SOCIAL CONTAGION
AS A MEANS TO TRANSITIONS

APPENDIX

Master thesis by:

Jesal Shah

August 2020

Contents

A

Project Brief

DESIGN FOR our future

DOS 3005   24/2/20

TUDelft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

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Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME
Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1!

family name	Shah		Your master programme (only select the options that apply to you):
initials	J. S. given name Jesal		IDE master(s): ( ) IPD ( ) Dfl (★) SPD
student number	4755863		2nd non-IDE master:
street & no.	▉▉▉▉▉		individual programme: _____ (give date of approval)
pcode & city	▉▉▉▉▉		honours programme: ( ) Honours Programme Master
country	▉▉▉▉▉		specialisation / annotation: ( ) Medisign
phone	▉▉▉▉▉		( ) Tech. in Sustainable Design
email	▉▉▉▉▉		( ) Entrepeneurship

SUPERVISORY TEAM **
Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair	Dr. Rebecca Price	dept. / section:	PIM / MCR
** mentor	Dr. ir. Jotte de Koning	dept. / section:	DE / DfS
2nd mentor	Jacco Kwakman		
	organisation:	Gemeente Rotterdam	
	city: Rotterdam	country:	Netherlands

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

comments (optional)

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30   Page 1 of 7

TUDelft

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF
To be filled in by the chair of the supervisory team.

chair Dr. Rebecca Price   date 20 . 02 . 2020 .   signature _____

CHECK STUDY PROGRESS
To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: **22** EC   (✗) YES   all 1st year master courses passed
Of which, taking the conditional requirements
into account, can be part of the exam programme **22** EC   ( ) NO   missing 1st year master courses are:

List of electives obtained before the third
semester without approval of the BoE _____

name _____   date 25 . 2 . 2020   signature MMS

FORMAL APPROVAL GRADUATION PROJECT
To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content:	(✓) APPROVED	( ) NOT APPROVED
Procedure:	(✓) APPROVED	( ) NOT APPROVED

comments

name Mr Morgan   date 2-3-20   signature _____

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30   Page 2 of 7
Initials & Name J.S. Shah   Student number 4755863
Title of Project Social networks as means to catalyse transitions

Personal Project Brief - IDE Master Graduation

TUDelft

Social networks as means to catalyse transitions
project title

delay due to holiday of supervisors.

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 24 - 02 - 2020

~~11 - 08 - 2020~~   end date

24 - 08 - 2020

INTRODUCTION **
Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

In the wake of global warming and the consequent Paris agreement, the government of Netherlands has set the goal to reduce greenhouse gas emissions by 49% in 2030 compared to 1990 levels. An energy transition in the built environment is identified as one of the means to achieve this goal. The vision includes the transformation of 7 million homes & 1 million buildings, which are moderately insulated and heated by natural gas, into well insulated homes / buildings that are heated using renewable sources [1]. Since alternate technologies are already available in the market, the government plans to adopt (to begin with) pricing and subsidising measures to enable the transformation – (financial) incentivisation being the key strategy [1]. The challenge here is that large scale adoption is a necessary condition to regulate the prices, even if the technology is economically viable. Moreover, the provision of subsidies & funding and the presence of technological alternatives does not imply that households will opt for gas discontinuation. Lock-ins in ways of thinking, doing and being (entrenched routines, beliefs) at different scales need to be overcome to enable the opt-it [5,6]. Thus, the transition can be viewed as a social challenge wherein participation of a critical mass is a pre-requisite to achieve the set goals.

The government aims to employ a 'district-oriented approach', wherein each municipality has to develop a customised transition plan (Regional Energy Strategy (RES)) for their region. In order to devise its RES, the Rotterdam Municipality has selected 5 areas to begin with – Reyeroord being one. Upon evaluation with energy providers (eg. Vattenfall), the municipality estimates that district heating is the most efficient heating source for this area going forward. Simultaneously, the sewage system of Reyeroord is due for replacement, and the municipality aims to combine both the efforts by developing an integrated plan that benefits the Reyeroord community. Along with the spatial transformations, social aspects such as improving the quality of life, positive social interactions and inclusivity are being given utmost importance. With this backdrop, the municipality is currently in the initial planning stage, faced with the over-arching question –How to motivate residents (a heterogenous mix in terms of demographics, income, type & ownership of house etc.) to actively participate in the upcoming transitions to make Reyeroord natural-gas free?

From the above context it is clear that solely top-down technological and financial solutions will not be enough to motivate a critical mass. The need for bottom-up, socially-driven interventions is apparent. At the micro level, the transition involves (financial) investments in terms of infrastructural changes, time and energy by the residents in order to upgrade the wiring, insulation as well as heating sources. Further, the return on this investment is not visible in the immediate future and poses uncertainty in financial savings in the long-term. It also entails short-term inconveniences in routines. Lastly, there is anomaly as to who will make the decision -the tenants, house-owners, housing associations, housing corporation or the community as a whole, each waiting for the other to take action. Thus, even if residents have a positive attitude towards the energy transition, given this perception of inconvenience and uncertainty, it doesn't reflect in their choices towards transitioning away from natural gas – an attitude-behaviour gap [2].

The literature on decision-making specific to energy use explains this attitude-behaviour gap by the interplay of multiple determinants of decisions (psychological & contextual) which makes it all the more difficult to motivate residents [2] [3]. Psychological determinants include values, attitudes, and personal norms while contextual determinants include available choices, economic incentives, social norms, technologies, and infrastructures. While financial incentivisation appeals to the rational consumer, making use of the concepts of utility maximisation and behavioural economics, this project aims to explore the social construction of the decisions of residents towards gas discontinuation (Figure 1).

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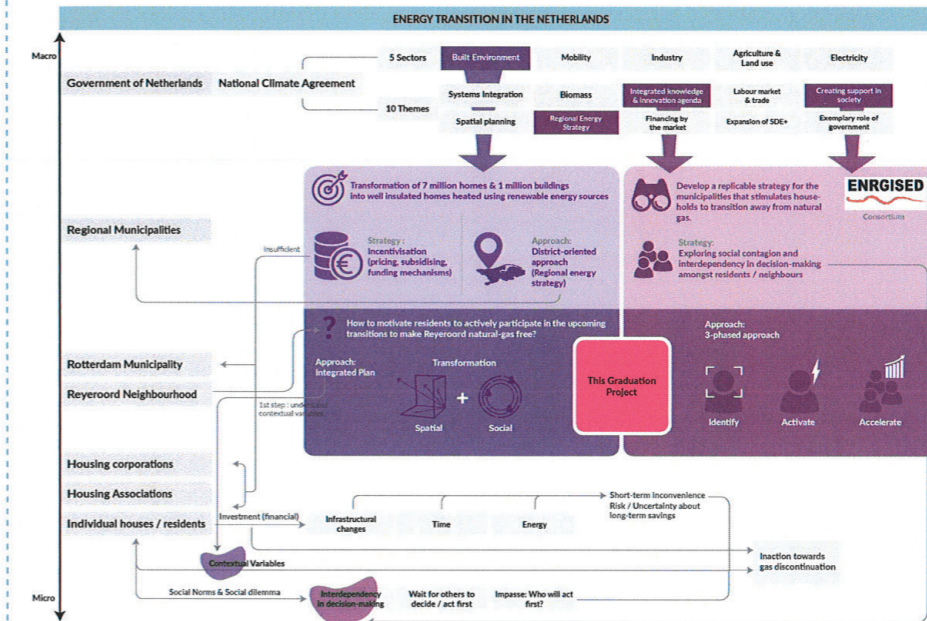introduction (continued): space for images
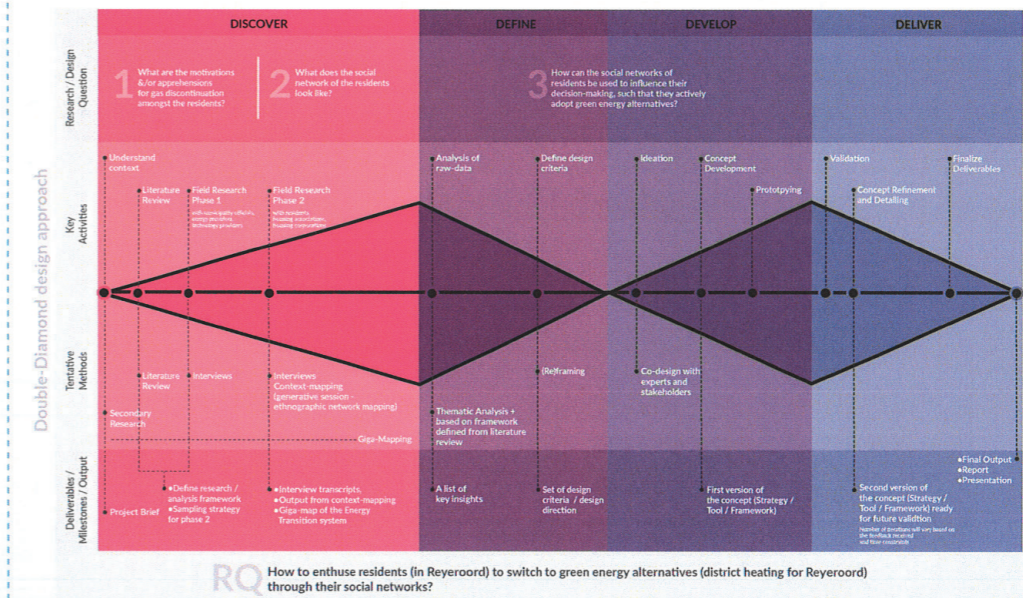

image / figure 1: Mapping the context of the project

image / figure 2: The double-diamond design approach to be followed during the project

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PROBLEM DEFINITION **
Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

Several models of decision-making from research traditions such as sociology, anthropology, psychology etc. consider the individual's actions to be influenced by social norms and social groups they belong to. They argue that "individual decisions are 'constructed' or determined by social and technological systems. Needs, attitudes, and expectations are not individual in nature but are part of a complex relationship between social norms and relations, technologies, infrastructures, and institutions" [3]. They discuss the " 'embeddedness' of action in ongoing relations and networks of relations, showing that embeddedness crucially affects behavior of rational actors in social dilemmas"[7]. Thus, the attitude-behaviour gap for gas discontinuation can also be explained through interdependency in decision-making amongst residents.

Theories of conformity and compliance [4] elucidate that residents are strongly influenced by the (in)action of others, which implies that one would act only if several others have chosen to act [7]. This gives rise to an impasse wherein everyone waits for the others to act first, with no ultimate action. However, on the positive side, this interdependency in decision-making and social conformity can also be seen as opportunity to trigger opt-in amongst a critical mass towards gas discontinuation. Here, the social network of residents and its dynamics become the building blocks of the social construction of the decision.

Given the above opportunity, the key research /design question for this project can be defined as : How can the municipality enthuse residents (in Reyeroord) to switch to green energy alternatives (district heating for Reyeroord) through their social networks?

ASSIGNMENT **
State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Main Research / Design question: How can the municipality enthuse residents (in Reyeroord) to switch to green energy alternatives (district heating for Reyeroord) through their social networks?   Three sub questions can be identified to further elaborate how the project will be shaped:

1) What are the motivations &/or apprehensions (motivators & barriers/lock-ins) for gas discontinuation amongst the residents?
2) What does the social network of the residents look like? Mapping the social network of residents (qualitatively) to understand interactions, relationships, dependencies and their level of influence (being influenced).
3) How can the social networks of residents be used to influence their decision-making, such that they actively adopt greener energy alternatives?

•The aim of the assignment is to devise a tool or framework which can support the municipality's efforts in gaining opt-in from a critical mass towards the energy transition in the built environment. The tool / framework could be supported by a strategy / list of recommendations, which shall be informed by the insights from the field-research as well as literature.
•The intent is to follow an approach inspired by the Double-Diamond framework (Figure 2), which culminates in the development of the tool / framework. The outcomes shall be co-designed with experts and the aim is to have at least one-test iteration, ready for further validation.
•Intermediate milestones / deliverables and tentative methods to be used during the process are outlined in Figure 2. The giga-mapping method within systems design will be used throughout the process since the project involves an a interplay of several stakeholders and phenomenon at different scales.

Initials & Name   J. S.   Shah   Student number 4755863

Title of Project   Social networks as means to catalyse transitions

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PLANNING AND APPROACH **
Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date   24 - 2 - 2020   11 - 8 - 2020   end date
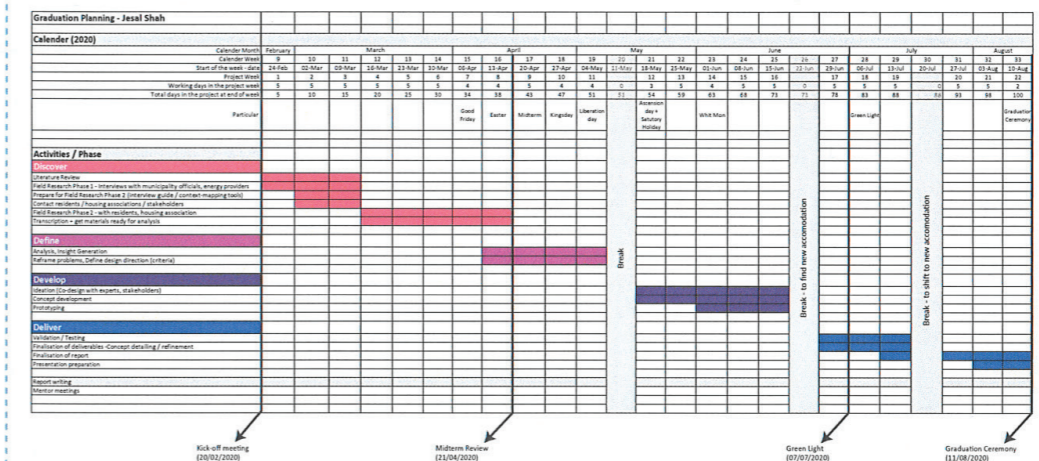
The above Gantt chart further elaborates the different activities that I intend to follow within the Double-Diamond approach and the approximate duration for each of the phase. The Discover phase has the largest time-span since it the project requires in-depth understanding of both literature (eg. decision-making theories, social network and social contagion literature) as well as the resident's (latent) needs, social networks through field research. This phase will largely focus on the first two sub-questions relating to resident's motivation / apprehensions towards gas discontinuation and mapping their social network. The subsequent Define and Develop phases will focus on using the insights from the Discover phase to answer the third sub-question pertaining to how social networks of residents can be used to motivate them.

The chart further outlines the key moments in the project. Although the project starts on 24th Feb 2020, due to unavailability of the supervisory team, the kick-off meeting will be held on 20th Feb., 2020.

I intend to take a break in (calender) weeks 20, 26 and 30. The break in week 20 is to unwind from the project, as well as to finish my Research Elective work (since those credits need to be uploaded to Osiris before the Green Light). The break in week 26 and 30, is to look for new accommodation and shift to the new place respectively, since my Duwo contract ends on 24th July 2020.

Initials & Name   J. S.   Shah   Student number 4755863

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• Witnessing the changing climates in our ecological, societal and political systems, I have been keen on applying my
strategic design skills to enable systemic change. I have developed an interest in the (overlapping) domains of public
sector innovation, designing with and within trans-disciplinary networks and transition design. I believe this project lies
at the intersection of all the above-mentioned domains, and would prove to be a good opportunity for me to get
hands-on experience in dealing with such projects / scales.

• More recently, my curiosity of applying design to deal with complex problems has been directed towards studying
transitions at the individual, organisational and macro-economic scales. I have been pursuing a research project with
Dr. Rebecca Price to understand the role of design to transverse and connect interventions and perspectives at
different levels of a (socio-technical) system to enable (sustainable) transitions. Since the project involves developing a
strategy for the municipality to motivate individuals towards gas discontinuation, it entails connecting the individual
(micro) scale with the municipality / neighbourhood (meso/ macro) scale (bottom up – and top down efforts). This
would prove to be an extension of my research project, helping me gain better understanding of designing for
transitions.

• Additionally, the project involves a mix of behaviour (change), technology, policy and economics – aspects I believe
need to be synergistic in nature to create impact. It would be a good learning for me to see how to balance these
aspects while dealing with a particular problem in a complex context.

• Last semester, I pursued electives such as Consumer Behaviour and Experience & Persuasion, which familiarised me
with behavioural literature, models and theories – eg. Cialdini's six principles of (social) influence, Theory of planned
behaviour, Design with intent, Choice architecture (heuristics) amongst others. This project would help me practically
apply these theories while understanding the resident's context, as well as while devising the strategy.

• Lastly, I want to experiment with the 'Giga-mapping' method / tool within systems design. Since the project involves
quite a lot of stakeholders, layers and aspects at different scales, it would be a good opportunity explore this tool.

References : [1] Klimaatakkoord. (2018). Voorstel voor hoofdlijnen van het Klimaatakkoord - sector Gebouwde
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Handbook of Social Psychology, edited by D. T. Gilbert, S. T. Fiske, & G. Lindzey. New York: McGraw-Hill.
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for understanding energy behaviours. Energy Policy, 38(10), 6120–6129. doi: 10.1016/j.enpol.2010.05.069
[7] Buskens, V. & Raub. W. (2013). Rational choice research on social dilemmas: Embeddedness effects on trust.

This project lies under the ENRGISED project which has received an NWO grant to develop a replicable strategy for the
municipalities to motivate households towards gas discontinuation. The project aims to use the concept of social
contagion as the underlying principle in designing the strategy. The graduation project aims to contribute to the
research and outcomes of the ENRGISED project.

B

The Natural gas regime

Appendix B - The natural gas regime

In order to bring about the requisite transition away from the natural gas system, it is first important to understand how it became the ever-glorious regime that it is. This includes understanding what drove the transition to natural gas and how it became a dominant paradigm spanning over almost 5 decades. While it is impossible to capture every single detail, cause, aspect that gave the natural gas regime its position (especially due to the limited time and scope of this thesis), a very simplified overview and only key points are presented. The key aim is to understand the complexity of the system and the multiplicity of factors that fuel the lock-ins towards the regime.

As Correljé, Linde, & Westerwoudt (2003) show through their book, the current natural gas regime is shaped due the interplay of multiple factors – technological and industry advances, local politics and geopolitically driven decisions, interests of private sector owners, crisis, national & international economics, trade & markets; and the prices and availability of alternative energy sources (mainly, oil, coal, nuclear power) to name a few. The interplay of all the above aspects at any given point in time shape the regulative, normative and cognitive institutions (Fünfschilling, 2014. p18-19), and give rise to different narratives, perspectives, logics and paradigms of policy-making; in turn affecting the production, commercialisation and consumption of gas. Correljé, Linde, & Westerwoudt (2003) identify 3 key phases (each driven by its own logic shaped by the landscape) in the history of natural gas in the Netherlands, namely:

1)   From 1960's (its discovery) until 1973-74 (first oil shock)
2)   1973-74 (first oil shock) until 1980's
3)   1980's – 1990's

Few key aspects related to each phase are described below. While all the three phases are important in moulding the natural gas system, the first phase marks the rapid infrastructural changes which led to the transition from coal to natural gas (then a niche). Thus, this is given more focus in this review.

The following historic outlines builds upon the work of Correljé, Linde, & Westerwoudt (2003), Kemp (2010), Beckman & van den Beukel (2019) and Verbong & Geels (2007).

1960's to 1973/74

This period marks the beginning of the natural gas regime with the discovery of on and off shore reserves in the 1950's and 1960's. Several different aspects in this phase added to the rapid development of requisite infrastructure, while stimulating demand. A few of these aspects include:

- The giant size of the reserves which convinced the State, Shell, Exxon (NAM -Nederlandse Aardolie Maatschappi; joint company of Shell and Exxon to produce gas in NL) of the opportunity for change. This was complemented by the low-priced oil from the Middle-east and cheap coal imports which gave tough competition to the Dutch coal industry making it unprofitable. This provided the incentive to expand into the gas market.

- NAM receiving the production concession (which gave them a kind of monopoly). Earlier, NAM produced the gas and sold it to the State- which took care of the transportation and distribution. Upon discovering Groningen reserves, NAM and the State wanted to restructure this regime and change its organising and operational structure. Gasunie – a gas association whose shares were owned by the State, Shell and Exxon was established. It is good to note, that earlier the gas distribution was driven by local councils and local utilities, the State did not play a central role. After the discovery of the Groningen fields, the State wanted to control the system in order to ensure it is lucrative for the economy.

- Within the restructuration of the regime, it was decided that the segment of small users could yield the highest revenues (as compared to big industries). Thus, the plan was to make gas available to domestic users on a very large scale, and to ensure that gas is used in as many applications as possible. (This decision was made mostly from the perspective of a business case).

- Domestic customers were persuaded to switch from coal or oil, to gas-fired (central) space heating, thus expanding the domestic market for city-gas that traditionally was used only for cooking and hot water supply. Costs to the users were kept equal to the cost for coal or oil-fired heating (market-value pricing being the key strategy), with progressively declining costs for higher levels of use. (this cost was much higher than the production cost, and thus, led to higher profits).

- Extensive campaigns were designed to communicate the benefits of natural gas compared to coal. Here, a majority of the people were easily convinced due to the increase in convenience and comfort as compared to coal, which was tedious to use and warmed only some parts of the house. Houses were in general uncomfortable, did not have insulation and were poorly heated. Specific cost advantages were designed for households that used gas for all purposes- cooking, warming water and space heating.

- Another aspect that added to this spontaneous buy-in amongst citizens (community acceptance, as (Van Rijnsoever, Van Mossel, & Broecks, 2015) term it) was the rapid expansion and industrialisation of the European economies. The (post-war) economic development gave rise to a general increase in personal incomes and well-being, and a widespread sense of dynamism and modernisation.

- Most sectors and industries turned to gas for their needs, ensuring a constant demand. Special subsidies and incentives were designed specifically to encourage adoption of natural gas into industry work-flows.

- Further, the State exercised power to ensure that alternative supplies of low prices gas could not reach the market. This gave Gasunie a monopoly in supplying gas.

- Companies part of the coal sector, local councils and other interest groups (that could be against the transition) within the existing supply chain were given favourable positions / roles within the new structure to ensure there was no resistance.

- Different aspects such as agricultural sector interests, plans for the expansion of cities, road construction, water systems, railroads, archaeological sites, and military installations were taken into consideration while designing the gas distribution network. Arrangements were made to compensate landowners and implicated parties during the construction of the pipelines and for the use of land afterwards. A wide network of public and private sector organisations was involved.

- Rise in nuclear power posed a threat of a steep fall in energy prices – thus, exploiting gas reserves became a political priority.

- A special feature of the Groningen production facility was that it was able to adapt to seasonal demand – produce flexible load curves. Hence, large investment in storage of gas did not have to be made.

- Export contracts with neighbouring countries, not only gave rise to a positive trade deficit and profits; It gave Netherlands a central position in the energy ecosystem in EU. The revenues (from exports as well as internal supply) further fueled the economy, the development of the 'Dutch welfare state' and facilitated investment in other industries and technologies.
  In sum, the 'energy abundance' narrative, the commanding position of the world's largest oil companies – Shell and Exxon (which gave them the power to deliberately orchestrate the institutionalisation of gas; corporatist nature) and relatively closed political decision-making paved the path for the transition (Correljé et al., 2003).

By the end of 1960's, the transformation to gas was achieved.

1973 /74 to 1980's

In the wake of the oil crisis of 1973/74 (and the subsequent rise in oil prices), world-wide economic recession and heightened geopolitical tensions, this phase was driven by the narrative of 'scarcity of supply' and need for '(continued / sustainable) self-sufficiency'. It saw a change in the pricing strategy (becoming more expensive). The importance of natural gas as an energy source increased multi-fold, and it was seen as a 'fortune', that was to be frugally managed - a 'scarce strategic good'. Further, conscious measures were taken to curb national consumption, and international exports were discouraged. The consumption indeed reduced (in industry and domestic use alike) due to the recession as well as general shift in labour and energy industries to more service-oriented paradigms.

Exploration (of gas reserves) activities were given utmost importance. Policies such as the small field policy were implemented with the agenda to 'preserve Groningen gas for future generations'.

Additionally, from 1986 onwards, the functional policies remained same, but there was a change in motive to more environmental and intergenerational sustainability. "Efficient use of gas was now motivated by the perspective of gas being the cleanest fossil fuel and of being thought to provide the bridge to the sustainable energy systems of the future, which will be based on renewable resources." (Correljé et al., 2003), Pg. 112
Tensions, conflicts of interests and divergent views amongst stakeholders as well as within the local and international political relationships form the backdrop of this phase.

Late 1980's -1990's

With the backdrop of the integration of EU, this phase paved way for a fundamental change in the role of the market and State. Liberalisation of markets and international trade encouraged the removal of trade barriers and energy to be freely traded and transported between countries – maximisation of the economic welfare being the key underlying principle. Although the Dutch State showed strong resistance, it gave in and eventually saw the unbundling of the ownership and activities of Gasunie- the system was restructured. New entrants, roles, relationships, institutions and actors came into play.

From 1991, earthquakes started becoming prevalent in Groningen, with the frequency and magnitude increasing over time.

2000's

Growing concern about the depletion of fossil fuels, dependencies on foreign suppliers, and climate change led to the realisation for the need to switch to more sustainable production and consumption of energy within all sectors. A transition approach was adopted.

Ever since, there have been several efforts (and rounds of iterations) in selecting platforms, defining platform specific activities and goals, setting up task forces and coalitions, funding of experiments with sustainable energy etc., all part of the transition approach (Kemp, 2010). These efforts towards transitions go beyond supporting technology, and are oriented towards building capabilities, institutions and networks through the formation of new partnerships, agendas, policies, and instruments (Ibid). The Dutch transition approach builds on several different domains such as socio-technical transition approach, the Transition Management approach and evolutionary economics; and is focused on transformative change and system innovation, relies on bottom-up processes and includes business (is corporatist) and other non-state actors in the transformation process (Ibid).

However, the earthquake in 2012 near the village of Huizinge (the largest earthquake so far) proved to be a turning point. Gas production started gaining public resistance. People with damaged houses having trouble getting compensated received widespread sympathy in the Netherlands. Eventually, environmental and safety considerations started to outweigh financial and economic considerations amongst policymakers.

A glimpse into these phase outlines how the Natural gas regime came into being. We see that even though the transition towards natural gas was predominantly initiated by economic motives (of the private sector and public sector alike), it gained quick momentum. This fast ('abrupt' -velocity, as Price (2019) terms it) pace was due to the co-evolution of technology and institutions. Not only did it achieve rapid regulative (top-down) institutionalisation, it was successful in building upon the 'Family institutional logic' of increasing family status and honour (Figure B1) to bring about the requisite normative institutionalisation (Fuenfschilling & Truffer, 2014). This enabled the creative destruction of the coal regime – where the coal ecosystem could not be improved. Thus, paving way for a timely (or early (Price, 2019) transition.

Further, we see that even though there were changes in the dominant narratives and organisation of the system, one of the main characteristics of the Dutch energy system has been its relative stability. This (perception of) stability gives rise to stubborn lock-ins which dampen the efforts towards transitioning away from Natural gas. Figure B3 tries to capture the basic functioning of the natural gas system in order to identify different factors that drive this 'stability'. This further helps to understand underlying lock-ins and barriers that need to be overcome to realise the transition. It also highlights the interconnectedness of different aspects that give rise to these stubborn lock-ins.

Institutional logics of societal sectors.

Categories	Family	Community	Religion	State	Market	Profession	Corporation
Root Metaphor	Family as firm	Common boundary	Temple as bank	State as redistribution mechanism	Transaction	Profession as relational network	Corporation as hierarchy
Sources of Legitimacy	Unconditional loyalty	Unity of will, belief in trust and reciprocity	Importance of faith and sacredness in economy and society	Democratic participation	Share price	Personal expertise	Market position of firm
Sources of Authority	Patriarchal domination	Commitment to community values and ideology	Priesthood charisma	Bureaucratic domination	Shareholder activism	Professional association	Board of directors, top management
Sources of Identity	Family reputation	Emotional connection, Ego-satisfaction and reputation	Association with deities	Social and economic class	Faceless	Association with quality of craft, personal reputation	Bureaucratic roles
Basis of Norms	Membership on household	Group membership	Membership in congregation	Citizenship in nation	Self-interest	Membership in guild and association	Employment in firm
Basis of Attention	Status in household	Personal investment in group	Relation to supernatural	Status of interest group	Status in market	Status in profession	Status in hierarchy
Basis of Strategy	Increase family honor	Increase status and honor of members and practices	Increase religious symbolism of natural events	Increase community good	Increase efficiency profit	Increase personal reputation	Increase size and diversification of firm
Informal control mechanisms	Family politics	Visibility of actions	Worship of calling	Backroom politics	Industry analysts	Celebrity professionals	Organization culture
Economic System	Family capitalism	Cooperative capitalism	Occidental capitalism	Welfare capitalism	Market capitalism	Personal capitalism	Managerial capitalism

Adapted from Thornton et al. (2012).

Figure B1: Institutional logics of societal sectors- Source Fuenfschilling & Truffer, 2014

Building upon its historic development and functioning, this section outlines the different barriers and lock-ins that make it difficult to transition away from natural gas. (Note: this is not a comprehensive list; just a glimpse into the multiple aspects that hinder the transition effort. These are more focused to the built environment specific transition). These barriers / lock-ins stem from the characteristics of the Natural gas system as well as of the alternatives.

- Unlike the transition in the 1960's, where there was one single source of alternative energy (Natural gas), the current transition effort draws on a portfolio of alternative greener energy sources. Although this gives freedom of choice to the consumers, and helps in ensuring locally-adaptable solutions; it creates uncertainty. While earlier the policies had to be drawn for a single technology, now these need to be devised for all the alternatives- each varying in terms of ownership structures, pricing, procurement, production and consumption routines etc. This also impedes the normative institutionalisation and adoption of these technologies.

Timeline: 1960 — 19701 — 980 — 1990 — 2000 — 2010 — 2020

Landscape

- Cheaper coal imports
- Low-price Oil from the Middle east
- Post war affluence
- Giant natural gas reserves discovered

- Oil crisis (1973-74)
- Economic recession
- Geopolitical tensions

- Environmental and intergenerational sustainability concerns

- Liberalisation of EU energy market

- Earthquakes in Groningen start and increase in frequency & magnitude

- Depletion of fossil fuels
- Dependency on foreign suppliers
- Climate change

- Climate urgency
- Increased earthquakes
- Public resistance & increasing awareness

Regime

Coal-driven energy regime

Natural gas energy regime
Centralised system

- Ramped up exploration
- Exports discouraged
- Consumption reduces (curbed)

Key narrative : 'Scarcity',
'Self-sufficiency'
'Natural gas is fortune, scarce strategic good'

Preserve Groningen gas for future generations, Use small field gas

"Natural gas is the cleanest fossil fuel"

Liberalised market, change in organisational structure

Niche

Natural gas is a niche

Coevolution of technology, institutions and user practices

- Ramped up production - operator NAM

- National gas transport grid built by Gasunie (public, pvt. venture), Increased role of State

- Off-shore fields found in 1980's /90's

- Certainty, Reliability of source (our own fields)

- (Perceived) Increase in comfort for households

- Export Contracts

Key narrative : 'Energy abundance'

- Discovery System
- Extraction / Production System
- Distribution System (for end use + use as raw material)
  - Infrastructure - Construction
  - Repair & Maintenance
- Storage / Transit systems
- Research and Development
- Quality Control (Standards)
- Economic -Trade system
  - Market - Companies, Competition
  - Ownership (Public - Private combination)
  - Pricing regulations
- Laws, Regulations Policies
- Export / Import systems
- Cultural & Symbolic Meaning (comfort, convenience)

- Awareness that greener energy alternatives need to be adopted

Niche organising structure (mechanisms of institutionalisation)

- Citizen participation in policy-making
- Decentralised energy production systems / models - Prosumers, Share / Trade systems Community Ownership
- Local Energy Initiatives, communities

Niche technologies

- Alternative energy sources: District Heating - Residual heat, Solar / Wind Power, Geothermal energy, Hydrogen gas, Biogas, Biomethane, Heat Pumps etc.

- Dutch transition approach and plans created - revisions
- Funding of research and experimentation with alternative technologies

Choice of alternative effects & depends on : Urban space, location, geography, architecture of houses, infrastructure requirement, financial aspects (business case, subsidy provided, market dynamics), consumption patterns and habits, ocial relations between stakeholders, communities, policy measures, trust, social issues (energy poverty, disparities etc.), knowledge & expertise etc.

Figure B2: Using the concepts of Landscape, Regime and Niche from the Multi-level perspective to see the evolution of the Natural gas socio-technical system.

Figure B3: Understanding the basic functioning of the Natural gas system.

•Basic necessity (comfort)
•Embedded in routine
•Leads to unconscious consumption, increased dependency and reliance on energy

affects incomes, functioning, valuation etc.

Society / individual households (heating, cooking)

Well established infrastructure -distribution system

freedom to choose supplier based on costs

Supply

National Economy

Industries

drives

price regulation

Competitive Market- distributors

Economies of scale, drives price regulation

Explorers, Producers, Distributors (Public + Private ownership)

Learning effect

Revenues

Constant demand, Energy is a basic utility (forms the backbone if industries)

Technology interrelatedness

Natural gas Technical System

•Maintain constant supply
•Investments + ROI's

Well established infrastructure - at the consumers' and industries' end

drives

Self Sufficiency
Stability / Certainty

helps to regulate price

Foundation for robust industries
Energy Intensive economy

Steady, Reliable Supply

**Owns the gas fields
Own production**

Policies, laws, regulations

drives

Fuels

**Export Natural gas
Global /EU trade**

National Position, Image,
Trade relations
Integral part of international energy
system (North western europe)

Politically drive decisions based on electoral cycles, and political ideologies

affect the whole system

**Geopolitics
International markets
Crisis, disasters
Alternative sources - prices, technological advancement
Global technological and societal trends**

-Lock-ins

- In the 1960's, the State and the private sector both had the common goal of 'profit maximisation' which was complemented by the relatively closed political decision-making process. This led to quick decision-making and steering of the transition. However, with the focus of the current paradigm on participatory decision-making (with all stakeholders) and transparency; and the difference in perspectives between the State and private sector (State is forced to give priority to environmental and safety concerns), the transition efforts are relatively slow.

- Further, post the Huizinge earthquake (2012) and Paris agreement (2015), the gas industry realised that business as usual was not an option anymore. However, it foresaw the phase out of natural gas only by 2050 or even after that. Thus, now when the transition needs to be achieved even sooner, the industry is taken aback and there is formation of lobby groups. These are looking for ways to maintain their business by promoting the use of 'sustainable gases'.

- These efforts also lead to misunderstandings and myths amongst citizens.

- Over the years, the learning effect and economies of scale (Klitkou, Bolwig, Hansen, & Wessberg, 2015) have facilitated the development of higher quality products and the improvement of processes by incremental innovation in the natural gas regime. This proves to be a lock-in, since niche technologies have not gained that kind of maturity. Big companies like Shell and Exxon have expertise in oil and gas based products. Thus, for them it is a learning curve to bring other technologies to the market. There is a lack of a powerful niche player who can fill in the shoes of these companies.

- A major lock-in amongst citizens and other stakeholders' alike, is the perception of natural gas being a well-functioning system. Not all citizens believe in and are in denial of climate change. Thus, it gives them no incentive to transition away from natural gas. A common perception amongst (older) residents is that as compared to coal, natural gas is anyways greener (instilled in them since the transition in 1960's). This leads to inaction.

- As compared to 1960, there is no increase in levels of comfort or convenience with the new systems. The financial gains are not significant and the new technologies do not provide extra affordances. Additionally, with the competitive market, people could choose their gas supplier – which will not be the case with some technologies eg. district heating. The perception of a private concessionaires having a monopoly is met with resistance.

- The physical gas infrastructure and the investment behind the gas regime (at all scales – individual, local, national) is huge. To replace this is a major task. There is uncertainty about what to do with this infrastructure – if it can be reused and how so. Also, in some cases (example district heating) the heat network needs to be installed underground – whether it should replace gas pipelines or be a separately put is a question unanswered. All these uncertainties prove to be barriers in the transition.

- Further, the technological interconnectedness (the development of complementary technologies, decrease in technological uncertainty, potential users adapting their expectations regarding quality, endurance and the performance of the technology; Klitkou et al., 2015)) that arises from the utility nature of the energy system proves to be a lock-in.

- It is observed that instead of reducing gas consumption, Groningen gas is being replaced by imports (Beckman & van den Beukel, 2019). Here, the role of international markets is significant. If they provide cheaper gas alternatives, industries might not have the incentive to transition away from natural gas.

- Technological alternatives are mature as compared to early 2000's but still there is uncertainty about their performance. Also, a common doubt that lingers is whether any of the technologies are truly more greener.

- And lastly, all decision-making is driven politically, by the ideology of the ruling party and by electoral cycles. This leads to myopic vision wherein only short-term goals are pursued.

In sum, we see that the natural gas regime has grown out of and functions with the interplay of many different actors, efforts, relationships, interests, tensions and aspects across different levels of the society. Thus, in order to transition away from it, different leverage points tackling different underlying issues need to be called into play.

C

Interview Guides

Appendix C - Interview guides

13 semi-structured interviews were carried out with different stakeholders (municipality officials from different departments, Vattenfall, experts in the domain of energy transition). Following is the basic overview of the interview guide used for the interviews. Note that based on the interviewee's role and expertise, the order and framing of the questions was tweaked. Emphasis was given to the aspects that fall under the interviewee's domain.

The key focus of the interviews was to understand the context of the Reyeroord and energy transition in general, as well as to answer the first two research sub-questions[1].

A set of sensitising templates were used during the interviews. These helped to guide the interview, to trigger the interviewees' thoughts as well as to aid them in formulating their answers. It helped to overcome the language barrier, since some interviewees found it difficult to articulate their thoughts in English - Dutch being their native language. All the interviews were recorded and transcribed for further analysis.

_____
1 According to the original plan, the interviews with municipality officials would have been succeeded by interviews with residents. These would have been used to answer the sub-questions. However, due to the COVID-19 pandemic, access to the residents was limited. Hence, the interviews with municipality officials were used to answer the sub-questions.

C.1 Semi-structured Interview guide

INTERVIEW GUIDE – MUNICIPALITY OFFICIALS (ENERGY TRANSITION TEAM)
Version 1 (24.02.2020)

_____

Research topic:
Energy Transition in Reyeroord
_____

Main research question:
How can the municipality enthuse residents (in Reyeroord) to switch to green energy alternatives (district heating for Reyeroord) through their social networks?
_____
Checklist for start
ask for permission to record
background of the person (job, position, role in government/company, role in the project, since how long are they in the project, etc.)
_____
Introductory script (optional)

I am from TU Delft and am doing my graduation project on on how the residents of Reyeroord can be persuaded to actively participate in the Energy Transition. I would like to know more about the process that is being followed and get the picture of the Reyeroord area and community.
_____

Subtopic 1:
Vision, Goals, Process

Opening question:
Can you tell me about how this energy transition project started? Why do you think the Reyeroord neighbourhood is chosen as a testing ground for Rotterdam?

Follow-ups/probes:
- Vision for the project
- Goals that need to be achieve
- Integrated plan – what social aspects are you focussing on and why?
- What is the overall process that you are following to achieve the energy transition?
- Which stage of the process are you at?
- On what basis was it decided that heat-grid is the way forward? (also how and why was Vattenfall selected?)
- Can you explain me exactly what the heat grid involves, what changes will have to take place to install it – in the neighbourhood, infrastructure wise as well as at the micro-scale in each house.
- How much would it approximately cost for each resident?
- What kind of (financial) incentives will be provided to the residents? Who is the stakeholder responsible for this – bank, insuarance agencies, funds? What is this funding process like?

Subtopic 2:
Stakeholders

Opening question:
Can you describe all the stakeholders involved in the project and their role?
Follow-ups/probes:
- For each stakeholder, can you explain what are their motivations or apprehensions for the energy transition? (whether they are actively participating or not, why?)
- What are the interdependencies between these stakeholders?
- What are the difficulties you are facing with each of the stakeholder?
- What will be the changes in each stakeholders current way of thinking / being / operating once the energy transition comes about? (change in habits / routines / paying bill -availing services / interactions /business model / role -powerplay etc.)
_____

Subtopic 3:
Zoom into residents

Opening question:
How are you planning to convince all the residents to undergo the energy transition?

Follow-ups/probes:
- Have you spoken to the residents? What is there reaction like?
- How do they perceive / understand the energy transition? What are the motivations and apprehensions of different groups to actively participate in the energy transition?
- How are you planning to overcome these apprehensions?
- Imagine I am a resident, can you take me through the process of the energy transition, what will happen?
- How do you communicate with the residents?
- How do you ensure they have enough information to make the decision? Who will be making the decision? – tenants, owners, housing associations? What is the structure? How often do they have meetings? are these formal or informal associations
- Perceptions of specific groups – low-income, old-age…?
- What are the priorities of different groups? Do these clash with the energy transition?
- How do you think that people can be motivated?
- What should be the process followed by say Vattenfall (or municipality) to convince the people?
- Within the household, do you know how the decision is made? Who is responsible – especially for things related to technology, and infrastructure change?
- Is there any role played by the neighbours or the community in the decision-making? Collective action / protocol / dependencies?

Subtopic 4:
Community / Social structure of Reyeroord

Opening question:
Can you explain the social structure of the Reyeroord Community? In terms of demographics – age, gender, ethnicities, religion), socio-economic groups (income)

Follow-ups/probes:
- If you had to divide / describe the community in terms of say sub-groups – what would those groups be? Different identities?
- Can you also map these groups spatially? Any relation between these sub-groups and the type of house they live in, location, ownership of house.
- And what is the relationship between these groups? Any specific tensions (stereotypes, perceptions)
- Do all the different groups interact with each other?
- What are the meeting points of people in the neighbourhood? Where are the spaces where most social interaction happens?
- Do you have community events in Reyeroord? Who organises these events?
- Does everybody participate actively? Which groups do, and which dont? And why ?
- Who are the most active participants ? Which groups are more approachable (easy to convince) and least approachable?
- Are there any specific popular/ influential people, who everyone in the community has a good relationship with? Say if you have to motivate the residents, you know that if this one person is motivated, the others will follow, or atleast give it a thought?
- Are you using social events as a means to discuss the energy transition with the community?
- What are the different social issues you face in this neighbourhood ?
- How is the relationship of the people with the networker? And the municipality in general?
- Do you think people trust the municipality and are happy with its efforts? Which groups have a better relationship with the municipality?

Checklist for closure
- Thank them again for their time
- Check if we can contact again in the future, to discuss / validate our analysis. Or at later stages in the process.

C.2 Sensitising templates

Tell me something about yourself

I am -

I work at - as -
        organisation / department   job title

Your (or your company's) role in the energy transition (in Reyeroord)

The process of Energy Transition in Reyeroord

Outline the overall process that will be followed for the energy transition in build environment in Reyeroord. Mark key activities on the
timeline.

Send offer to households

Decide type of Energy - Heating Grid
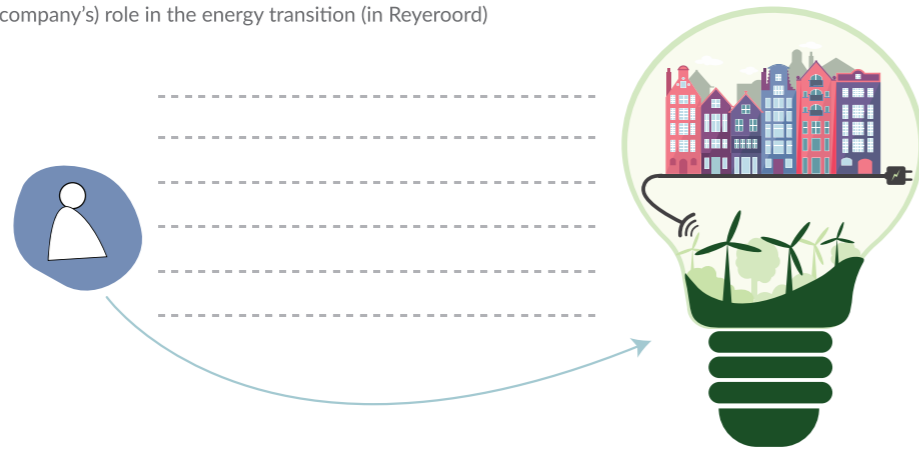
Goals (Vision for the energy transition in Reyeroord

What is the vision for the energy transition in Reyeroord. Outline the different goals the transition aims to achieve.

Spatial Goals

Social Goals

Personal / Company Goals
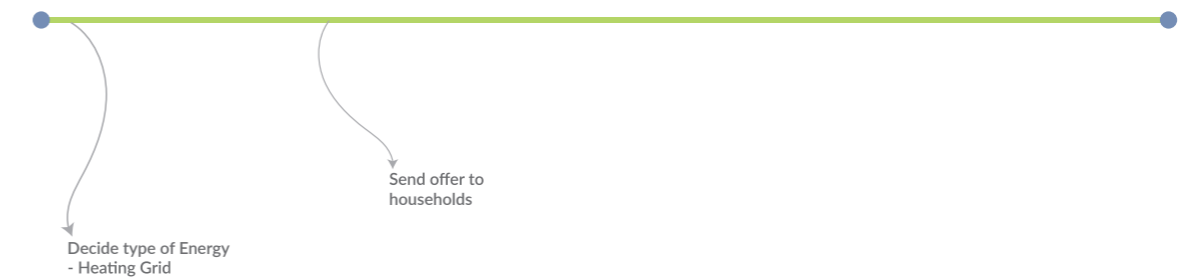
Stakeholders involved

Map the stakeholders based on their importance and role in the energy transition.

Energy Transition

Most important

Least important
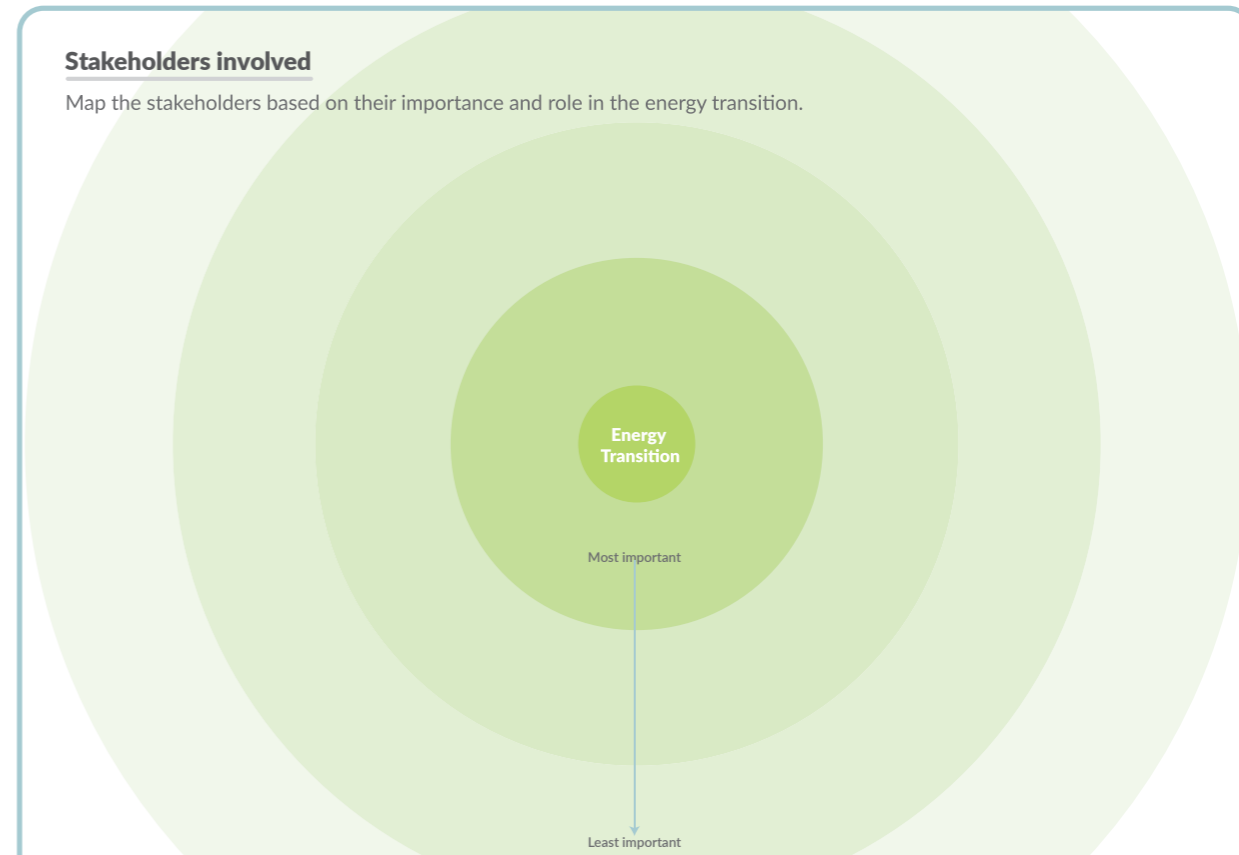
Stakeholder's motivation / apprehensions

According to you, what are the motivations and apprehensions of these stakeholders to participate in the energy transition.

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Stakeholder:

Mapping the change in the system

What will be different in the new energy system as compared to existing energy system (in terms of how energy is produced, procured, used, regulated etc.)

Rules /Regulations
Maintenance

Business Model
(Pricing strategy)
Supply chain

**Heating Grid /
District Heating System**

Billing cycles
Subscription model

Habits / Routine
Lifestyle

Relationships / Dependencies
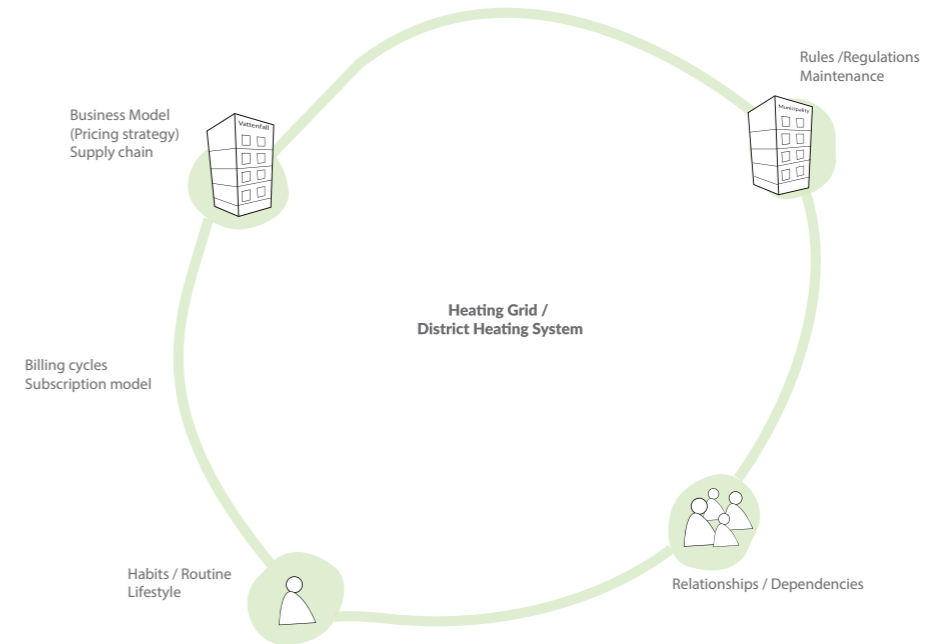
Resident's transition journey

Map the resident's journey through the whole transition phase. (people they have to contact, decisions they have to make, procedure to be followed etc.)

Before transition   During transition   After transition

Receive offer

Receive the letter
from Gemeente about
energy transition

House is well-insulated
and uses renewable energy
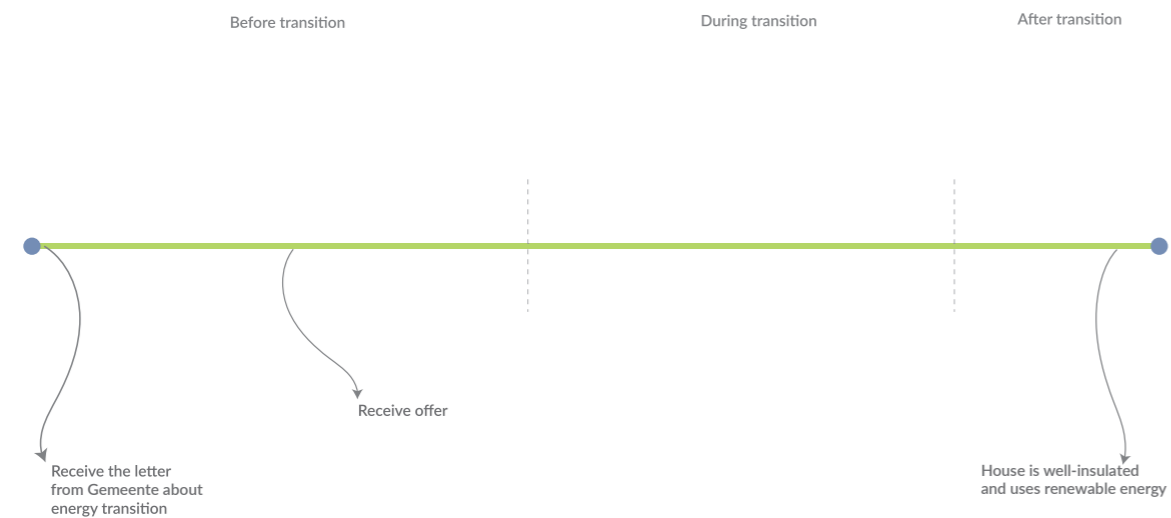
The Reyeroord community

Define the social structure of the reyeroord community.

Socio-economic groups
(Income groups, professions)

Leisure / Activity groups

Ethnicities, Religious groups

**Reyeroord
Community**

Social Media / Online groups
(Facebook, Whatsapp)

Age groups

Political groups

Spatial groups (neighbours, housing
associations)
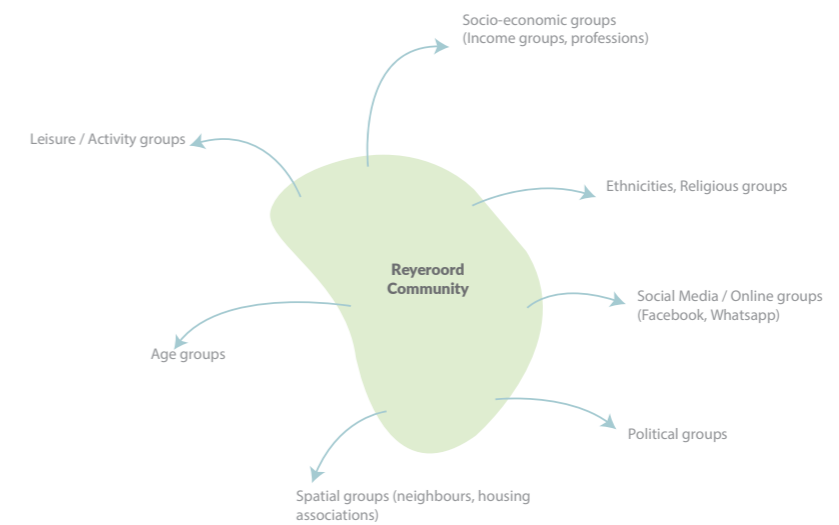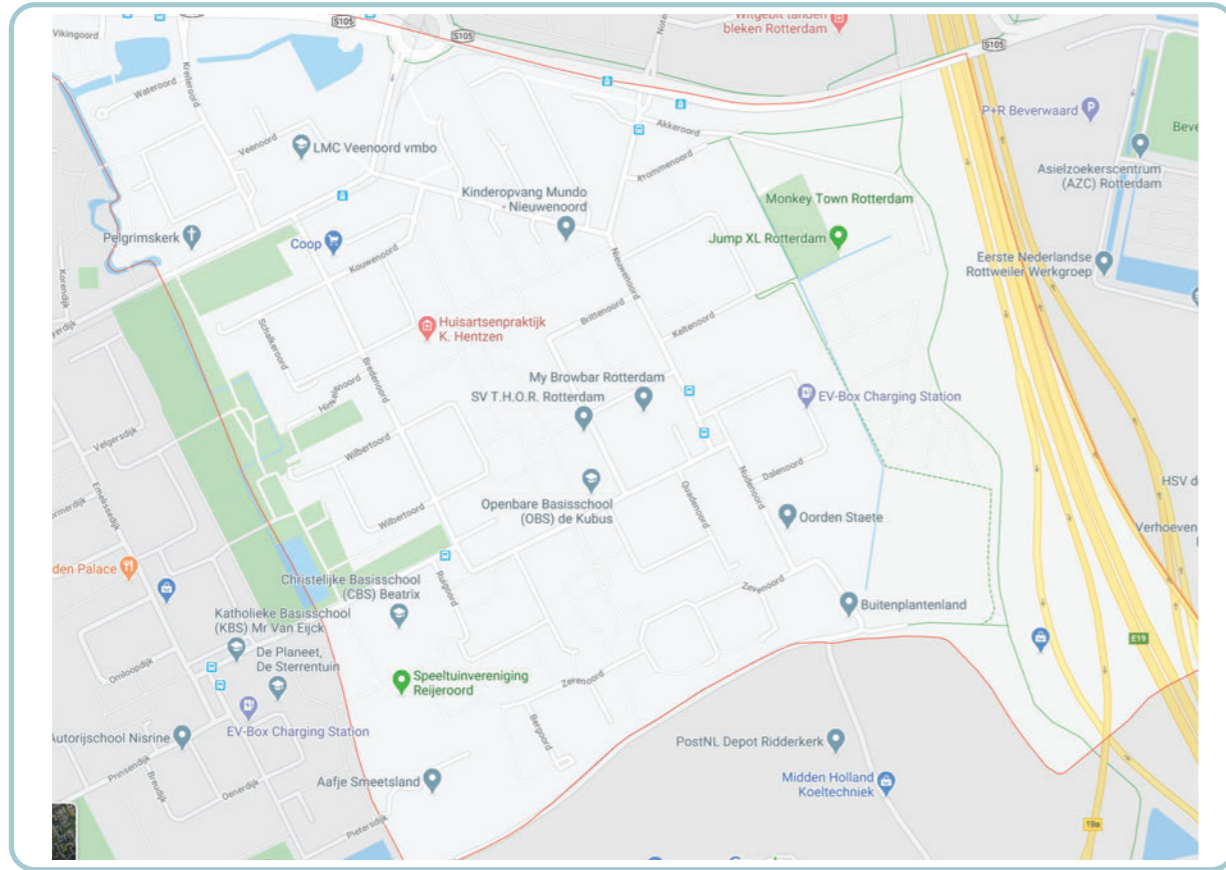
A glimpse of what the filled in sensitising templates looked like. Data from each participant's filled in templates was consolidated into one final sheet upon analysis
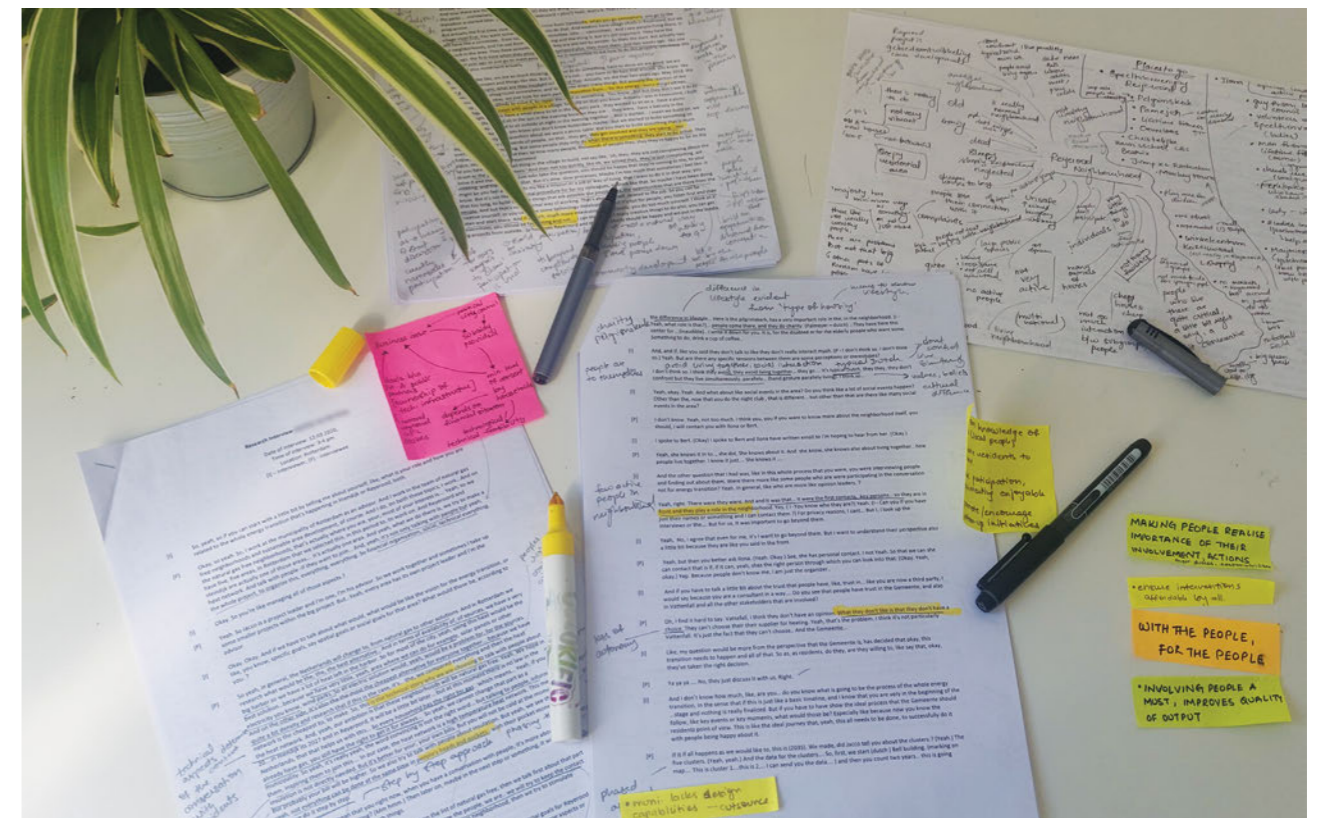
All interviews were transcribed and analysed using thematic analysis.

D

Analysis

Appendix D - Analysis

The interview transcripts were analysed using three key methods – Thematic Analysis, SWOT Analysis (Figure 14 in the report) and Relationship mapping between the 3 key primary stakeholders (as shown in figure 13 in the Report). Additionally, since the overall aim of the interviews with the municipality officials was to understand the context of energy transition (its timeline, process the municipality aims to follow, their goals, stakeholders involved etc), each interviewees answers to those specific questions (during the interview as well as through filled-in sensitizing templates) were collated. These were then formalised into a concrete timeline (Figure 12 of the report), stakeholder map (Figure 10 of the report) and a list of goals (Figure 9 of the report).
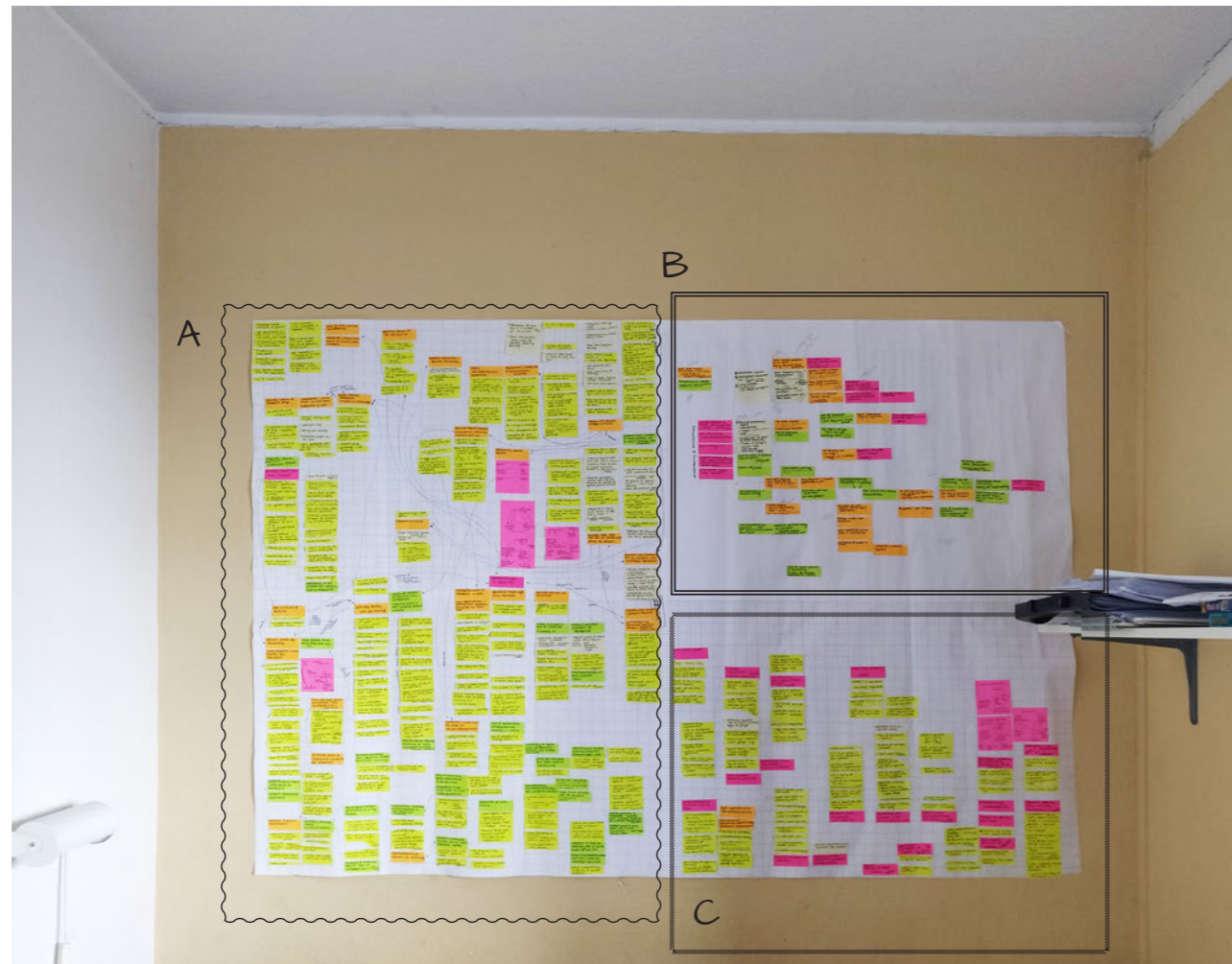
Output of the thematic analysis.
A- includes all generic themes from the thamtic analysis
B- Specific analysis of Reisdents' motivations and apprehensions
C- Understanding Reyeroord

Thematic Analysis

The aim of the thematic analysis was two-fold. First, to understand the Reyeroord context (the neighbourhood and community, as well as the municipality's current efforts towards the energy transition). Second, to answer the sub-questions 1 & 2 pertaining to the resident's motivations and apprehensions towards the energy transition and their social networks.

A proper thematic analysis (Caulfield, 2020) protocol was followed. The first step was familiarisation with the content. Since the author carried out the interviews and transcribed these herself, the data was quite familiar. Post transcribing, the transcripts were given a quick read. Next, the transcripts were coded. Here, a mix of inductive and deductive approach was used. Since the research questions were already stated, it paved way for a deductive mindset. Here, the deductive aspects were related to understanding the municipality's goals, the timeline they envision, the chosen technology and the stakeholders involved in order to frame the context. This was guided by the semi-structured nature of the interviews, which gave comparable data.

However, the author did not restrict herself to answering the defined questions. In order to understand the richness of the context and its complexity, the data was allowed to speak for itself. This formed the inductive aspects of the analysis, which gave rich insights into other contextual aspects that need to be kept in mind while planning the transition. These are presented as themes in the report (pg. 62-69). Further, there was a balance between a semantic and latent approach, wherein the semantic approach (analyzing the explicit content of the data) was used to analyse (list) the administrative and financial aspects of the process of energy transition. On the other hand, a latent approach (reading into the subtext and assumptions underlying the data), was used to understand the resident's motivations and apprehensions, the relationships between the stakeholders, their perceptions, dependencies, interactions etc. Specifically, to understand the residents' motivations and apprehensions towards the energy transition, several models of decision-making were referred to (as described in Chapter 4 of the report and Appendix E).

Upon coding the data, overarching patterns and themes amongst these codes were identified (and defined). Figure D1 shows examples of codes and themes. Relationships between these themes were mapped (as shown in figure D2). Ultimately, 5 key overarching meta-level themes were identified (As explained in section 3.3 of the report.) Note, the meta-level themes and their explanation are also shaped based on the SWOT Analysis and Relationship mapping between the 3 key primary stakeholders (outlined in the report).

Refer chapter 4 in the report for in-depth explanation and output of the thematic analysis regarding the residents motivations and apprehensions.

Codes	Themes
Resistance towards top-down solutions Distrust in govt Need for transparency Distrust due to lack of citizen involvement	Top-down enforced policies meet resistance and rejection; hone distrust amongst citizens.
Image of a companion Reluctant to get help Build a safe space Let people confide into you Importance of discretion Problems not always evident Hesitant to show vulnerability Evoke sense of reciprocity Solve problems to build trust (good reputation)	Trust is important to elicit latent vulnerabilities
Personalised conversation Multiple rounds of persuasion Continuous contact /conversation Sowing seeds for future Build relationship from day 1 Build personal connection	People are experts of their own lives
Make participation (experimenting) enjoyable Involve people from the beginning Combined effort Encourage bottom-up experiments Stimulate reflection amongst people Contribute v/s complain People need a push Spark interest amongst people People need to be given a starting point Need concrete steps / plan	With the people, For the people; Need for participatory processes; Involving people improves quality;
Gemeente Clusters are parallel worlds Silo-ed thinking and functioning Different goals, process, timelines	Shortsightedness (Siloed thinking) of different clusters

Figure D1: Examples of codes and the themes derived from these codes.

Codes	Themes
Link E.T to daily life Link E.T to people's daily problems Imp. To know people's daily problems Connect people to right channels (of resolving problems) Need to reach people's minds Connect to people's reality Customised (Personalised problem solutions	People's minds are pre-occupied / Other problems take precedence
More talking than doing Namesake participation Late involvement of citizens Minority of 'innovation' oriented employees Innovation (experimenting) not a part of municipality's mindset Need for govt. to stay in control Need for govt. to steer decisions Perception of being experts / specialists (know it all) amongst muni. Gatekeepers of info. Focus on image/ reputation Lack of experience (in involving people) Lack of design capabilities Need to build new competencies Practice co-creation	New learning curve for municipality. Balance push and pull factors. Need to hone a new mindset. Build new competences.
Too early in the process (nascent stage) Trial Pilot project Exploratory in nature Lack of quantitative goals uncertainty about outcomes uncertainty at municipality level uncertainty about the process (social design) reflection is important learning is key learning from diversity define learning goals	Exploratory nature leads to Uncertainty. Uncertainty is contagious (amplifies). Need for clarity at municipality level.

Figure D1: Examples of codes and the themes derived from these codes.

Goals /Vision for the Project

•Physical / Spatial goals
•Social goals
•Qualitative goals - no hard goals

Exploratory nature of the project leads to uncertainty

•Learning is key
•Intial phase
•No hard goals

Need for clarity at Gemeente level first

Fueled by

Need to change municipality's way of working

Multiple roles & faces of the municipality

Regulates

Uncertainty is contagious (amplifies)

Balance Push & Pull Factors during the process

Centralised Decision making

Exploring the Social Design Approach

Uncertainty of outcomes, process

Shortsightedness of clusters - working in silos

New learning curve

Ultimate decision in the hand of the city council

Contributes to

Means to mitigate / connect with people

Need to be in control, steer decisions

Need to hone a new mindset - internally and in external dealings

Is a hurdle for

Ultimately all decisions are driven by politics, electoral cycles

Inconsistency between vision and (people's) reality

Due to lack of

Need to understand and practice truly participatory approach

Is a hurdle for

Because

(lacks)

With the people, for the people

Cohesion between clusters imp.; Breaking silos

(Perception of) Policies / Law enforcement as the ultimate means to achieve transition

•Participatory approach

Peoples minds are preoccupied Other problems take precedence

People hesitant to show vulnerability

People are experts of their own life

On the contrary

Need to free peoples mind, Solve their problems

Only then can one solve problems

Helps overcome

Participation improves quality of output; slows down process

Competing and conflicting goals / interests of stakeholders

add to

affect (the business case)

leads to

•So they can think about ET.

Trust is important to elicit latent vulnerabilities

Important to make people realise their role

affects

Solving problems a means to build trust

•Evoke sense of Reciprocity
•Indirect Persuation technique

Helps to

For

Top-down enforced policies meet resistance and rejection; hone distrust amongst citizens.

The complex knot of technical feasibilty, financial viability and social desirability difficult to untangle

Helps in

Building Trust is important

Ensures

Only when people understand, they trust

Awareness / Understanding key to decision-making

depends on

Technical feasibility is the basic building block

depends on (requisite infrastructural changes and its costs)

drives

Important for

Contributes to

Only then people are open to receiving info. and understanding it

Lack of awareness / understanding amongst citizens

depends on

determines

Highly dependent on each other

Building a personal relationship (connection) key to build trust

Transparency

Engender

Consent of citizens is key

Business Case is the backbone of the project

Need to develop a personal relationship

Unfold conversation step by step

Showing a complete picture (future scenarios, options)

Important for stimulating accurate comprehension

Lack of a single source of relevant info.

depends on

Lack of Vital Coalition; Collaboration

•Continuous Communication
•From early on in the process

Avoid overwhelming Dont give shocks

Important to highlight both big picture and details

Available information lacks clarity; confusing

Certainty, tangibility, concreteness

Need to make things certain, tangible, concrete, visible

Is a key characteristic of the relationship

Prioritise information being provided

Build apt expectations

Framing of Information, choices important

Perceptions, Impressions & Relationships (of) with stakeholders

depends on

Technical, Financial aspects drive the conversation

Prevalence of Misconceptions, Misunderstandings, Preconceived notions

Past experiences

Other motivations & apprehensions, situational aspects

Refer figure X of report

Contribute to

depends on

depends on

•Take people through the information

Social aspects (problems) of the neighbourhood

•Important to solve doubts immediately - in person

Refer figure X of report

Safety is a concern
- •People dont feel safe
- •Avoid going out night
- •Dont let children play outside
- •Increase in crimes committed by youth
- •Nuisance of illegal parties

adds to

Diverse Reyeroord Community
- •Socio-economic groups (Income groups, professions)
- •Age groups
- •Ethnic groups
- •Permenant vs Temporary residents

causes youth to engage in crimes

Sleepy, Inactive Neighbourhood
- •Physical space boring, looks neglected
- •Individualistic
- •Residential area
- •People disconnected with surrounding

Need to build social cohesion
- •Social cohesion can provide a safety net

Diversity leads to Clashes
- • Clash of cultures, values, beliefs
- • Generation gap
- • Permanent vs Temporary residents clash
- • Neighbouring youth gangs clash

but

fuels

No social interaction
- •Inactive community
- •People dont take initiative
- •People dont mingle
- •Know just a few neighbours living around

Peoples mind preoccupied with personal, financial problems

Not much to do in the neighbourhood
- •Specially for youth
- •No interesting activities
- •Lack of spaces for social interaction

fuels

cause and consequence of each other

No sense of ownership/ responsibility

No sense of belonging

People dont identify with the neighbourhood

Lack of sense of togetherness

•Lack of neighborhood identity

From past experience:
- •Triability is important
- •Well-curated, small, informal, personal events work
- •Important to involve key active people in the community - act as catalysts
- •Should target entrepreneurial and professional people first

Communities formed around key spaces - church, gym, school.
- •Important to involve these

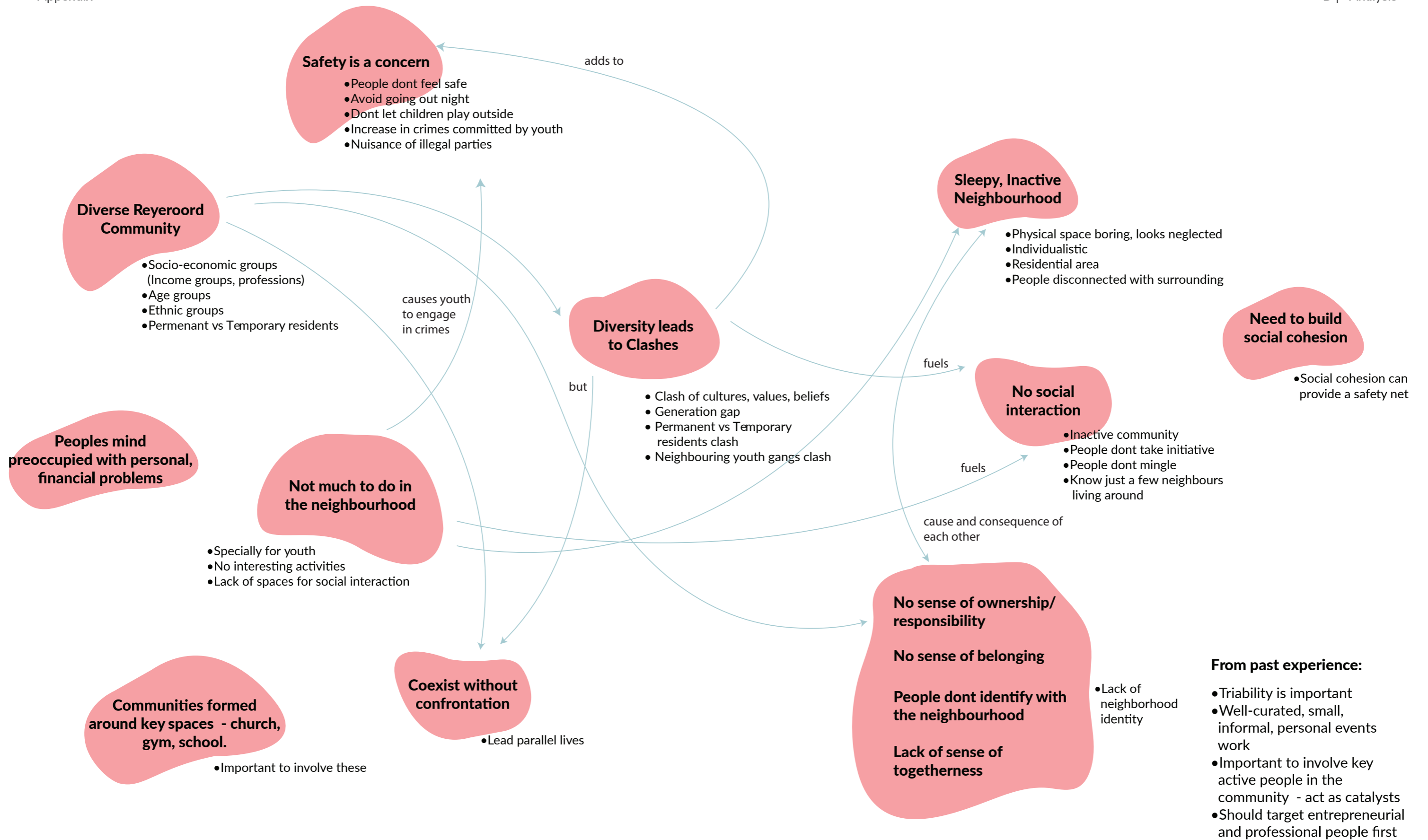**Coexist without confrontation**
- •Lead parallel lives

Figure D3: Reyeroord specific themes

E

Decision-making model for analysis

Appendix E - Decision-making model for analysis

In order to analyse the decision-making process of the residents', a combined model of decision-making is derived (figure 20 in the report; E2 in the appendix), inspired by three key domains, namely:

1) Psychology – Attitude formation and Behaviour change

2) (Diffusion of) Innovation

3) Marketing Communication

The psychological models of attitude formation and behaviour change provide insight into how humans perceive information & cues, and use these for decision-making. However, this decision-making journey of an individual (towards a new innovation /behaviour) starts from when they hear about the product. This communication about the innovations part of the marketing efforts of the provider. Thus, it is necessary to include this marketing perspective in understanding the decision-making process. Further, attributes of the innovation are important factors that drive the decision-making process. Diffusion of innovation literature includes these characteristics and hence, is relevant for this project.

The rationale for choosing specific models from each of the domains is explained next.

Model from the domain of Psychology

Literature highlights that attitude doesn't necessarily always precede behaviour (Blythe, 2013). However, in this case, since the intended behaviour is a one-time investment and entails a high cost, we assume that attitude (about switching to alternatives or alternatives itself) shall precede the behaviour /decision moment. Further, it won't be an impulsive decision. From the Dual-processing theory (Kahneman, 2011), it follows that the key decision process in this case would be driven by conscious reasoning (Deliberative reasoning; System 2) as compared to unconscious reasoning (Intuition, Creativity, Subconscious; Heuristics). Thus, rational decision-making prevails in this context[1] , and a model which emphasizes evaluation of the behaviour and its impact, should be chosen to analyse the decision-making process. However, the perceptions derived from the interviews also highlight the role of values, personal norms and beliefs as key decision-making factors.

The study by Wilson & Dowlatabadi (2007), shows the different perspectives of classifying decision-making models. Amongst other things, these mainly differ based on the decision scale (individual to social) and the logic of decision making (utility maximization, decision heuristics, attitude-based evaluation, values and beliefs -contextual variables etc.). In line with

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[1] This does not mean Heuristics cannot be used during the persuasion process. Heuristics and cognitive biases can be used at different stages of the entire process, especially in the Awareness / Knowledge / Persuasion phase to ensure people understand the information correctly and form a positive attitude towards the intended behaviours.

Wilson & Dowlatabadi (2007)'s conclusions, as well as the data from the interviews, it is necessary to combine the attitude-based (more rational) decision models with the models based on values, personal norms and contextual factors (more irrational aspects). This combined model can help to explain both the evaluative beliefs (e.g. stemming from the theme of reduce loss / risk perception) as well as altruistic values (e.g. people's concern about their children or the environment), and in mapping them in the decision-making routes.

The Theory of Planned Behaviour (TPB; Ajzen, 1991; Figure E1) can be used from the rational perspective since it emphasizes the evaluation of outcomes. It suggests that one's intention for a behaviour is driven by their attitude towards it, the subjective norm as well as the perceived control over it. Attitude is formed based on an individual's beliefs about the behaviour as well as an evaluation of its outcomes. The subjective norm includes normative beliefs as well as the evaluation of how peers would value the behaviour. Last, the perceived control on behaviour takes into account the context of the decision in which the action is constrained (or situations when individuals do not have full control on volition). These three components define the intention to act, which in turn predicts behaviour.

From an altruistic, value driven perspective, Wilson & Dowlatabadi's (2007) Integrated model of pro-environmental behaviour (Figure E1) can be used. This model is based on the Value-Belief-Norm theory.

Combining both, the theory of planned behaviour and this value-belief norm theory, we can see that the attitude component can be formed by either an evaluative route, or based on one's personal values and beliefs, or both (Figure E2). The contextual domains from Wilson & Dowlatabadi's (2007) 'Integrated model of pro-environmental behaviour' affect the perceived behaviour control. The individual aspects such as technical skills fall under ability factors, while shared conditions such as the economy, regulations or supply chain can be grouped under the label of contextual factors (Figure E2).

Further, Ölander & Thøgersen's (1995) MAO model (Figure E1), builds on the theory of planned behaviour (TPB) and explains behaviour in terms of motivation, ability and opportunity. Here, the motivation factor includes the attitude and subjective norm component of the TPB. An ability factor is added, which includes task knowledge and current habits that need to be overcome in order to perform the behaviour. The opportunity factor encompasses contextual conditions that affect the decision. As seen earlier, Fogg's behaviour change model also utilises three components – motivation, ability and triggers. Since both these models have similar factors, they are combined to enhance the explain-ability of the analysis model (Figure E2).

In sum, from the domain of Psychology, an integrated model as shown in Figure E2, is apt to analyse the decision-making (attitude formation) process of the residents of Reyeroord.

Model from the domain of Innovation diffusion

Literature on technology adoption and innovation diffusion explains how innovations come about, are put to use and spread (or do not spread) across the whole population. The diffusion of innovation model by Rogers (1983) describes social communication processes via both, person-to-person communication as well as media channels, that aid in spreading the innovation. Rogers describes the innovation decision process (Figure E2) in five steps, wherein the user goes through the journey of knowledge (knowing about the innovation), persuasion (forming an attitude towards it), decision (to adopt or reject the product), implementation (of the new idea; using the innovation) and confirmation (analysing the innovation -whether it meets the expectations or not; results in either continued adoption of innovation, or discontinuation). As compared to the Psychological model, which gives a detailed overview of how a person forms an attitude towards an innovation, this model presents a zoomed-out view. It gives insight into the pre and post attitude formation (and behaviour change) steps.

Further the model takes into account two key aspects – the attributes of the innovation and the innovativeness of the user, that play an important role in the decision-making process. Rogers quotes Wasson (1960) p. 212, "The ease or difficulty of introduction [of ideas] depends basically on the nature of the 'new' in the new product—the new as the customer views the bundle of services he perceives in the newborn"; while arguing that the user's perception of the attributes of an innovation affects the rate of adoption. User's compare innovations (existing and new) to arrive at a judgment about its usefulness or newness and relevance. Rogers outlines five key attributes that determine this attractiveness of the innovation - Relative advantage, Compatibility, Complexity, Trialability and Observability. This focus on the attributes of the innovation and its relationship with the decision-making process, shall prove fruitful while analysing what aspects of the new technology are key to the decision-making process.

Roger's model also takes into account the innovativeness of the user – "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system"(p.242). Here, Innovativeness indicates behavioural change, rather than cognitive or attitudinal change and hence directly translates to the rate of adoption. Based on the susceptibility of users to adopt the innovation, Rogers defines five ideal adopter categories – Innovators, Early adopters, Early Majority, Late Majority and Laggards. This categorisation is used in the next section, to further classify the residents of Reyeroord based on their personality and to select the target segment for this project.

Model from Marketing Communication

Although the diffusion of innovation model takes into consideration communication channels and provides a zoomed-out perspective, it is highly oriented towards the innovation itself. The Hierarchy of effects model (Lavidge & Steiner,1961; Evans, Jamal, & Foxall, 2010), from the domain of marketing communication can complement this with its focus on the quality of effective communication. This model is built on psychological components of attitude / behaviour – cognitive, affective and conation. However, it focuses on how advertisements / communication channels can capture / influence each of these components of attitude.

The Hierarchy of effects model (Figure E2) outlines a 6-step process of decision-making – Awareness, Knowledge, Liking, Preference, Conviction and Purchase. When combined with the 'Sequential model of response to marketing' (Evans et al., 2010), we see that the awareness stage involves exposure and attention towards the product / information. Knowledge includes perception and learning of the information (ensuring it is remembered in the intended way). Learning can be through a behavioural approach (based on the stimulus-response model which includes either associationist learning: classical conditioning or instrumental learning: operant conditioning) or a cognitive approach (through mental processes) (Evans et al., 2010). The 'Knowledge' step contributes to the cognitive component of the attitude, while the 'Liking' and 'Preference' steps appeal to the affective component of attitude formation. Thus, Knowledge, Liking and Preference lead to attitude formation.

Next, 'Conviction' relates to the conation aspect of behaviour- behavioural intent (not behaviour itself). Last, Purchase phase links to implementation of behaviour or decision at hand. Thus, this model gives more in-depth insight into the phases of decision-making outlined in the innovation diffusion model, from the perspective of marketing communication.

All the above-mentioned domains and their models prove valuable to analyse the decision-making process towards gas discontinuation. When combined, these models provide a comprehensive view of all the aspects/ factors involved. All three are used to describe and analyse the decision routes of residents in Chapter 4.
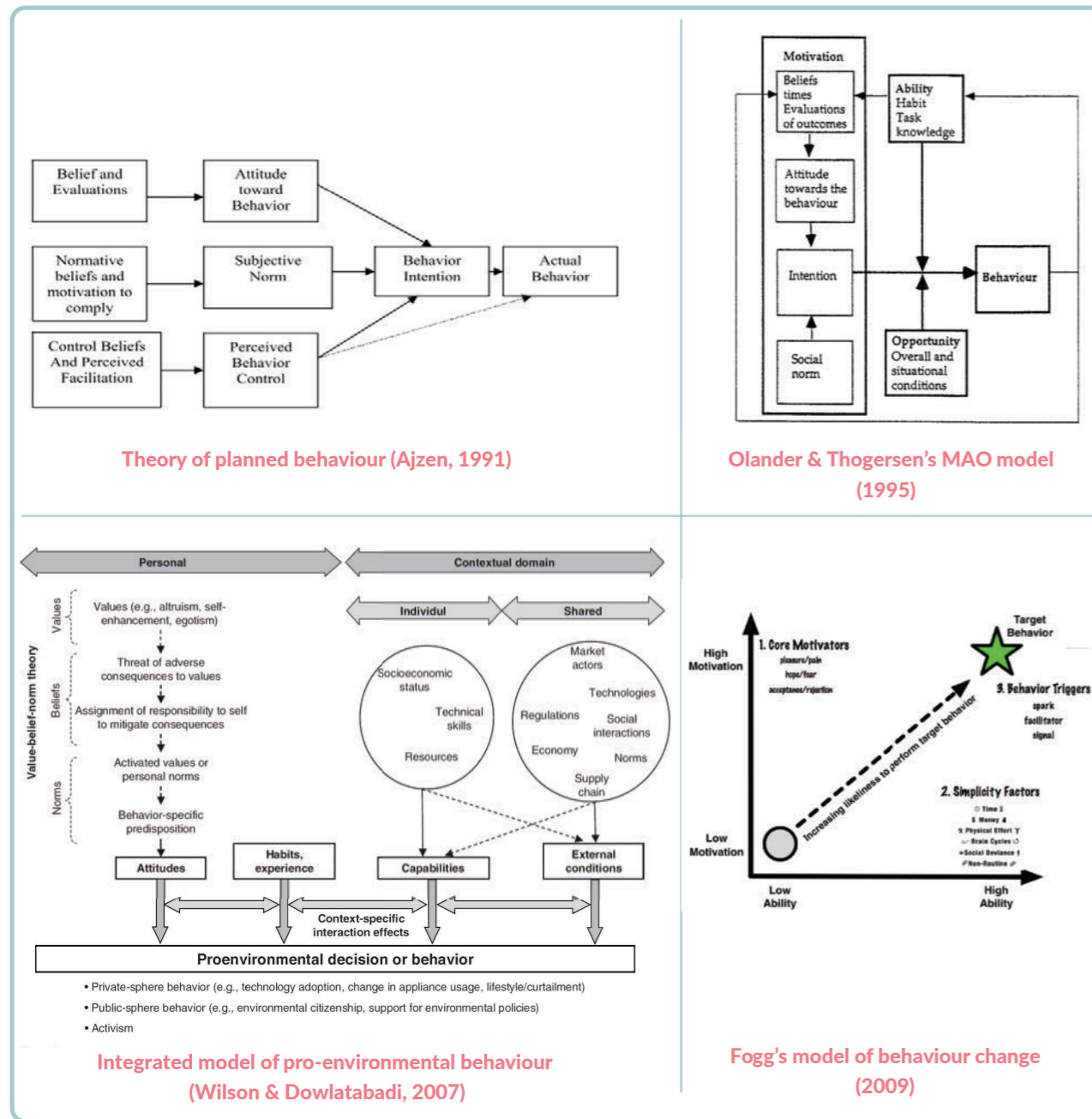
Figure E1 (left diagrams)

Theory of planned behaviour (Ajzen, 1991)

Belief and Evaluations → Attitude toward Behavior
Normative beliefs and motivation to comply → Subjective Norm
Control Beliefs And Perceived Facilitation → Perceived Behavior Control
→ Behavior Intention → Actual Behavior

Olander & Thogersen's MAO model (1995)

Motivation — Beliefs times Evaluations of outcomes → Attitude towards the behaviour → Intention → Behaviour
Ability — Habit, Task knowledge
Social norm
Opportunity Overall and situational conditions

Integrated model of pro-environmental behaviour (Wilson & Dowlatabadi, 2007)

Personal — Contextual domain (Individul / Shared)

Value-belief-norm theory: Values, Beliefs, Norms
Values (e.g., altruism, self-enhancement, egotism)
Threat of adverse consequences to values
Assignment of responsibility to self to mitigate consequences
Activated values or personal norms
Behavior-specific predisposition
Attitudes — Habits, experience — Capabilities — External conditions

Individul: Socioeconomic status, Technical skills, Resources
Shared: Market actors, Technologies, Regulations, Social interactions, Economy, Norms, Supply chain

Context-specific interaction effects

Proenvironmental decision or behavior
• Private-sphere behavior (e.g., technology adoption, change in appliance usage, lifestyle/curtailment)
• Public-sphere behavior (e.g., environmental citizenship, support for environmental policies)
• Activism

Fogg's model of behaviour change (2009)

High Motivation / Low Motivation
Low Ability / High Ability
1. Core Motivators: pleasure/pain, hope/fear, acceptance/rejection
2. Simplicity Factors: Time, Money, Physical Effort, Brain Cycles, Social Deviance, Non-Routine
3. Behavior Triggers: spark, facilitator, signal
Target Behavior
Increasing likeliness to perform target behavior

Figure E1: Different models from the domain of Psychology, that explain user behaviour (attitude formation / decision-making)

Figure E2 (right diagrams)

COMBINED MODEL FROM PSYCHOLOGY (derived by author)

Motivation: Pleasure / Pain, Hope /Fear
Behavioural beliefs → Value-Belief-Norms (theory)
Beliefs time evaluation of outcomes → Attitude
Subjective Norm (Normative beliefs)
Social acceptance/ rejection
Time, Money, Brain cycles, Physical Effort, Nonroutine, Social Deviance, Task Knowledge
Market actors, Regulations, Technologies, Economy, Supply chain
Ability Factors (individual)
Contextual Factors (macro-level)
Perceived Behavioural Control (Control beliefs)
Opportunity/ Triggers — Sparks, Facilitators, Signals
→ Intention → Behaviour

INNOVATION DECISION PROCESS (DIFFUSION OF INNOVATIONS)

Prior Conditions
1. Knowledge — Cognitive: awareness/understanding
2. Persuasion — Affective: attitude / perception
3. Decision — Dissonance? intention / choice
4. Implementation — Behaviour change
5. Confirmation — Embed change / continue use

Internal feedback: reinforce attitudes, resolve dissonance

Innovativeness of adopter
Characteristics of decision maker:
• Socioeconomic status / characteristics
• Personality variables
• Communication behaviour
Prior Conditions
• Perceived need or problem
• Social norms, behaviour
• Previous and existing practice

Attractiveness of innovation
Perceived attributes of the innovation:
• Relative advantage
• Compatibility
• Complexity
• Triability
• Observability
Reduce Uncertainty

1. Adoption
2. Rejection
Continued Adoption
Later Adoption
Discontinuance
Continued Rejection

External feedback: diffusion through social networks and other communication channels
Change practices / norms
Communication Channels

HIERARCHY OF EFFECTS MODEL (MARKETING COMMUNICATION)

1. Awareness — 2. Knowledge — 3. Liking — 4. Preference — 5. Conviction — 6. Purchase
Exposure, Attention, Perception, Learning, Attitude, Action, Post Purchase

Cognitive — Affective — Conation (Intent) — Behaviour
Attitude towards the intended behaviour

Figure E2: Decision-making models selected from the three domains to build a comprehensive analysis tool. **Top** – Combined model from the domain of Psychology (Derived by the author, based on Theory of planned behaviour (Ajzen, 1991), Integrated model of pro-environmental behaviour (Wilson & Dowlatabadi, 2007), MAO model (Ölander & Thøgersen, 1995) and Fogg's behaviour change model (Fogg, 2009);
Middle – Innovation decision process from Diffusion of Innovation Literature, adapted from Rogers (1983) & Wilson & Dowlatabadi (2007);
Bottom – Hierarchy of effects model from Marketing Communication- adapted from Evans et al., (2010)

F
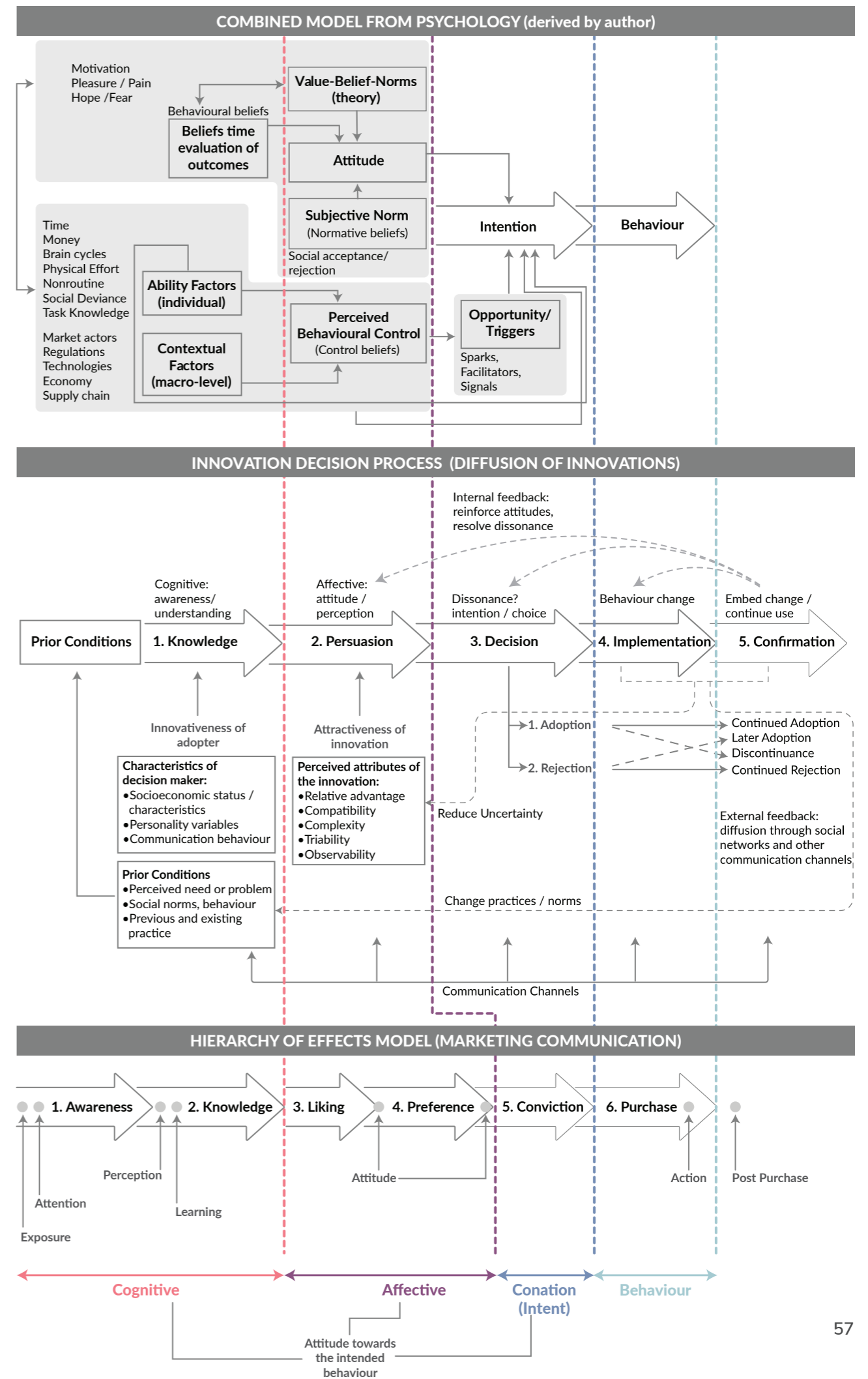
Existing tools, frameworks, Information channels

Appendix F - Existing tools, frameworks, information platforms

Secondary research and a couple of interviews (with specific tool / game developers) were carried out in order to understand existing tools, frameworks and information channels that aim to build awareness and persuade residents towards gas discontinuation. The aim of the research was to understand and learn from the characteristics, pros and cons of the existing tools, which can inform the design phase.

The tools and platforms studied do not form a complete, comprehensive list. These are the top search results found on Google (most easily findable) by a resident upon searching for information about the energy transition in the Netherlands.

As shown in Figure F1, the tools, frameworks and platforms were classified into categories based on their intent, content, features and the target audience. The figure is inspired by the 'Levels of competition model' used in brand analysis, wherein competitors are mapped onto different levels including Product Form (having similar features with similar values), Product Category (falling under the same product category), Generic competition (fulfilling the same need) and Budget competition. Although this is not a competition analysis, the model helps to map the tools at different levels to understand their value.

Inner most layer (circle)

At the centre lies Product Form level (having similar features and values). Since social contagion forms the ethos of this project, tools/ frameworks/platforms that could enable social contagion are included here. Note that social contagion (social influence) is an unhackneyed route to transitions; thus, none of the tools are specifically aimed at it. However, the ones mentioned (help in) actively involve (involving) residents, wherein they are asked to perform tasks or participate in activities to understand the energy transition together. Examples of tools / frameworks/ platforms/ campaigns that lie at this scale include Hier begint het, WE-energy game, Buurkracht (app+ energy party), Energieslag etc.

The 'Hier begint het' and 'WE-energy game' are games that aim to stimulate resident (or stakeholder participation). The Hier game aims to spark interest amongst residents by sending them a letter prompting them to find out when their neighbourhood will undergo the transition. Upon visiting the website, residents can fill in a questionnaire to find out a matching persona. Residents are then taken through a set of tasks they need to finish (individually, and along with a few neighbours). The last task includes organising an Energy party, inviting others in the neighbourhood. The overall aim of this game is to break the ice and start making residents more aware. It is usually managed by the concerned municipality and HIER. The project is in the pilot stage and is undergoing several iterations.

Interview with the coordinator of the game highlights that some municipalities are hesitant about contacting residents. Further, most participants constitute of white, middle-aged men who are interested in knowing more. Thus, how to attract a majority of the population with a diverse background in terms of age and ethnicities remains a question to be answered. On the positive side, the game is successful in capturing people's attention by making it relevant to their neighbourhood. The personas developed also help people to identify themselves (their role) with respect to the energy transition. While it stimulates curiosity and can serve as a good starting point to bring people together (conversation starter), it is still passive and needs to incorporate more actionable items to get residents' buy-in.

The WE-energy game helps to bring all stakeholders together and facilitates discussion (and decision-making) about how the energy transition should unfold in a neighbourhood (which is the apt technology, what will be the costs etc), in a visual manner. It helps in bringing forth different stakeholders' perspectives, perceptions, concerns, apprehensions and constraints. However, it needs an active coordinator who brings all the stakeholders together (usually the role of the municipality). The game needs to be promoted amongst residents, to ensure representation and participation of all types of residents. How the outcomes (discussions and decisions) get translated to practice- needs to be closely monitored in the future.
While the We-energy game brings together stakeholders (physically or digitally) to discuss about the energy transition in a specific neighbourhood (locality), Energieslag takes a macro (digital) perspective. It is a digital platform which is open to all, and enables one to share stories, discuss / follow specific themes, talk to experts, put forth concerns etc. This is managed by the RVO. Both, the WE- Energy game and Energieslag are more focussed on the technical and financial conversations around the energy transition. Taking a more (marketing) awareness campaign stand, the Warmetruiendag prompts people to be more conscious about their carbon footprint by using less heat on one particular day. Citizens are encouraged to turn down the heat and put on an extra warm sweater and save 6% energy and CO2 per degree. They claim that if the whole of the Netherlands burns 1 degree lower on one day, we save 6.3 million kilos of CO2. This also stimulates the conversation about the energy transition. They have a toolkit with different posters communicating about the campaign which are open to residents / volunteers to share with others.

Further, several municipalities are developing their own games / tools to actively involve residents. For example, Duurzam Den Haag has different tools under 'Expeditie Schone Energie spelen' which help to actively involve residents and increase awareness about alternatives. They also have a platform for residents to start their own initiatives. Similarly, LSA is an association of active resident groups across the country who are committed to their neighbourhood. The association helps resident groups to understand and act promptly towards the energy transition.

Information Platforms, tools
that give personalised information
(have to fill in preferences, forms,
details, data)

Platforms, Channels, Websites
that provide information to citizens
(Sustainable living, Energy transition)

Includes data visualisation tools
(maps or initiatives around etc.)

Directory of suppliers, experts,
companies- service providers

Supporting tools
(scan your house, 3D modelling of
house)

Tools / Games / Strategies / Initiatives that
directly include residents
(Stimulate conversation,
Active participation)

Guidelines, Frameworks, Toolkits,
Strategies for Municipalities to develop
transition vision, RES and follow a
participatory process

Figure F1: Existing tools, frameworks and platforms

In sum, whether municipality-driven, privately-driven or community-driven, the above-mentioned tools / frameworks / campaigns actively involve residents towards the energy transition. Although they stimulate conversation /interaction amongst residents and enable peer-to-peer marketing, these are not enough for social contagion. These trigger thought (and discussion; increase awareness) but do not prompt action. Thus, more actionable aspects need to be added to these initiatives in order to build commitment towards gas discontinuation.

Middle layer

The next level outlines tools / frameworks / platforms that have the same purpose (increase awareness amongst residents) but are more passive. These mainly include online platforms and websites which provide information about the energy transition. These can be classified into three types of information portals / tools. 1) Generic information repository 2) Personalised information platforms and 3) Supporting tools.

1)Generic information repository

These include all the websites that aim to give information about the energy transition. These are developed by the national government, municipalities, private sector stakeholders like providers of alternate energy, suppliers, retailers etc. They either give an overview of what is happening in the Netherlands – sector wise, type of energy wise, local initiatives, energy cooperatives etc; or they show small steps people can take, technologies available, answer questions, step-by step take people through the energy transition, have testimonials and experiences of others (in the form of video series), outline upcoming activities, show region wise (municipality wise) data or serve as a directory to find the apt technology providers, contractors, retailers etc.

While some try to break down the information into smaller chunks, most of these provide overwhelming amounts of information and keep directing you from one website to the other (for detailed information on different topics). Most of the websites have overlapping information (not personalised; can confuse people) and in general, lack structure or hierarchy in how information is provided. Some portals make use of maps and visual elements to show other active people / initiatives in the region; however, do not prove to be very engaging. Further, each stakeholder (eg. banks, insurance companies, gas providers, technology providers, residents' associations etc.) has their own website which highlights their own perspective /interpretations and is used to market their own agenda. This further adds to the anomaly in the information, wherein things can be contradictory or give rise to myths. While this multiplicity of sources can be overwhelming, having so many platforms endorsed by both the public and private sector accentuate the urgency to act towards the energy transition. Thus, bringing structure to these portals, while ensuring they provide coherent, relevant information, in digestible bits is the need of the hour.

It has been observed that only people who are interested and are purposely looking for this information (have enough time at hand; more like early adopters) will go through these platforms. These do not engage the critical mass due to their tendency to overwhelm users.

2)Personalised information platforms

Going a step ahead as compared to the generic platforms, these platforms give the residents relatively personalised information. Users are asked to fill in specific details about their house, locality or income and then based on this information they are shown specific things they can do / options available for them. However, it is key to note that each portal provides only one type of information – say financial aspects or changes required in the house, or energy label of the house. These also do not provide all information in one place. Further, at times the residents are asked to enter specific details (eg. specifications /dimension of their house architecture) which are not always handy (or easily recalled by the residents), and thus, lead to frustration or procrastination amongst residents. Thus, if these platforms are developed to be more personalised and easier / accessible to use, they can help in increasing residents' buy-in. Both the above types of websites need to be complemented with actionable items, which go beyond just information provision and truly get people started.

3)Supporting tools

These tools usually aid the residents to carry out specific tasks in order to get relevant information, or make decisions about the energy transition. These also serve as input to get personalised information. For example, the Woon Connect app helps to 3D scan the house and understand infrastructural changes required during the energy transition.

Outermost layer

The third level (outer-most circle) includes guidelines, tools, frameworks, platforms that are designed specifically for the municipalities to aid them in their process to develop the transition vision or plan. These tools include different strategies that municipalities can use, different methods they can follow to stimulate participation amongst residents, or sets of criteria they need to meet in order to achieve their goals.

Several other channels such as podcasts, video series, TV /radio ads, radio shows, talks, information desks, sustainability stores etc. are used by different municipalities (stakeholders) to increase awareness and prompt action amongst residents towards the energy transition. Further, specific apps designed by municipalities to stimulate citizens' participation in general are also used – eg. Gemeentepeiler app in Rotterdam[1] .

In sum, the above analysis, gives an insight into the different tools and platforms that provide information or engage residents towards the energy transition. Insights from these are used to shape the toolkit in the design phase. While the toolkit developed in this project lies in the third level (designed for the municipality), its key aim is to enable active participation amongst residents (similar to the tools of the first level).

1 Note: these apps are not included in this analysis, since the main focus of this research is tools / platforms developed specifically for the energy transition.

G

Ideation output

Appendix G - Ideation output

This appendix outlines the ideas generated for each how-to question during the brainstorm sessions (Figure G1 - G10. The results from different brainstorm sessions have been consolidated into 1/2 sheets per how-to. These ideas, along with the concrete examples and concept lines presented in chapter 7 were analysed to derive the context for the toolkit.

Next, the explorations for the format of the toolkit are presented (Figure G11).
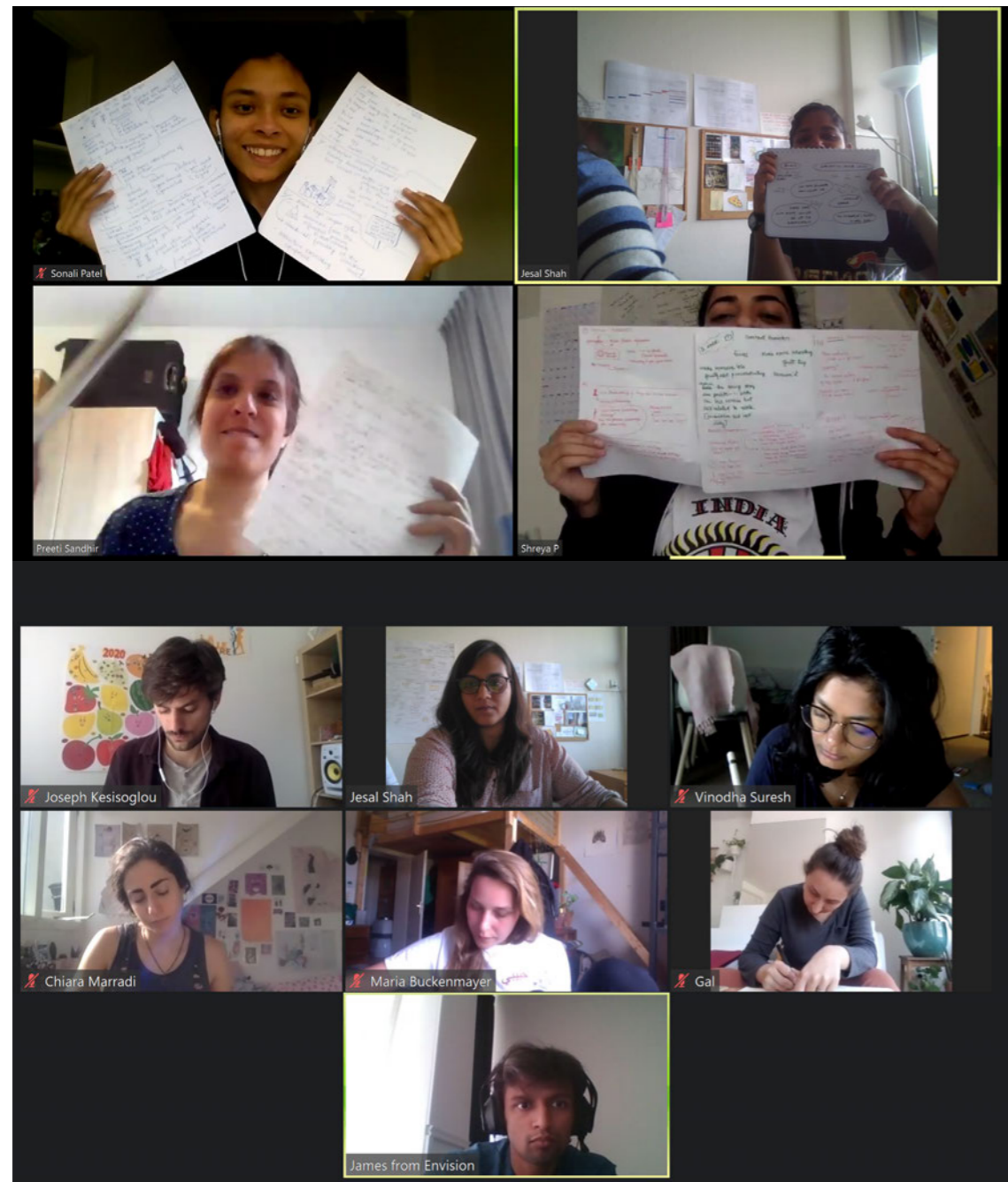
Digital brainstorm sessions using braindrawing, brainwriting methods
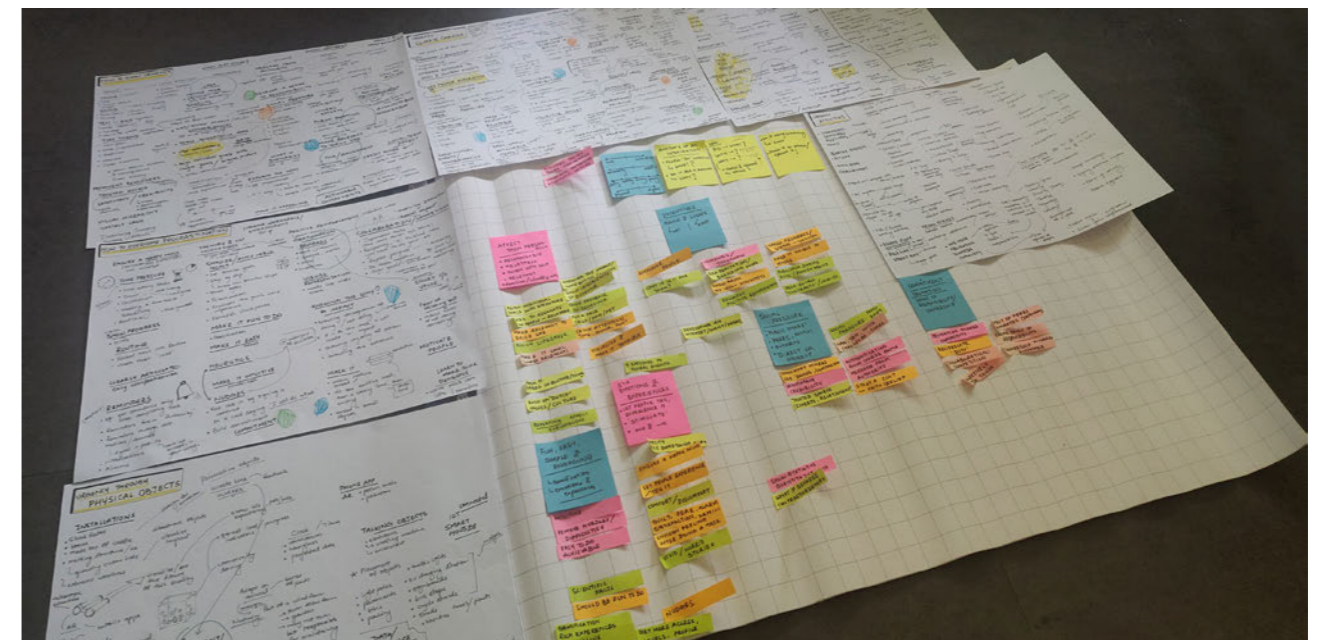
Analysis of the ideas, concrete examples and concept lines to derive the content for the toolkit.

HOW TO OVERCOME PROCRASTINATION

CHANGE WORKSPACE / ENVIRONMENT set up

ENSURE A HAPPY MIND
(emotionally balanced)
+ve mindset

TIME PRESSURE
- Time-boxing tasks
- Timer — clock ticking
- Countdown — hourglass
- creating a timetable
  Scheduling
- deadlines
  - time yourself

Show

SHOW PROGRESS
visible
- levels

ROUTINE
- Embed task into Routine
- create Habit 'cues'

CLEARLY ARTICULATED
easy comprehension

REMINDERS
(constant)
- eg. get attendance only after completing task
- Reminders from 'Authority'
- Reminders through diff. mediums / channels
  - digital + post-its
- Notifications
- Alarms

can't be missed. in your way.

IDENTIFY & LIST MOTIVATIONS
trigger these motivations
  reinforce
to stay motivated

SMALLER / ACHIEVABLE GOALS
- Set smaller goals
- step by step
  - break into smaller steps
- small bytes
- Prioritization
- Explicate the goals, value importance.
- Establish checkpoints

MAKE IT FUN TO DO
- Gamification

MAKE IT EASY
easier

HEURISTICS

@ moment of decision

MAKE IT INTUITIVE
process, task.

NUDGES
- Get lock-in by signing a contract
  or a card saying 'I will do x task'
- Build commitment
  COMMITMENT

POSITIVE REINFORCEMENT
(short-term)
GRATIFICATION

collective work

REWARDS
- food (pleasure)
- badges, ranks
- outing
- incentives

VISUAL REPRESENTATION
- needs less mental space

KNOWING THE WHY?
or IMPACT
- knowing consequences of doing / not doing — peak into future
- if u do the task, it will create 'x' impact
- showing urgency of action
- knowing the rationale

MASK IT
- within routine. embed
- do one exciting task, then a boring one, then exciting
- embed in small objects

sandwich
peak end

COLLABORATION / COMPETITION
'involving someone'
'social aspect'
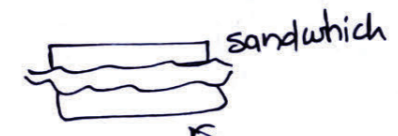- Dependant tasks (one can't finish w/o other)
- Reciprocity — 'x' finished now you have to do your bit
- Report progress — Authority
- Do tasks together. eg. prof. supervisor
- Align goals — personal with collective motivating

"someone is counting on you"

EFFORT v/s VALUE
knowing

effort
value

Fear of Missing out
- induce FOMO of not doing something

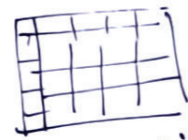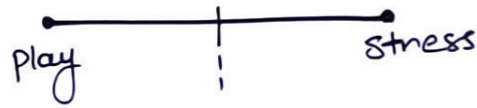### MOTIVATE PEOPLE

LEARN TO MAKE QUICK DECISIONS
- write pros & cons lists. | benefits

Figure G1

MIDDLE SOLⁿ ——— instead of 2 extremes

play ———————— stress

GUILT TRIP

REVERSE PSYCHOLOGY

(Rename)
REFRAME TASK

• Rephrase wording

◦ not work

◦ not -ve

SOMEONE ELSE
DOES IT FOR YOU
(DECIDES FOR YOU)

& later convinces you!

KNOWING YOU ARE NOT
THE ONLY ONE
PROCRASTINATING
└ normalising it

EXCHANGE TASKS

DEVELOPING AN INTEREST,
WANT, DESIRE
instead of only a need.

TO DO LIST
AGENDA
• Scheduling
• clear structure

TRIABILITY
↑ trust

who
TRUSTED
SOURCE ——— RELATIONSHIP
of info.
EXPERTISE

for decision-making
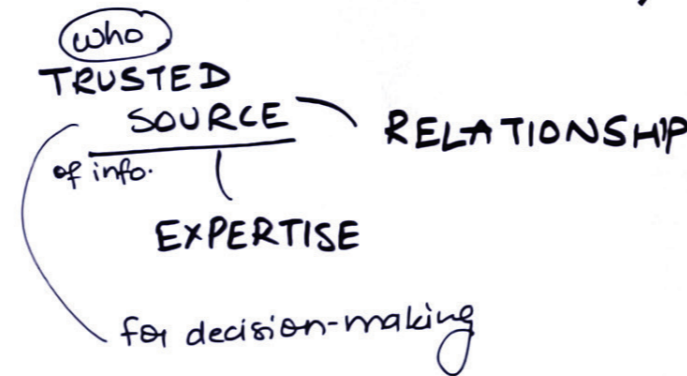
Depends on who
is procrastinating
& why?

ENVISION/VISUALISE
THE FEELING YOU
MIGHT HAVE AFTER
DOING THE TASK

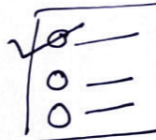envision your self
after accomplishing the
task
'relieved' 'Happy'

what will
you do
after?

SHOW A PERSON ——— Acknowledge you are
THEY ARE   procrastinating
PROCRASTINATING
                      visualise self
                      doing / not doing
'TABOO'   the task

• TICK BOX LIST CHECKLIST ☑
• SLASH THINGS OF   ☐
  STRIKE   AN AGENDA ☐

• SHOW CONTEXT OF
   SITUATION / PRODUCT USAGE
        └ procrastination
          of decision-making
          (in purchase)

Replace the thing
one is procrastinating
about with less
serious / stressful task.
(productive but not   ┌ ensure
completely)   │ continuous
                       └ work.

SHOW CONTRIBUTION
◦ to everyone in the team

making a decision is
scary
make it less scary
'risk perception'

CREATE SENSE OF
RESPONSIBILITY

FINDING INSPIRATION

• through different activities
  meditation / exercise /
  nature walk etc.

• physical activity

• online —→ pinterest
         └ celebrities
         └ idols

REMOVE HURDLES /
DIFFICULTIES
(in the decision-making
  process)

REVIEWS / TESTIMONIALS
OF SOMEONE WHO
HAS DONE TASK Before

TIME y/s AMOUNT
OF WORK

DISCUSS WITH
PEERS / TEAMMATES
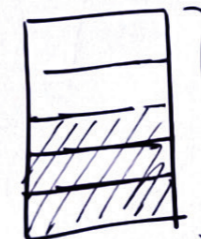
a bar to
indicate
how late
is late

Figure G2

HOW TO SHOW URGENCY

WHAT IS AT STAKE?

Notifications

Stimuli ← → CATCH ATTENTION

COLOUR / LIGHT
- red
- warm colours
- bright

SOUND — loud / shocking
- Ambulance   • Alarm   flashy
- Blazing   • Sirens

TEXT — BOLD typeface.
- write URGENT!!   Big
- Full stop
- choice of words   stronger expressions

TIME TICKING
- Hour glass
- clock / countdown
- deadlines   facts & figures
- calender
- Show timeline

- Show similar incidents & consequences from history

PROMINENT REMINDERS.
                        notifications repeating

TRUSTED SOURCE

LEGITIMACY / CREDIBILITY
- news channels   • marks
                   • identification
                   • standards

VISUAL HIERARCHY
GESTALT LAWS

Disturbing Imagery
Shocking pictures

- Show Danger
- Disasters
war / corona

LOSS

INDUCE FEAR
if something is not done you lost something

SCARCITY
take something away

chain / cascading effect of their action

- **LIST / SHOW IMPACT / effects**
  CONSEQUENCES
  eg: no. of people dying

- **Show quantitative data**
                      numeric
                            DATA
                      brings out seriousness
- **Use emotions**
  humanise / pets

- **Align individual goals with larger goals / bigger picture**
  └ show contribution

GAMIFICATION   — energy you get from finishing a task
adrenaline
rich experiences

Get more access, the more you act

eg linkedin opportunities
you are here

MESSAGE FROM AUTHORITY
- powerful personality
  respected eg police
                doctor
                political leader

influential

DEVELOP A SENSE OF RESPONSIBILITY / ownership

show local consequences

SOCIAL PRESSURE   shaming
- herd mentality   "I behave like others do"
- peer pressure

SHOW CONTRIBUTION /
OTHERS EFFORTS

PUBLIC SHAMING
- look down upon
- review behaviour

Visualise
- scenarios
- story boards
- graphs
- visuals

Positive Reinforcement

WHAT IF SCENARIOS
+ve & —ve

show impact on everyday life

MAKE RELEVANT TO DAILY LIFE

whats in it for them?   tangible

does it affect me? How?

FINE / PUNISHMENT
incrementally harm persons reputation

EXPLAIN THE WHY
└ eg supermarket trolley
                count + distance.
- if u say "u have to take it"
  └ people will be rebelious / question

SHOW CONTRAST
depends on culture   someone you trust, respect

someone you look up to

someone you fear

challenging   marketing
exciting   Actnow!

CALL TO ACTION

short term rewards

POSITIVE REINFORCEMENT
"please do this fast"
'it would be great to have this done'

ACCOUNTABLE
ANSWERABLE

MAKE IT A LAW / REGULATION

LONG-TERM EFFECT

CREDIT SCORE
- credit cards.
  └ people never want a bad credit score.

AUTHENTICATION
from a known / credible organisation / source.

MAKE IT APPEALING   **ACTIONABLE COMPONENTS**

Figure G3

URGENCY
CLIMATE CHANGE

Remind people the elements necessary to our survival

CHILDREN (PETS) — HUMANISE IT

Future of children

put a face

common thing b/w people - earth whatever the worldviews

Show child's future

capitalism or socialism — h2 appeal 2 both

talk their language

FRAMING
wording 'crisis'

FIT-IN LIFESTYLE

keep the tree alive

Get people out of their bubble

make it understandable digestable

tangible info.

educate
Information / Knowledge

good work being done people's efforts

SHOW WHAT EVERYONE IS DOING.

gov'ts. + companies
now its your turn

d People care

EMPOWER PEOPLE

only you can do it

AWARENESS THROUGH MOVIES, SOCIAL media

netflix

local heros

torch bearers

eg

Warm winters in NL

• Scientific facts
• things that can be done

-ve & +ve aspects

multiple channels

induce guilt

WHAT IS IT THAT WE ARE LOSING?

communicate in local language, local symbols, culture

INCREASE EXPOSURE TO LOCAL & GLOBAL EVENTS

before & after

you are reaping benefits of someone else's actions. you need to act

COMPETITION

give options

which would you rather have

LET PEOPLE EXPERIENCE IT.

eg • Australian bushfires
• Droughts

Coal that you are using now was discovered in 1850's

no. of coffee cups turned to toilet paper

1 coffee or toilet cups paper

> crisis
• scarcity
• alternatives (scenarios) good/bad
• consequences — eg science experiments

kids

or

INDIVIDUAL CONTRIBUTION

to the problem consumption / patterns feedback.

Shaming

POLICY/LAWS

INDUCE FEAR

TIME PRESSURE

to the change

explicate the effects of action

positive reinforcement

SYMBOLISM

• membership
• social groups / pressure

COMPARISON
with others

SHOW WHAT OTHERS ARE DOING

> climate change
• ozone depletion

VISUALISE

consumption & impact

needs to resonate with people

• DATA (quantitative)
• Feedback

gas levels

REPEATING/ PRIMING

place everywhere

subconscious

Postcard (neighbour x is using this, doing this, don't you want to try it?

MAKE IT RELEVANT/ RELATABLE

• one house
• one street
• Shock
• signals

• daily routine
• no... of people died in the region

COLLECTIVE EFFORT

• collective goals
• group activities

induce a sense of pride

solar energy apps show generated energy

plank in front of house (# winner)

rewards

bonus

discounts (financial)

incentives

OWNERSHIP

RESPONSIBILITIES GIVE PEOPLE

SHOW HISTORIC EVENTS/ CONSEQUENCES

Nudges

EASY, SMALL (cheaper) ACTIONABLE ITEMS

• step by step guide
• easy 2 adopt
• stage wise

GRATIFICATION

IMMEDIATE | DELAYED

scenarios do it today, if not...

EMBED IN EVERY COMPANY'S PURPOSE

• compare to old lifestyles — sustainable

make it easy, accessible

if u choose sustainable option - pay less

Show gains

Figure G4

URGENCY THROUGH PHYSICAL OBJECTS

Provocative objects

design for emotion

Waste bins — feedback
nudges

INSTALLATIONS
- Shock factor
- bones
- made out of waste
- melting structure / ice
  ↳ growing ozone hole
  ↳ extreme weathers

disastrous objects

visualise impact

show life expectancy — pets/kids

→ street level indicators / progress

telescope binoculars

visualise / see the future of this locality

community saving

AR
VR
mobile apps.
- (weighing) scale

Data screens — hyperlocal

FEEDBACK ON CONSUMPTION
- Energy meters
- Buzzers   usage — thermometers
- Scales

ADAPTIVE PLANTS
drooping — → based on consumption

"nobody likes dead plants"

POSITIVE REINFORCEMENT/ SYMBOLISM
- paint house green

Public spaces as an object
↳ discussions
  • meeting space
• Give objects let people appropriate

Adopt an animal — sense of pride.

(analogy)
Nurturing   Part of a wind farm
→ own solar farm
→ garden
→ may not own but responsible for maintaining

Wall of shame / fame

Branding — Reputation
bad name if you do not comply

- trophies   giveaways
- Flags   souvenirs
- Badges   momentos
- Planks / Plaques   Billboards
- Medals

Clock / Timer
- countdown
- hourglass
- projected data

PHONE APP
AR • pollen levels
   • pollution

TALKING OBJECTS
- electronics
  ↳ washing machine
  ↳ microwave

★ Placement of objects

- Light poles
- pavements
- bins
- parking

- traffic lights
- EV charging station
- signboards
- bus stops
- cycle stands
- sheds   trees/plants
- benches

connected
IOT
SMART HOUSES

nudges

DATA/ SCIENCE

MOMENTOS
TAKEAWAYS   QR codes
Pamphlets
Leaderboards
backyard   Bulletin Boards

- Clothes
- utensils / grocery / food

Figure G5

78   79

URGENCY ACTIVITIES

- Climate / Disaster Drills
- disaster preparedness training (climate)

app-based → Tinder
- community
- Team Building exercises

- Fablab Maker's space
  - Reflect lab
  - try lab
  - experience / experiment lab

Podcasts
- DISCUSSIONS SEMINARS MEETINGS — (AA) style
debates

- movie screenings
- entertainment + education
- WORKSHOPS

- Webinars
- Instagram stories

Quizzes
- Kahoot — Family games
- mentimeter

open days
- BARTER SYSTEM
- POT LUCK
- PITCH IDEAS
- CHALLENGES

- MARKET (DAY) — competition
- SPORTS / GAMES
  Matches tournaments
- Events (music) Festivals

Q & A sessions
- FAIRS [TRADE SHOWS]
- CREATIVE sessions
- HACKATHONS / Jamming sessions
- Culture Days
- sharing is caring

- Online Forums
- Tag someone
- Shaming activities
- Award ceremonies
- Sports day

- Modelling future city
- Visits → to production facilities
- Exhibitions

- FITBIT — compete with others / friends

- 'X' Day eg fathers day valentines earth day

- Social Streets
  ↳ Floats   open Streets

- AH coupons — collect things
"are you an Tinder?" — win (incentives)
Normalise the use of an app
- Paytm

levels of coupons
- cook out barbeque

- join / together buy stuff collective actions

- Treasure Hunt
- Flash mob
- citizen assembly

community gardening

Task Ownership eg W₁ → level 1   W₂ → level 2
- Build on other persons work.
transferable

- Kids & Parents bonding activities

- ESCAPE ROOM
save surrandings to save yourself
- ROLE PLAY STREET PLAY — dramas
  ↳ engage youth

FRIDAY STRIKES
Protests marches demonstrations "NIGHT WATCH"
- exchange resources

- ONE HOUR OBLIGATION TOWARDS COMMUNITY

- charity
- volunteering

Lottery system to give tasks / responsibilities   Raffles

Govt. / community schedules 10 activities to be achieved in 3 weeks

Planting / grow cleaning
Sharing (Peerby)
Tending
Organizing
Collecting
development of a plot

→ Put on agenda of people.

- Group advantages
- Signing petitions together
- Stand-up comedy
Passive Aggressive.

- Nature Walks
- Know your neighbourhood   neighbours

Figure G6

URGENCY EMOTIONS

news channels — TV / radio

Demistifying green

reflects / shows / evokes emotion (Dead / Alive)

visualisations installations — use art forms

KIDS

INVOLVE ALL SENSES

—VE

SHOCK
FEAR
SCARE
GUILT
Shaming
ANGER

Scarcity
cut off electricity / water
world ending

showing contribution
feedback on consumption

childhood memories

ASSOCIATIONS

Expressions

Humanise it
make it local

NUDGES
POWERFUL ADS
visuals imagery

DATA

COMFORT / DISCOMFORT
└ experience
• CONTRASTING situations
• Whacky ways

eg. water shouts @ you in a restaurant

RESPECT
BELIEF

+VE
HOPE — satisfaction — tony chocolony (fairtrade)
FUN — gamification
PASSION

positive reinforcement
• green dot

• REVEAL / UNEARTH
└ SURPRISE

• PRIDE
happy

• RESPONSIBILITY

• OBLIGED

EMPOWER THEM

Forget about themselves

EMPATHY / ALTRUISM

accomplishmt / satisfaction
evoke a sense of
eg donation charity

through SYMBOLISM

• Authority — stern message.
• Scientific
  — fact based rational

google maps

Tone of voice

IMPOSING RESTRICTIONS
(people will do it more.

show their importance.
tell them its not possible w/o them

Peer to peer recognition (feedback)
Acknowledgement (of accomplishment)

REPUTATION — FAME
— SHAME

RECIPROCITY GRATITUDE

MINDFUL WELLNESS

'neighbour of the month'

Sense of Belonging
└ community

intolerance towards who doesn't comply

SYMBOLS / VALUES / MEANINGS

religion, cultural symbols
• Fabric Bags • caps • badge • merchandise

• Legitimizing colour / symbol
• Food labelling
• Brands
• Location-based eg canals
• neighbourhood identity

Greenwashing

• Show the intentions — whole process
• Transparency
• google map — marks your house

Dutch-values (they take pride in)
• on time
• direct / clear
• trade (money minded) financial gain
• agendas & schedules
• Pioneering / engineering / knowledge hub
• power / rich
• relⁿ of Dutch people with nature — water

'inventive'
• already undergone one transⁿ, lets do it again

'For ourselves'
'For our own (community)'

world leaders
'Set an example'

• Why were plastic bags designed — to help?
└ show history
consequences of it?
different in context

EXPERIENCE CENTRE
• Space induces different emotions

• Flyer • Sticker
• T-Shirts • posters
• cups

Figure G7

DAILY ROUTINE

- Touch points
- Activities

Labelling / Packaging

- Food
- Shopping — online

- Retail stores
- online stores

Apps / services

- Google mails
- Gmail
- Netflix
- Spotify

Exercise

walk / run

Bike ride

Mobility

- drive
- take bus / train

- Walking dogs
- Religious activities
- entertainment
- Partying

Washing

Chores:
cleaning
gardening

News

TV, radio, paper
Social media
internet / phone

Pop-ups

Parenting

- Tracking APPS
- AR/VR
  - carbon footprint
  - energy

gardening

eg CE8 — material pack
- material specs
- consequences

make
people
aware
how
much
energy
they
consume

app

purchase travel wash heat

convert to
energy terms

Take a
bike atleast
x days
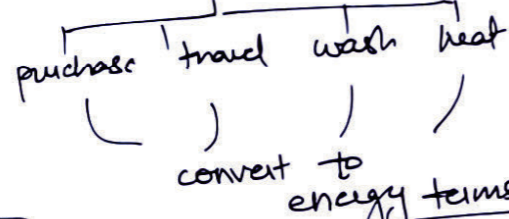
SHOW HOW
'ESSENTIAL ENERGY IS'

SOCIAL PRESSURE

FOMO
fear of missing out

Held mentality

near &
dears

VISIBILITY

SYMBOLISM ⟷ REWARDS INCENTIVES
- ranks
- show progress
- exclusivity

more experience

OLD ⟷ young
dynamics

more awareness

- 'x does like this'
- 'people like you behave this way'
- show COMPARISON

Show-off
- your progress
- your investment

#metoo

COMPETITION

Leaderboard
grade card

- PEER REVIEW

State of
your plant
reflects on
you!

pressure
to act

- Peeing on wall
eg 2 shooting water

eg parking in disabled spots

Calling people out

Shame.
└ people don't want to stand out

SOCIAL REWARDING
IMAGE

- imposed through shops ⟷ policy

eg if someone does not bring own bag

when billing
spotlight

- social media challenges / trends
- tagging someone with a call to action

TAG

- People tend to compare kids (family)

NAG
lack of freedom
impose

PROPOGANDA
Start a cult
"desirable image"

history / scriptures
say you have to behave like this

'CONTRACTS'
LOCK-INS

social credit system
(extreme eg.

mythology

Religions
(faith & belief
(why so successful?
(lots of rules
  'defined behaviour'
- cultural attributes

Figure G8

SOCIAL INTERACTIONS
CONTAGION

Hub & spoke
word of mouth
influencers / bloggers

flyers, posters,

CHANNELS
MEANS

community
EVENTS
• parties / drinks
• get togethers
• seminars
• group
• markets

PEOPLE AS AMBASSADORS endorsers

training

Tupperware / Oriflame model.

REMOVE BARRIERS

SELF-HELP GROUPS

• TRUTH OR DARE
• Spin the bottle

RECIPROCITY

INVITE-ONLY
exclusivity

CONVERSATION STARTERS
curiosity

LIKING

TAGS

AGMS

COACH BUDDY SYSTEM

Act as a helper
expert + make others experts

spread fast

overpriced
someone doing something wrong

Build trust

KITTY PARTY

GOSSIP CONTROVERSIAL SCANDALOUS

* cards against humanity
└ game

politically incorrect
saying / actions

APP / PLATFORM FORUM
online community
BUILD TOGETHER

TREASURE HUNT
POKEMON GO

VIDEOS STORIES

DO TASKS TOGETHER!
promises to each other

COMMITMENT
obligation

NICE TO BE ASKED FOR HELP
when someone asks for help

PASSING THE PARCEL

action
reaction

ANONYMOUS

AUTHORITY EXPERTISE.

Group incentives

ROLE PLAYING

GIFT OF GIVING

DINNER DISCUSSIONS
• tell a story

SEEING IS BELIEVING
LEARNING BY DOING
• triability / experience it
• testimonials
• tve & -ve pro's cons

BINGO! GAMES (FUN)

SCHOOLS
education activities for kids

over the FENCE conversations

lucky draw
jar

PLAQUES

personalised boards

placards Billboards

BUILD COMMUNITY FUNDS

UNIONS
eg. Rotterdam Bridge — symbolic Harmony

TED TALKS

EXCHANGE BARTER

BUILD NEW RELATIONSHIPS / DEPENDENCIES

• WRITE LETTERS / POSTCARDS

placing some object to stimulate conversation.

Tesla 1st car owners
incentives — exclusivity

Figure G9

IN PUBLIC SPACES

coaches/volunteers

Gym — Burning out energy
└ care for self & planet
   health.

— burning calories
   takes is
   diff.

making energy
more
diff.

Use the physical space
itself for conversation

BROADCAST

interactive gym equipment

has a
E.T. helpdesk
Booth

competition b/w gym / church
└ avail offers through
   the church/gym

VISUAL CUES
badges symbols
posters

**BULLETIN
BOARD**
counter

POP-UP
└ moves from
place to place

help financially

TAKEAWAYS
┌ plants
├ piggy banks
└ starter kits

incentives / rewards / discounts
• coupons related to
  gym membership
• Health care products
  energy drinks
• Parking priviledges

**EACH SPACE
PROMOTES OWN
INITIATIVES**   —   **UNDERGO'S
TRANSITION
ITSELF**

**CALL TO
ACTION**

**PRIMING
INSTALLATIONS**

NUDGES
• piano staircase
  example.

WALL OF FAME

people like to
travel.

• in bathroom

TRAVEL

• door handles
• entrance
• parking
• post boxes
• waste bins

THINKING SHIP
└ hats
• games

Build an
energy efficient
playground

Figure G10

While the spin-the wheel, shade-card or catalogue format serve as quick reference formats, the cards can help in capturing in-depth explanation of each strategy. Further, being stand alone, the card provide flexibility in use – used in groups, making different permutation combinations or used alone. Next appendix, outlines the rationale for the chosen format.

Figure G11: Explorations for the format of the toolkit.

H

Deriving the content for the toolkit

Appendix H - Deriving the content for the toolkit

This appendix outlines how the content of the toolkit is derived, and the rationale behind including different aspects. Next, it throws light on how the content is translated into the toolkit – its chosen format.

H.1 The content of the toolkit

Before outlining the content of the toolkit, it is necessary to highlight a key aspect. While the ideas and examples presented in chapter 7 were specific to the Reyeroord context and aimed to answer the specific design questions listed in chapter 6, the toolkit needs to be generic in nature and needs to capture all plausible ways/strategies of arriving at solutions. This ensures that one can design interventions for different target groups – with different levels of motivations and abilities.

This section builds on the insights from chapter 7 and describes the content that is incorporated in the tool. First, a few design principles are presented. Next, the section moves to building upon the anatomy of an intervention identified in chapter 7, wherein the 4 components of an intervention and relevant persuasive strategies are outlined. While each strategy is not explained in detail, the rationale behind incorporating specific strategies is outlined.

H.1.1 Design Principles – Design for social contagion towards energy transition

As Brignell (n.d) describes them, design principles are "A set of considerations that form the basis of any good product". Defining design principles specific to a product, service, method, domain etc. can help in guiding the process of developing that particular product/ service/ method/ domain, while providing consistency and steering the direction of thought. They also serve as evaluation criteria for ideas or concepts. Since designing interventions for social contagions is an unhackneyed approach to activating residents towards gas discontinuation or sustainable behaviours in general, it is apt to define basic design principles that can guide the process of developing ideas. Following are design principles identified specifically for designing interventions aimed at stimulating social contagion of sustainable behaviours (towards the energy transition; derived from the analysis of examples and concepts described in chapter 7):

Scale down: Translate global to local

While social contagion is inherently a scaling up exercise, the first step to achieve contagion is to activate individuals. Translating global phenomenon into locally/ individually relevant and recognisable issues is a means to capture people's attention. Only if something affects you directly or is relatable, it triggers immediate action,

overcoming procrastination. As seen in chapter 4 – two of the key apprehensions / barriers that contribute to inaction towards energy transition are "It does not affect me, I will take action when it affects me" leading to procrastination; and people being so pre-occupied with other issues that they find it irrelevant to even understand what is at stake. These point to the importance of 'personal relevance' in decision-making, in line with Celsi and Olson (1988), where they highlight that 'felt involvement' or 'personal relevance' plays a 'motivational role in consumers' attention and comprehension processes. To avoid /overcome this shrugging off of the decision at hand, the global phenomena like climate change, sustainability need to be made personally relevant, relatable, recognisable for the residents. Thus, scaling down and translating the global/ national issues to regional, local, familial or individual scale is important while designing interventions.

3 S's- Simple, slow and steady win the race!

In order to encourage people to take action, it is necessary to reduce the effort they need to put in. Similarly, to ensure accurate comprehension of information, it must be easy to understand and should not overwhelm the user. Easier/ simpler it is to do a behaviour, the lesser the motivation required. This is in line with Fogg's behaviour change model, wherein there is an inverse relationship between motivation and ability (Fogg, 2009).

Strategies like breaking up a large task into smaller actionable components, embedding these into existing routines, providing bite-sized information incrementally, in interesting formats can help in encouraging people to start changing their behaviour or ensure accurate comprehension.

Further, attitude formation or changing behaviours is a long-term process. Interventions need to build commitment towards the behaviour and provide certainty, avoiding future cognitive dissonance (situation involving conflicting attitudes, beliefs or behaviours). In sum, interventions need to be simple (easy to do), incremental (gradual) and continuous in nature to ultimately instill positive attitudes and achieve favourable outcomes.

Comparison is key: enable (sub)conscious comparison

As described earlier, one of the key underlying principles of social influence is social comparison. People have the tendency to constantly evaluate themselves in terms of the appropriateness of their abilities, behaviours and beliefs based on those of similar others (reference groups). They use social norms or social proof to guide their behaviours and manage their social identities (self-concept). Thus, in order to achieve social contagion, designing interventions that enable this conscious or subconscious comparison to people who have adopted or are committed towards the desirable / target behaviour is a pre-requisite. As explained subsequently, designing the

Spread Mechanism and Incentives related to a particular behaviour plays an important part in enabling comparisons and can be leveraged to induce social contagion.

Make it desirable, silly!

In order to ensure that people adopt sustainable behaviours / products/services, these need to be made desirable. People need to be given a compelling reason to opt for sustainable options. While, this can be done by making the behaviour easy / simple, triggering intrinsic and extrinsic motivations is also necessary.

Further, making the behaviour desirable, can stimulate contagion by providing a reason for comparison amongst residents. Designing incentives or an (dis)advantage related to the new behaviour can induce emotions such as the fear of missing out, envy, insecurity or the perception of having a disadvantageous position, upon comparison. These make the new behaviour more desirable, stimulating adoption. Principle 3 and 4 complement each other and need to be designed in coherence.

While all the principles need to be kept in mind, principles 1 (Scale down), 2 (3S's win the race) and 4 (Make it desirable, silly) specifically help in designing interventions to achieve the target behaviour (goal; criterion 1 of an intervention), whereas principle 3 (Comparison is key) guides the social contagion (criterion 2 of an intervention) aspect of the intervention.

Further, we shall see that, Principle 1 & 2 are more relevant while designing the Action and Touchpoint components of an intervention, whereas Principle 3 & 4 are relevant while designing the Spread mechanism and Incentive components of the intervention.

Having defined the design principles of designing interventions for social contagion, the next section builds onto the 4 components of an intervention identified in chapter 7.

H.1.2 Design Components

While analysing the anatomy of an intervention, it was evident that each intervention needs to meet two criteria - First, it needs to tackle / cater to the main goal (target behaviour) of the contagion, for example – communicate the urgency to act towards gas discontinuation, or ensure comprehension of alternative technologies. Second, it needs to enable social contagion of this target behaviour. Further, each intervention has four key[1] components:

-What do people do/see (to bring them closer to the target behaviour / goal) – Action;
-Why would people do this Action – Incentive;
-How will people do the Action – Touchpoints; and
-How will people spread this Action (target behaviour) – Spread mechanism

---

1 The Who and Where components of the intervention are captured in the design process (through design of the canvas)

This section builds upon each of these components. Specific design inspiration strategies (ways of designing the component) are outlined for each of these components. These are inspired by the overarching themes identified through the analysis of ideas. Once these themes were derived, similar behaviour change and persuasive intervention design techniques, toolkits and strategies were studied. These include the Design for Intent toolkit by Lockton (2010), Social influence strategies by Cialdini (2016), The Brains, Behaviour and Design toolkit, Behavioural intervention design toolkit for service design developed by van Lieren (2017), MINDSPACE framework for behaviour change by Dolan et al. (2011), Persuasive patterns card set (Toxboe, n.d.), amongst others.

One of the key observations was that most ideas generated fell under specific categories or strategies in these toolkits. Thus, the relevant concepts (strategies, techniques) from these toolkits and the ideas generated were used to build a wide range of inspiration strategies (specifically to be applied for the energy transition) that can help in designing each of the component.

The names of strategies and concepts were kept as close to the original strategies in order to let them be easily identifiable. It is key to note here, that rather than reinventing the wheel, the idea is to build upon appropriate tried and tested (proven) strategies predominantly used in the marketing efforts to diffuse products /services (trigger adoption), to inculcate sustainable lifestyles and activate residents towards the energy transition. While the aim was to capture all ways of arriving at solutions, this toolkit and the strategies listed are only a starting point to inspire ideas towards social contagion. It is by no means a complete collection of persuasive strategies. The selection is meant to provide enough depth and coverage to help establish a foundation. Which strategies are more effective towards stimulating social contagion towards gas discontinuation, or how can these strategies be further customised to the energy transition are areas for future research.

Components and relevant strategies

As Bhamra et al. (2011) & Daae & Boks (2014) point out through their research, interventions aimed at changing behaviours can be categorised into different levels based on the distribution of 'control'. Here, control refers to how much the product allows the user to behave in unintended ways. As shown in figure H1, this spectrum goes from 'product in control' wherein the products are designed in such a way that they allow for only the intended behaviour (the user has no control in determining what to do) – they steer or force the behaviour, eg. Integrated toilet and washbasin – decreases water use by re-using water for hand-washing to flush toilet. On the other end of the spectrum lies 'user in control' interventions wherein the users are in complete control of their behaviour and can choose whether or not to perform the behaviour. This end of the spectrum includes interventions that inform the user, or give feedback and then it is upto the user to make a change.

In between the two ends lie persuasive interventions which encourage users (rather than only informing; but also, not steering or determining the behaviour completely) to perform the target behaviour. Since the decision to discontinue gas cannot be steered through design (except designing imposing policies), the strategies used to design interventions need to lie towards the user-end of the spectrum – from persuading to informing. Thus, the strategies outlined to design interventions include persuasive or 'informing in a persuasive manner' techniques.

Although the overall aim of any intervention is to instill behaviour change (positive attitude) using persuasive techniques, the inspiration strategies have been classified and assigned to each component based on the purpose of the component. As seen Figure 37 of the report, all the themes derived are persuasive means of designing an intervention. However, to ensure that the intervention meets both the criteria – goal of intervention and enables social contagion of the behaviour, these themes have been linked to apt components of the intervention, where the components help in guiding the design process.

The Action component serves as a means to engage the users towards the desired behaviour through tasks, challenges, activities etc. Thus, strategies such as 'Make it personally relevant', 'Build Commitment', 'Make it fun' can provide inspiration for designing the Action component. The 'Incentives' theme can inspire the Action component; however, it is considered as a different component since it serves a dual purpose of motivating people to do the Action, while acting as a way to spread the behaviour. In order to ensure that Incentives are explicitly thought off while designing an intervention, they are kept as a separate component.

Similarly, 'social pressure' is a persuasive strategy in itself which can be used to design the Action, but is instead used to inspire the design of the 'Spread Mechanism' component – since it is inherently a means of spreading a behaviour – enabler of social contagion.

The themes 'Nudges', 'Behavioural economics' and 'Make it easy' are used to inspire the design of Touchpoints (which embody the Action, Spread mechanism and Incentives) such that they make the Action, Spread mechanism and Incentive more effective in achieving their goals.

It is evident that all the 4 components have several overlapping constructs and are not mutually exclusive. However, they are specified as different components to guide the design process, and to ensure each aspect is explicitly thought about and defined. Having described the rationale for having the 4 components and the selection process of the relevant inspiration strategies, the next step is to define these components and their respective inspiration strategies in detail.

Figure H1: Distribution of control in strategies for behaviour change – Source Daae & Boks (2014)

Action

The key aim of the Action component is to fulfill the first criteria of designing an intervention - achieve the goal of the behaviour. It defines 'What do people need to do / see' in order to engage them in the desired behaviour. This can be in the form of tasks, activities, challenges, campaigns or installations, wherein people are asked to do (create, solve, collect, share, discuss, attend, experience, learn, negotiate etc.) something; engaging them directly or indirectly. This component is inspired by the 'learning by doing' philosophy.

The persuasion strategies outlined provide inspiration to design the Action and make it more effective in achieving its goal. The strategies are classified based on 4 key Action Design principles (A1, A2, A3, A4) identified based on the key factors / behavioural traits that influence a person's decision-making process (derived from the analysis of ideas, analysis of existing behaviour change toolkits & models; and the motivations & apprehensions of residents identified in Chapter 4). The strategies suggest ways to incorporate (reinforce/ counter) these behavioural traits into Actions, in order to ensure that people actively participate.

These 4 Action design principles (categories) and the strategies that fall under each principle are described next.

A1: Make it relevant, recognisable and certain

People use personal relevance, recognisability and certainty as filters to make (quick) decisions. These filters are used to decide whether to learn more about or pursue a specific behaviour / decision. If the behaviour /information being provided seems personally irrelevant or not familiar, the process of decision-making is not pursued further than the 'exposure' or knowledge phases (Chapter 4). Additionally, people have a present bias (or hyperbolic discounting) - the tendency to prefer outcomes that are closer to the present, a status-quo bias (preference for the current state of affairs) or fall prey to the decoupling effect wherein they don't always connect their actions to its consequences. The larger the delay between an action (decision) and its consequence (outcome), the weaker the link in people's minds. These biases amongst others, lead to a myopic vision, which prevents people from pursuing future-oriented decisions.

This is also exemplified by the motivations and apprehensions of residents discovered during research (chapter 4) wherein the common reasons for inaction towards gas discontinuation were:

-"It doesn't affect me yet; I will take action when it affects me"; Ego-centric beliefs

-People are pre-occupied with other issues. Shrug off the decision thinking this is not relevant for me now.

-Lack of the ability to visualise the future or intangible things – disbelief in climate change

-Need for certainty

Concern for children's future (personally relevant) was amongst the few motivations to pursue the gas discontinuation. Thus, the interventions (Action) need to be made personally relevant, recognisable (familiar) and certain in order to capture people's attention and get their buy-in. This is also in line with the Design principle 1 – Scale down: Translate global to local.

Following are the key strategies that can help in applying this Action design principle:

• Personalisation

• Show contribution / give feedback / show consequences of actions

• Emphasize & Establish ownership

• Make it tangible, concrete, visible & explicit

Tailoring or personalising the content / activity can help in improving the resident's engagement with it and building commitment. It can make the content highly recognisable, prompting immediate action. Further, emphasizing or establishing ownership can build a sense of responsibility and make people more conscious of their behaviours. People tend to attribute relatively more value to items (groups/ beliefs etc.) that they own (have a sense of ownership towards). They will go out of their way to avoid any potential loss of the owned item / belief. Thus, 'ownership' can help in building personal relevance, relatability and recognisability.

Additionally, to overcome the myopic vision, abstract and future-oriented issues /phenomena need to be made more tangible, concrete and certain. Here, comparison with daily objects, or translating the meaning of future into present terms can prove fruitful. Interventions need to help people in visualising the future. This is in line with Trudel (2019), where he advocates priming a future focus amongst consumers to gain higher participation in pro-environmental behaviour. For example, when participants were told to think and write about what they want to remembered for by the future generations, it increased donations to an environmental charity, pro-environmental intentions and climate change beliefs (Ibid). Further, since energy transition is in itself a vague concept, using more concrete, daily life interactions with energy – (such as feedback on energy consumption) can be used as a means to make it more recognisable.

Other strategies, such as priming, humanise it (give it a face), build onto the existing (routine, norms, values), use analogies, or make it bite-sized and incremental can complement the four key strategies listed above while making the interventions more relevant, recognisable and certain.

A2: Shape expectations, emotions and experiences

Expectations, emotions and experiences mould people's (future) decisions. As outlined by the decision-making models in Chapter 4, affective elements (along with cognitive elements) play a key role in shaping people's attitude towards a behaviour/ product / service. Emotions, as well as the (past) experiences that give rise to these emotions, drive how people perceive, evaluate and make (future) decisions; or form opinions and behave. This is also exemplified by factors such as 'Past experiences', 'Trust' or 'Empathy / Altruistic values' that surfaced as motivations or apprehensions towards gas discontinuation during the research phase. Thus, triggering specific emotions & creating experiences or eliciting past experiences (and reinforcing positive ones and tackling the negative one) can be a powerful persuasive technique used while designing the Action / intervention to prompt people towards the energy transition.

Further, people's experiences are often strongly influenced by their existing expectations. Positive expectations can increase the likelihood of a positive experience. Setting up these positive expectations can be a way to further influence people's decision-making. It is key to note, that almost all strategies engender some emotion. However, it is captured into a separate category / Action design principle, to develop ideas which rely highly on this emotion / experience quotient. Some strategies for inspiration include:

•   Build positive expectations (let people try it)

•   Elicit reciprocity

•   Use priming (elicit associations & past memories)

•   Trigger specific emotions (use peak-end effect)

As defined by Rogers (1983), a key characteristic of innovation, essential to its diffusion is trialability. Letting people try a behaviour can help set apt expectations and shape their attitudes and decision towards the behaviour. It also helps to ensure comprehension of hidden elements and costs. In cases where it is difficult to let people try a technology / behaviour (eg. the alternative energy sources), digital /virtual walk-throughs or role-playing activities can come in handy. These can also reduce the uncertainty related to the new behaviour.

Apart from letting people try the behaviour, the Actions can be designed to trigger specific emotions such as guilt, empathy, surprise, hope, fear, anger etc. through installations or specific activities and the related touchpoints. One such emotion is gratitude. From the perspective of social influence, gratitude and the consequent reciprocity that it gives rise to, is an effective persuasive strategy that influences people to behave in a certain way (Cialdini, 2016). While reciprocity can be used as a means to spread the behaviour, it can also be used to design the Action in a persuasive manner, motivating people to respond promptly.

Last, priming (a phenomenon wherein exposure to one stimulus influences a response to a subsequent stimulus, without conscious guidance or intention; through past associations, cues, past experiences) can be used to trigger specific behaviours. For example, in order to promote water conservation, the city of Melbourne has adopted the Target 155 campaign - which primes people to remember that 155 litres is the maximum amount of water that should be used per day per person to ensure sustainable water futures. Since people remember the '155' number distinctly, it triggers self- reflection and conscious change in behaviour, in case the user's monthly bill and water report reflect higher usage quantities.

Strategies such as Gamification, Humanise it (give it a face), Combining facts with vivid content and Anchoring can be used to further create rich experiences, trigger emotions or shape expectations while designing the Action.

A3: Build commitment through consistency

People strive to maintain internal consistency, avoiding contradictory information and behaviours. They tend to pay more attention to information that is consistent with their current attitude, behaviour and beliefs. Thus, building upon existing routines, habits, values, beliefs and prevalent social norms can be an effective way in ensuring people are committed to doing the new behaviour.

Additionally, people also maintain this consistency on commitments they make. Once people have made a promise /pledge to do something or invested time/ money/ effort in something or set specific goals, they feel obligated to follow through. Thus, Actions can be designed to build this commitment in order to ensure people pursue the energy transition in the long run. Strategies that can be used include:

- Let people pre-commit
- Foot in the door principle
- Create dependencies amongst people
- Give people a headstart; build onto the existing (routines, values, norms).

While one strategy is to let people pre-commit to the behaviour itself, such that they follow through on that commitment; the other way of building commitment is through the foot-in-the-door principle. It involves getting a person to agree to a large request by having them agree to a modest request first. If people commit to a smaller action / request, they are more likely to agree to a related larger action/ request in the future since they feel obligated to keep agreeing in order to stay consistent with their original commitment (decision of agreeing). Alternately, commitment can also be built through collective / group tasks /efforts. When people are dependent on you, one feels obligated to perform best to their ability. It locks people into the task. Further assigning responsibilities, or appealing to existing roles people play in the society or their skills / expertise can help in building commitment towards the Action.

Strategies such as Eliciting reciprocity, Personalisation, Emphasizing & establishing ownership, Providing feedback/ showing contribution and Make it bite-sized & incremental can be used to reinforce one's commitment to the Action.

A4: Simplify and engage

People are easily overwhelmed and distracted and end up procrastinating or giving up on the decision / behaviour. Thus, the information being provided or the Actions towards the desired behaviour need to be simplified and made fun and engaging. The effort required to do / comprehend / remember tasks and information needs to be minimal, since people's minds are already pre-occupied – as is the case in Reyeroord.
Following are the strategies that can be used to make the Action fun and engaging, or easy to perceive / comprehend and remember.

- Use gamification
- Make it bite-sized and incremental
- Combine facts with vivid content

Gamification of tasks or using elements of games to design persuasive interventions is a proven means to engage users to learn new information or motivate them to adopt / practice new behaviours. It can be used to make the new behaviour interesting and easy to perform. Gamification can be used to design environments that facilitate specific behaviours (e.g. a waste bin with a basketball net above it) or to design artefacts / games with a specific goal in mind (e.g. the WE energy game to enable decision making).

Bite-sized and incremental nature of content / tasks can help in reducing the effort as well as increasing the engagement (and commitment), while ensuring appropriate retention and comprehension.

Examples of bite-sized content / tasks could be micro-learning content, 'Tasty's' videos of recipes on; or unlocking levels feature of a game. Another strategy to ensure apt comprehension while making the content / task engaging includes combining facts with vivid content. While excess of any of one the two can be overwhelming, a balanced use of facts and vivid content is effective in prompting both the cognitive and affective components of attitude formation. This strategy can be used to design Actions that have equal amounts of cognitive and affective components.

Further, strategies such as trigger specific emotions (use peak-end effect), Personalise it, Minimise effort, Use analogies or Increase salience (Make it stand out) can help in making the Action simple and engaging.

Spread Mechanism
While the key focus of the Action component is to prompt people towards the desired behaviour, the Spread Mechanism relates to the second criteria an intervention must meet – to enable social contagion. This component captures the ethos of the project and for each intervention it is key to explicitly identify how the Action or desired behaviour shall spread across the target group. It embodies the design principles 3 (Comparison is key: Enable (sub)conscious comparison) and 4 (Make it desirable, silly).

Based on the social influence strategies and practical examples of how trends, or the 'bandwagon effect' come along, two routes of spreading behaviours / building social pressure towards the adoption of the target behaviour are identified.
S1: (stimulate) Direct Social Pressure, and
S2: (stimulate) Indirect social pressure
These routes of building social pressure and the relevant strategies under each are described below.

S1: (stimulate) Direct Social Pressure
Direct social pressure involves direct contact / interaction between an activated person (who is currently performing / is convinced to perform the desired behaviour) and the targeted person. During (through) the interaction, one's peers directly request / force them to do or participate in the desired behaviour / Action. This can be in the form of an invitation, tagging on social media, nominating someone, nagging them through phone calls etc. Upon being tagged / invited, one feels obligated to reciprocate or join the bandwagon, conforming to the new behaviour or social norm. This enables the contagion of the behaviour.

These interactions between people need to be designed for / facilitated. It can be through different channels (e.g. social media, physical meeting points, bulletin-boards, newspapers etc.). The Spread mechanism (tag, nag, invite, nominate, challenge, share, refer etc.) can be selected based on the Action.

S2: (stimulate) Indirect Social Pressure
People can feel the social pressure to join a trend or perform certain behaviours even if they are not directly forced to do so. They have the tendency to compare themselves and their behaviour to peers. In order to belong to certain social groups or maintain a social identity, they feel pressurized to imitate others or conform to the social norms. This can be leveraged to stimulate people to carry out the desired behaviour.

Comparison with peers and the subsequent emotions such as fear of missing out (FOMO), envy, insecurity can be triggered by designing the Spread Mechanism and Incentives (for an Action / desired behaviour). These incentives and the participation of others need to be made explicit and visible, such that they trigger social comparison. This can be done through different strategies such as:

- Use symbolism
- Show experiences of others (stories, testimonials, reviews)
- Show performance of peers (through leader-boards, wall of fame/shame, profile ratings)
- Provide social proof

Symbolism can be used to make other's behaviours conspicuous, especially since, unlike products (and brands), the greener energy alternatives (specifically district heating) are not directly visible. As Rogers (1983) highlights it, 'Observability' plays a significant role in the diffusion of an innovation. Thus, peer's participation in the Action /desired behaviour or ownership of the technology need to be accentuated. Although, one has to bear in mind the negative connotations related to symbolism as well as privacy and ethics considerations.

Further, direct comparison can be stimulated by showing other's performance through leader boards, profile ratings and rankings, wall of fame/shame. These can instill the drive to compete against the peers, and enable the social contagion of the desired behaviour / Action. Social proof can be provided in terms of 'the number of people doing the similar behaviour' or stating acceptable / ideal conduct according to social norms.

Another way to stimulate comparison is to show other people's experiences say through stories, testimonials or reviews. Along with providing social proof, the positive or rich and fun experiences of others can trigger (sub) conscious comparisons. It is evident that this would go hand-in-hand with first, designing the rich and fun experience as a part of the Action, and

'fun' can be the rewarding Incentive to participate. This highlights the interconnectedness of the components. At times, the Action itself can act as a Spread Mechanism and vice-versa. Similarly, the Incentive and Spread mechanism can be substitute each other. Specific touchpoints (physical / digital; based on the spread mechanism selected) can be designed in addition to the Action touchpoints, that can help the activated person to spread the desired behaviour.

Incentives

Incentives serve a dual purpose - they act like motivations that persuade people to participate in the Action or carry out desirable behaviour; and they stimulate comparison amongst peers (especially when made highly visible). While all the strategies mentioned for the Action and Spread Mechanism are persuasive techniques and can act as incentives /motivators, it is also necessary to explicitly design benefits / rewards / advantages that can make the Action / behaviour more desirable – in line with the Design principle 4 (Make it desirable, silly!). As Verplanken (2018) outlines, rewards are a proven means to affect behaviour change, specifically pro-environment behaviour for people with low motivation. Thus, Incentives need to be explicitly thought off / identified while designing an intervention.

The incentives can be tangible or intangible, and can be embedded into the Action / Spread Mechanism (touchpoints), or be separately designed. One needs to think of 'Why would people participate in this Action? What will they gain / lose?' when designing the incentives. Further, Incentives along with the spread mechanism need to make the behaviour conspicuous amongst peers and can trigger the feelings such as the fear of missing out, envy etc. amongst non-participants – stimulating social contagion.

Following are some different type of incentives (strategies) that can be offered /used:

•Provide people group membership (e.g. membership to a self-help group, active mom's group, conscious citizens club)

•Give people a social identity, social status or reputation (e.g. responsible parents, conscious citizens, pioneering family).

•Provide people with guaranteed outcomes (e.g. free life time service, repairs, warranty etc.).

•Make it an achievement, a new skill people learn or qualities that people possess.

•Give them cash or kind incentives (savings, discounts, low interest loans, future valuation, gifts, freebies, samples).

•Give people special privileges, perks, benefits (e.g. group discount, free parking, access to party/ guest-list). Make it exclusive.

•Provide people with unique, fun, novel experiences.

Here, the timing of incentives - immediate / in the future, needs to be kept in mind. Since people are present-oriented, future gains needs to be translated to present gains. Further, since people are averse to losses, 'losses' can prove to be an incentive to trigger people towards the behaviour / Action. For example, loss of any of the above can prompt action. e.g. people would avoid the loss of their (current) tax benefits; or loss of their identity as a responsible citizen. The spread mechanism and incentive can be incorporated together – for example, people have a soothing doorbell if they opt-in, but an unpleasant loud one, when they haven't adopted the behaviour. While the sound of a bell can be indicative of peer's /neighbour's participation (and help in the spread of the behaviour), people would not want to have an unpleasant door bell and it can serve as an incentive for them to opt-in or do the Action.

Touchpoints

The project draws upon the concept of 'Touchpoints' from the domain of Service design. As defined by Interaction design foundation (2020),

> "A touchpoint is any interaction (including encounters where there is no physical interaction) that might alter the way that your customer feels about your product, brand, business or service."

They form the interface (points of contact) between the service provider and the clients and can be in the form of material artefacts (objects), environments, interpersonal encounters (interactions and relations between people; and their capabilities)(Secomandi and Snelders, 2011). Understanding these touchpoints and shaping them appropriately enables one to design meaningful (and novel) experiences. While they enable the users to avail a service (exchange of value – the service dominant logic), they also help in making things more tangible, concrete or certain- further shaping the user's experience, emotions and expectations. Thus, an explicit focus on touchpoints can ensure well-curated interactions and experiences – which are a pre-requisite for building positive attitude amongst residents, as established earlier.

The touchpoints embody the Action, Spread Mechanism and Incentives; and provide the means through which people interact with a system, other people or engage in an activity. Although touchpoints help in making the components more tangible and concrete, they should not be viewed as, what Secomandi & Snelders (2011) call it, 'accessorizing of the intangible'. The idea is to be conscious and mindful of the environments, objects, relations and interactions which facilitate the behaviour and to make these more effective to ensure favourable outcomes and opinions amongst residents.

Further, as outlined by van Lieren (2017) and the Brains, Behaviour and Design toolkit, behavioural economics principles (based on heuristics and biases) and nudge theory can be applied to touchpoints (of a service) in order to trigger specific behaviours (change behaviours), and shape people's experiences at the moment of interaction. While behavioural economics

principles and nudge theory are widely used by private sector organisations to promote their products /services or prompt specific behaviours amongst consumers, these are also finding their way into the workflow of public sector organisations, and interventions aimed at promoting sustainable and healthy lifestyles alike. Behavioural Insights team (2012) presents several instances of these persuasive techniques being used to reduce fraud, errors and debt.

This project builds upon this line of thought and aims to use behavioural economics principles and nudge theory as a means to make the touchpoints more effective in shaping the Actions/ Spread mechanism. These can enable easy and prompt decision-making, overcoming procrastination. This is in line with Magnier (2019), where she suggests that it is most apt to use nudges when choices have a delayed effect, they are difficult, infrequent, feedback is poor and the relation between choice and outcome is ambiguous. However, the ethical considerations of these need to be kept in mind. These should not be manipulative (enforced) and jeopardize people's freedom of choice. While the principles are used to optimize the choices and effort, they should always be used to improve the welfare of the target group. Further, one must ensure they are transparent and not misleading; and provide for an easy opt-out or alternative.

The strategies outlined are classified into two broad categories (Touchpoint design principles), for the sake of simplicity. The principles build on two inter-related decision-making traits, namely:
1) People's perceptions are moulded by how information is presented.
2) People rely on short-cuts to make decisions / do things. They want to put in minimum effort.

These are translated into the following touchpoint design principles respectively:
T1 - Shape perceptions and impressions.
T2- Make it easy (to use / do).
These design principles and the relevant strategies are outlined next.

T1: Shape perceptions and impressions
People's perceptions are moulded by how information is presented. This is due to perceptual biases that arise from the automatic, fast, non-conscious and intuitive System 1 thinking – dual processing theory (Kahneman, 2011). For example, through their study,Yang & Raghubir (2005) show the effect of package shape on the quantity people buy. The more elongated a container, the lower its purchase quantity: Beer bottles are perceived to contain more than beer cans (especially for infrequent beer drinkers. Consumers buy more products when they are presented in a short (vs. long) container. Similarly, Gorissen & Weijters (2016)show the negative footprint illusion, wherein consumers erroneously estimate the environmental impact of the combination of the green and non-green product lower than the same non-green product alone. These heuristics and cognitive biases can be used to shape people's perceptions and impressions about the energy transition and prompt immediate action. When applied to the

touchpoints, these can ensure accurate comprehension of the subject matter. Strategies include:
- (Re) Frame
- Show scarcity (of time &/or supply)
- Humanise it (give it a face)
- Use anchoring
- Use analogies
- Increase salience (make it stand out)

People tend to draw different conclusions (and react accordingly) based on how the information source, context and loss/gain is framed or which personal attributes or values you appeal to. A loss is more painful to people than an equivalent gain. Emphasizing losses will generally cause people to avoid an option or activity, while emphasizing gains will make an option seem more attractive. Further, people don't judge losses and gains absolutely – rather, they perceive losses and gains relative to a reference point (say in the past or future). By shifting the reference point, a loss or gain can be made more or less influential.

People place a higher value on objects / opportunities that are scarce. This value is determined by how easily the object might be lost, especially to competitors. The more difficult it is to acquire an item the more valuable it is. In many situations the item's availability and its perceived abundance is used to quickly estimate quality and/or utility. Scarcity provides social proof, that others also prefer the same item, and thus can be used to trigger positive attitudes, or as a tactic to spread the behaviour.

Humanising the touchpoints (giving it a face, persona, character) can help in making things personally relevant and recognisable, and trigger prompt action. Several companies use this tactic of personification to create a bond between the consumers and their brand to create long-term engagement. Thus, it can be an effective means to shape people's perceptions towards the energy transition or specifically their energy behaviours.
Further, Anchoring can help to set expectations towards the new behaviour, as well as provide suggestions of what should be the ideal behaviour- since people tend to use familiar or previously introduced information /cues as a reference point, and make subsequent decisions relative to that anchor.

In order to simplify complex information, or to make something more tangible / recognisable, Analogies can be used while presenting the information /task. Additionally, since people have a limited ability to process information and cannot attend to every aspect of a situation, increasing the salience (the quality of being particularly noticeable) of important items can help in capturing people's attention and prompting them to go through the information or do the behaviour. Other strategies such as Combine facts with vivid content, Personalise it or Choice architecture can be further used to shape people's perceptions.

T2: Make it easy to do /use

People rely on short-cuts to make decisions / do things. They want to put in minimum effort. Thus, the touchpoints need to be easy to use (or should make the Action easier to do / information easier to remember). Following are few strategies that can be used:

- Minimise effort
- Shape Choice architecture (defaults, enhanced active choice, recommended options)
- Provide social proof

For each Action (spread mechanism, incentive) and the respective touchpoint, one needs to think how the effort or time required can be optimised. This can be done through say pre-filling forms, sending people reminders/ alerts/ notifications, providing checklists, walking people through the process etc. Further, shaping the choice architecture – making use of defaults, recommended options, or enhanced active choice can help in making it easier for people to decide. Since people are lazy and want to avoid making complicated decisions, they tend to go with pre-selected options / defaults (which don't require an extra effort). People also look for social proof to reduce the effort in evaluating and comprehending the choices. Whenever people are unsure about a decision or how they should behave, they align their choices with those of similar others, assuming that others have more knowledge, or if the majority have chosen something it might be correct. Thus, incorporating social proof or the socially acceptable behaviour can help in guiding people's decisions and behaviours.

Strategies such as Make it bite-sized & incremental, Combine facts with vivid content or Use analogies can further optimising the effort required.

These Touchpoint strategies can be used while designing both, physical and digital touchpoints

H.1.3 Evaluating the Interventions

Having outlined the four key components of an intervention, the next step is to outline the evaluation criteria for an Intervention, which shall also form a key aspect of the tool/ process. Being a qualitative approach to social contagion, the concepts will have to be evaluated qualitatively, especially in the initial stage of idea generation. The first stage shall involve commonly used design concept selection and evaluation methods such as C-box, Power dot voting or Harris profile, which can be used during the design process to narrow down and identify the most promising ideas.

The criteria for evaluation can be defined by the team based on the constraints at hand. Additionally, the design principles identified earlier can serve as evaluation criteria. Following are a few examples of the evaluation criteria:

1. Does the intervention meet the overall aim (target behaviour)? How well does it meet the overall aim?
   If the overall aim is to show urgency to act or enable thorough comprehension, specific criteria can be defined based on the intervention, such as: does it capture peoples attention / spark interest? Does it trigger intended emotions? Is it easy to understand? Does it aid retention of information?

2. Does the intervention increase the desirability of greener energy alternatives? Does the intervention create a sense of envy / induce a fear of missing out (FOMO) /Insecurity?

3. Does the intervention trigger conscious / subconscious comparison?

4. Does the intervention trigger social contagion of the urgency to act / accurate information?
   How many people get activated? What is the reach of the contagion? (qualitatively)

5. Ease of implementation? Cost of Implementation?

Upon selection of a few promising ideas, these can be prototyped and validated in field using small sample sizes. Insights from the validation can help in creating iterations and can prove to be a good indicator of the potential of the concept. Based on the intervention, specific evaluation criteria (as shown above) can be devised. Further, quantitative methods and tools like social network mapping can be used to simulate the contagion and understand it reach.

Since the scope of the project is limited to the 'ideation and design of concepts', only the first step of evaluation (qualitative evaluation and selection of design concepts) is captured in the tool.

In sum, the content required for designing interventions that needs to be incorporated in the tool consists of:
- The two design criteria
- The four design principles
-The four design components
- The categories and relevant inspiration strategies for each component, and
- The process of evaluation and selection of ideas / concepts.

The next section gives shape to this content. It captures how the content is translated into a toolkit that can be used to design interventions for social contagion.

H.2 Format of the toolkit

This section presents how the content identified is translated into a toolkit. The toolkit is developed mainly for use by municipality officials, as well as designers working on the subject. The main criteria kept in mind while designing the toolkit was that it should be easy to use, should provide adequate inspiration and needs to strike a balance between structure and freedom. While freedom (of thought) is crucial for the creative process, structure is necessary to ensure fruitful outcomes. Moreover, since municipality officials are not accustomed to design thinking processes, the toolkit needs to help them dive deep into the inspiration strategies as well as the process of generating ideas / concepts. Having outlined the key requirements for tool development, the next section delves into the chosen format for the toolkit and how the content is translated into this format.

Rationale for the chosen format of the toolkit

After brainstorming and evaluating different forms for the toolkit (as shown in Appendix G), a card set accompanied by a design canvas was chosen as the way forward. Apart from being easy to use and handle, the card format of presenting the design principles and inspiration strategies provides flexibility in use. One can easily select specific strategies, use different permutations and combinations (couple / bundle the cards) or use a single stand-alone card. The design principle cards can be kept in the centre, visible to all, such that they are handy and easy to refer to. Further, each strategy can be presented (viewed) incrementally, making it less overwhelming. The cards help in capturing the essence of a strategy in-depth – through explanations, examples and suggestions. This in-depth and rich explanation is necessary to help municipality officials dive deep into the subject matter, and also to understand how to apply these persuasive techniques (which they are not familiar with).

Further, the process of using the cards to design interventions has to be guided. Here, a design canvas serves as the most efficient way of channeling the process. The canvas has evolved from being a 'fill all in' template like the business model canvas, to a 4-step process, that guides and facilitates the design process during a workshop (The evolution of the design canvas (iterations and validation input on these iterations) can be found in Appendix I). While the 4-steps capture and guide the design process – from problem definition, brainstorm, conceptualization, evaluation and detailing (providing the requisite structure/backbone since municipality official are not familiar with these); each step provides enough freedom for people to jot down their thoughts – use it creatively. However, some details (eg. in the definition of the goal) have bounded boxes, to ensure concrete decisions are made upon discussion, which can further help in guiding the process. A detailed explanation of how to use the cards and canvases can be found in chapter 8 of the report.

Iterations of the toolkit

Appendix I - Iterations of the toolkit

This appendix outlines the different versions of the toolkit and the key insights from their validation. Upon finalising the format, the content was translated into a set of cards and the canvases. Although, the cards have also undergone several rounds of iterations (in terms of the strategies included, categorisation of the strategies under each component, amount of text, structure & presentation), these are not presented here. Only the iterations of the canvases (and in general, of the process of using the toolkit) are presented.

Validation for each iteration was carried out digitally (this may have led to some biases or limitations). All rounds almost followed approximately the same protocol. A group of people were invited for a creative session of around 2-3 hours, wherein they used the cards and canvases to design interventions to answer the specific design question. Participants were given a short introduction about the topic and the toolkit, after which they used it. Each iteration built upon the insights from the previous ones, and varied in terms of (amongst others):
-        Individuals v/s teams working with the toolkit
-        The order in which activities were carried out
-        The level of explanation given to the participants
-        Combinations of canvases used
-        Duration of different activities

The participants in each round had diverse backgrounds – from expert designers to novice designers to non-designers; People very familiar with the energy transition and not at all.; people very familiar with behaviour change and persuasive strategies or not at all, etc. This helped in getting varied types of feedback. The next section outlines the iterations based on the validation sessions. A basic explanation of the canvas design and the feedback on each during different validation sessions is presented.

Validation 1
Canvas A (figure I1) was used for this round. This canvas was designed as a fill-all in canvas; wherein participants can brainstorm ideas (create concepts) using the four components. For a single idea, all the components had to be thought off. The columns help in ensuring all 4 components are included, whereas rows signify a single concept.

Validation protocol: A few cards from each component were handpicked and sent to the participants a few days before the session. The cards only had the explanation of the strategy and no examples or prompts to design. All 8 participants worked individually, wherein each participant worked on a one canvas allotted to them on Miro. Upon brainstorming ideas,

participants discussed their ideas and tried to evaluate ideas using a c-box. Figures I2 shows a few of ideas people generated.

Feedback / Insights: Figure I4 outlines participants' feedback. Other insights / suggestions include:
- While some participants could grasp the concept and came up with ideas easily, a few struggled. They did not understand the four different components and why how they should use it. They said they need more time to get a grasp of it.
- A few participants suggested that it would be better to use the toolkit as a team (les overwhelming, and a push to really think)
- The evaluation stage was not very clear since criteria for the axes were not well-defined.
- There was discussion specifically about the design principle 'Design for FOMO', having a negative connotation, and that it might not be ethical.
- Other suggestions included, having trigger questions (eg. in the form of how-to's), which can make it easy to answer come up with ideas. Having more clarity on the target audience for the toolkit. Since designers a familiar with the design process and hence, it is easier for them to use this.
- "Can we start thinking of ideas from any component? Or is there a specific starting point? I would like to use different starting points.. how can you prompt that?"
- "C- box might not be the best method if there are more that 2 evaluation criteria; you should try dot-coting as well."
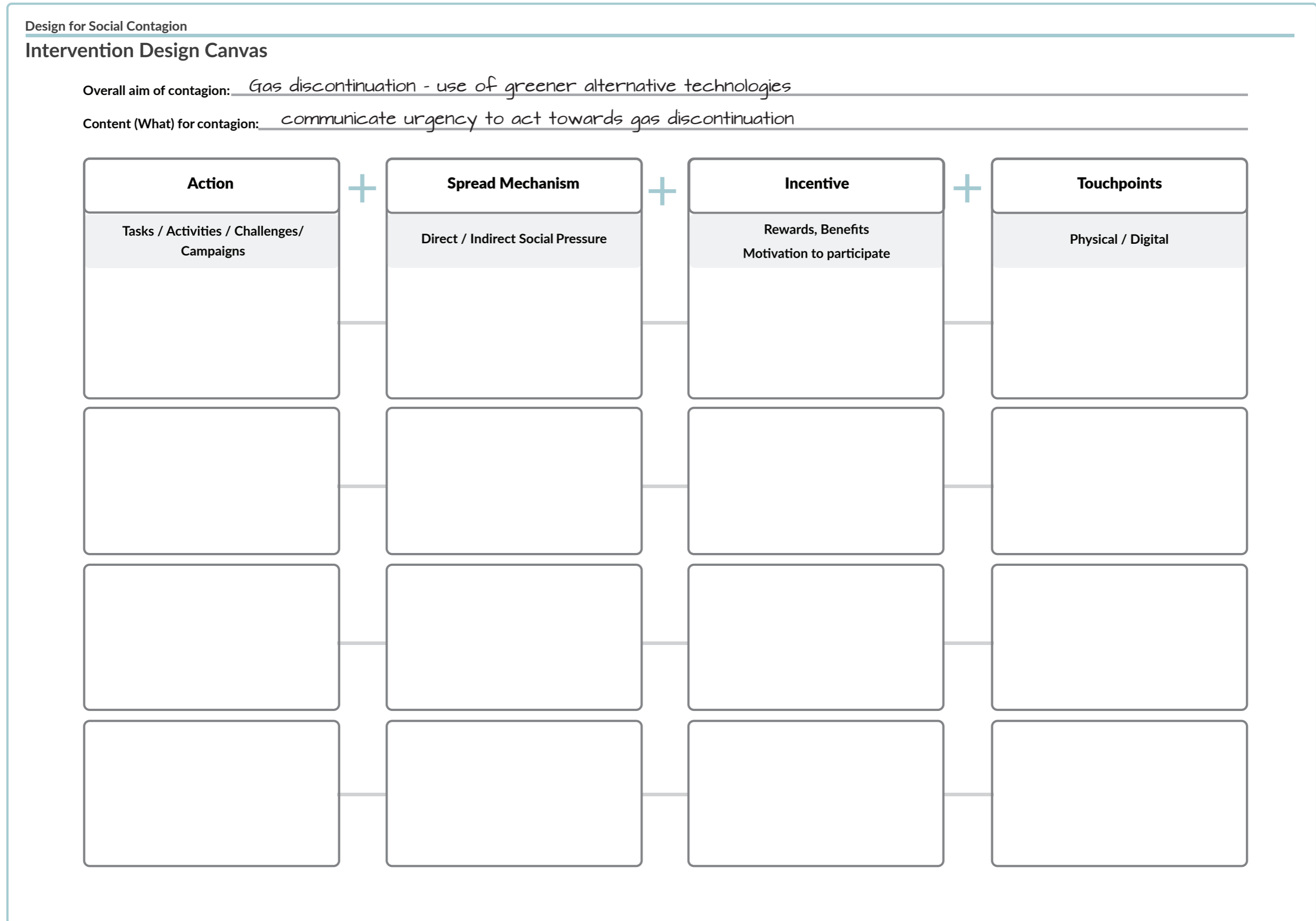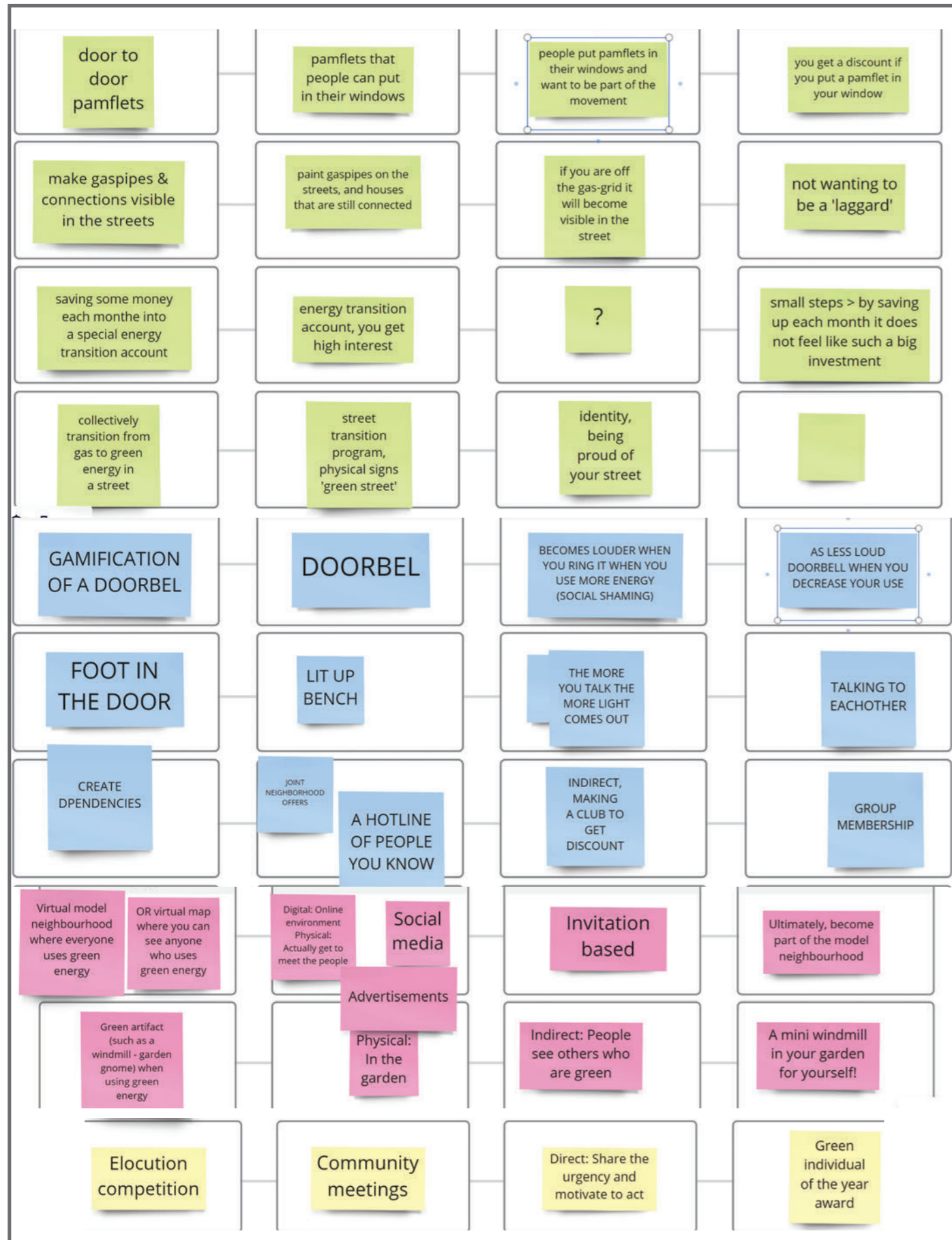
Design for Social Contagion

Intervention Design Canvas

Overall aim of contagion: Gas discontinuation - use of greener alternative technologies

Content (What) for contagion: communicate urgency to act towards gas discontinuation

Action		Spread Mechanism		Incentive		Touchpoints
Tasks / Activities / Challenges/ Campaigns	+	Direct / Indirect Social Pressure	+	Rewards, Benefits Motivation to participate	+	Physical / Digital

Figure I1: Design canvas A

door to door pamflets	pamflets that people can put in their windows	people put pamflets in their windows and want to be part of the movement	you get a discount if you put a pamflet in your window
make gaspipes & connections visible in the streets	paint gaspipes on the streets, and houses that are still connected	if you are off the gas-grid it will become visible in the street	not wanting to be a 'laggard'
saving some money each monthe into a special energy transition account	energy transition account, you get high interest	?	small steps > by saving up each month it does not feel like such a big investment
collectively transition from gas to green energy in a street	street transition program, physical signs 'green street'	identity, being proud of your street	
GAMIFICATION OF A DOORBEL	DOORBEL	BECOMES LOUDER WHEN YOU RING IT WHEN YOU USE MORE ENERGY (SOCIAL SHAMING)	AS LESS LOUD DOORBELL WHEN YOU DECREASE YOUR USE
FOOT IN THE DOOR	LIT UP BENCH	THE MORE YOU TALK THE MORE LIGHT COMES OUT	TALKING TO EACHOTHER
CREATE DPENDENCIES	JOINT NEIGHBORHOOD OFFERS / A HOTLINE OF PEOPLE YOU KNOW	INDIRECT, MAKING A CLUB TO GET DISCOUNT	GROUP MEMBERSHIP
Virtual model neighbourhood where everyone uses green energy / OR virtual map where you can see anyone who uses green energy	Digital: Online environment Physical: Actually get to meet the people / Social media / Advertisements / Physical: In the garden	Invitation based	Ultimately, become part of the model neighbourhood
Green artifact (such as a windmill - garden gnome) when using green energy		Indirect: People see others who are green	A mini windmill in your garden for yourself!
Elocution competition	Community meetings	Direct: Share the urgency and motivate to act	Green individual of the year award

Figure I2: Glimpse of the ideas generated during validation 1 (of canvas A)

Figure I3: Glimpse of what the evaluation using c-box looked like.

Was it clear what you need to do? Do you need more explanation?

Were the strategy cards self-explanatory?

Was the template easy to use?

Was it fun / simple or daunting ?

Things / aspects you liked

Things / aspects that annoyed you / can be changed

Did it help to come up with interesting ideas?

Other feedback

not perceived their relevance. highlight better how to use them and for what

Canvas was easy to use on its own, but I struggled to make use of the principles and guidance at the top. (EJ)

Fun. Lots of concepts to absorb though. (Also using Miro for first time. That was a bit daunting) (EJ)

easy and appreciable

Design for FOMO / envy. Is that really something we want to do? This relates to the general ethics question. (EJ)

stimulates a nice reflection

indicate how much time it takes to do the activity

Specificity of the action to think was not clear (IP)

further explanations would be useful

the format works well. I forgot about the strategy cards in the beginning

I would have people do the activity In couples instead of individually. People can feel insecure if they are not sure what to do.

I am aware about the behavioral change theories and have been reading about it, so I kind of understood what to do. (IP)

Having the cards to mix and match was helpful as a prompt

Fun and gives me energy

It wasn't clear for me;

I really would like to have a question of an instruction for thinking about each: action, touchpoints...(IP)

I think it would be nicer to use the prompts in a group for brainstorming as opposed to individually

I liked doing the activity

The template in itself did not help in getting creative juices flow.(IP)

be conscious of time and engagement; especially for an online workshop; we ended up going for over an hour so it was quite a lot longer and hard to stay engaged. Would be nice to give a bit more of an overview and timing for each activity ahead of time.

Adding a question like "How would you like others to know about this?" for the section of spreading mechanism could be helpful to think. (IP)

each card had a lot of information and there were 4 categories of cards so it was a bit overwhelming; especially in this time frame

The axes for evaluation are unclear, would recommend thinking of other ways (such as weighted evaluation on multiple aspects)

I always started with Action because of the format of the template, could be interesting to see what ideas come up if touch points is the first column. (IP)

Figure I4: Participants' comments, feedback, suggestions from validation 1.

Validation 2

Validation protocol: The second validation was carried out with 3 participants, wherein they did two rounds of designing interventions. In the first round, participants used canvas A followed by Canvas B (Figure I5 i & I5ii)) to brainstorm ideas individually. The participants were not specifically told to used canvas B for detailing. However, they ended up using it to detail one of their ideas.

The second round was carried out as a team, where participants used canvas C (Figure I6) followed by canvas B to design ideas. This time they were specifically told to choose an idea and detail it with canvas B. Evaluation was not given emphasis in this validation session due to lack of time.

Canvas B has two parts (i, ii) based on the Spread mechanism – direct pressure v/s indirect pressure. This has been designed to prompt people to think in terms of the contagion process, how it starts, who does what, using what etc.

Building on Canvas A, canvas C prompts people to think of ideas in terms of the frequency of occurrence – daily , monthly weekly etc.. These prompts can be replaced by other aspects such as individual v/s group activity. The format is more like a matrix, where people can place ideas based on the component (rows) and the frequency. Figure I7 and I8 show the output of both rounds.

Feedback / Insights:

Following is the feedback and insights from the session:
- Participants preferred doing the activity in a team as compared to doing it individually.
- The structure of canvas B does not prompt one to think of many ideas, rather a single detailed concept. It can be useful while detailing the concepts.
- Participants would prefer to have some space for brainstorming ideas first first and then make concepts with all components or putting concepts under different components.
- "Good to give prompts (questions) that people can think off" - "turn the
- categories into How to questions"
- It was difficult for them to think about ideas using the components as well as frequency (canvas C)
- "Need some free space to ideate, then can make it more structured while
- turning to concepts".
- "If there are boxes, we feel we need to fill each and every one in - spend
- time in that"
- "Need more time. better to know the context more in depth.."
- "Rather than fill in the blanks just provide prompt questions for Canvas B. Let people shape it how they want. Like the space given for detailing the touchpoints."

- "Like the space where we can sketch / detail thoughts"
- "Really like the cards - very inspiring - give rise to new interesting ideas"
- "Maybe you can send the cards in advance, so people can read before the session. Make it a long term process where they truly get inspired" (participant messaged me few hours later saying that she was still thinking about the strategy she read and it really inspired new ideas later. So the extra time for familiarisation can help)
- "You mentioned during the session that we can start from any of the components. That is good. You should write it in the instructions"
- "I am missing in-depth knowledge of the context, so not able to make specific ideas"
- "It would be nice if you captured the design process. Like how we brainstorm and then cluster ideas and then make concepts which are evaluated later. It will prompt discussion."
- " I liked doing it in a team because I could discuss it with my teammate and we could build upon each other's ideas"
- Maybe detailing (canvas B) can happen on the next day. It will give time to let the ideas sink in, and prompt better concepts (details).
- " really like the explanation and examples on the cards".

Design for Social Contagion

Intervention Design Canvas

Overall aim of contagion: _Gas discontinuation - use of greener alternative technology_

Content (What) for contagion: _Comprehension of alternative technologies_

Direct Social Contagion

Direct Spread mechanism :

For / To do

Who: _____

Does (action): _____
_____
_____

How (touchpoint): _____
_____

To gain (incentive): _____
_____

How (Touchpoint): _____
_____
_____

To gain (incentive): _____
_____
_____

Who: _____

Does (action): _____
_____
_____

How (touchpoint): _____
_____

To gain (incentive): _____
_____

Action: _____
_____
_____

How (touchpoint): _____
_____

To gain (incentive): _____
_____

Detail / Visualise:

Action:

Touchpoint:

Incentive:

Spread mechanism:

Touchpoint:

Incentive:

Action:

Touchpoint:

Incentive:

Action:

Touchpoint:

Incentive:

Figure I5i: Design canvas B (i)

Design for Social Contagion

Intervention Design Canvas

Overall aim of contagion: Gas discontinuation - use of greener alternative technology

Content (What) for contagion: Comprehension of alternative technologies

Indirect Social Contagion

Who: _____

Does (action): _____

_____

_____

How (touchpoint): _____

_____

To gain (incentive): _____

_____
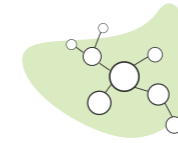
Indirect spread mechanism: _____

_____

_____

_____

Touchpoint: _____

_____

To gain (incentive): _____

_____

Detail / Visualise:

Action:

Touchpoint:

Incentive:

Spread mechanism:

Touchpoint:

Incentive:

Figure I5ii: Design canvas B (ii)

Design for Social Contagion

Intervention Design Canvas

Overall aim of contagion:_____

Content (What) for contagion:_____

	Daily	Weekly	Monthly	Once in ___ months
Action				
Touchpoints				
Spread Mechanism				
Incentive				

Mark ● for Private Sphere Intervention or ■ for Public Sphere Intervention

Figure I6: Design canvas C

Left panel (Canvas A and B)

Left columns headers (top):
- ...ies / Challenges/ ...paigns
- Direct / Indirect Social Pressure
- Rewards, Benefits — Motivation to participate
- Physical / Digital

Sticky notes (top):
- Take a picture of how you cook and we will tell you how much do you consume
- on Instagram it will be shown a statistic of peers consumptions
- create a # and spread it like the #blacklivesmatter example where everyone was putting black screen on insta feed
- if you participate in the challenge some rewards will be provided
- Instagram Stories about what is gas discontinuation and how does that work which end with a call to action!
- the problem is how to get people watch those stories
- use some influencers people follow or some popular page
- start from an outbreaking news, unexpected factor or emotional story that trigger people to feel attach to that and want to contribute like #blacklivesmatter

Direct Social Contagion

Direct Spread mechanism :

Who: Municipality / governement

Does (action): publish outbreaking news about gas discontinuation, some factors or emotional stories that attract people and invite people to follow an instagram page with a special #

How (touchpoint): news on the media

To gain (incentive): _____

How (Touchpoint): To create even more buzz some words/sentences/videos related to the topic will be published e.g. I use gas discontinuation because / I'm green because... invite people to share their own thought

on the instagram people are asked to share pictures of how they use gas at home, how often they cook through Insta Quizzes. After comparisons and statistics of those participants will be published and a winner selected as most #green

To gain (incentive): the more sustainable, winner of the challenge will win a reward, maybe a discount

Sticky / box notes (lower):
- Ask inhabitants to share their energy consumption data and share community total (by comparnig it to something people all know; e.g. this is the energy required to make Paris light up for a day.)
- Create a list with all inhabitants and indicate if they have entered their data (green/red symbol)
- Each inhabitant who joins is invited to a neighbourhood party/drink
- Action is digital (ener data), campaign can be local (shops, spotrt clubs), incentive physical (party)
- School children go door-by-door and provide information about the topic (like schoolkids in NL go door-by-door to sell as many postcards as possible for charity and collect money for a run (per km)). Ask the inhabitant to fill in an evaluation (newness of info, wow-factor, way of communication). School kid with most inhabitants convced and best evaluations receives a price. This could be expanded by having schoolkids do a research (interviews) project about the experiences of inhabitants and use these in their presentation to others.
- Direct competition amongst schoolkids
- Use of kids to spread info
- Parents will be involved
- trial week?!
- example house with once a week open doors events where people can see/experience and get informed
- tax reduction if they participate
- Voucher as a gift for free instalation?!
- CD of transition + merchandise (T-Shirts) that show to other that one is part of the movement #mycleanneighbourhood
- ET Sticker for the mailbox
- Create iconic symbol for transition
- free entry in local swimming pool/zoo/cinema etc

Figure I7: Examples of the ideas generated during the first round using canvas A and B

Right panel (Canvas C and B)

Column headers: Daily | Weekly | Monthly | Once in ___ months

Sticky notes:
- person becomes an influencer
- puzzle piece in newspaper
- give responsibilities to different people every week -- transition ambassador.. they take over social media channels (nominate each other, apply for it, municipality selects)
- note their habits daily (diary)
- provide training -- like apple organises workshops to teach people how to use apple tools
- Ikea tour - experiential tour (showing technology and the changes for each technology)
- buddy system - one persons who knows it all - contact them
- Insta Videos Stories
- Nomination
- Ipad
- Interactive games
- Interactive Museums
- schools teaching about energy transition (specific workshops) -- go back and tell parents... little games...
- game for kids - bring knowledge to parents
- create your own solar panels --- experiment kits for kids
- daily quiz in the form of homework kids need to do together with parents in order to understand current habits and how these could be improved or changed better

...for Social Contagion

...vention Design Canvas

...verall aim of contagion: Gas discontinuation - use of greener alternative technology

...ontent (What) for contagion: Comprehension of alternative technologies

Direct Social Contagion

Direct Spread mechanism :

Who: School
Does (action): hands out kit
How (touchpoint): toolkit / game
To gain (incentive): School: raise awareness and educate children on the topic
Kid: learning while having fun

How (Touchpoint): distribute the kit
To gain (incentive): awareness

Who: Child
Does (action): use kit
How (touchpoint): _____
To gain (incentive): _____

For / To do
Action: _____
How (touchpoint): _____
To gain (incentive): _____

Figure I8: Examples of the ideas generated during the first round using canvas C and B

Validation 3

Based on the feedback, the canvases were changed from being a fill-all in format to more like a guide for the process of designing interventions using social contagion. Instead of a single canvas, a set of 4 canvases (canvaas D) was designed. This included steps from problem definition, brainstorm, concept generation, evaluation and detailing. These are shown in figures I9 (a to d).

These were validated with 3 participants through a digital session, where participants went through all the steps. Figure I10 show the outcomes of the whole process. Figure I11 highlights the feedback of the team.

Following are other insights / suggestions:
- Reduce the number of bullet points (prompts on each sheet)
- Make a short tutorial / booklet outlining all the steps so that one knows what to expect
- While brainstorming people can pass around the inspiration cards every one 40 seconds - to get quantity of ideas
- "good that you have the brainstorm and concept creation as different stages"

These canvases were also shown to the participants of the previous session, who went to the whole process quickly via zoom, for their feedback. Participants found it a much better approach to design interventions. Minute changes suggested in visual elements were made.

Since this version of the canvas seemed to work well, it was tested with the municipality officials. Insights from this validation with municipality officials and the subsequent iteration can be found in Chapter 9 of the report.

Overall, it was good to see that during all the sessions, participants came up with similar ideas to the ones generated in the ideation stage of the project. This reiterates that the toolkit stimulates apt ideas, and provokes thought in the right direction.

Figure 19a: Canvas D

Design for Social Contagion

Intervention Design Canvas   Step 1 : Brainstorm ideas

1A **Define the 'WHAT'- Content for the contagion:**
Think of what is the goal of the contagion?
What is the target behaviour that needs to be spread?

eg. residents understand the urgency to act towards climate change

1B **Translate the WHAT (content /goal / target behaviour) into a How to / How might we question:**

eg. How to show residents the urgency to act towards climate change? / How might we ensure residents understand the urgency to act towards climate change?

1C **Identify the social contexts for contagion:**
Which social identities and social networks of people are relevant to trigger the contagion? Which are the key social spaces / environments / contexts where social interactions will take place to enable contagion?

eg. neighbourhood network, church, gym, busstops as the social context for contagion.

1E **As a team, brainstorm ideas to answer the How to / How might we question identified in 1B.**
•Use the Action, Spread mechanism and Incentive cards for inspiration.
•Select specific category(s) of Action strategies based on the goal/ WHAT of the contagion for the brainstorm
•Use any of the components (Action, Spread mechanism or Incentives) as a starting point to think of ideas
•Keep the identified social contexts of interaction and contagion in mind while ideating.
•In case there are more than 3 participants, carry out the brainstorm in smaller teams of 2-3 people

1D **Action Design Principles selected (A1, A2, A3, A4):**

Actions	Spread Mechanisms	Incentives
What Tasks / Activities / Challenges/ Campaigns can people perform/ participate in, that will help in achieving the target behaviour? Think of physical / digital touchpoints that can be used to trigger the target behaviour.	How can the target behaviour / Action be spread to other people? Think of Direct / Indirect social influence / pressures.	Why will people want to perform / participate in the target behaviour / Action? What will they gain out of it? What wll they lose if they dont participate?

Figure 19b: Canvas D

Design for Social Contagion

Intervention Design Canvas

Step 2 : Generate concepts for contagion

Go through the ideas generated in step 1. Build on the ideas, mix and match them to generate concepts for contagion of the behaviour. For each concept define the Action, Spread mechanism, Incentives and Touchpoints that will be used.

Action	Spread Mechanism	Incentive	Touchpoints
What Tasks / Activities / Challenges/ Campaigns will people perform/ participate in, that will help in achieving the target behaviour?	How can the target behaviour / Action be spread to other people? Think of Direct / Indirect social influence / pressures.	Why will people want to perform / participate in the target behaviour / Action? What will they gain out of it? What wll they lose if they dont participate?	List the touchpoints that will be used while carrying out the Action. Which touchpoints will enable the spread of the behaviour? Which touchpoints embody the incentives?

Concept 1

Concept 2

Concept 3

Concept 4

Concept 5

Design for Social Contagion

Intervention Design Canvas

Step 3 : Evaluate and Select concepts

Each team should present their ideas (top 3/5) to the bigger group.

Build onto each others ideas
Discuss pro's/ con's. Add / Subtract details.

As a team, define the evaluation criteria for the concepts based on the goal of the contagion and other constraints:

If possible, list the evaluation criteria from most important to least important.

eg. ease of implementation, spread /reach of contagion, cost of implementation, effectiveness in meeting the goal of the contagion.

Use any one of the following methods to evaluate and shortlist the concepts:

| **Vote using coloured dots** | **C-Box** | **Rank the concepts** |

● For each of the evaluation criteria, define a specific colour dot (either print coloured dot stickers, or use colourful markers).

eg. Spread / reach of contagion

● Keep the concepts of all the teams together (on a board / table). For each evaluation criteria, vote for the concepts that are most promising. Each person can vote for 3 concepts for each evaluation criteria. Let everyone vote simultaneously.

● Based in the tally of votes and the importance of evaluation criteria, select top 3 / 5 promising concepts, that will be detailed further and can be validated in field.

● If there are only two key evaluation criteria, use a C-box.

● Plot x and y axis.
Assign one evaluation criteria to each axis (eg. x-axis : cost of implementation - cheap to expensive; y-axis : spread /reach of contagion max. reach to min. reach)

● As a team, go through each concept and place it on the c-box according to how it fairs on both the evaluation criteria.
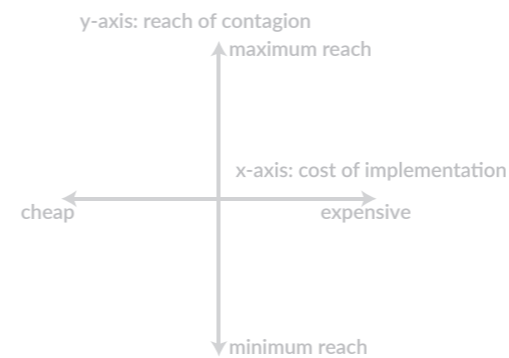
y-axis: reach of contagion
maximum reach

x-axis: cost of implementation
cheap   expensive

minimum reach

● Once all concepts are evaluated (placed on the c-box), decide which quadrant is most feasible. Detail the concepts in this quadrant in the next step and validate in the field.

● As a team, discuss and find top three concepts for each evaluation criteria.

eg. Reach of contagion   Evaluation criteria #2

1. _____   1. _____
2. _____   2. _____
3. _____   3. _____
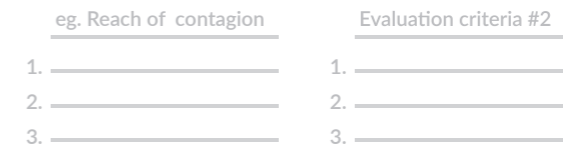
● Now vote for the most promising concepts, or decide together 3/5 concepts that fair well in all evaluation criteria and can be taken forward for detailing and validation.

Figure I9c: Canvas D

Figure I9d: Canvas D

Design for Social Contagion

Intervention Design Canvas

Step 4 : Detail the selected concept(s)

'WHAT'- Content for the contagion:

Concept (Name / number):

Detail how the contagion will unfold

Use the following spectrums to think about 'where (it takes place)', 'who (does it / initiates is)' and 'how often' for the concept.

Outline the contagion process:

- Who (individual /group) will initiate the Action / be the first one to do the Action / target behaviour? What do they do? How often? Why do they do it? How does it spread?

- Who will the initiator spread the Action / target behaviour to (individuals (one or many)/ group)? Do they do a collective action? Why will they participate? How will they do the Action?

Private sphere — Public sphere

Individual action — Group action

Daily — Weekly — Monthly — One time in 'X' months

Detail / Visualise the (Action / spread mechanism / incentive) Touchpoints:

- Use the Touchpoint cards for inspiration. Go through the Touchpoint strategy cards and apply the relevant strategies to make the touchpoints more effective.

Top-left board (Section 1):

- Keep the identified soci... in mind while ideating ... in smaller teams of 2-3 people

	Spread Mechanisms	Incentives
Action	How can the target behaviour / Action be spread to other people? Think of Direct / Indirect social influence / pressures	Why will people want to perform / participate in the target behaviour / Action? What will they gain out of it? What will they lose if they dont participate?

- experience all technologies through VR
- one pesron from each community is given a free trial version of different technologies and then they have to present it to everyone after using it for a month
- Install small scale projects in the community on each of these technologies and show over time the results to the residents..and tell them"see this is how it is , this is what it will mean for you"
- neighborhoods are divided into teams and each team gets different information, eventually through games of some kind all residents should know what other teams know
- green points
- Conduct seminaars and show live how each technology works , like show small samples of wind energy, solar panel, hydro energy etc... walk them through and so they know what to expect, how to expect.
- App for house. Residents can see a virtual layout/ simulation of the house. With Energy usage (electricity,etc) included
- medals, ribbons, certificates, free food
- education program / training / energy coaches
- flyers, pamphlets, my the community leader, weekend borrels, dutch people love free borrels etc. to tell them about the seminaar.
- personalised plan
- free food..always nice..they love free coffee, tarts etc.

Middle-left board (Section 2):

perform/ participate in, that will help in achieving the target ... behaviour?
behaviour / Action? What will they gain out of it? ... lose if they dont participate?

- **Personalisation**
  - make it easier for people to comprehend what the technologies mean for you personally , what it can do to you and not the community
  - one pesron from each community is given a free trial version of different technologies and then they have to present it to everyone after using it for a month
  - door to door salesman concept
  - Houses in the same street identify as one group/club, this helps extend a house identity to a street. Collective identity. Specific personal
  - Tips and Tricks for the house so user can go and implement them
  - free food..always nice..they love free coffee, tarts etc.
  - you get a personal calculations of your energy and money savings based on the type of sustainable energy you select so that you can make a informed decision

- **Experential**
  - community session with games to experience all technologies through VR
  - Conduct seminaars and show live how each technology works , like show small samples of wind energy, solar panel, hydro energy etc... walk them through and so they know what to expect, how to expect.
  - Install small scale projects in the community on each of these technologies and show over time the results to the residents..and tell them"see this is how it is , this is what it will mean for you"
  - put a scrore board in the neighbourhood..which makes people talk about it to each other and discuss it..score board of how the technologies are doing with respect to each other and with respect to gas which is currently used
  - installation related to the energy transition in a park
  - neighborhoods are divided into teams and each team gets different information, eventually through games of some kind all residents should know what other teams know
  - medals, ribbons, certificates, free food

- **Community Influencers**
  - Government website that lists all technologies with their pros and cons for people to be able to look at any time. (eg. like New Zealand shows details about referendums)
  - threaten them to do it. People do it when scared
  - get the pastor to give a lecture on climate change. people listen carefully.
  - have a poster on each residents door
  - leaders of different organisations can issue challenges to people who visit their establishments
  - residents will feel left out if the entire community is participating in an event
  - People get badges or tags to identify their level. Ex: Green Goers for people who have made the move for a year. Super green Goers for people who made the move for a couple years (social status or reputation.)

Bottom-left board (Section 3):

Criteria 1 : Enable comprehension	Criteria 2 : Easy to implement	Criteria 3 : Enables maximum spread (can have a good reach)

(rows: Personalisation / Experential / Community Influencers — with dot voting)

Top-right board:

- Kids open days where they present about the technologies and community in an understandable way. Happens only once - but is a month long process. Competition between kids (teams)
- Teachers inform parents about the competition, and their role. Invite them to participate, tell them to invite other parents / people from community to form their own teams.
- Specific technology Companies give workshops to kids, parents; provide raw material
- Parents and children have a month to translate the information into a working model. Several checkpoints in the month.
- On the final day, each team presents their models and explain the technologies to the community.
- Winner team gets free installation of heat network in their house.
- The process and progress of each team is broadcasted through the whole month; eventually put up on the website.
- Evaluation of projects based on accuracy and detail of process captured, most innovative way to present the technology, most easy to understand model etc.

Detail / Visualise the (Action / spread mechanism / incentive) Touchpoints:

- Use the Touch... relevant strateg...
- Can be triggered by a lecture or a session at school. Companies /someone from community can be spearhead the open day
- Can be a part of several other activities done with kids
- Based on progress, teams can unlock gifts. Winners at each stage. Winner of a particular stage gets an advantage for next level.
- Market day with all companies on that day. Each sets up their own stall.
- Incentive is to get a free understanding / model of what the ET means for your house.

Bottom-right board:

Detail / Visualise the (Action / spread mechanism / incentive) Touchpoints:

- Use the Touchpoint cards for inspiration. Go through the Touchpoint strategy cards and apply the relevant strategies to make the touchpoints more effective.

- Each team should make use of a house from the neighbourhood (their own house) as the base model
- All parents are automatically signed up. They need to end a specific email /letter to de-register.
- Letter from teacher: We know you care about your child's future. So we have already signed you up for our upcoming parent-child activity / competition. If you want to deregister, send us an email.
- Teams get checklists to make it easy.
- Or make is first-come- first served. Else your child will have to pair up with some other parents and you can't get the free review of your house. (limited spots)

Figure I10: Step wise examples of the output from the whole process (during validation 3 using canvas D)

145

Was it clear what you need to do? Do you need more explanation?

Were the strategy cards self-explanatory?

Were the templates easy to use?

Was it fun / simple or daunting ?

Things / aspects you liked

Things / aspects that annoyed you / can be changed

Did it help to come up with interesting ideas?

Other feedback

yes it was clear

yes

Yes it was clear. But might need some recollection of goal from time to time.

yes, however I knew the concepts I was reading about

almost..this is kind of new thing to read a card and keep track of all the cards

Yes. But was already familiar with it.

yeah they were to some extent..but i would like to have more visual hierarchy..at one glance i could know what are the steps and then i can go and read about it underneath it i get lost often what to read first

yes.. it was a bit difficult to think of spread mechanisms and actions as separate things

Mostly. I think there are too many bullet points/ sub info in some places, that could be confusing.Simplify more?

Not daunting... it will take a bit of time to read through everything... knowing from the beginning how many things are there to do will be helpful

it is simple, fun i dont know , depends how you define it. the topic is quite intense but gives a feeling of healthy discussion

Found it fun. .... Could be overwhelming to non-designers though.

nicely structured, new way of looking at idea generation through social contagions

the way you defined the actions, spread mechanism and incentive part..makes the whole topic of energy transition digestable and comprehendable

The break down of the entire process and the cards! (strategy and touchpoints)

discussion time should be prompted and encouraged

its lengthy but at the same time needs more time..may be a break would have been nice..you get time to reflect, and come back to it

Definitely is time taking... although felt like we could give it more time. Maybe it was annoying that we were rushing it

yes

definitely, the cards helped me

yup. But also there were some ideas that we discussed in the previous session. Maybe it was still only scratching the surface hm

instructions of the steps.

small videos/animations and prominent examples along the way keep you goingand make it interesting

An example for the entire process?

Figure I11: Participant's feedback from validation 3

J

Final toolkit

DESIGN FOR SOCIAL CONTAGION

INSPIRATION CARDS

The cards in this toolkit provide inspiration while designing interventions aimed at social contagion of sustainable behaviours - specifically towards the energy transition.

Refer to the handbook to see how to use the inspiration cards and design canvases to develop interventions.

Contents:

01x Introduction card (this one)
01x Anatomy of Intervention
03x Design Criteria cards
05x Design Principle cards
21x Action cards
06x Spread Mechanism cards
05x Incentive card
12x Touchpoint cards

54 cards in total

This toolkit is developed by Jesal Shah as a part of her master thesis 'Social contagion as a means to transitions' at TU Delft, for Gemeente Rotterdam, in association with the ENRGISED project; under the guidance of Dr. Rebecca Price, Dr. ir. Jotte de Koning & Mr. Jacco Kwakman.

ENRGISED

Gemeente Rotterdam

DESIGN CRITERIA

Each intervention aimed at prompting adoption of technologies / behaviour through social contagion must meet two key criteria:
(It should)

1) Enable the target behaviour
2) Enable contagion of the behaviour

While brainstorming ideas (in step 2), you can think of ideas that meet each of these criteria. These individual ideas can then be mixed and matched and translated into complete concept lines in step 3. It is a must that the concept lines meet both these criteria.

These design criteria can also be used as the evaluation criteria while short-listing and selecting the concepts.

ANATOMY OF AN INTERVENTION

(Keep this in mind while designing an intervention)

An intervention aimed at social contagion
should
fulfill
2 Criteria

Enable the target behaviour	Enable contagion of the behaviour

follow
4 Design Principles

Scale down : Translate global to local	Comparison is key: enable (sub)conscious comparison
3S's: Simple, slow and steady win the race	Make it desirable, silly!

constitute
4 Design Components

ACTIONS	**SPREAD MECHANISM**
Tasks / Activities / Challenges/ Campaigns	Direct / Indirect social pressure
TOUCHPOINTS	**INCENTIVES**
Physical / Digital	Rewards, Benefits

1

ENABLE THE TARGET BEHAVIOUR

Before shaping the contagion of the behaviour, the first step is to ensure that the intervention enables the target behaviour- overcoming apprehensions towards and barriers to adoption. For example, if the overall aim is to use social contagion to get rid of myths about greener energy technologies amongst residents, the interventions need to first define how to burst the myths - say through gamification. Only then this can be spread amongst the target group. Thus, meeting the key goal, or enabling the target behaviour forms the first design criteria all interventions need to fulfill.

This criteria can be fulfilled through the design of the *Action, Touchpoint and Incentive* components. These need to be specifically designed to ensure people perform the target behaviour. Design principles 1 (scale down: translate global to local) and 2 (3S's: simple, slow and steady win the race) help in achieving the target behaviour.

Further, 'how well / to what extent does the concept enable the target behaviour?' can become one of the evaluation criteria while short-listing concepts.

2
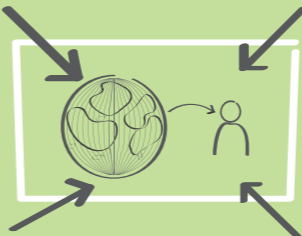
ENABLE CONTAGION OF THE BEHAVIOUR

In order to spread the target behaviour amongst the target group, the intervention needs to enable its contagion. This forms the second criteria each intervention needs to fulfill.

Within an intervention, this mainly relates to the design of the *Spread Mechanism* and *Incentive* components. While the Spread Mechanism can directly or indirectly prompt people to adopt / perform the behaviour, the Incentives can further make the behaviour desirable; stimulating its diffusion.

Further this can be achieved through the application of design principles 3 (comparison is key) and 4 (make it desirable, silly!).

'How well does the concept enable the social contagion of the target behaviour' can be an evaluation criteria while selecting the concepts.

1

SCALE DOWN: TRANSLATE GLOBAL TO LOCAL

While social contagion is inherently a scaling up exercise, the first step to achieve contagion is to activate individuals.

Prompt action and pro-active adoption is pursued only when something affects you directly or is relatable. To avoid /overcome procrastination of the decision at hand, global phenomena like climate change, sustainability need to be made personally relevant, relatable, recognisable for the residents. Thus, scaling down and translating the global/ national issues to regional, local, familial or individual scale is important while designing interventions, in order to capture people's attention and trigger action.

This can be achieved by strategies such as Humanise it, Personalisation, Emphasizing ownership, Showing contribution etc. This principle is more relevant while designing the *Action* and *Touchpoint* components of the intervention.

DESIGN PRINCIPLES
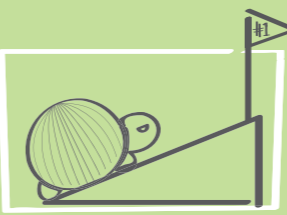
In order to enable social contagion of sustainable behaviours, four key design principles need to be kept in mind while designing the interventions, namely:

1) Scale down: Translate global to local
2) 3 S's- Simple, slow and steady win the race!
3) Comparison is key: enable (sub)conscious comparison
4) Make it desirable, silly!

While these design principles act as a guideline to design the contagion, they also serve as evaluation criteria while selecting the interventions, qualitatively. (This is in addition to other criteria specific to the intent of contagion, decided by the team).

Although all principles need to be kept in mind while designing the interventions, Principle 1 and 2 are more relevant while designing the *Actions* and *Touchpoints* design components. Principle 3 and 4 relate to the *Spread Mechanism* and *Incentives* design components.

Let each team member go through these design principles before starting the creative session. Keep the design principle cards in the centre (or clearly visible to each member) such that they are easy to refer to and kept in mind while designing the interventions.

2
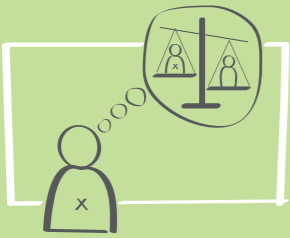
3 S's: SIMPLE, SLOW & STEADY WIN THE RACE

In order to encourage people to take action, it is necessary to reduce the effort they need to put in. Easier/ simpler it is to do a behaviour, the lesser the motivation required on the consumer's end. Hence, the target behaviour and the interventions should be easy to do, use, remember and understand.

Further, since attitude formation is a long-term process, incremental (and continuous) nature of interventions builds certainty, commitment and a continued relationship with the behaviour. It helps to overcome future inaction due to cognitive dissonance (situation involving conflicting attitudes, beliefs or behaviours). Thus, the 3S's should form the ethos of all interventions.

Strategies like breaking up a large task into smaller actionable components, embedding these into existing routines, foot-in-the- door principle and providing bite-sized information incrementally, in interesting formats help to incorporate this design principle. This principle is more relevant while designing the *Action* and *Touchpoint* components of the intervention.

3

People have the tendency to constantly evaluate themselves in terms of the appropriateness of their abilities, behaviours and beliefs based on those of similar others (reference groups). They use social norms or social proof to guide their behaviours and manage their social identities (self-concept). Thus, in order to achieve social contagion, this (sub) conscious comparison to people who have adopted or are committed towards the target behaviour must be stimulated through the interventions.

While conscious comparison can be achieved through direct *Spread Mechanisms* such as leaderboards, ratings & rankings, showing consensus (social proof), indirect comparison can be activated through strategies such as symbolism, showing stories and experiences of similar others or using influencers.

The *Spread Mechanism* and *Incentives* play an important part in enabling comparisons, and must explicitly designed.
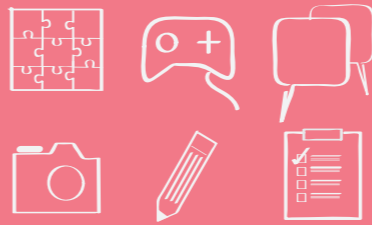
COMPARISON IS KEY: ENABLE (SUB)CONSCIOUS COMPARISONS

4

People need to have both, intrinsic and extrinsic motivations to opt for sustainable options. Making the behaviour desirable (e.g. by designing incentives and well-curated experiences) can help in prompting adoption as well as inducing emotions such as the fear of missing out, envy, insecurity etc., upon comparison. These in turn increase the desirability of the behaviour, stimulating adoption and paving the way for social contagion. Here, making the incentive or the (non) participation of others conspicuous, is key.

While the desirability aspect needs to be kept in mind at all times. the principle is more related to the design of *Incentives* (such as cash or kind benefits, group membership, experiences etc. which lend the user a particular social status/ reputation or add to their achievements, possessions or qualities. It can also be a loss of current benefits / reputation).

MAKE IT DESIRABLE, SILLY!

ACTION

The Action (or Object) component of an intervention refers to 'What do people need to do' in order to engage them in the desired behaviour. This can be in the form of tasks, activities, challenges, campaigns or installations, that engage people directly or indirectly.

The strategies outlined help to design the *Action* effectively. They are related to and build upon 4 key factors / behavioural traits that influence a person's decision-making process, namely:

A1 People use personal relevance, recognisability and certainty as filters to make (quick) decisions.

A2 Expectations, emotions and experiences mould people's (future) decisions.

A3 People strive to maintain internal consistency, avoiding contradictory information and behaviours.

A4 People are easily overwhelmed and distracted; they end up procrastinating or giving up on the decision / behaviour.

The strategies suggest ways to incorporate (reinforce/ counter) these behavioural traits into *Actions*, in order to ensure that people actively participate.

Categorisation of Strategies

The 4 decision-making factors / behavioural traits (A1, A2, A3, A4) translate to 4 ways of motivating people towards the desired behaviour- the four *Action* design principles:

A1 Make it relevant, recognisable and certain.

A2 Shape expectations, emotions and experiences.

A3 Build commitment through consistency.

A4 Simplify and engage.

Based on the purpose(s) it serves, each strategy is classified into one or more of the above *Action* design principles. The *Action* card deck includes four category index cards- each with one action design principle and a list of related strategies. Each strategy is explained in detail on individual cards with examples.

Designing Actions

Based on the content and goal of contagion, select the relevant design principle(s) to design the *Action*. Alternately, you can select 1 or 2 strategies from each category to inform the intervention.

Use the strategies to design tasks, activities, challenges, campaigns or installations, wherein people are asked to do (create, solve, collect, share, discuss, attend, experience, learn, negotiate etc.) something, engaging them towards the desired behaviour.

The interventions can be designed using different permutations and combinations of strategies. Use the following spectrums to define the 'where (it takes place)', 'who (does it)' and 'how often' for each *Action*.

Private sphere ————————— Public sphere

Individual action ————————— Group action

Daily —— Weekly —— Monthly —— One time in 'X' months

A1

Behavioural Trait / Decision-making factor

People use personal relevance, recognisability and certainty as filters to make (quick) decisions.

Action Design Principle

Make it relevant, recognisable and certain.

A1

Relevant strategies:

1) **Personalise it**

2) **Emphasize or establish ownership**

3) **Provide feedback & show contribution**

4) **Make it tangible, concrete, explicit and visible**

Other strategies that can be used:

- Use priming (elicit associations & past memories)
- Make it bite-sized & incremental
- Give people a headstart; build onto the existing (routine, values, norms)
- Humanise it, give it a face
- Use analogies

A2

Behavioural Trait / Decision-making factor

Expectations, emotions and experiences mould people's (future) decisions.

Action Design Principle

Shape expectations, emotions and experiences.

A2

Relevant strategies:

1) **Build positive expectations (let people try it)**

2) **Elicit reciprocity**

3) **Use priming (elicit associations & past memories)**

4) **Trigger specific emotions (use peak-end effect)**

Other strategies that can be used:

- Use gamification
- Combine facts with vivid content
- Humanise it, give it a face
- Use analogies

A3

Behavioural Trait / Decision-making factor

People strive to maintain internal consistency, avoiding contradictory information and behaviours.

Action Design Principle

Build commitment through consistency.

A3

Relevant strategies:

1) **Let people pre-commit**

2) **Foot in the door principle**

3) **Create dependencies amongst people**

4) **Give people a headstart; build onto the existing (routines, values, norms).**

Other strategies that can be used:

- Personalise it
- Emphasize & establish ownership
- Elicit reciprocity
- Provide feedback & show contribution
- Make it bite-sized & incremental

A4

Behavioural Trait / Decision-making factor

People are easily overwhelmed and distracted; they end up procrastinating or giving up on the decision / behaviour.

Action Design Principle

Simplify and engage.

A4

Relevant strategies:
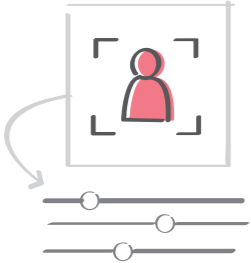
1) **Use gamification**

2) **Make it bite-sized and incremental**

3) **Combine facts with vivid content**

Other strategies that can be used:

- Trigger specific emotions (use peak-end effect)
- Personalise it
- Minimise effort
- Use analogies
- Increase salience (make it stand out)

A1, A3, A4, T1

Personalise it
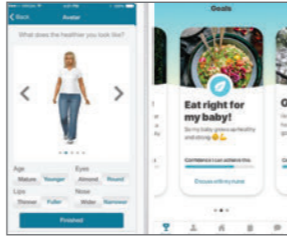
Tailoring or personalising the content /experience /activity to the person (or their needs) helps to make it highly relevant and recognisable, prompting people to act and expediting their decision-making process. It improves the engagement with the behaviour and can help in building commitment.

Personalised data is perceived to be highly valuable since people think that it has taken some effort to produce it. It induces a sense of ownership, making people more responsible for their behaviours.

Example:
AYOGO has designed the 'Empower' app that improves compliance to prescriptions amongst patients through personalised gamification. Patients create their own avatars that symbolize their health goals & aspirations; based on which it provides personalised virtual coaching to get used to pre /post disorder life, tracks behaviours, sends reminders, provides support to the care team and connects patients to similar others.

Ways to use personalisation:

• Provide only relevant information (e.g. energy alternatives available and consequences of each based on house type).

• Show personal context (e.g. (future) picture of their neighbourhood, children, house etc.)

• Let people customise the content based on their needs.

• Provide actionable suggestions based on personal situation or consumption patterns.

A1, A3

Emphasize or establish ownership

People attribute more value to items (groups/ beliefs etc.) that they own (have a sense of ownership towards) and go out of their way to avoid any potential loss of the owned item / belief. They are also more conscious about their behaviours when these are related to things they own. This sense of ownership, or responsibility can be evoked when you want people to do something / behave in a particular way.

Either emphasize existing ownership, or introduce new ownership (temporarily). Alternately, distance people from things they currently own (habits) before introducing them to a new product/ service / behaviour.

Example:
A UK shopkeeper writes the customer's name on the packaging of snacks they buy - discouraging littering by emphasizing ownership.
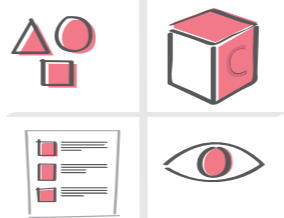
Ways to emphasize / establish ownership:

• Highlight existing items, beliefs or experiences people 'own'. Use personalisation e.g. An insuarance company inserts a picture of people's house / car while providing insurance options.

• Provide free trails or freemium models to let people experience new innovations, specifically at home to create implicit ownership.

• Assign specific responsibilities. Build upon existing roles, and dependencies. Use people's skills / expertise as a way to build ownership.

A1, A3

Provide feedback & show contribution

People find it difficult to draw connections between their action(s) and its (future) consequences. Providing (real-time) feedback enables people to understand the (invisible) consequences of their actions and stimulates conscious self-reflection.

Presenting the feedback in the form of the user's contribution towards an issue further makes it highly relevant and triggers conscious change in behaviour.

Think about how frequently the feedback is provided, in which format (through percentages, points, labels), and by whom (by a peer, authority, child).

Examples:
Waterhawk shower-head shows the amount of water used during each shower. It also indicates when the water is warm enough to start the shower, promoting water conservation.

Ways to provide feedback / show contribution:

• Use smart devices to measure & evaluate behaviours and give people immediate feedback (through different touchpoints). Use gamification. Show them their behaviour journey/ growth, help them set higher goals.

• Show people cumulative effect of their decisions - use statistics, future predictions / simulations, progressions. Help them compare their behaviour to others.

• Let people recall similar actions in the past that affect them in the present. Compare consequences.

A1

Make it tangible (T), concrete (C), explicit (E) and visible (V)

Prioritising the present or immediate future, people avoid thinking about the vague and uncertain aspects in life, e.g. the future or issues such as sustainability. It is also difficult for people to relate actions to outcomes spanning over long periods of time.

In order to convince people towards future-oriented behaviours, the uncertain and vague need to be made more tangible, concrete and visible. Hidden costs and impacts need to be explicitly communicated to ensure that people comprehend the issues and alternatives at hand.

Example:
To encourage people to invest in their future, Merill Edge developed *Face Retirement app* which shows people their future selves. Statistics show that people who used the app were more willing to save and invest money.

Oxfam shows what one's donation could buy e.g. mosquito nets for children.

Ways to make it T, C, V, E:

• Relate future oriented info. to examples at hand. Compare it to daily objects e.g. 'drink one less cup of coffee a day & save for the energy transition'. Use statistics. Combine facts with vivid content.

• Translate into present gains / losses. Provide small actionable steps for immediate future. Translate the abstract into tangible artefacts / installations.

• Let people know what to expect by experiencing it. Use (virtual) walkthroughs. Help people visualise the future through simulations, comparative & contrasting scenarios.

A2

Build positive expectations
(Let people try it)
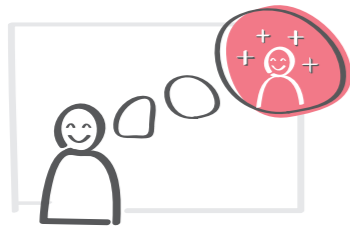
People's experiences are strongly influenced by their existing expectations. Positive expectations increase the likelihood of a positive experience.

These positive expectations can be shaped by letting people try the new behaviour. Trying/ testing the new technology or behaviour helps in fully understand its value, benefits, usage and usefulness, increasing people's likelihood to accept & adopt it. It enables thorough comprehension of hidden costs / aspects, reducing uncertainty and providing a sense of control. Trialability is more important for early adopters as compared to late adopters.

Example:
Medisch Centrum Alkmaar uses Medify, a multimedia module, in which patients are informed about their upcoming treatment by means of 3D visualisations, photos, videos, voice-over & texts. It takes them through the whole journey of the treatment - from administration to actual surgery procedures, reducing the uncertainty; since they know what to expect.

Ways to build positive expectations:

• Convey the positive aspects, values, benefits in advance.

• Let people convey their expectations /past experiences. Reinforce the positive ones and counter the negative ones (e.g. by showing other people's experiences).

• Give people tasters/ freebies. Create (virtual) tours, walkthroughs, experience centres; let people act out / role play situations. Provide free trials periods / subscriptions.

• Make the process transparent.

A2, A1

Use priming
(elicit associations & past memories)
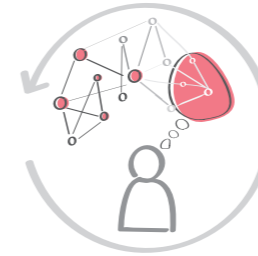
Priming is a technique in which the introduction of one stimulus influences how people respond to a subsequent stimulus. Eg.Dutch trains infuse carriages with the citrus scent of cleaning products which stimulates people to clean up after themselves / not litter. This occurs without conscious awareness, yet it influences behaviours.

Priming can be used to elicit associations from past or to build new ones. Cues such as visuals, numbers, words, smells can be used to directly prime people towards a behaviour, improve comprehension, induce self-reflection or indirectly affect someone's psychological state, impacting their way of thinking.

Example:
The city of Melbourne has adopted the Target 155 campaign - which primes people to remember that 155 litres is the max. amount of water that should be used per person per day to ensure sustainable water futures. It triggers self-reflection & conscious change in behaviour in case the user's monthly bill and water report reflect higher usage quantities.
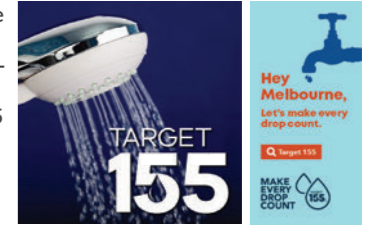
Ways to use priming:

• Include subtle visual or verbal cues in the *Action*.

• The *Action* in itself can be to prime people towards specific beliefs or behaviours. e.g. use a rubrics cube format to give information about different technology alternatives. This can help people remember the features, benefits, drawbacks of each technology.

• People use past experiences to inform their behaviour and decision-making. Elicit past experiences and associations. Reinforce the positive ones, counter the negative.

A2, A3

Elicit Reciprocity

People are inclined to return a favour, or help somebody who has done something for them ("tit-for-tat"). Reciprocity evokes a sense of indebtedness or gratitude, which people want to repay.

It is a powerful method for gaining one's compliance with a request while building continuing relationships. It has maximum effect when the gift/ favour is unexpected and personalised. Reciprocal relationships can be induced between people by helping them with something, solving their problems, making their life easier.

Example:
To ensure people park bikes in the stands, the city of Copenhagen introduced 'bicycle butlers'. The butlers move illegally parked bikes into the biking stands after oiling their chains and filling air in the tires. They put a note on the handlebar explaining the project and wishing the cyclist a good day. Fewer people park their bikes incorrectly after meeting the bicycle butler.
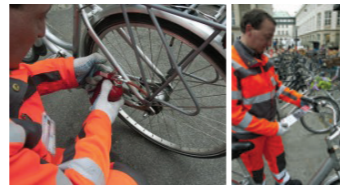
Ways to elicit reciprocity:

• Use the door-in-the-face principle: First make a large (unrealistic) request that people will most likely turn down. Next, make a second more reasonable smaller request. People are more likely to agree to this second request since they feel that they owe something for declining the first request. Use requests with a social aspect such as asking for help.

• Give a (surprise) small unconditional gift, sample, discount, free shipping, access or information.

A2, A4

Trigger specific emotions
(Use peak-end effect)

Emotions play a key role in the way people perceive, evaluate information and make decisions (form opinions or behave). Triggering specific emotions during an *Action* can help to set expectations, as well as prompt people to form favourable attitudes and change behaviour. Both, positive and negative emotions can be explored. The emotion triggering elements can be embedded in the touchpoints, or designed into the *Action* itself.

Use the peak-end principle. It states that people remember and evaluate an experience based on how they felt at its peak (i.e. most intense point - either +ve or -ve) and its end, rather than a total sum or average of every moment.

Example:
The 'run for your life' wristband (Fokkinga & Desmet, 2014) and the 'Zombies, Run!' app engage and motivate recreational runners (to push harder) by triggering a feeling of being chased (by dogs or zombies).

Ways to trigger emotions:

• Trigger pleasure/ pain/ hope/ fear to motivate people to change behaviour. Evoke specific emotions such as surprise, guilt, regret, empathy using vivid stories, installations, walk throughs, testimonials, personalisation to engage people.

• Help people feel / realise the emotions they will feel after adopting the new behaviour. Create emotional attachment to the new behaviour.

• Create peak moments & end the *Action* on a high note by designing apt rewards, or evoking +ve emotions using gamification or surprise elements.

A3

Foot in the door principle

Foot-in-the-door (FITD) technique is a compliance tactic that aims at getting a person to agree to a large request by having them agree to a modest request first.

If people commit to a smaller action / request, they are more likely to agree to a related larger action/ request in the future, since they feel obligated to keep agreeing in order to stay consistent with their original commitment (decision of agreeing).

Example:
Shelter, a homelessness charity piques one's interest with a local angle ('What does the housing crisis look like where you live?'), prompting people to just enter their pincode. Later, it takes you through a well-reasoned argument & finally invites you to add your signature on a petition to politicians.
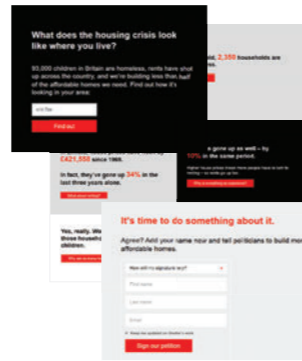
Ways to use the FITD principle:

● Let people first commit to a small, low effort action/ task like placing a small poster /sticker on their car or giving a tour of their house to understand architectural constraints for energy transition. You can also ask people to participate in a survey, to sign-up to a newsletter via email, or like/ follow a social media page.

● Appeal to people's social identities. Use symbolism to accentuate people's group membership / social identity such as 'conscious citizen'. Later, ask people to perform a task to keep up with that identity.

A3

Create dependencies amongst people

When people are dependent on you or your skills / expertise, one feels obligated to participate and perform best to their ability. Creating dependencies amongst people while carrying out specific activities can help in building commitment.

The three C's - compete, compromise /cooperate and collaborate can be used to further bind people to the group, lock them into the task. The advantages of a group effort can be designed to ensure people are motivated to participate.

Example:
Smart watches like Fitbit or Apps like Nike Running Club let people sync their devices and set fitness goals together. People can either collaborate and achieve the goals together or compete against each other to achieve the goals independently. This builds commitment towards the goal and ensures that people follow through.
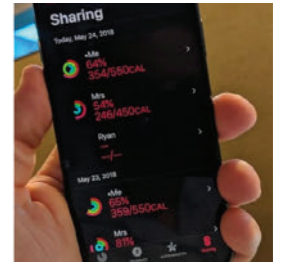
Ways to create dependencies amongst people:

● Design collective tasks, activities - wherein the outcome depends on performance / rating of each person. Include time constraints to avoid procrastination.

● Let people ask for help from each other.

● Assign responsibilities based on expertise. Make people accountable for their tasks.

● Each person builds onto the work of the previous task owner. Weekly rotation of task owners (relay-race).

A3

Let people pre-commit
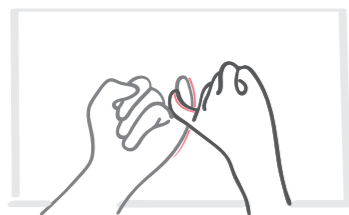
People strive to maintain beliefs and act accordingly. Once people have made a promise /pledge to do something or invested time/ money/ effort in something, they feel obligated to follow through.

Stimulating people to specify what, when and how they will do something creates the desire to be consistent with that commitment and further ensures compliance. This also reduces future inaction due to change in emotions or cognitive dissonance (situation involving conflicting attitudes, beliefs or behaviours).

Example:
In a hotel in California, guests who made a specific commitment to reuse towels during their stay (v/s a general commitment to be eco- friendly) and received a "Friend of the Earth" lapel pin, were significantly more likely to follow through on reusing the towels, and being more eco-friendly.
(Baca-Motes et. al, 2012)

Ways to let people pre-commit:

● Create small, informal written or verbal commitments, promises, pledges, oaths, contracts. This can be done through a prompt (screen) with a check-box that people need to agree to, by letting people commit to each other, or in a public forum by signing a form or raising a hand etc. When the commitment is made to somebody or publicly, people are more likely to follow through.

● Make a person's commitment visible to others, e.g. through symbolism or as a wall of fame. This further ensures that people stay consistent to their word.

A3, A1

Give people a headstart; build onto the existing

People are motivated to complete tasks that are incomplete or goals that are not achieved. By giving them a 'head start' they feel that they already have made progress and are more likely to finish an *Action*.

People need consistency and are creatures of habits. Embedding the Action into or building upon existing routines, habits, values and social norms can help in ensuring that people commit to doing the action. It would seem to be just an extension of the existing routine /values, making it seem less tedious. Additionally, everyday activities can be turned into something new and interesting by adding the new desired behaviour/ task.

Example:
In Transburg, residents received a starter kit with bags for residual waste and packaging materials to ensure they segregate & dispose waste correctly.

To ensure that people remember to check their smoke alarms twice a year, Red Cross related the activity with the changing of clock to summer /winter time (since both are bi-annual activities).

"As you turn your clocks ahead, take a few minutes to protect you and your family from home fires. It's easy!"
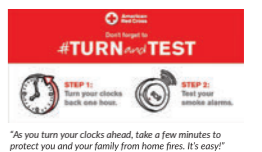
Ways to give a headstart / build onto existing:

● Provide small advantage / advancement towards a goal— e.g. points, stars, or stamps. Equip them to start performing the new behaviour. Use 'Framing' e.g. progress bar half full, first three steps of a checklist tick-marked.

● Link with routines that are similar in terms of quality, type of activity or occurrence. Use priming in existing routines

● Translate elements of existing routines into the experience of doing the new behaviour /task.

A4, A2

Use gamification

Gamification of tasks or using elements of games to design persuasive interventions is a proven means to engage users to learn new information or motivate them to adopt / practice new behaviours. It can be used to make the new behaviour interesting and easy to perform.

Gamification can be used to design environments that facilitate specific behaviours (e.g. a waste bin with a basket ball net above it) or to design artefacts / games with a specific goal in mind (e.g. the WE energy game to enable decision making).

Example:

Tim Holley's Tio lets children become energy champions of their house, influencing parental behaviour. Information is sent from the wall switch to the computer app, which allows the child to track the lighting use/ performance over a period of time. The child takes care of a 'virtual tree' by moderating their lighting-use performance. This engages children to make a personal contribution to reducing energy consumption.

Ways to use gamification:

• Let people solve puzzles, take quizzes, play a board game to stimulate conversation, prime people towards something, or for people to learn new information/ make decisions.

• Use game design elements like unlocking levels, player profiles, one-to-one competition to engage people in the activity.

• Environments designed using gamification elements can help evoke specific emotions, shaping people's expectations or experiences.

A4, A3, A1, T2

Make it bite-sized & incremental

People are easily overwhelmed. When provided with a lot of information or choices, they either procrastinate decision-making, give up or make use of heuristics to come to a quick decision. Thus, provide information in smaller, digestible steps. Break down the action into smaller steps.

This incremental or step-wise nature of an action can also help to build commitment towards the behaviour. Further, bite-sized content can build anticipation which can make the new behaviour engaging.

Example:

To train managers on the importance of a safe team culture, Google used microlearning through the 'Whisper course'. It has of a series of emails each of which gives a suggestion that managers could try during team meetings.

The emails were centred around the idea that the managers need a gentle reminder (nudge) to use what they know. Each email outlined an experiment they could try.

Ways to use bite-sized, incremental content:

• Break the content into smaller packets, revealed progressively over time to minimize complexity. Increase the number of decision moments. Give small actionable tasks (that build on top of each other).

• Use gamification elements such as unlock levels to unveil the content. Formats like comic strips, storyboards etc. can make the content engaging and build anticipation.

• Categorise the content; show comparisons of categories.

A4, A2, T1, T2

Combine facts with vivid content

Facts lend credibility and memorability. Vivid stories are compelling and help people relate to issues. However, too much of either of the two can become overwhelming for people, which motivates them to ignore the information altogether. Thus, both-facts and vivid stories need to be combined and balanced.

A few hard facts can go a long way. Use clear, distilled facts to assert authority and to give people a means of backing up their decision. Use short vivid stories / imagery to support the facts and evoke particular emotions.

Example:

DogsTrust highlights the number of dogs up for adoption along with images of the dogs. The statistics helps to communicate urgency while the images evoke feelings of sympathy, and affection that help in motivating people to adopt the dogs.

Ways to use facts and vivid content:

• Use quantitative data along with vivid imagery. Distil information into key points. Make use of authority (e.g. scientists, doctors, teachers) to convey the facts. Use testimonials, storyboards, live narrations as means to bring stories / experiences to life.

• Involve other senses such as touch / smell / hear to bring alive experiences, while showing facts.

• Show comparative or contrasting scenarios.

TOUCHPOINTS

Touchpoints form the interface between people and the target behaviour, defining 'How will people do the Action or spread the behaviour'. These can be physical or digital - in the form of artefacts, environments or interpersonal encounters. Explicitly designing touchpoints can ensure well-curated interactions & experiences, which are necessary to build positive attitudes. They also help in making things more tangible, concrete or certain.

The strategies outlined help to design the *Touchpoint* more effectively, and in nudging people to carry out the required *Action*. They are related to and build upon 2 key factors that influence a person's decision-making process, namely:

T1 People's perceptions are moulded by how information is presented.

T2 People rely on short-cuts to make decisions / do things. They want to put in minimum effort.

The strategies suggest ways to incorporate these factors into *Touchpoints*, in order to ensure that people actively participate. The above factors can be translated into 2 *Touchpoint* design principles, which are used to categorise the strategies.

T1 Shape perceptions and impressions.

T2 Make it easy (to use / do).

Once you have designed the *Action /Spread mechanism* and identified what touchpoints will be used, go through and incorporate these strategies to make the touchpoints more effective /engaging.

T1

Behavioural Trait / Decision-making factor

People's perceptions are moulded by how information is presented.

Touchpoint Design Principle

Shape perceptions and impressions.

T1

Relevant strategies:

1) (Re) Frame

2) Show scarcity (of time &/or supply)

3) Humanise it

4) Use anchoring

5) Use analogies

6) Increase salience (make it stand out)

Other strategies that can be used:

- Combine facts with vivid content
- Personalise it
- Choice architecture (defaults, enhanced active choice, recommended options)

T1
(Re)Frame

People draw different conclusions (and act accordingly) based on how the information source, context and loss/gain is framed or which personal attributes or values you appeal to.

Framing information, specifically losses and gains, helps in ensuring people have apt perceptions towards the behaviour. A loss is more painful to people than an equivalent gain. Further, people don't judge losses and gains absolutely – rather, they perceive these relative to a reference point (in the past or future). By shifting the reference point, a loss or gain can be made more or less influential.

Example:

Meyerowitz and Chaiken (1987) show that when presented with information stressing the negative consequences of not self examining, women were more likely to engage is breast self-examination (BSE) as compared to when they are shown positive consequences.

> *Positively framed:*
> Research shows that women who do BSE have an increased chance of finding a tumour in the early, more treatable stages of the disease.
>
> *Negatively framed*
> Research shows that women who do not do BSE have a decreased chance of finding a tumour in the early, more treatable stages of the disease.

Ways to (Re)frame:

- Describe situations as loss / gain based on the desired behaviour. Things framed as loss are more salient to people. Combine losses. Segregate the gains. Integrate small losses with larger gains to reduce its significance. Highlight smaller gains even from larger losses. Use 'loss' frames for uncertain outcomes; 'gain' frames for certain outcomes.

- Position offerings in favourable contexts (e.g. middle of three prices; in between competition).

- Appeal to specific personal identities (e.g. parents, commuter) that best align with the intent.

T2

Behavioural Trait / Decision-making factor

People rely on short-cuts to make decisions / do things. They want to put in minimum effort.

Touchpoint Design Principle

Make it easy (to do / use).

T2

Relevant strategies:

1) Minimise effort

2) Shape Choice architecture (defaults, enhanced active choice, recommended options)

3) Provide social proof

Other strategies that can be used:

- Make it bite-sized & incremental
- Combine facts with vivid content
- Use analogies

T1
Show scarcity
(of time &/or supply)

People place higher value on objects / opportunities that are scarce. This value is determined by how easily the object might be lost, especially to competitors. The more difficult it is to acquire an item the more valuable it is. In many situations the item's availability and its perceived abundance is used to quickly estimate quality and/or utility. Scarcity provides social proof, that others also prefer the same item.

Scarcity in terms of limited time to carry out an action or in terms of limited quantity of something available, can be used to trigger people to adopt the desired behaviour.

Example:

When British Airways announced it was closing the London to New York Concorde service, sales went through the roof. Nothing had changed about the service or the cost; it had simply become scarce.

Ways to use / show scarcity:

- Build limited editions, provide limited number of spots or limited time for availing different incentives. Make it invite-only.

- Show scarcity of quantity through messages such as 'x number of things left'; 'x number of people are looking at this same option' etc. e.g. the gas company can show amount of natural gas reserves left, and the countdown to when there will be no gas supply.

- Show scarcity of time by highlighting deadlines, having countdowns etc.

T1, A1, A2

Humanise it
(give it a face)

Global phenomenon such as sustainability are vague and difficult for people to understand. Humanising these phenomenon (giving it a face) by building specific characters or using imagery with real people can help in making them more recognisable. It can change how people perceive issues and build empathy towards the causes, in turn triggering prompt action.

Using images of one's near and dear ones to show the effect of different phenomenon in the future (through future scenarios / progressions) can also ensure conscious behaviour. Personification helps in building certain associations and triggering specific emotions.

Example:

Shelter uses the image of young girls to prompt people to donate towards homelessness charity.
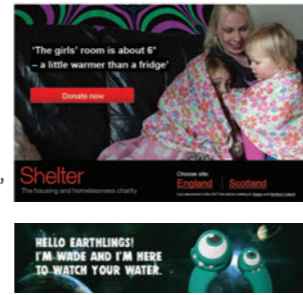
Yarra Valley Water has developed 'Water watcher' characters like 'Wade' in the form of an artefact to be put on the tap. These ensure people (especially kids) are conscious about their water consumption.

Ways to humanise it:

● Use children /pets (real imagery) to communicate the effect of global phenomenon.

● Using principles like the watching eye effect. Build characters and embed these into artefacts which are friendly reminders for people to be conscious about their behaviour.

● Make persona-based quizzes. Let people see (relate) themselves as (to) these personas. Link desired behaviours with these personas (or personality traits).

T1, T2, A1, A2, A4

Use analogies

An analogy is a comparison of two things to help explain an idea or concept. When the information is complex or difficult to understand, use of analogies to capture people's attention and to make it easy for them to grasp (remember) the information.

Draw analogies to commonly known phenomenon, or past experiences of people. Use analogies in text as well as in visuals and imagery. If the touchpoints are artefacts, their form and visual appearance can be inspired from relevant analogous examples to communicate specific interaction qualities / goals / intent defined by the Action / Spread mechanism.

Example:

These posters use analogies to trigger behaviour change (stop smoking - It is like hanging yourself) or conscious thought (about the urgency to act towards climate change).

Ways to use analogies:

● Use analogies to explain the process. e.g. the format of a recipe of a dish can be used as an analogy to tell people the steps towards gas discontinuation.

● Use analogies to communicate features. Appeal to one's personality traits using analogies like comparing people to famous personalities or attributes people aspire to be.

● Compare to daily objects /known phenomenon e.g. cutting trees is like removing ones lungs.

T1

Use anchoring

People use familiar or previously introduced information /cues as a reference point, and make subsequent decisions relative to that anchor. Once (the value of) this anchor is set, all future negotiations, arguments, estimates, etc. are according to the anchor. Information that aligns with the anchor tends to be assimilated, while information that is more dissonant or less related tends to be ignored.

Using anchors can help to set expectations towards the new behaviour, as well as provide suggestions of what is the ideal (baseline /minimum threshold), acceptable behaviour. This can be used along with strategies such as providing social proof, framing or priming.

Example:

Change in the efficiency categories of the European energy label from unique letters only (the A to G scale) to a mixture of letters and "A-pluses" (the A+++ to D scale), makes consumers less likely to choose the most energy efficient appliances. The letter A functions as an anchor for consumers' judgement of energy efficiency; resulting in them giving less importance to energy efficiency above the A category.
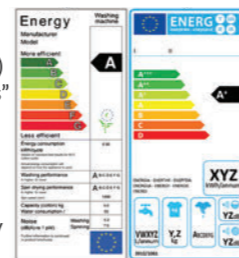
Ways to use anchoring:

● Provide anchoring information (quantitative data - price ranges, value before discounts, goals etc.) before telling people the action to perform, or the actual values. Communicate high and low extremes to create anchors.

● Pre-fill a form / blank with an anchor (numeric value, words etc.), suggesting how people should behave. e.g. when telling people to save monthly towards the energy transition, fill in a temporary value (say 5 Euros) in the space where people have to enter the amount.

T1, T2, A4

Increase salience
(Make it stand out)

People can process only a limited amount of information; they cannot attend to every aspect of a situation. Salience (the quality of being particularly noticeable) determines which information will most likely grab one's attention and have the greatest influence on one's perception of the world.

People tend to be drawn to things that stand out from the environment. Novel or personally relevant things grab people's attention and can be used to influence behaviour. Make the desired behaviour (Action/ Touchpoint) stand out so it attracts attention and motivates people to do it.

Example:

In Lucerne, decals of games like hopscotch boxes were pasted around bins to accentuate their position; encouraging people to consciously bin their waste.

Handwritten post-it notes increase the probability of people opening a letter and reading it or filling out surveys (Garner, 2004). This is used by the Dutch tax system to increase on- time tax declarations.
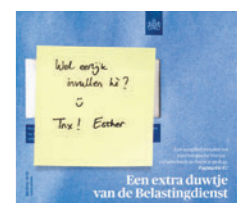
Ways to increase salience of desirable behaviour:

● Capture people's attention by making the touchpoints salient (stand out) through colours, sounds, visuals, smells gamification.

● Make the beliefs / behaviour of others salient.

● Embed surprises in the touchpoints.

● Create favourable contexts; e.g. comparing to less desirable options. Use contrast.

T2, A4

Minimise effort

We have pre-filled the form for you! Verify the details and continue.
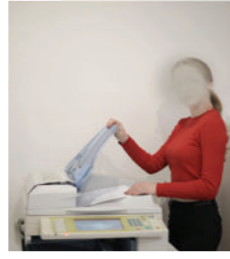
People avoid doing things that are tedious, ambiguous or difficult. They want to put in minimum effort to achieve their goals. Both, the actions and the related touchpoints need to designed for simplicity. The touchpoints themselves should be effortless to use and should aid people to carry out the action easily.

The things should be easy to :
- Understand
- Remember
- Do
- Use

Example:

Rutgers University made double-sided printing the default option on its lab printers. Students need to manually select the option to print on only one side of the page. The option to conserve is made much easier by setting it as the default option (swapping the effort required in the desirable and undesirable behaviour).
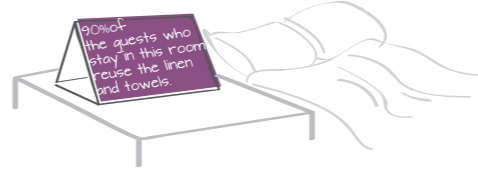
Ways to minimise effort:

● Can you do the effort on behalf of the people? e.g. pre fill a form. Give people a headstart. Provide check-lists. Distil into few key points/ steps. Use levels, progressively reveal new info.; Reduce the number of choices. Provide ways to filter /customise. Walk people through the Action - let them know what to do/ expect.

● Embed into routine, such that the behaviour takes place automatically when people are doing other activities.

● Use reminders, notifications, alerts

T2, T1

Shape choice architecture
(Defaults, Enhanced active choice, Recommended options)

Do you want to receive a newsletter from us every month?

⦿ Yes   ◯ No

Since people are lazy and want to avoid making complicated decisions, they tend to go with pre-selected options which don't require an extra effort. Make the desired behaviour the default option to build commitment towards it. However, ensure that people can freely opt-out or select alternatives (have freedom of choice).

Further, highlight the advantages of the desirable behaviour and the disadvantages of the alternative behaviour - Use enhanced active choice. This loss / gain framing helps in shaping people's perceptions towards the desired behaviour, making is effortless - since people always want to avoid losses.

Example:
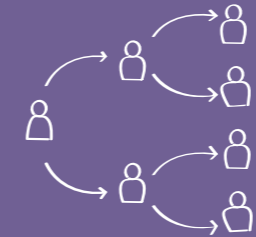
Organ donation rates in Denmark & Germany are low (4 % &12%) because the default option is 'opt-in'. Meanwhile, they are 86% & nearly 100% in Sweden & Austria where the default option is 'opt-out'; since choosing not to be an organ donor is perceived as morally more deficient. This prompts conscious thought, prompting people to make the right choice.

ORGAN DONOR DEFAULTS

WHEN PEOPLE HAVE TO OPT OUT   WHEN PEOPLE HAVE TO OPT IN

Ways to use 'choice architecture':

● Make the desired behaviour a default - highlighted, check marked, pre-filled. Let it be the first option that people see. Minimise or completely eliminate the effort in choosing it. Increase the effort people have to put in to opt-out. At times the undesirable behaviour (opt-out of desirable behaviour) being a default also triggers people to opt-in for the desirable behaviour, since the default opt-out triggers conscious thought about the behaviour.

● Personalise the default desired behaviour using the user's data- 'recommended (for you)'. Highlight what people can lose.

T2, S1, S2

Provide social proof

90% of the guests who stay in this room reuse the linen and towels.

Apart from wanting to be socially accepted, people also look for social proof while making decisions to reduce the effort in evaluating and comprehending the choices. When unsure about a decision or how they should behave, people align their choices with those of similar others, assuming that others have more knowledge, or if the majority have chosen something it might be correct.

Provide social proof to motivate people to carry out the behaviour, in the form of quantitative data or statements highlighting what others are doing / what is the socially accepted behaviour in that particular context.

Example:

Nolan et. al (2008) find that the most effective message in stimulating energy conservation is the one that gives social proof (as compared to messages that state that using less energy saves money, that it protects the environment or benefits the society). The message stating that a lot of other people are conserving energy, generates 3.5 times as much energy saving.

Your neighbours are saving energy, are you?

Ways to provide / use social proof:

● Show how many people have chosen the behaviour. Show peers performing the behaviour. Provide testimonials & reviews of others who have performed the behaviour. Use 'Best-seller', 'Most popular', 'others also viewed' tags.

● Use Authority - show expert recommended behaviours (e.g. doctors, teachers, scientists). Use certification marks.

● Appeal to personal or social identities / traits of people. e.g. 'apt for athletic people'; '75% mothers do this'. Build upon existing social norms such that people automatically perform the socially acceptable behaviour.

SPREAD MECHANISM

Spread Mechanism defines how the behaviour or *Action* will spread amongst the target group (enabling social contagion). The strategies presented suggest different ways of building social pressure in order to stimulate people to adopt the target new behaviour.

The strategies within the spread mechanism can be broadly classified into two categories:

S1 (Stimulate) Direct Social Pressure

These involve direct contact / interaction between an activated person (who is currently performing / is convinced to perform the desired behaviour) and the targeted person.

S2 (Stimulate) Indirect Social Pressure

These strategies indirectly build social pressure towards the desired behaviour by stimulating the person to compare themselves with peers.

Think of interactions between people (direct or indirect) that can help in spreading the behaviour. This can be facilitated through either physical or digital touchpoints that are built into the Action (touchpoints) itself or are designed specifically to spread the behaviour. The Spread Mechanism should be designed to complement both, the Actions and Incentives.

S1

(Stimulate) Direct Social Pressure

Direct social pressure includes interactions wherein one's peers directly request / force them to do something. This can be in form of an invitation, tagging on social media, nominating someone, nagging them through phone calls etc. Upon being tagged / invited, the person feels obligated to reciprocate or join the bandwagon, conforming to the new behaviour or social norm.

Facilitate these interactions between people through different channels (e.g. social media, physical meetings, newspapers etc). Select the spread mechanism (tag, nag, invite, nominate, challenge, share, refer etc.) based on the Action, and design the appropriate Touchpoints.

Example:

The ALS Ice Bucket Challenge required nominated participants to film (and post) a bucket of ice water being poured on their heads and then nominate others to do the same. The nominated person had 24 hours to comply or forfeit by way of a charitable financial donation towards research for ALS disease. It went viral on social media in 2014 and raised over $220M worldwide for the disease.

Ways to stimulate direct social pressure:

● Let frontrunners challenge, invite or tag others to carry out a task. Participation can be made exclusive through invite-only channels,to make it more desirable. For example, many brands like One-plus, Spotify (in the US), Socialcam rolled out their products through invite-only channels enabling peer-to-peer marketing.

● Combine direct social pressure with strategies like creating dependencies between people.

● Use on-going trends. e.g. Instagram challenges, Tiktok etc.

S2

(Stimulate) Indirect Social Pressure

People feel the social pressure to join a trend or perform certain behaviours even if they are not directly forced to do so. In order to belong to certain social groups or maintain a social identity, they feel pressurised to imitate others or conform to social norms. Further, if the behaviour is perceived to lend peers an advantegous position, it is imitated.

This comparison with peers and the subsequent emotions such as fear of missing out, envy, insecurity can be triggered by designing *Incentives* and making them (as well as the participation of peers) conspicuous; in turn prompting adoption of behaviour.

S2

Relevant strategies:

1) Use symbolism

2) Show experiences of others (stories, testimonials, reviews)

3) Show performance of peers (through leader-boards, wall of fame/shame, profile ratings)

4) Provide social proof

Use symbolism

Symbolism is the use of signs and symbols to represent ideas and qualities. It can be used to show which individuals are pursuing the desired behaviour. Symbols can represent social identities (e.g. conscious mothers), group membership, participation in specific Actions or the possession of some thing / quality. This helps to trigger (sub) conscious comparison amongst peers, making the behaviour desirable.

Symbolism can be incorporated in clothing, accessories, merchandise (caps, wrist bands, flags, stickers, tags, badges, artefacts; or through filters, symbols on digital mediums. These should complement the Action and can serve as one of the Incentives itself - if made desirable enough.

Example:

As a part of the campaign to reduce littering in Transburg, residents who opted-in received stickers to be put on the doors or windows. These stickers showed which residents had made a commitment to improve the neighbourhood, prompting others to think about their role / duty towards the neighbourhood, and taking action.

Ways to use symbolism:

● Place the symbols in apt areas and make them highly visible. Use it in appropriate amounts; if over done, it loses effect.

● Instead of 2D symbols, think of 3D artefacts. Can these be be responsive to (reflect the) user's behaviour? e.g. a smart object placed in the front yard - blooms or withers based on the user's behaviour.

● Make use of / build upon existing symbols. Use daily objects. e.g. for non-compliant people, the door bell can has an annoying, loud ring. Use symbolism to shame / call out people for their current behaviours.

Show experiences of others
(stories, testimonials, reviews)

While making difficult decisions, people rely on their peer's experiences or feedback to evaluate the decision at hand. Showing testimonials, reviews and ratings as social proof can help to make the behaviour more desirable.

The actions can be carefully curated to provide fun, exciting, novel, unique experiences towards the desired behaviour, which can be made visible to others. Seeing the experience of one's peers can induce the feeling of missing out. Both, online and offline channels can be provided for people to share their experiences.

Example:

To increase the uptake of the free check ups, NHS, redesigned their invitation letters and appointment cards, showing testimonials from local residents from different demographic backgrounds. This way people could easily relate to and trust the legitimacy of the invitation.
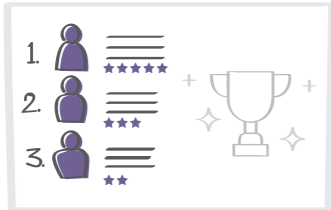
Ways to show experiences:

● Use existing channels to show people's experiences e.g. hoardings, billboards, instagram / snapchat stories, blogs/ vlogs, youtube, newspapers, talk sessions etc. Use different formats such as pictures, text, comic strips, stand-up comedy, bite-sized videos etc.

● Show people doing the behaviour along with their retrospective views, testimonials, reviews, ratings etc.

● Show both positive and negative experiences. The negative effects of current behaviour can also be shown through peers' experiences to trigger behaviour change.

S2

Show performance of peers
(through leader-boards, wall of fame/ shame, profile ratings)

Indirect comparison and competition can be triggered amongst people by ranking and rating their behaviours. The performance of others can be shown through leaderboards, walls of fame / shame, comparison charts etc. via an app, emails, or displayed publicly through screens and billboards.

Placing the performance information in public spaces serves as a conversation starter, and builds curiosity amongst people who are not aware. Seeing one's peers on the leaderboards can enthuse people to join. Providing profile ratings can instil the urge to continue with the desired behaviour, since people do not want to lose their (higher) ratings.

Example:
Opower provides people with an energy report, which shows comparison of one's energy consumption with their neighbours - to stimulate energy saving. The relative ranking provided motivates people to perform better and save more energy.

Ways to show performance of peers:

● Build levels or define ways to quantify the behaviour such that the progress and performance of peers can be tracked.

● Combine the strategies of 'show experiences of others' and 'show performance'. This can further reinforce the positive outcomes of the desired behaviour.

● Use gamification or interesting formats to show the peer's performance. Show building, area, community, lane wise performance instead of individual performance. Stimulate group/ collective action to maintain ranking /rating.

INCENTIVES

Incentives act like motivations that persuade people to participate in the *Action* or carry out the behaviour. These can stimulate comparison amongst peers (especially when made highly visible). The incentives can be tangible or intangible, and can be embedded into the *Action / Spread Mechanism* (touchpoints), or be separately designed.

Think of 'Why would people participate in this Action? What will they gain / lose?' when thinking of incentives.
Ensure that the incentives make the behaviour desirable (create feelings such as the fear of missing out, envy etc. amongst non- participants). Following are some different type of incentives (strategies) that can be offered / used:

1 Give people a social identity; Provide people group membership

2 Use cash or kind incentives (special privileges, perks or guaranteed outcomes)

3 Provide unique, fun, novel experiences

4 Make it an achievement, a new skill or quality

Consider the timing of the Incentives (gratification)- immediate / in the future. Since people are averse to losses, think of **'losses' as an incentive**: loss of any of the above. e.g. people would avoid the loss of their (current) tax benefits; or loss of their identity as a responsible citizen.

Give people a social identity; Provide group membership

People comply with and conform to social norms in order to fit in, maintain their social relationships and manage their social identities. Thus, providing them with specific social identities or membership to groups that complement their existing social identities (or the one's they aspire to be) can serve as an incentive for them to adopt the target behaviour (or continue participating).

Further, if the group is shared with peers (or similar others), people will go out of their way to avail the membership and maintain the social identity; prompting them to carry out the desired behaviour.

Example:
Parents pride themselves in caring for their children and want to provide the best for them. Appealing to this identity, citizens who start saving for the energy transition can be given a recognition of being 'responsible parents' from the govt. They can be given extra benefits and their membership to this 'resposible parent' group can be made visible to others. Once recognised as responsible, people will not want to jeopardise that image.

Ways to design group membership / social identities:

● Appeal to existing social identities or define new one's based on the aspirations of the target group. The social identity can also conform people with a status or reputation. (e.g. responsible parents, conscious citizens, pioneering family, active moms).

● Membership can be provided to existing groups or new groups can be created through the Action. Groups can be driven solely by functional purposes eg. self-help groups. Make membership exclusive eg. invite-only. Make the social identity / group membership visible to others eg. through symbolism, wall of fame etc.

Make it an achievement, a new skill or quality

Turning the desired behaviour into an achievement or translating it into a new skill or quality that people possess, serves as an incentive for people to participate.

The achievement can be a result of a competition, or simply participation. It can be quantitative in nature (in terms of points earned, ranks and positions etc.) or qualitative (accomplisment of a goal). It can also be the achievement of a new skill, quality, reputation or identity through trainings and certifications.

The achievement, or possession of a skill/ quality can be for individuals or groups, and can be gained physically or through digital mediums.

Example:
Citizens can undergo a training to become experts about sustainable lifestyles or greener energy alternatives. Upon completion, they can receive a certification which adds to / reflects on their resume, and can provide them with extra benefits at their jobs.

Ways to provide an acheivement, new skill, quality:

● Think of benefits of having the achievement, new skill or achievement. Base these off on people's aspirations. What do people receive upon acheiving something? What qualities do people want to have? eg. access to something, a seat at the table, additional source of income, social identity, reputation etc.

● Use gamification elements to make it fun to achieve something or learn new things.

● Design specific touchpoints that show the achievement, possesion of quality / skill. Use symbolism.

Use cash and kind incentives

Cash and kind incentives / rewards are known to be effective prompts in affecting behaviour change. Cash incentives can be in terms of savings, discounts, low interest loans, future valuation, low taxes, funding and sponsorship.

Kind incentives can be gifts, freebies, samples, subscriptions. These can also be special privileges, perks, benefits (e.g. group discount, free parking, access to party/ guest-list) or guaranteed outcomes such as warranty, free lifetime service and repairs etc.

Example:
In a study by Volpp et al. (2008), a group of people who met their weight-goals, were automatically entered into a daily lottery with a 20% chance of winning $10 & a 1% chance of $100. Those in this treatment group lost 13.1lbs on average compared to 3.9lbs amngst people with no incentive after 4 months.

Ways to make use of cash /kind incentives:

● While cash and kind incentives are effective, they only trigger short-term adoption (until they last). Think of ways to extend their effect, combine with other types of incentives.

● Since people are loss averse, the cash and kind incentives can also be taken away. Think of existing benefits people enjoy that can be taken away from them.

● Bundle losses, segregate gains. Combine small losses with big gains, and small gains even with small losses.

Provide unique, fun, novel experiences

Owing to the rise of the experience economy, people are always looking for new unique experiences. Further, digital means of sharing experiences pave way of emotions such as FOMO, which prompt people to imitate their peers (they want to experience the same things), giving rise to the bandwagon effect and trends.

Thus, designing unique, fun, novel experiences can prove to be an incentive for people to adopt / try specific behaviours and can give rise to social contagion. These can be a part of the Action.

Example:
An extremely hydrophobic paint is applied to walls of the railway station in Cologne to curb public urination. Any stream of liquid aimed at the wall bounces back off at roughly the same angle; thus, urine splashes back on the person. In order to avoid this negative experience, people refrain from urinating on the wall.

Ways to provide unique, novel experiences:

● Experiences can be physical, digital or virtual. These can be incorporated in existing touchpoints / services (eg. in a dustbin) or specifically designed (say for educative purposes). The experiences can be both positive or negative.

● Emotions play a key role in one's experience; thus triggering apt emotions through the process is important.

● Use peak-end rule and/or gamification tactics.

● Devise ways for people to share their experiences.

Design for Social Contagion

Alloted time for step:

Intervention Design Canvas 1
Do with all participants

Step 1 : Design Question Definition

1A

Define the overall GOAL of contagion / project
What is the target behaviour that needs to be spread?

eg. Gas discontinuation / Residents understand the urgency to act towards climate change / Awareness of energy transition amongst residents

1B

Define the SPECIFIC design question/ problem/ content for contagion (the WHAT)

•Can you break the overall aim into smaller aspects that need to be tackled?

•What are the smaller problems that give rise to the overall goal?

•What are the perceptions or apprehensions of the target group/ other barriers that result in inaction?

As a group discuss these specific design questions / problems you want to tackle. Select 2-3 questions that you will target during this brainstorm session.

eg. Myths and misunderstandings amongst residents / Residents don't understand the hidden costs, technological specifications

1C

Translate the specific design question (WHAT) into a HOW TO / HOW MIGHT WE question:

Refer to the examples given.

This question(s) will be answered during the brainstorm.

eg. How to curb the spread of myths and misunderstandings ? How to devise myth busters? How to ensure residents do not believe myths about the technological alternatives? How to ensure people do not create and spread myths about energy alternatives / gas discontinuation?

1D

Identify the social contexts for contagion:
Which social identities and social networks of people are relevant to trigger the contagion?

Which are the key spaces where the target group meets / interacts with similar people?

Which are the key social spaces / environments / contexts where social interactions will take place to enable contagion?

eg. Streets, Vicinity of the building, Church, Gym, Bus-stops as the social context for contagion.

Design for Social Contagion

Alloted time for step:

Intervention Design Canvas 2

Step 2 : Brainstorm Ideas

Breakout into smaller teams

1C

?

Copy the HOW TO / HOW MIGHT WE question (defined in step 1C) for reference. This is the design question to be answered during brainstorm.

eg. How to curb the spread of myths and misunderstandings ? eg. How might we ensure residents understand the hidden costs related to a technology?

2A

Select relevant categories of Action inspiration cards

Based on the goal and specific design question, select the relevant Action design category(s) (A1, A2, A3, A4). Alternately, select a few cards at random from each category and use those.

A1, A2, A3, A4

Distribute the cards amongst the participants. Along with the Action cards, distribute 1 or 2 Spread Mechanism and Incentive cards to each team member.

Let each participant go through their cards. Once done, briefly discuss the cards.

2B

As a team /individually, brainstorm ideas to answer the How to / How might we question identified in 1C.

•Use the Action, Spread mechanism and Incentive cards for inspiration and come up with ideas.
•Consider this as a parking lot for all ideas for Action, Spread Mechanism and Incentives. They don't need to form a single concept as yet.
•Keep the identified social contexts of interaction and contagion in mind while ideating.
•In case there are more than 3 participants, carry out the brainstorm in smaller teams of 2-3 people

Actions

What Tasks / Activities / Challenges/ Campaigns can people perform/ participate in, that will help in achieving the target behaviour? Think of physical / digital touchpoints that can be used to trigger the target behaviour.

Spread Mechanisms

How can the target behaviour / Action be spread to other people? Think of Direct / Indirect social influence / pressures.

Incentives

Why will people want to perform / participate in the target behaviour / Action? What will they gain out of it? What will they lose if they don't participate?

Parking lot for all your ideas; There is no right or wrong!

Design for Social Contagion   Alloted time for step:

Intervention Design Canvas 3   **Step 3 : Generate concepts for contagion**
Continue in breakout teams

3A   💬   **Discuss ideas generated in step 2.** Build on each other's ideas, group similar ideas.

3B   ⊡   **Mix and match ideas** to generate concepts for contagion of the behaviour. For each concept define the Action, Spread mechanism, Incentives and Touchpoints that will be used.

	Action	**Spread Mechanism**	**Incentive**	**Touchpoints**
	What Tasks / Activities / Challenges/ Campaigns will people perform/ participate in, that will help in achieving the target behaviour?	How can the target behaviour / Action be spread to other people? Think of Direct / Indirect social influence / pressures.	Why will people want to perform / participate in the target behaviour / Action? What will they gain out of it? What wll they lose if they dont participate?	List the touchpoints that will be used while carrying out the Action. Which touchpoints will enable the spread of the behaviour? Which touchpoints embody the Incentives?
Concept 1				
Concept 2				
Concept 3				
Concept 4				
Concept 5				

Design for Social Contagion   Alloted time for step:

Intervention Design Canvas 4   **Step 4 : Evaluate and Select concepts**
Do with all participants

4A   **Each team should present their ideas (top 3/5) to the bigger group.**
            Build onto each others ideas. Discuss pro's/ con's. Add / Subtract details.

4B   **As a team, define the evaluation criteria for the concepts based on the goal of the contagion and other constraints:**

            You can use the design principles and design criteria for evaluation of ideas.

            If possible, list the evaluation criteria from most important to least important.

            eg. ease of implementation, spread /reach of contagion, cost of implementation, effectiveness in meeting the goal of the contagion.

4C   **Use any one of the following methods to evaluate and shortlist the concepts:**

| **Vote using coloured dots** | **C-Box** | **Rank the concepts** |

- For each of the evaluation criteria, define a specific colour dot (either print coloured dot stickers, or use colourful markers).

  eg. Spread / reach of contagion

- Keep the concepts of all the teams together (on a board / table). For each evaluation criteria, vote for the concepts that are most promising. Each person can vote for 3 concepts for each evaluation criteria. Let everyone vote simultaneously.

- Based in the tally of votes and the importance of evaluation criteria, select top 3 / 5 promising concepts, that will be detailed further and can be validated in field.

- If there are only two key evaluation criteria, use a C-box.

- Plot x and y axis. Assign one evaluation criteria to each axis (eg. x-axis : cost of implementation - cheap to expensive; y-axis : spread /reach of contagion max. reach to min. reach)

- As a team, go through each concept and place it on the c-box according to how it fares on both the evaluation criteria.
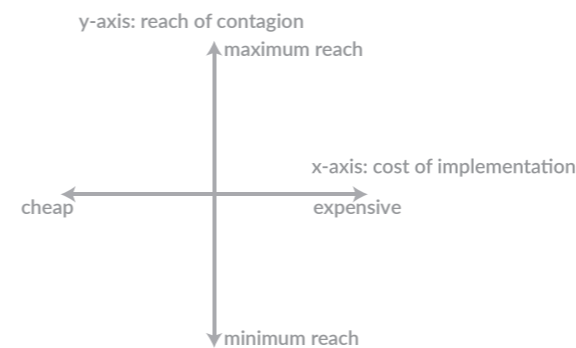
  y-axis: reach of contagion
  maximum reach
  x-axis: cost of implementation
  cheap   expensive
  minimum reach

- Once all concepts are evaluated (placed on the c-box), decide which quadrant is most feasible. Detail the concepts in this quadrant in the next step and validate in the field.

- As a team, discuss and find top three concepts for each evaluation criteria.

  eg. Reach of contagion   Evaluation criteria #2
  1. _____   1. _____
  2. _____   2. _____
  3. _____   3. _____
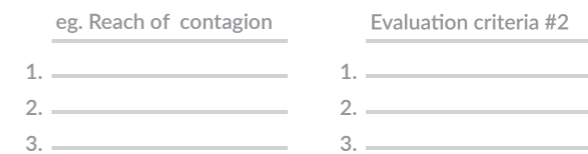
- Now vote for the most promising concepts, or decide together 3/5 concepts that fare well in all evaluation criteria and can be taken forward for detailing and validation.

Design for Social Contagion   Alloted time for step:

Intervention Design Canvas 5   **Step 5 : Detail the selected concept(s)**

Concept (Name / number):

5A **Detail how the contagion will unfold**

Use the following spectrums to think about 'where (it takes place)', 'who (does it / initiates is)' and 'how often' for the concept.

Outline the contagion process:

Private sphere	Public sphere
Individual action	Group action
Daily WeeklyM	onthly One time in 'X' months

•Who (individual /group) will initiate the Action / be the first one to do the Action / target behaviour? What do they do? How often? Why do they do it? How does it spread?
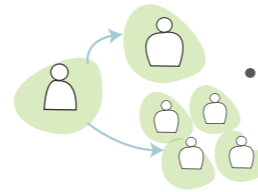
• Who will the initiator spread the Action / target behaviour to (individuals (one or many)/ group)? Do they do a collective action? Why will they participate? How will they do the Action?
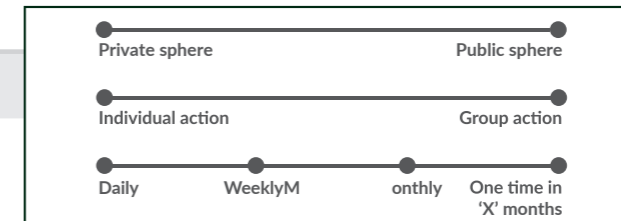
5B **Detail / Visualise the (Action / spread mechanism / incentive) Touchpoints:**

•Use the Touchpoint cards for inspiration. Go through the Touchpoint strategy cards and apply the relevant strategies to make the touchpoints more effective.

Design for Social Contagion
HANDBOOK

Original size : A5

HANDBOOK INTRODUCTION

This handbook is designed as a part of the 'Design for social contagion' toolkit. It should be used along with the inspiration card deck and the set of canvases - which are part of the toolkit.

The handbook gives a brief introduction about the phenomenon of social contagion (social influence) and how it is useful to activate residents towards the energy transition.

Next, the handbook presents the 'Design for social contagion' Framework. This framework guides the overall process of designing and stimulating contagion (of the target behaviour) qualitatively, by providing actionable steps. It builds upon complex contagion theory.

To enable the contagion, persuasive and tactical strategies of inducing behaviour need to be developed and applied in the form of interventions. This 'Design for social contagion' toolkit helps in designing these strategies and interventions.

The handbook outlines the different components of the toolkit, the logic of designing interventions aimed at social contagion (anatomy of an intervention) and a step-wise explanation of how to use the toolkit.

The toolkit is developed to be used in a creative session. Thus, it is ideal that all participants go through this handbook before (or during) the creative session. If not, at least the organisers (or facilitators) of the workshop should go through it beforehand, such that they are familiar with all the elements and the process, and can explain it to the team during the session.

CONTENTS

A means to transitions
SOCIAL CONTAGION

The energy transition

In the wake of global warming and the earthquakes in Groningen, the government of Netherlands has set the goal to reduce greenhouse gas emissions by 49% in 2030 compared to 1990 levels. An energy transition in the built environment is identified as one of the means to achieve this goal. The vision includes the transformation of 7 million homes & 1 million buildings, which are moderately insulated and heated by natural gas, into well insulated buildings that are heated using renewable sources.

Since alternate technologies are already available in the market, the government plans to adopt (to begin with) pricing and subsidising measures to enable the transformation – (financial) incentivisation being the key strategy. The challenge here is that large scale adoption is a necessary condition to regulate the prices, even if the technology is economically viable. Moreover, the provision of subsidies & funding, and the presence of technological alternatives does not imply that households will actively opt for gas discontinuation.

At the micro scale, the transition involves (financial) investments in terms of infrastructural changes, time and energy by the residents in order to upgrade the wiring, insulation as well as heating sources. The return on this investment is not visible in the immediate future and poses uncertainty in financial savings in the long-term. It also entails short-term inconveniences in routines. Thus, even if residents have a positive attitude towards the energy transition, given this perception of inconvenience and uncertainty, it does not reflect in their choices towards transitioning away from natural gas.

Hence, the transition is predominantly a social challenge (a societal transition) wherein participation of a critical mass is a pre-requisite to achieve the set goals. It is clear that solely top-down (policy-driven) solutions are not enough to motivate the critical mass. Bottom-up (institutionalisation), socially-driven interventions are required to activate residents.

Social influence on decision-making

Several theories within the domains of psychology, sociology and anthropology highlight that an individual's actions, behaviour and decisions are influenced by contextual factors, especially the social groups they belong to, and the social norms that these ensue. These argue that individual decisions are 'constructed' or determined by social and technological systems wherein needs, attitudes, and expectations are not individual in nature but are embedded in ongoing relations and networks of relations.

People are strongly influenced by the (in)action of others, which implies that one would act only if several others have chosen to act. People have the tendency to imitate behaviors of others who are either in their vicinity (belong to similar social groups), or whom they aspire to be. Here, one's social identity, social networks and the social norms these ensue are the building blocks of social influence, and constitute an important leverage point in shaping people's behaviours. Thus, social influence (social contagion) is a means of scaling up the desirability, acceptance and adoption of greener energy alternatives.

This project explores and builds upon this social construction of an individual's decision-making process and its building blocks. It outlines how social influence processes, and the phenomenon of social contagion can be used to activate citizens towards the energy transition through the 'Design for social contagion' framework and toolkit.
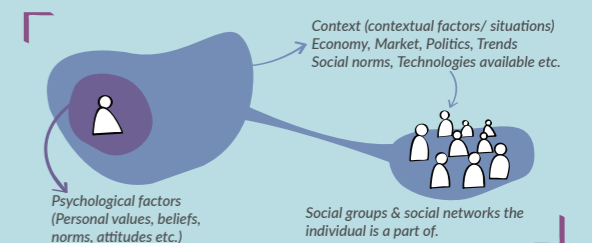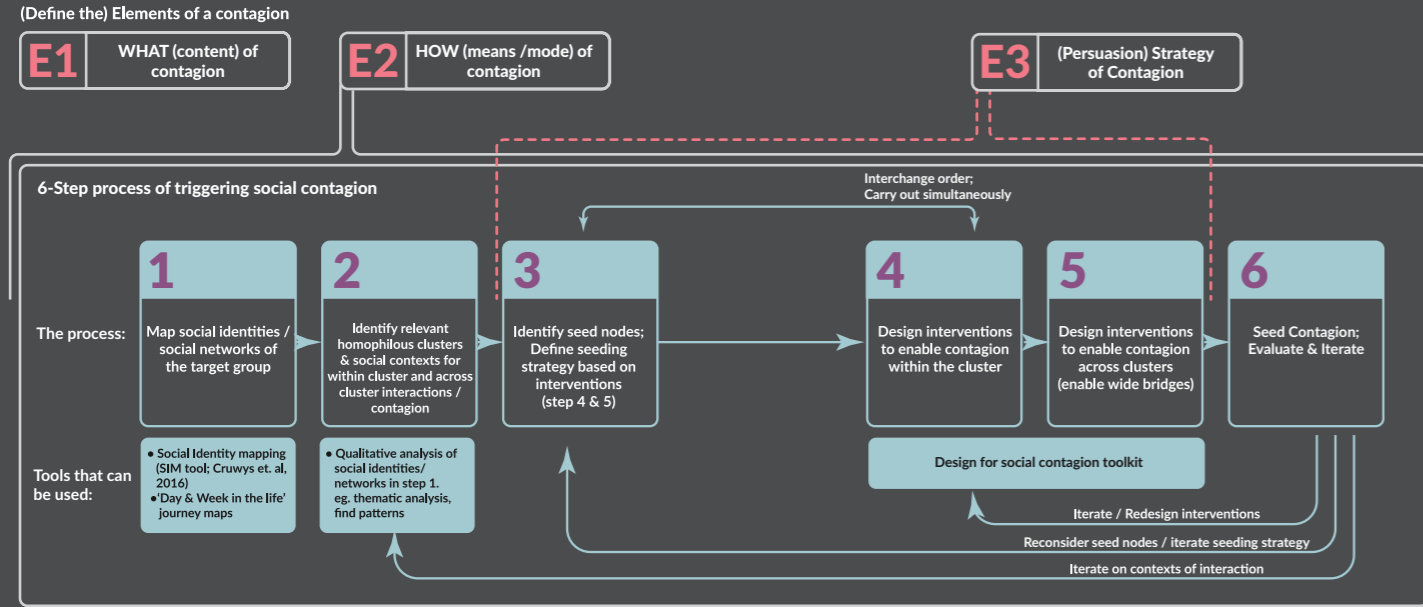

Context (contextual factors/ situations)
Economy, Market, Politics, Trends
Social norms, Technologies available etc.

Psychological factors
(Personal values, beliefs, norms, attitudes etc.)

Social groups & social networks the individual is a part of.

Figure 1: Factors that influence an individual's decision-making

Top-left panel (pages 8–9)

Design for Social Contagion
FRAMEWORK

To ensure positive outcomes and a far reach, the social influence and social contagion process needs to be well-curated and designed for. The 'Design for social contagion framework' (shown below) outlines actionable steps to design the contagion process. It includes 3 key elements that need to be thought off while shaping the contagion, and a 6-step process that helps to visualise (and design) how the contagion will unfold in a particular context. The framework builds on complex contagion theory.

The 'Design for social contagion' toolkit (presented subsequently) helps in defining the 'Strategy element (E3)' of the framework and aids in designing the interventions for contagion (Step 4 & 5 of the process).

(Define the) Elements of a contagion

E1 — WHAT (content) of contagion

E2 — HOW (means /mode) of contagion

E3 — (Persuasion) Strategy of Contagion

6-Step process of triggering social contagion

Interchange order; Carry out simultaneously

The process:

1 Map social identities / social networks of the target group

2 Identify relevant homophilous clusters & social contexts for within cluster and across cluster interactions / contagion

3 Identify seed nodes; Define seeding strategy based on interventions (step 4 & 5)

4 Design interventions to enable contagion within the cluster

5 Design interventions to enable contagion across clusters (enable wide bridges)

6 Seed Contagion; Evaluate & Iterate

Tools that can be used:

- Social Identity mapping (SIM tool; Cruwys et. al, 2016)
- 'Day & Week in the life' journey maps

- Qualitative analysis of social identities/ networks in step 1. eg. thematic analysis, find patterns

Design for social contagion toolkit

Iterate / Redesign interventions
Reconsider seed nodes / iterate seeding strategy
Iterate on contexts of interaction

Top-right panel (pages 12–13)

Identify seed nodes; Define seeding strategy

3 Having identified the social networks and contexts of contagion, the next step is to identify seed nodes (people who can initiate the contagion; within and across clusters). These can be selected based on the intent & content of contagion e.g.: most influential people, people with biggest networks, people already activated, entrepreneurial & active people etc. This step goes hand-in-hand with steps 4 & 5. Define seeding strategy. Use clustered seeding.

Design interventions to enable contagion within the clusters

4 Use this toolkit to design (facilitate) interactions (in the identified social contexts) between people within a cluster. (Note: people need reinforcement from multiple sources before they adopt the behaviour; design interventions accordingly).

Design interventions to enable contagion across the clusters

5 Use this toolkit to design (facilitate) interactions (in the identified social contexts) between people from different clusters. For effective spread of the behaviour ensure there are wide bridges (maximum number of overlapping ties between the clusters).

This 'Design for social contagion' toolkit helps to design these interventions that can enable the contagion of the target behaviour.

Seed the contagion; Evaluate & Iterate

6 After seeding the contagion, evaluate the spread and effect of the interventions. If required, iterate on the interventions, seed the intervention in different social contexts or use a different seeding strategy.

Bottom-left panel (pages 10–11)

The 3 Elements of contagion

E1 — WHAT of contagion

This includes defining the content or the target behaviour that needs to be spread amongst a population. In the case of gas discontinuation in the built environment, the WHAT can be the contagion of positive attitudes or decision towards shifting to greener energy alternatives. It can also be determined by understanding the residents' motivations and apprehensions towards the gas discontinuation.

E2 — HOW of contagion

The HOW refers to the means / mode of contagion. This includes visualising and designing the network dynamics of the contagion – how the contagion will unfold, who will initiate it, how will it spread, where will the contagion take place. The 6-step process outlined subsequently helps in defining this element of the contagion.

E3 — STRATEGY of contagion

While the HOW component refers to identifying the who's and visualizing the process of how the contagion will unfold, the strategy component involves devising persuasive and tactical ways of inducing the behaviour. This component goes hand-in-hand with step 3, 4 and 5 of the 6-step process described. The inspiration cards in this 'Design for social contagion toolkit' help to define this element.

The 6-step process (to define E2 & E3)

1 — Map social identities & networks of the target group

In order to understand how contagion can be seeded, the first step is to understand people's social networks; which can be defined using their social identities. Use tools such as Social Identity Mapping (SIM tool; Cruwys et. al, 2016), Ethnographic Social network mapping (Trotter II, 1999) or methods like Day-in-the-life or Week-in-the-life mapping to identify the target group's social identities and the social networks these engender.

2 — Identify relevant homophilous clusters & social contexts

Analyse (qualitatively) the social identities and networks derived in step 1 to define relevant homophilous clusters (groups where individuals have similar characteristics, e.g. cultural background, physical appearance, tastes etc.). Based on the clusters identify two types of social contexts where interactions to spread the behaviour can take place-1) which enable spread of behaviour within the cluster; 2) which enable spread of behaviour across different clusters.

For example, if the relevant identity of the target group is based on the houses they live in (similar people live in the same building / locality), the context for within cluster contagion is the vicinity of the houses. Contexts for across clusters contagion are public spaces like the church, gym, busstops, activity centres etc., where individuals from different vicinity clusters interact.

(continued..)

Bottom-right panel (pages 14–15)

Design for Social Contagion
TOOLKIT

This toolkit is developed to help municipalities in designing interventions that stimulate social contagion of favourable attitudes and opt-in towards gas discontinuation amongst residents. It should be used along with the 'Design for social contagion framework presented before. The toolkit provides inspiration to devise persuasive and tactical ways of inducing the target behaviour (i.e. defining the STRATEGY element -E3 of the framework; and Step 4 & 5 in HOW process).

The interventions can be designed for both, the attitude formation phase and the decision-making phase. In the attitude formation phase, several small interventions need to be designed, which engage the users over a longer time and build commitment; overcoming the apprehensions and other barriers to adoption. In the decision-making phase, interventions can be designed to build social pressure, prompting positive decisions.

Contents of the toolkit

The toolkit consists of 3 items:

1) A deck of inspiration cards

2) A set of 5 design canvases (that guide the design process); and

3) This handbook

This handbook outlines how to use the inspiration cards and canvases to design the interventions. The next section outlines the anatomy of an intervention (for social contagion), as identified through the project – which needs to be kept in mind while designing the interventions. Subsequently, the the inspiration cards and canvases are presented.

Page 16

ANATOMY of an intervention

Figure 2 outlines the anatomy of an intervention aimed at stimulating social contagion. Each intervention should:
- Fulfill 2 criteria
- Follow 4 design principles
- Constitute 4 design components

These elements help in guiding the design process and ensuring that the interventions can enable social contagion of the target behaviour. These can also serve as evaluation criteria while selecting concepts. The elements in the anatomy of an intervention are explained in brief next. In-depth explanation and strategies that can be used to design each of these are captured in the inspiration cards.

Before starting the creative session, each team member should familiarise themselves with this anatomy of an intervention (either go through the inspiration cards related to each element, or this handbook).

Design Criteria

Each intervention needs to meet two criteria:

1) Enable the target behaviour: It needs to meet the overall goal of the contagion – Enable the target behaviour to overcome apprehensions towards or barriers to adoption. Examples of target behaviour are 'understand the urgency to act towards gas discontinuation', or 'comprehension of alternative technologies'.

2) Enable contagion of the behaviour: Each intervention needs to give rise to (prompt) social contagion of the target behaviour (defined in criteria 1) amongst the target group.

Note: While social contagion can be used to spread positive attitudes, it can also spread resistance. Thus, the interventions need to be well-thought through, and the negative impacts / obstacles should be foreseen and mitigated.

Page 17

An intervention aimed at social contagion should

fulfill
2 Criteria

| Enable the target behaviour | Enable contagion of the behaviour |

follow
4 Design Principles

| Scale down : Translate global to local | Comparison is key: enable (sub)conscious comparison |
| 3S's: Simple, slow and steady win the race | Make it desirable, silly! (design for FOMO / Envy) |

constitute
4 Design Components

ACTIONS	SPREAD MECHANISM
Tasks / Activities / Challenges/ Campaigns	Direct / Indirect social pressure
INCENTIVES	TOUCHPOINTS
Rewards, Benefits	Physical / Digital

Figure 2: Anatomy of an intervention aimed at social contagion

Page 18

Design Principles

Since designing interventions for social contagions is an unhackneyed approach to activating residents towards gas discontinuation, the following four design principles are defined in order to streamline the ideation process.

1

Scale down: Translate global to local

Prompt action and pro-active adoption is pursued only when something affects you directly or is relatable. Thus, global phenomenon like climate change and sustainability need to be translated into locally / individually relevant and recognisable issues, in order to capture people's attention and trigger action.

2

3 S's -Simple, slow and steady win the race

In order to encourage people to take action, it is necessary to reduce the effort they need to put in. The target behaviour and the interventions should be easy to do, use, remember and understand; and should be incremental (and continuous) in nature to build commitment amongst the target group towards the desired behaviour.

3

Comparison is key: enable (sub)conscious comparison

People constantly compare and evaluate themselves in terms of the appropriateness of their abilities, behaviours and beliefs to those of similar others. They use social norms (social proof) to guide their behaviours and manage their social identities. Thus, in order to achieve social contagion, this (sub) conscious comparison to people who have adopted or are committed towards the target behaviour must be stimulated.

4

Make it desirable, silly!

People need to have both, intrinsic and extrinsic motivations to opt for sustainable options. Making the behaviour desirable (by designing incentives) can help in prompting adoption as well as inducing emotions such as fear of missing out, envy, insecurity etc., upon comparison. These in turn increase the desirability of the behaviour, stimulating adoption and paving the way for social contagion.

Page 19

Design Components

Interventions aimed at social contagion should consist of four key components, which give shape to the design principles and design criteria. Each component needs to be well-thought of and designed for, to achieve favourable outcomes.

A

Action

This component defines 'What do people need to do / see' in order to engage them in the desired behaviour (meeting the 1st criteria – enable the target behaviour). This can be in the form of tasks, activities, challenges, campaigns or installations, wherein people are asked to do (create, solve, collect, share, experience etc.) something; engaging them directly or indirectly.

S

Spread Mechanism

The Spread Mechanism defines how the Action or the target behaviour will spread amongst the target group. This can be in the form of direct or indirect social pressures.

I

Incentive

For each intervention, intrinsic and extrinsic motivations that make people want to do the target behaviour or participate in /perform the Action, need to be explicitly designed. Along with motivating people to participate in the Action, these should stimulate comparison amongst peers.

T

Touchpoints

Touchpoints form the interface between people and the target behaviour, defining 'How will people do the Action or spread the behaviour'. These can be physical or digital - in the form of artefacts, environments or interpersonal encounters. Explicitly designing touchpoints can ensure well-curated interactions & experiences, which are necessary to build positive attitudes.

Page 20

INSPIRATION CARDS

The inspiration deck includes cards that capture the design criteria, design principles and design components. Further, for each design component (Action, Spread mechanism, Incentive and Touchpoint), there are several categories of strategy cards, each of which outlines a persuasive strategy that can be used to design the specific component. These cards provide inspiration during the creative session, and should be used along with the canvases.
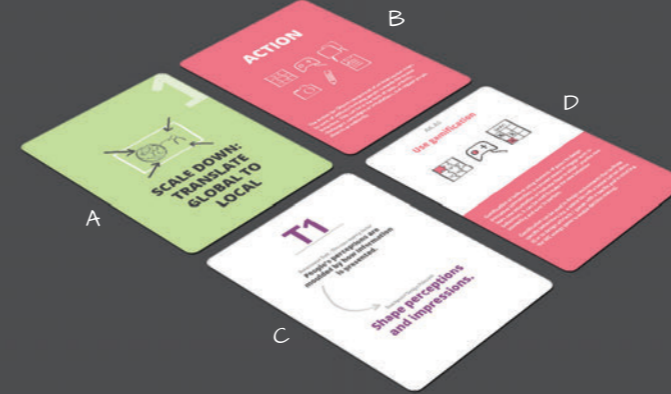
Figure 3: The four type of cards in the Inspiration card deck

Page 21

There are four types of inspiration cards (as shown in figure 3):

1) Design criteria and design principle cards (Figure 3A):
Each design criteria and design principle is captured on one card. The back-side gives a brief explanation of the design criteria /principle. Each participant should familiarise themselves with these before starting the creative session. Place these cards in the centre (or where they are visible to all), such that they are easy to refer to during the session.
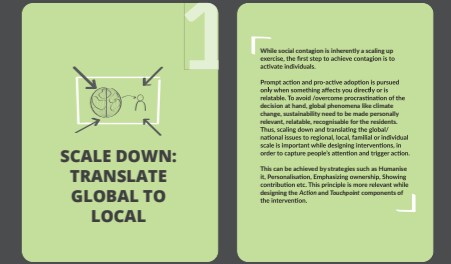
2) Component index cards (Figure 3B):
Each design component is explained on 1 or 2 Component index cards. These state what the component is, how to brainstorm ideas for the component, and the explanation of the categorisation (and categories) of strategies under that component. Each component is assigned a specific colour.

Page 22

3) Category Index cards (Figure 3C):
The categories under each component have a category index card. The Component design principles (e.g.. A1, A2,T1,S1,S2 etc.) are outlined on the front side. The back side provides the list of relevant strategies that fall under that category. These follow the colour scheme based on the design component they belong to.
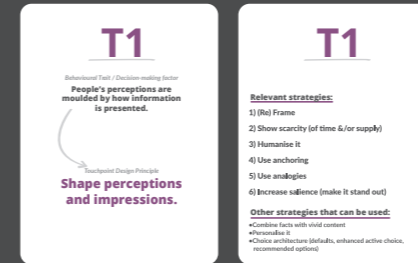
4) Strategy cards (Figure 3D):
Each strategy card outlines one persuasive technique relevant to the design component (indicated by the colour). Further, the front side outlines the Categories / Component design principles (A1, A2, T1 etc.) that the strategy falls under (right above the name of the strategy), along with the explanation of the strategy. The back side provides an example of the application of the strategy and suggestions on how the strategy can be used.

Page 23
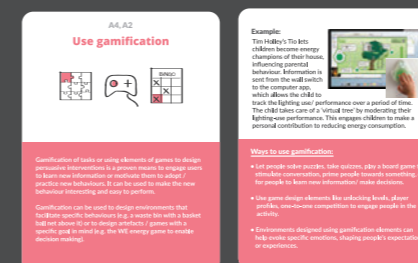
DESIGN CANVASES

A set of 5 design canvases is developed to guide the design process during a creative session. Each canvas covers one step of the design process, namely:

1) Define design question
2) Brainstorm ideas
3) Generate concepts for contagion
4) Evaluate and select concepts
5) Detail the selected concepts

A step-by-step explanation of the canvases, and how to use these along with the inspiration cards is provided in the next section.

USING THE TOOLKIT

This section walks you through the process of using the toolkit. Each canvas and the steps it includes are outlined with an explanation of what the steps entail and recommendations of how to use the steps along the process. Filled-in examples are used to illustrate what the output of each step would look like.

STEP 0: PREPARATION & FAMILIARISATION

• The toolkit is designed to be used during a creative session to design interventions aimed at social contagion. It is recommended to **use the toolkit as a team (of min. 3 people).** However, it can be used by individuals as well. In case there are more than 3 participants, **breakout into smaller teams of 2-3 participants while carrying out steps 2 and 3.**

• Although the toolkit is designed for municipal officials and is structured in a way that they can understand the process and do it themselves, **a mixed group of participants** with a few designers and municipality officials would lead to better outcomes.

• The ideal **duration** for the creative session would be **4-5 hours (or a day long workshop)** with several breaks in between. Block out enough time for the session, well in advance.

• The workshop **can be carried out physically (offline) or digitally (online)**; through a creative platform like Miro, or Mural).

• For an offline workshop, book a room big enough such that each breakout team has a working space of its own. **Things you need during the offline session**:

    -Few decks of inspiration cards
    -Prints of the set of canvases (print a set for each breakout team)
    -This handbook for reference
    -Post-its
    -Writing / drawing stationery (different colour markers for voting)
    -Different colour dot stickers (for dot voting)

• For an **online workshop** on a platform like Miro, the organiser (or facilitator) should **create digital workspaces for each breakout team** using the set of canvases (as shown in figure 4).

• It is recommended to **have a facilitator** for the creative session, who can manage, monitor and guide the process. Having a facilitator with a design training would prove to be advantageous. If not, the facilitator should be familiar with the purpose and process of the workshop. They can be assigned the responsibility to go through the design process or the handbook well in advance to be able to explain the process and details to the participants during the session.

• **Short energizers** should be incorporated in the process, in order to stimulate creativity. **Take a short break after each step.**

• Before starting the session, the **participants should familiarise themselves with the purpose and process of the session.** They can be given a short presentation by the organiser (facilitator), or can go through this manual.

• It is a **must that each participant understands the anatomy of an intervention** and the different types of inspiration cards. **Allot specific time for this familiarisation phase.** Once all participants have understood the anatomy of an intervention (the design criteria, principles and components), the creative session can begin.
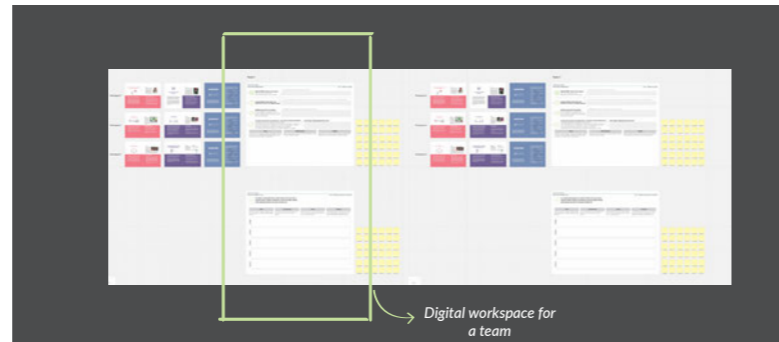

Digital workspace for a team

Figure 4: Teamwise workspace set-up for an online workshop on Miro.

STEP 1: DEFINE DESIGN QUESTION

Use Canvas 1 for this step. Carry out this step with all the participants.

Before starting the brainstorm, define the design question for the creative session. Through discussion, the team should identify what would be the content for contagion or what is the goal /target behaviour to be achieved through the contagion.

This can also be pre-defined by the project owner or through research carried out in field (for example, on the motivations and apprehensions of residents). This canvas helps the team to define this design question through 4 sub-steps (1A, 1B, 1C, 1D).

1A Define the overall GOAL of contagion / project
Think of what is the target behaviour that needs to be spread?
This can include the broad objectives of the team like:

> Gas discontinuation; ensuring residents understand the urgency to act towards climate change; building trust amongst residents; improving the awareness amongst residents about the energy transition.

1B Define the specific design question/ problem/ content for contagion (the WHAT)
In order to brainstorm ideas, the overall goal needs to be narrowed down into specific aspects. The more the specific the design question, the better. This specific design question (or intent) shall become the 'content for contagion' or 'WHAT needs to be spread'.

After defining the overall goal, think of specific underlying aspects of the goal. Think of smaller problems that fuel the goal and need to be overcome. Are there specific perceptions or barriers that lead to inaction? As a group discuss these specific design questions / problems you want to tackle. Select 2-3 questions that you will target during this brainstorm session. Examples of specific problems could be:

> Myths about technologies amongst residents, inability of citizens to visualise the future, negative past experiences of the residents, language barriers, loss/risk perceptions amongst residents.

1C Translate the specific design question into HOW TO / HOW MIGHT WE questions
The next step is to convert the specific problem(s)/ design question(s) into 'How-to' or 'How might we' questions.
How-tos are problem statements written in the form of questions that support idea generation. Reformulating the problems into how-tos helps to gain a comprehensive overview of the problem and answer the question (generate ideas) more easily.

If the specific problem is related to myths about technologies, examples of How-tos / How might wes are:

> How might we curb the spread of myths? How to devise myth busters? How to ensure residents do not believe myths about the technological alternatives? How to ensure people do not create and spread myths about energy alternatives / gas discontinuation? How to ensure accurate comprehension about technology, costs and processes, to avoid myths?

1D Identify the social contexts for contagion
In order to spread a behaviour within and across groups, there must be social interactions between different people. Thus, the social contexts of where these interactions take place (based on the social identities and social networks of the target group) need to be defined. The interventions need to be specifically designed for and seeded in these contexts to achieve successful contagion.

The social contexts of interactions between residents of a neighbourhood (where interventions should be designed for) could be:

> Vicinity of the house, common areas (mailboxes, garbage area, car parking), Church, Gym, Community garden, School, Annual community meetings etc.

After defining the How-tos and social contexts, move to step 2 (Brainstorm ideas).

STEP 2: BRAINSTORM IDEAS

Use Canvas 2 and Action, Spread Mechanism & Incentive inspiration cards for this step. Breakout into smaller teams of 2-3 participants.

Upon defining the specific design question / problem, the next step is to brainstorm ideas. At first, copy the How-to / How-might-we questions defined in step 1C in the space given on the canvas, such that they are easy refer to.

2A Select and distribute inspiration cards amongst participants.
In order to make the process less overwhelming, it is advised to narrow down to relevant Action inspiration cards. As a team go through the category index cards of each Action category (Figure 5) and select the ones that you think can help in answering the specific design question (1C).

After selecting the category(s) distribute the listed strategy cards amongst all participants. Each participant can get 1-3 Action cards. Alternately, each participant can get 1 or 2 cards from each of the Action categories to ensure all routes of achieving a solution are covered during the brainstorm. Similarly, distribute the Spread mechanism and Incentive cards (1 - 3 cards per person). Note: **use both S1 & S2 spread mechanism categories.** You do not need to make a selection for this.

Allot specific time for participants to go through their cards. Already write down the first ideas you have while reading the cards. Once everyone is done reading them, each participant can tell the others about the strategies they read in brief.
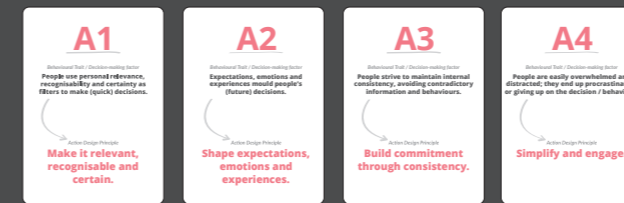
2B Brainstorm Ideas
Once each participant has discussed their cards, start the brainstorm session. Keep the design criteria, design principles & design component index cards in the centre or visible to all, such that they are easy to refer to.

Use the strategies you read to come up with ideas to answer the How-tos. You can think of any of these components; they don't need to form a single concept as yet. Consider this as a parking lot for all ideas - big, small, whacky, simple, elaborate. Keep the social contexts of interaction in mind while ideating.

Since the touchpoint cards include nudges and behavioural economic principles, which are more useful in making the concepts more effective, it is recommended to use them later in the process. However, they can also be used for inspiration in this phase, if the participants do not find it overwhelming.

To make the brainstorm more interesting, the cards can be rotated. Each participant gets one card for 40-60 seconds, where they brainstorm ideas related to that particular strategy and then pass it on. Ensure that the participants are already familiar with the strategies for this.

Figure 6 shows what the outcome of a brainstorm would look like.

Figure 5: Action categories (Category index cards)

Figure 6: An impression of what the outcome of a brainstorm session would look like.

STEP 3: GENERATE CONCEPTS FOR CONTAGION

Use canvas 2 & 3 for this step; carry on in the breakout team.

3A Discuss ideas generated in step 2
Once everyone has put down all ideas, present (discuss) your ideas to the others in the smaller breakout team. Use the discussion to build upon each other's ideas and group similar ones.

3B Mix and match to generate concept lines
As a team, mix and match ideas and generate concrete concept lines – with all the components specified for each concept– Actions, Spread mechanisms and Incentives. Also list the key Touchpoints that are needed for the concept. Use the spaces provided in the canvas to create the concept lines with post-its from step 2 itself. Figure 7 outlines what the outcome of this step would look like.

Figure 7: Impression of what the outcome of step 3 would look like.

STEP 4: EVALUATE AND SELECT CONCEPTS

Use canvas 4 for this step. Do this step with the whole team (all participants).

4A Discuss concept lines generated in step 3
Each breakout team should present their concepts (3 best ones) to the other teams. Further, build upon each other's ideas, discuss pro's & con's, add / subtract details.

4B Define evaluation criteria
After discussing all concepts, define the (qualitative) evaluation criteria for concept selection based on the goal of the contagion, other constraints or the design principles (with the whole team). Examples of the evaluation criteria are:

> How well do the concepts help in the goal of enabling comprehension of technology, costs, process? or overcoming myths?, Ease of implementation, Cost of implementation, Reach of the contagion (maximum spread), Locally relevant, Desirable, Triggers contagion etc.

4C Evaluate and shortlist concepts
Select one of the three concept evaluation/ selection methods outlined on canvas 4 - C-box, Dot voting, or Ranking. Use the selected method to evaluate the concepts and shortlist the high potentials. The top potentials can be taken forward to the detailing stage.

Use canvas 5 for this step along with the Touchpoint inspiration cards. This step can be carried out in smaller teams (or the team who is assigned the task to take these concepts forward). This step includes the first round of detailing of the concept.

5A **Visualise how the contagion will unfold**
Use the given space to further refine and detail the concept. Think of 'Who will initiate the contagion/ Action? How, where and how often will the Action take place? To whom will the initiator spread the Action / behaviour? Why and how will they spread it?

5B **Detail the Touchpoints**
Use the Touchpoint inspiration cards to detail / visualise all the touchpoints that will be used in the concept (to carry out the Action, spread the behaviour and incentives).

The touchpoint strategies build upon nudge theory and behavioural economics principles, that can help in making the touchpoints more effective (ensuring people pursue the behaviour). Incorporate as many of the strategies as you can to make the behaviour compelling.

After this round of detailing, the project team can prepare budgets, start prototyping and validating the concepts. These can undergo several rounds of iterations. The concepts can also be modeled using quantitative network simulation techniques to predict outcomes, based on the social contexts of the contagion (social networks of the target group).

Continue with the 'Seed the contagion, Evaluate and Iterate' steps (step 6) of the 'Design for social contagion framework'.

32

Designed by Jesal Shah

33

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