European Commission

SOCIO-TECHNICAL TIPPING POINTS SOLUTION BOOKLET

Smart Cities Marketplace 2024

The Smart Cities Marketplace is managed by the European Commission Directorate-General for Energy

ENERGY

WHAT IS THE SMART CITIES MARKETPLACE?

The Smart Cities Marketplace is an initiative supported by the European Commission bringing together **cities, industry, SMEs, investors, banks, research and other climate-neutral and smart city actors**. The Smart Cities Marketplace Investor Network is a growing group of investors and financial service providers who are actively looking for Climate-neutral and smart city projects.

WHAT ARE THE AIMS OF THE SMART CITIES MARKETPLACE?

The Smart Cities Marketplace has thousands of followers from all over Europe and beyond, many of which have signed up as a member. Their common aims are to **improve citizens' quality of life, increase the competitiveness of European cities and industry** as well as to **reach European energy and climate targets**.

WHAT CAN THE SMART CITIES MARKETPLACE DO FOR YOU?

Explore the possibilities, **shape** your project ideas, and close a **deal** for launching your Smart City solution! If you want to get directly in touch with us please use info@smartcitiesmarketplace.eu

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WHAT AND WHY

Picture from 2019 ©Leuven2030 when 16 key actors signed Leuven 2050 City Roadmap.

What and why

Tipping points mark significant moments of change, often leading to big societal shifts. Sociologist Thomas Schelling first used the term in the 1970s to describe racial segregation in neighbourhoods. Other terms like "regime shifts" and "thresholds" emerged later.
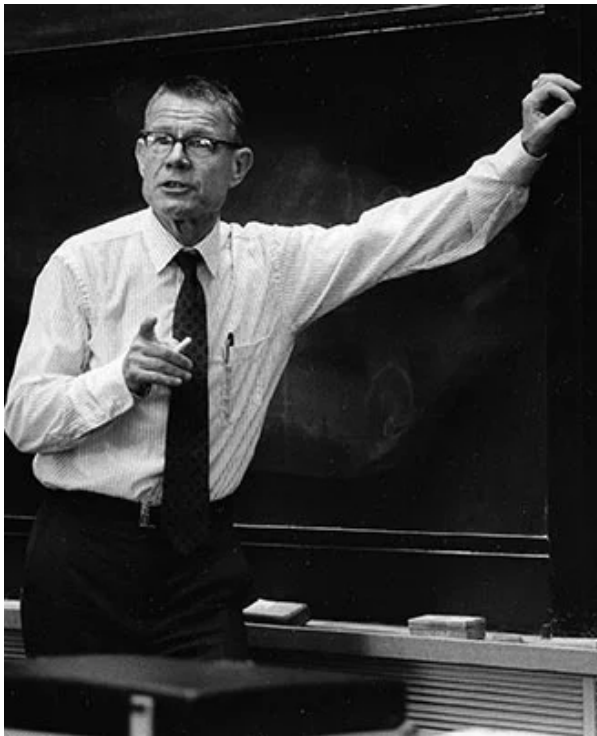
Thomas Schelling received his Ph.D. from Harvard in 1946 and joined the Harvard faculty in 1958. ©Martha Stewart

Malcolm Gladwell popularised the term "tipping point" in 2000, borrowing it from earlier social science ideas.

In 2008, "**Social Tipping Points**" (STPs) gained attention, especially in relation to climate change. These are moments when society hits a critical point, sparking major changes like political shifts, social revolutions and changes in mentality.

This booklet sees STPs as moments of significant societal change that can set off a chain reaction of effects. These changes can be intentional, influenced by social and political factors, or occur when certain behaviours or conditions become unacceptable. For instance:

A social tipping point might happen when awareness of climate change grows to the point where many people demand stronger environmental policies, prompting significant shifts in government and business practices.

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BEFORE GETTING STARTED

Picture from 2019 ©Leuven2030 when 16 key actors signed Leuven 2050 City Roadmap.

Before getting started

Navigating the complexities of city systems and tipping involves identifying leverage points, which are strategic opportunities where small adjustments can lead to significant systemic changes. These points offer policymakers pathways for impactful interventions and help foster collective intelligence within urban environments.

Leverage points, crucial in navigating complex city systems, are strategic junctures where minor adjustments can lead to substantial systemic changes.

Coined by Donella Meadows, they offer policymakers opportunities for impactful interventions. Examples include tweaking system rules (like incentives or penalties), redefining system goals (prioritising environmental sustainability over sheer economic growth), challenging prevailing mindsets, and the capacity to transcend established paradigms.

Understanding and strategically utilising these points can foster collective intelligence and drive effective self-organisation within urban contexts.

THE SYSTEM

Constants, Parameters, Numbers — 12

Size of Buffers and Stabilising Stocks — 11

Structure of Material Stocks and Flows — 10

Length of Delays — 9

Strength of Negative Feedback Loops — 8

Gain Around Driving Positive Feedback Loops — 7

Structure of Information Flow — 6

Rules of the System — 5

Power to Add, Change, Evolve System Structure — 4

Goal of the System — 3

Mindset or Paradigm — 2

Power to Transcend Paradigms — 1

PHYSICAL EVENTS

INFORMATIONAL/PATTERNS OF BEHAVIOUR

SOCIAL/SYSTEM STRUCTURE

CONCIOUS/MENTAL MODELS

Leverage points as defined by Donella Meadows. Graph based on a graphic recording of an unknown author ©Agata Smok

Understanding and strategically using these points is vital for expediting systemic change towards sustainability, with public acceptability and perceptions of risks and benefits playing pivotal roles in driving such change.

Behavioural insights can be implemented across various levels, and categorised within a PESTLE (political, environmental, social, technological, legal, economic) framework, which helps identify external factors affecting a system, informing the identification of leverage points for intervention.

How do I use this information?

As a policymaker, understanding how to identify leverage points within your city is essential for driving meaningful social change. Leveraging the PESTLE framework – Political, Environmental, Social, Technological, Legal, and Economic factors – can provide valuable insights into where strategic interventions can be made to nudge societal norms towards sustainability. Here's how you can apply each category.

Meadows proposes the following twelve leverage points, in increasing order of effectiveness:

#	Leverage point	Description	Example
12	Constants, Parameters, Numbers	Parameters are points of lowest leverage in a system, they provide information but rarely change behaviours significantly.	Building performance data, energy consumption data
11	Size of Buffers and Stabilising Stocks	Buffers provide stability to a system by absorbing fluctuations and preventing disruptions.	Building's thermal mass to stabilise passively the indoor temperature to not be reliant on HVAC. A water reservoir to manage demand in a water supply system
10	Structure of Material Stocks and Flows	This is about how things move through the system. Infrastructure can have a huge impact but might be difficult to change.	Efficient infrastructure for energy distribution
9	Length of Delays	Delays are the time it takes for actions to have an effect. Shortening or lengthening delays can make a system more or less responsive.	Speeding up the approval of building permits might accelerate housing development

CO$_2$-neutral retrofitting project Eco-life project in Kortrijk, Belgium ©Agata Smok

#	Leverage point	Description	Example
8	Strength of Negative Feedback Loops	Negative feedback loops promote stability by slowing down processes.	Imposing a tax on new construction to encourage adaptive reuse
7	Gain Around Driving Positive Feedback Loops	Positive feedback loops can accelerate processes and amplify changes.	A popular green area attracts businesses and residents to the surrounding areaa
6	Structure of Information Flow	Information flow affects decision-making; changing it can be easier than altering physical structures. I.e., real-time public transit apps that provide up-to-date information on multimodal transport schedules can encourage public transport use.	Access to energy usage data in real-time to promote energy conservation.
5	Rules of the System	Rules, such as laws, incentives, penalties and constraints, have a significant impact on the system.	Implementing zoning laws to control building density and protect green areas
4	Power to Add, Change, Evolve System Structure	Ability of the systems to change, evolve and adapt.	Community-led urban projects in vacant areas

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AGGREGATING FINANCING FOR RESILIENCE SOLUTION BOOKLET
Smart Cities Marketplace 2023

The Smart Cities Marketplace is managed by the European Commission Directorate-General for Energy

Further reading: Smart Cities Marketplace Solution Booklet Aggregating Financing for Resilience

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PUBLIC PROCUREMENT SOLUTION BOOKLET
Smart Cities Marketplace 2023

The Smart Cities Marketplace is managed by the European Commission Directorate-General for Energy

Further reading: Smart Cities Marketplace Solution Booklet for Public Procurement in Smart Cities

#	Leverage point	Description	Example
3	Goal of the System	Overarching purpose or objective of a system. Changing the system's goals affects parameters, feedback loops, and rules.	Shifting from strategies focused on achieving economic growth towards achieving wellbeing
2	Mindset or Paradigm	Paradigms are the beliefs and mindsets driving the system. Changing paradigms brings fundamental change to the system.	Moving away from a paradigm of "buildings as disposable" to "adapting current buildings as assets for future generations"
1	Power to Transcend Paradigms	Transcending paradigms go beyond challenging assumptions, allowing for a shift in values and priorities. This is the most significant transformation of the system's dynamics.	Moving from a mindset of competition to one of cooperation

Further reading

The article "How Close Are We to Climate Tipping Points?" from Columbia University's State of the Planet blog examines the imminent risks of crossing critical thresholds in the Earth's climate system, such as ice sheet collapse and Amazon rainforest dieback, emphasizing the urgency of climate action. For more details, you can read the full article:

☞ How Close Are We to Climate Tipping Points? – State of the Planet (columbia.edu)

The OECD iLibrary webpage provides an analysis on climate tipping points, emphasizing the critical need for effective policy action to address potential irreversible changes in the Earth's climate system:

☞ Climate tipping points: a critical moment for action | Climate Tipping Points: Insights for Effective Policy Action – OECD iLibrary (oecd-ilibrary.org)

The Stockholm Environment Institute (SEI) report examines the links between the Paris Agreement and the 2030 Agenda, highlighting the need for policy coherence to ensure climate actions align with sustainable development goals (SDGs):

☞ Connections between the Paris Agreement and the 2030 Agenda: the case for policy coherence | SEI

The Global Policy Forum webpage on "Shifting Policies for Systemic Change" discusses the 2020 Spotlight on Sustainable Development report, which assesses the impact of COVID-19 on global policies and highlights the need for systemic changes to address economic and social inequalities, enhance human rights, and achieve sustainable development goals:

☞ Shifting policies for systemic change – Global Policy Forum

☞ Risk communication and public engagement in CCS projects: the foundations of public acceptability (researchgate.net)

☞ A better understanding of how tipping points work – Stockholm Resilience Centre

☞ Social capital and the public acceptability of climate change adaptation policies: a case study in Romney Marsh, UK – Climatic Change (springer.com)

©Bart Ros, Unsplash

CITY CONTEXT

Solar Settlement in Freiburg, Germany. To encourage sustainable and smart procurement, public authorities should have a clear environmental social and governance targets such as carbon reduction and innovation strategies in place which are reflected in procurement mandates and budgets. ©Rolf Disch, Solar Architecture

City context

Cities aiming for a sustainable transition often target actions that enable certain individual and collective behaviours. Some of the actions that cities target may be, for example, to encourage building renovation to improve the energy efficiency of their buildings to reduce energy consumption and carbon emissions.

Another is the promotion of **local energy communities** where energy is produced and shared locally, enhancing energy efficiency and resilience. Cities can also develop **positive energy districts** that produce more energy than they consume by combiningenergy-saving measures and renewable energy production. The deployment, and use of renewable energy sources like solar, wind, and hydropower is another possible action. Mobility and transport, encouraging public transport, cycling, and walking instead of private cars to reduce carbon emissions, is often part of cities' strategies. The question is why, how, and when these actions are reaching a social tipping point: changing behaviours at scale, triggering cascading effects and systemic change.

For instance, the use of renewable energy can influence mobility (through electric vehicles) and heating and cooling (through heat pumps). Electric vehicles without renewable energy sources have a limited effect on reducing carbon emissions.

Throughout this booklet, we will present the case of Amsterdam as a mobility hub, a city known for its extensive use of bicycles as active mobility. The city's biking culture and infrastructure serve as a model for other cities aiming for sustainable transition.

This narrative will be told through the lens of the PESTLE framework, illustrating how policymakers can strategically manipulate leverage points within these categories to drive societal change. Through a real-world example of a social tipping point in action, we will uncover the essential elements necessary to achieve sustainable transformation.

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Further reading: Smart Cities Marketplace Solution Booklet From Idea To Implementation

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Further reading: Smart Cities Marketplace Solution Booklet Citizen Engagement

Amsterdam's mobility hubs revolutionise sustainable urban transport

Amsterdam is paving the way for sustainable urban mobility, offering valuable insights for policymakers. **Their approach centres on the establishment of mobility hubs, strategically positioned at key metro stations like Bullewijk, Bijlmer Arena, and Duivendrecht.** These hubs serve as centralised access points for shared and personal bicycles, facilitating seamless connectivity and reducing reliance on private vehicles. Through subscription models, residents and visitors gain affordable access to shared bikes, incentivising regular usage and addressing last-mile connectivity challenges.

Additionally, Amsterdam is spearheading innovation with the development of the E-lympic Mobility Hub, a futuristic facility dedicated to electric shared transport and fast-charging infrastructure for electric vehicles. This commitment to multimodal integration fosters efficiency and accessibility in urban mobility, underpinned by strategic public-private partnerships.

The collaboration of entities like the Future Mobility Network with industry leaders such as MoveYou, GoAbout, and Bimas exemplifies the transformative potential of collective action in shaping sustainable urban transportation systems.

Amsterdam metro ©Fons Heijnsbroek, Unsplash

POLITICAL FACTORS

Mina Kolagar, co-founder of PANTOHEALTH, uses the company's public transport energy monitoring software in its offices on January 30, 2024, in Berlin, Germany. ©Adam Berry, EIT Mobility

Political factors

In our context, the "political" aspect refers to **the policies, regulations, and initiatives (Rules of the System)** implemented by government entities at various levels. These can range from local city councils to national governments and international bodies. Political decisions can significantly influence people's behaviours related to energy consumption and environmental choices.

> For instance, a government might **implement policies promoting renewable energy sources (Power to Add, Change, Evolve System Structure)**, which could encourage citizens to install solar panels or use electric vehicles.

Conversely, if a government subsidizes fossil fuels, it might discourage the adoption of greener alternatives. Multilevel governance plays a crucial role in this context. MLG is a system where power, authority, and influence are shared across multiple levels of government – local, regional, national, and international. In the context of climate change mitigation, MLG can facilitate the coordination of energy policies across different levels, ensuring that local initiatives align with **national and international goals (Goal of the System)**.

> For example, a city might aim to reduce its carbon emissions in line with national targets and international agreements.
> To achieve this, the city could implement local initiatives such as **promoting** public transport or cycling, improving energy efficiency in buildings, or encouraging the use of renewable energy **(Mindset or Paradigm)**. These local actions would be more effective if they were supported by policies and incentives at the regional and national levels, demonstrating the importance of coordination in MLG.

EU

NATIONAL

CIVIL SOCIETY

THE MARKET

REGIONAL

LOCAL
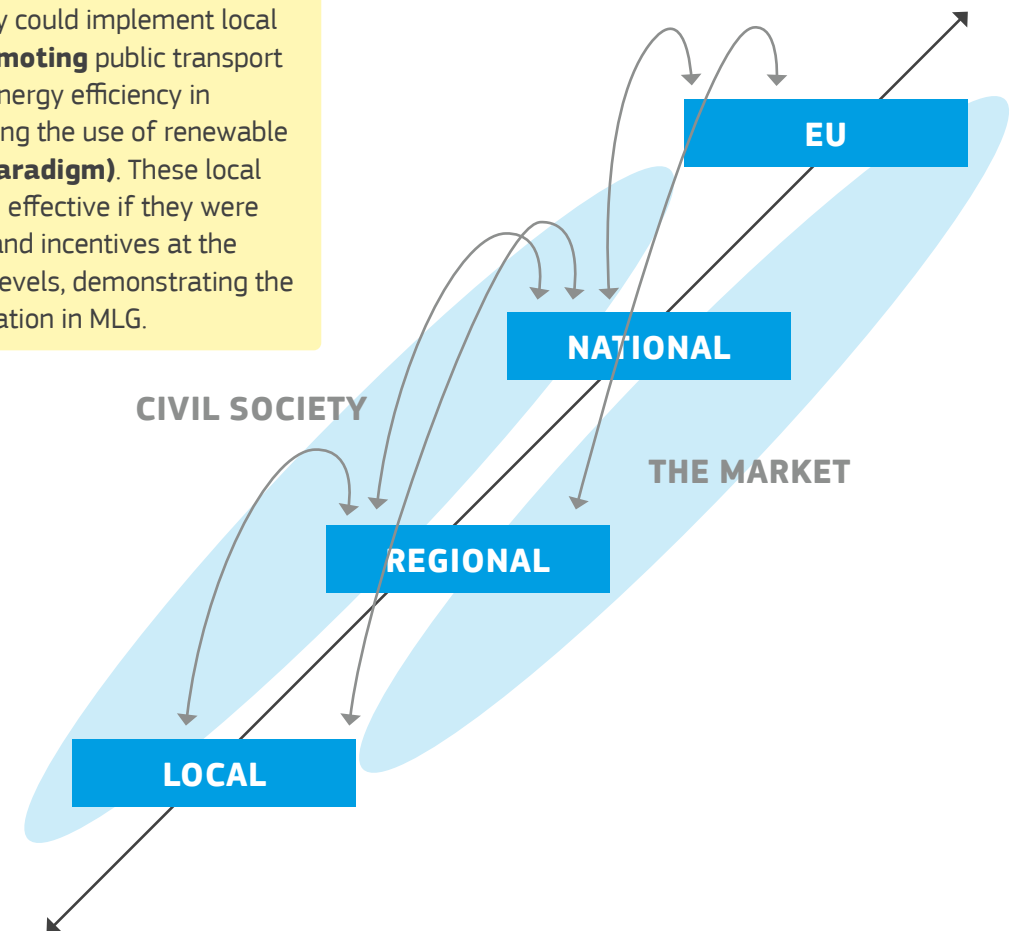
Tips & Tricks for Driving Social Tipping Points: Harnessing Political Influence

Utilise governmental *policies and regulations* (Rules of the System) to shape behaviours and catalyse social tipping points. Policies promoting renewable energy sources encourage citizens to adopt solar panels or electric vehicles, while subsidies for fossil fuels may hinder the uptake of greener alternatives.

Foster social tipping points through *political backing* (Mindset or Paradigm) for sustainable practices. Active endorsement and bolstering of initiatives like recycling, reusing, or public transportation by governments propel these practices into mainstream acceptance.

Engage citizens in decision-making processes related to sustainability to cultivate ownership and responsibility. *Public involvement* (Power to Transcend Paradigms) instils a sense of community participation, garnering greater support for sustainable practices and driving societal change.

By leveraging political factors effectively, you can lead the change towards a more sustainable future, creating lasting social tipping points for positive change.

Political context: Amsterdam case

Amsterdam's government has been proactive in promoting bicycling, *enacting policies* (Rules of the System) that prioritise cyclists over cars and *investing* (Power to Add, Change, Evolve System Structure) in extensive bike infrastructure and parking facilities.

This support was catalysed by public activism in response to rising traffic accidents in the 1970s, ultimately propelling Amsterdam to become the world's bicycle capital. The success of Amsterdam's bicycling initiatives owes much to effective multilevel governance. Local policies were reinforced by national regulations and international sustainability *objectives* (Goal of the System), ensuring alignment and synergy across different tiers of governance.

This coordinated approach facilitated the seamless implementation of bicycling infrastructure and programs, contributing to the city's renowned cycling *culture* (Mindset or Paradigm).

Bike parking in Amsterdam, the Netherlands ©Getty images

Further readings

A campaign called "Finland Down a Degree." aims to raise awareness or take action on reducing carbon emissions or addressing climate change in Finland. For a detailed understanding, visiting the page directly provides more specific information:

🖱 [Finland: Down a Degree – Users TCP](#)

Article discussing energy policy issues, focusing on topics such as energy economics, renewable energy, energy efficiency, and energy governance. For exact details, accessing the article directly provides a more precise understanding of its content and scope:

🖱 [The diverging paths of German and United States policies for renewable energy: Sources of difference (repec.org)](#)

Finland ©Alexandr Bormotin, Unsplash

Germany ©Max Bottinger, Unsplash

ECONOMIC FACTORS

Picture from 2019 when 16 key actors signed Leuven 2050 City Roadmap. ©Leuven2030

Economic factors

The "economic" context refers to the economic conditions, policies, and systems that influence environmental decisions, for instance, how energy is produced, distributed, and consumed.

This includes factors such as the cost of sustainable products, the structure of the market (the energy market or the market for circular products, for instance), **economic incentives** (Rules of the System) for sustainable practices, and the economic impacts of environmental policies.

Economic factors can significantly influence people's behaviours related to energy consumption and the energy transition. For instance, the **cost of energy** (Power to Add, Change, Evolve System Structure), can directly influence people's energy consumption behaviours.

If renewable energy sources like solar or wind become cheaper than fossil fuels, people might be more inclined to switch to these cleaner energy sources.

Similarly, **economic incentives** can be used by governments. These can be in the form of subsidies, tax credits, or feed-in tariffs to encourage individuals and businesses to adopt renewable energy technologies, improve energy efficiency, or opt for secondary materials, for instance. These economic factors interact with political, social, and technological factors to drive the shift towards more sustainable urban systems.

For example, the economic viability of renewable energy technologies can be enhanced by **political support, social acceptance, and technological advancements**.

©Pixabay, Pexels

**Navigating Economic Influences:
Tips & Tricks for Propelling Social
Tipping Points**

Recognise the impact of *economic factors* (Power to Add, Change, Evolve System Structure) on adoption rates of sustainable practices.

When sustainable alternatives become more cost-effective than conventional options, such as solar panels surpassing fossil fuels in price, adoption rates can soar.

Focus on making sustainable technologies and practices financially accessible to all, while also *implementing higher prices or taxes* (Power to Add, Change, Evolve System Structure) on the non-desirable options.

Leverage economic *incentives like tax credits or subsidies* (Rules of the System) for solar panel installations or electric vehicle purchases to make sustainable practices financially appealing. These incentives play a crucial role in fostering broader adoption and accelerating the transition towards sustainability.

Embrace *market dynamics* (Rules of the System) driven by heightened demand for sustainable products and services.

Businesses responding to this demand by offering sustainable options not only meet consumer preferences but also normalise sustainable practices, further propelling societal shifts towards sustainability.

Amsterdam ©Florencia Viadana, Unsplash

**Economic dimension:
What happened in Amsterdam?**

Making sustainable options more *financially appealing* (Power to Add, Change, Evolve System Structure) holds the potential to instigate significant shifts in societal behaviour. Bicycling emerges as a particularly cost-effective mode of transportation, with lower expenses for purchasing, maintenance, and use compared to cars, thereby attracting a sizable portion of the population to embrace cycling as their preferred means of getting around. The city's *substantial investments* (Rules of the System) in cycling infrastructure, including extensive networks of bike lanes and well-equipped parking facilities, enhance the convenience and safety of cycling, further bolstering its allure among residents. Moreover, economic incentives such as financial rewards offered by employers to staff who opt for cycling as their primary commuting mode contribute to the growing uptake of sustainable transportation choices. Amsterdam's holistic approach underscores its commitment to creating a more environmentally conscious and economically vibrant urban landscape.

Further reading

Article titled "The Economics of Renewable Energy," which discusses the economic aspects and implications of renewable energy technologies. The article explores various renewable energy sources, their costs, benefits, and the policies influencing their development and deployment. It provides an in-depth analysis of how renewable energy can be integrated into the energy market and its potential impact on the economy:

    Tax incentives to promote green electricity: An overview of EU-27 countries

South Korea's "Feed-in Tariff for Renewable Energy" policy mandated fixed prices for electricity generated from renewable sources, encouraging renewable energy development by guaranteeing rates for 15-20 years. The Korea Electric Power Corporation (KEPCO) was responsible for purchasing this electricity. The policy supported wind and solar energy with specific capacity limits and provided significant subsidies to renewable power plants until its conclusion:

    Feed-in Tariff for renewable energy – Policies – IEA

The PDF report titled "EeMMIP 2022 Complete Report: Consumer Insights & Green Mortgage Propositions" focuses on the analysis of consumer attitudes and perceptions regarding green mortgages. It provides detailed insights into the market demand for green mortgages, the factors influencing consumer decisions, and the potential benefits of offering green mortgage products. The report also includes data and case studies to support its findings and recommendations for stakeholders in the mortgage and financial sectors:

    E.ON PowerPoint (energyefficientmortgages.eu)

©Alexander Mils, Unsplash

SOCIOCULTURAL FACTORS

Photo of Ursula and Michael Sladek, the Courtesy of ©Frank Dietsche, EWS Elektrizitätswerke Schönau eG

Sociocultural context

The sociocultural context encompasses the social norms, values, and cultural practices that shape the adoption and maintenance of sustainable behaviours. Local governments can leverage **social and public campaigns** (Power to Add, Change, Evolve System Structure) to trigger mindset shifts and promote environmentally conscious actions among citizens.

For instance, city administrations can spearhead campaigns to cultivate societal attitudes favouring environmental conservation and sustainability.

Through targeted initiatives, such as **educational programs** or community **events** (Power to Add, Change, Evolve System Structure), governments can foster a culture of eco-consciousness and encourage behaviours like recycling, reducing energy consumption, and utilising public transportation.

Cultural practices also play a pivotal role in influencing energy consumption patterns and pro-environmental behaviours. City administrations can support and promote cultural norms that align with sustainability goals, such as **promoting** bicycles or public transportation as alternatives to private vehicles.

By investing in infrastructure conducive to these practices, such as bike lanes and pedestrian-friendly zones, governments can further facilitate their adoption.

Moreover, local governments can enhance the acceptability and adoption of innovative technologies that promote sustainability. By implementing policies and incentives to encourage the uptake of renewable energy sources or energy-efficient technologies, city administrations can pave the way for a **change in mental models** (Mindset or Paradigm) in citizens and communities.

Policymakers can strategically leverage social campaigns and policy interventions to catalyse shifts in collective behaviour towards sustainability.

OurPower is a non-profit European Cooperative (SCE) based in Austria with the aim to re-design the electricity market. It is owned by a growing number of members (Jan 31, 2021: 400), who sell their self-produced power directly to end consumers.

Harnessing Sociocultural Dynamics: Tips & Tricks for Driving Social Tipping Points

Policymakers wield significant power in shaping societal values and norms. Particularly by implementing *strategies* (Rules of the System) that prioritise sustainability and environmental consciousness, they can steer communities towards embracing eco-friendly practices such as energy conservation, reusing products, and sustainable transportation options.

Policy *interventions* (Power to Add, Change, Evolve System Structure) should aim to align with and amplify cultural practices that support pro-environmental behaviours. By promoting and integrating these interventions that change cultural norms favouring public transportation or bicycles over cars, policymakers can effectively reduce energy consumption and environmental impact within communities.

Acknowledge the importance of community acceptance in driving the adoption of new solutions or practices. Through community outreach initiatives (Power to Add, Change, Evolve System Structure), participatory decision-making processes, and collaborative projects, cities can empower their citizens to readily embrace renewable energy technologies and expedite their adoption and integration into daily life, fuelling social tipping points towards sustainability.

Depot Bike in Czech Republic. ©ekolo.cz

A woman parks a bike in a LOKIT parking and charging station in Stuttgart, Germany, on September 25, 2023. As a pilot-project the Italian start-up LOKIT installed two stations on the festival ground, where people can park, lock and charge their e-bikes ©EIT Urban Mobility

Sociocultural factors:
What happened in Amsterdam?

In Amsterdam, cycling isn't just a means of transportation; it's woven into the very fabric of daily life.

From the youngest to the oldest, everyone pedals their way through the city streets, making bikes the go-to choice for getting around. This widespread embrace of cycling didn't happen by chance—it was born from a mix of amongst other PESTLE factors, of sociocultural activism. Moreover, cycling is seen as a symbol of Dutch **egalitarianism and pragmatism** (Mindset or Paradigm).

Back in the 1960s and 70s, Amsterdam was at a crossroads, teetering on the brink of becoming a city dominated by cars. But rising traffic congestion, accidents, and the sacrifice of historic landmarks for roads sparked a movement against car-centric development. The push for change gained momentum when tragedy struck, with over 3,000 traffic-related deaths in 1971, including many children.

This spurred a wave of protests, **demanding** (Mindset or Paradigm) safer streets and dedicated bike lanes. Their activism proved pivotal, paving the way for Amsterdam's transformation into a bike-friendly haven. Beyond mere convenience, this shift towards cycling also reflects deeper values of sustainability.

In essence, it's a tale of societal change driven by norms, values, practices and acceptability of both citizens and government.

Cycling priority lines in Lindau, Germany ©IMAGINEXT, EIT Urban Mobility

Commuting by bike with small children in the Netherlands ©Mark Stosberg, Unsplash

Red bike lines in Amsterdam, the Netherlands ©Fons Heijnsbroek

Further reading

"The Culture Map" authored by Erin Meyer explores the dynamics of global business interactions, focusing on how cultural differences impact communication, collaboration, and management across international teams and organizations. It offers insights and strategies for navigating cultural diversity effectively in professional settings:

☞ The Culture Map – Erin Meyer

The Energy Citizens for Inclusive Decarbonization (ENCLUDE) project addresses the need to better define, contextualize, and integrate energy citizenship into decision making processes by acknowledging and including different types of knowledge from diverse groups in order to co-produce strategies for mobilizing and scaling up energy citizenship initiatives for inclusive energy transitions. Through the implementation of a mixed-method and transdisciplinary research framework, ENCLUDE aims to rethink and redesign engagement processes between government, business, civil society organizations, and citizens for a decarbonized future for and by all:

☞ Home | ENCLUDE (encludeproject.eu)

An article published in Nature Energy discusses topics related to energy research, such as renewable energy technologies, energy policy, energy efficiency, or the environmental impact of energy systems:

☞ Social dynamics of energy behaviour | Nature Energy

The Changemaker's Guide to the Energy Transition, a playbook that aims to take citizens step by step to design, implement and reflect on an initiative of their own related to the energy transition. This is the outcome of helping citizens develop their own community energy initiatives. The approaches used in the playbook are based on an online programme, called the ENCLUDE Academy, developed as a part of the research project called ENCLUDE, as well as methods that have been used with more than 1,500 Bachelor and Masters students in Europe. This playbook is for anyone looking to contribute to or already engaged in the energy transition. It is tailored for those interested in launching or already working on community projects related to energy and decarbonization or for civic organizations and local authorities who want to empower citizens to work together towards change. ©ENCLUDE Project

TECHNOLOGICAL FACTORS

Technological factors

The "technological" dimension in energy consumption and cities refers to the crucial role of technology in shaping energy production, distribution, and consumption. As city officials and policymakers, you have the power to drive advancements in renewable energy technologies, energy-efficient appliances, smart grids, and digital platforms for energy management. By **supporting innovation** and development in both low-tech (e.g., passive building design) and high-tech (e.g., smart charging stations) solutions, you can provide citizens with the tools to engage in sustainable behaviours.

Ensuring that technological innovations are accessible and affordable for all citizens is vital. You can achieve this by **implementing** (Rules of the System) subsidies, tax incentives, and other mechanisms to reduce the cost of energy-efficient appliances and systems, making it easier for people to adopt these technologies and reduce their environmental footprint. Investing in **public awareness campaigns** (Structure of Information Flow) and educational programs is crucial to highlight the benefits of technological innovations in energy efficiency and sustainability.

By informing citizens about how smart technologies, such as smart meters and energy management systems, can help them monitor and reduce their energy consumption, policymakers can encourage widespread adoption and responsible usage.

Developing and maintaining (Power to Add, Change, Evolve System Structure) infrastructure that supports the integration of new technologies is essential.

This includes expanding smart grids, building charging stations for electric vehicles, and retrofitting existing buildings to improve energy efficiency.

By creating a supportive infrastructure, you can facilitate the transition to sustainable energy practices.
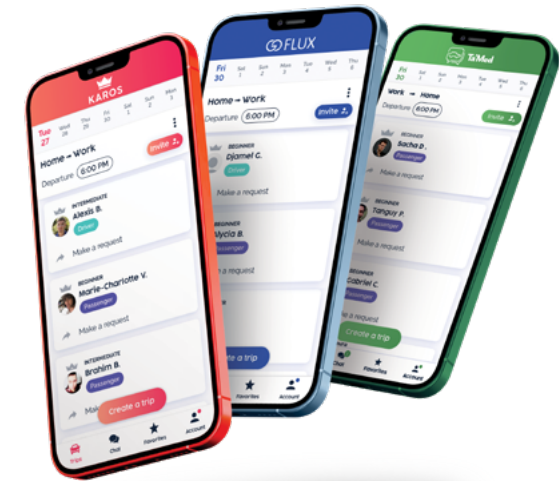
Karos Mobility is an innovative carpooling solution integrated with public transport that aims to reduce the environmental impact of commuting trips by increasing the occupancy rates of vehicles. ©Karos Mobility


Inbalance grid is a Lithuania-based EV charging company that's overcoming the grid limitation barrier through a cloud-based dynamic load management technology for grid balancing. ©inbalancegrid.com

Engaging communities in the adoption and implementation of new technologies through participatory decision-making processes and collaborative projects is important. Involving citizens in the development and deployment of technological solutions ensures community buy-in and fosters a sense of ownership over sustainable practices.

Encouraging the adoption of new technologies by **implementing policies** (Power to Add, Change, Evolve System Structure) that mandate their use is also effective.

For example, setting energy efficiency standards for appliances, requiring smart meters in new buildings, or offering rebates for the installation of renewable energy systems can drive widespread adoption and lead to a social tipping point in consumption behaviours.
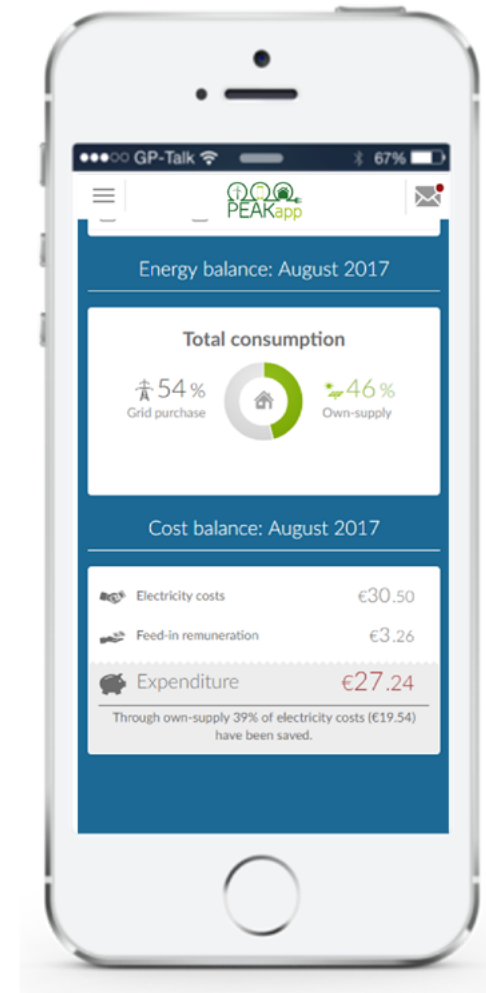
PEAKapp - Personal Energy Administration Kiosk application: an ICT-ecosystem for energy savings through Behavioural Change, Flexible Tariffs and Fun ©peakapp.eu

Tips & Tricks for Facilitating Social Tipping Points – Embracing Technological Advancement

Embrace technological advancements, like affordable technologies to empower individuals in reducing their environmental impact. Accessible and cost-effective solutions are pivotal; widespread availability and affordability accelerate the adoption of sustainable technologies, catalysing tipping points in energy consumption behaviours.

Policymakers can further support this by offering *incentives* (Power to Add, Change, Evolve System Structure) and subsidies for the purchase and installation of such systems, making them more accessible to a wider audience.

Simple innovations in the form of products, services and systems can make the most significant impact on the population, while also being the most cost-effective and accessible.

Policymakers can complement these efforts by enacting *regulations and standards* (Power to Add, Change, Evolve System Structure) that promote the use of low-tech sustainable solutions, while also investing in research and development for further advancements in this area.

Policymakers can play a role in this acceleration by launching extensive *awareness campaigns* (Structure of Information Flow) to educate citizens about the benefits and availability of affordable sustainable technologies. Additionally, implementing education and training programs focused on sustainable technologies can empower citizens to understand how these innovations work and how they can integrate them into their daily lives.

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Further reading: Smart Cities Marketplace Solution Booklet Why Circular Cities?

Abattoir's rooftop urban farm pilot project in Brussels, Belgium ©Agata Smok

**Technological Framework:
How did it happen in Amsterdam?**

The transformation of Amsterdam into a renowned bicycle city owes much to a confluence of technological and infrastructural developments. The Dutch "black bikes" and "Oma" are central to this phenomenon.

This sturdy technology, characterised by robust fenders, single gears, and enclosed chains, embodies a utilitarian sensibility prioritising comfort over speed. Their ergonomic configuration, facilitating an upright riding posture, has democratised cycling, appealing to a broad spectrum of riders, and fostering widespread adoption.

The proliferation of bike-sharing (Positive Feedback Loops) platforms enabled the mass adoption of biking for commuting. For instance, the municipality of Amsterdam has developed apps that provide real-time information on bike parking availability and bike-sharing programs.

Thus, the ascendancy of cycling as a mass mode of commuting shows that low – and high-tech components have contributed to a paradigm shift in urban mobility.
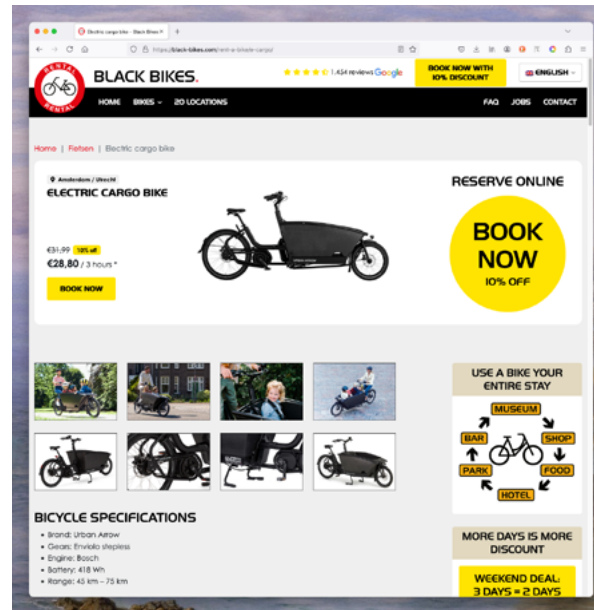
Black Bikes rental website in 2024 ©Black bikes

Commuting by cargo bike with groceries (above) or a baby seat (below) ©Agata Smok

Further reading

The website providing information and resources related to the deployment of smart metering systems across the European Union. It covers topics such as the adoption rates of smart meters, regulatory frameworks, technological advancements, and the benefits of smart metering in energy efficiency and sustainability efforts within the EU member states:

☞ [Smart Metering deployment in the European Union | JRC SES (europa.eu)](#)

The Transition Network website is dedicated to supporting and inspiring communities worldwide to reimagine and rebuild their local environments in response to global challenges such as climate change and economic instability:

☞ [transitionnetwork.org](#)

NIMBEE Mobile Charging Stations. Nimbee's vision? More electric cars in the city with less charging stations. Why should a person drive to a charging station, when it can come to them? Further reading: nimbee.me ©EIT Urban Mobility

LEGAL FACTORS

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Legal factors

The "legal" context in energy consumption and cities refers to the laws and legal frameworks that govern the various aspects of sustainability in cities.

This includes laws related to renewable energy, energy efficiency, emissions, mobility, construction, and the rights of energy consumers. Legal factors can significantly influence people's behaviours related to sustainability: laws that set **standards** (Rules of the System) for energy efficiency and whole-life carbon in construction can promote more energy-efficient and circular buildings. Similarly, **legal frameworks** (Rules of the System) can include incentives (like tax credits or subsidies, showing overlap with the economic factor) for adopting renewable energy technologies or penalties for excessive energy use or emissions.

Laws that protect the rights of energy consumers can influence behaviours by ensuring access to reliable, affordable energy and protecting consumers from unfair practices.

Legal provisions (Power to Add, Change, Evolve System Structure) and market conditions for energy communities have been introduced into the EU legal system.

Energy communities (Goal of the System) are legal entities that empower citizens, small businesses, and local authorities to produce, manage, and consume their energy. In the context of social tipping points, these legal factors can play a crucial role; if a new law or regulation makes a practice or activity more attractive or less attractive, it can lead to a social tipping point driving more sustainable cities.

Energy Community in Berlin. ©berliner-energietisch.net

Elektrizitätswerke Hindelang e.G., Germany cooperative was founded in the 1920s by the citizens of Hindelang in order to supply their village with electricity. The initiative generates electricity, organises local energy trading and operates the local grid of Bad Hindelang. The municipality of Hindelang holds about 14 % of the cooperative's equity but has only one vote like the other members. The cooperative is a key driver in the energy transition and an important employer ©Natalia Banz, Unsplash

Tips & Tricks for Creating Social Tipping Points: Leveraging Laws and Regulations

Utilise **laws and regulations** (Rules of the System) to directly influence citizen behaviours and create tipping points. Implement mandates like recycling laws to make recycling a commonplace practice. Similarly, incentivise renewable energy adoption through regulatory measures to catalyse widespread use of sustainable technologies.

Safeguard specific practices or technologies with **legal protections** (Rules of the System) to sway behaviours. Laws protecting the rights of renewable energy producers, for instance, can foster greater adoption of renewable energy production.

Ensure **proper enforcement** (Rules of the System)of laws and regulations to induce significant behaviour change. Even well-intentioned laws may falter without effective enforcement mechanisms in place.

Recognise the influence of **court rulings** (Rules of the System) in shaping societal norms. Favourable rulings supporting certain behaviours or practices can alter public perception and behaviour, contributing to social tipping points.

Automotive Campus in the Netherlands is a center for innovation in the automotive industry, particularly in the development of intelligent and sustainable transportation solutions. The campus provides a collaborative environment for companies, researchers, and educational institutions to work on advancements in smart mobility technologies, such as connected and autonomous vehicles, electric mobility, and smart infrastructure. The goal is to drive forward the future of transportation with innovative projects and partnerships. ©EIT Urban Mobility

VOOVOO Founder photographed with prototype of device that provides real-time prevention of speeding and unsafe driving behavior for commercial fleets, delivering substantial cost savings to the industry, revolutionizing fleet management, and enhancing road safety in Riga, Lithuania. ©EIT Urban Mobility

Ecopower CVBA is a Belgian cooperative that acts as a producer and supplier of green electricity. The capital raised by the co-operatives is used to finance projects, in co-operation with other co-operatives or not. Its main area of activity is Flanders. The CVBA collects money to invest in rational energy consumption and green electricity. In addition, Ecopower informs and raises awareness about renewable energy and the rational use of energy and cooperative entrepreneurship. A third objective is to bring together green electricity consumers. Since the liberalisation of the electricity market (1 July 2003), Ecopower has supplied green electricity to its shareholders. By mid-2016, Ecopower had over 48,000 shareholders. ©ecopower.be

Legal Framework:
How did it happen in Amsterdam?

In Amsterdam, the legal landscape has played its part in shaping the city's status as a bicycle-friendly city. **Traffic laws** (Rules of the System) are deliberately structured to prioritise the safety and rights of cyclists and pedestrians, often leaning in favour of cyclists in accidents unless evidence suggests otherwise.

Additionally, the city has enacted **regulations mandating** (Power to Add, Change, Evolve System Structure) the creation of bike lanes and parking facilities, enhancing the convenience and safety of cycling. Supportive legal frameworks have also fostered the growth of bike-sharing platforms, making it effortless for both residents and visitors to access bicycles. Furthermore, government initiatives, such as **financial incentives** (Power to Add, Change, Evolve System Structure) for bike commuting, have further encouraged cycling as a preferred mode of transportation.

This amalgamation of legal factors has been instrumental in reaching a social tipping point where bicycles have become a prevalent choice for commuting in Amsterdam.

©Getty images

Further reading

Germany is planning to implement a ban on the installation of most oil and gas heating systems starting in 2024. This decision is part of efforts to reduce greenhouse gas emissions and promote more sustainable heating alternatives. The move is expected to accelerate the transition to renewable energy sources and improve energy efficiency in buildings across the country.

    Germany plans to ban installation of most oil and gas heating from 2024 | Germany | The Guardian

France adopted a new law on energy and climate aimed at reducing greenhouse gas emissions and promoting renewable energy. The legislation sets ambitious targets, including achieving carbon neutrality by 2050 and reducing reliance on nuclear power. It also outlines measures to enhance energy efficiency in buildings and transport sectors, emphasizing France's commitment to combating climate change through comprehensive legislative action.

    France: Law on Energy and Climate Adopted | Library of Congress (loc.gov)

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ENVIRONMENTAL FACTORS

Environmental factors

The "environmental" factor refers to the physical environment and the impact of environmental and ecological factors. This includes factors such as climate, weather, geographical position, and global changes in climate.

The local climate and weather conditions can influence the types of energy sources that are viable. For example, city officials can take advantage of environment, location, and incentives, and **encourage** (Power to Add, Change, Evolve System Structure), i.e. solar energy is more viable in areas with high levels of sunlight, while wind energy is more viable in windy areas.

The geographical position of a city can also influence energy consumption behaviours. For example, cities located near large bodies of water might have the potential to use hydropower. The materials available locally are also dependent on the environmental conditions.

The increasing impacts of global climate change can encourage policymakers to **motivate** (Structure of Information Flow) individuals and communities to reduce their water, energy, and material consumption and transition to renewable energy sources.

Tips & Tricks for Driving Social Tipping Points – Environmental Catalysts

Foster change *by raising awareness* (Structure of Information Flow) for environmental challenges like climate change and pollution. Encourage individuals to embrace practices such as energy conservation, local consumption, and sustainable transportation to align with sustainability goals.

Harness the power of *firsthand experiences* (Structure of Information Flow) with environmental shifts. Whether it's extreme weather events or ecosystem alterations, these encounters motivate communities to adopt more eco-conscious habits and spur collective action.

Leverage *regulatory measures* (Rules of the System) and policies to promote renewable energy and curb pollution. By providing incentives for both individuals and businesses to embrace sustainability, these measures accelerate the transition towards a greener future.

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©Alexander Mils, Unsplash

What happened in Amsterdam? Environmental Factors

Amsterdam's flatness and mild climate have also important roles in the mass adoption of cycling. Amsterdam's (and all of the Netherlands') flat terrain makes it easier for people of all ages and fitness levels to cycle, reducing the physical effort required compared to hilly or mountainous areas.

Furthermore, Amsterdam has a temperate maritime climate, with mild summers and moderate winters. While there can be rainfall throughout the year or strong winds, severe weather conditions such as heavy snowfall or extreme temperatures are rare. This relatively mild climate allows for comfortable cycling conditions most of the year, encouraging residents to use bicycles as a primary mode of transport.

Amsterdam is also one of the most densely populated cities in the world, with 5,333 people living per square kilometre of land in 2021.

The high population density also means that destinations within the city are relatively close together. This makes cycling a convenient and efficient mode of transport for many trips and it makes it less practical to rely on cars for transportation due to congestion and parking limitations.

These elements were taken *advantage* (Power to Add, Change, Evolve System Structure) of by policymakers, planners, and further actors to create a flat, serviceable, well connected, bicycle infrastructure.

©Robin Benzrihem, Unsplash

Further reading

In 2023, Spain achieved a significant milestone by implementing its largest installed solar photovoltaic power system to date. This initiative marks a substantial advancement in Spain's efforts to expand its renewable energy capacity and reduce dependence on fossil fuels:

🖱 [In 2023, Spain implemented the largest installed solar photovoltaic power system in its history | Red Eléctrica (ree.es)](ree.es)

The article from Life in Norway discusses hydropower in Norway, highlighting its importance as a renewable energy source. It covers Norway's extensive use of hydropower for electricity generation, its historical development, environmental impacts, and future prospects in the context of renewable energy policies:

🖱 [Hydropower in Norway (lifeinnorway.net)](lifeinnorway.net)

The webpage from the Swiss Federal Office of Energy (BFE) provides information on hydropower in Switzerland. It discusses Switzerland's reliance on hydropower for electricity generation, its role as a key renewable energy source, technological advancements in hydropower plants, environmental considerations, and policies promoting sustainable hydropower development in Switzerland.

🖱 [Hydropower in Switzerland (admin.ch)](admin.ch)

©Dan Meyers, Unsplash

INDIVIDUAL BEHAVIOURS

©Getty images

Individual behaviours

Behaviours are influenced by culture, experience, education, norms, values, and other psychological factors, making them resistant to direct change. Instead of directly targeting behaviours, interventions aimed at achieving change should focus on the aspects that facilitate or impede behaviour.

Values and self-identity significantly influence pro-environmental behaviours. People prefer options that align with their values and consider the implications of actions that resonate with them. Four fundamental values shape environmental beliefs: **self-transcending values**, such as altruistic and **biospheric values**, tend to promote climate action, while egoistic and hedonic values can inhibit it.

However, enhancing pro-environmental actions in line with people's values can enhance the likelihood of performance: low-cost actions and favourable contexts increase the likelihood of acting on biospheric values.

Behavioural change **requires interventions** (Rules of the System) that aim to modify costs and benefits to make sustainable actions more **appealing** (Mindset or Paradigm), easier, and less stressful, especially for those with hedonic and egoistic values.

Defining strategies (Goal of the System) that align with the identified values can support and motivate change.

For instance, highlighting the comfort achieved through an energy renovation is important for those with strong **hedonic values,** while offering subsidies for PV adoption may motivate people with stronger **egoistic values**. Public participation and citizen engagement are crucial to recognise values, priorities, and concerns that can motivate or hinder social tipping points.

©Erik McLean, Unsplash

©Han Vandevyvere

Tips & Tricks for Sparking Social Tipping Points – Behaviour

Ignite change by tapping into the power of values and emotions. When society collectively champions sustainability and feels a deep emotional connection to environmental issues, it sets the stage for sustainable behaviours to take centre stage.

Fuel a movement by integrating environmental consciousness into personal identities. When being eco-conscious becomes part of who we are, it triggers a wave of pro-environmental actions across the board.

City officials and policymakers can facilitate this by implementing changes, incentivising initiatives, and providing resources for sustainable behaviours.

Tapping into values (Mindset or Paradigm change) can be done by *promoting* awareness campaigns, *implementing* (Power to Add, Change, Evolve System Structure) policies that support sustainable practices, and collaborating with communities to foster a culture of environmental responsibility.

The Changemaker's Guide to the Energy Transition offers templates for civic organizations and local authorities who want to empower citizens to work together towards change. ©ENCLUDE Project

What happened in Amsterdam? Individual behaviours

In Amsterdam, the transition to biking as a prevalent commuting mode was spurred by several key triggers aligned with psychological principles. Initially, biking's enjoyable aspects, such as outdoor movement and freedom, were highlighted, enticing individuals to try it out.

Financial incentives (Rules of the System), like subsidies for bike acquisition, appealed to those prioritising egoistic benefits. Additionally, the environmental advantages of biking, such as reducing carbon emissions, resonated with individuals concerned about sustainability. To sustain biking behaviour, investments were made in infrastructure like dedicated lanes and cyclist-friendly urban planning, enhancing convenience and safety (linked to hedonic values).

Continuous *support services* (Structure of Material Stocks and Flows), such as repair stations and secure parking, ensured a positive biking experience over time. Fostering a biking culture through community events and group rides encouraged individuals to embrace biking as a lifestyle choice.

Recognising biking as a symbol of status and social responsibility further reinforced its appeal, particularly among those valuing recognition and approval.

Lastly, *promoting collective* (Structure of Information Flow) responsibility for environmental stewardship through education and grassroots initiatives strengthened the link between biking and sustainable living (biospheric values).

By aligning actions with these principles, policymakers facilitated the emergence of biking as a preferred commuting mode in Amsterdam, driving a significant shift towards a more bike-friendly city.

Netherlands Prime Minister, Mark Rutte rides bicycle to Royal Palace ©Frank van Beek

Further readings

Fogg behavioural wizard – to adapt. Identify behaviours that would be one time, span, or path. Identify key actions/strategies to trigger each type of behaviour:

🖰 [Behavior Wizard: A Method for Matching Target Behaviours with Solutions | SpringerLink](#)

Case study: De vries example of the hassle factor for a green home and one stop shops as potential enablers

🖰 [The Hassle Factor as a Psychological Barrier to a Green Home](#)

The article titled "A Perspective on the Human Dimensions of a Transition towards Net-Zero Energy Systems" on ScienceDirect discusses the social and behavioral aspects of transitioning to net-zero energy systems:

🖰 [A Perspective on the Human Dimensions of a Transition towards Net-Zero Energy Systems](#)

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LESSONS LEARNED

Lessons learned

As a policymaker, comprehending the dynamics of social change is essential for driving transformative change through strategic interventions.

While organic shifts in practices and norms occur naturally, proactive strategies are often necessary to nudge or engineer these changes. This involves identifying leverage points within the system where policy interventions can significantly impact behaviour.

In the context of the Amsterdam case study, key leverage points included government policies prioritising cycling, the development of extensive cycling infrastructure, and fostering a strong cycling culture through these interventions. Combined with favourable physical and economic conditions, these efforts tipped the balance in favour of cycling as a primary mode of transport.

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Context-Specific Social Tipping Points

There is no one-size-fits-all solution for enabling social tipping points in other cities.

Policymakers should consider the following steps to tailor interventions to their unique contexts:

1. Use PESTLE Framework to Identify Trends and Drivers

Utilise the PESTLE framework to analyse political, economic, social, technological, legal, and environmental trends that can drive social change. Policymakers can focus on specific PESTLE factors where they have expertise, recognising that addressing one factor can influence others.

This comprehensive analysis helps identify the most impactful areas for intervention.

2. Identify High-Leverage Points

Look beyond conventional wisdom to identify leverage points within the system.

These points may not be immediately apparent but have the potential to produce significant shifts in behaviour when targeted effectively.

For example, changing subsidy structures or implementing new regulatory measures can create substantial behavioural changes.

3. Engage Communities and Understand Values

Engage communities and incorporate social science insights early in the policy development process. Understanding intrinsic motivations and local values allows policymakers to design interventions that resonate with the community. This approach ensures that policies are culturally sensitive and more likely to be accepted and adopted.

4. Remove Barriers and Constraints

Create an enabling environment for desired behaviours by addressing existing barriers and constraints. For instance, ensuring the safety and convenience of cycling can promote it as a viable alternative to driving. Identifying and removing obstacles helps create conditions that support and sustain new social practices.

5. Implement Systemic Solutions at Scale

Catalyse social tipping points by implementing systemic solutions at scale. This involves leveraging foundational efforts to achieve widespread change, driving sustainable behaviours across communities. Pilot programs can help refine these solutions before broader implementation, ensuring effectiveness and scalability

Risks and considerations

While the steps above provide a framework for promoting sustainable behaviours, it's crucial to acknowledge potential risks.

Overlooking contextual nuances or underestimating barriers can lead to ineffective interventions or unintended consequences.
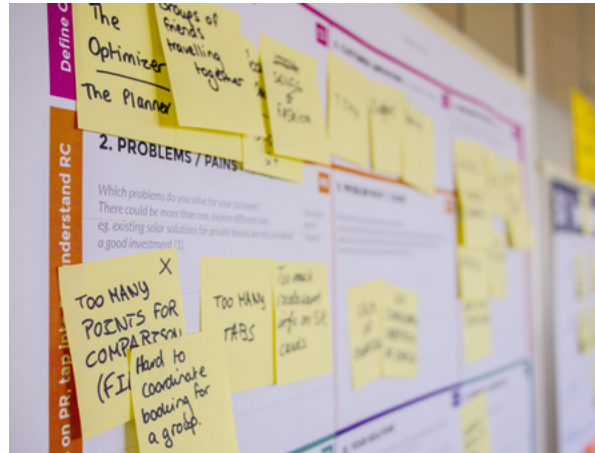
MONITORING   EVALUATION   ADAPTATION

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©Rawpixel, Unsplash

Continuous monitoring, evaluation, and adaptation are essential to navigate these risks and foster successful energy transitions.

©Alexander Mils, Unsplash

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Application to other cities

Governments worldwide, such as the Dutch government with its Behavioural Insights Network, have established specialised units to help policymakers craft effective interventions. These units utilise behavioural science to design 'nudges' that encourage desirable behaviours while maintaining individual freedom.

For instance, the UK's Behavioural Insights Team, often referred to as the Nudge Unit, has successfully applied these principles across various sectors, from increasing tax compliance to promoting public health.

These units use data-driven strategies to understand human behaviour and design interventions that subtly guide people towards making better decisions. By incorporating insights from psychology, economics, and social sciences, these units provide valuable tools for policymakers aiming to influence social norms.

Cities aiming to replicate Amsterdam's success in driving social practice change can follow a structured approach to ensure their interventions are effective and sustainable. Here are detailed steps that cities can take.

1. Use Leverage Points to Understand the Local Context

Apply leverage points to analyse the local context, identifying strategic areas where small changes can lead to significant impacts. Focus on high-leverage points most likely to drive substantial and sustained change, such as improving public transportation infrastructure to increase its usage.

2. Engage Stakeholders for Broad-Based Support

Involve a wide range of stakeholders in the planning and implementation process, including community members, local businesses, and influencers. Building a coalition of support ensures that interventions are well-received and supported by the community. Engage stakeholders through public consultations, workshops, and partnerships to gather diverse perspectives and foster a sense of ownership.

4. Leverage Behavioural Science Insights

Utilise insights from behavioural science to design interventions that nudge individuals towards desirable behaviours. Behavioural Insights Units, like those in the UK and the Netherlands, can provide expertise in crafting these interventions. If such units do not exist locally, consider establishing them or collaborating with external experts. These units offer valuable tools and methodologies for understanding and influencing human behaviour, ensuring interventions are both subtle and impactful.

3. Pilot Programs, Monitor, and Scale

Implement pilot programs to test the effectiveness of proposed interventions on a small scale before a broader rollout. This allows for experimentation and learning, helping refine strategies based on real-world feedback. Continuously monitor the impact of these programs using data-driven approaches, adjusting interventions as necessary to improve efficacy. Once proven successful, scale initiatives to reach a larger population.

5. Foster a Supportive Policy Environment

Create a policy environment that supports and sustains social practice changes. Align local regulations, incentives, and public policies with the goals of the interventions. For example, policies that promote environmental sustainability should integrate with initiatives encouraging green behaviours, such as cycling or recycling. Ensure policies are flexible enough to adapt to new insights and evolving circumstances.

6. Communicate and Educate

Effective communication is key to changing social practices. Develop comprehensive communication strategies to raise awareness and educate the public about the benefits of the proposed changes. Use multiple channels, including social media, public campaigns, and educational programs, to reach different population segments. Highlight success stories and positive outcomes to build momentum and encourage broader adoption of new norms.

7. Encourage Community-Led Initiatives

Support grassroots movements and community-led initiatives that align with the overarching goals of the interventions. Encourage local innovation and provide resources for community projects contributing to social changes. This fosters a sense of empowerment and allows for organic growth of the desired behaviours within the community.
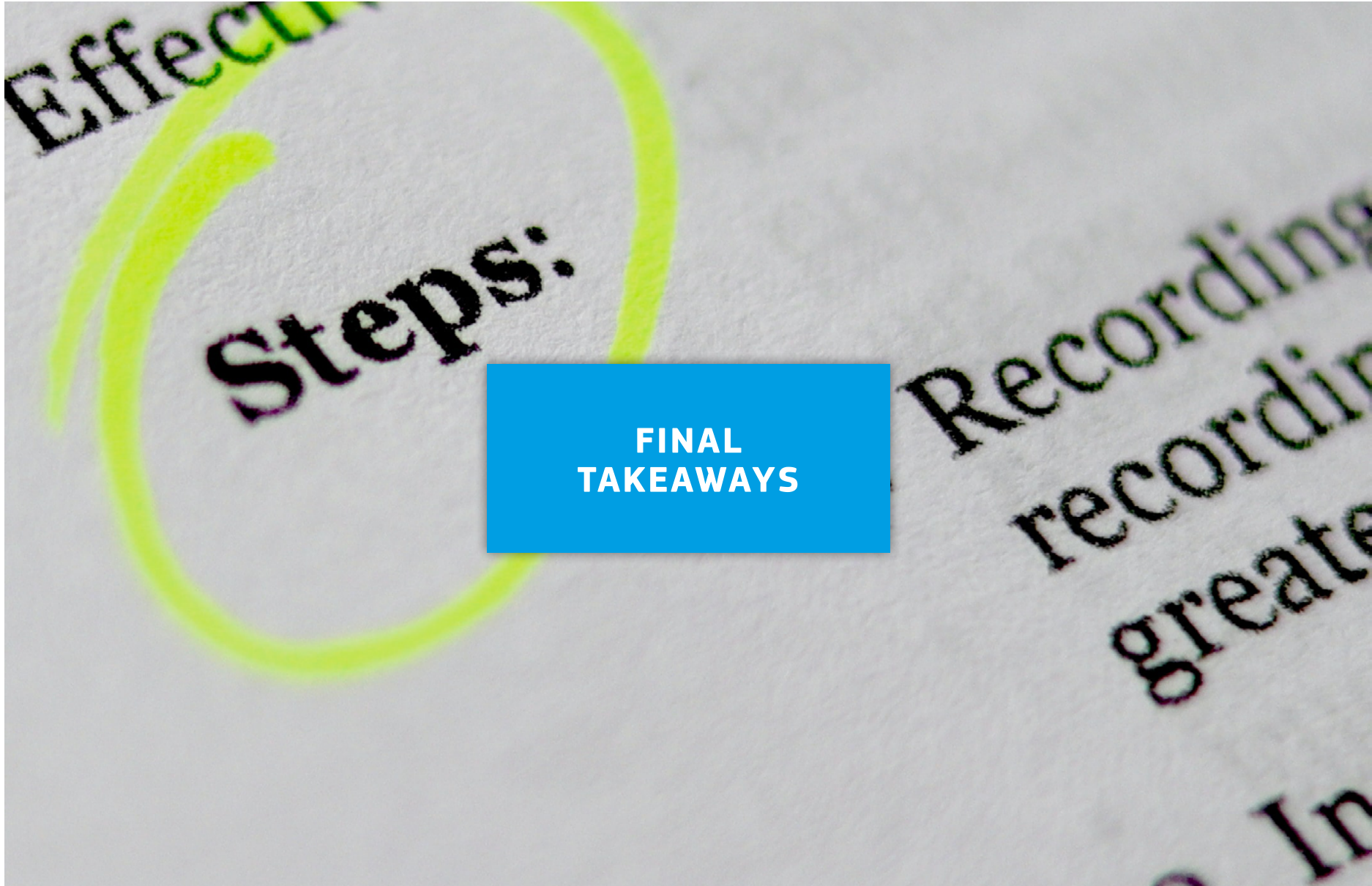
**FINAL
TAKEAWAYS**

Final takeaways

Effective social change is achievable through strategic policy interventions informed by behavioural science and systemic analysis.

By integrating insights from Behavioural Units and applying leverage points, policymakers can create environments conducive to social tipping points. Amsterdam's experience serves as a practical blueprint, demonstrating the importance of tailored, data-driven approaches and community engagement in driving transformative change.

Cities that adopt these strategies can effectively shift social norms and achieve long-term sustainable outcomes.


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Smart Cities Marketplace

The Smart Cities Marketplace is a major market-changing initiative supported by the European Commission bringing together cities, industries, SMEs, investors, researchers and other smart city actors.

The Marketplace offers insight into European smart city good practice, allowing you to explore which approach might fit your smart city project. Discover our digital brochure here.
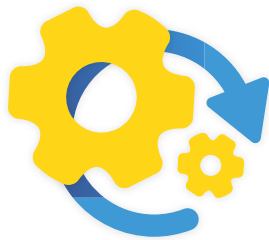
Matchmaking

The Smart Cities Marketplace offers services and events for both cities and investors on creating and finding bankable smart city proposals by using our Investor Network and publishing calls for projects.

Investor network

Call for Applications – Matchmaking Services
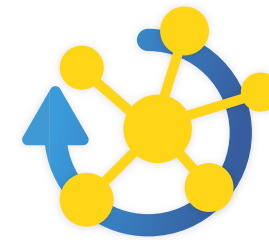
Project finance masterclass

Focus and Discussion groups

Focus groups are collaborations actively working on a commonly identified challenge related to the transition to smart cities. Discussion groups are fora where the participants can exchange experience, cooperate, support, and discuss a specific theme.

Focus and Discussion groups

Community

Scalable Cities

A city-led initiative providing a large-scale, long-term support for the cities and projects involved in the Horizon 2020 Smart Cities and Communities projects.

Scalable Cities

SOCIO-TECHNICAL TIPPING POINTS SOLUTION BOOKLET

Smart Cities Marketplace 2024

The Smart Cities Marketplace is managed by the European Commission Directorate-General for Energy