

Nudging Towards Sustainability: Insights for Sustainable Consumption and Waste Management in Mombasa and Västernorrland

Jua Cilliers



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ISBN: 978-91-86725-68-6

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Abstract

This study explores nudging as a transformative tool for promoting sustainable consumption and waste management in Mombasa, Kenya and Västernorrland, Sweden. By a literature review and global best practice analysis to benchmark successful nudging interventions worldwide, the research gathered insights on the nuances, challenges, and tailored nudges, to offer actionable and evidence-based strategies for local governments. The study explains nudging in theory and contextualizes its application for real-world impact, for sustainability initiatives that are both effective and culturally resonant. Through this approach, the research bridges the gap between global knowledge and local implementation, and shows tailored nudging techniques that can significantly enhance sustainability efforts in diverse socio-cultural environments.

Acknowledgement

We acknowledge the support of the Swedish International Cooperation Agency Sida. We also thank Wandia Githui, Pauline Oginga, Abdul Salam and Affan Mohammed for their inputs, as well as the ICLD contact persons of the Mombasa and Västernorrland regions.

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Preface



By Johan Lilja, Secretary General, Swedish International Centre for Local Democracy

The mission of the Swedish International Centre for Local Democracy (ICLD) is to contribute to poverty reduction by promoting local democracy. Democratic reduction and adaptation to the effects of climate change is one crucial task for local governments. In order to support this, we promote and encourage decentralised cooperation through municipal partnerships programme; adding capacity-building through our international training programmes; and investing in relevant research and creating research networks that support democratic policy development and implementation. ICLD connects research and practice by publishing key lessons learned from our programmes, initiating and funding relevant research, connecting academicians with practitioners, and organising workshops. “Nudging for Sustainability” is the 24th report to be published in ICLD’s Working Paper series.

In sustainability, “nudging” bridges the sometime blurry and much debated areas of responsibility – what is on the individual and what should be subject to public governance? – as a governance approach to make the better choice for individuals the easier one. Nudging is not about adding or removing options, but strategically arranging the options to make the sustainable choice the simplest one. Perhaps it can therefore help surpassing blame games and inaction and help tackle climate change more holistically. This paper explains the theoretic foundations of nudging as a practice and proceed to suggest concrete action on different scales. The focus on two widely different contexts allows for inspiration for a multitude of local governments – you are sure to recognize your own context in some of the features or reflect on how your own home differs.

It is an example of needs-based research. The report answers directly to a request for support by Mombasa City Council and Region Västernorrland, in their joint endeavour to improve and upscale their democratic sustainability efforts. We hosted a Local Democracy Lab to facilitate a discussion between municipal officers and academic scholars, whom, afterwards, were invited to elaborate the advice in a referenced, structured document. This report and the associated policy brief are the results of this process, and a prime example of how ICLD’s Knowledge Centre connects research and practice for more informed decision-making and democratic governance.

My genuine opinion is; to fight poverty and reach the ambitious goals set out by Agenda 2030, change must be anchored at the local level through data-driven, community-based improvements in means of equity, transparency, participation, and accountability. At ICLD we will continue to support local governments to be brave enough ask complex questions, to learn, and to fill the identified gaps. I hope this report can inspire and inform local policymakers to be creative, innovative and partner with their residents for a just, equitable and sustainable transition to a greener society.

Visby, Sweden

A handwritten signature in blue ink, appearing to read 'Johan Lilja', written over a light blue horizontal line.

Johan Lilja,
Secretary General, ICLD
June 2024

About the Author



Jua Cilliers is the Head of the School of Built Environment, and Professor of Urban Planning at the University of Technology Sydney in Australia. She is the President of the Commonwealth Association of Planners and has over two decades experience as Professional Urban Planner, with professional registrations from both the South African Council for Planners and the Planning Institute of Australia. With experience as chief investigator across Africa, Europe and Australia, Jua is unwaveringly committed to driving real change, shaping the future of our cities, and empowering the leaders who will inherit them.

Introduction and research problem

Human behavior is a significant driver of many environmental challenges, with the cumulative effects of individual and household decisions severely impacting biodiversity and ecosystem health (Byerly et al., 2018). Sustainable consumption and waste management are two cornerstones of modern urban development, especially as cities deal with escalating environmental challenges. While there is a general understanding of the importance of sustainable practices, a significant challenge lies in translating this awareness into actionable behavior at the community level.

In the heart of this conundrum is the realization that traditional methods of policy implementation, such as regulations and incentives, while essential, often fall short in ensuring consistent behavioral change. This is where the concept of ‘nudging’ becomes highly relevant. Rooted in behavioral economics, nudging offers a subtle approach to influencing decision-making by altering the environment in which choices are made.

Effective nudging, rooted in transparency, complements regulatory measures and economic incentives by helping citizens better understand policy objectives and the reasoning behind specific interventions. Rather than replacing mandates or financial incentives, nudging serves as an additional tool to engage an informed citizenry, encouraging active participation in local governance and reinforcing democratic practices. Nudging respects individual freedoms and choices. By offering gentle guidance rather than mandates, local governments show respect for individual autonomy, and this empowers citizens to make choices that are both personally beneficial and in line with social norms.

Nudging interventions that work in one cultural or socio-economic context might, however, not necessarily be effective in another. For example, what works in a Scandinavian country like Sweden may not resonate in an African city like Mombasa, due to differences in social norms, values, and consumer behaviors. Factors like governmental structure,

administrative capabilities, and community engagement levels also play a significant role in the adaptability of nudging techniques. Given these complexities, the research seeks to understand how nudging can be effectively employed in the distinct contexts of Mombasa and Västernorrland. Both regions, while vastly different in their socio-cultural and administrative makeup, share a common goal of wanting to enhance sustainable consumption and waste management practices. The current partnership between Mombasa and Västernorrland¹ presents a unique opportunity to explore tailored nudging strategies that are both effective and context-based, but also culturally sensitive.

Aim and research questions

The aim of this research is to contextualize global best practices in nudging within the unique socio-cultural and administrative landscapes of Mombasa and Västernorrland, facilitating effective sustainable consumption and waste management approaches. It answers to the expressed request by these local governments to better understand how nudging can be leveraged to improve their practices in sustainability governance.

The research questions included:

- What does the theory of nudging entail?
- What are the most effective global practices for utilizing nudging techniques to promote sustainable consumption and waste management?
- How can these global best practices be adapted and successfully applied in the specific contexts of Mombasa and Västernorrland?

¹ Region Västernorrland and Mombasa have a joint project on improving local governance in sustainability matters within ICLD’s Municipal Partnership Programme.

Research design

This research reflected on nudging as an effective approach to enhance sustainable consumption and waste management practices. The research focused on the contexts of Mombasa, Kenya, and Västernorrland, Sweden, following a request from these local governments to investigate how nudging can be applied to strengthen their sustainability governance methods. The research was conducted through the following phases:

- **Literature review:** A review of academic literature and grey literature was undertaken to understand the foundational theories of nudging within behavioral economics. This review aimed to explain how minor modifications in choice architecture or information dissemination can significantly influence decision-making processes, particularly regarding sustainable consumption and waste management.
- **Global best practice analysis:** This phase involved an analysis of case studies and official government reports documenting nudging interventions and approaches from around the world. The objective was to identify, understand, and benchmark against these interventions, extracting key components that contribute to their success.
- **Context-based analysis:** This stage sought to uncover the intricacies of applying nudging techniques within the specific regions of Mombasa and Västernorrland. It was informed by a Local Democracy Lab² hosted by ICLD in 2023, which drew on the insights of invited experts from both regions. The focus was on comprehending the challenges and nuances, and crafting potential solutions that are specifically suited for the environmental, cultural, and social contexts of Mombasa and Västernorrland respectively.
- **Contextualisation and recommendations:** Integrating findings from the literature review, global best practice analysis, and context-based

analysis, this phase aimed to develop and propose specific, evidence-based approaches for Mombasa and Västernorrland respectively, and contribute to the understanding of nudging approaches in localised settings.

Accordingly, the research design is detailed in the remainder of this document.

Literature review

This section focuses on the first research question “What does the theory of nudging entail?”. It unpacks theories of nudging as part of behavioural economics, and the explains various nudging approaches with respect to sustainable consumption and waste management.

Foundational theories of nudging

At its core, nudging revolves around subtly guiding individuals towards better decisions without removing their freedom of choice. Thaler and Sunstein (2009) pioneered this concept, emphasizing its foundation in behavioral economics. Since their groundbreaking work, nudging has evolved from a novel idea into a widely accepted tool for policy intervention, especially in public health, finance, and environmental domains. In the context of environmental sustainability, nudging has been explored for its potential in influencing behaviors related to energy consumption (Allcott, 2011) and recycling (Schubert, 2017). These studies underscore the efficacy of nudging in driving environmentally conscious behaviors. Despite the growing interest in nudging, there’s a discernible gap when it comes to its operationalization within local government settings. Much of the literature focuses on high-level policy interventions, often at a national scale, leaving a void in understanding its applicability at the grassroots level (Lourenço et al., 2016). Many existing studies leverage community-driven or experimental designs, often overlooking the invaluable insights that seasoned experts bring to the

² A Local Democracy Lab is a digital dialogue forum developed by the Swedish International Centre for Local Democracy (ICLD) to support policymakers with analysis and guidance through discussions with high-level academic experts. While research-policy connections often start from researchers’ outputs, Local Democracy Labs circle around policy challenges as experienced by local governments.

table. Nudging, as a behavioral intervention, holds significant potential for addressing the multifaceted challenges faced by cities and regions globally. By subtly influencing individual choices, cities can promote sustainable, healthy, and responsible behaviors among their residents. However, the application of nudging requires a nuanced understanding of local contexts and social considerations. The theoretical underpinning of nudging is rooted in the idea that human decisions are often influenced by the context in which choices are presented rather than by rational deliberation alone (Kahneman, 2011). Therefore, by redesigning choice architectures, it is possible to steer behaviors towards more sustainable outcomes without forced measures.

The following behavioral theories explain how nudging strategies can effectively guide public behavior towards more sustainable and beneficial outcomes, that respect individual autonomy while promoting positive change:

- **The Prospect Theory** explores how people evaluate potential gains and losses, especially under conditions of uncertainty. A key aspect of this theory is loss aversion, which states that the pain of losing is often more intense than the pleasure of gaining an equivalent amount. For instance, losing \$100 generally feels worse than the happiness derived from gaining \$100. Nudges can use this principle by framing choices to either reduce perceived losses or amplify perceived gains. For example, promoting the health benefits of consuming fruits and vegetables over sugary snacks makes healthy eating seem like a positive gain rather than a sacrifice. Similarly, stressing the risk of financial insecurity can encourage greater retirement savings. In the context of waste management, framing recycling as a contribution to environmental health rather than a chore can drive more sustainable behaviors. Loss Aversion Theory is a subset of Prospect Theory that specifically emphasizes the tendency to avoid losses more than seeking equivalent gains. It highlights potential losses associated with inaction or undesirable behaviors (Tversky & Kahneman, 1991), for example highlighting the negative health consequences of waste dumping in communities.
- **The Dual Process Theory** delineates decision-making as involving two cognitive systems: System 1, intuitive and automatic, and System 2, deliberate and analytical. Nudges often target System 1 processes, subtly influencing behavior sans conscious awareness (Kahneman, 2011). For instance, placing healthier food options at eye level in cafeterias leverages System 1, making the healthier choice the default, thus prompting healthier choices without requiring conscious deliberation.
- **The Choice Architecture Theory** revolves around shaping choice environments to influence decision-making. Nudges tweak the presentation or structure of options to guide individuals towards specific choices, such as setting defaults, which significantly impact behaviour (Thaler & Sunstein, 2008). Moreover, presenting information in accessible ways, like using visual aids for retirement savings plans, facilitates decision-making and boosts participation (Johnson & Goldstein, 2003).
- **The Default Effect Theory** underscores people's inclination to stick with default options, particularly when they require no effort to maintain. Nudges leverage this effect by setting default choices that guide individuals towards desired behaviors or outcomes (Madrian & Shea, 2001). For example, in retirement savings plans, opting for automatic enrollment significantly boosts participation rates. Similarly, default printer settings favouring double-sided printing reduce paper waste in office settings. The default effect by making it easy for people to do the right thing.
- **The Social Norms Theory** suggests that individuals' behavior is shaped by perceptions of social acceptability or expectations within specific contexts or groups. Nudges harnessing social norms aim to influence behaviour by highlighting what is commonly done or socially approved (Cialdini & Trost, 1998). For instance, informing hotel guests about the majority of people reusing towels increases towel reuse rates. Emphasising the descriptive norm of towel reuse taps into

social influence to encourage desired behavior. By highlighting socially approved behaviors, nudges can facilitate better decisions in line with societal expectations.

- **The Framing Effects Theory** argues that whether it is social norm, choice architecture, or loss aversion, the framing of the effect on the environment or otherwise, is central to shaping decision-making. Hence, Framing Effects theory explores how the presentation or framing of information influences decision-making. Nudges leveraging framing effects present options in ways that highlight certain aspects or outcomes to shape decision-making (Levin, Schneider & Gaeth, 1998). To illustrate, framing a health message as a gain (“Quit smoking for a healthier future”) versus a loss (“Smoking increases your risk of lung cancer”) can evoke different responses from individuals. Similarly, framing financial incentives for saving as a bonus (“Get a 10% bonus on your savings”) versus a discount (“Avoid a 10% penalty for not saving”) can impact perceptions and willingness to save. Noteworthy, framing environmental wastage for saving earth surface (“Recycle and save the earth”) versus a discount (“Get 10c for every bottle returned) can have divergent nonetheless positive impacts.
- **The Salience Theory** emphasises making options or information more noticeable to influence decision-making. Nudges that enhance the salience of desired choices or behaviors can effectively guide behaviour towards more desirable outcomes (Loewenstein, 1996). Placing healthy food options at eye level in a cafeteria or prominently displaying recycling bins can increase the likelihood that individuals will choose them. Similarly, using vivid imagery or bold text to highlight the health risks of smoking on cigarette packaging can raise awareness and deter smoking behavior.

The above theories offer an overarching framework for understanding nudging within the realm of human behavior and decision-making processes. They provide the psychological basis and rationale for why certain

nudging approaches might work. Practical applications and specific techniques derived from these theories are either directly rooted in one of them or a combination. Some of these are discussed below, as the tools and methods used to implement the insights gained from behavioral theories and applied in the context of sustainable consumption and waste management.

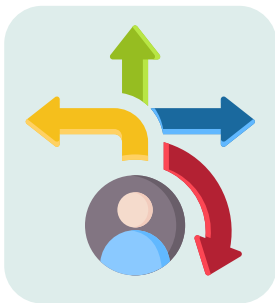
Nudging for sustainable consumption and waste management

As noted, nudging operates on the principle of altering the environment in which decisions are made to make certain choices more appealing without restricting freedom of choice (Thaler & Sunstein, 2009). This mechanism has been increasingly recognized as a vital tool in environmental policy and management, aiming to address the challenges posed by unsustainable consumption patterns and ineffective waste management systems.

In terms of sustainable consumption, nudges have been applied to encourage the reduction of energy use, increase recycling rates, and promote the purchase of sustainable products. For instance, providing feedback on energy consumption compared to neighbors can motivate households to reduce their energy use, leveraging social norms as a nudge (Allcott, 2011). Within waste management, nudging has been utilized to enhance waste sorting behaviors and reduce littering. Similarly, making recycling bins more visible and accessible while providing clear information on recycling can significantly increase recycling rates (Schultz et al., 1995). Color-coded bins is an effective nudge to simplify waste segregation tasks for individuals, thereby improving recycling efforts (Kollmuss & Agyeman, 2002). Additionally, employing signage that invokes social responsibility can decrease littering in public spaces by appealing to individuals’ desire to conform to social norms (Cialdini, Reno, & Kallgren, 1990). These practices hinge on the presence of adequate waste management systems, thereby complement but do not alleviate the responsibility of authorities and governing bodies.

While nudging presents a promising approach, its

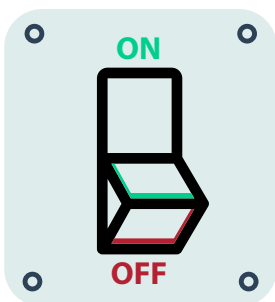
application in sustainable consumption and waste management is not without challenges. Critics argue that nudges may be insufficient to address the scale of environmental problems without accompanying regulations and incentives (Sunstein, 2019). The effectiveness of nudges is also argued to vary based on cultural contexts and individual differences, necessitating careful design and implementation. Regardless of these challenges, nudging still offers a complementary strategy to traditional policy instruments for promoting sustainable consumption and waste management, and can include a variety of the following approaches:



Choice architecture:

Within the framework of choice architecture, environments can be strategically designed to promote sustainable consumption. Research by Thaler and Sunstein (2008) suggests that placing eco-

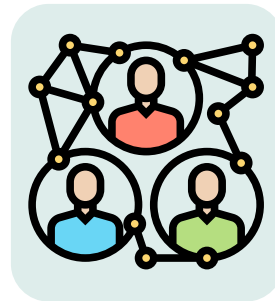
friendly products prominently and using clear signage can influence consumer choices. A study by Hanks and Eckard (2016) demonstrated that labeling products with environmental benefits can increase their attractiveness to consumers. This must be done in conjunction with clear regulations to avoid greenwashing.



Making it default:

Providing default options to shape behaviour and promote desired behaviours (Madrian and Shea, 2001). Applying this concept to waste management, government functionaries can implement opt-out

recycling programs, where residents are automatically enrolled in recycling services by default, as suggested by Chapman (2018). This makes participation the norm and simplifies the process of waste diversion. According to Smith and Wood (2019), this approach is shown to increase recycling rates.



Leveraging social norms:

Leveraging the influence of social behavior by informing people about what others are doing may be effective. Allcott (2011) argued for the effectiveness of providing personalized feedback, and Cialdini and Trost (1998)

emphasized the role of social influence in shaping behavior while Schultz et al. (2007) demonstrated that social norms significantly impact environmental behavior specifically. For example, by displaying signs in residential areas showing the percentage of neighbors who participate in recycling programs, the influence of social norms can be leveraged to encourage more people to recycle. Similarly, personalized feedback on energy consumption compared to the average of a relevant group may encourage limiting unnecessary energy consumption.



Create incentives:

Introducing incentives and tangible or intangible rewards to serve as powerful motivator for sustainable behavioural change. Thaler and Sunstein (2008) showcased the effectiveness of incentives in promoting desirable

outcomes. They argued that offering discounts or loyalty points for purchasing eco-friendly products aligns with the principles of behavioral economics established by Kahneman and Tversky (1979). Additionally, studies by Gneezy et al. (2011) have shown that incentives can lead to increased engagement in sustainable practices, making them a valuable tool for waste management initiatives.



Framing:

Framing information in a way that highlights environmental benefits can influence perceptions and behaviours and play a significant role in decision-making (Levin et al., 1998), especially in terms

of environmental messaging (Corner et al, 2014). By emphasising the positive elements of sustainable behaviours, such as using public transportation, municipalities can encourage residents to adopt more eco-friendly habits. Another example is presenting information about waste reduction by highlighting the positive impact on the environment and future generations, rather than just the financial savings. For instance, “By recycling, you are helping to preserve our planet for future generations.”

cultural differences and individual behaviors. It does not suffice alone to tackle large-scale environmental issues, but is one part in bridging the gap of individual action on the one hand, and governance and policy on the other. In this sense, nudges need to integrate with other regulatory approaches. To ensure their effectiveness and legitimacy, nudges also need to be applied appropriately within specific cultural and contextual realities, as unpacked in the following section.



Inspiring with peer influence:

Closely related to social norms, leveraging social proof and peer influence is another technique that has the capacity to foster a sense of community and collective action towards

waste reduction. Goldstein et al. (2008) finding on the power of social norms in shaping behaviour, demonstrated that by sharing success stories and testimonials from peers who have adopted sustainable practices, organisations can inspire others to follow suit. This approach builds on the principles of Cialdini (2001) perspective of social influence, which place emphasise on creating a culture of sustainability within communities and workplaces.



Simplification:

Making desired behaviors easier to perform by reducing complexity, like simplifying the process for signing up for green energy programs. Another example is to simplify the process for recycling by providing clear,

easy-to-understand guidelines and labeling on bins. Ensuring that recycling bins are easily accessible and conveniently located also encourages participation by making the process straightforward and hassle-free.

While these nudging approaches offers significant potential, its effective application can vary due to

Global best practice analysis

This section focuses on the second research question “What are the most effective global practices for utilizing nudging techniques to promote sustainable consumption and waste management?” It presents a systematic analysis of case studies and official government reports documenting successful nudging interventions

from around the world, to identify and understand these interventions by extracting key components that contribute to their success. Accordingly, the table below captures examples of different global regions and their specific nudging interventions.

Country	Description	Choice Architecture	Defaults	Social norms	Incentives	Framing	Peer influence	Simplification
Germany	The introduction of a compulsory deposit on plastic bottles and cans significantly increased recycling rates (Rathmann et al., 2014). Absence of enforcement makes this a nudge rather than regulation. The choice architecture, and creating a financial incentive to return containers, effectively nudges consumers towards more sustainable behaviour.	X			X			
France	France's implementation of an Extended Producer Responsibility (EPR) framework holds producers financially accountable for the end-of-life disposal of their products (Prognos & Wuppertal Institute, 2017). This means that companies are incentivized to design products that are easier to recycle, reuse, or dispose of sustainably. EPR nudges companies to adopt more sustainable practices by shifting the economic incentives, leading to systemic changes in production and consumption patterns.				X			
United States	Personalised energy reports in the United States have emerged as a game-changer (Allcott, 2011). By leveraging social comparison and providing actionable insights, these reports empower individuals to make informed decisions about their energy usage. By fostering a sense of community and competition, they ignite a collective momentum towards energy efficiency.			X			X	
Japan	Some Japanese utilities provide feedback to consumers about their energy use compared to their neighbours, aiming to reduce household energy consumption (Allcott, 2011). This social comparison nudges individuals to adopt more energy-efficient behaviours, leveraging the power of social norms.			X				
Australia	Instead of imposing strict regulations, Australia employs targeted interventions that subtly influence behavior to promote water conservation (Shah et al., 2017). These interventions include setting specific water usage targets and leveraging social norms. These nudges come with tangible incentives, such as offering free leak repair services, which provide immediate and practical benefits, making it easier and more rewarding for individuals.			X	X			X

<p>Rwanda</p>	<p>Umuganda (Community Clean-Up Day) is a traditional practice in Rwanda where community members come together on the last Saturday of each month to participate in communal activities, such as cleaning public spaces, building infrastructure, or engaging in environmental conservation. By institutionalizing Umuganda as a national practice, the Rwandan government leverages the cultural value of community service and collective responsibility to promote public health, environmental sustainability, and social cohesion (Uwimbabazi, 2012).</p>					<p>X</p>	<p>X</p>	<p>X</p>
<p>Indonesia</p>	<p>Gotong Royong is a traditional Indonesian practice of mutual cooperation, where community members work together for the common good. Government programs that require collective action, such as disaster preparedness drills or community health initiatives, frame participation as an act of Gotong Royong (Yamamoto, 2020).</p>					<p>X</p>	<p>X</p>	

While nudging offers a compelling framework for promoting environmental sustainability, it is not without challenges. The complexity of environmental issues necessitates a multifaceted approach, combining nudging with other policy instruments such as regulation, education, and technological innovation. Moreover, the effectiveness of nudges depends on cultural, social, and economic factors, highlighting the need for context-specific interventions tailored to diverse societal contexts.

For instance, reducing littering relies heavily on strategic placement and timing. In Sweden, financial incentives like fines are less effective, whereas in Brazil and India, they play a crucial role. The global examples emphasise the importance of the cultural environment and context-based approach that is needed to tailor nudges to specific societal contexts. Accordingly, the cases of Mombasa and Västernorrland are analysed in the next section to further explain the context-based approach to nudging.

Context-based analysis

This section focuses on the third research question “How can these global best practices be adapted and successfully applied in the specific contexts of Mombasa and Västernorrland?”. It draws on the local democracy lab that was hosted by ICLD in 2023 that brought representatives from Mombasa and Västernorrland together with a range of academic experts, to reflect on the policy dilemma put forward by these municipalities of how they can use nudging to promote sustainable choices while remaining ethical, democratic and responsive local governments. This section of the working paper unpacks the intricacies of applying nudging techniques within these specific regions.

Mombasa and specific nudging techniques

Mombasa, Kenya’s second-largest city and a key economic and cultural hub, is known for its significant historical and strategic importance. Located on the country’s eastern coastline, it serves as a major port and gateway to East Africa. The Port of Mombasa, East Africa’s largest port, plays a crucial role in the economy of Kenya and its neighboring countries by facilitating trade and logistics. As Mombasa faces challenges related to urbanization, such as congestion, environmental degradation, and social inequality, the concept of “Mombasa ni Yangu” (Mombasa is ours) introduced nudging as a strategy to engage residents, especially the youth. By involving young people, who are effective ambassadors for change, the community are nudged towards more sustainable and democratic practices. Nudging proved especially important and effective during the Covid-19 pandemic. Youth groups played a crucial role in disseminating information in meaningful ways and nudging pushed the broader society towards healthier practices. Learning institutions also contributed significantly to nudging approaches, using artwork as an effective communication method. For example, strategically placed pictures with themes relevant to their locations, such as marine life at the beach, captured attention and conveyed important messages.

Västernorrland and specific nudging techniques

Västernorrland is a county located in the northern part of Sweden, characterized by its diverse landscapes that range from coastal areas along the Gulf of Bothnia to forested inland regions and mountainous areas in the west. It is scarcely populated and known for its natural beauty, including vast forests, rivers, and lakes, making it a popular destination for outdoor activities. The economy of Västernorrland has traditionally been based on forestry, agriculture, and fishing, with the forest industry remaining a significant sector. However, the environmental footprint per capita is very high. Like many regions with a strong dependence on traditional industries, Västernorrland also faces challenges related to economic diversification and demographic changes, such as an aging population. Balancing responsibility among individuals, authorities, industries, and the private sector in the Nordics is challenging. The entire region’s consumption and emissions levels are extremely high by global standards, making it problematic to place the burden solely on individuals, even though their lifestyles significantly contribute to these levels. Västernorrland’s natural assets, including forests, renewable energy resources (particularly hydro and wind power), and tourism potential, present significant opportunities for using nudging, and the Swedish government’s endorsement of nudging for public health and environmental sustainability suggests that similar approaches would be welcomed at the regional level (Pierre, 2020), although the specific tactics might differ based on local contexts, cultural norms, and existing policy frameworks.

Comparative analysis

Both Mombasa and Västernorrland are leveraging their unique natural and strategic assets to drive sustainable development, acknowledging the importance of innovative solutions to consumption and waste management.

Mombasa’s sustainability challenges are intertwined with its urban and port dynamics, focusing on mitigating the impacts of urbanization and port activities.

Aspect	Mombasa, Kenya	Västernorrland, Sweden
Urbanization	High urban density, leading to congestion and pollution.	Lower population density, rural and natural landscapes.
Environmental challenges	Waste management issues, degradation of coastal and marine environments.	Preservation of natural resources, managing forestry sustainably.
Economic base	Port city with a major focus on trade and logistics.	Traditionally based on forestry, agriculture, and fishing, with a growing service sector.
Sustainability strategies	Improving waste management systems, urban planning for green spaces, education on recycling.	Promoting renewable energy, sustainable forestry and agriculture, eco-tourism.
Cultural factors	Diverse population with varying cultural norms and practices.	Homogeneous population with strong cultural values of environmental stewardship.
Technological support	Limited access to advanced waste management technologies.	Well-developed infrastructure supporting renewable energy and conservation efforts.
Government policies	Implementation of regulations for waste management and environmental protection.	Supportive policies for sustainable development and conservation initiatives.

Västernorrland, with its natural landscapes, prioritizes renewable energy and eco-tourism, aiming to preserve its environmental heritage. This comparison below underscores that effective nudging strategies must be context-specific, respecting local cultures, values, and available resources to achieve the best outcomes in promoting sustainable behaviors.

In Mombasa, the diverse population may require tailored educational campaigns to effectively promote recycling and conservation. Limited access to advanced waste management technologies underscores the importance of innovative solutions and community engagement in addressing environmental challenges. Apart from educational campaigns, nudging strategies in this context might include the design of public spaces to encourage recycling and conservation, and actions beyond simply sharing communications. For example, supporting community-led recycling initiatives and using local leaders to endorse sustainable practices can enhance engagement and participation. Nudges must account for cultural diversity and resource limitations, emphasizing community engagement and practical solutions. For example, local languages and culturally relevant symbols in recycling and conservation messages can improve comprehension and acceptance. Encouraging the use of traditional practices that align with conservation goals might also be effective.

In contrast, Västernorrland’s homogeneous population shares strong cultural values of environmental stewardship, although the environmental footprint remains high due to high living standards. The region’s well-developed infrastructure and access to advanced technologies support its transition towards renewable energy and conservation efforts. Nudging strategies here could focus on informational campaigns about renewable energy, engaging signage in natural parks to promote conservation, and leveraging existing environmental values to foster more sustainable behaviors by highlighting local success stories and use social proof. Nudges can promote the benefits of reducing waste and conserving resources as part of a high-quality, sustainable lifestyle.

Contextualisation and recommendations

This final phase aims to consolidate the analyses to develop and propose specific, evidence-based strategies that local governments could implement to enhance sustainable consumption and waste management.

Evidence-based strategies for local governments

To effectively implement nudging strategies for sustainable consumption and waste management in Mombasa and Västernorrland, a comprehensive policy framework is essential. This involves initiating educational campaigns and public engagement through funded programs and social media, optimizing infrastructure by mandating recycling stations and eco-friendly urban design, and introducing incentive programs that reward sustainable practices. It is crucial to distinguish between nudges and pure information, as nudging employs subtle behavioral cues rather than direct instructions.

Both regions should leverage technology and community feedback mechanisms to monitor and evaluate environmental performance, encouraging community-based initiatives and fostering public-private partnerships to amplify impact. Context-specific approaches are essential, for example, Mombasa needs low-cost, innovative solutions due to resource constraints, while Västernorrland can utilize advanced technologies and infrastructure. While norms and education are the most tested nudges for

waste reduction, successful behavioral change must be Easy, Attractive, Social, and Timely (Bit UK, 2014). It's important to recognize that the same nudge does not work everywhere; effectiveness depends on the specific context of place and time.

Cross-regional collaboration between Mombasa and Västernorrland would enhance the sharing of best practices and co-development of sustainability tools, ensuring that nudging strategies are culturally resonant and grounded in practical, actionable policies. Additionally, actions should be taken to increase diversity among behavioral scientists, teams, collaborations, and institutions (Hallsworth, 2023). The following table provides recommendations to implement nudging strategies in Mombasa and Västernorrland respectively, drawing on the uniqueness of the local environmental, cultural, and administrative contexts. By adopting these measures, local governments can drive significant improvements in sustainability and waste management, contributing to global environmental goals and enhancing the quality of life for their residents. These initiatives not only benefit local communities but also provide valuable insights and models that can be adapted and implemented by other regions worldwide, thus supporting broader environmental and sustainability efforts. The table can also inspire other local governments, who may be prompted to consider the examples with their own unique challenges and opportunities in mind.

Nudging strategies	Recommendations	Kenya	Sweden
Choice architecture	Deploy mobile educational units in local languages to increase awareness about waste segregation and recycling.	X	
	Arrange local markets to showcase eco-friendly products prominently.	X	X
	Strategically place recycling stations in high traffic areas and ensure they are clearly marked.	X	X
	Design urban areas with integrated green spaces that encourage waste sorting and reduction.	X	X
	Upgrade public transportation facilities with clear, engaging signage promoting eco-friendly travel options.	X	
	Implement user-friendly waste sorting facilities in public spaces.	X	X

Defaults	Automatically enroll residents in recycling programs with an opt-out option.	X	X
	Provide default energy-saving settings on public lighting and heating systems.		X
Social norms	Publicize the percentage of community members participating in recycling programs to encourage others	X	X
	Utilize social media campaigns featuring local influencers to promote conservation efforts.	X	X
	Display community achievements in sustainability in public places and media.	X	X
	Organize community events that celebrate collective environmental efforts.	X	X
Incentives	Introduce a rewards program for households that demonstrate reduced energy consumption and effective waste management.	X	
	Offer tax incentives for businesses that achieve sustainability benchmarks.	X	
	Provide subsidies or tax reductions for homeowners who participate in community renewable energy programs.		X
	Encourage local businesses to participate in environmental stewardship by offering recognition and financial incentives.	X	X
	Implement a points-based system where residents earn rewards for recycling and conserving energy.	X	X
Framing	Highlight the positive impact of recycling on local health and environment in communications.	X	X
	Present sustainable practices as a way to improve community well-being and future prospects.	X	X
	Use positive imagery and messages in campaigns to make sustainable actions more appealing.	X	X
Peer Influence	Use testimonials from respected community members about their sustainable practices to inspire others.	X	X
	Create neighborhood competitions to see who can reduce the most waste or save the most energy.		X
	Share stories of local environmental heroes in media and at community events.	X	X
	Develop mentorship programs where sustainability champions guide others.	X	
Simplification	Simplify the process of signing up for recycling programs through easy-to-use online platforms and straightforward instructions.	X	X
	Provide clear and concise guidelines on how to properly sort waste to minimize confusion and increase participation.	X	X
	Use visual aids and infographics to simplify complex sustainability information.	X	X
Awareness and engagement	Organize community workshops focusing on the benefits of sustainable living and renewable energy.	X	
	Implement school programs that integrate principles of sustainability into the curriculum.	X	X
	Launch awareness campaigns that use local languages and culturally relevant symbols.	X	
Infrastructure optimization	Implement biodegradable waste bags in markets to promote organic waste recycling.	X	X

Feedback mechanisms	Regularly distribute community-specific energy and waste management reports to enhance awareness.	X	X
	Set up digital billboards in key areas showing real-time stats on community recycling and energy saving achievements.	X	X
	Use annual sustainability reports to inform residents about regional achievements in energy efficiency and waste reduction.	X	X
	Employ interactive online platforms to provide personalized feedback on community environmental footprints.		X
Community-based initiatives	Support community clean-up events and waste collection competitions among neighborhoods.	X	X
	Develop community gardens that also serve as centers for environmental education.	X	
	Facilitate community-led renewable energy projects, such as small-scale wind or hydro power installations		X
	Encourage the use of traditional practices that align with conservation goals	X	
	Establish pilot programs to test specific nudging interventions such as with waste pickers (see ICLD Policy Brief 17)	X	
Cross-regional learning	Partner to exchange ideas on effective plastic reduction strategies and community engagement techniques	X	X
	Co-develop and share digital tools for tracking waste management metrics.	X	X
	Share advancements in renewable energy technology and implementation strategies.	X	X
Public-private partnerships	Engage local businesses in sponsoring recycling initiatives and educational programs.	X	X
	Partner with tech companies to develop apps that encourage sustainable consumption practices.	X	X
	Work with the tourism sector to promote eco-friendly practices and sustainability in local attractions.	X	X
Monitoring and evaluation	Establish a community-based monitoring system that allows residents to report on local environmental conditions.	X	X
	Implement a region-wide tracking system for waste reduction and recycling rates.	X	
	Conduct regular assessments to refine and enhance the effectiveness of nudging strategies based on community feedback.	X	X
	Use data analytics to monitor and evaluate the impact of sustainability initiatives.	X	X

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