its inception, GCash has planted 1 million trees through GForest.

Challenge

To involve citizens to contribute to environment sustainability including afforestation using digital applications in Phillipines.

Intervention

GForest users earn green energy points by using various cashless services of GCash, such as Send Money, or Bank Transfer on the app. This essentially decreases their carbon footprint. Users can also collect green energy every time they walk if they have given the GCash app access to their health app. The green energy points can be used to plant virtual trees, and users can choose the name of the species, energy required to plant it, and the location of where it can be planted.





Impact

- As of November 2021, more than 133 million paperless transactions have been made in GCash in order to collect green energy points.
- As of December 2021, 1,060,000 trees have been planted virtually by GForest users, 1 million of which have been converted to trees planted at actual locations.
- With GForest, GCash was also able to support local farming communities by sending more than 2,000 coconut farmers coconut seedlings which could help increase produce and revenue.

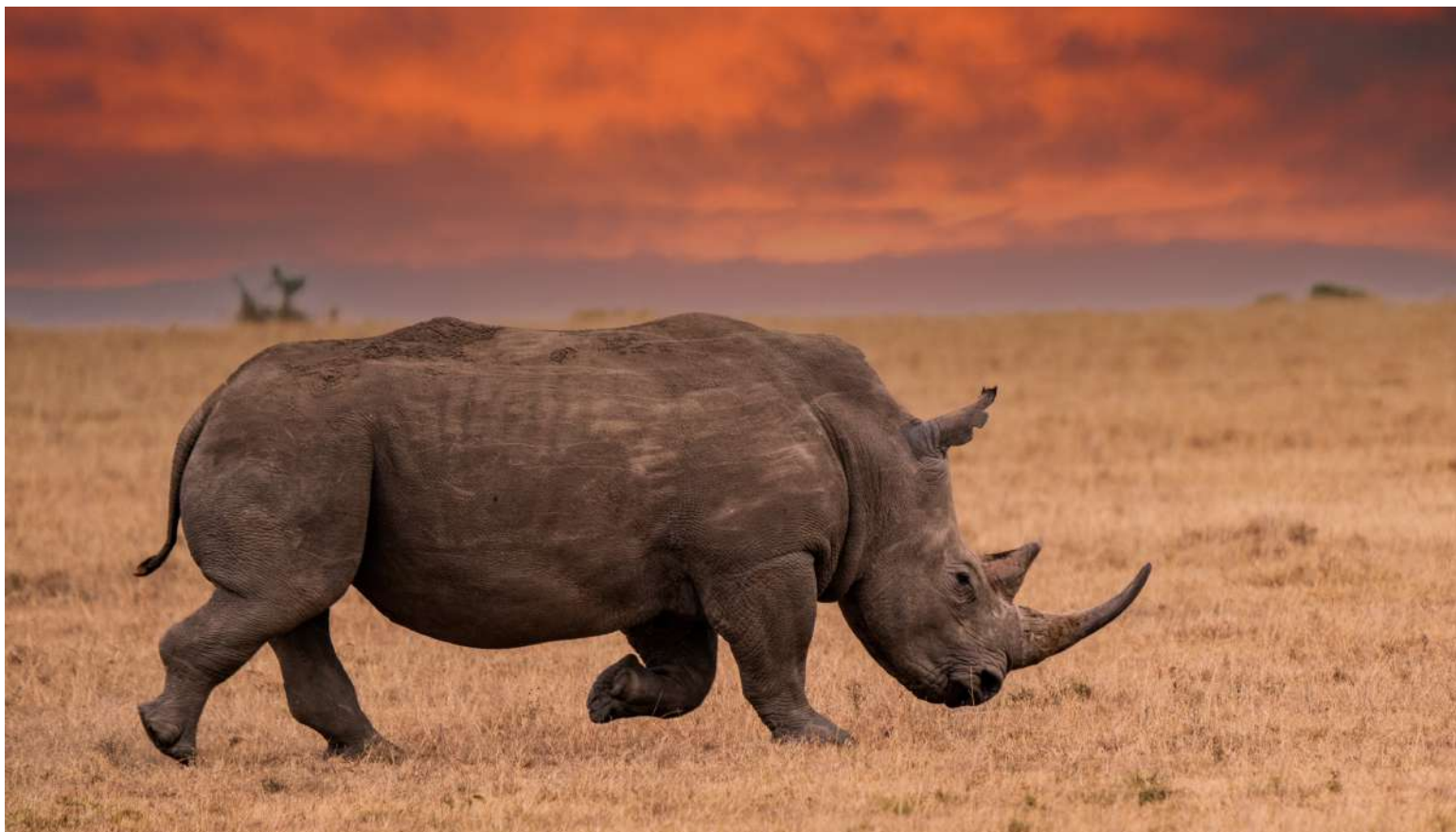
Key Takeaway

- Cash-less financial services contributes to saving carbon footprint.
- Linking financial apps with health apps could combine the benefits of health and financial outcomes.

Conservancy Rhino Ranger Incentive Programme

Region/Country: Namibia

Year: 2012



About the Case Study/ Summary

Poaching has been a massive threat to rhino populations in Africa for decades, with the number of confirmed cases of poaching jumping from less than 200 rhinos in 2006 to more than 1300 rhinos in 2015. While traditional conservation methods for rhinos have had a top-down, the Conservancy Rhino Ranger Incentive Programme used a community-based approach to increase the value of local people to help stop poaching from becoming a tolerated behaviour.

Challenge

Changing community members' attitudes towards rhinos, along with motivating rangers to protect and conserve Rhinos from poaching for wildlife conservation in the region of Namibia.

Intervention

The initiative took place on communal land in north-west Kunene region of Namibia where a group of local people were chosen by respective conservancies who would conduct rhino monitoring and generate income from rhino tourism on their conservancies. Basic training was also imparted where rangers read, pledged, and signed the rhino ranger honour code in front of their peers and received a bracelet to signal their commitment. Campaign logos and uniforms helped build a sense of belonging, pride, and responsibility among rangers. Hero jackets were also awarded by respected figures for rangers who completed 5 years of service. Custom-made memorial tombstones were made for rangers who passed away that honoured their life of service. Additional incentives in the form of monthly performance bonus payments for exceptional quality and quantity of reporting as well as awards posted in the public operations room for the best photo, best sighting, and best overall patrol were given as motivation. All of these factors combined, worked towards.



Impact

Results of a pre-post assessment from the program show that poaching declined by 83% from 2012–2017 in the program area. There were no poaching incidents from August 2017 to May 2019. A survey with approximately 300 farmers in 2017 showed that there were positive attitudes towards the Rhino Rangers and interest in having more in the community along with an increased amount of information sharing regarding potential poachers to rangers.

Key Takeaway

- Creating a sense of belonging, ownership, and responsibility can trigger behaviour change.
- Behavioural nudges through incentivisation and capacity building along with awareness and community sensitisation can help change perceptions and make a community more inclined towards Pro-Planet behaviour.

Wild Meat Consumption

Region/Country: Brazil

Year: 2017

About the Case Study/ Summary

Millions of people across the globe rely on wild meat consumption for their food and income. Not only is the consumption of wildlife harmful to the environment but can also have adverse effects on human health. Research was carried out for a before-after control-intervention to assess the effects of behavioural nudges through social marketing and economic incentives on wild meat consumption in the town of Tapauá, central Brazilian Amazon.

Challenge

To promote biodiversity and ecosystem conservation and additionally good health through people's participation on wild meat consumption in the town of Tapauá, central Brazilian Amazon.

Intervention

Information Campaign: An information campaign to raise awareness was aimed at increasing consumption of domesticated meat (chicken and pork) and fish and decreasing consumption of wild meat. These included a variety of visual media (posters and billboards promoting recipes for domesticated meat), mass media (2 radio spots promoting consumption of domesticated meat), giveaways including hats and t-shirts, print media and community outreach efforts. 3 broad strategies were implemented.

Strategies: 3 broad strategies were implemented:

- a. *Coupons for cleaning products* - 3 coupons provided to each household for each monitoring period. Households could redeem the coupons at local shops and markets when purchasing cleaning products.
- b. *Coupons for chicken* - 3 coupons provided to each household for each monitoring period. Households could redeem the coupons at local shops and markets when purchasing chicken for a discount on chicken. With the coupons, chicken became much cheaper than wild meat.
- c. *Community engagement activities* - Included a total of 1200 door to door visits (800 to promote domesticated meat recipes and 400 to promote wildlife conservation and ask for a commitment to reduce consumption of wild meat). 400 public commitments through posters being displayed at households were made. 3 cooking courses (20 hours each over 5 days) teaching domestic recipes with locally available ingredients were conducted.

Treatment Groups: 157 households in Tapauá were randomly selected and assigned to one of three treatments that included a combination of different behavioural strategies over three different periods of monitoring. All treatments were exposed to the information campaign, however, a combination of strategies were exposed to different treatment groups at different monitoring times.



Impact

92% of people in the group made a public commitment to reduce wild meat consumption. However, the expected chicken coupon did not reduce wild meat consumption, only fish consumption in households. Treatment groups exposed to community engagement activities without any price incentives reduced wild meat consumption by 62%.

Key Takeaway

- Economic incentives do not always work out as intended, as with the case with the coupon discounts for chicken purchases.
- Community engagements combined with information campaigns are highly effective in behavioural change towards environmental and sustainable habits.



Greening of Supermarket Stores

Region/Country: Austria

Year: 2017

About the Case Study/ Summary

REWE International launched a greening of stores campaign in Austria in response to climate change challenges and customers demanding more sustainability initiatives on the part of retailers and corporations. They implemented biodiversity measures in front of their supermarkets and stores comprising flower meadows, planting trees, grassed areas, open spaces and forage plants in consultation with supply chain stakeholders, citizens and local authorities. Successful pilots were conducted and since the cost of implementing the initiatives in the pilot stores were reasonable, scaling up the initiative became possible. More than 20 stores have been successfully adapted with biodiversity initiatives.

Challenge

To address climate and biodiversity threats and public pressure demanding incorporation of sustainability initiatives by the corporates.

Intervention

The sustainability department as a first step involved the stakeholders including the customers all the way to the point of sale. Results from dialogues with stakeholders from the sustainability community were considered. A framework was agreed upon among various internal departments, including marketing, feeding into strategic guidelines for the greening of stores across the entire organisation. Several initiatives were initiated including the flowering meadow in selected branches, accompanied by insect hotels. Further input also came through continuous dialogue with the stakeholder community. In the case of the store greening concept, this began at a basic level, with hedges and plantings recommended by the nature conservation sector. This was then extended to concepts for the entire store. In addition, other hotspots, such as soil sealing, were worked on. Photos with positive feedback on the social media channels were the first positive signs that the public endorsed and encouraged the work.





Impact

- More than 20 stores were adapted with ecological friendly initiatives with ongoing work for the other stores as well.
- The results were then turned into guidelines, which are currently in their final approval phase within REWE International.

Key Takeaway

- Involvement of the community in the planning process of branches increased the attractiveness of the location.
- Showcasing of the positive outcomes leads to more mobilisation and buy-in from customers as well as other stakeholders



“

When technology and tradition mix, the vision of LiFE can be taken further. ”

Shri Narendra Modi
Prime Minister

4.7

E-waste Management

According to the World Health Organization (WHO), health risks may result from direct contact with toxic materials that leach from e-waste. These include minerals such as lead, cadmium, chromium, brominated flame retardants, or polychlorinated biphenyls (PCBs). Danger can come from inhalation of the toxic fumes, as well as from the accumulation of chemicals in soil, water, and food. This puts not just people in danger but land and sea animals as well. In developing countries, the risks are exceptionally high because some developed countries send their e-waste there. Growth in the IT and communication sectors has enhanced the usage of electronic equipment exponentially. Faster upgradation of electronic products is forcing consumers to discard old electronic products very quickly, which, in turn, adds e-waste to the solid waste stream.

The growing problem of e-waste calls for greater emphasis on recycling e-waste and better e-waste management [57]. E-waste poses a huge risk to humans, animals, and the environment. The presence of heavy metals and highly toxic substances such as mercury, lead, beryllium and cadmium pose a significant threat to the environment even in minute quantities. Consumers are the key to better management of e-waste. Initiatives such as Extended Producer Responsibility (EPR); Design for Environment (DfE); Reduce, Reuse, Recycle (3Rs), technology platform for linking the market facilitating a circular economy with the aim to encourage consumers to correctly dispose their e-waste, with increased reuse and recycling rates, and adopt sustainable consumer habits [58]. The need to address the problem of e-waste globally is absolutely unavoidable.

The following section showcases few relevant case studies from this theme on 'e-waste reduced'



Nokia's E-waste Management

Region/Country: India

Year: 2009-10

About the Case Study/ Summary

This case study refers to Nokia's efforts to put the government's EPR policy into practice. The firm made use of mass advertising and rolling out recycling campaigns to generate awareness in consumers and to increase their collection of e-waste. The study also highlights the practical challenges the management faced in rolling out initiatives to promote the practice of mobile phone recycling.

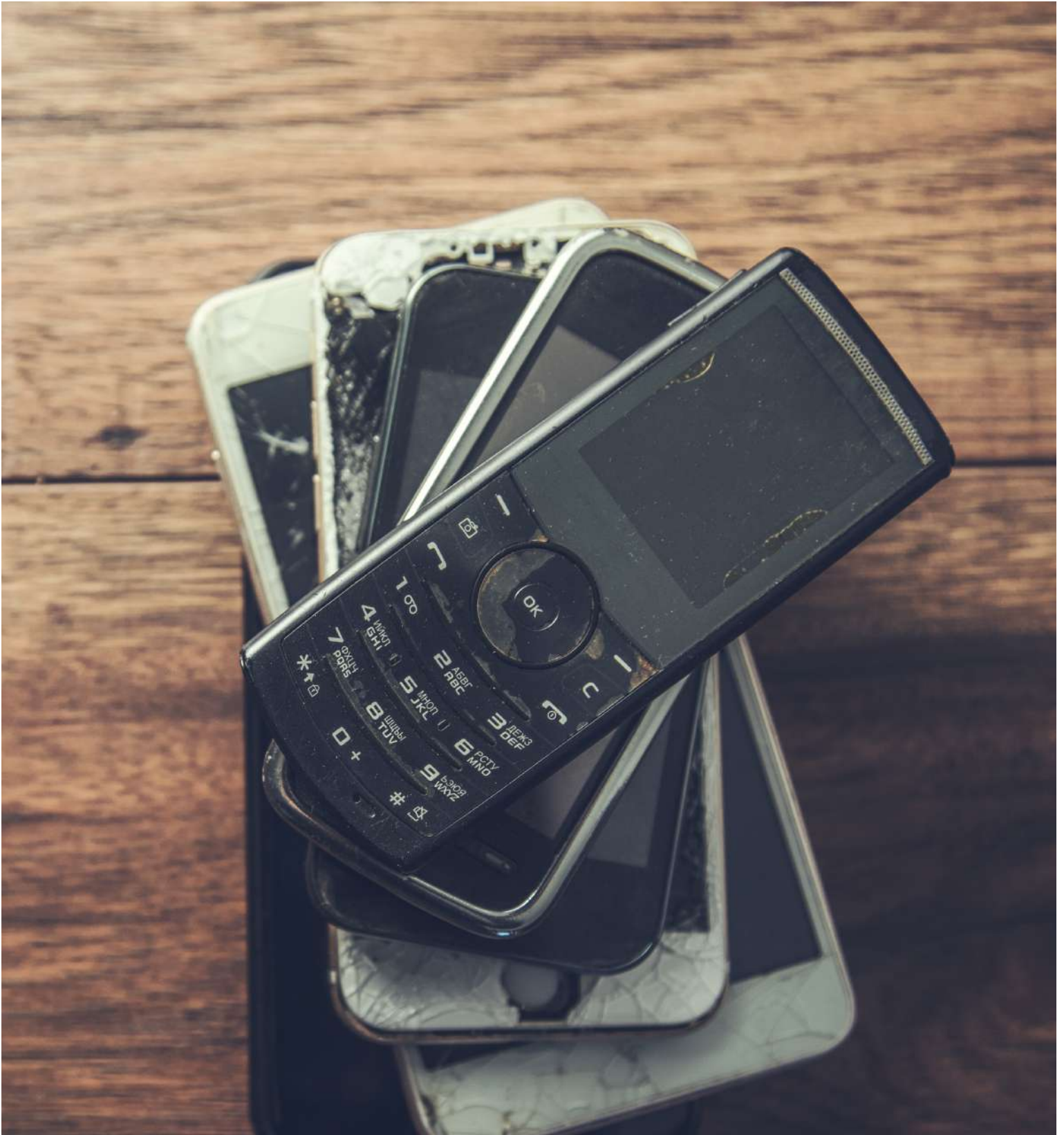


Challenge

Changing people's behaviour towards recycling of their mobile phones for tackling the issue and management of e-waste.

Intervention

Nokia launched its "*Planet Ke Rakhwale*" take-back and recycling campaign in September 2009, which extended to 28 cities across India. The key initiative under this campaign promised to plant one tree and give a surprise gift for every handset that was added to their recycle bins. An awareness campaign through TV, radio and print at the national level and thereafter a follow-up programme was introduced, aiming to involve small repair shops in e-waste recycling. Over 6,000 stores in 25 cities and towns were enrolled. The responsibility of engaging with their neighbourhood network of mobile phone stores came under each of these stores and Nokia assisted in channelling their e-waste to a responsible e-waste recycler. This created a ripple effect in the sector of e-waste recycling.



Impact

Nokia's EPR campaign highlights that there is a strong need for manufacturers to undertake the financial responsibility for recycling their products. Eventually they recycled over 50,000 old mobile phones and accessories in the first year itself through this programme.

Key Takeaway

The communication methods adopted for spreading a message which aims to bring about a change in behaviour of the masses plays a vital role in the success or failure of the initiative. Also, involving relevant actors, for example in this case, the youth, to encourage the habit of recycling from a very early age has proved vital for adoption of e-waste recycling in this case.

Electronic Waste Recycling Increases Waste Diversion

Region/Country: United States of America

Year: 2014

About the Case Study/ Summary

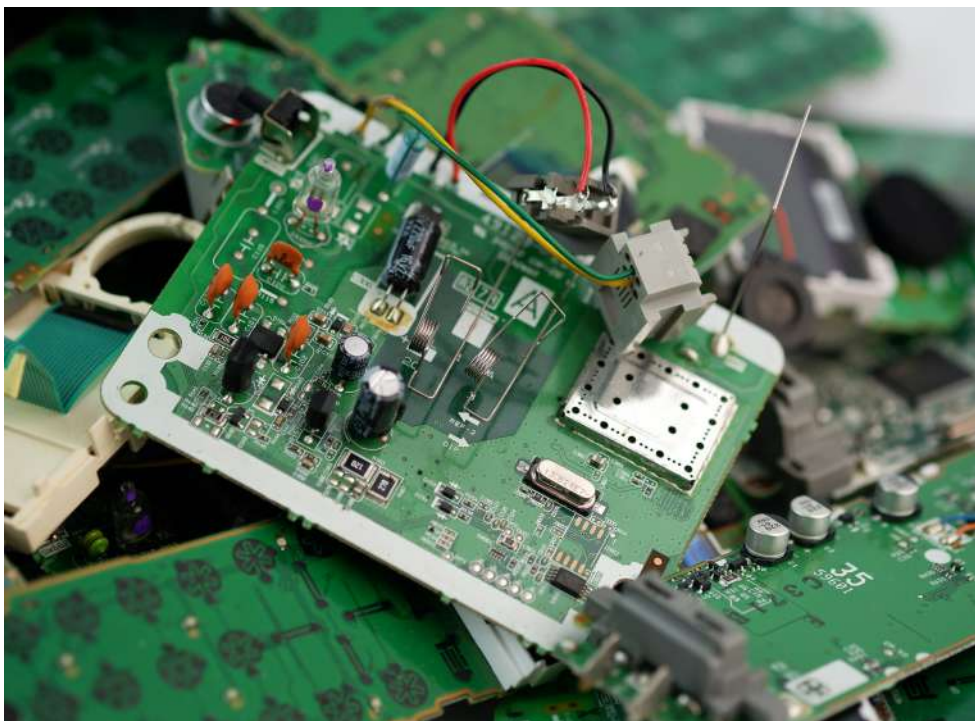
The U.S. Railroad Retirement Board, headquartered in Chicago, was able to recycle more than 3,200 pounds of electronic waste within a year by adding more recycling and repurposing options, via the Computers for Learning program and property management process. However, the progress came with challenges, such as ensuring that the removal of data from equipment hard drives was complete and consistent, finding sufficient storage for equipment till it was recycled and meeting the requirements for disposition change.

Challenge

To find ways and options to manage increasing e-waste including televisions, computer servers, machines etc by U.S. Railroad Retirement Board.

Intervention

The RRB's reuse and recycling policies are streamlined by two federal programs. One of these is Executive Order 12999 - Computers for Learning - which created a registry for schools that needed computer equipment. This provided RRB an avenue to donate their surplus desktop material. Another method for recycling equipment is through a certified electronics recycler. The RRB pursues property management practices to identify other agencies that can use their equipment, packages them, and then obtains cost proposals from electronic recyclers to find an ideal economic outcome. Lastly, the RRB sends reusable mobile devices back to its telecommunications provider in exchange for credit on its bill.





Impact

The RRB was able to recycle more than 3,200 pounds of electronic waste in a year, which was a 10% increase in recycling from the previous year.

Key Takeaway

- The increase in recycling capacity shows the success of their newly adopted methods for recycling – the Computers for Learning program, and appropriate property management practices.
- It is also important to note that the success came with challenges as well, which has to be addressed appropriately along the way.

Changing Default Options To Decrease Electronic Waste

Region/Country: Sweden and Denmark

Year: 2016



About the Case Study/ Summary

The Nordic Council of Ministers through its working groups, the Nordic Waste Group (NWG) and the Working Group for Sustainable Consumption and Production (HKP), commissioned Copenhagen Economics to conduct a study of how behavioural economic research can increase sustainable consumption of electronics. The aim of their study was to evaluate a demand side desire for sustainable use of electronics. It was found that nudging can be useful to reduce consumption of electronics among young people and recommended that for governments, the strategic discussion of sustainability policy should include nudging as a potential tool, among other policy instruments.

Challenge

To understand young people's consumption patterns with regard to mobile phones and how nudging can be employed as a way to influence consumption behaviour towards more sustainable consumption of mobile phones.

Intervention

The study focused on consumption of mobile phones in the age-group 19-28. The study included two phases:

1. A sample of young consumers was surveyed in a Danish electronics shop to identify unintended behaviours or behavioural obstacles preventing sustainable consumption of electronics throughout their entire lifecycle. In the second phase, two stated choice experiments were carried out in order to test the impact of different treatments on mobile phone purchase decisions. Depending on the treatment group, slightly different hypothetical purchasing situations were described and participants were asked to answer a questionnaire indicating the actions they would take in the described circumstances.
2. The second experiment aimed at increasing the percentage of young people opting to lease their mobile as an alternative to buying it, by including a third, clearly undesirable option (e.g. a more expensive mobile leasing scheme).

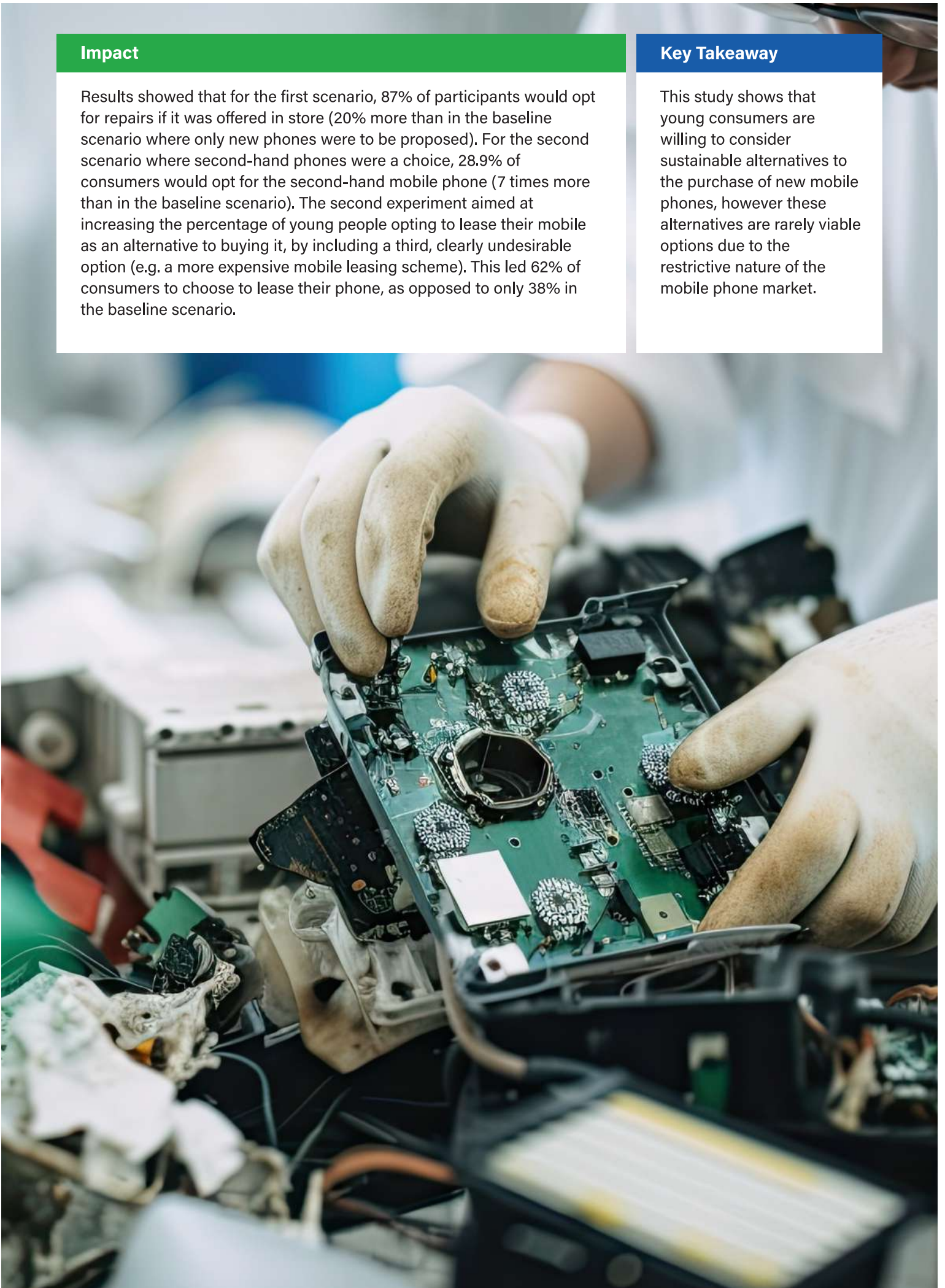
Relevant baselines were established for both experiments.

Impact

Results showed that for the first scenario, 87% of participants would opt for repairs if it was offered in store (20% more than in the baseline scenario where only new phones were to be proposed). For the second scenario where second-hand phones were a choice, 28.9% of consumers would opt for the second-hand mobile phone (7 times more than in the baseline scenario). The second experiment aimed at increasing the percentage of young people opting to lease their mobile as an alternative to buying it, by including a third, clearly undesirable option (e.g. a more expensive mobile leasing scheme). This led 62% of consumers to choose to lease their phone, as opposed to only 38% in the baseline scenario.

Key Takeaway

This study shows that young consumers are willing to consider sustainable alternatives to the purchase of new mobile phones, however these alternatives are rarely viable options due to the restrictive nature of the mobile phone market.



bE-Responsible Initiative

Region/Country: India

Year: 2016

About the Case Study/ Summary

bE-Responsible initiative aimed at encouraging responsible e-waste management in 30 wards of India. The bE-Responsible initiative focused on collection of e-waste generated by households and providing awareness and sensitisation along with multiple collection/disposal options for households\ institutions. The collected waste is sent to recyclers which are authorised by the Karnataka State Pollution Control Board (KSPCB).

Challenge

To create awareness among households on the need for proper disposal and management of e-waste, in the wake of rising e-waste, in the city of Bengaluru.

Intervention

The initiative reached out to hundreds of Residential Welfare Associations (RWAs) from the 30 wards in Bengaluru. The bE-Responsible initiative comprised of 3 components which ensured its success:

- 1. Awareness Campaigns:** Sensitisation and training sessions are conducted in residential societies, Bangalore One centres, post offices, commercial centres, schools, colleges, etc, about the issues regarding e-waste disposal along with how to properly dispose of e-waste. The awareness imparted was in various formats including presentations, e-waste drives, e-waste days in different locations, street plays, student competitions, art installations, etc in order to reach all sections of society. The program also received media coverage in both local language as well as English via radio jingles, newspaper articles, etc.
- 2. E-waste disposal options:** Based on citizen behaviour towards ease and access three options were developed –
 - a. E-waste drop boxes at public places** - Through collaborations with India Post, Bangalore One Centres, Rotary club and MK Retail, public pilfer proof e-waste drop boxes were placed at many of their respective centres.
 - b. Registering for monthly e-waste pick up** - E-waste drop boxes were set up in residential societies, offices, etc. complexes and a mobile van collected e-waste at pre-decided timings.
 - c. On call pick up request** – A hotline number was provided as an option to citizens with big bulky e-waste items such as microwaves, refrigerators, etc., to schedule the pick-up of e-waste right from their doorstep.
- 3. IT Usage:** A mobile application was developed to help the initiative optimise the collection schedule and routes, manage the database of donors of e-waste, send out automated receipts and maintain the records of collection data. This effectively reduced pilferage as tracking of vehicles was automatically scheduled, increased traceability of e-waste throughout the process, and improved efficiency of the programme.



Impact

In a span of 2 years, 50,000 kgs of e-waste has been collected from 30 wards in Bengaluru and routed to state authorised recyclers. This has resulted in:

- GHG emissions were reduced by 14,380 kgs.
- 297 kgs of toxic metals diverted from landfills.
- 3,484 kgs total metals recovered via the initiative.

Key Takeaway

- The information, awareness and sensitization campaign was complemented by the multitude of options provided for waste collection / pick-ups. This ensured that the targeted behaviour (responsible e-waste disposal) had minimal obstacles and was seamlessly adopted by users.
- The use of IT resources made the initiative more efficient and therefore helped collect more e-waste.

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