



**SUSTAINABLE
LIFESTYLES
POLICY AND
PRACTICE:
CHALLENGES AND
WAY FORWARD**

ANNEX: CASE STUDIES

SUSTAINABLE LIFESTYLES POLICY AND PRACTICE: CHALLENGES AND WAY FORWARD

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ANNEX: CASE STUDIES

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TABLE OF CONTENTS

Acknowledgements	4
About the Project	6
Introduction	6
AFRICA	8
Car Free Day Marrakech, Morocco	9
Green Belt Movement, Kenya	13
iShack, South Africa	17
Support for Women in Agriculture and Environment (SWAGEN), Uganda	21
ASIA	26
Energy Efficiency in the Indian Building Sector	27
Fifth Environmental Basic Plan, Japan	31
Gross National Happiness, Bhutan	35
Indonesian City Walkability (Bandung and Bogor)	39
MUNI Meetups, Philippines	43
National Work-Life Balance Policy, South Korea	47
Oki Town, Japan	51
Reverse Migration, India	55
San Carlos City, Philippines	59
Shu Shi (WildAid), China	63
Sino-Singapore Tianjin Eco-City, China/Singapore	67
Using Local Resources in Building Construction, India	71
Zero Waste Activities, Dumaguete, Philippines	75
EUROPE	80
Ballina Eco District, Ireland	81
BioSzentandrás, Hungary	85
Incredible Edible Todmorden, UK	89
London Bans Junk Food Ads on the Transport for London Network, UK	93
National Consumption Strategy, Sweden	97
National Loneliness Policy, UK	101
Nudge in a Green Direction, Belgium	105
Ruby Cup, UK	109
Sieben Linden Ecovillage, Germany	113
NORTH AND LATIN AMERICA AND THE CARIBBEAN	118
Costa Rica's Biodiversity Law	119
Edukatu, Brazil	123
Montréal's Multi-Model Transportation Mix, Canada	127
Patagonia, United States	131
Rizoma Field School, Uruguay	135
Sidewalk Toronto, Canada	139

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ABOUT THE ENVISIONING FUTURE LOW-CARBON LIFESTYLES AND TRANSITIONING INSTRUMENTS PROJECT

The 10-Year Framework of Programmes on Sustainable Consumption and Production (10YFP) was adopted at the United Nations Conference on Sustainable Development (Rio +20) in 2012 and confirmed the commitment of UN Member States to the realisation of sustainable consumption and production (SCP) as one of the three overarching objectives of and essential requirements for sustainable development. Under the 10YFP, the Sustainable Lifestyles and Education programme seeks to foster the uptake of sustainable lifestyles as the common norm, with the aim of ensuring their positive contribution to addressing global challenges, such as resource efficiency and biodiversity conservation, climate change mitigation and adaptation, poverty eradication and social well-being.

The Envisioning Future Low-Carbon Lifestyles and Transitioning Instruments Project under the Sustainable Lifestyles and Education Programme of the 10YFP (hereafter Envisioning Project) ran between September 2017 and January 2019. Its overarching aim is to understand the development and implementation characteristics of successful policies and instruments which are transformative and can support pathways towards lifestyles within ecological limits in order to inform the future actions of policy makers and advocates. In tandem, the project aims to understand what the resulting lifestyles would look like, and the various future scenarios in which people can live sustainably and happily through an examination of the current literature and the creation of mash-ups.

With the help of our global advisory group, the Institute for Global Environmental Strategies (IGES) and One Earth examined how the way we live our daily lives – our choices, habits and the context within which we live – have can have a positive effect on our planet, our communities and our wellbeing both now and in the future. This publication draws on the materials gathered through the project, highlighting current challenges in sustainable lifestyles and presenting 30 case studies as examples of the current practices and policies being undertaken.

INTRODUCTION

This collection of case studies serves as an annex to the Sustainable Lifestyles Policies and Practice: Challenges and Way Forward report. These publications draw on the outputs of the Envisioning Future Low-Carbon Lifestyles and Transitioning Instruments project (hereafter the Envisioning Project), which ran from September 2017 – January 2019 with the overarching aim of understanding the development and implementation characteristics of successful policies and practices and the various future scenarios in which people can live sustainably. The project was a part of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) Sustainable Lifestyles and Education programme, which is a global programme to accelerate the shift to sustainable consumption and production with the United Nations Environment Programme as the secretariat.

The Envisioning Future Low-Carbon Lifestyles and Transitioning Instruments project had three objectives:

1. Identify a variety of policies and instruments used to promote sustainable lifestyles, compile case studies from across the globe
2. Gather transformational policies and instruments which can support pathways to 1.5 degrees
3. Develop recommendations for the design of effective policies and instruments supporting pathways to 1.5 degrees

Policies and instruments were conceived broadly and practical initiatives were considered to be instruments in order to maximise the number of potential case studies that could be collected. In order to facilitate the collection of case studies and the initial literature review, a preliminary framework was developed. The initial framework divided cases into three sections, planning and implementation, assessment, and scaling, with each section further sub-divided. Planning and implementation was divided into motives and objectives, means, and challenges and enablers. Assessment was divided into results (as compared to the objectives), environmental impacts, and wellbeing. Scalability was divided into scaling out, scaling up, and scaling deep (a further discussion on scaling can be found in section 8.3 of the Sustainable Lifestyles Policies and Practice: Challenges and Way Forward report.)

The review encompassed formal peer-reviewed research and an environmental scan of sustainable lifestyles practices, which included grey literature such as websites, social media posts, and other non-peer reviewed material. In addition a call for case studies was undertaken with over 120 submissions received. The submissions and the results of the call for case studies were assessed. Our preliminary findings showed a body of on-going work that showed enormous variety in terms of scale, approach, stakeholders involved, and location but also frequently lacked critical information such as the approach used and impacts created. Moreover, it rapidly became clear that where information was available, it was mainly concentrated in policies and practices within high income nations. Finding well documented examples in the Global South was no easy task. Moreover, the wide range of approaches which were uncovered defied easy categorisation, and concerns were raised that categorisation may exclude promising practices. This initial scan thereby uncovered the main messages contained in Sustainable Lifestyles Policies and Practice: Challenges and Way Forward report, especially the concerns regarding the need for the linkage between ecological limits and wellbeing, the absence of the Global South and the difficulties surrounding implementation.

In order to illustrate the challenges described in Sustainable Lifestyles Policies and Practice: Challenges and Way Forward report, thirty case studies were selected from the examples gathered through the review and the call for case studies. As a comprehensive list of case studies was beyond the scope of the project, it was decided to select the case studies primarily on the basis of diversity of approach, scale, and geographic diversity. It was felt that thirty was a sufficient number to give a broad overview of current approaches across the world, while ensuring that the case studies would reflect the level of detail desired given the resource constraints of a small project team. These resource constraints also mean that they are not formally categorised, as the number of potential categories would mean that there would only be two or three examples per category. Issues surrounding categorisation are discussed in section 3.3 of the Sustainable Lifestyles Policies and Practice: Challenges and Way Forward report "Limits of the Lifestyles Domains Based Approach"

The case studies in this annex all follow a similar structure – a brief introduction, then description of the story of the case study. Implementation issues and enablers are described, followed by consideration of measurement and impact. The case study is assessed for potential scalability, followed by a brief discussion of the lessons learned. The case studies are not only intended as illustrations of the current policies and practices of sustainable lifestyles but also to encourage further action. Inclusion of any case study is not an endorsement, but we hope that they can be used as a source of inspiration and the means by which further activities can be catalysed.



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AFRICA.

CASE STUDIES

CASE STUDY

CAR FREE DAY MARRAKECH



MOROCCO



IN SHORT

Since 2010, “A Day Without Cars” has been an awareness raising event organised by a local non-governmental organisation, Association Mawarid, to promote cycling within the city of Marrakech, Morocco. The 12 kilometres cycling tour has increased in popularity year on year and is now an established annual event attracting around 1,500 cyclists per year. The event has helped raised awareness of alternatives to car transportation and promoted health and physical fitness among the residents. The event is not just standalone – Association Mawarid is trying to collaborate with schools and the local government to further integrate sustainability concerns into education as well as encourage the local government to support cycling through the establishment of proper infrastructure and a fully realised sustainable transport policy.

OVERVIEW

Association Mawarid is an environmental non-governmental organisation started in 2009 in Marrakech by a group of young people dedicated to placing sustainability at the heart of public policy. As one of their first awareness raising activities they launched the “Day Without Cars” on Earth Day in 2010. The initial event had only 70 participants but grew very rapidly to over 1,000 participants by 2015, becoming an established event.

Advertising for the event is started around three months prior to the event using a variety of resources consisting of social media, word of mouth, and local news programmes. The Association Mawarid works with a variety of partners to implement including the local government and police as well as private sector partners.

As the event has grown the impact on traffic has also grown considerably and presents a significant logistical challenge. There are two main options that can be used. The first option is to make a map and propose a route that includes major landmarks to ensure visibility. As there are now over 1,000 participants the route cannot be completely straight. The police would follow the riders, not closely the route completely, but operating rolling diversions and road blocks so that the roads can be released back to normal traffic as soon as possible. The second option is to close the entire route for the two or three hours the event takes. This is preferable in terms of the carbon emission reductions, but requires substantial manpower to keep the entire route closed for that long and also creates far more disruption to normal traffic.

Another challenge is sourcing a sufficient number of bicycles. Many of the participants are not regular cyclists and the organisers are keen to encourage those not currently cycling to take it up again. The organisers have teamed up with local sports companies, Argan Xtreme Sports and Atlas Sport, who make available a limited stock of bikes available for rent.



The organisers have also sought to enliven the tour through adding a bicycle decoration contest whereby participants decorate their bicycle in Moroccan style. Winning bicycles were selected by a jury comprised of local artists based on criteria of inspiration from Moroccan culture and creativity in the choice of colours. The prize was two nights in a hotel in the city of Marrakech supplied by an association of local travel agencies as a means of sponsoring the competition.

The event has seen some impact on behavioural change. 36.4% of participants use the bike on a daily basis to get around and there are others who have made the modal shift towards using bicycles due them being more sustainable and respectful of the environment. In addition, this eco-citizen approach is evolving with the support of local participants and their representatives, ensuring the safety of cyclists and promoting the development of cycle paths in Marrakech. Encouraging cycling offers health benefits and reduces pollution, but it is also a participatory economical means of transport.

CREATING A BROAD MOVEMENT FOR SUSTAINABILITY

Association Marawid does not see the event as standalone but sees it as one part of a wider movement towards sustainability. The organisation runs a variety of other similar activities such as plogging (similar to jogging but also picking up litter whilst running) and Be Cool Be Sustainable which was a variety of activities on sustainable mobility, leisure, housing, and food. Key to this approach are their efforts in engaging with schools and the wider education system. The organisation has been engaging with schools throughout Marrakech on mobility and have conducted sensitization of 200 students on sustainable mobility and road safety targeting the following outcomes – (i) training educators in the use of environmentally themed slides and audio-visual aids provided by Mawarid; (ii) promoting urban greenery by encouraging children to plant trees to mitigate greenhouse gas emissions; (iii) informing and educating children about the benefits and practice of sustainable mobility that respect the environment and road safety; and (iv) proposing innovative learning materials for children that encourage environmental stewardship.



IMPLEMENTATION

The event is a simple concept but nevertheless is a significant logistical challenge for a small non-governmental organisation. The key enablers are raising awareness and interest, ensuring the availability of bicycles and working closely with the local authorities to temporarily close the roads to enable around 1,000 people to cycle for several hours on the main roads. In addition to this, there are the on-going problems of a lack of government support for sustainable transportation, and a lack of cycling lanes and wider cycle infrastructure such as bike rentals, safer riding conditions, and additional areas for securing bikes around the city. This is a missed opportunity - Marrakech has optimal riding conditions, with warm summers, mild winters, and flat terrain. Safety is a particularly important aspect with many potential cyclists expressing concern and avoiding cycling for safety reasons.

The event involves significant levels of manpower and logistics. There has to be police availability to close streets and provide protection for the riders. There are significant needs for volunteers to prepare, execute and clean up, supply water and snacks, as well as selling t-shirts. Sourcing sufficient numbers of bikes for rent for the event has been challenging despite the assistance and collaboration with local partners.

MEASUREMENT & IMPACT

The positive environmental impacts of bicycles use as a mode of transportation have been highlighted by the project website. A number of questionnaires were distributed to the general public and have been analysed. With a total number of responses of 300 taken from the participants in the Day Without Cars, the survey was able to capture a broadly representative sample of those interested in sustainable transport and cycling. It showed that although there is a very high percentage of car and other fossil fuel transportation, 36.4% regularly use their bicycle and, more importantly, 72.2% would be willing to take their usual city trips by bike.

In terms of carbon reduction, it was calculated that the most recent event achieved reductions of 864kg of carbon dioxide. Association Mawarid has measured carbon dioxide reductions based on the following hypothesis - the participants usually use their car for a journey equal to that made during the day without cars every day; the car is occupied by two people, passenger and driver; and the average carbon dioxide emissions is 0.16 kg per kilometre. Mawarid is currently working to improve the accuracy of its carbon dioxide calculations.

As a young association, Mawarid has been recognized as a prominent environmental actor by leading national, international institutions, and most importantly local citizens. Mawarid was the only young association in Morocco's environmental circles to be invited by UNESCO to participate in the International Congress on Education for Sustainable Development, in November 2014 in Japan.

SCALABILITY

Association Mawarid has been trying to scale cycling in a number of ways. Firstly at the local level the organisation has increased the participation significantly since inception and actively looked to broaden the scope and appeal of the event within the city. They have stepped beyond this single event and used it as a platform to start a wider conversation about cycling and sustainable transport. Moreover they have tried to engage the local government on the development of cycling infrastructure and have successfully received their cooperation in implementing the event.

Scaling to other cities should be possible. Marrakech is a particularly strong candidate as a cycling city due its clement climate and flat terrain and local contexts will no doubt vary. Nevertheless proper cycling infrastructure has been implemented across a wide variety of cities within a variety of climates, so this should not be an obstacle. Replicating this event or an event similar in scope is clearly possible.

However the wider issues of the absence of proper cycling infrastructure and support. This requires the development and implementation of a sustainable transport policy at both the national and sub-national levels and funding for necessary supporting infrastructure. There is significant opportunity here for the creation of employment with numerous bike sharing schemes having been set-up globally.

The event itself is not very expensive to run and the concept is simple. There are no strong technical needs. With sufficient buy-in and effective collaboration with stakeholders, the event can be replicated in many cities globally.





LESSONS LEARNED AND WAY FORWARD

The event has achieved notable success in a short timeframe with minimal amount of funding. In the future the organisation is hoping to achieve greater levels of public visibility and recognition. For the 2015 edition, the organisation pushed for greater national and international visibility by bringing together various participants from Morocco and around the world. Moreover, Association Mawarid has invited local electives, policy makers, and various stakeholders in the City to attend the event.

There have been other sporadic efforts within Marrakesh to support sustainable transport and cycling such as the implementation of a bike sharing scheme called Medina Bike, the expansion of cycling infrastructure through bike lanes, the launching of ten electric based powered by a solar power station located at the entrance to the city, and the inclusion of sustainability into local development plans. In the future, Association Mawarid will need further support from local and potentially national stakeholders to ensure that the event can be built on to further improve access to sustainable transportation and cycling.



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 If not otherwise acknowledged in a caption underneath, all photos are either from unsplash.com, were supplied by those connected to the case study, or are otherwise public domain.

CASE STUDY

GREEN BELT MOVEMENT



OVERVIEW

The Green Belt Movement (GBM) started as a grassroots level tree planting activity by Wangari Maathai in 1977 under the National Council of Women of Kenya (NCWK). The initial aim of the movement was to respond to the needs of women in rural areas in Kenya, who were reporting that life had become more difficult due to environmental degradation, deforestation and water and food insecurity. Wangari Maathai encouraged women to start tree planting activities together to restore the degraded lands and water resources and provided them with a small payment for their work. The activities then expanded into additional activities that include educational seminars titled “Community Empowerment and Education Seminars (CEE)” to empower individuals as agents to bring about broader changes in society through a democratic process. Since 1977, GMB has planted over 51 million trees in Kenya, and the movement has achieved global recognition for its crucial work in diverse areas on environmental issues, women empowerment, democratic participation, community empowerment and conflict resolution ¹. Wangari Maathai received the Nobel Peace Prize in 2004 for her leadership in restoring forest land and empowering people to engage in the process of improving their lives. In the wake of Wangari Maathai’s death in 2011, the movement has continued her legacy through demonstrating leadership in international efforts on addressing climate change challenges.

FROM ONE PERSON’S IDEA INTO A MOVEMENT

GBM started based on Wangari Maathai’s simple idea of planting trees, expanding to a nationwide, and later an international movement, after it was implemented collectively by thousands of people in Kenya. The movement has improved the environment, boosted livelihoods and empowered local communities. GBM utilises tree planting to preserve watersheds based on a scientific approach implemented over a large scale. Watersheds are areas in which water always drains to the same stream, river or lake. Planting trees surrounding watershed areas helps improve the quality, quantity and consistency of flows to catch and preserve rainfall and water supply for millions of Kenyans. The preserved watersheds provide ecosystem services to surrounding communities for daily living. Planting trees can revitalise dried-up springs and provide women with an income to plant trees, access to resources such as wood and fruits, as well as knowledge on ecosystems. Such preservation activities help people understand that ecosystems straddle borders on maps and that people from different communities need to work together to sustainably maintain the watersheds. The GBM network currently consists of over 4,000 communities.

The movement as a whole benefits entire households and rural communities, and especially women, who are mostly likely to be affected by climate change and who are closely linked with nature through agriculture. The benefits are in farming, water collection, harvesting, sourcing medicinal plants, and generating natural resources.

PLANTING TREES FOR PEACE AND DEMOCRACY

After starting collective tree planting, Wangari Maathai came to the realisation that the causes of difficulties the poor face in day-to-day living relate to deeper issues within communities. Previously, people in communities worked together to protect the environment for the common good, but have since gradually become more disconnected and disempowered – in other words, communities have lost their traditional sense of shared values that once united them. The mission under Wangari Maathai has thus expanded to utilise planting trees as an entry

point towards deeper changes to improve the living of local people through environmental management and community empowerment.

To empower and unite people in rural communities, the initiative started providing knowledge and sharing its wisdom through capacity building seminars. CEE seminars have taken place to engage individuals to discuss and learn from each other about the reasons behind their loss of agency to effect change to serve their needs. As a result, people realise that they have been relying on leaders to implement policies and make decisions for the common good instead of making such changes themselves. Thus, the movement expanded advocacy for democratic processes to be more accountable and to serve the needs of local people. In doing so, it has encountered several issues affecting the livelihoods of local people, such as land grabbing and deforestation to make way for agricultural plantations. This movement has expanded to a global scale to tackle climate change, with the preservation of rainforests in the Congo and the Mottainai Campaign, promoting reduce, reuse and recycle globally. The movement has also grown to empower men to improve their environment and livelihood as well as political accountability, and has given hope for people demanding change. The movement has thus grown in impact from the planting trees to peace, democracy and respect for human rights.

IMPLEMENTATION

The movement started from Wangari Maathai hearing about women in rural communities complaining about problems with obtaining water, food and other natural resources, which led her to the idea of planting trees to restore the water supply and the ecosystem. Initially, women in rural areas did not know how to plant trees and so foresters were called in to provide instruction. However, the training turned out to be impractical and of little use, thus instead Wangari suggested women rely on their “women’s sense” and try planting trees by themselves. This led to cooperation on a small scale in the beginning, and later to a realisation that their efforts in different communities were being replicated far and wide.

In the beginning, no one took the activity seriously due to ingrained norms of women as only performing subservient and supportive roles under men, but when the tree planting started to demonstrate results and provide CEE seminars for training women about the roots of environmental issues and consequences in their living, women began to realise their own resources and environment were at stake and that they must empower themselves. GBM also works with rural communities to enhance their capacity to take action against climate change and works with corporate entities on the rehabilitation of urban areas through planting trees as part of their corporate social responsibility (CSR) efforts. In addition to tree planting and ecosystem conservation, it advocates for political accountability in Kenya’s decision-making processes as well as to empower women to be involved in this decision making. It continues to help communities build on their understanding and capacity to bring about solutions to problems in order to improve their livelihoods.





MEASUREMENT & IMPACT

So far, GBM has planted over 51 million trees across Kenya, which means a carbon dioxide reduction – based on one tree absorbing 21 kg (48 lb.) per year – of approximately one million tonnes per year². Trees also help restore forests and watersheds, which provide local people with the water and other natural resources for food security and better livelihoods. The socioeconomic impact is as large as its environmental impact, and the movement also provides the women tree planters with an income. As part of the overall tree planting activities, the role of training seminars was profound, as they have trained over 400 community members to act as trainers in their communities, who then went on to train over 50,000 households, affecting 300,000 people. Through the training, women in particular were empowered to make their communities more environmentally resilient and to have a bigger say in decision making. It also advocated and succeeded in bringing about political change, leading to higher accountability and transparency in democratic processes.

SCALABILITY

GBM demonstrates that a single person's idea can realise a huge impact on the environment as well as in other dimensions when individuals are collectively empowered to work towards their goals. The movement has constantly scaled up including internationally, as shown by the United Nations launching its first global tree planting campaign in November 2006, inspired by Wangari Maathai's work. Wangari Maathai served as one of the patrons for the initiative. GBM built partnerships with international organisations, such as the United Nations Environment Programme (UNEP) Billion Tree Campaign³. The first billion trees were planted in November 2007, and at the end of January 2008, 2.3 billion trees had been pledged with 1.8 billion planted. In 2015, GMB was involved in launching the AFR100 (Africa Forest Landscape Restoration Initiative) in Paris, which aims to restore 100 million hectares of degraded lands by 2030.

The initiative has mobilised millions of people across the globe to participate in the process – in India, 600,000 people in Uttar Pradesh in India planted 10.5 million trees in one day in July 2007, 35 million young people in Turkey and 10,000 schools in Malaysia took part in tree plantings, and 500,000 children in schools in sub-Saharan Africa and the UK joined in through the British Council. In the United Arab Emirates, 1,500 members of the Emirates Environmental Group have pledged to plant one million trees in the country. Mobilising the public also helps to empower government leaders and individuals to take action in a tangible way to be part of the social movement for the transition towards a low carbon and sustainable society.

WAY FORWARD

Beyond expanding its activities in African countries, GBM has gradually increased its influence on tackling climate challenges. It established offices in both the UK and USA in partnership with international foundations and organisations to promote Wangari Maathai's vision through lectures and educating young scholars on a global scale, to help more individuals and organisations demonstrate and disseminate its leading role in contributing to sustainability.



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CASE STUDY

iSHACK



IN SHORT

The iShack Project is a social enterprise based in Stellenbosch, South Africa with the purpose of demonstrating the feasibility of creating a sustainable business providing energy services to informal settlements in South Africa. The project currently provides solar electricity to over 4,500 residents in three informal urban settlements while creating employment opportunities for the local community.

ENSURING ACCESS AND OPPORTUNITY

The iShack project started in 2012 based on work undertaken by graduate students at the Sustainability Institute, Stellenbosch University outside Cape Town, South Africa. The purpose of the project was to supply basic energy services to communities not yet connected to the national grid, and which can wait up to 10 years to be connected.

Funds of US\$250,000 from the Bill and Melinda Gates Foundation were awarded for a pilot project of 20 households in the informal settlement of Enkanini, Stellenbosch, to be installed with Solar Home Systems. After this was successfully completed the project received a grant from the Green Fund (a South African government fund to finance innovative green economy projects) of 17 million South African Rand (US\$1.1m) to scale-up the project to 1,700 households within the community.

The original business model was pay-for-use, in which households paid a monthly fee of US\$10 for the service and any maintenance required. Monthly incomes in the settlements varied widely, from zero/unemployed up to around US\$1,000. However, about 18 months after the initial roll-out, after lengthy discussions and negotiations with the local Stellenbosch Municipality, the project was awarded the Free Basic Electricity subsidy, the first instance of this kind in South Africa for an urban informal settlement. The subsidy, allowing 50 Kwh of electricity use, was previously allocated only to households with a grid connection.

The project receives the monetary value of the subsidy for every installed household, and this has allowed the project to cover all of its operational costs, while households only need to pay for maintenance services or additional appliances or upgrades from the basic installation. Although the project is operationally dependent on the subsidy, this subsidy will only be cancelled if the settlements start receiving grid electricity.

The original pilot project helped engage the community by letting them see the concept in action. People can join the project voluntarily and interested residents can visit the field office and receive all the necessary information concerning installation. After joining, residents learn about the system in full from how it generates energy from the sun to how they can manage resource use during winter months when solar energy output is low. The project also operates an effective maintenance operation with residents being assisted either over the phone or with in-person visits.

The project demonstrates that it is possible to take delivery of grants that translate almost entirely into community-owned assets to the same value as the grant, as well as act as a social enterprise in providing the basis for organising informal settlements to improve their daily living. These have come about while the Municipality and the Provincial Government manage the long, drawn-out process towards the eventual commencement of incremental upgrading. The solar panels themselves represent physical assets now owned individually by the residents, and the project does not generate any profit from this.

Recipient households have not only the benefits of being able to more easily charge phones, enjoy radio and television, or read and study after dark but also improve health and security aspects through avoiding the use of paraffin lamps or running the risk of fires. The households do not just receive electricity but can also opt to make a co-payment towards a television as part of the installation.

The solar home systems enable access to education, livelihoods, safer neighbourhoods, and healthier lives, and substantially improve the quality of life for households with young children, as LED lighting in the evenings assists with schoolwork and reading, and television enables English language development. The programme has hired and trained 10 local people as agents who handle multiple tasks in the project – installation, maintenance and client management – and the solar systems have helped power external lighting making the settlement safer at night, particularly for women. There are also significant improvements due to replacing candles and paraffin lamps for lighting, which are not only the leading cause of deadly fires within these densely populated informal settlements but are also harmful to children due to the inhalation of toxic fumes.

While the project has improved the lives of its recipients, some issues have emerged with members of the community who still lack access. These include the project being caught up in a violent demonstration over wider grievances regarding lack of political action to fulfil electoral promises. Rioters, blaming the project for their lack of access to energy, attacked project offices and destroyed equipment. However the damage was limited to the field office, and following reengagement with the community it was found that these actions constituted a small minority and were not representative of widespread attitudes.

IMPLEMENTATION

In implementing the project, building capacity, stakeholder engagement and funds have been critical, with the necessary tools, legal framework and physical infrastructure largely already present when the project started. Skills and knowledge were critical as it was intended for local people to be trained up and taken on as staff in the business, which meant adequate trainers needed to be found and a training scheme developed and implemented. The agents were selected following an application and interview process, and if chosen then undertook a trial period to assess their suitability. Minimum requirements for the agents were to have completed high school and be able to speak and write in English. Electrical qualifications were not needed to work on the systems. Also key to the project was the solar powered electricity itself, which was provided by a broad range of stakeholders, especially from the community. The trained agents in the community then needed to explain and try to convince other residents to use the technology. The project involved multiple stakeholders including researchers, local government, the private sector, the local community and households, with project outcomes dependent on this broad coalition buying into and supporting the project. The project also received over US\$1m of funding in grants. Although it has generated assets of the same value as the grants, this funding requirement may be a significant hurdle to overcome. Moreover, the unusual situation in South Africa involving an established precedent obliging municipalities to provide certain basic services has also been a significant factor in enabling the project. The subsidy from the municipality is about US\$8–9 per household, which covers employing four field agents, three managers and operational expenses (office space, data, transport).





MEASUREMENT & IMPACT

The project has both social, economic and environmental impacts. As its usage is in an environment in which there was no prior access to grid electricity for the community, it must be noted that solar energy cannot be used as a replacement measure for fossil fuel energy for the purpose of carbon reduction measurement as it was not possible for the community to be connected to fossil fuels. Positive impacts of the project were improved access to information, increased participation in education, greater safety for residents (particularly women), and reduced health risks due to zero exposure to paraffin, which could all be measured through before-and-after surveys either in terms of perceived safety, access to information or actual educational attainment levels of children.

SCALABILITY

Subject to access to funds, the project shows strong potential for scaling and is currently being expanded within the initial communities. Direct replication maybe possible, though the project itself has needed to be flexibly run to deal with issues that occur. This being the case, adoption of the project concept rather than direct replication may be more appropriate, and mainstreaming the concept through formal support of the off-grid concept for informal settlements, including funding support and the provision of subsidies, would be ideal. How easy it becomes to mainstream would greatly depend on the views of national governments on informal settlements, as the potential for repercussions over formal recognition of informal settlements in this way may represent an issue.

If the subsidy can only be privately funded, the project would most likely only be expandable to other countries. As the cost of purchasing the system is still high, it does represent a large financial outlay for households, but other models, mostly found in East Africa, also exist, which use the Pay-as-you-go format by operating as an ongoing utility service for which households pay a monthly fee.

LESSONS LEARNED AND WAY FORWARD

The project continues to operate in three communities at present, only one (Enkanini) of which has the backing of the local municipality, which provides a Free Basic Electricity subsidy to keep the project operationally sustainable.

In addition to the ongoing installation of solar energy systems to provide a basic level of energy access, the project is working with communities to push the policy framework around energy access in South Africa to recognise that off-grid energy access, such as solar home systems, are a viable solution for communities waiting to be connected to the national grid.

The main lessons learned from the project were:

- 1 - The need to overcome multiple challenges using a rigorous method of working through alternative solutions and applying them steadfastly.
- 2 - Support of the local municipality to fund the project through an off-grid energy access subsidy, which has enabled the project to become operationally sustainable.
- 3 - Ongoing staff training and development, enabling a robust, efficient operation and ensuring commitment from the staff to follow maintenance procedures.



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CASE STUDY

SWAGEN



UGANDA



IN SHORT

Support for Women in Agriculture and Environment (SWAGEN) was established in 1998 as a grassroots-based organisation founded and owned by women in Uganda. Its mission is to empower farmers in national development through engagement in agricultural activities for ecosystem-based adaptation, as well as build resilient grassroots communities to adapt to shocks and unplanned changes through sustainable and equitable use of natural resources. It promotes agro-ecological and organic farming to conserve biodiversity through nutrient recycling, improve soil fertility and build resilience to droughts and address land scarcity. It also collaborates with the National Forest Agency and REDD+ (reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks) in forest management ¹. Within farms, it improves resource efficiency such as by using livestock urine as a manure and pesticide, using rain water for irrigation, cleaning livestock stalls for livestock drinking, growing trees for fruit and repelling mosquitoes, growing grasses for fodder and use of the sun for solar energy – which together provide ecological benefits and generate higher yields to address food security. The initiative improves the lives of women, traditionally burdened with food production, through increased income and reduced workloads, thus offering vulnerable societal groups such as these farmers a more equitable share of the resources and means to access basic needs.

LOCAL SOLUTIONS FOR THE CHALLENGE OF CLIMATE CHANGE

Agriculture accounts for over 40% of Uganda's GDP and employs 80% of the labour ². Increased average temperatures and more frequent climate change degrade ecosystems and reduce the quantity and quality of water needed for agriculture. Impacts of climate change are visible in various domains – prolonged drought, violent rains, and degraded farmlands. Farmers lacked the knowledge and know-how to link these changes with climate change but were aware that the seasons had been affected and something was not right with their environment. Through the training programme carried out by SWAGEN, farmers are now aware that climate change is the culprit behind such challenges that have surfaced in their farming practices, and are making efforts to better preserve the environment beyond their farms, such as through tree-planting to produce herbs and as a source of biomass fuel.

Prior to this initiative, farmers faced numerous severe issues on food scarcity, malnutrition, shrinking land and rising population. Traditional farming methods were no longer meeting the needs of farmers in providing food of adequate quality and quantity. Faced with these problems in nature, people in the community started to find solutions. Local farmers had ideas for water collection, rain water harvesting, and composting. People started looking outside their immediate communities for knowledge, such as by contacting the National Farmer's Federation, Ministry of Agriculture, and local governments to provide them with scientific knowledge to integrate and scale-up local farmers' practices.

The approaches they adopted by combining local and scientific knowledge for recycling nutrients in farms provided the answers to farmers' immediate needs. Further, they found that their own way to bring this about by themselves in the communities. Farmers started to recycle nutrients methodically at farms and used traditional techniques to control diseases, as well as ceasing the use of chemical fertilisers. To be certified as an organic farm national certification is normally needed. For farmers who cannot afford this certification, putting this method into practice enables improvements to be seen within one calendar year.

SOCIAL JUSTICE THROUGH ACCESS TO BASIC NEEDS

It is the most vulnerable people in society who are normally the first to experience the consequences of climate change, and in Uganda it is the small-scale farmers, who produce the bulk of the crops and livestock. The changing climate temperature in Uganda has been linked with issues of more frequent and longer droughts, increased cattle mortality, hydroelectricity generation and crop production. The country's high population growth rate adds a further pressure on the land in trying to cope with food insecurity and poverty. The current government's efforts have been focused on adaptation to climate change, especially in the areas of agriculture and livestock, forestry, infrastructure, water, energy, health, and disaster risk management³. Before the SWAGEN initiatives, food shortages and levels of poverty were both issues faced by the majority of households and communities, which the initiative has tackled by developing home-grown solutions to bring about resilience in the face of climate change.

The initiative has particularly helped women and children in Uganda, the chief historical actors in farming. It aims to arm women with knowledge and equipment, and the technology used is designed with a gender dimension enabling ease of use to reduce workloads. Thanks to the initiative, the average income of women and households has increased and workload has dropped, but it has also empowered women in household decision making as they can now use their income as a bargaining tool, which is important considering the ongoing gender inequality and discrimination they face in terms of economic opportunities and ownership of assets. Although 70% of women in Uganda engage in agriculture, they only have control over one-fifth of the output. One of the programmes under SWAGEN is on "Women's rights as human rights", which provides civic education and leadership, as well as management training to empower women in society and in households. The men in households have also benefited from the programme since it reduces their income burden, meaning whole families are provided with sufficient food as well as the chance to receive an income from sales.

IMPLEMENTATION

In the initial phase of implementation at the household level, the critical enabling factors were the change in societal norms and values among farmers to accept something new. The decision of farmers to engage is made by community members themselves. The challenge was therefore in the need to convince farmers of the benefits of the initiative, as its practices sometimes go against traditional agricultural methods. The success of the initial practices in producing better yields than previous traditional methods enabled it to be scaled-up. Key to driving the process was the dedication of community members who engaged with the community to bring about solutions to the most pressing issues.

The next key issue in implementation was to meet the various needs of different communities and households, such as lack of construction skills to build fuel efficient water harvesting tanks, and lack of financial resources. Thus, the initiative sourced funding for those who could not afford construction equipment and also provided training workshops in the field with technology that was locally obtained and simple to use. The trainers used native languages for those who were not highly educated with an emphasis on practical hands-on training.





MEASUREMENT & IMPACT

For the measurement, they used a score card method, field observations and interviews with participating farmers. Each participating household conducted a situation analysis with baseline food security, income, land productivity and occupation. The initiative measures directly attributable achievements against each participating household.

Results confirmed there had been a 90% improvement in food security for participating households. The initiative also generated a good source of income for farmers – participating households reported an 80–90% increase in income. Of the 17 different income generating projects with average land area of 1.5 hectares, the best of these farms can earn 100 USD per day, while 80% of Uganda's population practices traditional agriculture and about 29% live below the World Bank Poverty Line of 1.25 USD per person per day. In consequence, the initiative has also led to a 60% drop in urban migration of youth and men in the communities they engaged with.

SCALABILITY

The initiative started with 10 households and has now expanded to 3,000. The initial agro-ecology-based production of food crops and milk has expanded into honey and fish production. What started out as a solution for food security now also contributes to local economies, environment conservation and female empowerment. The programme can be self-sustaining once the practices have been learnt and put to use, and the scaling-up potential is very high as now many communities want to be join. Replication in other communities would require more financial resources and technical support to provide training, as well as intensive advocacy efforts to connect with government in terms of directing policy towards more participatory decision making to serve the real needs of people.

If the subsidy can only be privately funded, the project would most likely only be expandable to other countries. As the cost of purchasing the system is still high, it does represent a large financial outlay for households, but other models, mostly found in East Africa, also exist, which use the Pay-as-you-go format by operating as an ongoing utility service for which households pay a monthly fee.

Nevertheless, SWAGEN has scaled up its impact at both national and international levels through the support and cooperation of various organisations. In Uganda, it has established a collaborative forest management agreement with the National Forest Authority and represents forest-dependent communities in the REDD+ working group. It also implements actions in partnership with the National Forest Authority on the Forest Carbon Partnership Facility Project. At the international level, it presents East Africa Civil Society Organizations on the Civil Society Mechanism Coordinating Committee to engage with Committee on Food Security of the Food and Agricultural Organization of the UN (FAO) as well as to represent Africa Civil Society Organizations on the Climate Investment Fund Forest Investment Program. In the policies and measures on mitigation and adaptation to climate change at the international level, it is crucial that the views of the most vulnerable and fragile groups of communities are represented in order to bring about solutions to the issues affecting them the most.

WAY FORWARD

The activities under the initiative are slowly being recognised by the international community. It was selected as the 8th Annual ONE Africa Award Winner and the won the 2015 Wangari Maathai Forest Champions Award. While the organisation is still small in size with six permanent staff and eight volunteers, it is making efforts to expand. It is also currently applying for international grants to support scaling up in different communities as well as to effect more impact in areas of policy. The mantra of the initiative is to “act locally and think globally” to ensure more communities adopt and benefit from the initiative.



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ASIA.

CASE STUDIES

CASE STUDY

ENERGY EFFICIENCY IN THE INDIAN BUILDING SECTOR



INDIA



IN SHORT

The building sector is responsible for nearly a third of India's total energy consumption. In the face of rapid urbanisation and potential for huge growth in construction over the coming decades, the building sector is expected to take the initiative in developing relevant policies and strategies for climate change and sustainable lifestyle solutions. These initiatives and institutional interactions can also be incorporated within comprehensive local sustainable visions.

BACKGROUND AND OPPORTUNITIES

India has been experiencing rapid urbanisation over the last few decades, with 40 billion m² of new buildings anticipated by 2050. This has caused ever-increasing demands for energy – the energy used by buildings represents one-third (33%) of the country's total energy consumption, second only to industry. The residential sector is 22% of total energy consumption, and of this 38% comes from cooling, 28% from lighting, 13% from refrigeration, and 7% from air conditioning. The estimated energy conservation potential of this sector is around 23%¹, which the Government of India has alluded to by raising awareness of energy efficiency as a climate mitigation strategy.

Related to this, the government has led initiatives to improve the energy efficiency of buildings. In 2001 the Bureau of Energy Efficiency (BEE) was established, which led to development of the Energy Conservation Building Code (ECBC)². Considering over half of potential demand of floor space has not been built yet, policies for energy efficiency measures can have a significant impact. A voluntary-basis building rating system, Green Building for Integrated Habitat Assessment (GRIHA) has also been widely adopted in India, with a reported 700 projects on record³.



KEY FACTORS RELATED TO POSSIBLE TRANSITIONS

One key driver behind the increasing call for greener buildings has been the rise in global awareness of climate change strategies such as mitigation and adaptation measures. However, a number of challenges and barriers still exist to their widespread adoption. For instance, energy efficient buildings often incur higher building costs and capacity needs to be increased in order to create a new green building market, especially in developing countries. In addition, identifying culture, climate, and building types are highly important for maintaining regional sustainability – there is no one-size-fits-all strategy that can be adopted globally.

The domain of green and sustainable building is broadly defined by a number of institutions and experts as well as business sectors, and in general refers to high-performance for energy efficiency, well designed natural ventilation systems, on-site energy production through renewable sources, and net zero energy. The key challenges for deploying such sustainable buildings in rapidly growing countries are technical complexity, material costs, as well as the lack of regulations and knowledge and awareness ⁴.

Considering the future high construction demand in India, energy efficiency measures as well as a framework covering sustainable building design for new buildings will have particularly great impact. Therefore, relevant policies will play an important role in the long-term development plans and implementation of green and sustainable buildings. India also has a number of historical villages and buildings which need to be effectively conserved and maintained using greener retrofit standards.

Building-related policies also need to address rising energy demand due to increasing use of modern glass-wall buildings ⁵. There has also been a rise in commercial and urban residences that mainly use electricity. Therefore, access to green energy sources, and green markets for materials and technologies would also be of importance in the transition toward sustainable society in India.

Furthermore, as most buildings are linked with local infrastructure and land use plans, regional development plans need be comprehensively assessed by all related stakeholders including policy-makers, experts, developers, and citizens, as a comprehensive societal transition requires well-designed governance structures to implement policy.



MEASUREMENT AND IMPACT

Analysis of energy efficient building design in Indian case studies shows how a design-led approach can impact on the energy efficiency and energy consumption of buildings. Much room remains for further reduction in energy consumption, through environmentally friendly design and occupancy behaviours, as well as the production of energy. One case study ⁶ involved six public buildings built to green standards (such as LEED and GRIHA), and compares heating, ventilation, and air-conditioning (HVAC) and lighting loads. The buildings, each between 5 to 8 storeys and with mainly open-plan designs, are located in different cities (New Delhi, Gurgaon, and Hyderabad). The final results indicate that the window-to-wall ratio (WWR) may influence HVAC performance, in that use of more glass means more heat enters from outside, increasing the cooling demand under the Indian climate. On the other hand, use of glass walls means more sunlight and less lighting demand. Therefore, mixed-mode ventilation systems can reduce HVAC loads. Higher performance can be realised with use of HVAC buildings that have non-air-conditioned spaces installed with effective natural ventilation systems such as a central courtyard, natural shading and effective wind path. However, the efficacy of alternative approaches is heavily dependent on local climate conditions.

In addition, net-zero energy building (NZEB) is expected to be widely deployed as a climate mitigation strategy and potential solution to future energy challenges. NZEBs are self-sufficient and environmentally highly efficient, yet very costly. For large-scale deployment, relevant policy actions and institutional arrangement are essential.

Over the last few decades India has seen a steep rise in its urban population, as well as a rise in per-capita incomes. It is believed this increased urban wealth has resulted in reduced urban residential final energy consumption per capita, owing probably to the increased ability to purchase more efficient housing and appliances. According to the analysis, urban areas may become more energy efficient and may deploy NZEBs. However, such developments could also cause greater societal division and urban-rural disparity ⁷ due to the cost involved with NZEBs.



SCALABILITY

Although the building sector is growing rapidly, energy efficient buildings as well as NZEBs still represent a niche in India's overall construction market ⁸. To achieve sustainability targets, fostering technological changes and social innovation have to be accelerated. A number of research papers examining social changes indicate that shaping expectations, social network formulation, learning processes, and market demand creation are keys to bringing about social transition. Specifically, to scale-up the number of innovative projects, interconnections between actors, stakeholders, drivers and barriers need to be analysed and organised. National- and regional-level policies such as incentives and regulations can play significant roles in helping implement this. Along with increasing building demand is the need to create real markets, and to bring this about at speed, education and institutional learning processes will be key to avoid inefficient 'lock in' effects within the building sector.

WAY FORWARD

There is a long history of architecture and built environment in India, and a number of local well-established initiatives exist. Aiming to achieve the vision of a sustainable lifestyle, the built environment can have significant impacts on societal transitions and future living conditions. While many new projects related to sustainable buildings can be found throughout the world, growth in green, sustainable and net-zero energy buildings is currently too slow in many countries. Big gaps are apparent between technological progress and social interactions, therefore a wide range of tools need to be demonstrated to the public and all related stakeholders.

In India's case, there are also emerging concerns over conserving historical buildings as well as local cultures. These initiatives need to be connected to the overall discussion on sustainability in order to realise long-term transitions. To achieve sustainable development goals in the Indian context specifically in the living environment, long-term lifetime thinking for all related materials including buildings, service infrastructures, energy, waste, among others, need to be comprehensively considered. At the same time, identifying different time phases of transitions may be a key to conserving aspects of existing culture. For instance, retrofitting of old heritage buildings requires a different framework and mechanisms from deploying new, high-tech smart buildings. Another concern is that preserving old cultures and buildings is not likely to be high on the lists of priorities for local governments. Conversely, a number of solutions within traditional living environments such as in building materials and natural ventilation systems that have come about through adapting local specific needs and climate conditions have shown great promise to achieving sustainable lifestyles.

To sum up, the establishment of green building design codes such as GRIHA enable potential energy efficiency improvements of around 30–80% in India. Although adoption of the related systems is still voluntary, there is still huge potential to realise sustainability within the building market. Policy actions and relevant governance frameworks are keys at this stage to encourage large-scale deployment, which need to be backed up with carefully structured learning processes aimed at all related stakeholders covering the benefits, as well as some trade-offs.

Climate policies can be strongly interlinked with sustainable building strategies in terms of both mitigation and adaptation measures. As the subject of sustainable buildings also covers lifestyle factors and quality of life, as well as technological innovations, there are no single solutions to enabling higher levels of sustainability in buildings and the built environment. Such factors should be elaborated in local societal contexts and cultures. Moreover, new solutions in the areas of sustainable buildings and lifestyles developed in India are expected to be shared in the global arena.



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FIFTH ENVIRONMENTAL BASIC PLAN



OVERVIEW

Japan's Fifth Environmental Basic Plan, approved in April 2018, is a comprehensive, long term plan centred on environmental protection. In line with the global shift towards sustainability through the Paris Agreement and SDGs, it considers interconnections between issues in the environment, economy and society and aims to bring about an ambitious paradigm shift towards a circular- and symbiosis-driven society, which it calls "Environmental and Life Centred Civilized Society" through a systems approach. Through forming partnerships with different stakeholders its multiple aims include stimulating innovation, solving socioeconomic issues through environmental protection, demonstrating Japan's global leadership through its core 'living in harmony with nature' culture, sharing its experiences in overcoming environmental pollution, and introducing its environmental technologies via international cooperation and partnerships. The plan is also designed to assist in important policies, financial incentives, infrastructures and so forth that can advance sustainable lifestyles, and demonstrate that focusing on sustainability can solve other social issues to bring about an improved, more sustainable society ¹.

A SYSTEMIC APPROACH TOWARDS ENVIRONMENTAL PROTECTION

The plan recognised the environmental challenges as being inseparably interlinked with the economic and social aspects facing Japan today, and outlines a systemic approach to address sustainability. Such aspects are the socioeconomic challenges of population decline due to its low birth rate and rapidly aging demographics, as well as the challenge of uneven population distribution across different regions, exacerbated by the movement of young people from rural areas to cities, which leads to more acute depopulation of rural areas. The negative impacts on the environment resulting from these problems are decreased farming populations and more cultivated lands and forests being abandoned without proper management, which could lead to the deterioration of biodiversity and ecosystems. Japan also faces other challenges, such as to rapidly reduce its greenhouse gas emissions, ensure effective use of resources, preservation of forests (such as Satochi Satoyama; forest areas surrounding local communities), and needs to start a conversation on biodiversity ². Various other issues also face its society – the loss of regional economies, global economic competition from emerging economies, and responding to the technology revolution of artificial intelligence and the Internet of things, while concurrently experiencing a declining birth rate and rapidly aging population, the need for workstyle reform and the need to bolster resilience to natural disasters.

In responding to these challenges, the plan utilises preservation of the environment as a focus around which to set up six cross-cutting priority areas – economy, land, community, living, technology and international cooperation. Holistic improvements in these areas are sought through innovative solutions in socioeconomic systems, lifestyles and technologies. For economy, it utilises the green economy to expand green business, mainstream environmental aspects into corporate strategy, and maximise domestic resources through measures on finance and the tax system. To improve national land, it focuses on maintenance, creation of attractive cities and communities, use of environmental and green infrastructure, and symbiosis between different areas through a wide area network. In addition to the economy and land, the plan also aims to build sustainable communities through the use of local resources and provide healthy, prosperous living for all. For international cooperation, the plan aims to continuously develop and disseminate technologies to support the transition to sustainability and demonstrate Japan's leadership throughout the world.

REGIONAL CIRCULAR AND ECOLOGICAL SPHERE

One of the features of The Fifth Environmental Basic Plan is to introduce the “Regional Circular and Ecological Sphere” (CES) to make both urban and rural regions sustainable. CES is aimed at building a self-reliant, decentralised society in different regions to mutually complement and support various regional needs and resources, and involves all regions demonstrating their strengths in ‘soft’ as well as hard/physical resources. Some rural regions face declining populations, birth rates, and aging, while others rich in natural resources such as scenic landscapes as well as “Kizuna” (deep local social connections within communities) can complement resources in urban areas. Expanding populations in larger cities such as the greater Tokyo area means residents lack opportunities to experience nature or deepen connections with others. In other words, in recognising that humans are part of the environment, it aims at creating symbiotic relationships between them to ensure harmonious living with ecosystems, such as in conservation of secondary nature and supply and consumption of local ecological services, to create sustainable communities in different regions.

CES can be applied at different scales of communities to cover geographical variations to revitalise regional economies in rural areas, and support needs for natural ecosystem services in urban areas through the circulation of regional resources. In exchange, cities provide funds and human resources through encouraging people to participate in eco-tourism, local consumption, and investment in local business. Thus, the plan aims to maximise the sustainable use of regional resources to improve the economy and society in both areas, as well as create new value chains supported by connections between natural and economic resources through optimal resource circulation. Its scope affects a wide variety of resources including food, products, circular resources, renewable resources, artificial stocks, natural capital and basic chemical elements, for which it wants to bring about a ‘rediscovery’ of aspects previously overlooked, thus utilise them more effectively. For example, use of regional biomass for power and heat generation could replace fossil fuel use. Such practices also permit socioeconomic benefits in creating local employment opportunities to stem the migration to cities, and strengthening community resilience on energy self-sufficiency. For those in urban areas, exposure to nature could help them re-evaluate how deeply society and living are supported by natural resources and ecosystems.



IMPLEMENTATION

The plan is revised every six years, with the current edition revised in April 2018 resulting from a review following consultation with the Minister of the Environment in 2017 to incorporate the findings and recommendations of the Central Environment Council. To ensure effective implementation, the Fifth Environmental Basic Plan will describe measures taken by governmental and other entities as well as good practices and prioritised strategies, and the related ministries and government agencies will include consideration for the environment in actions taken by economic entities in their use of resources, as well as develop policy to enhance initiatives related to the environment. The government will improve its environmental management system and review how measures for environmental conservation should be implemented in each area, which would be carried out by local governments.



MEASUREMENT AND IMPACT

In reviewing the Fifth Environmental Basic Plan, the Central Environment Council will review the progress of individual measures listed in the plan through interviews with ministries and examining the views of citizens and then making recommendations for policy direction. The review process will set different indicators to demonstrate progress achieved in environmental conservation and other initiatives by incorporating as many quantitative indicators as possible. Due to the limitations of relying on indicators, the review process will seek to acquire, on a regular basis, a broad understanding of different stakeholders to ensure the indicators sufficiently reflect on progress in the environment, economy and society. The results of the Council's review will be used to draw up national policies, communicated to different stakeholders, and be incorporated in the subsequent revision of the plan.

Since the plan was only recently published, it is too early to measure how successful its comprehensive solutions in the areas of society, economy and the environment are. Under the six priority areas, the goal is to mainstream the green economy for sustainable consumption and production, land, sustainable community, health and prosperity, and technology, as well as demonstrate Japan's leadership in this systems-type approach to other countries. As the socioeconomic challenges of society evolve over time, these will be incorporated into subsequent revisions of the plan every six years, thus making it able to address different needs over time.

SCALABILITY

To address all the current issues in society, economy and the environment into the plan comprehensively and systematically, government leadership is needed. Its implementation requires forming partnership and enabling actions from many other actors such as business, research communities, civil society, communities and individuals. Due to the complexity and interconnectedness of environmental issues with all aspects of society, such approach would benefit other countries as well in helping them deal with specific needs, contexts and issues. For example, the problem of migration to urban areas which depletes farming populations is not restricted to Japan as it is linked with personal aspiration in many other countries, thus Japan's plan as well as the lessons and experiences resulting from it may help create decentralised, self-sufficient regions in urban and rural areas in other countries too. Moreover, this systematic approach enables policymakers to increasingly acknowledge the benefits of environmental policies in addressing other socioeconomic issues at the same time.

WAY FORWARD

As the plan points out, future approaches to environmental policies should address issues on the environment to the fullest extent possible by considering linkage with other socioeconomic issues Japan is facing to enable environmental policies to simultaneously contribute to solving other challenges. The plan hopes such systemic approach will usher in a new way of thinking for society as it develops, to maintain everyone's quality of life.



- 1 - https://www.env.go.jp/policy/kihon_keikaku/plan/plan_5/attach/ref_en-02.pdf
- 2 - https://www.env.go.jp/en/policy/plan/5th_basic/plan.pdf

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CASE STUDY

GROSS NATIONAL HAPPINESS



IN SHORT

The Gross National Happiness (GNHI), developed in Bhutan and administered by the Gross National Happiness Commission (GNHC), is a multidimensional measurement tool used by the government to assess the general level of happiness or life satisfaction. It is not a measure of subjective, individual well-being, as many happiness indicators are; rather, it recognizes happiness as a collective endeavour where different people in disparate circumstances can enjoy deep happiness. The Index draws on representative data from surveys conducted across Bhutan to generate a view of happiness that can be assessed at the national and sub-national levels. 151 variables are tracked under nine groupings. In 2008, the Government of Bhutan enshrined the GNHI in its Constitution and began publishing data and reports on the state of gross national happiness (GNH). The resulting data and analysis are used by various levels of government and by private and non-profit organizations to support policy and programme development. The GNHI has spread well beyond Bhutan, with many states, provinces, and cities around the world adopting versions of the Index for their own use. At the international level, the World Happiness Report, based on Bhutan's GNH Index, has become an annual publication of the United Nations presenting relative happiness data and rankings for the countries of the world.^{1,2}

GENERAL OVERVIEW

In 1972, the King of Bhutan declared that “gross national happiness is more important than Gross Domestic Profit.”³ Since that time, happiness has become an organizing principle for Bhutan and has been a key consideration in policy formation. In 2008, when Bhutan adopted democratic governance, the new government enshrined the principle of pursuing happiness over wealth in Article 9 of the Constitution, which states that: “The State shall strive to promote those conditions that will enable the pursuit of Gross National Happiness.” This established the pursuit of the enabling conditions for happiness as being a guiding purpose of Bhutan's development strategy.⁴

The GNHI is the world's first sustained, serious attempt to measure happiness across the spectrum from individual to communal and national, and to craft policies based on those measurements.⁵ Since 1972, the GNHI has grown from a set of aspirations and guiding principles into a quantified tool. To some extent, this development toward rigorous methodology has been a response to the intense international attention the GNHI has generated.

The GNHI is implemented by the GNHC and is tasked with developing and informing government policy and convening and implementing Bhutan's 5-year development strategies.



FEATURES OF THE GROSS NATIONAL HAPPINESS INDEX

Multidimensionality

The GNHI is defined as a “multi-dimensional development approach seeking to achieve a harmonious balance between material well-being and the spiritual, emotional and cultural needs of society,” explicitly recognising the need for balance between people’s physical, spiritual, and mental well-being. ⁶ This multidimensional approach means that the GNHI is not simply focused on subjective well-being. It is not narrowly focused on individual happiness but goes beyond the self to recognize communal and collective well-being as contributing to overall happiness. The GNHI internalizes other-regarding motivations, such as the desire to see one’s community thrive, one’s neighbours to be happy, or for one’s countrymen to enjoy a sense of mental well-being. As such, it seeks to capture a holistic snapshot of happiness across the individual-communal landscape. The GNHI is implemented by the GNHC and is tasked with developing and informing government policy and convening and implementing Bhutan’s 5-year development strategies.

The Four Pillars of the Gross National Happiness Index

The GNHI is organised around four central pillars: Good Governance; Sustainable Socio-economic Development; Preservation and Promotion of Culture; and Environmental Conservation. Each of these pillars offers a valuable lens for governments and organisations to use in crafting policies and programmes aimed at increasing happiness.

Good Governance provides a solid means by which the enabling conditions for happy, thriving communities and individuals can be pursued. The GNH Index establishes four key measures of good governance: political participation; political freedom; service delivery; and government performance. These measures span the breadth of government’s activities and interactions with citizens, including citizen’s trust in government institutions and the protection of fundamental rights such as speech, political affiliation, and the right to vote.

Sustainable Socio-economic Development is a pillar of the GNHI because of the central importance of the social and economic contributions of households, families, and individuals to the pursuit of happiness. Measures of sustainable socio-economic development include: household income; assets; housing quality; social support; community relationships; family; crime; working hours; and sleeping hours. These measures acknowledge the value of community vitality, living standards, and time use as contributing to overall live satisfaction

Preservation and Promotion of Culture are important aspects of the GNHI. Preserving local cultures is considered a vital contribution to happiness. The GNHI measures cultural promotion and preservation under four measures: language; artisan skills; socio-cultural participation; and the Way of Harmony (behaving in accordance with cultural norms). Deepening cultural resilience is also a critical factor, as it increases a culture’s ability to maintain and further develop its identity in the face of economic, environmental, social, and technological changes. This is particularly important in the globalized world, as cultures face challenges from ideas and norms imported from other regions.

Environmental Conservation is a key contribution to the pursuit of Gross National Happiness. The GNHI recognises the role played by a healthy, diverse and resilient environment in supporting healthy people and healthy economies. Ecological diversity and resilience are measured across four key areas: pollution; environmental responsibility; wildlife; and urban issues. The GNHI acknowledges that the environment provides critical services such as energy, materials, and water. The natural environment also provides less-tangible benefits such as aesthetics and spiritual and mental healing. The GNHI is implemented by the GNHC and is tasked with developing and informing government policy and convening and implementing Bhutan’s 5-year development strategies. ⁷

The Gross National Happiness Screening Tools

The GNH Index is innovative in that it is designed to be a relevant tool for the development and assessment of policies and programs. The Government of Bhutan has developed a pair of screening tools to assist it in pursuing national happiness – the GNH Policy Screening Tool, and the GNH Project Screening Tool. The tools establish a system used by the Government of Bhutan to ensure that all its development policies and projects are reviewed through the lens of the GNHI. This system includes a process of evaluation, goal-setting, and monitoring to guide projects and policies. The tools contain processes for communications with the public to raise awareness of the enabling conditions for happiness and well-being from the individual to community and national levels.

The screening tools are used by government at three different levels to ensure that policies and projects are well designed and continue to deliver measurable progress in increasing GNHI. First, they are used across all ministries and sectors in support of good governance. Second, each ministry makes use of the screening tools to ensure their policies and projects remain aligned with the objectives of GNHI. Third, the tools are used by government to develop and implement policies and projects targeting specific demographics (i.e.: youth, women) or types of activity (i.e.: employment).^{8,9,10}



IMPLEMENTATION

In 2005, the Government of Bhutan began developing the GNH indicators to facilitate the transition of the concept of GNH into a concrete, measurable tool that government could use to develop and implement policy. The Centre for Bhutan Studies and a team of researchers from Oxford University led these efforts.

Bhutan conducted the first GNH survey in 2008, followed by a second in 2010.¹¹ The most recent survey was conducted in 2015. The 2008 survey was a lengthy questionnaire focused on living conditions and religious behaviour. It was a representative sampling of the population, rather than a systematic survey of all 20 of Bhutan's districts. The 2010 and 2015 surveys were shortened to facilitate participation in the survey and were distributed across all 20 districts.¹²

The GNHI is administered by the GNHC, the highest government body mandated to develop and monitor policy. The GNHC is composed of the Secretaries of each government ministry, the Prime Minister, and the Secretary of the GNHC.¹³ It is charged with developing and implementing Bhutan's 5-year development plans and with creating and monitoring policies and projects for the country consistent with the values of GNH.

MEASUREMENT

Bhutan's GNHI is comprised of a rigorous set of 151 indicators that can be clustered and analysed in several different ways. Indeed, the GNHI groups these indicators into 33 clusters under nine Domains, which are in turn housed within four Pillars. The indicators are weighted according to their subjectivity, with more subjective indicators being weighted less heavily. The Domains themselves receive equal weighting as they are considered to be of equal value in achieving happiness.

The four Pillars are the primary driving force behind the GNH, expressing the fundamental principles that enable the pursuit of happiness and well-being. All 151 variables measured by the GNHI fit into one or more of these four categories.¹⁷

The GNHI can also be looked at with an eye to Domains of activity. These Domains are: psychological well-being; time use; community vitality; cultural diversity; ecological resilience; living standard; health; education; and good governance. The Domains do not always neatly fit under a single Pillar, reflecting the holistic approach taken by the GNHI.

Finally, the 151 indicators of the GNHI can be sorted into 33 different clusters that fit under the nine Domains. These clusters provide more detailed information on thematic areas such as literacy, cultural participation, positive and negative emotional balance, mental health, and disability.

LESSONS LEARNED

The Bhutanese government learned early on that implementing a programme such as the GNHI requires a willingness to review and adapt methods. Expanding the GNH surveys to cover the whole country would not have been possible using the early long-form surveys. Similarly, the partnership with external researchers allowed the GNHI to be developed with a high degree of rigour. Perhaps most importantly, Bhutan's experiment in measuring GNH has paid off both domestically and internationally. Domestically, Bhutan has gained a valuable set of tools to help guide its development policies toward higher levels of well-being for its citizens. Internationally, Bhutan has inspired the global community to reimagine how we measure quality of life.



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- 4 - <http://www.gnhcentrebhutan.org/what-is-gnh/history-of-gnh/>
- 5 - <http://worldhappiness.report/ed/2012/> p. 7.
- 6 - <http://www.gnhcentrebhutan.org/what-is-gnh/history-of-gnh/>
- 7 - <http://www.gnhcentrebhutan.org/what-is-gnh/the-4-pillars-of-gnh/>
- 8 - <http://www.gnhcentrebhutan.org/what-is-gnh/gnh-screening-tool/>
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CASE STUDY

INDONESIAN CITY WALKABILITY (BANDUNG & BOGOR CITY)



INDONESIA



IN SHORT

Recently, several cities in Indonesia have begun implementing pedestrianisation programmes to help encourage non-motorized transport (NMT) as a way to combat the cities increasingly being filled up with cars and provide safer, cleaner, and more visually appealing walking environments. Two of such programmes are “Panca Trotoar” in Bandung, the third largest city and capital of the West Java Province, and “Dialogue between spaces” in Bogor, the sixth largest city, a dormer city for Jakarta’s workers, scenic tourism destination (including botanical garden and summer palace), and also educational hub, home to the country’s largest agricultural university.

ORIGIN STORY

Asia’s cities have traditionally been walking cities, and many of Asia’s urban dwellers rely on walking and cycling to get around. However, the rapid pace of motorisation and vehicle-centric urban planning has meant pedestrian facilities and non-motorized transport (NMT) have received less attention, which has led to a dramatic increase in pedestrian fatalities and accidents, air pollution and poor health, together with lower levels of physical activity – Indonesia has some of the lowest ‘activity levels’¹ among a sample of 46 countries. To solve these issues policymakers have tried to improve or build new sidewalks to encourage walking, especially in Surabaya, Bandung, Bogor and Jakarta by creating safe and attractive pedestrian environments² and more liveable cities while simultaneously reducing air pollution and mitigating climate change. In Bogor, efforts were focused on improve green pedestrian facilities to improve NMT while simultaneously increasing access to public transport and recreation and tourism facilities.

BETTER PEDESTRIAN ENVIRONMENTS

Bandung is the capital of West Java Province, located about 180 kilometres southeast of Jakarta. Although Bandung has an official population of around 2.3 million people more than 5 million people live on Bandung’s peri-urban fringe or surrounding cities. Known as the Paris of Java during colonial times, Bandung has developed rapidly in recent decades and has undertaken a number of ambitious sustainability related projects such as for clean air and a smart city programme. The walkability programme “Panca Trotoar” started in 2014 and is underway or completed in various parts of the city. It focused on four main goals and related activities – revitalising sidewalks, developing new pedestrian walkways, increasing pedestrian safety, and improving the visual appeal of sidewalks – and proposed as solutions benches for resting, stone balls to block traffic, flower pots for decoration, garbage cans for cleanliness and street lighting for safety.

Located 60 kilometres to the south of Jakarta, Bogor has long been known for its commitment to city greenery and livability. Founded in 1817, the Bogor Botanic Gardens is the first and foremost garden in Indonesia and the oldest botanical garden in Southeast Asia as well as being a world famous institution for research and conservation. The garden is a key part of Bogor providing not only employment but a large recreational area for local residents, visitors from neighbourhood cities and many passing tourists. In Bogor, the city used an approach called “Dialogue between spaces” to focus on green building/urban heritage (national heritage buildings such as: summer palace, colonial buildings, etc); urban green space (Bogor Botanic Gardens) and green transportation to ensure all sidewalks could support the transportation system and also tourism development. The Bogor Botanic Gardens is an important element of Bogor city in terms of heritage and research as well as providing jobs and a large recreational area for visitors and tourists.

WHY DO WE DECIDE TO WALK?

The cities have collaborated with researchers to measure what encourages people to walk. To determine this, the decision to walk was analysed against a list of possible environmental factors, which revealed five main reasons: feasibility, accessibility, safety, comfort and pleasure. Feasibility means whether walking gets you to your destination, including time spent, distance and mobility, accessibility means the connectivity, quantity and quality of pedestrian facilities, safety refers to the potential for traffic accidents or becoming a victim of crime when walking, comfort means the ease of walking, such as sidewalk width, street benches and other amenities, and pleasure means whether you enjoy the walk, city layout, architecture and so forth. Other research on how walking and the built environment are linked points to the subjective nature of perception as strongly influencing walking behaviour, as well as the presence of other physical attributes of the built environment, both directly and indirectly ^{3,4,5,6,7}.

WALKING NEEDS IN INDONESIA

While previous studies ⁸ found feasibility was the main influence in deciding to walk, i.e., people will not walk if they have insufficient time to reach their destination, in Bandung, a survey found Safety and Security to be the greater need (with pleasure as least important), which might reflect the low levels of pedestrian safety and security in Indonesia.

Table 1. Weighting barriers to walking in Bandung

ANTECEDENTS - ENVIRONMENTAL FACTOR	RELATIVE WEIGHT
Pleasure	0.09
Accessibility	0.13
Feasibility	0.14
Comfort	0.16
Security	0.21
Safety	0.27



For Bogor residents, most say pedestrian facilities are safe, convenient and comfortable for walking in the city, and that they had used pedestrian facilities for sport and leisure activities. Only a few used them for commuting. They expressed a desire for pedestrian facilities to be extended or connected with bus or train transport facilities in the future, as well as shopping malls and so on, and also wished a canopy to be built to protect them from the sun and rain. If pedestrian facilities were expanded, a high percentage would be willing to use them for non-commuting such as for lunch spots, recreation/leisure and shopping.

MEASUREMENT

Questionnaires were distributed randomly to general citizens in both cities, with the Bandung survey undertaken in September–November 2016 for 500 respondents and the Bogor survey undertaken in January–March 2018 for 600 home residents. The key question asked was what was the acceptable walking distance per day. Results showed that prior to pedestrian facility improvements, the average acceptable walking distance was about 1.447 km per day in Bandung and about 1.678 km in Bogor city.

Specific groups such as non-walkers and private vehicle users walked less, on average 1.297 km per day in Bandung. The questionnaire then posed a hypothetical question asking how far they would walk if pedestrian facilities similar to “Panca Trotoar” were built nearby where they lived or worked. By comparing these two sets of data, it was found that respondents who relied on non-motorized transport would walk 860 meters further per day, or around 2.3 km in total, double the amount of the non-walker group, which was about 430 meters per day. Private vehicle owners indicated that they were willing to walk around 1.7 km. The results indicate that in Bandung the improvement program had a clear impact on the walking distance (see Figure 1), but in Bogor the impact was only minor, with the total distance increased by approx. 10.9% for a total of 1.9 km per day.

Figure 1. Comparison of walking behaviour in Bandung and Bogor city



THE EFFECT ON EMISSIONS

Based on a simple assumption that a modal shift will take place from private vehicles to non-motorized transport, especially for non-commuting trips, based on the willingness to increase walking distance per day, GHG emission reduction and air pollution improvement were estimated, which revealed that on the city level, total emissions of Volatile Organic Compound (VOC) would drop by around 1.76%, with a smaller reduction in NOx, about 0.95%.

Table 2. Daily Emission Reduction of modal shift to non-motorized transport in Bandung city

EMISSION	DAILY EMISSION REDUCTION (MILLION GRAM)	EMISSION REDUCTION %
CO	1.82	1.20
VOC	0.23	1.76
NOx	0.18	0.95
PM	0.01	1.10



SCALABILITY

The pedestrian improvement program in Indonesian cities produced positive impacts on lifestyle, especially in urban mobility. The analysis for Bandung and Bogor city shows that the programme can be scaled-out within the city itself to increase the impact, create cleaner air and reduce emissions. Combining the initiative with parking policies may encourage a modal shift for people to walk more and use private vehicles less in city centre, which would create a bigger impact on air pollution and GHG emissions. Replication of the initiative appears feasible in other cities in the country (Indonesia) and across other Asian cities. Although the programme could be executed in a short term period, determining whether these programs are successful or not depends on whether they meet the needs of urban residents for safer, cleaner and more visually appealing pedestrian facilities to achieve the Sustainable Development Goals indicator 16.1.4 on safe and secure walking environment.

WAY FORWARD

Results from the analysis would provide city governments with citizens' perspectives in order to improve pedestrianisation programmes in Bandung, Bogor and other cities in Indonesia and Asia. While the study produced several interesting findings, it was not free from limitations, such as issues with bias in self-reporting or data reliability, which means there is a need for more quantitative measurement, such as use of mobile phone or GPS data. Further, the sample size was rather small and may need to be increased to capture more areas of the city in parallel with expansion of the programme. The case study further illustrates the difficulties in making even simple measurements for sustainable lifestyles as this short study involved a team of researchers working for several months in collaboration with the cities, which can be a strain on resources.



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CASE STUDY

MUNI MEETUPS



PHILIPPINES



IN SHORT

Based in Manila, Philippines, MUNI Meetups are designed to be fun and friendly, yet insightful and action-oriented learning and networking events on sustainable living, organised by MUNI Cultural Creatives Inc. Based on developing a culture of conscious consumption, and showcasing available solutions, they aim to inspire attendees to take action and maximise their influence as well as create meaningful collaborations between like-minded individuals.

ORIGIN STORY

Inspired by the Story of Stuff and a tree-felling issue caused by the expansion of a mall in Baguio City in 2012, the establishment of MUNI was spurred by the intense desire to build a community that could spark conversation about more pro-environmental choices, and take proactive steps to continue raising awareness and provide sustainable solutions.

Starting informally in 2013, the MUNI Meetups have gradually grown into regular, professionally organised, facilitated and well-attended events. The meet-ups themselves, usually attended by around 75 people, were inspired by networking nights and conferences previously attended by the founder Jen Horn, and are designed to maximise interaction and help attendees formulate their own thoughts and insights, with the aim of inspiring them to commit to their changes through stories of cause-driven creatives.

THEME SELECTION

The themes of the meet-ups have tackled a variety of sustainable living aspects guided mostly by Sustainable Development Goal 12 (responsible consumption and production), including discussions on responsible consumption and production, zero waste living, responsible travel, sustainable dining, amongst others. Meshing all of these separate threads is an underlying philosophy of mindfulness, which the company defines as being more conscious of the impact of our daily lifestyles – how we shop, eat, travel and do business – and their impacts on our health, community and the planet. Topic or theme selection is determined by the prevailing themes in sustainable lifestyles and business news and events, discussions in the MUNI Community Facebook group, and seasons or cycles of typical lifestyles (for example, travel themes in the summer, celebrations or events as the holidays approach, health and self-care at the beginning of the year).

Thematically, the meetups are highly rooted in the everyday lives of the attendees with the overall entry point being the idea of living mindfully within a consumerist culture, enjoying the benefits of a modern urban life while reducing environmental impact.





CREATING SOCIAL CONNECTIONS

Bringing people together and forging connections are at the heart of MUNI Meetups. Unlike events which are led by presentations with the audience as passive receivers of information, the audience is invited to actively participate in the discussion.

At the beginning of the meetup, attendees are primed to think more thoughtfully about the topic and interact with other attendees through a mindful listening exercise facilitated by the MUNI team. The purpose of this is to warm up the audience and encourage interaction while helping them to be more receptive and open-minded towards other ideas presented.

In the panel discussion, questions asked are often derived from attendees themselves whenever possible. Upon registering for the meetup, attendees are asked for their questions regarding the topic and for the panellists, and responses are then collated and chunked into meaningful segments for the panel. Time is also allotted for on-site questions and answers.

After the panel discussion, attendees are divided into groups, where they interact with others in the room, share their thoughts, unpack the earlier panel discussion, and hopefully find individuals they can get support from and/or collaborate with in the future.

This visioning and co-creation methodology is a critical aspect of both bringing people together but also encouraging commitment to behavioural change. The founder Jen Horn studied psychology as part of her undergraduate degree and this interest, with the support of her team, has led to an emphasis on reframing sustainable lifestyles in a positive, engaging way. By having attendees talk about changes in their lives and envisioning how they could be brought about, it is believed they will more likely enact change in their lives and have a sense of ownership over them, rather than feeling compelled or obliged to do so. Each Meetup tends to have a mixture of both newcomers and repeat attendees which helps give a sense of committee while having enough new faces to prevent events becoming stale.

MAINTAINING DIGITAL PRESENCE

In addition to its regular in-person meetups it also has a strong web presence which includes a website, social media pages (Instagram, Twitter, and Facebook) and an interactive Facebook group where members can post about and discuss sustainability. The Facebook group has almost 4,000 members (requests to join are not automatically accepted and the group is actively moderated), with its Facebook page having over 12,000 likes, and its Instagram and Twitter accounts have over 7,000 and 2,000 followers respectively. MUNI staff are active on the platforms and make considerable efforts to interact with the members and create a warm and welcoming atmosphere.



IMPLEMENTATION

The key components to implementing MUNI Meetups are finding a suitable venue, selecting a theme and speakers, and developing the event and maintaining the community. The MUNI team has worked together to identify and recruit knowledgeable and engaging speakers, as well as facilitating interaction at the events themselves.

Speakers are usually chosen from broad backgrounds to ensure a range of viewpoints and perspectives as well as lively discussion, and are generally drawn from non-governmental organisations, the private sector and government officials. MUNI Meetups also try to invite those whose lifestyles exemplify the topic under discussion and can serve as role models for the attendees to aspire to.

Stakeholder engagement has been strong and positive feedback received, and engagement on multiple platforms is ongoing. However, other aspects such as tools, funds and finding suitable venues have proved more difficult. The most challenging issue for MUNI Meetups to further their work is the lack of tools to enable day-to-day sustainable living and to manage their relationships with attendees and the wider group. In other words, MUNI Meetups lacks the tools needed to gauge the impact of individual meetups on the long-term behaviour of attendees.

MEASUREMENT AND IMPACT

Currently, the impact of the meetups is measured through surveys that inquire into the likely future behaviours of the attendees. Post-event feedback forms show that 92.3% would adopt new pro-environmental behaviours, 80.8% would attend another event in the future, and 65.4% would recommend events to others, which demonstrates initial success as regards the objectives of building a community and influencing behavioural change, but does not as yet demonstrate sustained behavioural change.

Regarding environmental impacts, MUNI Meetups cover a very wide range of themes from zero waste to food to travel, all of which involve different measurement methodologies. Given the whole lifestyle approach that MUNI Meetups is interested in, one potential method would be to measure a participant's lifestyle when they join MUNI Meetups using a footprint calculator and track reductions over time. Currently there are a wide range of footprint calculators that could be used, but none enable automatic tracking, and such monitoring would also need to take account of the meetups themselves. At this moment, previous meetups may be referenced if there is an overlap between the themes but they are generally considered as standalone affairs.

SCALABILITY

MUNI Meetups appear highly scalable due to the universality and simplicity of the concept. However, the concept faces problems with the availability of human resources such as speakers and the required resources. While MUNI Meetups feels that there is no shortage of interest in the topic, there is concern about the risk of fatiguing their audience with overly frequent meetups and being unable to deliver deeper workshops due to the lack of time and manpower. Adoption and replication of the concept appears feasible across the Philippines and Southeast Asia as the region is predominantly youthful and rapidly urbanising, in keeping with MUNI Meetups' target demographic, meaning both audiences and suitable speakers could be sourced within major urban centres.

WAY FORWARD

MUNI hopes to boost the impact of the project through offering a more intensive series of learning workshops for those who have passed through the entry-level meetups to help them extend their sustainability journey. It also aims to better manage the post-meetup situation, promote further engagement and networking, as well as share more resources from meetups to online channels. One of its key short-term aims is to develop a hub toolkit to assist attendees in shifting to more sustainable ways of living.

Initiatives of decision-makers and other stakeholders that could assist projects such as MUNI Meetups include support in ensuring access to low or zero-cost venues for public meetings and the development of tools to help with effective follow-up with attendees and measure behavioural change and environmental impact reduction.



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CASE STUDY

NATIONAL WORK-LIFE BALANCE POLICY



SOUTH KOREA



OVERVIEW

In 2018, South Korea's government introduced a policy on work hours in order to address the nation's corporate and public attitudes to work. Reducing hours of weekly work permitted by law from 68 hours to 52, it targeted companies and public organisations with over 300 employees, and imposed a prison sentence or fine of up to 20 million won (US\$17,945) for failure to comply. ¹ The law, for widespread implementation by 2021, is mainly to address the nation's workaholic culture, and aims to raise levels of personal free time. According to President Moon Jae-in, it represents an important opportunity to spend more time with families and protect people by reducing deaths from overwork, industrial accidents and sleep-deprived driving. ² Chung Hyun-back, the former Minister of Gender Equity and Family, also acknowledged that a vast gender disparity exists together with excessively long working hours. ³ It is also intended to help women enter the labour force so that they can have professional careers as well raise children. How people spend free time is a key area in sustainable lifestyles and a good work-life balance helps reduce stress, enhance mental wellbeing and increase personal autonomy.

WORK LESS AND HAVE MORE FAMILY TIME

South Korea has been notorious in its stressfully long working hours and has one of the highest suicide rates of industrialised countries. ⁴ In 2017, South Koreans worked 2,024 hours annually, which is the second highest after Mexico of the Organisation for Economic Co-operation and Development (OECD) countries. Despite this it remains one of the lowest-ranked OECD members for productivity. ⁵ Governmental efforts in reducing maximum legal weekly working hours aim to reduce the stress workers face at work and hence improve the productivity of the labour force of the country. The long working hours also contribute to negative physical wellbeing such as death from overwork, industrial accidents and sleep-deprived driving. In addition to improving the work culture, the policy hopes to provide better work-life balance with more free time for family and leisure activities to improve quality of life.

Another aim of the government intervention is to encourage people to have more children. Chung Hyun-Back stated that the long working hours is one of the reasons for the country having one of the lowest fertility rates in the world, at only 1.2 children per family. Due to the long working hours, young women normally make a choice between career and starting a family. For married couples since introduction of the policy, men can leave the office earlier and spend more time for meals with their family. By expanding the free time of workers, couples can spend more time together to share the burden of childrearing rather than shouldering the entire burden on the mother and, by reducing work hours to a level that enables work to be compatible with childrearing, more women are encouraged to join the labour force. The policy also aims to help empower women to have more equitable gender roles within both the family and labour force in South Korean society.

GOVERNMENT POLICY IN COUNTERING SOCIAL NORMS

Although the measure to reduce working hours started as the policy by the government, it is delivered on the reflection of the citizen's demands in the series of peaceful protests during the "Candlelight Rallies" from 2016 to 2017 for their wished for lifestyles. ⁶ Nevertheless, long working hours are the social norm and deeply rooted in South Korean culture, especially among the older post-war generation who pride themselves on having led the country out of poverty into one of the richest industrialised economies in the world. ⁷ The office culture is one in which the older generation or senior-level employees maintain the tradition of staying in the office until late at night, meaning younger employees need to follow suit to avoid appearing rude. This obligation on employees is only increased by mandatory office social events, which restricts their free time even further.

There is an expectation stemming from older generations of employees for their younger members to carry on such traditions in the workplace, which has resulted in a labour market that places higher value on attitudes and social skills rather than actual job competency. This is in vain, however, since it is most likely the cause for the country's low productivity ranking. Moreover if the culture and norms of society remain unchanged, people might question whether a government law can actually affect whether employees go home earlier. In this sense, implementation of the new policy represents a springboard for society to transform its thinking and social norms around the work culture and pay more attention to the importance of making space for family and personal time.

IMPLEMENTATION

To enforce the new law, companies adopted various means to ensure their employees leave home within legal work hour limits. Some shut down computer networks at certain times, others install surveillance systems to prevent staying late or early work at offices and limit smoking and coffee breaks to encourage staff to finish tasks within normal work hours, and some employers have even resorted to forcing their employees to leave the office early. With the Ministry of Employment and Labour hiring 200 labour supervisors to help companies and organisations in this transition, this can be taken as a sign of its determination to ensure the successful implementation of the law.





MEASUREMENT AND IMPACT

While the policy has only recently been implemented in 2018, it has already had some results – employees started leaving earlier or signing up for evening fitness classes. However, the policy only currently affects 10% of the labour force targeting the large corporations, and may also not reverse the declining fertility rate due to families having less money to spend due to loss of overtime pay and therefore less desire to have bigger families due to affordability concerns. It remains unclear as to when the policy will be expanded to cover smaller-scale companies as well as its effect in the long term. Assuming the policy can meet its initial aims, it could bring about many long term positive impacts to society in creating a work culture that is less stressful, enhancing productivity as well as gender equity in labour force participation, and improved time use to enhance social connections with family and friends.

Nevertheless, concerns exist over whether it can achieve its intended goals, especially for companies that are understaffed. According to a survey by a local employment portal, over half of the 905 workers who participated are concerned that they might end up working the same amount of overtime as before but without receiving overtime pay.⁸ There are also views that the government should allow people preferring to work longer hours to receive higher overtime pay. Moreover, some actors in the business community, especially small and medium enterprises (SMEs) that comprise 90% of the labour force of the country suffer from a labour shortage, which would be exacerbated by reduced work hours. It could widen the wage gap between large corporations and SMEs, which are unable to make up their wages without additional overtime work. This in turn would mean workers face a net loss in compensation that they may try to remedy through taking on part time jobs, thus defeating the purpose of the law. Fully comprehending the unintended effects of the law will require more time.

SCALABILITY

Due to the mental and time pressures people are experiencing in current work spaces, not only in South Korea but also other industrialised countries, governmental policy could start to intervene in these areas that would significantly impact people's physical and mental wellbeing. In the meantime, other than through governmental policy measures, corporations could also consider to voluntarily reduce work hours. This may have effects in improving the quality of work of their employees as well as bring about other non-financial benefits, such as increased wellbeing.

WAY FORWARD

This policy from South Korea has the potential to inspire other governments to take similar measures to ensure a proper work-life balance as part of policy targets for people to enjoy a higher quality of work and better time use in their daily life. Korea's neighbour, Japan, is also facing similar issues of low fertility rates and high stress from work, and has introduced various countermeasures such as Premium Friday to encourage workers to leave offices early on the last Friday every week. But this country too faces similar problems of ingrained mindsets of corporations and older employees, which could require more long-term planning to fully engage the whole society beyond the extent of government policy.



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CASE STUDY

OKI TOWN



IN SHORT

Oki Town, a small town with a population of around 14,000 located in western Japan, has leveraged its need to shift from incineration-based solid waste management to adopt a more holistic approach to community-based resource recovery. By abandoning incineration and establishing a biogas plant, the town has been able to produce organic fertiliser for local agriculture. Moreover, the town has made the facility a centrepiece of a broader push for greater sustainability. The biogas plant itself is part of a complex including a restaurant, sales depot, information centre and multi-purpose plaza. The town has also established a local brand for the rice grown using the organic fertiliser and has made the plant and associated activities a part of its environmental education curriculum. As a result of these efforts, Oki Town's recycling rate increased from 14.9% in 2005 to 63.1% in 2015, incinerated waste has decreased by 56%, and landfilled waste decreased by 98%. This has led to reductions in costs for the city, increased wellbeing for local people, and reductions in greenhouse gas emissions.

OVERVIEW

Since ancient times, Oki Town has been an agricultural town, centred on the production of rice, wheat, rush, and rush processing due to its favourable environment. This has further expanded in recent years to include strawberries, green asparagus, and various types of mushrooms. Although the town established incineration as its primary means of solid waste management in the 1970s through outsourcing to a facility owned by the adjacent city of Okawa, by the 1990s it was clear this method was generating a significant financial burden. In response, the city undertook waste reduction initiatives and a local civic group promoted composting activities. However, it was a change in the law in 2002 banning the disposal of human waste and septic tank sludge into the sea which provided the real impetus for change. Rather than pursue the expensive option of establishing an incineration and sewage treatment system, the town decided to explore alternatives. It was realised that the establishment of a biogas plant could both solve the immediate problem of organic and human waste disposal while also providing organic fertiliser for the local agricultural industry.

ESTABLISHING A CIRCULAR LOOP AND BOOSTING LOCAL SUSTAINABLE ACTIVITIES

The Oki Recycling Centre, "Kururun" ("circulation" in Japanese) is a biogas plant with a methane fermentation system that started operations in 2006. All organic waste (including from household and business sectors, also comprising human waste) in the town is separated and collected. Methane fermentation provides enough gas to cover 70% of the electricity needs of the plant, and the fermented liquid produced, called "Kuruppi", is used by farmers and private gardeners across the town as an organic fertiliser. The agricultural products grown produce rice, oil, and vegetables, which are supplied to homes and schools. This leads to further organic waste creation and thus completes the cycle, creating a circular resource loop within the town.

The local public has also been involved through not only the separation of waste but also the development of Kururun as an information centre and source of education for local schools. The centre accepts study groups from elementary schools as well as holding classes to inform them about recycling. Schools have extended invitations to outside lecturers and the town has developed a complete set of study materials for this purpose. In 2007 the town also established awards for districts with good organic kitchen waste separation practices, and from 2013 has held Zero Waste Contests.

IMPLEMENTATION AND ENABLERS

The key enabler to the success of Oki Town has been the involvement of all the town's stakeholders, which it secured not via a top-down mechanism but through acceptance and agreement, especially concerning local farmers. However, this resistance subsided over time upon the realisation that the practice is hygienic and that Kuruppi is an effective fertiliser.

Development of the organic fertiliser as a commodity was achieved through providing spraying services at an affordable price. The liquid manure itself is free upon paying a spraying fee of 1,000 JPY per 0.1 ha, and the spraying is undertaken by a dedicated vehicle owned by the town. The service is considered important as it avoids the need for elderly farmers to perform manual spraying. Fertiliser management has also been key as the fertiliser is not required all year, leading to the construction of storage tanks.

The development of Kururun that not only includes the processing plant but also a local restaurant, information centre and a multi-use plaza has both helped create acceptance for the organic fertiliser and also placed sustainability squarely at the centre of the town's development approach.



MEASUREMENT AND IMPACT

The town has measured a number of impacts across all three aspects of sustainable development as conventionally understood – economy, society, environment.

The economic benefits of Kururun relate to the reduction in costs for facility construction and waste treatment, creation of local employment, sales of agricultural products, and savings in fertiliser fees for farmers. The facility cost (including the surrounding facilities such as the information centre and restaurant) was estimated at around 1 billion JPY (about 10 million USD) over the five years from 2005 to 2009, which is approximately one-third to a quarter the cost of incineration facilities. Around 61 jobs were created, and the restaurant and direct sales depot have annual sales of around 100 million JPY each. The liquid manure production and spraying has saved Oki Town around 10 million JPY (100,000 USD) and some farmers have saved around 500,000 JPY (5,000 USD) in fertiliser costs annually.

Kururun has also created social benefits through the provision of facilities for farmers to sell their produce; 80 local farmers are currently registered for shipping products to the direct sales depot, with an additional 200 from neighbouring areas. Over half of the local residents have visited the restaurant, more than two-thirds the direct depot, and almost a quarter have used Kuruppi. In addition, Kururun has over 3,000 visitors annually, further promoting and connecting the town to the outside world as well as providing income from their local spending.

The environmental benefits of this approach have proven significant – Oki Town's recycling rate increased from 14.9% in 2005 to 63.1% in 2015, incinerated waste decreased by 56%, and landfilled waste decreased by 98%; calculations show that the use of methane fermentation as compared with standard incineration facilities leads to a reduction of 846 tonnes of carbon equivalent (t-CO₂eq) per year.



SCALABILITY

The project shows great promise for scaling. Japan is currently facing an ageing society and a depopulating countryside, with questions being raised regarding the fiscal viability of a large number of towns. Oki Town therefore shows a means by which agriculturally based towns can reduce their fiscal burdens in a way which not only benefits their balance sheets, but also the local environment, economy and society. Using this model would most likely require a similarly sized town with a comparable economy but the circular loop concept is a good example of the circular economy in action. For example, in December 2018, the second Biomass Centre, which produces electricity and organic liquid fertilizer through the fermentation of garbage, human waste, and septic tank sludge, started operation in Miyama city and was technically supported by Oki Town.

LESSONS LEARNED AND WAY FORWARD

Incineration is the standard means for managing solid waste in Japan, the most common reason for such being the lack of space for landfills. While incineration is unlikely to be completely phased out, Japan is increasing its focus on reduction, reuse, and recycling as a means of preserving resources and lowering amounts of waste incinerated. In such context Oki Town serves as a sound example of an alternative, especially considering its additional benefits for local governments, as well as its promotional value in terms of sustainability thinking and paradigm shift.

Horizontal and vertical collaboration has been integral to the development of the project. The production of fertiliser from Kururun did not originate with the government but from meetings with local farmers, and as such the concept has been embraced by the entire town and not simply led by the Environment Division of the local government. Oki Town also signed an agreement on the development of a sustainable material-cycle society with Miyama City in 2017, which will help ensure facilities are maintained as well as enable both cities to capitalise on their mutual strengths, such as Miyama City's renewable electric power supply industry.

The town is continuously developing its material-cycle initiatives. In 2010 the town started a project to produce oil from waste plastics and in 2011 started separating disposable nappies. Another key issue is to reverse the decline in farming in the town. Currently the town has around 100 full time farmers and another 500 with other side businesses. Local establishments in collaboration with the local government are looking for ways to encourage future generations to take up farming, which is an enduring challenge facing the whole country as it heads into the future.



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CASE STUDY

REVERSE MIGRATION



IN SHORT

The Swades Foundation works in the rural area of the state of Maharashtra the city of Mumbai in India. The Foundation is pursuing a holistic development strategy incorporating health and nutrition, education, water and sanitation, and economic development. An integral part of this has been the promotion of and support for reverse migration through which migrants to major cities such as Mumbai and Pune have returned to their rural villages in Raigad, Maharashtra. These returnees have benefitted through an increased income, wellbeing and social standing as they are mentored by the Swades Foundation team to start with an income generation activity that helps them develop and acquire the skillset and technical know-how to become first time entrepreneurs.

OVERVIEW OF REVERSE MIGRATION

The world has undertaken an historic shift to becoming majority urban for the first time. This rapid urbanization and development has led to decreased poverty and improved opportunities for many in the rural Global South, but has led to severe air, water, and land pollution. There have been increased concerns whether the levels of predicted urbanization are sustainable. In addition, the adaptation to life in the city for many rural to urban migrants is not easy, with many struggling with insecure employment, poor quality housing, and difficulties accessing education and healthcare, leading them to wonder if there is a way of living well and sustainably within their rural villages.

Government of India has started several policies to promote rural development, such as the Saansad Adarsh Gram Yojana initiative that aims to develop model villages with housing, education, and healthcare and the Providing Urban Amenities to Rural Areas (PURA) strategy, which aims to improve the economic wellbeing of rural India through increasing connectivity between villages. However there is no formalized policy assisting rural reverse migration at place in India.

Swades Foundation is one such non-governmental organization (NGO) working to promote and assist reverse migration. However, the purpose is not to simply send migrants back to their villages, but to enable the transition through the development of a business plan and support for initial costs in starting the business. This is achieved through a structured process that involves not only the returnee, but also the village council (Gram Panchayat) and previous reverse migrants and arranges for multiple exposure visits along with assistance for first two years after migration. Swades Foundation is not only giving technical support to such returnees but also psychological support as such transitions are challenging especially in the initial few months.

Swades through its holistic development model for rural areas has successfully transformed whole villages using what it terms its 360-degree development model encompassing four areas – health and nutrition, education, water and sanitation, and economic development. They have provided access to water and sanitation in every home, improved infrastructure and host of activity based learning programmes in schools, as well as the creation of cadre of community health workers who are trained in conducting primary health screening and eye care, cardiac surgeries and anaemia alleviation programmes, as well as programmes to increase agriculture output and animal husbandry leading to increases in household income. All these factors create a favourable ecosystem for migrants to come back and restart their life in village and live an independent, dignified life.



RETURNING TO THE VILLAGE – A CASE STUDY

One such returnee is Sanjeev Dhasade. He was born and raised in Bhandare, a village near the small town of Mangaon located in Raigad district, around 150 kilometres from Mumbai. He migrated to Mumbai in 2013 where he made a living as a sales executive and lived in a small apartment with his family. He was successful enough to have continued living in the city, but had long desired to return to his native village. His father owned five acres of land with a plentiful water supply, so he had always felt that there was strong potential in the land but did not know how to fully harness it.

After attending an explanatory meeting by Swades Foundation, he immediately saw the opportunity and swiftly agreed to move back to his village with his family. Swades helped him in procuring 11 adult goats and 22 kids of a good breed of goats (called osmanabadi) at a subsidized rate and mentored him on farming, knowledge which he supplemented through watching online videos. After six months he earned 100,000 rupees from selling goats. He also turned to agriculture, again seeing a swift return for his efforts. After starting tilling in November and sowing in December, he was able to earn 200,000 rupees by May. In addition he set-up a vegetable shop earning 400 – 500 rupees per day profit (146,000 – 182,500 rupees per year, assuming it is open every day) that employs his family. Overall he has earned around 600,000 rupees (around US\$8,500 at April 2019 exchange rates) since returning, compared to his previous salary of 240,000 rupees per year.

Not only has he created a sustainable business for himself and other family members, but he has also helped revitalize the village he lives in. Once he started cultivating his land with seven or eight different types of crops, his abundant and verdant crops stood out in the uniformly brown fields of the village and soon other farmers started to copy him, boosting their own incomes. His success has in turn led to another two migrants returning to the villages, also hoping to be able find a means of flourishing in rural India.

IMPLEMENTATION

Swades Foundation implements their reverse migration through a multi-step process. First there are information meetings called City Committee Meetings whereby successful reverse migrants share their stories to encourage reverse migration. Interested migrants then have meetings with staff from Swades Foundation to assess their situation and a visit to their home village is undertaken. Discussions are undertaken with the village council, visits are undertaken to successful returnees, and a business plan is developed. Once the migrant has moved back to the village, Swades Foundation provide support and technical assistance to uptake livelihood programmes such as poultry, goat rearing, cashew processing, water for irrigation, dairy and so on depending on the interest of the returnees. In addition to providing expertise, Swades also links returnees with relevant government schemes. These returnees are also supported with a major part of their initial funding requirements for starting a business through grants from Swades as well as training and on-going advice. Swades continues to visit and support returnees for up to two years.

A key enabler for the success of the programme has been the supporting infrastructure that has been established that has made returning viable for the returnees. The returnees come back to villages that have been supported by Swades, so they have the infrastructure that can support their day-to-day lives and ensure that returnees do not feel they are missing out or disadvantaging their family through returning.

In addition, skills and knowledge given by the experts to the returnees has been critical, as have the study visits that the returnees undertake, as well as the efforts by the returnees to learn themselves, through a variety of means such as books, online videos, and trial and error. In response to the success of the project, Raigad District Administration opened a reverse migration cell in January 2019 to facilitate to credit and loans through banks and other government schemes that support rural development that are applicable for returnees have also provided a supportive policy framework to assist.



MEASUREMENT AND IMPACT

Swades Foundation measures impact through monitoring the progress of the returnees. The indicators are remaining in the village, income and business growth, and the willingness to support other returnees. Monthly visits continue for at least two years. Thus far, 142 migrants have been supported in reverse migrating with only three having returned to the city. Given that Swades monitors the returnees for such a length of time, it is clear that migrants are satisfied with their standard of living and income upon returning to the village. Currently Swades does not have indicators for measuring the environmental impact of the returnees. Nevertheless, as the migrants are returning to a rural life from the city, it is reasonable to assume that their carbon footprint would be reduced. However, their impact on the land would be dependent on the activities that they undertake and whether such activities are sympathetic to the local environment (for example, avoiding excessive use of fertilizer, not exhausting water sources, and avoiding deforestation).

SCALABILITY

There have been significant efforts to scale the activities of the scheme with the number of returnees growing rapidly from 33 in September 2017 to 142 by April 2019, meaning around nine to ten migrants a month are being recruited. However, as knowledge regarding the scheme has spread, it is becoming more popular and currently (April 2019) there are around 360 potential reverse migrants in different stages of migration. Swades also collects lists of closed households from the villages, which can indicate areas of need and form a basis for targeted recruitment.

Reverse migrants who accept help from Swades Foundation agree to motivate five more people from their contacts and network. These efforts will be supplemented by Swades Foundation holding increasing numbers of meetings in Mumbai – fifteen are planned for this fiscal year, and they expect another 180 - 200 returnees to migrate through the process. The scheme is in the early stages but currently appears to receive a lot of interest from potential returnees.

WAY FORWARD

Swades Foundation is planning to expand the scheme in the future. Specific plans are for expanding capacity for establishing the businesses through bank loans, business development training, study visits, and further facilitation from government schemes and involvement of village development committees. The scheme aims to attract 500 more returnees over the next two years through direct connections, referrals and community outreach.



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CASE STUDY

SAN CARLOS CITY



IN SHORT

San Carlos City, located in the centre of the Philippines, is nationally and internationally recognised for its environmental and development work across a wide range of areas from fisheries and watershed management to eco-schools and solid waste management. Under the slogan “Vamos San Carlos! Where Green is Go” the city aims to develop into a “A modern agro-industrial processing city, a model green city on good governance, a renewable energy hub for Asia, and a sustainable tourism destination with strong, diverse and viable economy, and an ecologically balanced and sustainable environment with functional, appropriate and accessible infrastructure where citizens are healthy and well educated, living in a harmonious and peaceful community, under a dynamic, competent, and reliable leadership in a safe, adaptive and resilient city” where quality of life is increased through balancing services, jobs, and housing, properly integrating green and open spaces, expanding businesses, and supporting education and local culture and traditions.

INTRODUCTION TO THE CITY

San Carlos is a city with a population of around 132,000, located in the province of Negros Occidental of the Visayas region in the centre of the Philippines, equidistant between the cities of Iloilo and Cebu. Remotely located on the east side of Negros Island, the city traditionally relied on its sugar plantations and processing to support the economy. However the industry became under increasing pressure during the last two decades of the last century, and the city realised that a different development path was needed. Realising that the city was blessed with both abundant space and natural resources, a sustainable development approach emphasising the environment was a path for growth and prosperity.

The city covers a large land area, with the main development in the city being in the flat coastal urban area with a population of around 40,000 people but with the majority of the residents living in the hilly upland area. There is also a small island near the city called Sipaway Island which has been the main focus of sustainable tourism efforts. Under the auspices of a city development board incorporating stakeholders across the city including the private sector and non-governmental organisations and other public groups as well as government officials, the city has implemented a wide variety of initiatives. These initiatives have received many awards both nationally and internationally.

A wide variety of initiatives have been launched by San Carlos in the last two decades, including but not limited to, solid waste and wastewater management, sanitation, forest and watershed protection, housing, environmental education, coastal resource management, sustainable tourism, renewable energy, highway development, and cemetery management. These initiatives cover a wide range of sustainable development and wellbeing aspects including health, shelter, livelihood, environment, education, and social connection.



INTEGRATING ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE LIVELIHOODS

The city has undertaken a wide range of coastal resource management activities including mangrove protection, and the creation of a marine protection area as a part of its fish forever campaign. The marine protection area is a designated section of the sea near Sipaway Island. By both preventing fishing in the protected area and educating workers in the local fishing industry to prevent overfishing in other areas, the city has successfully created a marine protection area which both ensures the continued sustainable livelihood of the locals due not only to the fisheries protection, but also has increased the island's attractiveness as a tourist destination due to the improved snorkelling opportunities. This programme, called Fish Forever, started in 2014 and is a collaboration between the city's coastal resource management office, RARE Philippines, Fisheries and Aquatic Resource Management Council (FARM C), and People's Organization (comprising fisher folks). Following capacity building, the management of the two marine protected areas have been transferred to the community with the city's task being only to monitor the area. The city is looking to expand to other coastal areas within the city and establish additional protected areas.

PROVIDING SHELTER AND INTEGRATING THE URBAN POOR

The city has undertaken a variety of housing initiatives to address two separate problems, the proper integration of the urban poor into the city and the provision of housing for local government workers. Squatting and the creation of informal settlements by migrants from the rural districts lead to a variety of issues such as poor quality and dangerous structures as well as inadequate sanitation and lack of access to facilities. The city is helping alleviate this situation through a land settling programme called Homelot. Informal settlers are given land for 5 pesos/day which equates to the price of two cigarettes. After 5 years the land is theirs, but if it is sold, it must be sold back to the government. There is no assistance for construction of housing, but there is government assistance for moving their house. The movement is literal; the previous house is dismantled, placed on a truck and then moved. In addition the plot of land is properly connected to utilities to prevent issues such as pollution or fire hazards caused by improper sanitation or electrical installation. The project has moved through four phases, starting in 1994 and having continued to the present day. To date approximately 2,870 households have benefited with the total area for the programme being 28.5 hectares. To be eligible, the recipients must have no property under their name. In addition, there is also an urban housing project for city workers with workers offered housing at a discounted price. The city has a large gap between the rich and the poor, and a small middle class. Poverty remains a persistent problem with the poverty incidence in 2010 being 24.5% and the subsistence rate being 13.6%. One of the key components of poverty alleviation is security of tenure – by offering this security at a small price the city can help prevent issues created by informal settlements and encourage the urban poor to put down roots and become a part of the community.



MEMORIALISING THE DEAD AND CREATING GREEN SPACES

Another project undertaken by the city to integrate wellbeing and the environment is Punongkahoy sa Bawat Pumanaw, or “memorial tree park project”. Like many other local governments the city faces a lack of affordable burial sites. San Carlos City solved this with a novel environmentally based solution by building a memorial park to serve as a permanent graveyard and aid reforestation. It initially purchased a 5,000 sq metre lot beside the old cemetery and equipped it with proper facilities. It then established a tree park 12 km away for around 1,500 trees.

Burial of the deceased in a niche is charged at 100 P for indigents and 1,000 P for non-indigents, and involves planting a tree in the Memorial Tree Park with seedlings provided by the city. After five years, the surviving family exhumes the bones and transfers them to the foot of their planted tree.

The programme started in 1999, with 393 families being the first to benefit. Given the five-year cycle of interment and transfer the burial site has capacity for 3,000 more niches. Financially, the LGU realised a net income of 159,785 P from operations in 1999, which easily covered their total expenditure of 95,000 P in 1997 for upkeep of the previous cemetery. The programme has at the same time served as a means to reforest the denuded mountainsides of Negros Occidental ⁴⁶.

IMPLEMENTATION

Key to implementation of the activities has been stakeholder involvement and political will. The establishment of an independent citywide multi-stakeholder development committee has ensured both stakeholder consultation and continuity regardless of changes from elections. In addition there is significant political will within San Carlos. One party is dominant within the city further ensuring policy continuity and the city has unambiguously and clearly framed itself as pushing for green or sustainable development. The city also creates comprehensive development plans with clear indicators and regular monitoring procedures. Once new rules and regulations are passed, they are enforced impartially. Enforcement is particularly key as although the Philippines has a sound comprehensive environmental and sustainable development framework, enforcement remains a significant challenge.

Funding is enabled through the Internal Revenue Allotment (IRA) which is the annual funding received from the national government. Of this 20% is earmarked by law to be allocated to a development fund. This funding is used solely for funding the city's developmental projects vis-à-vis social, economic & environmental initiatives under the auspices of the City Development Council (CDC) wherein the City Planning & Development Coordinator's Office (CPDCO) is the fund manager & secretariat with the Local Chief Executive (LCE) being the Chairman of the CDC.

The city has also been very pro-active in seeking out and forming relationships with potential collaborating organisations and ensuring buy-in from the local public. These organisations have varied considerably from local non-governmental organisations such as Global Environment and Nature Ecosystems Society (Phil.) Foundation, Inc. (GENESYS Foundation, Inc.) involved in sustainable waste management, to international organisations such GIZ and RARE. The city also engages in widespread information campaigns to ensure the public is involved in decision making, and once decisions are made that they are aware of the outcomes and are given time and assistance if new rules mean a change in practice.

MEASUREMENT AND IMPACT

As stated above, the city develops targets and indicators as part of its planning. Summary data concerning the city can be found on the local government website and it supplies regular news updates. For those not online, information can also be easily obtained by visiting the city hall. Individual projects are also monitored and evaluated against targets to check progress.

Examples of this include the solid waste management programme which properly checks and records waste flows with approximately 70% of waste has been diverted, surpassing the 25% diversion mandate by the law. Other examples are monitoring of the fish population and catch levels and, with the introduction of a plastic regulation ordinance, monitoring the reduction in plastic bag usage.

In terms of measuring sustainability at the macro-level, San Carlos is a leading city in ASEAN. It is one of the few cities within ASEAN to have completed a greenhouse gas emission inventory which was done in collaboration with ICLEI and measured emissions within city boundaries. The inventory found that on this basis, the city is a carbon sink with emissions of just over 85,000 tonnes offset by just over 172,000 tonnes of carbon sink provided by the city forestry. In addition to this as a member of the ASEAN SDGs Frontrunner Cities (FC) Programme the city is developing indicators for the sustainable development goals and acting as a mentor to other cities to achieve the same.

SCALABILITY

Although an exact replication of some of San Carlos' activities may not be possible due to the differing contexts of individual cities, it appears possible to scale out activities. Moreover San Carlos is attempting to shift the mindset of the local people towards sustainability and embed a sustainability viewpoint within the public. This approach appears very much replicable – many of San Carlos' activities do not require large scale funding.

San Carlos has already been used as a best practice example by the Department of the Environment and Natural Resources through its selection as an environmentally sustainable city both nationally and within the ASEAN region through its participation in the ASEAN Environmentally Sustainable Cities Model Cities Programme and also the ASEAN Sustainable Development Goals Frontrunner Cities Programme. Activities have been scaled to other cities. The design of the central materials recovery facility in the sanitary landfill has been replicated by at least six other local government units, there have been a variety of study tours by other local government units to understand the implementation of the plastic regulations, and the memorial tree and water levy programmes have been replicated in part by at least one other local government unit. The design of the city hall itself has also been replicated by Kabankalan City. In addition, San Carlos is managing to scale part of its solid waste management activities by accepting waste from nearby local governments.

LESSONS LEARNED AND WAY FORWARD

The main lesson from San Carlos is that clear, transparent, and inclusive leadership are important for developing and implementing sustainable lifestyles projects. This experience has given the city national and international prominence as a city for sustainable development and has demonstrated that much work can be accomplished with the resources local governments have at their disposal. Nevertheless the city stills faces challenges regarding persistent poverty and is actively working to assist and develop its poorer rural areas. One of the means that the city believes can be a source of income and employment for the city is an expansion of its tourism activities near the city centre and organic farming in the poorer hill regions. San Carlos continues to push hard on its sustainable development for the improvement of its citizenry.



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CASE STUDY

SHU SHI (WildAid)



CHINA



OVERVIEW

Since 2017, WildAid has run a communication campaign in China called Shu Shi (Vegetarian Diet) to encourage consumers towards healthier and environmentally friendly diet choices and reduce meat consumption. It was launched in partnership with celebrities who are especially influential among younger generations as role models in diet behaviour change. Due to the increasing wealth of the middle class and the shift towards Western-style diets, consumption of meat and dairy products in China is increasing, and such shift impacts both on health, and the environment, such as land and water resources, as well as greenhouse gas emissions. The communication campaign also incorporates recommendations from China's Nutrition Society on meat consumption. If such recommendations were broadly observed, China's CO₂ emissions could be reduced by up to 9.5% by 2030¹. The campaign also builds partnerships with companies such as restaurants, shopping centres and airlines to provide vegetarian options, with WildAid's potential reach numbering into hundreds of millions of people across China through its multiple media outlets, including online and television public service announcements (PSAs), and billboards in transportation hubs and public spaces in some of China's biggest cities.

MAKING A PLANT BASED DIET DESIRABLE THROUGH CELEBRITIES AND STORIES

The campaign's communication strategy is to engage famous local celebrities such as Huang Lei, Angelababy (Yang Ying) and Huang Xuan to promote a less meat-oriented diet to create positive aspirations among especially younger generations. This aspirational message-push approach results from a process of trial and error in WildAid's engagement with Chinese consumers, which historically included in 2016 an international celebrity Arnold Schwarzenegger. In their first food choice campaign, he delivered a shock-type message through picturing him walking in a desert – the implied consequence for our planet if we continue eating meat. As a result, the team rethought its 'scary messaging' tactic of forcing behaviour change as it was unattractive for the general public and media sponsors.

The Shu Shi campaign in 2017 marked a change in approach to create positive messaging to make a plant-based diet appealing to Chinese consumers. The team carried out a survey at the outset of the new campaign using as a baseline the general public's current understanding of diet. Of the 600 people interviewed in Beijing and Shanghai, 93% expressed a willingness to reduce meat eating as well as willingness to tell their friends to do the same. The survey also revealed that the health angle was more popular than the environmental perspective in promoting a reduced meat diet.

The Shu Shi campaign video thus delivers the positive message that eating more fruits and vegetables leads to a healthy body and environmentally friendly lifestyle. The campaign, which made use of attractive local celebrities and simple messaging, has been successful as it frames the consumption of vegetables and fruits as a desirable option rather than a forced dietary constraint. The campaign also engages with ordinary people to share their stories on plant-based eating. In 2018 it launched a series of short videos titled "Shu Shi Ji" with a recipe-sharing platform "Xia Chu Fang", which tells the stories of ordinary people in different occupations and thus shares their original vegetarian recipes and the positive changes they experienced in adopting them. The sharing of experiences and stories reinforces general awareness that a plant-based diet can be enjoyed by everyone and also provides health and environmental benefits. The campaign also encouraged the creation of more vegetarian food, through use of video, which attracted over five million video downloads.

EXPANDING THE IMPACT TO CHANGE SOCIAL NORMS

The communication campaign attempts to expand its influence beyond merely awareness-raising and into the behavioural change sphere to smoothen the shift towards vegetarianism among consumers. One of the strategies employed by WildAid in 2017 was to build partnerships with food outlets such as restaurants, airlines and shopping centres to provide vegetarian options, backed up with campaign videos and other educational materials in-situ, as well as to help consumers identify the vegetarian or low-meat options. The strategy also included developing new methods to make vegetarian options more accessible to audiences and the public.

The ultimate aim of the campaign is to foster new social norms throughout China, and especially for the emerging middle-class, based on the positive aspiration of pursuing sustainable consumption and changing how money is spent. This is intended to counter the increasingly predominant aspirational model of eating more meat and buying more cars. The campaign sees this as an opportunity to re-engineer social norms to promote sustainable living for better wellbeing and for the environment, such as eating less meat, to eat more often with your family and spend less money on cars and more time outdoors, which dovetails with current national policy instruments on encouraging Chinese citizens to live environmentally-aware lifestyles. The campaign thus acts as an instrument to promote these messages and create positive aspirations to reach out to consumers. Through the engagement with “green celebrities” as aspirational figures along with imagery of sustainable options as something desirable, the campaign aims to both increase public support for pro-environmental policies as well as create demand, on the side of consumers, for more pro-environmental policies.

IMPLEMENTATION

In its engagement with key partners such as celebrities, media and advertisement companies, and city government, WildAid has strategically built pro bono partnerships to launch campaigns almost free of cost. This is because their PSA videos on national television channels are media spots generally only affordable for the private sector. Through these partnerships, WildAid is able to produce high quality, professionally-designed and cost-effective campaign contents. Further, support from the city government has been instrumental in obtaining free billboard advertisement space, which is utilised by the campaign in partnerships with celebrities and big advertisers to help fill up any unused advertisement space.

The campaign has historically tried different forms of messaging on different media platforms. In the first year of Shu Shi in 2017, it experimented with delivering messaging focusing on plant-based diets for health and the environment. In the second year, it experimented with implementation of the messages. The campaign was launched via two major PSAs accessing over 70,000 video screens and 350 billboards. Contacts within the media estimate this campaign produced over 1.5 billion potential impressions. According to the survey, the heat map was first on the celebrity's face and the second was on the message. The combination of attractive imagery and simple, positive wording meant consumers readily digested the campaign's message on the impacts of diet on health and the environment.



MEASUREMENT AND IMPACT

The campaign has been highly successful in attracting viewers, and public awareness is high. A press release held by the Shu Shi Campaign in 2017 was attended by 31 media representatives and led to 158 news articles, including 74 original articles and 84 shared articles on TV, online video platforms, radio and newspapers, as well as 47 reported on some of China's most-used SNS platforms – Weibo and Wechat. There were three live reports and the PSA on Weibo was viewed over 22 million times.

Behaviour change, however, is a drawn-out process requiring long timespans in order to understand real trends and impacts. Engagement with individuals also brings with it new challenges in calculating impact over the long term, and current funding does not allow the organisation to analyse impact of individual behaviour changes on the environment. Nevertheless, diet choices have profound impacts on the environment, and in light of the rapid shift of dietary habits towards more meat consumption, if this were reduced by more than half from the current 63 kg per person to 27.4 kg as recommended by China's Nutrition Society, China would reduce its overall greenhouse gas emissions by 6% and reduce global emissions by 1.5%. Without a shift in diet, emissions from Chinese meat consumption may rise over 50% by 2030 and China would generate more greenhouse gas emissions than the 2012 total global emissions except China, the United States, India and Russia ².



SCALABILITY

Other similar campaigns to encourage meat reduction for health, animal welfare and environmental benefits are also underway in China, carried out by other NGOs. However, the Shu Shi campaign was able to reach a wider audience than the others thanks to its media network.

The long-term impact of the communication campaign is challenging in terms of measurement, and difficult to sustain. Thus, in addition to communication campaigns, since 2017 WildAid has been scaling up its impact through partnerships with airlines, restaurants and government agencies to increase vegetarian options for people eating out. One such partnership involved Tianjin Airlines and comprised providing vegetarian meals in all first and business class flights. In 2018 it partnered with a 289-outlet chain restaurant "Xibei" with 50 million consumers to promote a menu with more vegetarian options. In 2018, WildAid, with support from the Chinese Center for Disease Control and Prevention, produced the contents of books that promote healthy eating.

LESSONS LEARNED AND WAY FORWARD

Currently, the campaign aims to develop a multi-year strategy of implementation covering 10 or more Chinese cities, especially those with the rapidly growing middle classes. One of such plans is to pair-up with cafeteria companies to provide vegetarian options as a move from educational and awareness-raising into action-based behaviour-change platforms as part of the shift towards a plant-based diet.

The campaign has now reached a level of awareness among the public and needs to sustain its momentum to educate while at the same time provide tools to take meaningful actions. To broaden its scale, the campaign must not pass judgement on motivations for joining it, and create more reasons for individuals to participate rather than to isolate them on this journey.



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CASE STUDY

SINO-SINGAPORE TIANJIN ECO-CITY



CHINA / SINGAPORE



OVERVIEW

Sino-Singapore Tianjin Eco-City is a bilateral top-level government cooperation between China and Singapore. Development of the eco-city got underway in November 2007 upon the joint signing by signatories Prime Minister Lee Hsien Loong of Singapore and then Chinese Premier Wen Jiabao. The eco-city is envisioned as “A thriving city which is socially harmonious, environmentally friendly and resource efficient”, and aims to be a model for other cities in China and other countries for sustainable development through highlighting practicality, replicability and scalability¹. The city can be found in the Tianjin Binhai New Area, about 40 km from Tianjin city and 150 km from Beijing city, which is itself within the Bohai Bay Region, considered to be one of the fastest growing regions in China that also encompasses Beijing, Tianjin and part of Hebei province. It covers an area of 30 km² and plans to act as a residence for a population of 350,000, with schools, hospitals and shopping malls. To date, the basic infrastructure has been completed and the first wave of residents moved in in 2012.

ECO-CITY AS AN INSTRUMENT TOWARDS SUSTAINABLE URBANISATION

China has experienced rapid urbanisation over the past few decades, and by 2025 64% of its population is projected to be urban. In the meantime, it faces critical challenges in providing sufficient land, infrastructure and resources to accommodate this growing urban population while also addressing climate change². A land area of 65,000 km² is needed to build urban spaces, two-thirds of its 600 cities already face issues over water shortages and water quality, and energy demands are projected to rise rapidly. In mobility, car ownership is projected to rise by 50 million by 2020. The government's 11th Five-Year Plan lists achieving sound urbanisation to achieve sustainability in resource use, environmental protection, economic efficiency and social harmony. While urbanisation in its current form has typically focused on sectoral solutions such as water supply and waste management, Tianjin Eco-City provides opportunities for China to address cross-sectoral solutions to bring about a more comprehensive style of urban design and management.

In selecting the location of the eco-city, the government requested that development take place in an area of non-arable land that also faces a water shortage challenge. The idea behind this was to provide impetus for a form of planning that would enable replication in other cities, in terms of revitalising polluted lands, reducing urbanisation pressures on agricultural lands, as well as minimising the relocation of current residents. Thus, Tianjin Eco-city was selected to respond to challenge of converting an area including non-arable land, polluted water bodies, and deserted salt pans into 34 km² of usable space. There are several themes to the eco-city's Master Plan – transit-oriented development, mixed land use, walkable community, high population density, energy efficiency buildings and affordable housing. Its focus is on land use, the water network, transport and vegetation. In addition to converting non-arable land into an eco-city development, the original water bodies that were polluted were rehabilitated and, together with the desalination of sea water, formed the water supply. In the planning of transport and land use, a density index was used, in which high density developments were only planned among major transport hubs to reduce commuting times of residents and encourage the use of public transportation. Public transportation options were planned to be within 800 meters of 80% of the population.

INCORPORATING SOCIOECONOMIC AND ENVIRONMENTAL GOALS

The objective of Tianjin Eco-city is to be a model low carbon city whilst also being economically and socially sustainable. From an economic perspective, the joint collaboration involving Chinese and Singapore governments fosters cooperation among private sectors from both countries. In 2011, the Singapore side offered grants and tax incentives for Singaporean companies to open and operate in the eco-city under a scheme called the Tianjin Eco-City Assistance Programme. As part of this, Singaporean industry associations provided seminars and information for companies to invest in and set up operations in the eco-city. The total project cost is estimated at about 50 billion RMB (9.7 billion USD), with 168 million USD of commercial investment, and 46% of the total investment coming from Singapore companies³. Over 58 million USD worth of projects has been awarded to over 20 companies in Singapore as part of the eco-city development.

Development of the eco-city has been guided by a set of key performance indicators (KPIs) covering environmental, economic and social aspects – 22 quantitative and 4 qualitative KPIs in total⁴. The 22 quantitative indicators focus on four themes: “Good Nature Environment”, “Healthy Balance in a Man-made Environment”, “Good Lifestyle Habits” and “Developing a Dynamic, Efficient Economy”. For environmental quality, it sets indicators for air, water, land and noise quality, and overall aims for carbon emissions per unit of GDP to be below 150 tonnes per 1 million USD which is one fourth of the Chinese average of 600 tonnes per 1 million USD in 2014⁵. In infrastructure, it aims to build 100% green buildings with the Green Building Evaluation Standards that are jointly developed by Singapore team with the Eco-city Administrative Committee⁶. The indicators are also used to ensure 20% of the energy is obtained from renewable sources and half of the water supply is obtained via water desalination and recycling. The infrastructure design is aimed at building amenities within walking distances to facilitate community building and to nurture good lifestyle habits as well as reduce consumption and recycle resources. Moreover, at least 20% of the housing is to be subsidised public housing for people in need. Among the qualitative indicators, the eco-city aims to encourage green consumption and low-carbon operations to promote a healthy ecology. It will also adopt policies and efforts to promote regional collaboration to preserve history and culture, and hopes that the practices that emerge from the eco-city can be used to guide and benefit other regions.



IMPLEMENTATION

Tianjin Eco-city is the second such flagship joint China-Singapore project to have taken place based as a result of top-level political commitment of the two countries, the first being the China-Singapore Suzhou Industrial Park. Tianjin Eco-city was developed through multi-stakeholder efforts under the Urban Redevelopment Authority in China, and the actual city was designed by China Academy of Urban Planning and Design and Tianjin Urban Planning and Design Institute, along with a Singapore planning team. It involved the joint-equity Sino-Singapore Tianjin Eco-city Investment and Development Company Ltd, in which both the Singapore consortium led by Keppel Corporation and the Chinese consortium led by Tianjin TEDA investment holdings hold 50% stakes. The design chosen was adapted from the Singapore Neighbourhood Concept to meet the local needs in China.

As a large-scale project involving building an entire city, various levels of expertise are required in order to offer opportunities in different industries across the value chain. The implementation, led by a Singaporean company, started with a call for partners, investors and service providers to develop comprehensive solutions in the eco-city. One of its current major challenges is to attract residents as the metro line connecting it with the major economic hubs as well as other public transport facilities are yet to be completed. As one of the incentives, the Chinese government started offering subsidised school and housing for residents in the eco-city.



MEASUREMENT AND IMPACT

As the city is still in its development phase it is difficult to measure it against its goal of sustainable urbanisation for replication elsewhere. Despite the presence of KPIs covering 22 quantitative and 4 qualitative indicators, they are focused on the planning process and not implementation. One lesson learnt from this is the need to incorporate the institutional, administrative and contractual processes into the implementation phase as part of monitoring and evaluation measures, in order to enable periodic progress reviews of the Masterplan. Moreover, while the current model mainly benefits from a top-level bilateral political commitment between two governments, it could consider making the planning and implementation process more inclusive by engaging different actors including potential residents in order that their needs in sustainable lifestyle dimensions could be reflected in making the eco-city more sustainable.

SCALABILITY

Tianjin Eco-City was planned as a model city for sustainable urban development and to test and demonstrate emerging sustainable technologies and solutions for future replication in other areas. Thus, the technologies used in the eco-city are designed to be practicable, replicable and scalable for other areas in the context China's ongoing urbanisation, and if successful could help in urban development both within China and further afield. This is particularly important given two-thirds of the global population is projected to live in cities by 2050 compared to today's 54% ⁷. Considering the scale of the land and the resources needed to build a whole city, commitments such as these require decisions at the highest level of government. Also vital is the need to create effective partnerships between other stakeholders through private investment in the implementation phase. Involvement of the private sector is considered essential in the case of Tianjin Eco-City to enhance its commercial viability and potential for replication.

WAY FORWARD

Tianjin Eco-city launched into its second phase in July 2018, which is focused on developing the central business district ⁸. At the launch, Deputy Prime Minister of Singapore Teo Chee Hean underscored the importance of replicating the experiences of Tianjin Eco-city development across the whole Beijing-Tianjin-Hebei new area as a new growth engine for China's economy. Beyond economic sustainability, the eco-city also serves to demonstrate how to incorporate economic goals with social and environmental goals as part of comprehensive eco-city planning.



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CASE STUDY

USING LOCAL RESOURCES IN BUILDING CONSTRUCTION



IN SHORT

Compressed Stabilised Earth Blocks (CSEB) are a potential break-through that could lead Asian cities towards building sustainably. Earth required to make CSEB may often be utilised from the construction site itself. Stabilised with a 3 to 10% cement mix, it significantly reduces the need for concrete. Combining CSEB with passive design and circular economy approaches could lead to transforming the way we build cities today.

INTRODUCTION

Asia has been urbanising not only rapidly, but also highly inequitably and unsustainably over the last decades. From 0.3 billion urban dwellers in 1950s to 2.1 billion in 2015 and projected to reach 3.3 billion by 2050¹, basic infrastructure and housing needs are enormous. Asian cities consume up to 80% of total regional energy and generate 75% of the region's carbon emissions² yet fail to meet infrastructure needs.

Conventional building materials such as concrete, steel, glass, aluminium and brick have a very high embodied energy (the energy consumed throughout the lifecycle of a building), actively contributing to buildings' 40% share of the world's energy consumption and a 1/3 share of global CO₂ emissions³. Not only are they energy inefficient, but buildings made with today's conventional construction materials have a short life span. The average life span of a traditionally built building (masonry and wood) is 120 years versus the 60 years of modernist buildings (reinforced concrete and glass curtain wall)⁴.

SUCCESSFUL UTILISATION OF CSEB IN INDIA

Earth has been a widespread building material for centuries. Initially, it was used as a plain mud-to-straw mix to produce sun-dried adobe bricks, which had low strength and durability. Later, the process evolved into fired clay bricks. From the mid 20th century, Compressed Stabilized Earth Blocks (CSEB) entered the construction scene. These are manufactured mixing a moist and sandy soil parts stabilised by adding cement up to 3 to 10% of the total mix, and compressed into blocks using a manual or a motorized press. First experimented with in Colombia (1950s), India entered the process in the late 1970s and has been gradually scaling the technique over the last decade.

The three selected examples showcase this gradual upscaling and highlight how this alternative building material, combined with passive design techniques and the principles of circular economy, create sustainable and highly livable buildings that are sensitive to the local context.



This case study has been developed by Olga Chepelianskaia, Founder and Director of UNICITI, as a guest case study. UNICITI is a French think tank and consultancy that carries out the mission of helping Asian cities harness on their unique natural and cultural assets to achieve sustainability, inclusiveness, livability and economic competitiveness.

Olga Chepelianskaia is an international sustainable urban development consultant. She has worked with over 20 cities and 40 countries with a number of international institutions such as ADB, CDIA, ISOCARP, UNDP, UNECE, UN Environment and UN ESCAP.

INSTITUTIONAL BUILDING: WORLD HEADQUARTERS OF DEVELOPMENT ALTERNATIVES, NEW DELHI



Development Alternatives (DA) is a global sustainable development social enterprise founded in 1983 and headquartered in New Delhi^{5,6}. Their new building, designed by architect Ashok B. Lall as a replacement for the first headquarters, was completed in November 2008, has a total of 5 storeys and hosts over 340 employees⁷.

Non-stabilised earth blocks were crushed and mixed to make CSEB, generating a five times longer lifespan. Fly-ash from a local power plant was utilised to make cement stabilized fly-ash lime gypsum blocks. These comprise 90% of the building walls, replacing energy intensive conventional walling⁸. Similarly, the use of glass with aluminium frames was minimised and timber for doors and windows was preferred. Some of the rooms' ceilings were designed as shallow masonry domes held by reinforced concrete frames⁹. Ferrocement vaults span the office spaces,

carrying 4 cm thick sandstone slabs, avoiding building materials heavy in embodied energy. Most materials were locally sourced to reduce processing energy.

The building hosts a spacious courtyard, a traditional element of Indian architecture providing natural cooling and serving as a public space. Baoli, or a stepwell, is also a traditional feature, essential in hot and arid climates. They play a multi-functional role of rainwater harvesting, replenishing aquifers, and cooled public spaces. The building is designed to maximise natural light and show views of nature¹⁰.

The new building utilises crushed materials from the old building, industrial waste (fly-ash) as well as waste polystyrene in the wall cavities for insulation to reduce the use of virgin materials in the building. All rainwater is used to recharge ground water and all wastewater is treated on site. This water is filtered and reused for flushing toilets and for watering plants by a drip irrigation system¹¹. The building provides an inspiring built environment featuring numerous open spaces that provide natural cooling and green views, creating comfort through the use of building materials close to nature. The building was entirely built by skilled craftsmen, providing an aesthetic richness reminiscent of the fine old buildings of North India.

RESIDENTIAL COMPLEX: T-ZED, BANGALORE



Biodiversity Conservation India Limited (BCIL) was founded in 1995, focusing on building sustainable units for upper middle-class resident groups. The T-Zed complex, completed in 2008, was designed by Sanjay Prakash, Studio for Habitat Futures (former Sanjay Prakash and Associates)¹². The T-Zed complex hosts a 5 storey building of nearly 100 apartments and fifteen independent villas. The 100 apartments building is the focus to demonstrate that stabilised earth walls are possible in low to medium-rise buildings.

CSEB and gypsum plastered internal walls reduced the usually required quantity of cement while natural stone floors replaced conventionally used industrial tiles. Sandstone slabs, transported from Rajasthan, were used to make window overhangs instead of concrete. In addition, a number of features facilitate penetration of the day light while limiting heat in indoor spaces, hence reducing the use of air conditioning. All apartments face North

or South, rooftop gardens provide additional roof insulation and the overall shading, colour and orientation of various surfaces contribute to this¹³.

A 4 million litre rainwater harvesting tank is installed in the premises. An electro-mechanical sewage treatment plant processes waste water within the complex. This water is looped to feed the sky gardens on the rooftop. Similarly, organic kitchen waste is set to be processed. Ample green spaces with eco-friendly and indigenous plants ensure that residents have access to a pleasant leisure space: each unit comes with a 15m² private rooftop garden space and 8000 m² of open unpaved public space is shared between over 500 residents.

RESIDENTIAL NEIGHBOURHOOD: MALHAR, BANGALORE

Good Earth was founded in 1991 as an NGO, before evolving into to a consultancy cum contractor and real estate group. Over the past 5 years, in close partnership with Principal Architect Jayakumar Sonam (Jayakumar & Associates), they have constructed multiple earthen buildings demonstrating that these can be mainstreamed in relatively dense low-rise urban areas. The Malhar residential neighbourhood combines 6 residential clusters around shared public spaces that host over 2,000 residents on a 4,046 sqm territory. Public spaces constitute 46% of the total land area.

Malhar Terraces combines two 5 storey buildings, which required concrete foundations and an RCC frame. Walls are entirely built with CSEB made on-site from subsoil excavated from the basement. Cavity skin external walls are made of hollow terracotta blocks to serve as an additional thermal insulation and to minimise maintenance.

The design was inspired by terrace gardens on hill slopes. These cool the buildings' interiors and all apartments get direct access to day light. Ventilation is maximised with air flow through corridors, bay windows and verandas as well as staggering on alternate floors. An atrium provides a cooled down open air shared space. A waterbody located within the atrium adds an evaporative cooling effect¹⁴. Rainwater is collected from all roofs, filtered and stored in an underground sump tank that supplies water to all apartments. Rainwater excess is used to recharge ground water through dedicated recharge wells. Wastewater is treated on-site through a decentralised waste water treatment system (DEWATS) and used for flushing and gardening.



Malhar neighborhood represents an inspiring example of a people centred design incorporating the following features: (i) pedestrianisation and soft mobility, (ii) ample public spaces, most of which include landscaped gardens (iii) revived local biodiversity, (iv) human scale and aesthetically diverse architecture, with a broad spectrum of textures, colours and patterns.

Malhar Terraces is designed to be comfortable, inclusive and affordable. Over 20 different flat plans cater for a wide scale of budgets while all residents have access to the same public spaces¹⁵.

IMPLEMENTATION AND ENABLERS

In the 3 selected case studies, a number of enabling parameters are common and can be looked at in 3 major categories: committed professionals, supportive beneficiaries and supportive ecosystem.

Committed professionals: the architects have a thorough mastery of both conventional and vernacular materials. This is combined with a strong personal sense of a mission for sustainable urban development. Careful attention is paid to the local context, both physical and cultural. This extends to design and materials selection that simultaneously address the needs of sustainability, cost, construction time and livability. They also have the ability to share knowledge with the beneficiary or client, persuading to the value of the sustainability approach.

Beneficiary/building owner's support to sustainability: through effective collaboration, the frequent gap between the knowledge and vision of sustainability architects and that of the real estate developers has been overcome.

Enabling supporting ecosystem in place: stabilised earthen construction remains a niche approach and requires specific skills. To address this matter, most of renowned Indian practitioners working with earth have over years developed an ecosystem around them through training other architects as well as masons, craftsmen, and other professionals. By providing regular work opportunities to this ecosystem, they are able to sustain the practice.

MEASUREMENT AND IMPACT

Projects rarely monitor indicators and make estimates of gains compared to business as usual (BAU) scenarios. However, some quantitative and qualitative data-based evidence showcases benefits. The T-Zed project estimated that 74,000 GJ of embodied energy and over 20,500 tonnes of CO₂ emissions were avoided compared to a similar BAU construction. In addition, the water saving and waste management practices used in the examples lead to significant avoided impacts.

Although the capital costs may be slightly higher, the greater durability of the buildings and the use of water saving and recycling leads to lower running costs. The overall lifecycle cost of such construction appears to be much lower than in conventional buildings. Quality of life related benefits are hard to quantify, but a local context tailored and sustainable construction process most often brings along human scale buildings, green areas, better shaded and ventilated community spaces, a sense of common purpose through a joint effort of saving natural resources and an overall sense of belonging.

SCALABILITY, LESSONS LEARNED AND WAY FORWARD

Three major directions need to be looked at: disseminating knowledge and skills, mainstreaming tested sustainable approaches into policies and regulations, and researching on new break-throughs.

Disseminate proven knowledge and skills: there is insufficient knowledge on the viability of vernacular materials and their possible upscaling. Craftsmen's skills are insufficiently valued and promoted, and most home owners and real estate developers lack confidence in alternative approaches. Public, educational and development sectors could hence jointly facilitate knowledge dissemination and skills development.

Adopt design and building regulations to the sustainability imperative: As a first step, systematic monitoring on embodied energy consumed throughout the construction process is required. This would lead to much better quantification of benefits and create evidence for further action. Policies and regulations could emulate the path of operational energy efficiency and renewable energy, where minimal standards or incentivising cross-subsidised tariffs were gradually introduced to trigger a market formation.

Facilitate R&D on alternative options and collect evidence building data: while earthen materials are among the most well tested low in embodied energy materials, their potential to build faster and higher needs to be further researched upon. Mainstreaming sustainable building materials needs to go along with a strategic reflection upon what kinds of urban fabric are today most aligned with citizens' aspirations and with sustainability imperatives.



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CASE STUDY

ZERO WASTE ACTIVITIES (DUMAGUETE)



PHILIPPINES



IN SHORT

Dumaguete, a city of around 131,000 people in the centre of the Philippines is overcoming its solid waste management problems through community efforts in collaboration with the local government. It is achieving this through a combination of national and local regulation supported by a local non-governmental organisation that is proving instrumental in assisting with raising awareness within the community and supporting waste separation efforts. With the increasing concerns regarding waste and plastic pollution across the world, efforts made by communities in countries such as the Philippines will be important in managing and solving this global problem.

SOLID WASTE MANAGEMENT IN THE PHILIPPINES

Solid waste management has been a significant issue in the Philippines for many years and the country itself is one of the main sources of plastic pollution globally¹. The government has attempted to solve the issue through legislation (Republic Act 9003) but despite almost 20 years since the passing of the act, solid waste management remains a major problem within the country. Much of the difficulty arises from the improper implementation of the law. Although the act delegates much of the responsibility to sub-national actors, particularly local government units, implementation has been uneven due to a variety of issues. These include lack of public awareness and compliance particularly with waste separation, lack of political will or capacity within local government units to enforce the law, and difficulties in locating and procuring suitable final disposal sites. Inadequate funding is frequently cited as a primary cause especially in terms of land procurement and costs associated with the construction of final disposal². In order to bridge this gap a variety of non-governmental organisations and other voluntary environmentally focused organisations have turned their attention to this issue and tried to establish initiatives to alleviate the problem such as through encouraging home composting and supporting the recycling and reuse of materials through creation of products such as bags and lamp shades from discarded waste.



SOLID WASTE MANAGEMENT AND SUSTAINABILITY IN DUMAGUETE

Against this national background, Dumaguete City is also finding problems in dealing with its waste problem. As a highly urbanised city it generates significant volumes of waste, an issue that is compounded by its status as a university city and a tourist destination. The city has been compelled to close its open dumpsite, but with a current lack of a sanitary landfill and on-going disputes concerning its location, the city is facing an ever-growing problem. However, Dumaguete is also home to a number of voluntary environmental groups such as FENOr, Kinaiyahan and the Zero Waste Cities Project - Dumaguete and has a history of successfully developing and implementing environmental management facilities. Its sewage treatment plant has been acknowledged nationally having received the prestigious Galing Pook award, which is given for best practice in sustainability³ and receives study groups from across the Philippines and from other nations like Indonesia, India, Bangladesh, Nepal and the USA, demonstrating local capacity to implement sustainability related projects.

COMMUNITY WORK FOR SOLID WASTE MANAGEMENT

Facing this difficulty a group of local non-governmental organisations have partnered together with Barangay Bantayan (a barangay is the smallest administrative division in the Philippines, representing a district of a city) to demonstrate the viability of pursuing a zero waste strategy through community work. This activity has been undertaken through the Barangay Solid Waste Management Committee and targets two pilot puroks (a purok is an informal sub-division of a barangay), Purok 1 and 2, to convert them into zero waste communities starting in August 2018. A month after the commencement of full implementation, a 90% household compliance was achieved in these two puroks.

The establishment of the collection system started with the education of residents and businesses through a door-to-door information education campaign through which the relevant laws and regulations are introduced and explained and waste management techniques such as waste separation are demonstrated. Information materials are provided and residents signed an acknowledgement of receipt. In parallel to this activity materials recovery facilities (MRFs) for the further classification and division of collected waste, and collection vehicles and the training of the waste collectors and monitors was undertaken. Within the Philippine solid waste management system MRFs are established as an intermediate point for the further separation of waste prior to transfer to final disposal sites.



On the implementation of the system, house to house collection and the “no segregation, no collection” policy was observed. To sustain the system, a legislated minimal sum is collected from households and businesses; the proceeds of the sale of recyclables was divided among the waste collectors as their extra income; and, penalties will be levied against uncooperative residents and establishments. It was hoped that the successful implementation of the zero waste project throughout Barangay Bantayan could have a positive effect on the health of the terrestrial and the marine environment and could help support other projects in the barangay like poverty alleviation, urban gardening, and urban forestry.

This project continued the works started in the first two of the nine (9) puroks of Barangay Bantayan in Dumaguete City, Philippines. The beneficiary puroks are Puroks 3 – 9, with a total of 504 households. On average, a household has seven members. As of end of project, business establishments were excluded because these pay garbage collection fees directly to the city.

All wastes collected were temporarily stored at the mini-MRF. Twice a week, the city garbage truck collected the residuals and special wastes. Biodegradable wastes were composted within the mini-MRF and in the composting box in a nearby private property. Recyclables were sold monthly to junk shops. Sale of recyclables for the months of November and December totalled P2,374.00. These were divided among the waste collectors as incentives.

IMPLEMENTATION AND ENABLERS

Key to the implementation of the project was the collaboration between the barangay and the local non-governmental organisations. Due to a shortage of resources within the Philippines, collaboration with such organisations can be highly beneficial to local government units, enabling a level of engagement with the local people such as door-to-door visits that may not be possible with the levels of staffing available. It showed that prior to pedestrian facility improvements, the average acceptable walking distance was about 1.447 km per day in Bandung and about 1.678 km in Bogor city.

Another key enabler of the project was the compliance of the local people. This is a significant issue within the Philippines with open dumping being a common issue. However, successful projects within the country and within Southeast Asia more broadly have demonstrated that with sustained engagement with the community accompanied with enforcement of the law and the provision of proper waste disposal infrastructure it is possible to attain high levels of compliance with relatively low levels of expenditure. Partnering with non-governmental or other voluntary organisations can be a key resource due to frequent staffing limitations faced by local government.

The final key enabler for proper waste management as shown by the project is the proper application of the law through both the provision of the necessary infrastructure and enforcement. Although a final disposal site is still unavailable within Dumaguete, there are means to alleviate the problem through proper waste separation and reduction of waste through recycling and composting.

MEASUREMENT AND IMPACT

The project has measured its impact through the amount of waste generated. The project implementers also believe that the project is likely to help reduce carbon footprints through the reduction of fossil fuel consumption of the city garbage trucks due to reduced collection frequency and reduced idling time of the trucks; reduction of garbage volume to about 25% of current volume preventing release of methane due to decomposition of organic waste in the dumpsite; strict prohibition of open burning of waste; and the incorporation of carbon in the soil through composting techniques.

Prior to the implementation of zero waste activities, waste assessment and categorization study (WACS) for Barangay Bantayan undertaken in September 2018 showed waste composition as follows: biodegradables (58.50%); residuals (22.30%); recyclables (16.60%); and, special wastes (2.30%). However, after the implementation of zero waste system, this changed dramatically. A second WACS undertaken in December 2018, showed that on the average, residual wastes now comprised the bulk of the collected waste at (72%). This was followed by special waste (13%), recyclables (9%) and biodegradables (6%). The relatively low collection of biodegradable wastes was due to the fact that at least 40% of the households practice composting. However, these numbers should be seen as provisional due to the short time frame of the project. Also the timing of the second WACS was not ideal as it was taken close to the Christmas holidays which is likely to have had a strong effect on the content of the waste.

SCALABILITY

The project demonstrates strong scalability potential due to both the simple concept and also as it is in line with the solid waste management structure envisioned by the relevant Philippine law. It is therefore illustrative of what should be occurring in the Philippines regardless of the local context. Although non-governmental organisations are heavily involved in the solid waste management, this is not outside of what is envisioned by the law – indeed, the law makes specific reference to non-governmental organisations and encourages their involvement.

Given that much of the waste generated in the Philippines, and in Southeast Asia and the Global South as a whole, is organic there is a substantial waste reduction potential through composting which can then be used either for urban greenery or gardening projects depending on the quality of the compost created. There is also a thriving informal recycling industry across the region, and the proper separation of waste can also assist with providing incomes and livelihoods for the urban poor.

LESSONS LEARNED AND WAY FORWARD

As of January 2019, the amount of waste had reduced by 19% short of the target 25% reduction of garbage volume. It was not attained because of the heavy consumption of products packaged in sachets and other single use packaging as well as the current non-implementation of the city's plastic regulation ordinance. However, once the barangay ordinance on solid waste management is approved by the city council, the zero waste enforcers would be tasked to report violations on the plastic regulation ordinance.

Sustainability of the zero waste activities will be largely dependent on the source of funding for the honoraria of the waste collectors and enforcers as well as for the maintenance of the MRFs and collection vehicles. This is addressed through the passage of a barangay SWM ordinance that provides monthly garbage collection fees from households and business establishments. The same ordinance provides as well for the penal provisions of violations thereof. Hopefully, with its strict implementation by the elected officials, it will help produce change in the people's behaviour.

Residuals and special wastes were collected by the city as mandated under the Ecological Solid Waste Management Act (RA 9003). Currently and sadly, these have been brought to the dump site where these were mixed again with the unsegregated wastes collected from other areas where waste segregation is not strictly enforced. However if the outcomes of this project can be spread across the city, there is strong potential to significantly alleviate this problem.

As of January 2019, composted materials were not yet ready for harvesting. However, once available, composted materials will be given for free to residents in line with the upcoming urban vegetable gardening project of the barangay. Regarding infrastructure, the city has identified another area where it will soon build a centralized MRF. Residuals from this facility will be transported to the Bayawan landfill. The city is also currently planning to construct a sanitary landfill in line with their legal obligations, which should further help solve this issue over the longer term.



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EUROPE.

CASE STUDIES

CASE STUDY

BALLINA ECO DISTRICT



IRELAND



IN SHORT

Using sustainability drivers described in a report by the Environmental Protection Agency, Ireland ¹ at the local level, a community group in Ballina, Ireland reduced their ecological footprint by 28%. They achieved it through meaningful measurement of consumption and the power of storytelling to reinterpret technical messages. This footprint measurement and the subsequent storytelling gave a sustainability uplift to local norms, and the strong, committed local participation through bringing people together has led to big reductions in resource, waste and energy use.

STORIES AND TRANSITIONS

Ireland currently has the third highest greenhouse gas emissions per capita in the European Union, with agriculture (22.9%) and transportation (21%) being two of the largest sectors. Although resource efficiency is a key element for reducing environmental impact, it is also clear that top-down environmental, economic or technology-driven solutions will not be sufficient, which points to the clear need for a change in mindset and habits of the population. This became particularly pertinent given the political context of increasingly centralised power in recent years which constrains local governments to undertake initiatives, meaning such bottom-up action will need to be led more and more by community based organisations such as that in Ballina.

Ballina is a commuter settlement with a population of around 2,000 in County Tipperary, Ireland. Starting in 2004, a five-year project was undertaken by a researcher in a local university ² to work with the local community in order to reduce their ecological footprint in a way that both empowered and united them as a community. The methodology chosen was co-creation of measurement activities using stories and messages, in order to give meaningful and motivating examples of transitions to more sustainable lifestyles.

They opted for this methodology due to concerns over the misplaced focus of previous schemes on energy or water savings, which had little impact and relied on information provision and soliciting feedback on current policies, leaving recipients feeling unengaged and unmotivated to adopt new behaviours. Engagement can be encouraged, research has found, by making use of local knowledge and the complete involvement of citizens, as well as recognising, embracing and addressing the diversity of interests, building local capacity and including citizens in assessments and management where possible. The project followed this approach throughout its five-year duration, split into clear yearly cycles.



PROJECT CYCLE

The project started each spring with an ecological audit based on the ecological footprint metric but focused on energy, transport, water and waste. The participants themselves implemented the methodology used to calculate the ecological footprint of settlements. Following this footprint survey, workshops were hosted by a local school as well as community groups to help the participants work through and calculate ecological footprints, as well as discuss and fully digest the figures and impacts of different types of their consumption – such as waste generation, transport arrangements, and household energy consumption. This approach ensured co-production of a community ecological footprint where the participants had ownership of the process and outcomes. Following these annual workshops, a series of focus groups of around 20–30 participants were hosted by the school and community groups, focusing on low carbon lifestyle practices and solutions. The focus groups were attended by those living and working in the community, with the school-based meetings being primarily attended by students, and the community-based meetings attended by the general public.

The workshops and focus groups were both highly interactive and aimed at catalysing dialogue and recording stories. Technical jargon was avoided through translating theoretical or technical concepts into everyday terms and narratives, which meant the facilitator needed to be aware of the contextual meaning of the stories, thoughts and images and how participants' values and experiences can impact their stories. Through this active listening participants were led to articulate their stories using their own narrative and values, such stories being of the learning type based on their own experiences.

The co-produced ecological footprint and solutions were disseminated through short presentations to the community groups and the school, and an annual competition was launched aimed at reducing the community footprint with prizes being in line with the sustainability theme. One example of a winning entry was the slogan "Why use a litre of petrol to buy a litre of milk?", aimed at decarbonising local transport. Stories/narratives were then disseminated through a variety of local community channels including newsletters, local media, project outreach materials, schools, award ceremonies, and workshops and focus groups, before the project would end for the year with wrap-up activities.

USING STORYTELLING

The mode of storytelling was used as stories are seen an effective tool for engaging and influencing, gathering and evaluating information, reframing and providing insight, as well as reducing jargon and developing a common understanding. The stories come in many different forms, such as hero, horror and learning. The hero stories tend to be expert-led and driven by a simple technology solution with the focus being on technology and efficiency. Horror stories focus on the feelings of powerlessness caused by coverage of climate change by the media and the negative consequences of creating guilt and fear. Learning stories are focused on local actors and modelling actions, involving complex and more nuanced solutions regarding both social and technical aspects, and may also present failures.

Participants used storytelling to capture their low carbon lifestyles and behavioural changes. Combined with the ecological footprint metric these were developed into brief statements or case studies which were very useful in placing sustainability in daily contexts, to acknowledge the participants' role, and to provide advice and guidance for all. These stories were developed in both workshops and competitions. Most of the stories developed were learning stories centring on the experiences of the community, which then led to case studies illustrating and reminding residents of the stories and which were low carbon guidance in their own right. Example case studies were given in three categories – energy, transport, and waste. One of them read as follows:

Case Study: Carr Family, Derg Marina. Prevention, Reduction, Composting. By buying fresh fruit and veg, mostly at the local farmers market in Killaloe, Marie prevents packaging as she brings her own bag or uses a returnable carton from one of the stalls. She also believes that composting has reduced her landfill waste volumes dramatically. The Carr's waste volumes are a quarter of those of many of our households and they believe this is very easy to achieve.

Over the course of four years the project has measured significant reductions of 28% in the ecological footprint in the target community.

ENABLERS

The primary enablers of the project were the meaningful measurement of the ecological footprint and stakeholder engagement, which were enabled by the skills and knowledge of the facilitators. By placing a primary focus on the recipients in ensuring they were fully integrated through facilitation, as well as emphasising collective action, the project was able to achieve its aims. The use of community bridging organisations to ensure proper co-creation and collaboration were critical to recipients becoming collaborators and taking ownership of the project. Schools were also considered as a critical actor in the project as 78% of respondents to their survey believed that the school participation assisted in their greenhouse gas emissions reduction. Other enablers were access to resources such as meeting facilities and the use of storytelling as a tool for change. The low cost of the project has also been cited by the implementers as a key enabler for both implementing it and facilitating scaling.



MEASUREMENT AND IMPACT

The implementation team adapted how they measured ecological footprint by concentrating on transport, energy, water and waste, which makes the concept of consumption more tangible for the participants. Surveys were conducted once a year and asked respondents to detail their energy (electricity, gas, oil, coal and peat); travel (car, bus, train and flights (long/short haul)); water use and waste (including landfill and recycling). It was distributed to all occupied households in the area, of which 31–35% responded in full. Measurement of the settlement's EF was carried out by the settlement itself, which involved strong co-design and co-creation in the methods adopted.

SCALABILITY

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The EF measurement has been scaled out to 95 communities, but not at the same level of depth and engagement as seen in Ballina. In general, only snapshot ecological footprint calculations have been possible due to funding challenges noted by the implementers, but ideally, deeper, wider engagement would have been preferred. Although the project was relatively inexpensive, funding support is needed to properly facilitate it and particularly for measuring ecological footprints. However, the project appears to have managed to scale deep within the district, and evidence of more sustainable mindsets through drops in footprint have been noted.

LESSONS LEARNED AND WAY FORWARD

This research project has produced strong evidence that modelling through meaningful measurement and storytelling, facilitated by discourse-based approaches, can contribute to sustainable lifestyles. Further research is needed, but with 95 communities in Ireland having had their ecological footprints calculated with relatively little government funding and at low cost through a bottom-up movement, and with the methodology being employed being low cost, easily transferrable and in-line with the current understanding of the value of co-creation for persuasion and behavioural change, the case of Ballina shows great promise for sustainable lifestyles. The research was supported by the Irish Research Council.



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BIOSZENTENDRÁS



IN BRIEF

Hernádszentendrás, a small northern Hungarian village of 445 inhabitants, has been working since the 1990s to alleviate the twin issues of unemployment and a decreasing population. The village launched a programme called BioSzentendrás, aimed at boosting self-sufficiency and supplementing low incomes. Participants grow vegetables together, produce vegetable-based food and craft products while learning organic gardening and how to make healthy meals. Initially restaurants purchased the organic produce; however, this has expanded to include local people and even households from further away. The programme has been acknowledged both nationally and internationally.

HOW IT STARTED

BioSzentendrás officially started from December 2010, but initial efforts commenced in 2002-2003. The decline of the once relatively prosperous and self-sufficient village in the 1960s and 70s commenced when more and more people started to leave for larger towns and cities in search of new opportunities. This process culminated in the 1990s when the village saw a collapse in village life and opportunities as the young left in order to seek work in the cities. Unemployment and low incomes have been a continual problem, making rural life in Hungary an unattractive option for young people.

The first years of work (beginning in 2002-2003) were focused on trying to create a greater sense of opportunity and hope for the community. Without this, the implementers believe that the subsequent phases characterized by social enterprise development would have likely ended in failure. Along with community development there was also a strong focus on assessing the strengths and weaknesses of the village and its surrounding areas. The area suffers from regular flooding from the Hernád river, but also had a very productive agricultural area of 2.5 hectares that could be safely cultivated. It became clear that an innovative agricultural programme capable of providing employment for the whole year rather than the usual 6 to 7 months growing period would be best for creating opportunities.

The initiators of the project, led to by the major of the village who has lived there since he was a child, wanted to undertake agricultural activities that were not just a means to try to boost local employment but also show something more unique and tied to the area. In this way, the village has started organic agricultural activities and developed a range of products targeted at market gaps and had a strong ecological message. Through building on these principles and utilising local resources and the involvement of the community the programme was developed, partnerships formed, and systemic implementation began in December 2010.

BOOSTING LOCAL LIVELIHOODS AND FINDING AN IDENTITY

As part of the development process organically built up of various sub-programmes, the village started eco-learning programmes and teaching organic farming, re-galvanising the village. Slowly, and systematically Hernádszentendrás has become a dynamic village attracting greater levels of youth involvement. This was key for the village due to unemployment and a lack of central government support requiring the village to be able to assist the young and less educated using its own resources.



In order to promote the produce, the first goal was to find a market gap and create partnerships. Using professional marketing, the village branded its products BioSzentandrás and continually promoted the brand. At the core of this identity is an insistence on fresh and healthy organic produce grown both in the greenhouse and in the open fields. As a next step in production, a one-hectare orchard has been planned and will start bearing fruit in 2019.

Apart from selling fresh produce to several high quality restaurants in the region and local people, the village has built infrastructure such as a processing plant to produce a variety of products using various methods including preservative and additive processing. Responding to requests from restaurants, herbs are grown. Lavender is also an important product with local handicrafts based on it. Eco-tourism has been developed and accommodation is being created alongside various lifestyle programmes, and will be able to provide around 10-12 people with long-term market-based employment.

Initially the main customers were restaurants due to the increasing focus on quality fresh ingredients in recent years. Other buyers - like households and local people - later emerged and the customer base is now evenly distributed between the two segments. At first the products were not well supported by local people with a lot of local pushback. However over time there has been an increasing trend from village inhabitants towards looking to buy locally such as when choosing a gift for a birthday or similar celebration and taking pride in local produce.

IMPLEMENTATION AND ENABLERS

The primary enabler of the programme has been a long term view and patience. As the village community dissolved over several decades, a similar timescale is required to re-build with the implementers anticipating at least 10-15 years. Many communities have been impatient, wanting quick results but also often voicing scepticism regarding innovation. BioSzentandrás faced the same issues. At the beginning, around only two of every ten people in the village support the project, and several actively opposed the programmes. It required around a decade to reverse these attitudes.

EU funding was instrumental in initiating activities as it funded the infrastructure necessary for organic growing. These projects always included a training and learning element, so that local people could acquire the skills and knowledge to use them successfully. In addition to EU funding, national funding available to settlements for creating public benefit jobs for local unemployed people was also very helpful and contributed to the success of the programme.

Developing partnerships to learn about organic agriculture as well as create a market for the products was also essential. BioSzentandrás started working with Pro Ratatoullie (Hungarian programme which later won the Social Business Idea award) focusing on agro-based social business development. Due to this cooperation, BioSzentandrás was able to enlist the support and mentorship of a well-known expert of organic agriculture. 25 local people joined the organic agriculture training programme comprised of both theoretical and practical elements. Local organic production has been monitored since the beginning by Biokontroll Hungária Nonprofit Ltd., one of the main players of organic certification in Hungary. They also cooperate with the Research Institute of Organic Agriculture as well as the Corvinus University of Budapest. On the other hand, BioSzentandrás established cooperation with the best regional restaurants and have proven to be a trusted and reliable supplier.

Finally, stakeholder engagement and political will were key. Starting a social enterprise and engaging in creating business is an unusual activity for a local government but there was no other local stakeholder to take on this role. It is hoped that in the future the newly created local businesses will be able to take over such tasks.

MEASUREMENT AND IMPACT

The BioSzentandrás programme has an impact on various levels. First of all, there is the growing size and number of facilities created. Starting with a relatively small market garden in 2010, today about 25 types of vegetables and 30 species of herbs are grown, there is a 2,000 m² lavender field, a soft fruit field and an orchard of around one hectare. There is a food processing plant that started production in 2015. There is a shop in the village as well as an online shop selling their products, fresh produce, processed produce and crafts.

In addition to the expanding cultivation area and agricultural facilities, the village is taking part in a learning process and creating employment. From 2010, 25 local people have participated in an organic agricultural education programme, and since the beginning local people were invited to take part in various learning activities such as planting days, market days, various food festivals and educational events. Local jobs have been created. So far, people managed to find long-term employment in various positions, for example in the market garden, the food processing plant, the craft shop, and managing and operating the shops.

However, the impact of BioSzentandrás is not limited to the village. It has a growing business network through the restaurants and various other places it is cooperating with, and through which its healthy and environmentally-friendly products reach an ever-growing group of people. Its professional partner network is not limited to the organic agriculture field, but also includes social and environmental organizations such as the Energiaklub Climate Policy Institute, the Pro-Cserehát Association (Butterfly Complex Regional Development) or the Agenda 2030 Human Ecology Research Group. Through these professional and learning networks the good practice developed at Hernádszentandrás can reach other communities both within and outside Hungary. In addition, the various impacts can be measured with the help of research communities.

As a form appreciation of their positive impact, the BioSzentandrás programme won the European Innovation Award in 2013, and was finalist in the social innovation award of the European Investment Bank in 2015.

SCALABILITY

The programme has scaled out over time both in the village but also has attempted to spread its work to other villages through trying to network with similar villages, invite representatives from other villages and also visit other places to network in and outside Hungary. Scalability is built into their planning process. The programme works step by step and building one part of the project on another moving from growing to processing, to diversifying the customer base and diversifying products.

WAY FORWARD AND LESSONS LEARNED

BioSzentendrás is successful and has managed to create an organic, step-by-step development process, but the implementers recognise the need for further work. Further elements of the system to be developed include larger areas from the surrounding region to join them in organic production, the creation of a franchise system for products, and the implementation of an eco-tourism component to make the programme sustainable in the long term.

The initiative demonstrates the possibility of alleviating poverty, enabling livelihoods and finding a means to re-vitalise communities. It also demonstrates that sustainable production and consumption built on a careful assessment and development of local resources, including the local community, can create a sustainable future for a relatively small rural community. The programme has shown that organic produce is not only for the more well-to-do, but can be made accessible for under-privileged social groups. As a recognition of these efforts and achievements the BioSzentendrás programme was awarded the SozialMarie prize, a prestigious European social innovation prize in 2015.

However, the village feels that if higher level resources and policies are not supportive it is difficult to spread the concept further, especially in a context where people and communities are sceptical of trying new solutions and alternative ways of development. At the moment, there are young people willing to move to the countryside, but a more supportive environment showing that rural living is a viable lifestyle with employment prospects would be necessary. For this, national level policies that are mindful of the capacities and needs of small rural settlements situated in disadvantaged regions are needed.

The village also feels that such projects need figureheads to catalyze positive processes and commit to working for at least 8 to 10 years. The problem is systemic and cannot be solved through quick fix solutions – it requires patience, long-term construction through a step-by-step process, and a good regulatory and favourable tax environment.



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CASE STUDY

INCREDIBLE EDIBLE, TODMORDEN



INTRODUCTION

Incredible Edible Todmorden is a community initiative turned movement which aims to show the power of small actions for a kinder world through growing food and sharing. Starting in 2007 with a small group of dedicated volunteers it has grown beyond the confines of its small town and received national and international attention. A self-sufficient initiative reliant on volunteer action and donations, it has expanded beyond its initial urban gardening activities into working to create a kinder town through its three areas of work – community, business, and learning.

HOW IT STARTED

Todmorden is a small town in northern England with a population of approximately 13,000 located around 17 miles northeast of Manchester. Traditionally an industrial town, Todmorden has seen a steady decline throughout the twentieth century. Although the immediate motivation for starting Incredible Edible was the financial crisis of 2007/8, the initiative brought together a number of people who had been looking for ways to revitalise the town and re-connect people to both each other and the environment. There was a frustration at the lack of leadership shown by the local authorities and the belief that the situation could and would not improve without local people taking action by themselves.

The initial activities focused on urban gardening as the main focus. Instead of following the usual approach in such activities such as establishing formal designated allotments for growing, Incredible Edible simply utilised abandoned spaces without asking permission. In order to bring attention to their initiative prominent spaces were often chosen such as in front of the local police station, the local health centre and railway station as well as a canal towpath and a community garden. The group termed this approach propaganda gardening as their aim was to be highly visible, provoke a reaction and start a debate.

This was done by clearly labelling the various produce and encouraging passers-by to help themselves. In addition the initiative also placed signs around the town and set-up a strong social media and online presence to help spread the word. In addition, Incredible Edible has not worked alone and has been highly reliant on effective collaboration with a wide variety of stakeholders. The initiative itself grew out of previous community work, particularly that of the Todmorden in Bloom horticultural society, and there was already various voluntary initiatives that Incredible Edible was able to work with.



THREE SPINNING PLATES

The initiative is based around what are termed three spinning plates, which are community, business, and learning. The community plate is growing food as a community, the business plate is focused on supporting food-related enterprises and the learning plate helps boost knowledge and skills. However while the initiative remains food based, the activities have expanded over time. The considerable interest that the initiative has generated means that 1,000 visitors come annually with around 60 organised tours run to cater for them. The initiative is also using its platform to expand into areas such as loneliness and end of life care. In short, the group is interested in any aspect of wellbeing or way in which the town can be made a more lively, friendly, and pleasant place to live. This has included garage sales, cookery demonstrations, festivals, creating and installing community art, workshops, a Death Awareness week, dementia-friendly training, and hosting a UK Food Sovereignty gathering.

There has not only been an increase in local wellbeing and connectedness, but also a business boost. Surveys conducted have shown that local businesses believe that there has been an improvement in trade due to the presence of the initiative both in terms of local people being more likely to purchase local produce but also from the sales boost from the tours and tourists. At the beginning, businesses were supplied blackboards on which they would advertise which of their goods were locally produced, and they have reciprocated by assisting with activities in kind through donating equipment and space for planting with collaboration continuing and deepening across a variety of activities since then.

The learning plate has been both in formal and informal education. The initiative has spread to all of the schools in Todmorden with students now growing and eating their own food. There has been a great deal of informal learning through the community both learning to plant food but also being educated by simple means such as through the labelling on the plants themselves which explain when the plant should be harvested and tips for cooking.

GOVERNANCE AND COLLABORATION

However although the initiative takes pride in its reliance on voluntary action and donations as well as its flexibility and responsiveness to events, it has a strong structure being underpinned by both the spinning plates and its established activities. It has a formalised committee with term limits on service and is also registered as a limited company. This provides a clear legal basis and also ensure that Incredible Edible will be able to continue if the founders step aside.

One of the key ways of working for Incredible Edible has been its reliance on voluntary efforts and donations. The initiative does not apply for funding and has no offices or paid staff. This has meant that the initiative has had to employ creative thinking and actively search for collaborators and those willing to contribute without the expectation of something in return. This has helped develop a strong sense of a shared vision and create strong bonds and confidence within the initiative. This has expanded to beyond the direct activities of the initiative – for example, the group was able to assist local people during incidences of flooding during 2012 and 2015 as they had a strong network of trusted partners who could be contacted and relied on to assist and contribute.

Nevertheless, while the initiative has managed to effectively collaborate across the town, progress has not always been smooth. There has been concerns about elitism and also a perceived difference between those who have moved to Todmorden and those either born there or very long term residents created some resistance to some of the new ideas. In addition the initiative notes that engaging the young and marginalised sections of society continues to be a challenge.





EXPANDING OUTWARDS

Building on its foundations, the initiative has expanded. In 2010 the Incredible Farm, a one acre mixed farm was established an educational resource centre and to supply fresh food to local businesses. In 2012 the Incredible Edible Network was founded to support other Incredible Edible groups. An aquaponics facility, Incredible AquaGarden, was established in 2014 and Incredible North, an initiative to link activities across the North of England, was launched in 2016. It is worth noting that the networking initiatives are based on Incredible Edible principles but are operated separately.

Although Incredible Edible remains based in food, there has been a wider push on committee wellbeing and engagement in recent years. This has included erecting a large sign of the word kindness, but also addressing loneliness and also end of life care. Many of the volunteers involved in Incredible Edible are also involved with Pushing Up Daisies, a group that is also interested in the compassionate communities model.

ENABLERS AND IMPLEMENTATION

The initial key enablers were the founders themselves who appear to have driven initial activities forward with confidence and verve. Their ability to engage stakeholders and achieve buy-in, ensuring that it was possible to utilise highly visible plots in the town to maximise attention and then being able to demonstrate value to the wider community, was vitally important. Without the strong and highly visible start as well as the buy-in from key stakeholders such as local businesses and the local government, it seems unlikely that the initiative would have taken hold in the same way. The initiative has also been highly successful in engaging the local public, both through the high visibility of initial efforts but also through word of mouth and savvy use of social media and their website.

The three plates of community, business, and learning gave simple and clear frame to all stakeholders. It demonstrated that the initiative was not simply about urban gardening but showed a desire for a wider engagement with the community. It also meant that the concept of the initiative could be clearly explained which enabled stakeholders to feel a shared sense of purpose and vision.

The initiative is proud of its lack of reliance on funding, relying on donations in kind for equipment, labour, and for capacity building. Again, the key to avoiding a reliance on funding and obtaining the resources they need has been a reliance on the ability of the implementers to persuade stakeholders to contribute on a voluntary basis. The initiative has been fortunate in that their activities do not clash with any existing legal or policy frameworks and that the infrastructure needed for implementation largely existed prior to the start of activities. What the initiative has brought is a high degree of energy and imagination in using what is already available in Todmorden.

MEASUREMENT AND IMPACT

The initiative does not measure its environmental impact. Wellbeing has been measured to some extent through conducting surveys and through informal feedback received by the implementers. The most systematic assessment of the initiative appears to have been a Social Return on Investment assessment undertaken in 2017 by a group of academics. The Social Return on Investment methodology attempts to measure social impact through capturing the social, environmental, and economic outcomes and represent those using monetary values. The study measured six measurable outcomes – changed use of public space, greater physical activity and use of green space, Incredible Edible used as a brand for business and tourism, buy local ethos promoted, increased engagement with food, provision of learning and training opportunities. It calculated a net return of £878,609 against £159,512 worth of inputs such as volunteer time, giving an SROI of 1:5.51 meaning that for every pound invested £5.51 was returned to the community.¹

SCALABILITY

Incredible Edible Todmorden has managed to scale locally, nationally and internationally. Surveys have captured a widespread awareness of the initiative within Todmorden and strong levels of engagement. There are over 100 projects around the UK, over 700 projects worldwide, and two spin-off social enterprise companies. Incredible Edible is also attempting to scale at a deeper cultural level by shifting mind sets not just around food, but also around how people in the community are relating to each other. There appears to be success here through the acceptance by key stakeholders but also surveys undertaken which show the initiative is viewed as having created an energy of possibility and buzz around the town.

LESSONS LEARNED AND WAY FORWARD

Incredible Edible is growing a kinder more connected community and have found that a direct action approach is valued by all concerned. Expanding from the initial urban gardening work into helping less-abled people and those with addictions has helped expand community acceptance. The initiative believes that the use of energy into activities, rather than staffing, buildings and grant applications can transform a group, gives greater freedom and the ability to fulfil their own agenda and not pursue those of others. Incredible Edible hopes to continue as a beacon for the transformative power of small actions.

Incredible Edible Todmorden demonstrates the feasibility of undertaking far reaching activities powered by voluntary action which create clear value for their communities. It shows that by engaging with local people and stakeholders in a proactive but friendly way, change can be effected within a town and mind sets shifted.

In the future, Incredible Edible will continue to build out from its beginnings in urban gardening and seek to continue to boost wellbeing in the community through particular attention on the marginalised.



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CASE STUDY

LONDON BANS JUNK FOOD ADS ON THE TRANSPORT FOR LONDON NETWORK



ENGLAND



OVERVIEW

In May 2018, the Mayor of London Sadiq Khan announced the city will ban junk food ads from the Transport for London (TfL) network, which covers all of the transport network in the Greater London area, to tackle the issue of child obesity and promote healthier diets. According to parliamentary research, almost 40% of children aged 10 to 11 are overweight or obese, with poorer areas having even higher numbers. The ban targets brands with products high in fat, salt or sugar, and is aimed at reducing the pressure of advertising on consumers, especially the younger ones. It is part of the London Food Strategy, published by Greater London Authority in April 2018, which calls for public consultation on how the city can enjoy healthier, more culturally appropriate and affordable food. ¹ The strategy recognises the challenges regarding food at a time of rising child obesity, increased reliance on foodbanks, increased greenhouse gas emissions and poorer air quality resulting from food production, and considers food's ability to deeply connect with our wellbeing, economy, health and cultural life. The ban took effect on 25 February 2019. From a sustainable lifestyles perspective, as advertising heavily shapes our aspirations on consumption, if more sustainable dietary options were presented this could have a big impact on our consumption.

LONDON FOOD STRATEGY

In April 2018, Greater London Authority published a draft London Food Strategy for public consultation that provides a framework to help the city in adapting its food system to meet the city's food challenges. In acknowledging that food can trigger changes in the city to bring various benefits that would provide Londoners with healthier lives, better jobs, thriving producers, improved environment and better social connections, the strategy listed out a plan to address food issues. It took a holistic approach in considering food security and quality from broad aspects of people's living, such as poverty, inequality, methods of marketing, food environment surrounding children, community building and environmental impact, and aims to make improvements based on broader social and institutional contexts through targeting specific situations and circumstances.

The improvements focus on six priorities – reducing food insecurity, healthier environment, better food procurement, healthier habits, more sustainable food production, and improved food systems. It targets three different situations familiar to us – home, shopping and eating out, and public institutions, and emphasizes three themes – maternity and early years, community production, and the environment. In the context of home, the strategy aims to help solve issues of food insecurity. In shopping and eating out, it aims to support businesses offering healthier food to consumers by making it more accessible. In public institutions, it aims to promote procurement of good food for communities – in other words it aims to offer those starting out in life with healthy food options, from maternity to early years education. It also encourages growing food on a personal level, such as in community gardens and urban farming, for personal consumption and local employment. Local food production can also contribute to local communities by bringing people together. Lastly, it aims to make the food system more environmentally friendly, more efficient and less wasteful.



ADVERTISING AND ITS IMPACTS ON UNHEALTHY FOOD CONSUMPTION

The London Food Strategy, which promotes healthy food in the city and bans junk food advertising aims, according to mayor Sadiq Khan, to “reduce the influence and pressures on children and families to make unhealthy choices”, and also places partial blame for London’s child obesity problem on the current food environment which involves bombarding the public with marketing and promotions of unhealthy options. Since advertising of unhealthy food is unregulated and omnipotent in the media, such as during family TV viewing times, on the Internet and on streets, the campaign advocated that removing such advertising could promote a shift towards healthier options and reduce child obesity in the city.²

Vulnerable groups such as young children are especially susceptible to marketing messages in their food choices, since their daily journeys through the city involves numerous advertisements on transportation networks, and such advertising is a powerful instrument in shaping consumer behaviours. A survey revealed that 87% of young people found that advertising for food and products that are high in fat, salt and sugar products are appealing, and according to research conducted by Cancer Research UK, children are twice as likely to be obese if they are exposed to junk food advertisements compared to those who are not over one month. As well as the current ban on transportation, Cancer Research proposed a ban on junk food ads before 9am to avoid children seeing them.³

Prior to the ban, big advertising companies had made some voluntary efforts in 2017 to avoid billboard and poster advertising of unhealthy food within 100 metres of schools to protect students from making unhealthy food choices. The strategy intends to extend these efforts across the Greater London area via the TfL network to help tackle the child obesity issue, and the ban – acknowledged by the Strategy as the largest intervention by the government in any city in the world – includes “brand only” food and drink company advertisements, and is seen as necessary in order to transform the current situation in which children and young people are exposed to unhealthy food advertisements when going to school and in their local communities. In parallel with the removal of advertising of unhealthy options, the strategy provides support to increase healthier, cheaper food options in various scenarios, such as high streets and local convenience stores across the city.

In November 2018, the city announced that the ban on junk food advertising would take effect from 25 February 2019, and that advertisements of food by food and drink brands, restaurants and stores that provide takeaway and delivery services would only be able to promote healthier options, banning the promotion of only own brand or unhealthy products.

IMPLEMENTATION

Before the London Food Strategy was published, a public consultation was held to invite comments and opinions on the proposed ban of advertisements for Junk food on the TfL Network. In addition to the ban on advertising dealing with child obesity, the city is also planning other efforts in supporting healthy, high quality food.

To this end the Mayor convened a Child Obesity Taskforce to perform in-depth research into the complex factors related to the issue, and intends to implement restrictions on new hot food takeaways in locations close to primary or secondary schools, as well as promote healthy food in maternity, early years and education to promote healthy diet habits from early ages. The city will also promote programmes such as Healthy Early Years London to support healthier eating habits for infants and children.

MEASUREMENT AND IMPACT

Through the public consultation, 82% of Londoners supported the junk food advertising ban⁴. However, as the ban only took effect from February 2019, impact measurement is not yet complete but will likely present challenges in terms of directly measuring how banning unhealthy food advertising will impact choices of children making decisions on food on a whole-city scale. Nevertheless, from the examples of other cities, such as when Amsterdam introduced similar measures in 2012, child obesity fell by 12% overall and by as much as 18% in the most deprived areas of the city.

The Myor of London urged that measures from London's Food Strategy to be expanded across the whole country and to make deeper and long term impacts through other policy instruments. He plans to work with various partners to push the government in its efforts to reduce child obesity and to regulate industry further to reduce fat, sugar and salt levels in food. The London Food Strategy recommends incorporating the quality of food in evaluating a school's performance, such as in the provision of good food and integrating food into school curriculums. It also encourages institutions such as Public Health England to work with the Child Obesity Taskforce to develop a case for business to switch to healthier food options.



SCALABILITY

The measures introduced by London were also inspired from other measures in other cities such as Amsterdam. Currently the City of London is part of broader international network of efforts to improve food in cities. London received a Silver Award from the Sustainable Food Cities Network, a global network to promote partnerships among various sectors of the government, business, research and NGOs to bring healthy and sustainable food to people. London is also party to the C40 Cities Food System Network in supporting cities to bring solutions in the food system to reduce the carbon emissions of food and increase the resilience in urban food systems. The C40 network covers the world's megacities in addressing climate change, and in 2014 announced the Milan Urban Food Policy Pact with over 100 signatory cities, including London. The success of London's current efforts in improving its food system would likely set a positive example to inspire and promote similar measures in other cities facing similar challenges.

LESSONS LEARNED AND WAY FORWARD

Improving food not only improves health but also the environment, as well as building the community, sustainable business, and improving the wellbeing of city dwellers. As mentioned by the Mayor, "Food is now being used by mayors around the world to promote solutions to some of the biggest challenges facing their cities. As London's Mayor, I am proud that our city is part of that movement." Promoting good, healthy food can contribute to broader positive changes in society towards sustainability.



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CASE STUDY

NATIONAL CONSUMPTION STRATEGY



SWEDEN



OVERVIEW

In the same vein as some other national governments directing policies specifically to living within Earth's means, the Government of Sweden has developed an ambitious policy agenda to support sustainable lifestyles. Its action programme defines a bold yet achievable vision for realising environmental sustainability both within and across its borders, setting an important global precedent. In promoting sustainable lifestyles, it argues, we need to be clear about ecological limits – the extent to which our air, water and soil can tolerate certain pressures without irrevocable damage.

BACKGROUND

Sweden has historically taken a leading role on climate and environmental issues. Over the past nearly three decades the Swedish Government has progressively implemented a range of measures aimed at protecting and safeguarding the environment. One of such measures was to introduce a carbon tax on fossil fuels (as Finland did, in 1991). The new policy agenda focuses on balancing nature's needs with human demands, and beyond shaping and informing environmental policymaking, steers wider institutional efforts aimed at supporting more sustainable lifestyles.

STRATEGIC ENVIRONMENTAL GOALS

The comprehensive policy strategy, led by the Swedish Ministry of Environment and Energy, lays out specific goals for reducing the country's overall ecological footprint by 2020 through a number of environmental quality objectives – tackling climate and air pollution, promoting land and water conservation, protecting sensitive habitat, and sustainably managing natural resources, among others¹ – linked in with individual milestone targets to assess how it contributes to environmental improvements over the immediate term.



NEGATIVE CARBON BY MID-CENTURY

Given its emphasis on ecological stewardship, in particular climate change and Sweden's commitments under the Paris Agreement, in 2017 the Government unveiled a new climate policy framework that places the country on course to achieve carbon neutrality by 2045, with the ultimate goal of becoming a negative emitter of greenhouse gases by mid-century. According to Ministry of Environment and Energy, the policy represents an approx. 85% cut in overall emissions since 1990 levels, and underlines this must be achieved without posing undue threat to biodiversity or human wellbeing. Recognising that climate change transcends national and regional boundaries, Sweden has also introduced a milestone target for its emissions, aspiring for reductions of 40% by 2020 compared to 1990 from market activities outside of the EU Emissions Trading System (ETS), including transport, housing, waste, agriculture and certain industrial sectors. It has also been active in climate research. For instance, the Stockholm Environmental Institute (SEI), together with several other partners assigned by the Swedish Environmental Protection Agency, has recently concluded a major research programme aimed at systematically exploring methods for following-up on Sweden's annual consumption based emissions².

These ambitions are in line with the country's greater objective to become "one of the world's first fossil free welfare states", which is reflected in the country's most recent national communication on climate change. While the country grew by over 150% from 1970–2015, it only consumed 22% more energy, and slashed its fossil fuel-related emissions in residential, commercial and institutional sectors. Reductions for manufacturing and construction were 72% and 33% lower in 2015 compared to 1990, a downward trend expected to continue.

Internationally, the country remains one of the largest per capita donors in the world to the UN Framework Convention on Climate Change (UNFCCC), the Green Climate Fund (GCF), the Global Environmental Facility (GEF) and the Adaptation Fund, among other global financing mechanisms.

STRATEGY FOR SUSTAINABLE CONSUMPTION

Understanding that climate and environmental challenges cannot be fully addressed without also transforming the way resources are managed and used, Sweden's Ministry of Finance has developed a strategy for sustainable consumption focused in several hot-spot areas – changing market behaviours, improving the sustainability of products and services, and promoting healthier lifestyles – to reduce the country's overall environmental impact. It has strategically prioritised food, housing and transport in line with national climate efforts, which are linked with other Government plans under development.

The strategy also includes other fiscal and budgetary proposals for actions carried out in cooperation with relevant government agencies, such as the newly established Forum on Eco-Smart Consumption³, supporting networking and knowledge sharing on good practices (investment budget of 43m SEK; approx. 4.7m USD), increasing tax on certain hazardous chemicals, and reducing VAT for selected items (bicycles, shoes, clothing, etc.) to encourage product recycling and repair.





IMPLEMENTATION

A suite of policy instruments and mechanisms are used to deliver its goals in support of sustainable lifestyles. For example, environmental quality objectives are delivered through multiple measures – regulatory, market and information approaches – to conserve and protect air, water and land resources in line with regional and international agreements. Sweden’s strategy for sustainable consumption emphasises using all such tools in order to mobilise public engagement and also earmarks specific funding for promoting environmental sustainability efforts both domestically and abroad.

Sweden’s climate policy framework provides an instructive example of how these components work together in practice. The framework comprises three core pillars: the Climate Act, related climate goals and a climate advisory body. The Climate Act sets out the legislative basis as well requirements for carrying out the country’s climate objectives, which include producing annual climate assessment reports and four-yearly climate action plans. An independent climate policy council advises the Government on progress made with respect to emissions targets and provides recommendations on areas for raising ambition.

Taken together, this framework defines the remit of national authorities with regards climate action, and outlines strategic interventions for implementation. For instance, in addition to calling for new tax regimes and commitments aimed at mitigating emissions⁵, Sweden’s climate policy also draws attention to the role of government partnerships in driving education and awareness around climate change solutions. This institutional coordination is crucial for scaling up Sweden’s environmental activities across different levels and sectors.

MEASUREMENT

The Swedish Government assesses its environmental quality objectives annually, including through stocktakes on whether individual policy measures are fit for purpose and achieving their intended impact against respective indicators, to determine if they require adjusting or replacing. The assessments are followed by comprehensive evaluations carried out every several years, using tools such as data sampling, emissions statistics and surveys.

The Swedish Environmental Protection Agency and Swedish Agency for Marine and Water Management (operating under the Ministry of Environment and Energy) are jointly responsible for managing environmental monitoring data, which is freely accessible to the public. Benchmarks have been developed for a number of programme areas, including toxic substances, health, air quality, agricultural land, wetlands, biodiversity, freshwater, sea and coastal areas, and household water.

The nation’s population is generally highly aware and supportive of climate change and related actions. Climate issues, both domestic and international, are regularly publicised, such as in how international supply chains linked with Swedish consumption contribute to emissions abroad, and various web platforms have been developed to assist consumers in reducing ecological footprints.

SCALABILITY

Sustainable lifestyles in Sweden show strong potential for expansion because of the institutional setup used to implement the country's environmental quality objectives, which is efficient, responsive and results-oriented. For instance, in addition to tasking different agencies with designated functions for carrying out and reporting on the objectives, the Government has established a working body (All Party Committee on Environmental Objectives) responsible for advising on environmental policies, strategies and measures related to their effective enforcement. Comprising Members of Parliament, the Committee works in close consultation with research groups and other public organisations engaged in environmental issues to ensure its proposals are informed and evidence-based. This process enables Parliament to evaluate progress made on the objectives and decide on appropriate legislation for specific matters of concern.

Dialogue and consensus-building also feature prominently in the way Sweden's environmental objectives are dealt with at the local, sectoral and regional levels. For instance, the Swedish Forest Agency collaborates with local authorities such as county administrative boards to ensure that the objectives are delivered in line with their respective targets, and a special coordinating body reviews outcomes and determines follow up actions. Similarly, specific government agencies are assigned to cooperate with businesses and other organisations to advance the objectives most relevant to their sectors. Lastly, because many of Sweden's environmental goals are also aligned with European Union laws and other international agreements, the Government makes efforts to fully engage with global policy processes, working to lead by example.

WAY FORWARD AND LESSONS LEARNED

Sweden's environmental aims are built around a larger generational goal that the country has set for itself, which is to resolve by 2020 all major ecological problems facing its population. However, given that most environmental challenges (and their solutions) are global in nature, this can be envisioned more as a direction, rather than a fixed end point.

To continue its work building environmental resilience, Sweden aims to show leadership in sustainable lifestyles while also recognising much more needs to be done both domestically and internationally. Beyond restoring ecologically threatened habitat and conserving biodiversity at home, future priorities include strengthening cooperation with international partners on transboundary issues, such as climate change, air pollution, and ozone depletion. To this end the Government intends to continue bolstering the country's knowledgebase around key environmental issues to improve monitoring and follow up efforts, alongside exploring new research frontiers to better address emerging sustainability challenges facing both Sweden and the planet at large.



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NATIONAL LONELINESS POLICY



UNITED KINGDOM



OVERVIEW

In January 2018, the Prime Minister of the United Kingdom Theresa May described loneliness as “the sad reality of modern life” for too many people, and tasked Undersecretary Tracey Crouch with tackling the issue ¹. The strategy produced was in response to a report by the Jo Cox Commission on Loneliness in 2017, showing that over 14% of the population often or always feels lonely ². Jo Cox, a Labour Party politician assassinated in 2016, had aimed to start a national conversation on the issue following her own postnatal experience. The strategy, “A Connected Society: A Strategy for tackling loneliness – laying the foundations for change”, points out that increasingly efficient public services and businesses still neglect people’s basic need to connect with others ³. Loneliness and mental health have become an increasing concern in industrialised societies. Reducing consumption and long hours online, and leading lives better connected with family, friends, colleagues and others both alleviate loneliness, improve mental health and support sustainable lifestyles.

JO COX COMMISSION ON LONELINESS

Jo Cox’s aim in setting up the Commission was to break down the boundaries between political parties in order to work with civil society and businesses to reach communities with people affected by loneliness. The Commission encouraged people to connect. It reached out to thousands of individuals in different communities to start sharing their experiences and feelings on loneliness, as well as recommending roles the government, businesses, charities and communities could play in responding to this issue. The report published by the Jo Cox Commission on Loneliness in December 2017 called for the national government to take action, including by appointing a Minister, measuring progress and catalyzing action. At the same time, it also urged local government leaders, businesses and communities to act on this issue, and that through this conversation it is possible to envisage a future that is connected through kindness and community instead of isolation.

The report also pointed out that the current level of loneliness is shared among different groups of people in society, especially in the marginalised and vulnerable. For those over 65, 3.6 million rely on television as the main form of company. Half of disabled people are lonely every day. For those over 75, more than one third of them feel loneliness is out of their control, 58% of migrants and refugees living in London consider loneliness as their biggest challenge, and over half of parents have a problem with loneliness. In spite of its widespread nature, not all feel they can speak about it openly. More than 10% of men are lonely but would not admit it to anyone. The report also points out that there are lots of areas and ways in which people can come together to connect people within families, neighbourhoods and wider communities.





GOVERNMENT EFFORTS IN TACKLING LONELINESS

Following the government's appointment of its first Minister for loneliness, it published its first strategy to tackle the issue, "A connected society: a strategy for tackling loneliness – laying the foundations for change", on October 2018. The strategy aims to change thinking about public services as a means to invest in connecting people, as medication alone cannot address the root causes of the loneliness issue. While loneliness and isolation can be felt on a personal level, the government can strengthen the foundations to make society easier for people to connect, share and trust each other. Moreover, it recognises that the connections we have with family, friends, colleagues and neighbours are the most important thing in life. The strategy lists three goals for connecting people, which are to improve the evidence in understanding the causes and effective measures to tackle it, to embed loneliness across government policies to improve people's social wellbeing and resilience, and to have a national conversation to raise awareness on this issue.

The strategy emphasises the approach of public services, community infrastructure and the culture of connected communities in tackling loneliness. Public services and organisations could seize opportunities to promote social connections and to connect people as the core part of their everyday roles in society, could improve how public services connect with and support people experiencing loneliness, and improve access to information and sharing of knowledge on tackling loneliness. Community infrastructure such as public spaces for meeting and transportation networks to enable access to such spaces would be a practical measure to avoid people feeling isolated, and enabling people to get together more easily should be part of community planning through effective utilisation of digital tools. Last, the strategy requires a cultural shift in society through making the topic a national conversation point involving different actors and individuals to reduce the stigma when facing loneliness in order to help build resilience against loneliness. It also provides support at the grassroots level to enhance social relationships and community ties to encourage people to invest and care for their social wellbeing.

IMPLEMENTATION

The strategy co-developed based on the Jo Cox Commission on Loneliness involves over 40 organisations, charities, businesses and the public sector through numerous workshops and comprises five guiding principles: to work in partnership with other actors such as businesses, local governments, and civil society; to adopt a cross-party and cross-cutting approach in government; to implement measures through testing due to limitations in existing evidence in this area; to focus on key trigger points for prevention; and to recognise personalised approaches and local solutions.

The strategy acknowledges that tackling loneliness requires action by all actors and collaborating with different actors beyond the government alone. The central government is to provide leadership on this issue through a campaign to raise awareness on the importance of social wellbeing and in the meantime will help society at large play a bigger role. The strategy identifies five key actors and actions: 1) friends, families and communities, to enable more connections, such as via volunteering, 2) government, to lead and encourage networks for knowledge and solutions, 3) voluntary and community sector, to build resilience through skills and services, 4) local authorities and public/health services, to provide holistic health options, and 5) employers, to support employees, customers and communities.

MEASUREMENT AND IMPACT

Due to the limited means for measuring loneliness, the impact of governmental policy is hard to define, thus the success of its approach would be assessed by the development of measures to understand how to reduce loneliness in the country. In so doing, the government aims to collect more data on the causes of loneliness in different ages and groups in the short term. When the issue is better understood, it will then set quantitative targets for intervention. As a starting point, the government has set three goals – to improve its evidence-base on understanding loneliness, to include loneliness in policymaking to drive a lasting shift in this direction, and to catalyse a national conversation on the topic. The government has identified preliminary areas under each goal to be measured and reported on annually.

In the meantime, the government has been developing measures on policies set out in the strategy to monitor the delivery and progress in tackling loneliness. In January 2018, the Prime Minister announced that the government will start work on the indicators to be used in research for all ages, and has consulted with experts from academia, service providers and internal experts on the measurement and study of loneliness. The Office for National Statistics has assessed existing means and recommended a package of measures to be tested. The government has also supported projects under the “Building Connections Fund” as well as surveys to evaluate policy effectiveness and will continue to explore the knowledge in this area.



SCALABILITY

Loneliness is an issue common to most industrialised countries. In Japan, the term kodokushi is used to describe those who die alone and are undiscovered for a long time. In the US, a survey has revealed that over a third of Americans over 45 feel lonely. The former Parliamentary Under-Secretary of State for Sport and Civil Society Tracey Crouch had been in discussions with other countries like Canada and Sweden on how the move by the UK can provide inspiration for other countries to tackle isolation⁴. While loneliness and connecting with others could be seen as confined to the personal sphere, for which intervention of government policies can be limited, current lifestyles in industrialised countries only increase the risk of isolation due to the increased convenience enabled by technology and reduced need for face to face communication in daily living. Thus the fact that national-level action has been taken against loneliness in the UK demonstrates that the need to connect with others is essential even in economically advanced countries. The UK government's efforts in collecting data and indicators on this topic enables other governments and researchers to better understand it and provide solutions to the issue in other countries, in order to scale out and scale deep the interventions on the issue.

WAY FORWARD

The publishing of the strategy represents an important step and the government is taking long-lasting actions through building an evidence base and appointing an independent evaluator to assess the impacts of the project, the findings of which will be used to improve understanding and data on loneliness. The government will also concurrently adopt a cross-government, cross-ministry approach under the lead of the Minister of Sport and Civil Society to work on the issue.



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CASE STUDY

NUDGE IN A GREEN DIRECTION



BELGIUM



SUMMARY

Nudge in a Green Direction (NIAGD) was a series of behavioural interventions in nudging consumer behaviour toward lower environmental impacts commissioned by the Flemish government's Environmental, Nature and Energy Department and conducted by the Marketing Department at Ghent University. The experiments were carried out in 2016 over the course of three months and involved several supermarkets, a private company's canteen, and the student canteen at Ghent University. The aim of the Flemish government was to determine the extent to which consumer behaviour could be influenced by gentle nudges designed to help close the intention-behaviour gap. The results of the interventions were a 20% reduction in the weight of sausage purchases, a tripling of sales of vegetarian alternatives to traditional meat-based spreads, and a 19–29% increase in sales of more sustainable dishes at canteens.

GENERAL OVERVIEW

NIAGD was a demonstration project of the Flemish government and was inspired by the lessons of behavioural economics and policy nudge theory, which suggest that consumer behaviour can be shifted towards environmentally friendly choices without explicitly communicating a message about sustainability. The nudges developed for NIAGD were designed to be non-intrusive and to preserve freedom of choice for consumers.

The behavioral interventions focused on shifting food consumption patterns to be more sustainable, the core goals being to lower meat consumption, increase plant-based diets, increase purchases of seasonal produce, and increase purchases of smaller portion sizes of foods. To this end, the researchers from government and Ghent University partnered with private enterprises to test interventions in both supermarkets and canteen venues.

BEHAVIOURAL ECONOMICS AND NUDGE THEORY

Understanding people's behaviour and the factors that contribute to decision-making are critical to any attempt to alter behavioural patterns. Behavioural economics focuses on the cognitive, cultural, emotional, psychological and social factors that influence people's financial decisions, and has three dominant themes: that people make the majority of their decisions using mental shortcuts and rules of thumb; respond to the world by using mental filters constructed from anecdotal information; and are prone to irrational decisions often influenced by mispriced goods.

From studying these key observations, behavioural scientists have learned that people will often act in ways that contradict their deeper values. For example, in the NIAGD experiments, researchers observed that despite consumers expressing a desire to consume less meat and more plant-based diets, their behaviour did not follow these intentions. This phenomenon is known as the intention-behaviour gap and is often the target of government policy nudge schemes.

Examples of national government interest include the establishment of the Behavioural Insights team by the UK government, which was the world's first government institution focused on applying behavioural sciences in a policy setting. Established in 2010, the team has since become a social purpose company, jointly owned by the UK Government, Nesta, and its employees. During its time within the UK Government it published a variety of papers covering topics including health, consumer choice, energy use, fraud, error and debt, charitable giving, and organ donor registrations. Other countries have followed since in establishing dedicated units including the US, Australia, Canada, Netherlands, Germany and Ireland as have international institutions such as the World Bank, UN agencies, OECD, and the EU. In addition, India, Indonesia, Peru, Singapore, and many others have explored behavioral science in developing policies and programmes.

THE EXPERIMENTS

The NIAGD interventions in supermarkets and canteens focused on nudging customers to purchase less meat and more vegetarian alternatives, as well as more fruits and vegetables, especially those in season locally. These interventions included, for example, changes in the visibility of products, signage communicating novel options, and changes in available portion sizes. Across the supermarket and canteen venues where the experiments were carried out, the NIAGD project saw measurable, net-positive results in shifting consumer behaviour toward more sustainable food choices.

SUPERMARKET EXPERIMENTS

There were three key interventions at supermarkets. First, NIAGD made smaller portion sizes available for meat products such as sausages, alongside the standard sized packages. The objective was to reduce meat consumption by roughly 33%. However, researchers determined that such a decrease may represent too large a change for some people. As a result, packages of sausages were offered at 33% and 17% reduced size. The test was highly successful – over the course of the intervention the average weight of a purchase of sausages declined by 20%. Second, vegetarian options were offered alongside standard meat-based products to encourage a reduction in meat consumption and an increase in vegetarian diets. Three meat-based bread spreads were the focus of the intervention, for which three vegetarian alternatives were developed. The spreads were marketed on the same shelf, side by side. The result was a tripling of sales for vegetarian spreads.

Third, a number of interventions were developed to nudge consumers to buy more local and seasonal fruits and vegetables. The interventions included attractive signage that depicted healthy foods as being delicious, placing seasonal foods together in one area and using clear signs to draw focus to them, and signs were placed featuring recipe suggestions for seasonal produce. As a result, sales of the targeted foods increased by 19–29%.



CANTEEN EXPERIMENTS

Two sets of canteen-based interventions were developed and tested by NIAGD. The first was at the canteen of a private company where meals are chosen from a set menu. Researchers identified the most environmentally sound dishes on the menu and built their intervention around increasing their sales. Interventions took the form of including an attractive adjective to the menu description of the more sustainable option, staging dishes with attractive visual aids like fresh ingredients, indicating that the items were only available in limited quantities, advertising the items as “new tastes”, and making samples of the dishes available at the entrance to the canteen. The result was an average increase in sales for the sustainable dishes of 5% on each day of the activity, though there were three days in which negative results were noticed.

The second canteen intervention took place in a university canteen. It was largely similar in design to the private company canteen intervention, but featured advertising using terms like “popular choice” and images of the dishes were displayed on television screens. The results were also similar, with a 5.5% increase in daily sales of the featured dishes. The volatility of sales on specific days was significant at the university canteen, however, with the increase in sales ranging from 1.5–19.4%.



IMPLEMENTATION

The Nudge in a Green Direction project benefited greatly from government support. As a project of the Environmental, Nature and Energy Department, the Flemish government was deeply involved in guiding it and providing the core funding. The availability of qualified academic researchers at Ghent University to design, carry out, and analyse the interventions was also critical to the success of NIAGD. The willingness of private companies to participate in the project was also an important factor. Buy-in on the part of the supermarkets and canteens presented the biggest challenge to the researchers, in particular owing to some scepticism and resistance to changes in their day-to-day business operations that were required. Finally, the general desire on the part of Flemish citizens to reduce their carbon and ecological footprints helped to enable the success of this project.

SCALABILITY

Nudge in a Green Direction is highly replicable and broadly applicable across the food industry. It is also likely that the core principles revealed by the project will see similar results if applied in other sectors of the consumer economy. As an academic endeavour it has revealed opportunities for policy nudges to influence consumer behaviour toward more sustainable patterns without limiting choice or using strongly coercive interventions.

MEASUREMENT

The NIAGD project was run as a series of randomised control trials, which set a benchmark for 'business as usual' where no intervention was conducted. This was then compared against outcomes in locations where interventions took place. Data, including current and past sales figures, was collected from the participating supermarkets and canteens and analysed by Ghent University researchers. It is important to note that no rebound effects were found – that is, no increases in sales in other areas cancelling out the effects of the sales of more sustainable products were found.

LESSONS LEARNED AND WAY FORWARD

The NIAGD project resulted in some valuable takeaways for policymakers and business owners. The fact that consumer behaviour can be nudged toward more sustainable patterns without limiting choice or using overtly coercive measures is a significant lesson. Relatively small interventions can have an impact on consumer behaviour, and such lessons appear to be consistent across the consumer-facing food sector. Nevertheless, it is important to note that the overall impact relative to the entirety of individual lifestyles was not measured, and from the results the effects maybe marginal.

While the NIAGD project was a limited, three-month experiment in nudging consumer behaviour, the lessons learned are valuable in designing longer-term interventions. The Flemish government is currently investigating the longer-term impacts of these and similar nudge interventions. It remains to be seen whether longer-term and larger sets of interventions are designed, but the success of NIAGD suggests that further interventions will continue to bear fruit and show potential as a part of a suite of policies towards enabling sustainable lifestyles.



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CASE STUDY

RUBY CUP



BRITAIN



OVERVIEW

Ruby Cup was established in 2011 in Denmark to provide a sustainable alternative in menstruation management. The product is a cup made of medical grade silicone to collect menstrual blood, and the idea behind it is based on the experiences of three college friends who started using them during their graduate studies. They found cups were superior, more comfortable, healthy, affordable and environmentally friendly compared to the disposable sanitary towels, thus had potential in low income areas. Combined with a realization that menstruation was a huge, mostly neglected global issue, they formed a company and obtained a development grant from the Swedish government to supply their product. With a lifespan of 10 years the Ruby Cup generates little waste, especially compared to disposables, and their “Buy One Give One” scheme ensures another girl or woman lacking access to such receives one free. The company works with local organisations to deliver seminars to increase awareness and empower girls and women to manage their periods in safety and dignity^{1, 53}. The issue of gender equity is important not only in developing but also developed countries to promote sustainable lifestyles. Engaging men at the same time also reduces related prejudices against women.

WOMEN EMPOWERMENT

In many countries, menstruation is still surrounded by fear and prejudice. For example, there is a custom in some countries to keep women out of the home during their periods, which can entail mental and physical damage, and in many other areas of the world menstruation is still regarded as a taboo and not spoken about. Especially in low income areas, many parents struggle to afford sanitary products for their daughters and there is a lack of access to both information and safe menstrual care products. Some girls end up using tissues or rags as a solution of sorts, but unfortunately this often prevents them from going to school, since they are afraid of staining their clothes. In some cases, girls have to start relationships with older men in order to purchase pads, which puts them at higher risk of becoming pregnant and dropping out of school altogether.

Ruby Cup’s mission is to provide a solution for women to manage their periods in safety and with dignity and to dismantle taboos and harmful beliefs and prejudices surrounding menstruation. Menstruation should not hinder a woman’s chances to reach her full potential. If periods are stigmatised as dirty and shameful, women’s bodies are also stigmatised as dirty and shameful. If periods stop girls and women from attending school and work, we are making being female in itself a hinderance to realising one’s full potential. Ruby Cup’s mission is thus to enable women to enjoy equal opportunities. In addition to distribution of ruby cups, one important role of the Ruby Cup workshops is to deliver correct information about female anatomy and menstrual health, which helps create a positive impression of periods and the female body, enhances self-confidence, and enhances women’s potential in society.



COMMUNITY ENGAGEMENT FOR CULTURAL ACCEPTANCE OF RUBY CUP

Ruby Cup-based menstrual health programmes can be very resource-intensive. With disposables, it is usually sufficient to distribute the product but the menstrual cup requires an educational workshop that comprises female anatomy, menstrual health and how to use it, as well as follow-ups to support new users and measure sustainability. This means that partner organisations of Ruby Cup need to train menstrual cup trainers, prepare materials and sensitise communities on the nature of the product. As part of the community engagement, they often encounter concern regarding products that are inserted into the vagina (worries about the hymen, sexual arousal, etc.), thus it is essential to keep communication channels open with teachers, parents and community leaders.

Taboos around menstruation and lack of access to products affects the whole community, so the company aims to engage with parents, teachers, religious leaders, men and women as well as the programme participants. When Ruby Cup arrived in Kenya, most had never seen the product before so forming a bond of trust with the product was a challenge that had to be addressed both at the individual and community level. When it comes to products for dealing with periods, as women trust their peers more than advertisements, Ruby Cup started by engaging Kenyan women and identifying those who could become Ruby Cup trainers and 'ambassadors'. When working in schools, it is also important to engage the boys as they sometimes ridicule the girls when they are menstruating. Some adults might have concerns about Ruby Cup too, as to whether it affects virginity or causes sexual arousal. Engaging and addressing these concerns is essential, and in the company's view, a positive side effect of the intensive programmes. This starts a conversation about the female body and menstruation and means that programme participants will also receive support from their family and peers when they start to use the device.



IMPLEMENTATION

The Social Impact Programme is implemented in eleven countries – Benin, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Nepal, Uganda, Tanzania, Zambia, and Zimbabwe, and emphasizes sustained long-term impact with an approach geared at involving local communities, conducting educational workshops, and providing facilities for cleaning and sustained long term support later on. The company has also joined the Sawa Initiative (Savara Women’s Advancement Programme) in 2017 – a bootcamp created to support, inspire and empower women to reach their full potential using their own resources, skills and talents.² All participants receive a cup and an educational workshop on their health and rights.

Ruby Cup has also donated products in a menstrual cup pilot in refugee settlements in Uganda with European Union Civil Protection and Humanitarian Aid (ECHO), CARE, Oxfam, CARFORD, and WOMena. In special conditions such as refugee camps, it helps girls receive cups without having to resort to selling food in order to raise funds. In dealing with misconceptions in the community about the use of Ruby Cups, the education of men in the community is also important to help in decision-making processes and to shape local norms over the products. Thus, CARE selected a group of men as “Role Model Men” to educate them about menstruation and how to support their female family members in dealing with it.

Ruby Cup based menstrual health programmes can be slow and very resource intensive compared to programmes that distribute disposable sanitary towels, however, distribution of Ruby Cups is always accompanied with educational workshops to provide knowledge on female anatomy, menstrual health, usage instructions, follow up support for new users and measurement of the programme’s sustainability. Thus, Ruby Cup’s partner organizations need to train menstrual cup trainers, prepare materials and educate communities about the product so they understand it. Thanks to these efforts, the programme also helps to start conversations about the female body and menstruation so that participating girls and women can receive support from their family and peers in the use of the product.



MEASUREMENT AND IMPACT

Since its launch of the ‘Buy One Get One Programme’ in 2012, more than 50,000 girls and women have received the cup. The product provides both environmentally and socially sustainable solutions for girls and women who cannot afford other products to deal with their menstruation in dignity and to reach their full potential. Access to the cup allows more girls to stay in school longer and feel safer, cleaner and more confident all the time.

From an environmental perspective, the cup can last 10 years. In this programme, it was found that 80% of Ruby Cup recipients still use it six months to a year after receiving it. Compared to conventional products, the cup can be reused, which saves on waste – one estimate is as saving of 1,713.74 tonnes in tampon waste in 2017³. In 2017, the company switched to a cradle-to-cradle certified print supplier to ensure all packaging and marketing materials complied with the highest environmental standards.

SCALABILITY

Currently there are over seventy brands in the world selling menstruation cups, and similar models exist, signifying more and more companies are seeing the potential of creating social impact and acting as sustainable businesses. The virtuous circle of Buy One Give One sells more Ruby Cups, thus perpetuates a sustainable business model of donating more to those who cannot afford them. At the same time, it also brings about the impact of starting conversations on a subject generally neglected in communities. The product itself is easy to take care of when water is available to wash hands and to boil the cup once a month, for which only one cup of water is needed.

The company has scaled up its support in countries such as Kenya, Malawi, Nepal, and intends to introduce it to Bangladesh and India. The key for scalability is to find the right partners and to take the challenge in engaging communities to talk about menstruation, which requires a long-term commitment. The current community engagement approach can bring about impacts in changing social norms within communities towards supporting women's health.

WAY FORWARD

The company would like to reach more girls and women in more parts of the world in view of the widespread lack of access to menstrual health products. Recently, in countries such as the UK, Food Bank has made the product available for those who cannot afford regular sanitary towels as part of a set when distributing food to girls and women. In terms of its future goals, the company thinks that too much emphasis is placed on measurable outcomes of menstrual health programmes, such as increased school attendance, engaging in sexual relationships or marrying later, but for Ruby Cup, access to products that allow women to manage their periods safely and with dignity is a goal in itself, as this means more girls stay in school for longer, and also feel safe, clean and confident every day of the month without feeling hindered by periods, which represents a real achievement.



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CASE STUDY

SIEBEN LINDEN ECOVILLAGE



OVERVIEW

Sieben Linden is an ecovillage of around 140 people, located in rural northern Germany. When it started in 1997 the initial plan was to have an ultimate population of 250–300, to demonstrate the possibility of living in a long-term sustainable community with a low ecological impact and high wellbeing. The ecovillage acts as a microcosm of society, supporting employment and establishing communal buildings on-site for a variety of needs, aiming for the maximum possible self-sufficiency. It disseminates knowledge about sustainability through community seminars, which also serve as a source of income. With its multi-decade experience as an attempt to live sustainably, the ecovillage provides an excellent example of the joys and sorrows of the road to sustainable living.

ORIGINS

Sieben Linden was conceived in 1993 with the purchase of a farmhouse which became the project centre. After 20 hectares of land was purchased in 1997, residents were sought through advertising. Since then, a community has built up the land over time – initially some of the residents lived in caravans, but the buildings were soon constructed to be their permanent homes. Its steady expansion over two decades has seen further additions of community and residential buildings according to demand, and the site now occupies over 100 hectares – 64 ha for forests and 8 ha for 11 multi-family dwellings, a regional and seminar centre, mediation house and other buildings including stables, woodworks, and summer kitchens.

LIFE IN THE COMMUNITY

The community operates as a loose democracy spanning seven decentralised, semi-autonomous decision-making councils and a half-day general assembly convened monthly to discuss major decisions, which is open to all. Proposed agenda are published a week in advance.

Community participation is key to the success of the ecovillage, and has proven that sustainable living needn't be hard to adjust to in terms of perceived austerity. One key adjustment residents tends to be the social aspect, due to living and working in shared spaces, which affects privacy. The answer to creating harmony was to adopt an open mindset that accepts conflicts are inevitable and need to be discussed openly and resolved rather than ignored or papered over..

Additional residents have been accepted in a gradual process, and the makeup reflects wider German society with a range of age groups and backgrounds. Following the initial advertisement, residents have been taken on through word of mouth or attending the community seminars. Once accepted, residents stay for a year before a decision is taken on whether they should permanently join the community. The ecovillage strives to be welcoming and there are many ways to support sustainable living, but given its size it is important to have a clear shared intention. If residents find adjusting to life in the ecovillage too demanding they generally leave of their own accord, or in very rare cases are requested to leave.

LIVELIHOOD AND INCOME

The ecovillage aims to be self-sufficient as far as possible. It supplies all food and household goods for a daily fee. For transportation most people walk or use bicycles within the village and there is a car-sharing system for necessary car trips, although there are as well private cars in the community. Around 70% of the vegetables, fruits and herbs consumed are grown on-site with the residents looking to develop crops, grain and pulses themselves. Food in the communal kitchen is vegetarian only, with the majority of the food being vegan. Residents are welcome to eat non-vegetarian food, but they need to purchase and cook it themselves. In order to lower the ecological impact horses rather than tractors are used for agriculture.

The ecovillage also provides employment for around 35 residents, and one of its main means of generating income is regular seminars, which provide it with €500,000 annually, of which approximately €200,000 is used for wages and remuneration for teachers. It also offers events for people with different financial means, one of which is the low-priced “co-working-weeks”. Originally offered free of charge, the community found this led to unreliable attendance, hence they are now charged. Of the other residents, around 15 are employed outside the eco-village and just over 30 work as freelancers. There are around a dozen pensioners on site and five residents are unemployed, which is lower than the regional unemployment rate of 12%. Moreover, the ecovillage provides income for residents and non-residents – services such as gardening, foresting, yoga and dancing, childcare at the kindergarten, and crafts are all paid for. All residents finance their individual share for the land and community infrastructure of €13,000 and pay around €150 as a monthly fee. When residential buildings are constructed, prospective residents contribute an additional share of at least €12,000 and a certain number of labour hours, and after moving in pay rent.



VILLAGE CONSTRUCTION

The first buildings within the compound were built by the community with volunteers. But experience proved that it is usually more efficient to build only with skilled craftsmen. Therefore, buildings built subsequently were built by ecovillage craftsmen, and if there were none, by other craftsmen. Construction is made as eco-friendly as possible – buildings are insulated using straw bale, and considerable efforts are made to ensure the materials are from eco-friendly sources if new, or are recycled-sourced. For example, straw bale needs to be sourced from local organic farmers and timber is partly sourced from the village forest. Due to use of this effective insulation, passive energy, solar panels and ground heat, the building only utilises one third the energy of the national average. Electricity mainly comes from photovoltaic systems and water use is significantly reduced due to an on-site well and use of compost toilets. The buildings themselves are quite spacious – residents have on average 32 sq. m each of floor space, including common areas, and the straw bale housing design represents an innovation in itself, given that one of them is the first multi-storey straw bale house of its kind in Germany and the research that went into securing the permit to build it led to a change in regulations to permit straw-bale construction. This change, in 2014, meant straw bales became recognised as a building material in Germany, thanks to the “Fachverband Strohballenbau” (Expert-Circle Strawbale-Building) that was founded in Sieben Linden.

The village is currently constructing a new seminar centre which is to include 14 guest rooms and a seminar room, intended to increase visitor numbers and help disseminate sustainable lifestyles.



IMPLEMENTATION

The village has developed in a highly self-sufficient and gradual manner, managed its own resourcing and utilised a learning-by-doing approach. The skills and knowledge required to develop the village mainly came from within, and it has managed to tap into voluntary expertise where skills were lacking. A key component of life in the village is its active expansion together with provision of knowledge-sharing through its numerous seminars. Other key strengths it possesses are good stakeholder management and engagement with the outside world, the clear democratic structure of the village and an emphasis on communal life and maintaining harmony.

The project has been largely self-financed with occasional receipt of grants. Through careful planning and self-management the village has been able to grow in the manner intended – that is, towards a settlement that is largely self-sufficient yet also able to offer a high quality of life for its inhabitants. Funding has not always been easy however, as initially the village was considering low-cost solutions for housing before deciding the extra investment in ecological solutions was preferable.

Key to the success of the village has been its ability to access land. The village has expanded to 100 ha, with 60 ha consisting of forest, which means there is adequate space for the community, land for producing much of the food consumed on site, and also woodland to provide timber for the buildings.

MEASUREMENT

The ecovillage has been measured for its ecological footprint twice, in 2004 by the Gesamthochschule Kassel and in 2017 by DIST Politecnico de Torino. The most recent study demonstrates that the average footprint of residents in 2014 was 3.08 global hectares (gha), against the German 2013 average of 5.47 gha. Included in these figures is 1.32 gha, which represents the share of government services for all German citizens. If this is deducted, the average per-resident footprint is 1.76 gha versus 4.15 gha, which is a considerable gap. All sectors are well below the German average other than energy. However, most of the area that is needed for the energy supply is wood for heating. When harvesting wood, the community works to increase biodiversity. Sieben Linden also compares well against other ecovillages, with only Krishna Valley in Hungary with a reported footprint of 0.89 gha being significantly lower^{1,2}

SCALABILITY

Sieben Linden has scaled well over time, gradually and sustainably building its population. It is making a clear attempt to scale deep, both through the lifestyle changes the residents have needed to undertake, but also through its efforts to engage both on a local and global scale. This effort will be further enhanced with the successful completion of the new seminar house, which will enable the village to host larger groups of people for longer. Sieben Linden has also scaled out – it has inspired a variety of other villages such as Schloss Templehof, Clan B, Vitopia eG, and Gemeinschaftsstifter Harzgerode, as well as disseminate straw bale construction. It has not only been reaching out by disseminating straw bale construction, but as well by sharing experiences in setting up community projects through training and supervision such as through its Community Compass tool. (www.gemeinschaftskompas.de)³

WAY FORWARD AND LESSONS LEARNED

For the future, the village is working on improvements to their ecological footprint. It aims to produce more of its own electrical energy, improve the insulation of the houses, and improve the car-sharing system and other aspects of the ecological footprint. The village has strong foundations. Given that the biggest potential reduction to their footprint appears to be in energy, the village has a strong opportunity to build further and reduce its ecological footprint as it seeks to continue to provide a high quality of life for its residents and encourage other ecovillage development.



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HEMPSTORY

14

HEMPSTORY



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NORTH AND LATIN AMERICA AND THE CARIBBEAN.

CASE STUDIES

CASE STUDY

COSTA RICA'S BIODIVERSITY LAW



COSTA RICA



SUMMARY

Costa Rica's Biodiversity Law (CRBL), passed in 1998, is a landmark piece of legislation. It establishes a rigorous set of policies and regulations designed to preserve, restore, and sustainably manage the country's biodiversity. A key part of this work includes fostering sustainable livelihoods and enhancing access to nature for Costa Ricans. Biodiversity, for Costa Rica, includes all plant and animal life, including micro-organisms, as well as the genetic and biochemical resources and traditional knowledge of how to exploit plants, animals, and micro-organisms. Through the work of two government organisations that co-ordinate activity across government Ministries and agencies, the CRBL has helped to reverse deforestation, protect large parts of the country's landmass, and protect species and traditional ways of life. The Biodiversity Law also establishes an incentive structure, the Payments for Environmental Services (PES) programme, that pays landowners for the ecosystem services and biodiversity preserved by actions they take on their land. Costa Rica has been lauded for the effectiveness of this Law and its policies, and several countries have emulated its key policies.

GENERAL OVERVIEW

Costa Rica's Biodiversity Law (CRBL), enacted in 1998 is one of the most comprehensive state efforts on the conservation of biodiversity in the world. It stands as a model for governments around the world seeking to develop legislative tools to preserve biodiversity and is a continuance of a long series of policy innovations implemented in Costa Rica since 1948. The CRBL was initially proposed in order to bring the country's national policies in line with the 1992 United Nations Convention on Biological Diversity (UNCBD). The law places responsibility for the protection and sustainable use of biodiversity squarely upon the people and government of Costa Rica and fully embraces the three core objectives of the UNCBD which are: biodiversity; sustainable use of resources; and equitable sharing of the benefits from genetic resources.

The CRBL takes a broad definition of biodiversity, covering the breadth of Costa Rica's ecosystems, organisms, and genetic material. It recognises the importance of biodiversity, both flora and fauna, and balances them against the rights of present and future rural and indigenous communities.¹

A wide array of policies have been enacted in Costa Rica that impact on biodiversity and conservation, including those that directly target conservation and those that include biodiversity instruments into larger policy packages targeting natural resources. This case study focuses on the core CRBL, as well as the PES programme. PES formally began as part of Costa Rica's 1996 Forest Law and establishes a system of payments in exchange for landowners preserving natural systems that provide the four key ecosystem services of carbon sequestration, biodiversity protection, water regulation, and landscape beauty and has served as an example for other regional governments.





PRINCIPLES AND OBJECTIVES

At its core, the CRBL seeks to establish better governmental capacity for the preservation of biodiversity and the responsible and sustainable use of natural resources. It recognises the importance of biodiversity for a thriving and sustainable economy, and for healthy rural and indigenous communities. The law redefines biodiversity, describing it as including the diversity of living organisms from any source – aquatic or marine, terrestrial or air – as well as the diversity of ecosystems, and goes even further to include many intangible components of biodiversity, such as biochemical or genetic resources and the knowledge and practices associated with exploiting biodiversity regardless of protection by intellectual property systems.

The CRBL establishes four principles that guide the law. First is respect for all forms of life, independent from any potential economic benefits associated with a species. Second, the components of biodiversity are valued as having “decisive and strategic importance” for cultural, economic, and social development. Third, diverse cultural practices and knowledge should be respected and promoted, particularly for rural communities and indigenous peoples. Fourth, intra- and inter-generational equity is a guiding principle to ensure that the benefits of biodiversity are guaranteed for future generations. In addition, there are 13 objectives often clustered by researchers into three categories: conservation, restoration and management of biodiversity; sustainable use of ecosystems and species; and the equitable and sustainable sharing of benefits from genetic and biochemical resources and traditional knowledge, particularly intellectual property rights.

PAYMENT FOR ENVIRONMENTAL SERVICES

Costa Rica's Payments for Environmental Services programme was first established in the 1996 Forest Law and was included as part of the CRBL. The PES establishes a system whereby private landowners enter into five-year contracts with the government to engage in different types of ecological conservation activities such as forest protection or management, reforestation, and agroforestry. It was the first national level programme directly paying landowners for the ecosystem services provided by their land. This incentive structure has proven to be highly successful and has been emulated by several countries.

To participate in the PES programme, a private landowner must submit their land to a ‘conservation gap’ analysis whereby the NSCA identifies areas for conservation and management activities and assists in developing an action plan. Landowners are paid in exchange for these activities based on a calculation of the value of the ecological services produced by the sustainably managed or restored lands. The environmental services that the CRBL pays for are biodiversity protection, carbon sequestration, landscape beauty, and water regulation. Although the programme focuses on environmental services, priority consideration is given to indigenous communities and communities with lower levels of economic development in its selection of suitable candidates. Although opportunities for landowners to increase their income are limited due to being denied the opportunity to fully exploit their land through farming or practicing forestry, this does not seem to have impacted on the recipients, who have chosen to voluntarily stay in the programme. A further consideration is that most landowners are already among the economically better off, so the poor are largely excluded from participating in the programme.²

Since it was first implemented in 1997, the Government of Costa Rica has expanded PES beyond its original focus on forestland management to protect additional types of land, such as organic farmland. Under this model, farmers are paid for the ecological services provided by the organic production methods they use.³

IMPLEMENTATION

Implementation of the CRBL was greatly aided by a policy environment with a long tradition of supporting the protection of biodiversity, natural resources, and indigenous cultures. Indeed, Costa Rica has been at the forefront of conservation and biodiversity policies since 1977 when the government began protecting land by establishing a system of national parks, and in 1988 the first Conservation Strategy for Sustainable Development in Costa Rica was tabled.⁴

In 1996, the CRBL established two administrative organisations charged with co-ordinating Costa Rica's management of biodiversity – the National Commission for the Management of Biodiversity (NCMB), and the National System of Conservation Areas (NSCA), which were placed under the purview of the Ministry of the Environment and Energy.⁵

NCMB is tasked with policy formulation relating to sustainable use of ecosystems and species, the restoration and management of biodiversity and ecosystems services, and conservation across the country. It is also responsible for contributing to and advising on policies and monitoring implementation by government agencies of activities related to conservation, sustainable ecosystem use, and genetic and traditional knowledge. NCMB co-ordinates these activities across government and watches over private actions in these spheres.^{6,7}

The NSCA was created to co-ordinate government activities in the areas of forest, wildlife, and protected areas. It is tasked with developing and executing policies and processes targeting sustainable management of natural resources (including biodiversity), recommending the creation of new conservation areas, and administering payments under the PES programme. The General Directorate of Wildlife, the State Forestry Administration and the National Park Service operate through the NSCA.

Regional and bilateral free trade agreements have placed considerable pressure on the Government of Costa Rica to alter its biodiversity protection laws, since such protections provided under the CRBL have been seen as an impediment to trade liberalisation by some countries and presented significant barriers in trade negotiations. Additionally, these protections have resulted in a reduced capacity to develop domestic forestry products and increased Costa Rica's reliance on imported goods from its trading partners.⁸

SCALABILITY

The CRBL has seen a steady increase in impact and influence within Costa Rica and at the international level, thanks in large part to the actions of its two administrative organisations. NCMB has had nation-wide reach since its inception and has continued to aid other government agencies in developing policies that advance its core mandate of preserving and restoring biodiversity and ecosystems. One key policy development to emerge from NCMB is the inclusion, since 2011, of sustainable development in the National Development Plan as an overarching theme. Thanks to policies like these, Costa Rica is known as one of the leading countries on biodiversity and conservation.

The NSCA has continued to expand the national park system and other areas of protected land. It has also had great success in restoring and preserving forest and agricultural land through the PES programme, and also experimented with innovative finance mechanisms, such as a green debit card that directs 10% of its commission to a Sustainable Biodiversity Fund that supports the PES programme. The success of the PES programme has served as an example for other countries – Mexico and Ecuador, for example, have developed similar programmes.⁹

MEASUREMENT

Given the wide-ranging influence of the CRBL within Costa Rica, exact measurements of the impact of the Law are difficult to perform. Separating the impact of the CRBL from other policies and initiatives is not feasible, and so instead general indicators for the country can be taken as indicative of the influence of the Law through the activities of the NCMB and NSCA, including the PES programme.

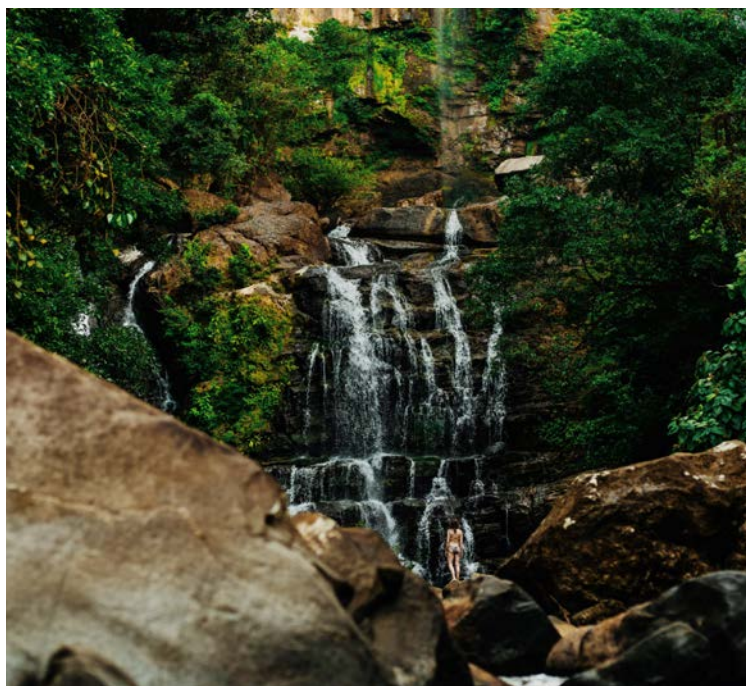
Ecosystem loss and restoration are perhaps the easiest metric to track the impacts of the CRBL. In terms of restoring forest ecosystems, Costa Rica has performed incredibly well – forest coverage in 1985 was at just 24%, but had grown to over 52% by 2010. Additionally, PES helped to prevent the loss of 720 sq km of forest in biodiversity

priority areas between 1999 and 2005. However, moorland and mangrove forests have been in decline since the 1990s and continue to deteriorate.^{10,11}

To date, the socioeconomic benefits of the PES programme remain hard to gauge. Research suggests that while the programme has contributed significantly to ecosystem conservation and restoration its impact on the incomes of participants is negligible.¹² This may be due to the prohibition on participants making productive use of their land, making it difficult for landowners to reinvest the PES payments into traditional income-generating streams such as cattle or hired farm or forestry labour. Nevertheless, it appears that the income received from being a member of the programme is adequate as the recipients are voluntarily remaining in it rather than leaving and exploiting the land.

LESSONS LEARNED

CRBL presents important lessons for policymakers. First, coordinated efforts by the government can have a large and long-term impact on preserving and restoring ecosystems and biodiversity. Establishing a coordinating body within government to ensure cross-ministry adherence to conservation policies has proven to be extremely effective. Second, the PES system contributes significantly to these efforts, though is not without its challenges. Balancing the needs of rural and indigenous communities against the need to preserve ecosystem services is not easy. Targeting landowners through PES is an effective means to make progress in conservation, but will often fail to result in benefits in terms of livelihoods as landowners cannot reinvest in their land. It may also exclude the poor, who do not own land.



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CASE STUDY

EDUKATU



BRAZIL



IN SHORT

Edukatu (www.edukatu.org.br) is an online learning network, free and voluntary, aimed at encouraging knowledge exchange and practices dealing with conscious consumption and sustainability among teachers and students aged 6–15 in schools throughout Brazil. Since its inception in 2013 it has enrolled over 46,000 users across more than 4,200 schools all over the country. More than 3,600 projects have been developed by teams comprising students and teachers, which have been registered on the Edukatu online platform, addressing a wide variety of topics under sustainability, such as waste, food, water, electricity, health, recycling and climate change. Many are also undertaken in partnership with the local community. Under the programme over 110,000 people have already been sensitized to the concepts and practices of conscious consumption and sustainability.

OVERVIEW

Since its foundation in 2001, the Akatu Institute has been developing activities and programmes focused on encouraging education dealing with sustainability and conscious consumption, especially among children and the young, as a way of promoting integral education and citizenship by the inclusion of these themes into daily school life. Work with conscious consumption and sustainability with children and adolescents especially during their basic education is essential for the training of individuals with a critical capacity to recognize the importance of more sustainable and balanced lives.

In 2013, Akatu instigated the Edukatu online platform to help raise awareness of sustainability among youth, facilitate the implementation of sustainable projects, and embed sustainability within schools and the wider community. The main pillars underpinning the project are: (a) developing independent learners; (b) ensuring teachers and students are actors in the teaching and learning processes; (c) the use of ICT to ensure scale and speed, enabling interaction in a collaborative, non-hierarchical manner; (d) breaking the culture of consumerism, encouraging the recognition of the impacts of consumption and supporting the development of conscious consumption habits from an early age; (e) encouraging hands-on learning through projects; and (f) to consider children and adolescents as important social actors and peer influencers.



PLATFORM STRUCTURE

Edukatu is a learning network which develops new content (such as games, videos, brochures, lesson plans, comics and the like), introduces new experiences, and shares them with all schools, teachers, and students. It is divided into three major blocks: In the Backpack, Circuits, and Network.

In the Backpack (Na Mochila in Portuguese) holds the main content of the platform with a variety of sections including a library called Edukateca, News and Updates with current information for students to research and learn from, and other sections that highlight projects already underway or undertaken, and inspiration for teachers and students.

Circuits (Circuitos, in Portuguese) is a section with suggested sequences of gamified activities (called paths), which have been developed to enable teachers and students to work with the issue of conscious consumption. It has eight different paths focusing on themes such as water, waste, energy and food. The teachers and students have to create teams and overcome challenges, both online and alone, while browsing on the site.

Network is the place where students and teachers can meet and interact. Each group working through the Circuits section has a blog which they can update and record their progress. The platform also has a community manager from the Institute to assist groups, answer questions and give tips on improving school projects.

This interactive element of the platform is fundamental. It is conceived not as one way learning but to facilitate three-way exchange between teachers, students and schools. Teachers and students were also involved in co-designing the contents and methodologies during the design phase of the project. The key to engaging both teachers and students is the multiplatform website, making it easy to access on either PC or mobile device.

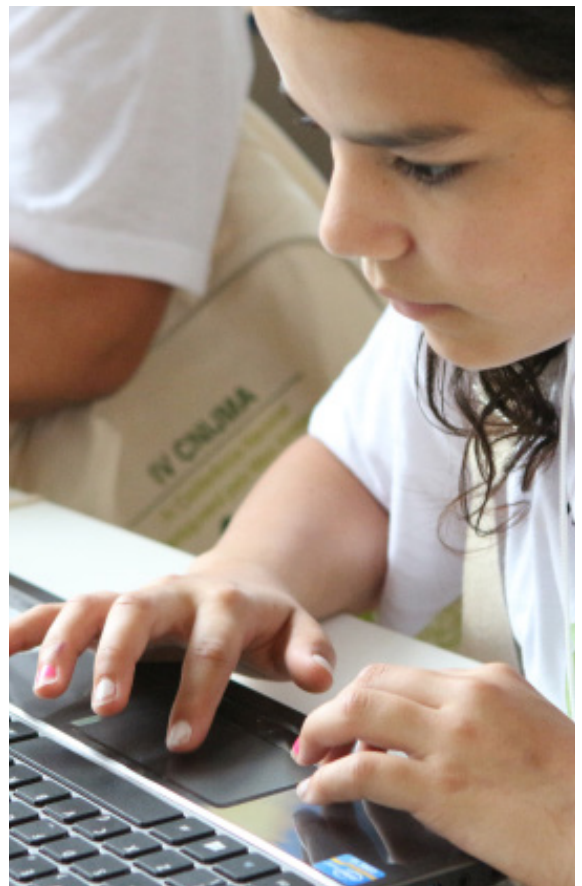
In addition to the online element, in-person capacity building workshops have been offered to teachers where resources permitted, which increased the number of schools participating. In the state of Alagoas, a partnership with a local NGO resulted in one fifth of the public schools with an Internet connection ¹⁵ becoming engaged; in the State of Roraima, a partnership with the Secretary of Education resulted in 70% of the public schools with an Internet connection engaged; and in the state of São Paulo, partnerships with both the Municipal and State Secretaries of Education resulted 12% of the over 12,000 public schools with an Internet connection joining the platform.

PROJECTS UNDERTAKEN

The platform supports many different sustainability-themed projects, such as waste, food, water, electricity, health, recycling and climate change. While they vary according to school and context, common themes are pursued through the Circuits. For example, in 2018, around 60 students (aged 6–11) from a school in Sao Bernardo do Campo (São Paulo state) undertook the activities suggested by the water path. Their project involved developing a school media campaign (with flyers and posters) to mobilise other school community members into adopting more sustainable water consumption habits, resulting in the school reducing its water consumption by 10%.

In the year before, 200 students (11 to 15 years old) from a school in Coité do Nória (Alagoas state) worked on the paths on recycling and waste. Their project included waste separation in the cafeteria and classrooms, and reducing waste generation and food losses. Over 200 kg of recyclable materials were also sent to a local recycling cooperative.

In 2017, around 20 students from a small school in Porto Velho (Rondônia state) concluded their project on healthcare by promoting a gaming marathon to urge the rest of the students to adopt frequent hand washing as a preventive and sustainable practice.



IMPLEMENTATION AND ENABLERS

The key factors contributing to success are partnerships with the public school system, use of internet tools attractive to children and adolescents, and the development of materials with a playful, simplified tone. The efforts undertaken by the Akatu Institute to deliver in-person support have also had a positive effect on the uptake of the platform nationally.

Presently, the main challenge is to stimulate teachers and students to engage with Edukatu throughout the education cycle so as to guarantee sustainability and conscious consumption behaviours are internalised. To this end, new strategies and additional partnerships are being designed such as influencing federal public policy to formally include the themes into the school curriculum and proposals to state and municipal education Secretaries for bonuses be issued for teachers who continuously use the platform.

Edukatu also faces financial challenges due to the need for frequent updates to both maintain interest for its present users and attract new users, and involves creating new content – videos, games, brochures, activities, lesson plans, among others – on themes not yet on the platform. This challenge is stretched further due to the preference of its financial partners to invest in direct outreach activities.



MEASUREMENT

Since its inception in 2013, it has enrolled more than 33,000 students across over 4,200 schools around the country. Around 54% of the students registered on the platform are 6 to 11 years old (studying in Fundamental 1, one of the pedagogical cycles of the national educational system). In some municipalities, such as São Bernardo do Campo, the project has reached almost 90% of the schools in the public municipal network (68 out of 78).

More than 3,600 projects have been developed by teams formed of students and teachers, which have been registered on the Edukatu online platform. Under the programme, almost 110,000 people have already been sensitised to concepts and practices of conscious consumption and sustainability.

In the last three years the platform averaged 59,000 page views and 14,000 unique visitors per month. Currently approximately 10,000 teachers and 33,000 students in 4,200 schools are registered and directly engaged with the project. As some public schools lack PCs, sharing involving 4 or 5 students enables access to the platform under a single registration, meaning actual user numbers maybe far higher, with total estimated students reached by the project exceeding 120,000.

SCALABILITY

While Akatu Institute has managed to scale the project across Brazil and already reaches most states, it has ambitions to penetrate further in order to reach more of the 17 million 6-15 year-old students in almost 70,000 public schools with internet access across the country, particularly those in medium-sized municipalities with populations up to half a million which tend to be more receptive of innovative, long term projects.

LESSONS LEARNED

The project demonstrates it is possible to utilise the power of ITC to boost awareness and uptake of sustainable lifestyles in schools and communities. Its long-term wish is for all students to embrace conscious consumption concepts and practices, and for teachers to develop theme-based projects on the same subjects as part of the school programme.

In the near future Edukatu also plans to produce and make available new online contents and methodologies directly related to the 17 SDGs, highlighting how the adoption of conscious consumption practices can help meet these goals. By accessing this content, Brazilian teachers and students will learn about each objective, have the opportunity to share knowledge and activities, and be encouraged to undertake projects to promote actions in their schools and communities related to the SDGs.



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Call for Case Studies
Interview with Akatu, November 2018*

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CASE STUDY

MONTREAL'S MULTI-MODAL TRANSPORTATION MIX



SUMMARY

The Société de transport de Montréal (STM), the authority responsible for managing Montréal, Canada's network of bus, metro, heavy rail, and paratransit services, has undertaken a radical experiment in integrated mobility. Within Montréal's metropolitan region, the STM has integrated bus, bicycle, carpooling, car sharing, metro, taxi, and shared taxibus in order to promote a "smart combination of individual means of transportation".

STM has established partnerships and agreements with a range of transportation service providers from self-serve bicycle systems to car sharing. STM has created a highly successful multi-modal transportation network to serve a wide range of transit needs.¹ These partnerships have allowed STM to offer bundled transportation services at a reduced price, including preferential rates for car- and bike-share services.² Payment is simplified through the full integration of fares across STM transit, allowing users to pay for any mode with their OPUS Card. Users can begin their trip walking, use a Bixi bike to cycle to the metro station and then use a car-share or taxibus to travel the last few kilometers home.

GENERAL OVERVIEW

The concept of integrating multiples modes of transportation became a core component of STM's sustainable development policies starting in 2008. This commitment led to a series of partnerships and communication campaigns designed to support alternatives to car owners, while at the same time recognising that for many the realities of urban living required at least occasional access to automobiles. STM therefore began by forming a strong partnership with Communauto, North America's oldest car-sharing company.

INTEGRATING AUTOMOBILES INTO THE TRANSPORTATION MIX

The concept of integrating multiples modes of transportation became a core component of STM's sustainable Rather than viewing cars as the enemy, STM incorporated their use as a key part of its transportation model. As such, partnerships and promotions have been carefully developed with car-share, taxi, and taxibus companies.

Car-Sharing

Communauto partnered with STM in 2008 in the form of a combined mobility offer covering car-sharing and public transportation. The programme, called DUO auto+bus, provided transit pass purchasers with access to Communauto's fleet of vehicles at a significant discount. It waived the 535 dollar subscription fee for DUO auto+bus programme participants and reduced monthly fees by 60% for pass holders. Car-sharing services have helped bridge the transportation gap that exists for many people living outside the city centre who need a reliable and fast way to get to metro stations, and have since been further integrated with bicycle services to provide customers with a variety of transportation options.

Taxis and Taxibuses

As a key part of its expanding integrated mobility program, STM has transform the taxi industry from a rival into a key partner. As taxis accounted for nearly 90% of transportation services for persons with disabilities (paratransit services) in Montréal, often supplementing STM's fixed-route bus and rail systems, STM harnessed this dominance in the paratransit services market to fill geographic gaps in the fixed-route transit network.

Montréal's taxibus service was first developed by STM in the mid-1990s. Taxibuses, or shared taxis operating both on fixed routes and on demand service, now serve a vital function providing feeder services to commuter rail stations and other key entry points to the regional transportation network. They operate in ten regions around Montréal where population density is too low to make bus service practical.

This move expanded transit coverage into low-density areas meaning 99.5% of the Montréal area is now covered by the network. It has also been cost-effective, with less than half the operating costs of a conventional bus service. A further advantage for taxis is that they can use the dedicated bus lanes, reducing trip times.³



INTEGRATING BICYCLES INTO THE TRANSPORTATION MIX

Montréal's bicycle service, BIXI, was launched in 2009 by the City in partnership with the Société de Vélo en Libre-Service and was fully integrated into STM's transportation mix and OPUS card payment scheme from the outset. STM provided over 2,700 bicycle parking spaces close to metro stations and pursued an aggressive marketing campaign, and also facilitated a series of highly successful cross-promotions across its transit partners.

BIXI has been supported by strong partnerships with Communauto and STM. Communauto offers to pay half of the BIXI sign-up fee for its members who choose to use BIXI, as well as a credit on their monthly bill. A high proportion of BIXI's stations were placed close to over 200 of Communauto's parking lots, which helps people switch transportation modes during commutes.

In May of 2013, STM unveiled a plan designed to enhance the use of bicycles within its jurisdiction.. Central to this plan was the roll out of additional buses equipped with bike racks, the testing of bike slides in metro stations, a pilot for dedicated bicycle parking spaces at metro stations, and a shared bus-bicycle lane on Viau Street, a major transit artery connecting bus and metro systems.⁴ For Montréal, embracing the bicycle as a part of the public transportation mixture has been a key ingredient STM has relied on as a healthy alternative to the car for part of or the entire journey.



IMPLEMENTATION

A number of enabling conditions helped from the outset, first of which was the presence of sympathetic stakeholders in the field, such as Communauto and the city's taxi industry. The partnerships which STM tapped into to provide immediate and broad-area coverage, and then the addition of the bicycle sharing service. Aligning the priorities of these actors also helped in cross-platform promotions to provide deep discounts for the users.

Second was the existing transport infrastructure as well as its willingness to further develop and adapt it to the new needs of an integrated multi-modal transit system. For example, many Communauto garages were already present in the areas around metro stations, which facilitated users switching transit modes more easily. Similarly, once Bixi was developed, bicycle parking near stations, use of some bus-only lanes were modified to allow for cyclists. The metro stations have also been ideal locations to trial of bicycle slides. Further, the OPUS card payment system was adapted for use over the entire transit system.

Third, STM made use of highly effective communication campaigns to promote its services and those of its partners. These campaigns have been sustained over many years and highlight the benefits of using the multi-modal transit mix, such as savings to individuals, reductions in traffic, reduced environmental impact, convenience, and healthier living. STM made use of advertisements in metro stations, bus stops, parking garages, and other locations in the city and used communiques and press releases for broader dissemination. STM has also featured in national and international conferences, and been awarded the Gold Level Distinction for 'sustainability commitment' from the American Public Transport Association.

SCALABILITY

Montréal's transportation mix scaled up rapidly through the partnerships it forged with the taxi industry and Communauto. These three services together – public transit, taxi, and car-share – cover over 99% of Montréal's metropolitan area, and the service mix allowed it to penetrate into the city's low-density suburbs, improving the convenience and usability and providing a real alternative to car ownership. The early success of the transportation mix also helped to make the development and launch of Bixi a viable opportunity.

The Société de transport de Montréal stands out as an exemplary model on the national and international stage. It has won awards and special mentions from several associations, including the Association du transport urbain du Québec and the American Public Transport Association, been recognised by the Corporate Knights magazine as being among the most responsible mid-size Canadian corporations for four years running (2015–2018)⁵, and has been eyed with a view to replication in some of Canada's largest cities including Toronto and Vancouver. Other cities around the world could also benefit Montréal's experience.

MEASUREMENT

The Société de transport de Montréal conducts yearly analysis of the environmental impact of its services and publishes the findings in the Sustainable Development Report, which tracks indicators across all its activities within the metropolitan geographic boundary to measure greenhouse gas emissions and carbon dioxide equivalent (CO₂e). The methods used are consistent with the methodologies recommended by the American Public Transportation Association and the Transit Cooperative Research Program.

As STM's impacts are measured at the aggregate level, reductions for specific components of the transportation mix cannot be done. The report evaluates emissions reductions under three key variables:

- A.** The impact of reduced car use
- B.** The impact of less traffic congestion
- C.** The impact of urban densification

Results showed that in 2016, STM's activities produced 160,044 tonnes of CO₂e, but avoided over 3.9 Mt of CO₂e from alternative modes of transport, equivalent to 55% of the total emissions from road-based transport in the entire Montréal Metropolitan Community.

The analysis also revealed that the CO₂e emitted by STMs services per passenger-KM (average emissions resulting from 1 kilometer of transit use) has continued to fall, down 5% since 2011 when measurement began. In 2011 STM estimated this at 49.7 grams of CO₂e per passenger-km, which by 2016 had fallen to 45.9 grams and is projected to be as low as 39.0 grams by 2020. A suggestive comparison is offered in the report: each tonne of CO₂e that originates from STM's transit service means another 20 tonnes are avoided by taking cars off the road and alleviating traffic congestion.⁶

LESSONS LEARNED

In developing and expanding Montréal's multi-modal transportation mix STM has learned valuable lessons. The importance of committed partners to STM's programmes cannot be overstated. Without buy-in from Communauto and the taxi and taxibus industries, STM would not have achieved the geographic coverage or diversity of services that is presently has. Additionally, these partners helped STM innovate and expand transit infrastructure across the city, the maintenance of which along with continuing innovations within the transit service space will be critical to the ongoing success of Montréal's multi-modal transportation mix.



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CASE STUDY

PATAGONIA



UNITED STATES



SUMMARY

The company Patagonia started out making tools for climbers based on a theme of simplicity and utility. Its mission statement echoes awareness that business creates pollution, “Build the best products, cause no unnecessary harm, use business to inspire and implement solutions to the environmental crisis.” It tries to reduce pollution impacts in production and operation processes such as through using recycled materials like polyester and organic cotton, and renewable energy. It has also devoted resources to environmental issues around the world, and in so doing learnt about global warming. It became aware that different grassroots organisations and individuals are fighting climate change in their daily environments and tries to support them in their projects. To this end it co-founded “1% for the Planet” in 2002, a non-profit to devote 1% of annual net revenues to organisations working on environmental sustainability, especially at the grassroots level ¹. On Black Friday 2016 it pledged 100% of the sales from its brick-and-mortar and online stores to environmental organisations (“100% for the Planet”).

BUSINESS AS AN INSTRUMENT TOWARDS SUSTAINABILITY

Patagonia’s production follows its principle of “build the best products with no unnecessary harm”, and its products are designed to be long-lasting, of high quality and functionality with minimal impact on the environment throughout the supply chain. It also partners with customers in asking them take responsibility for the lifecycle of products through repair, reuse and recycling. In its operations, it also aims to minimise harm to the environment to reduce its impact on resources use of water and energy, and to reduce pollution from greenhouse gas emissions, chemical use, toxicity and waste generation. With the knowledge that in Japan only half of new clothes produced are purchased by customers – with the remainder either going to waste before selling or shortly after purchase – by producing the highest quality products it encourages customers to use them over the long term. It published an advertisement in the New York Times Black Friday in 2011 titled “Don’t buy this jacket” to enhance people’s awareness to avoid buying new products without thinking about the environmental impact.

In “Worn Wear: Better than New”, the website provides stories for the clothes people have worn as part of the people’s life stories rather than only a product ². It promotes and guides customers to repair, reuse and recycle products to be in action for as long as possible and to share their stories related to use of Patagonia products. By connecting personal stories to worn products it is thought this creates a new kind of value by somehow enriching the product, thus making it more desirable than purchasing a new one. Patagonia products can be traded in at any Patagonia retail store for credit to purchase new or used items, with the worn items resold on their website. It also encourages and guides people as to how to repair clothes and sometimes supplements this through demonstrations in street-based and other events. Their repair service centre in Nevada sees throughput of over 30,000 items every year, and by extending the life of clothes it helps cut down on production and consumption of new materials, thus reducing resources, greenhouse gas emission and waste generated in those process. Such practices exemplify a new business model, which is opposed to the current one of mass production and disposal.



THE ACTIVIST COMPANY FOR SUSTAINABILITY

Patagonia considers itself as “The Activist Company”, and posits its mission of preserving and protecting the environment as the core of its business rather than as something peripheral to it. In addition to the grants it has been giving to support environmental organisations around the world in their activities, it also considers activism and advocacy as keys to achieving sustainability goals. Patagonia states that the chance of losing business along the way to achieving these goals, due to adopting attitudes that customers might not agree with, should not compromise its mission.

Under its 1% For the Planet initiative, Patagonia has donated 89 million USD in cash to support thousands of community-based grassroots organisations trying to improve their local environment³. The grants are distributed to hundreds of organisations that are normally very small in scale with less than five paid staff or entirely volunteer-run with 2,500 to 15,000 USD. The various environmental issues the initiative has supported to date include dam removal, restoring forests and rivers, finding solutions to and mitigating climate change, protecting critical land and marine habitats, protecting threatened and endangered plants and animals, and supporting local, organic and sustainable agriculture. Moreover, it has also trained thousands of activists to be more effective in the issues they are working on. It is currently involved in building a community through digital tools to connect individuals to those working on the issues they are passionate about, in a bid to build a movement towards sustainability in which each individual can play a bigger role.

IMPLEMENTATION

Despite the various challenges it faces the company has located environmental conservation as its core business objective, and its most critical challenge is to maintain its environmental mission while also producing the best products as a business. In its decision to design and produce products of the highest quality that can last for a long time, it also has to judge what the environmental costs are in following this principle. It also judges its suppliers for social responsibility, regardless of how technically adept they are. Its intention to source the cleanest technology such as renewable energy can also be a challenge in consideration of its downtown store locations, which have limited spaces and roof space for renewables installation. Thus continuing to pursue its dual goals of making the best and cleanest products represents a constant challenge for Patagonia.

MEASUREMENT AND IMPACT

Fashion is a very resource-intensive and polluting industry, and contributes to 10% of global greenhouse gas emissions – it consumes more energy than aviation and shipping industries combined. To produce one pair of denim jeans requires 1 kg of cotton, which requires 10,000 litres of water. The fashion industry also generates 20% of global waste water and 85% of the textiles are landfilled or incinerated instead of being reused.

Patagonia has created impacts in multiple dimensions, of which that on sustainability has been expanding. Its business model emphasises ongoing efforts to minimise environmental harm while producing the highest quality products and encourages customers to use them for as long as possible. The financial and human resources from the business are utilised in supporting its environmental missions, such as from expanding its grassroots environmental conservation efforts to improve local environments into larger impacts to assist capacity building and advocacy to bring about more long-term changes. Moreover, the community it is forming to connect individuals with the issues they are passionate about creates spaces for collective efforts aimed at long-term movements to bring about transformational change in society.

Nevertheless, collecting accurate data to monitor its consumption of resources and the positive impact of its environmental efforts is a challenge, as the grassroots organisations it supports through grants lack the capacity to measure their own impact due to their small scale.

SCALABILITY

The company has grown its business over the past 45 years, and as of 2017 attracts an estimated 750 million USD in revenue. In line with its mission of producing the best while considering the environment, it is currently expanding from apparel into organic food, with the aim of changing the food industry. This it intends to achieve by bringing about a rethinking of the supply chain, to connect people with the sources of the food they consume. This movement in building efforts can inspire and empower more communities and individuals to scale-up Patagonia's efforts to achieve its environmental mission.



Other businesses in the fashion industry are also committed to sustainability as a core component. Filippa K, a Swedish fashion brand, has been attempting to minimise harm to the environment in its production processes and make fabrics and products that can last a long time through efforts in designing, repair, recycling, and rental practices. Its motto “7 Pieces Is All You Need” encourages customers to create 18 different styles using seven key pieces of clothing to embrace the idea of “simplicity-as-luxury”. The company also supports and encourages new legislation to collect unwanted clothes in stores to extend the life of used clothes. Through joining the Global Fashion Agenda, Filippa K signed the 2020 Circular Fashion System Commitment, which is a commitment to implement circular design, i.e., collecting and reselling used garments and recycling used textile fibre ⁴.

Working with the United Nations, more and more fashion brands are starting to shift towards more sustainable production and consumption in the industry. The UN Climate Change organisation, along with the Italian Ministry of Environment and other partners regularly host Green Fashion Week to demonstrate more sustainable business models the industry can achieve, and during the UN Climate Change Conference in 2017 in Bonn, Germany, the industry announced its plans in support of the Paris Agreement goals ⁵.

WAY FORWARD

The company's commitment to its environmental mission has made it an inspirational leader on how business can act as a powerful instrument in support of the sustainable transition. Yet whether its business model will be replicated or adopted by other companies in the fashion industry remains to be seen. In the meantime, the case of Patagonia demonstrates how a business can act as a powerful instrument towards sustainability through its resources and platforms with the consumers.



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CASE STUDY

RIZOMA FIELD SCHOOL



URUGUAY



IN SHORT

Initiated by an American family who immigrated to rural Uruguay in order to demonstrate the possibility of living a life of high wellbeing in harmony with nature, the Rizoma Field School was established to pair ideas with experiences in order to facilitate meaningful long-term changes in thinking and behaviour of undergraduate students. The ultimate goal is for students to leave Rizoma not indoctrinated with philosophies, but with an intellectual and experiential toolkit with which to take to their part of the world and their life's work. Rather than viewing the Global North as a model for the rest of the world to follow, the Rizoma Field School aims to demonstrate that many of the answers to living sustainably can be found in the Global South.

OVERVIEW

After being inspired by her studies in international development and environmental sociology, Ashley Colby and her husband Patrick Fitzgerald moved to Uruguay in order to establish the Rizoma Field School. They purchased a plot of land in 2012 and are learning to cultivate it over a period of several years, after which the school started partnering with universities in the United States in 2017 to bring students to the field school in order to learn and directly experience a more sustainable way of living. Students learn both from the practices of Ashley and Patrick as well as local practitioners of agroecology, earth building, and rotational grazing.

Uruguay was chosen due to its culture of closeness to the land but also its ability to maintain a high wellbeing for its population. Due to the cost of resources such as energy and consumer goods being higher relative to incomes than in the United States, Uruguay has developed a culture of recycling and sharing. With the predicted disruption from climate change in the coming decades, societies such as Uruguay which can achieve high wellbeing despite limited resources are more likely to be resilient and prosper.



SETTING UP THE FARM IN URUGUAY

The farm is located on the southern coast in a rural area around two hours from the capital of Montevideo by bus. The nearest town is Nueva Helvecia, a small town with a population of around 10,000 which is accessible by bus twice a day. The farm is around nine acres with both a large plot of land available for growing food but also sufficient woodland to enable an ecological farm school to be established on the property for children under 18, based on the model of forest schools. Forest schools aim to expose their students to the natural world in order to help them develop bonds with it. Much of the education is undertaken outside and the children are encouraged to engage in self-directed learning and mutual support, with the teachers adopting a supportive role.

In setting up the farm, the family has undertaken a learning by doing approach. This has involved understanding how to grow their own food and raise chickens and beef cattle (they plan on becoming self-sufficient in food production), setting up on-site sanitation and grey water systems, and solar water heating amongst others. The family has relied on co-operation with the local community, which they have found to be very helpful and open. As the family is pursuing lifestyle changes informed by local practices, it has been relatively easy for them to integrate and the local people have been able to advise and assist on establishing the farm. The approach the family uses in farming is agroecology and permaculture, which emphasises understanding and growing in-line with the local environment and often results in intercropping a variety of produce, as well as an organic approach. Although not referred to as such by the local farmers, much of the region where the family has settled follows this style of farming. The family is also pursuing a form of animal husbandry called Holistic Grazing Management, or the Savory Method, wherein particular grazing patterns are used to build up soil and sequester carbon.

DEVELOPING EDUCATIONAL OPPORTUNITIES

Alongside establishing the farm, attention was turned to creating a hub of learning and education. The purpose of the field school was threefold – forming a network of sustainability practitioners, learning from the sustainability of the poor, and promoting small-scale agroecology.

The aim is to find a way for humans to live well while making the Earth healthier and more habitable, both socially and ecologically. In the courses and projects classroom learning is melded with international field experience using a practical, questioning approach, such as: How do you set up a cyclical waste system and why is it important? How does social equality contribute to a resilient society? How do economic systems impact how we interact with nature? What are the ways in which our micro decisions scale-up and how do we consider those decisions in daily life? The school aims to address these questions through the lens of history, philosophy, literature, cinema, art, agriculture, sociology, and environmental studies, and plans to teach both theory and practice so that students may bring these principles to their corner of the world. Potential course offerings include Sustainability or Regeneration?, Globalisation and Social Movements, Sociology of Food and Agriculture, and Environmental Sociology. The ultimate goal is for students to leave Rizoma not indoctrinated with the philosophies of the teachers, but with an intellectual and experiential toolkit with which to take to their part of the world and their life's work.



PARTNERING WITH UNIVERSITIES, LOCAL BUSINESSES, AND ORGANISATIONS

The Field School has partnered with a variety of local partners including an organic farm (Centro Emmanuel Organic Farm), an experimental farm working on Savory Method grazing (La Cristina), local families that participate in a cooperative of agroecology producers (Red do Agroecologia), and earth builders (Construccion en Barro), including an Earthship Hotel in Colonia del Sacramento (Caliu Hotel). The family got to know local partners by making inquiries within the community as to who practices small-scale, sustainable or family agriculture, which opened up a network of practitioners who often are already tied together and working in unison.

Upon the arrival of student groups, the family spends the majority of its time visiting and working with this network of local practitioners. The community partners identify needs for manual labour, and the students learn by doing. Some of the projects students work on include: agroecology, small-scale infrastructure, or earth building, which can take the form of hand-weeding, digging holes for fence posts, or filling in walls with an earth-mud mixture.

Student groups typically consist of less than fourteen students. Rizoma has developed partnerships with several universities based on their needs or interest in international experience. The first group to arrive at the Field School was from the University of Idaho on an Alternative Service Break during the winter break 2017/18, which is a recurring programme. In 2019, Rizoma will host students from Ohio State University, and in 2020 from Washington State University. The purpose of the groups from Ohio State is non-accredited volunteer service work and Washington State is for accredited classwork on the topics of food, agriculture and sustainability.

IMPLEMENTATION AND ENABLERS

As detailed above, the family has been able to establish the farm and live off the land through a learning by doing approach with assistance from the local community. In establishing the school itself, both Ashley Colby and Patrick Fitzgerald have post-graduate degrees with Ashley having completed her PhD in Sociology and Patrick having an MA in Spanish Language and Culture. They also both have a broad background in the humanities with Ashley having previously studied Cinema and Media Studies and Patrick having a BA in Spanish Teaching. In total, their education has enabled them to create a broad curriculum underpinned with knowledge of pedagogical issues. While the land and home on their property is self-funded through personal finances accrued prior to their move to Uruguay, they are currently pursuing more formal funding sources to build educational infrastructure such as classrooms and eventually dormitories.

MEASUREMENT AND IMPACT

Rizoma measures through surveys, interviews and ongoing analysis the impact of work on both students and community partners with whom they work. The surveys evaluate based on several threads – student engagement, community acceptance, and continued interest from educational institutions in the Global North. Student engagement is primarily assessed through asking students, university administrators and community partners about their experience of the trip, and continued interest is assessed through whether universities continue to engage with Rizoma. Community acceptance is measured both by formal surveys, and through informal interviews and day-to-day discussions with local people. It is clear that Rizoma has achieved local acceptance due to the ongoing willingness of locals to assist and partner with them and has managed to demonstrate initial value to the universities through the repeat custom of the University of Idaho.

Rizoma Field School does not currently measure its overall carbon emissions either directly produced by Rizoma or by students when they travel to and from the school. Given the amount of flying visits involved Rizoma is likely to be carbon positive, despite the efforts to sequester carbon through agricultural techniques. Nevertheless, such emissions could be offset if Rizoma Field School is able to inspire behavioural change in the students who visit, which would involve follow-up questionnaires at regular intervals after the return of the students to the United States. However, Rizoma does not currently have the resources to undertake this.

SCALABILITY

The school is starting to scale both locally and internationally through working with local and international partners. It is clear from that the concept would be replicable in similar contexts in terms of establishing a farm and school and inviting students from the Global North to attend. It is also replicable in demonstrating that a rural lifestyle does not need to be viewed as an unpleasant way of living or inferior to urban life. However, there are limits to the number of people who might be able to pursue this model, be it either as a farm/school concept or as simple sufficiency living. Moreover, Rizoma is dependent on its environment – although Uruguay is a part of the Global South, its gross domestic product per capita in purchasing power parity is similar to that of Turkey, Malaysia, Poland and similar countries, and as such it is at a level of development that makes adaptation to the local country much easier than it would be in a least developed country.

LESSONS LEARNED

The long term goal for the growth of Rizoma Field School is the export of this model of education and activism. It plans to develop a highly replicable template that can be shared horizontally through a network of organisations also looking to develop a sustainable future, in both the Global South and the North. The proposed means to achieve this is via fostering partnerships with other individuals working in this area to develop such a model. In the near term the school aims to work with other organisations working toward regenerative futures.



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CASE STUDY

SIDEWALK TORONTO



SUMMARY

Sidewalk Toronto is an ambitious experiment aiming to design a post-industrial urban district that utilises hi-tech solutions to improve the lives of residents and visitors. It aims to create a global hub for urban innovation in Toronto's Quayside district. The project is experimenting with innovative solutions to the challenges of urban growth, particularly affordability, mobility, and environmental and economic sustainability. In each of these areas, Sidewalk Toronto is working to achieve new global standards by combining technology with people-centred urban design. The project is currently in its first year and is primarily focused on public consultations and solidifying its Master Innovation and Development Plan. Sidewalk Toronto is a partnership between Alphabet Inc.'s Sidewalk Labs and the tri-government agency Waterfront Toronto.

GENERAL OVERVIEW

In October 2017 Alphabet Inc.'s Sidewalk Labs announced a partnership with Waterfront Toronto to jointly develop a section of Toronto's eastern waterfront – Quayside – into an innovative, post-industrial, mixed-use complete community. The resulting development project is called Sidewalk Toronto and is located at Quayside, part of Toronto's Parliament Slip district. It aims to leverage innovative digital technology and urban design to create neighbourhoods that combine affordability, economic opportunity, mobility, and sustainability. Designing people-centred neighbourhoods is a core objective of the project and has featured strongly in the planning and consultation processes to date.

Sidewalk Toronto has committed to developing affordable housing to address the pressures placed on existing housing stock by rapid urban growth, and its current plans include providing over a thousand below-market price housing units. To expand economic opportunities, the project is focused on creating innovation spaces designed to attract technology and urban design firms. Multi-modal transportation is built-into the current development plan, including connections for light rail, metro, cycling, and walking corridors, and there are also plans to test technologies for the deployment of driverless cars. Sustainability is incorporated into all aspects of the project, one example being the sole use of engineered, or 'mass' timber which is structurally as strong and fire-resistant as steel, for all building construction, which lowers the carbon and ecological footprints of construction projects.¹

Sidewalk Labs is an urban innovation organisation created in 2015 by Alphabet Inc., Google's parent company, and is tasked with addressing the challenges posed by urban growth related sustainability, economic success, transportation, and affordability². Waterfront Toronto is a joint venture between the Government of Canada, Province of Ontario, and the City of Toronto and was founded in 2001 to head the renewal of Toronto's waterfront district. Its stated objectives are to create in the city's waterfront a "world-class archetype of post-industrial innovative urban development."³

SIDEWALK TORONTO'S OBJECTIVES

Sidewalk Toronto has four core objectives. First, it aims to develop a complete community that addresses the needs of residents, visitors, and workers. Second, Quayside is being designed as a space for companies, local organisations, people, and start-ups to experiment and develop solutions to the challenges posed by urban growth. Third, Sidewalk Toronto is working to make Toronto a global hub for urban innovation. Fourth, and finally, Quayside is to serve as a model of what a sustainable neighbourhood can be for cities around the world.⁴



THE FIRST YEAR

Over the course of 2018, Sidewalk Toronto has pursued extensive public and stakeholder engagement across Toronto, such as through public talks and roundtables, neighbourhood meetings, pop-up stations, design jams, civic labs, and a fellowship programme. The results of these activities will help shape Sidewalk Toronto's Master Innovation and Development Plan in 2019. Input that helps guide public policy as well as predict and adapt to regulatory impacts will be of particular value. The Master Innovation and Development Plan will then be subject to approval by the boards of Sidewalk Toronto and Waterfront Toronto and will require extensive multi-level government approvals. Additionally, Sidewalk Toronto has created a citizen's Reference Panel, comprising 36 volunteer residents from across the city, which is to meet six times over the first year of activity to examine progress to date and provide input on moving forward.⁵

SIDEWALK TORONTO: URBAN INNOVATION

At the heart of Sidewalk Toronto's vision of a future post-industrial city is innovation in the urban space. This ranges from new construction methods and flexible building designs to self-driving transit systems, emissions reducing infrastructure, and people-centred public spaces that remain vibrant year-round. To this end, the project has begun partnering with urban innovators in Toronto and launched its own set of pilot projects, some of which are detailed below.

The central experimental workspace for Sidewalk Toronto is called "307," and serves as the centre for the urban innovation teams working on these pilot projects. Internally, Sidewalk Toronto has gathered together technologists and urbanists to experiment with ways of improving urban life, and the resulting programmes may become components of Sidewalk Toronto through the Master Innovation and Development Plan. To open up the ideas being explored to Toronto residents, 307 is open once a week to the general public for feedback, inquiries, and tours as a key communications tool.⁶

PILOTING NEW IDEAS

The Dynamic Street

Sidewalk Toronto's first pilot project is focused on road infrastructure, specifically the need for paving solutions that are more environmentally friendly, easier to maintain, highly adaptable, and are fit for use by people of all ages and abilities. To answer this a hexagonal, modular paving system is currently under development at 307, which was chosen because hexagons distribute weight more evenly and thus lead to fewer potholes and longer lifespans, and also can be removed and replaced within minutes.

The Dynamic Street pilot also includes an experiment with embedded lighting. Hexagonal modules are being developed that integrate lights to delineate pedestrian crosswalks, bicycle lanes, pick-up zones, and other road features. Such embedded lighting could be adapted to mark changes in traffic flows during peak hours such as counter-flow lanes, or a set of lanes that closes to traffic in the evening to become a pedestrian-only plaza.

Plan Your Neighbourhood

Sidewalk Toronto makes use of design technology to experiment with neighbourhood planning. The approach used, called “generative design”, utilises powerful simulation technology to model the impacts of the built environment at all scales – from buildings to neighbourhoods and districts – on the natural environment. For example, greenhouse gas targets, density goals, the changes in shade during the day, and wind patterns can all be built into a neighbourhood design model to track expected impacts of a proposed development, which are run through computer simulations to test the proposed designs and provide feedback to guide project adaptations. Visitors to 307 can explore design choices using a generative design tool that models the impact of various urban features such as the orientation of streets and the number of parks in a given area. ⁷

Partnerships

The Bowery Project has partnered with Sidewalk Toronto to develop, maintain, create and implement programmes for Sidewalk Toronto’s Learning Garden at 307. The Learning garden opened in May 2018 and supports local foodbanks and restaurants and hosted a series of hands-on workshops through the summer. ⁸

Civic Tech Toronto partnered with Sidewalk Toronto over the summer of 2018 to host a weekly hack night. The sessions saw groups of programmers gather at 307 to work collaboratively on projects aiming to improve Toronto through technology, data, and design. Projects that have emerged from these hack nights include Democracy Kit, Women and Color, and Toronto Mesh. ⁹

Sidewalk Toronto has engaged the Scadding Court Community Centre to lead its Market 307 canteen. The Community Centre is well-known in Toronto for its innovative ideas and has convened vendors from the markets it hosts and the Newcomer Entrepreneurship Hub (a business incubator focused on assisting new Canadians to enter the workforce) to supply Market 307 with goods and services.

IMPLEMENTATION

Sidewalk Toronto was announced in 2017 and the project began activities in early 2018. The pre-existing Waterfront Toronto organisation has provided a significant level of support to Sidewalk Toronto from three levels of government.

Sidewalk Toronto’s public engagement activities have contributed significantly to local buy-in. Its first year of operation has seen dozens of neighbourhood meetings, including public talks, roundtables, design jams, and civics labs. One key feature is the Reference Panel, comprising 36 Toronto residents who meet regularly to review and provide input and feedback on Sidewalk Toronto activities. Panel members serve voluntarily and were selected through an invitation and interview process organised by Sidewalk Toronto in early 2018. ¹⁰

The project has received considerable media attention both within Toronto and across Canada. While much of the coverage has been positive, focusing on the innovation and sustainability aspects of Sidewalk Toronto, much criticism has surfaced too. Of particular concern is data privacy; since Sidewalk Toronto will make extensive use of digital technology, including data collection, many have expressed strong concerns over how personal data will be protected. ¹¹



SCALABILITY

While Sidewalk Toronto is bounded geographically to the Quayside development area, the principles at work in the district are generally applicable elsewhere. Indeed, many cities around the world, such as Singapore,¹² are experimenting with integrating new technologies and data-driven design technology in their urban planning. These experiences suggest that Sidewalk Toronto could very well expand beyond the bounds of Quayside, should it prove to be a success.

What remains to be seen in the case of Sidewalk Toronto are the results of its pilot projects and the full roll-out of its Master Innovation and Development Plan, which will provide better insights into the long-term viability and sustainability of the project.

MEASUREMENT

Measuring the impact and success of Sidewalk Toronto will be a complex process. To begin, carbon and other greenhouse gas emissions can be estimated using traditional methods used by cities around the world. Given that information and data technologies are central to Sidewalk Toronto's model, it is likely that tracking changes in material and energy throughputs can and will be built into the development plan.

Gaining insight into the more qualitative impacts of Sidewalk Toronto's activities may pose more of a challenge. Standard measures of well-being, including general levels of health, educational attainment, life expectancy, and income can be used to track approximate changes in well-being, but tracking subjective measures such as happiness will require surveys.

WAY FORWARD

The first year of Sidewalk Toronto's operations have laid the foundations for robust and continued public engagement on the project. Moving forward, Sidewalk Toronto needs to deepen public engagement and continue to respond to input from its many partners. It would also benefit from ongoing transparency in all its processes, which builds trust among stakeholders and the broader public.

As Sidewalk Toronto moves into its second year of operations and begins to solidify its Master Implementation and Development Plan it will need to address public concerns over data privacy. While much of the project's plans to date have been met with public approval, concerns over prospective handling of resident's personal data need to be addressed if the project is to continue gaining momentum.



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SUSTAINABLE LIFESTYLES POLICY AND PRACTICE: CHALLENGES AND WAY FORWARD

ANNEX: CASE STUDIES

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