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By Paola Trapani, Marie-Caroline Lefort, Ngaire Molyneux, Evangelia Papoutsaki and Gregor Steinhorn



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THE SUSTAINABLE WHĀNAU CHALLENGE 2016: A MULTI-FACTOR ASSESSMENT TOOL TO RANK LIFESTYLE SHIFTS TOWARDS SUSTAINABILITY BASED ON PREDICTED IMPACT

A report commissioned by the Kaipatiki Project under the innovate ITP Research Voucher Scheme.

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ABSTRACT

The report presents the results of collaborative research involving the Kaipatiki Project and an interdisciplinary pool of Unitec Institute of Technology researchers. In 2016 the Kaipatiki Project launched the second edition of the Auckland-wide Sustainable Whānau Challenge, an online challenge to spread the adoption of everyday life actions oriented towards a more sustainable lifestyle. The team of organisers had prepared a list of 17 daily actions from which participants could adopt a few for at least three weeks, spreading successes, frustrations, encouragement and suggestions on social networks. The organisers turned to Unitec to have the list of challenges ordered, from the highest to the lowest impact, considering them socially, environmentally and financially. The report presents the creation of a specific multifactorial evaluation tool, and the criteria used to assign a weighted score to the impact of each challenge, along with discussion of the resulting rankings.

PART ONE: ABOUT THE PROJECT

Introduction

In 2015, the Kaipatiki Project and EcoMatters launched the first edition of the Sustainable Whānau Challenge, an online challenge proposing Aucklanders pick up four challenges (out of a list of 18), to be adopted for at least twenty-one days for more sustainable households, and to report about their experience through social networks.

The next year, the programme manager and her team wanted to launch the second edition, this time with a clearer understanding of what challenges to promote first and foremost for the greatest impact on the reduction of the carbon footprint. The project team applied for a research voucher, sponsored by Unitec's Tūāpapa Rangahau, to receive a comprehensive evaluation from a multidisciplinary research group. This required the creation of a multi-factor assessment tool able to take into consideration the point of view of disciplines as diverse as design, business and environmental sciences.

Background

The Kaipatiki Project is an environmental centre located in Glenfield, on Auckland's North Shore, established in 1998. Since then, over 60,000 trees have been planted in local reserves. Their vision is about "Inspired people living in restored environments as part of a connected community," and their mission aims at "Regenerating the environment and connecting our communities" (Kaipatiki Project, n.d.). With the help of hundreds of volunteers in working bees, they carry

out projects to protect and restore the New Zealand native bush. However, their activity has expanded over time to include workshops and courses including composting, worm farming, small-scale sustainable gardening and flax weaving. They also grow native plants from local seeds, to sell.

The project was the first collaboration opportunity between the Kaipatiki Project and Unitec under the auspices of the then Metro Research Voucher Scheme (now the innovate ITP Research Voucher Scheme). This report presents the results of this collaboration.

Research process

The starting point of the project was the launch of the Research Voucher Scheme as an initiative promoted by Innovate ITP, which is the network of the six largest polytechnics and institutes of technology in New Zealand. The research voucher is a concrete measure to fill the gap between the research needs expressed by commercial companies, industries and communities, and the research skills and capabilities available through the ITP network. The collaboration on strategic projects is a win-win strategy: the applicant can outsource research needs instead of having to create costly in-house capabilities; and the research institution can stay in direct contact with emerging market needs, and deliver research-informed programmes to national and international students.

When the Kaipatiki Project/Environment Centre of the North Shore applied successfully to the voucher scheme, they indicated Unitec as the preferred partner in answering their research question. In the beginning, the Environment Centre got in contact with Unitec's Tūāpapa Rangahau, the centralised research office in charge of delivering research credits to external partners. The research partner at Unitec, after a briefing meeting with the Kaipatiki team, put in place a research team. The multidisciplinary approach was meant to evaluate a casual and random list of 17 challenges, from which Aucklanders could adopt their preferred four, for at least three weeks, to make a real shift toward a more sustainable lifestyle.

The mix of competencies available in the research team reflects the definition of sustainability established in 2005 by the United Nations. At that time, the UN World Summit had identified that sustainability has social, economic and environmental/ecological pillars (United Nations General Assembly, 2005). Each of these three pillars is closely related to lifestyles, and together they provide useful indicators of their level of sustainability. The three pillars are also interdependent (Gibson, 2006) and the real challenge is

to move towards innovative, sustainable lifestyles which provide mutual support to all aspects of sustainability.

Using the UN's definition of sustainability (United Nations General Assembly, 2005), the criteria for ranking the Whānau Challenge practices considered three main areas:

People. This area aims to apply a design perspective to investigate:

- What actions come more naturally to people to adopt?
- Which ones already have a high baseline penetration in society and which ones don't?
- What are the main motivational drivers for behavioural change?
- Which ones are easier to achieve, and which ones are harder?
- Is it likely that a change could be sustained over a longer period?

Economics. This area aims to apply a business perspective to investigate:

- Will this action cost people money or help them save it?
- Are there investment costs that could make this sustainability action unattractive?
- What are the larger economic effects to society?

Environment. This area aims to apply an environmental sciences perspective to investigate:

- What is the environmental effect of this action?
- How much energy/water/carbon dioxide/pollution is saved/mitigated?

Due to budget and timeframe constraints, it was clear that it would not have been possible to conduct primary research actions involving participants (e.g., interviews, focus groups, or ethnographic research, etc.) Rather, a desk research survey was conducted into the most recent relevant literature in the above fields. The ultimate goal was to construct a common ranking tool aimed at ordering the practices in a negotiated manner between experts in the three areas, taking into consideration the specific aspects of the Auckland region.

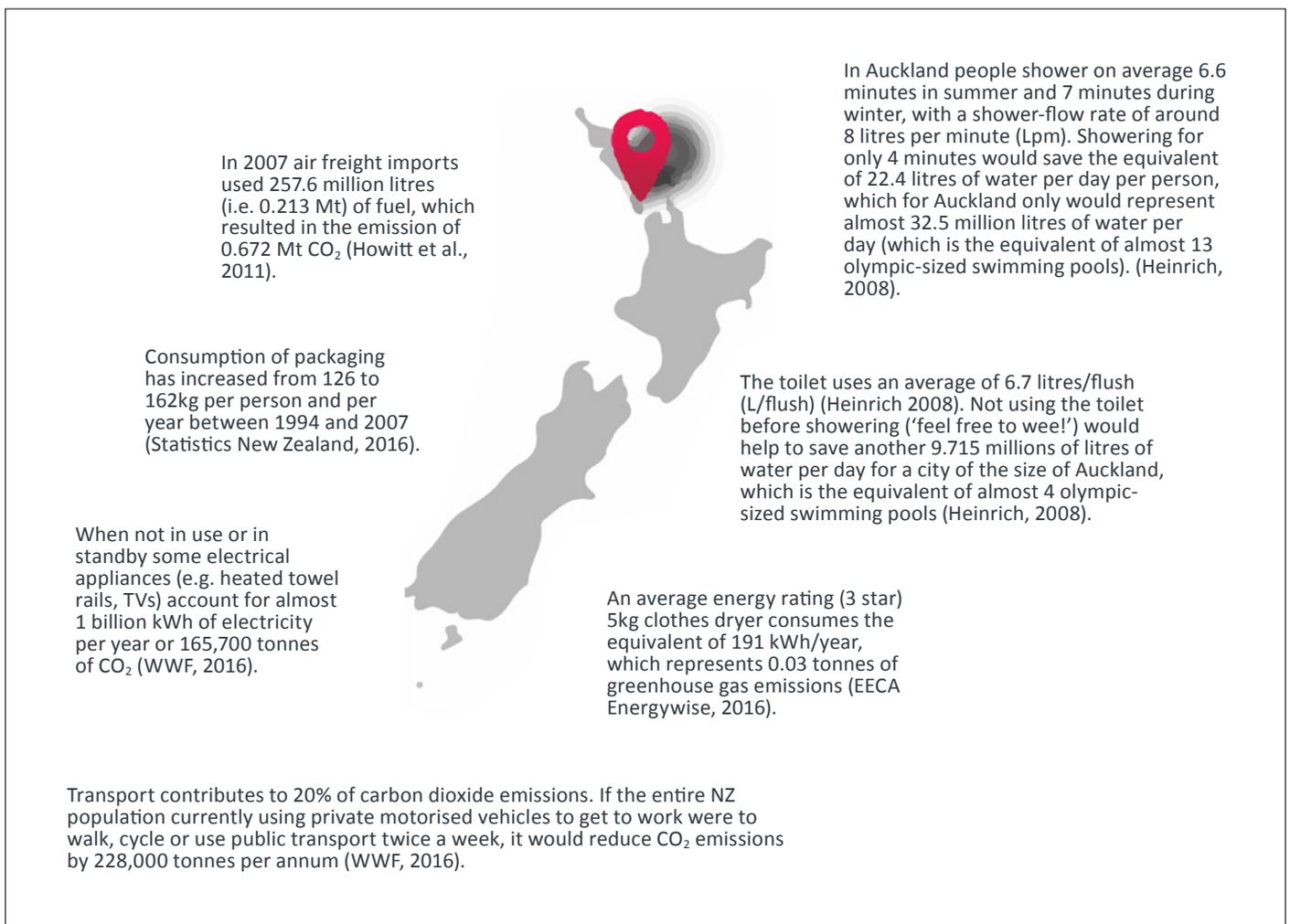


Figure 1. Unsustainability of current lifestyles and consumption patterns in New Zealand.

PART TWO: CONCEPTUAL AND THEORETICAL FRAMEWORK

Defining sustainable lifestyle

It is necessary here to clarify exactly what is meant by lifestyle and sustainable lifestyle. The European social platform SPREAD provides robust definitions of those terms, which seem applicable to our context.

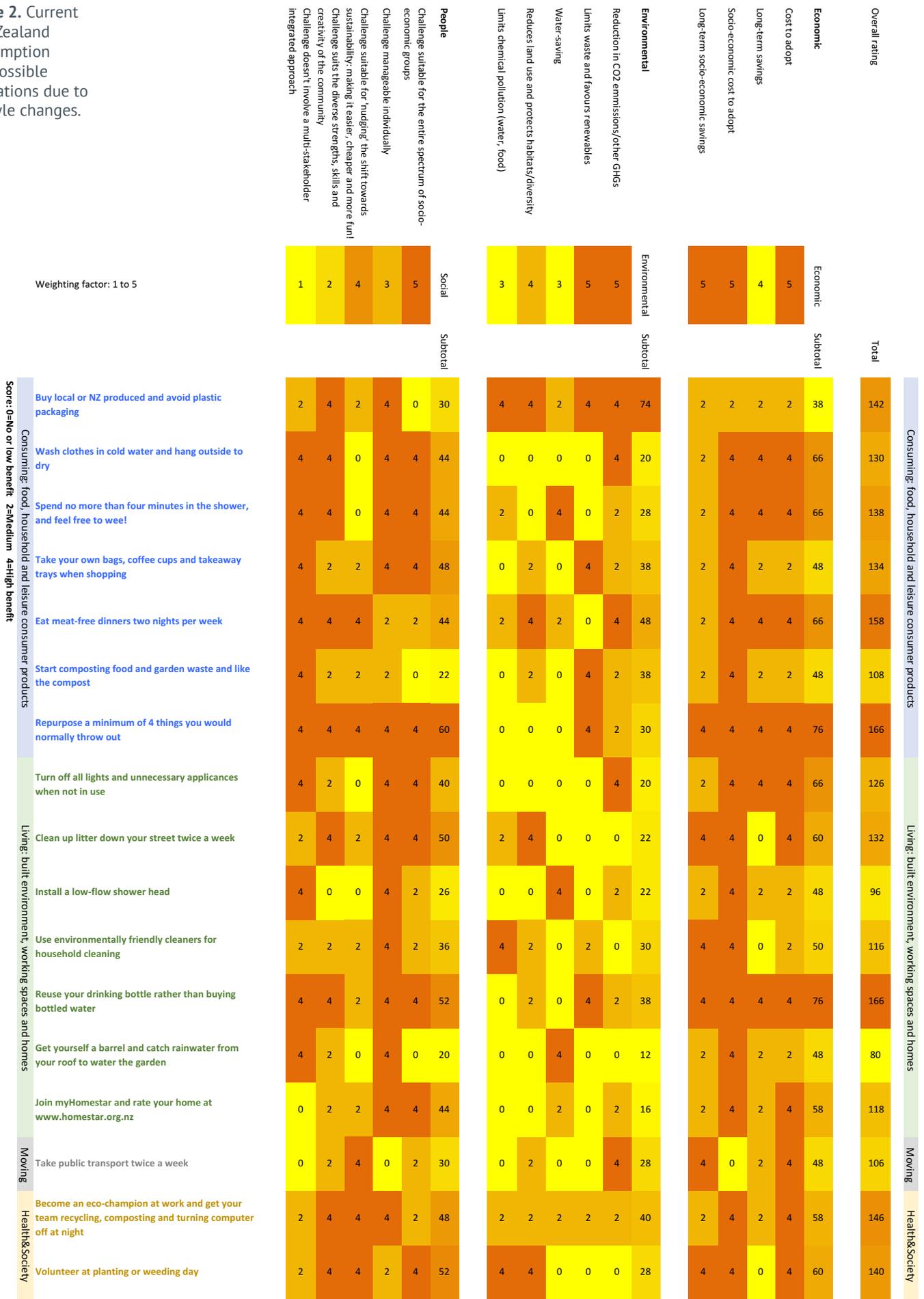
Lifestyles refer to the way we live our lives that allow us to fulfil our needs and aspirations. They serve as “social conversations,” in which people signal their social position and psychological aspirations to others. Since many of the signals are mediated by goods, lifestyles are closely linked to material and resource flows in the society. (SPREAD, 2011-12, p. 9)

Lifestyles are linked to people’s identity. The way we choose, use and display our belongings has a symbolic value, which allows us to express ourselves and our

connections to a particular social group or class (Edgar & Sedgwick, 1999). For this reason, lifestyles can be seen as “social conversations” through which we associate or distinguish ourselves from others (SPREAD, 2011-12, p. 19). Our display modes are related to how we grew up, what we learnt and what we like. For example, we might buy the same food and follow the same recipes as our grandmother, or vacation with the same group of friends.

Lifestyles are influenced by intangible factors such as values, manners and education. However, on a concrete level, they inform our daily routines, such as showering, cooking, working, caring for others, watching TV, driving or shopping. Even the things we do less often, such as buying a refrigerator or a car, having a party, going to the cinema or on vacation should be considered lifestyle-driven. Therefore, they also determine products, services and infrastructures that enable those daily or occasional practices. Cooking a meal, for example, involves several production and distribution systems, including those

Figure 2. Current New Zealand consumption and possible mitigations due to lifestyle changes.



of food, kitchenware and energy:

Sustainable lifestyles refer to patterns of action and consumption, used by people to affiliate and differentiate themselves from others, which meet basic needs, provide a better quality of life, minimise the use of natural resources and emissions of waste and pollutants over the life cycle, do not jeopardise the needs of future generations.

Sustainable lifestyles reflect specific cultural, natural, economic and social heritage of each society. (SPREAD, 2011-12, p. 9)

Social sustainability includes equity and security, diversity and social cohesion, health and wellbeing. It aims to ensure a democratic access to social resources (SPREAD, 2011-12).

Economic sustainability involves the efficiency of resources, as well as viable financial models targeted not only to meet people's current needs, but also to ensure the same for future generations (SPREAD, 2011-12).

Environmental sustainability pertains to the impact of human production and consumption. In other words, environmental sustainability refers to "the ability to maintain things or qualities that are valued in the physical environment" (Sutton, 2004, p. 1), such as preserving native species habitats, avoiding the discharge of chemical and of any other type of material into the environment, or limiting the emission of greenhouses gases (GHG) into the atmosphere. Protecting the environment from the negative effects of our current behaviour is the only way to secure the survival of future generations.

Emerging trends

Despite the continuing prevalence of unsustainable lifestyles, a growing number of people are aspiring to implement changes in their lifestyle to improve sustainability for themselves and the wider society. The SPREAD research reports some examples (SPREAD, 2011-12, p.43):

- We witness a trend towards more efficient consumptions (wasting less), different consumptions, (preferring high-quality goods and services) and sufficient consumptions (reducing material consumption).
- Collaborative consumption (e. g. sharing, exchanging, trading, etc.) reveals another important shift in attitudes: instead of goods ownership it is preferred the access to the corresponding functions only when necessary; instead of being passive consumers becoming co-producers of goods and services (like in urban agriculture) seems more appealing.

- The ability of households to save energy makes the necessary investments attractive, with a consequent growing awareness and willingness to move towards more sustainable ways of living.
- Cities and municipalities are supporting the transition to a multi-modal mobility that combines walking, cycling, and public transport, with a marked preference for electric vehicles.
- Communities value participatory approaches to governance of the city, such as in Eco-Municipalities and Transition Towns.
- Health, equity and well-being lead to a review of the way we live, eat and move.

Among the above trends, the European researchers have chosen to examine in detail four key lifestyle impact areas:

- Consuming: food, household, and leisure consumer products
- Living: built environment and working spaces and homes
- Moving: individual mobility and transport
- Health and society: health, well-being, ageing and equity.

Challenges and opportunities in the four strategic areas of sustainable lifestyles

This section outlines key challenges within each identified lifestyle area and explores what is fostering or holding back change in Europe. We believe that it provides an example that is usefully applicable to the New Zealand context.

Scaling up the transition toward sustainable lifestyles

The big question about how to enable large-scale transition to sustainable lifestyles remains a conundrum. Two important areas for further investigation are: a) the understanding of how change in individual behaviour originates and how to support it; and b) the creation of enabling environments and infrastructures that stimulate and foster more sustainable ways of living.

To address these issues, it is important to acknowledge the concepts of *diversity* and *context dependency*. Unfortunately, the most common strategies to stimulate sustainable behaviours rarely recognise the different needs, desires and motivations of individuals. Strategies tend to establish a direct one-to-one correspondence between issues and solutions, and often focus on technological innovation or policies in isolation. The initiatives often point to a separate

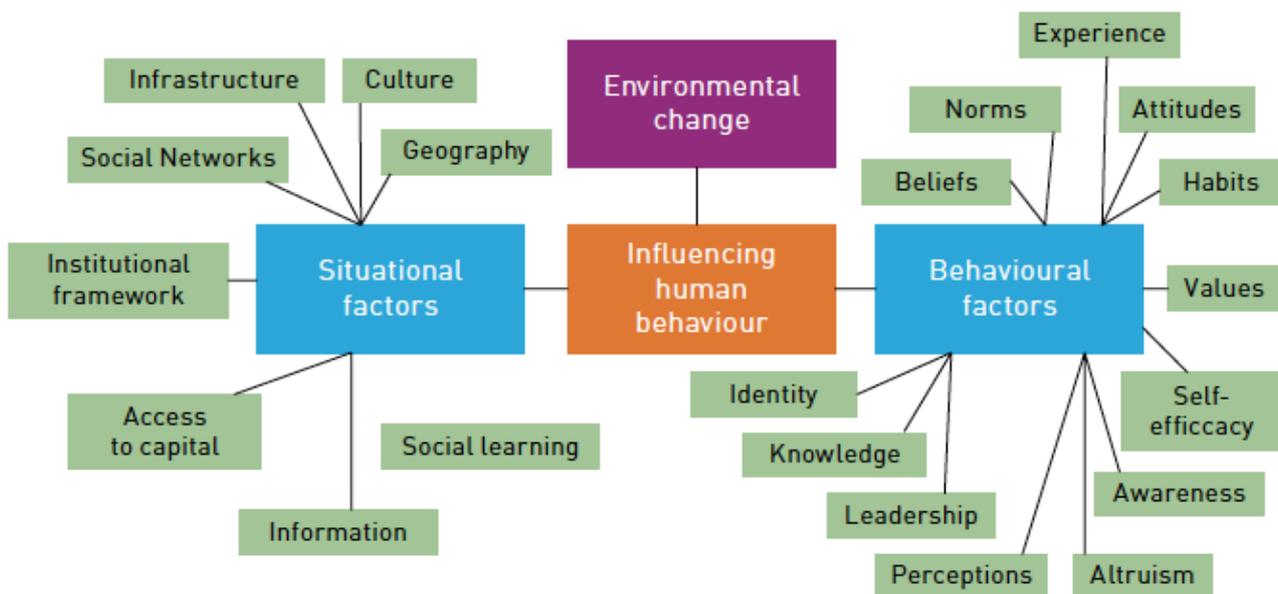


Figure 3. SPREAD Sustainable Lifestyles baseline report (2011-12), p. 23.

sphere, for instance, the public sector or families, without considering the compromises that are necessary for people to pursue sustainable ways of producing, working or living. Successful change behaviour depends on the appreciation of people and lifestyle diversity, and the real opportunity to access sustainable lifestyle options.

From definitions to practical application

It is difficult to calculate the impact of sustainability problems such as global climate change, deforestation, water stress and loss of biodiversity on our daily lives and the decisions we make. There are many factors that contribute to human behaviours and lifestyles (Figure 3).

The number of factors at play makes evident the impossibility of finding a unique response to very broad questions. It seems impossible to establish a one-to-one relationship of cause and effect between factors and challenges. One factor may facilitate or impede several challenges, and a challenge could be triggered or stopped by other factors. To make things even more complicated, it is possible to discover relationships between the challenges themselves, for instance observing that on those days of the week when people go car-free, it is particularly tough to stay also meat-free. However, this could be true for some people and not for others. Continuing to add relationships (and exceptions to the relationship) between factors and challenges, the already complicated problem becomes rapidly more complex, even apparently wicked.

A reasonable method to address these questions could be to reverse the approach and start from the strengths of the

project team. If, for instance, the project team is highly capable of managing processes of social learning, it would be worth trying to understand which challenges are more suitable to spread around through social learning activities, and assign them a high score in the ranking. However, this approach could be unsatisfactory, according to the paradigm of human-centred design – it wouldn't revolve around the needs of the community participating in the Whānau Challenge but, rather, around the skills of the project team (IDEO, 2015). A better way could be to start from the strengths, the skills and the diffuse creativity of the community. This knowledge, given the impossibility to interview people, should be based on the direct experience of the project team and the results of the challenge's past research.

We will return to these issues later in the paper in the section addressing the ranking methods and tool.

PART THREE: THE PROCESS

Key success factors

In the following paragraphs we report on insights extracted from the literature – in the three fields – in the form of *key success factors in shifting behaviours*, starting with considerations emerging from the literature (Manzini, 2015; SPREAD, 2011-12; Jégou & Manzini, 2008; Meroni, 2007) about *social sustainability*:

Changes towards sustainable lifestyles involve behavioural shifts in population segments characterised by different

levels of knowledge, awareness and motivation. Successful sustainability initiatives are those that go beyond the one-size-fits-all approach and try to motivate and activate change in different groups. Challenges that address the whole demographic spectrum got a weighting factor of five (out of five) because of their impact-magnitude.

The long-term change towards sustainable lifestyles can be achieved by making it easier, cheaper and more fun to make sustainable choices, through adequate infrastructure. An example is the concept of *nudging*: rather than compelling, it's better to incentivise people, which involves learning how they think and designing environments that incorporate or normalise sustainable choices. Nudging through various types of non-intrusive and non-coercive soft policies is an emerging trend in European decision-making. This criterion is weighted as four because people respond better to positive emotions (due to an encouragement or a reward) than to a punishment or a prohibition.

The current unsustainable behaviour is often 'locked-in' because of obsolete infrastructure and delivery systems, for example, in the sectors of transport, energy or waste management. We do not always have complete control over our lifestyles. Our choices may be blocked or influenced by the type of products/services or infrastructure available to us. Between policies, institutions, laws and regulations there are many high-level factors beyond our control. We could, for example, be eager to separate our organic waste, but the lack of municipal collection services drives us to continue to dispose of it in the bin of mixed waste. Challenges that are beyond personal control should rank low, as they can be only insufficiently impacted through personal actions. Therefore, this criterion has a weighting factor of three.

Research on the change processes highlights the need for a wide participation of all stakeholders, with a focus on end-users. The role of multi-level and multi-stakeholder integrated approaches is critical in creating supportive environments that facilitate sustainable lifestyles and long-term change. Practices that have the positive involvement of stakeholders at various levels should be included only if long-term change is desired, and even then in a low ranking position (weighting factor of one) due to their high complexity.

The five *environmental key success factors* identified for this project have been compiled from the scientific literature (Hansen et al., 2001; Whitmarsh, 2009; Godfray et al., 2010; Hanjra & Qureshi, 2010). These factors were then ranked and scored according to their relevance to the local community. Consequently, it is important to note that some factors considered highly relevant at the global scale in

environmental sustainability studies may score significantly lower in the present report due to local conditions in the Auckland region. Details of the environmental key factors and their respective scores are provided below.

Reducing CO₂ emissions and other GHGs: Gases that trap heat in the atmosphere and contribute to global warming and climate change, in general, are referred to as greenhouse gases, or GHGs (Ramanathan, 1988). The most important of them is carbon dioxide (CO₂), which enters the atmosphere through the combustion of fossil fuels such as coal, natural gas and oil, but also through that of solid waste and trees/wood products where the carbon is trapped (Benton-Short et al., 2013). A weighting factor of five (out of five) was attributed to these factors. The Auckland population is expected to reach 2 million by 2033 (Statistics New Zealand, 2016), and this growth will almost inevitably be accompanied by an increase in global consumption of resources and use of transport, and as a consequence in higher emission of GHGs. Limiting these emissions before they reach critical levels is therefore crucial for the future of Auckland as a sustainable city.

Limiting waste production and favouring the use of renewables: The main idea behind this principle is to eliminate persistent and harmful wastes and prevent their creation, by redesigning products and by changing societal patterns (Davidson, 2011). A weighting factor of five was also attributed to these factors.

Water savings: Because of continued population growth and increasing demands on water resources (Vörösmarty et al., 2000) this factor is incontestably one of the most frequently raised in global environmental sustainability studies. Nevertheless, sometimes, when water resources are seemingly non-depletable, the importance of this factor can be relegated to a secondary role. In Auckland, drinking water is collected from 27 water sources from dams, rivers and underground aquifers (Watercare, 2016), none of which is currently reported as under threat. Therefore, the available water-distribution networks and investments in them are the major limiting factor for Auckland, compared to the absolute water shortages found in many other parts of the world. For the above reason, a weighting factor of three has been attributed to this factor.

Reducing land use and protecting native habitats and biodiversity: The protection of a healthy environment encompasses the preservation of natural richness to ensure access to sustainable biological resources for future generations (e.g., clean air and water, and healthy soil). Furthermore, biodiversity not only shapes a country's character and cultural identity, but also provides recreational

and aesthetic benefits (Gobster et al., 2007). In New Zealand, where over 80,000 species are flagged as endemic (i.e., not present in any other country) (Ministry of the Environment, 2010), it appears vital to preserve their native habitats to prevent their disappearance. A weighting factor of four out of five was allocated to this fourth factor.

Limiting chemical pollution: In the present report, chemical pollution is considered in terms of air, water and soil contamination by toxic/harmful chemicals. In New Zealand, the overall burden of health effects resulting from air pollution is predominant in the larger urban areas, such as Auckland (Fisher et al., 2007). A weighting factor of three has been allocated to this last factor.

Economic key success factors

All of the key success factors outlined in the environmental and social sustainability sections above could also provide a platform for ultimately impacting positively on economic factors.

Additionally, the following two key success factors, as outlined in the Ministry of Business Innovation and Enterprise growth agenda, are relevant:

Firstly, developing a culture of community and working in collaboration (MBIE, 2015) by which collaborative initiatives can be discussed and developed. This should also help to develop a culture driven by core values (code of conduct) that would ensure wider communities are carrying out activities to drive a sustainable way of thinking and acting. This would also aid in evaluating and measuring outcomes from households and wider society, economic perspectives, and provide education to a wider group, education being another key success factor.

Secondly, education on how household actions impact on the wider community, through partnerships with government agencies and tertiary institutes. This would also impact on the educational economy, and could include sessions such as the following:

- How small changes such as switching off appliances and lights provide savings to individual households
- Medium-to-high investment results in high long-term savings
- Limiting waste production
- Developing sustainable gardens
- Saving on water usage by collecting water

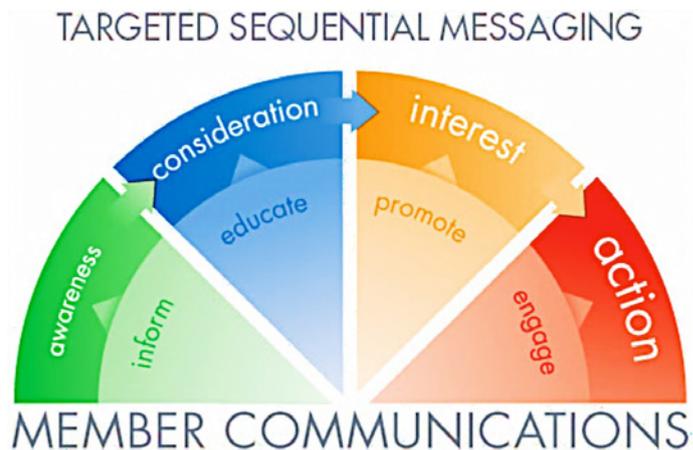


Figure 4: Targeted sequential messaging process (source: <https://www.membersfirst.com/images/process.jpg>).

Communicating Sustainability

As public awareness and concern about environmental issues increases, public communication plays an important role in building on citizens' needs to be more engaged in environmentally sustainable practices.

Any environmental campaign needs a well-developed communication strategy, not only to ensure all involved and potential stakeholders are well informed about the aims and objectives of the campaign, but also as a means of monitoring and evaluating how effectively the messages are communicated, how well the mechanisms of feedback are working, and to what extent behaviour change is taking place as a result of the initiative. (Coffman; 2002; 2003; Rice, Ronald & Atkin, 2001; UNEP. 2005; The Communications Network, 2008).

There are several elements involved in the design of environmental communication for behavioural and social change and they are all interdependent on what stage the initiative is at: awareness, consideration, interest and/or action (see Figure 4). Each requires a different approach. You cannot, for instance, call for action if you have not sufficiently raised awareness or interest.

Identify the target audience: Demographic characteristics; predispositions; social contexts.

Message design: Depending on what stage this campaign is at, consider the following: awareness; champions/supporters; constituency building; public will; policy change; level of participation of stakeholders in the process of message design; consultative participation; message design qualitative dimensions; credibility; engagement; relevance; understandability; motivation incentives; message design quantitative dissemination factors; total volumes of

messages; amount of repetition; prominence of placement; scheduling; length; message sources – Who is the messenger? How will it be delivered?

Message dissemination: Audience preference in receiving information.

Direct messaging: Campaigns achieve the strongest impact via triggering or reinforcing messages intended for people who are already favourably predisposed or are at risk (individual behaviour change).

Indirect messaging: Involves interpersonal communication and media advocacy by targeting opinion leaders and organisations that can influence people's behaviour, or individuals and communities that can put pressure on government and organisations. In order for public will to change, appropriate communication tools/media must be selected.

PART FOUR: IMPACT AND IMPLICATION FOR FURTHER RESEARCH

Ranking methods and tools

As already mentioned, the original intention of the Kaipatiki Project team was to receive support to evaluate the impact of the challenges, considering criteria from social, economic and environmental points of view.

The multi-disciplinary team of researchers provided a user-friendly assessment tool that the client would be able to adapt and reuse in the future. The 17 challenges were clustered into four groups (consuming, living, moving, health and society) taken from the SPREAD research. Each cluster has been color-coded in the ranking tool:

Consuming: food, household and leisure consumer products

- Buy local, or New Zealand-produced, and avoid plastic packaging
- Wash clothes in cold water and hang outside to dry
- Spend no more than four minutes in the shower, and feel free to wee!
- Provide your own bags, coffee cups, and takeaway trays when shopping
- Eat meat-free dinners two nights per week
- Start composting food and garden waste, and use the compost

- Use baking soda and vinegar for household cleaning
- Repurpose a minimum of four things you would normally throw out
- Install a low-flow shower head

Living: built environment, working spaces and homes

- Turn off all lights and unnecessary appliances when not in use
- Clean up litter down your street twice a week
- Install a low-flow shower head
- Reuse your drink bottle rather than buying bottled water
- Get yourself a barrel and catch rainwater from your roof to water the garden
- Join myHomestar and rate your home for energy efficiency at www.homestar.org.nz

Moving: individual mobility and transport

- Go car-free at least two days a week

Health and society: health, wellbeing, ageing and equity

- Become an eco-champion at work. Get your team recycling, composting and turning computers off at night
- Volunteer at a planting or weeding day

On an Excel spreadsheet, each challenge category with relative challenges is entered into the columns. Key success factors are entered into the rows and are weighted based on their level of importance in the North Shore context. Challenges can be then rated against the success factors, yielding weighted scores. Weighted averages can then be calculated, highlighting the categories that are most important and most feasible for the community to explore.

Discussion

The multidisciplinary research team convened to negotiate the scores to be entered into the spreadsheet. The use of the matrix aimed to avoid discipline-specific considerations that might lead to conclusions valid for one pillar and not for the others. That said, the actual scores resulted from discussion between the researchers, and it is possible, and even desirable, that the Kaipatiki Project staff will adapt the assessment tool in the future to establish their own ranking based on local considerations.

Outlined below is further information on the rankings of the challenge categories and actions undertaken according to the three pillars:

Consuming: food, household and leisure consumer products:

Buying New Zealand-produced goods has a huge impact on the environment, although it is not always a realistic option for many households. From a social and economic perspective, the cost to adopt this is still relatively high, however the long-term sustainable savings for the wider community are higher. This is due to material and labour-cost savings, buying local, and boosting the local economy with such things as farmers markets and gala days. According to the Auckland City Council Demographic report card for Kaipatiki (2014), there are 8200 businesses in the region, with 25,000 employees and 27 schools in the catchment area (Auckland City, 2014). Furthermore, there is a lot of available growing land and good infrastructure for distribution in the Kaipatiki region. The primary agricultural industries, food producers in particular, are well established and provide a great deal of resources.

According to the Ministry of Business Innovation and Employment Business Growth Agenda, there is strong evidence that shows that with more efficient land and resource use, and by drawing on our freshwater, marine and aquaculture resources, the region will reap immense benefits (MBIE, 2015). However, for households, buying New Zealand-produced goods could prove to be more costly with regards to certain products, in which case the long-term savings of this are minimal. In some cases, the supply of New Zealand-made consumer goods is limited or non-existent, for example electronics, entertainment systems, shoes and clothing.

From a household perspective, the cost of avoiding the use of plastic packaging is nil-to-minimal, although it can dramatically reduce the emissions of CO₂ and other GHG gases, and is more about changing what has become second nature to people. From a social, economic perspective, the investment cost is low, and the long-term savings are high, particularly due to the savings on landfill capacity and the protection of biodiversity.

There is low-to-nil cost, from both household and social, economic perspectives, to washing clothes in cold water and hanging them outside to dry, however the long-term savings for both are high, given the energy saving of not using hot water or a dryer. There may be a small cost associated with the time and inconvenience of physically hanging washing out; also, it rains frequently in Auckland, so a covered site would be preferable. The impact on the environment from not using dryers and water heating will result in high long-term benefits. It is a change in habits that can be adopted by the entire spectrum of socio-economic groups, although it excludes the growing group of inner-city apartment dwellers.

Spending less time in the shower is easy to do, is entirely in the control of the individual, and can result in high long-term savings in water use, wastewater and electricity or natural gas, among other things. It must be taken into account that circumstances are different, for example it may be unrealistic for people with disabilities and the elderly to take short showers.

Ensuring the installation of low-flow showerheads and urban tanks to save and catch rainwater involves some investment but has significant long-term benefits in terms of reduction in household water bills. This has a very positive benefit from a social perspective regarding water saving, but it is also about environmental factors, even though we have plenty of water in Auckland at present. With continued strong population growth in Auckland, the environmental effect of water saving could become even more important in the future.

Cutting back on meat consumption has a significant effect on the reduction of CO₂ and the protection of biodiversity, has low adoption costs and could mean long-term potential savings due to the high cost of red meat – and there could be benefits from refocusing on the quality of meat that is consumed. Research has suggested a link between red meat consumption and an increased risk of bowel cancer (Harvard Medical School, 2008), but from a wider social perspective, cutting out meat could impact negatively on the economy given that most meat eaten in New Zealand is produced here (MBIE, 2015). It is a change in diet that can inspire the creativity of cooks and the exchange of meat-free recipes on social networks.

Composting food and garden waste has a very positive impact on the environment, households and society, but is dependent on living spaces being adapted. There are small set-up costs associated with adopting composting, such as obtaining containers and bins, but there are long-term savings possible in terms of growing more and better produce, and reducing waste. However, if gardening increased substantially, this could have a negative impact on the local economy such as the production and sale of vegetables in the area.

Living: built environment and working spaces and homes:

Turning off lights and appliances when not in use is a very simple action for households to take, with positive benefits in savings and for the environment. From a wider perspective, organisations can make financial savings by simply switching computers and lights off, or investing in upgrades to replace out-dated equipment that is not energy efficient. Many businesses and organisations are required to implement sustainable practices within their daily operations and provide evidence of social responsibility.

Moving: individual mobility and transport:

With the purchase of over 800 new cars a week being reported, many Aucklanders may soon see this as unsustainable, and decide to go car-free. The current high car-use in the area brings with it traffic congestion, fuel costs, environmental impacts of high carbon monoxide emissions, the need for infrastructure development, and the impending reality of motorway tolls. This dependence on motor vehicles has an extremely high economic impact on households and the wider community (MBIE, 2015) and on the environment. Challenges to change this could be spread around social networks to great ends via initiatives like the Bike Challenge organised every year by Auckland Transport.

Monitoring and evaluation

Process

What messages were communicated to how many people, where and how often? Management of information dissemination and feedback mechanisms; website traffic, online feedback; attendees at events and quality of public information/communication exchange.

Type of media

Media relations, visibility, interactions, coverage and effectiveness of spokesperson; public opinion survey for

awareness levels; demand for more information by media and the public; quality of communication exchanges with audience.

Outcome: any change in people's behaviours/attitudes

Awareness; salience (believing in importance of message activity); attitudes/beliefs; self-efficacy; social norms; behaviour intention; behaviour change; impact on sustainable environmental practice objectives.

Conclusion

Overall, the examples above show that sustainable lifestyle changes have to be seen in their local geographic, social and economic context. The importance of some measures can be high in some regions while marginal in others. Furthermore, it is important to provide a sufficient range of lifestyle-change options to address the diversity of the participants of the Whānau Challenge programme. The described ranking tool is simple, but meaningful enough to aid in local community, environmental organisations and experts working together to foster conversations and decision-making around sustainable lifestyles in the local community.

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