Future vulnerability

Lifestyle Driven Scenarios and Emerging Vulnerabilities in the UK Energy Sector

2023

How will the changes of the future reshape our relationships with energy? What new vulnerabilities might emerge as we shift towards net zero?

This report presents a foresighting project that explores of how lifestyles might change in the future, and how this will shape our relationships with energy.

It delivers a set of strategic visions for the energy sector that can be used as tools to embed vulnerability considerations into future network planning.

Authored in 2023 for S**cottish Southern Electricity Networks** by:

Leila Sheldrick, Imperial College London
https://designfutures.io/

Finn Strivens, Futurall
Eva Oosterlaken, Futurall
https://www.studiofuturall.com/

Graphic design and illustration: **Eva Oosterlaken**

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Contents

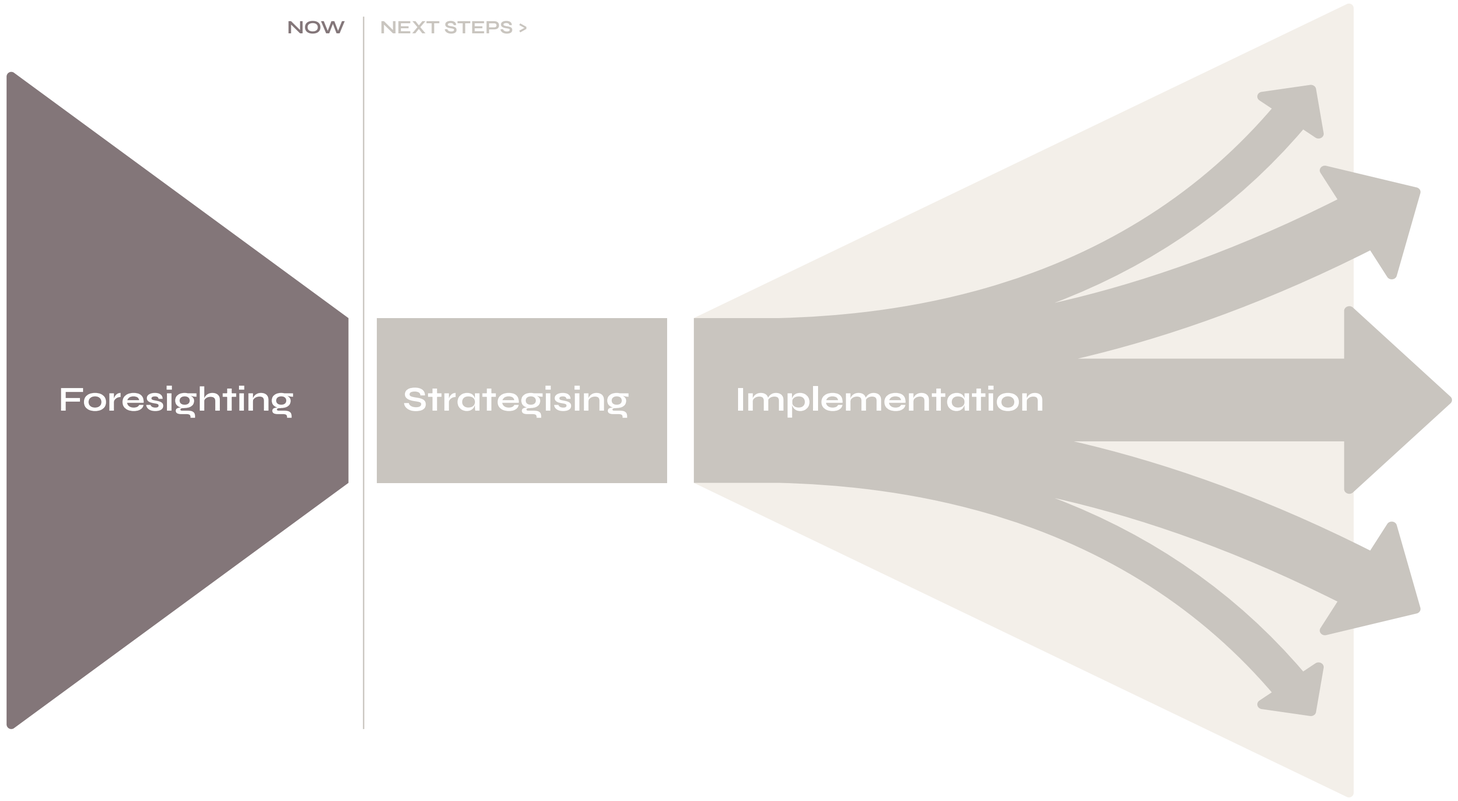
Exploring future vulnerabilities

Envisioning the possibilities of the future to develop strategies for the present - towards a just energy transition.

This work aims to make a step towards broadening definitions of customer vulnerability to acknowledge contextual vulnerabilities - the ways that factors such as values, living contexts and relationships influence people's ability to get the support they need.

This project is a first step in considering customer energy vulnerability from a new perspective. Foresighting methods were used to explore energy-independent factors that might affect people's lives. This human perspective unveils possibilities for future lifestyles that inform an expanded understanding of the relationships people might have with their energy.

The scenarios and vulnerabilities presented in this report are intended as a launchpad for future exploration into designing for contextual vulnerability. They raise key issues, present recurring themes, and pose big questions - all of which can help identify and catalyse the range of interventions needed in this space to realise a fair future for all.



Exploring multiple possible futures to understand new factors that may shape how people are vulnerable to energy shocks in the future

Applying scenarios and vulnerabilities to explore how to most effectively support vulnerable customers in the future

Developing a range of possible projects to deepen the insights, build innovative services, and shape sectoral approaches to supporting vulnerable customers

Summary of findings

Signals of changing lifestyles

Through an exploration of emerging trends and societal shifts, this report highlights three cascading lenses that frame how lifestyles might change in the future:

Changing Self

The way we view ourselves, and what drives our motivation and identity are reshaping societal expectations and lifestyles.

Changing Home

The ways we live and work in our spaces are changing the shape of homes.

Changing Connections

The way we build relationships to those around us is changing the shape of society and how we live day to day.

Summarised on pages 20-23, these signals highlight the unstoppable forces shaping society, and the greatest uncertainties that present opposing possibilities for the future.

Energy Vulnerability Scenarios

This report presents four future scenarios for 2050, each depicting different possible shapes of society and lifestyles.

These represent worlds with different distributions of responsibility that are either *service driven* (things are provided for people), or *subsistence driven* (people provide things for themselves) - and in which our communities are either primarily *collective* or *individualistic*.

By using these axes to frame new worlds, the scenarios tell stories of energy experiences that different people might encounter in their day to day lives.

Summarised on pages 6-14, these are not predictions, but examples of the many possibilities inside our future energy systems.

Emerging contextual vulnerabilities

Twelve emerging vulnerabilities have been extrapolated from the scenarios. These show how individuals might become *contextually vulnerable* - by becoming vulnerable to factors beyond their control such as space, time, and geography.

These vulnerabilities draw on the lenses of the three signals to demonstrate the overarching impact of *access to resources, links within communities, and levels of personal agency* on individual vulnerability.

Summarised on pages 15-17, these can be used to help consider the unintended consequences of our society.

As actionable prompts, they provide a framework for designing more equitable future energy systems.

Recommendations

By looking across the signals, scenarios and vulnerabilities, this report concludes by highlighting three clear themes for future work:

1. Use the vulnerabilities to understand **diverse implications of different customer contexts** and their role in shaping stability and access to resources.

2. Invest in understanding **changes to customer values and relationships,** and their role in shaping new forms of community.

3. Develop a **vision for sectoral leadership** and the way in which the energy sector might evolve to support customer agency.

Summarised on page 18, these recommendations form the first steps for developing just energy transitions for all the people in the system.

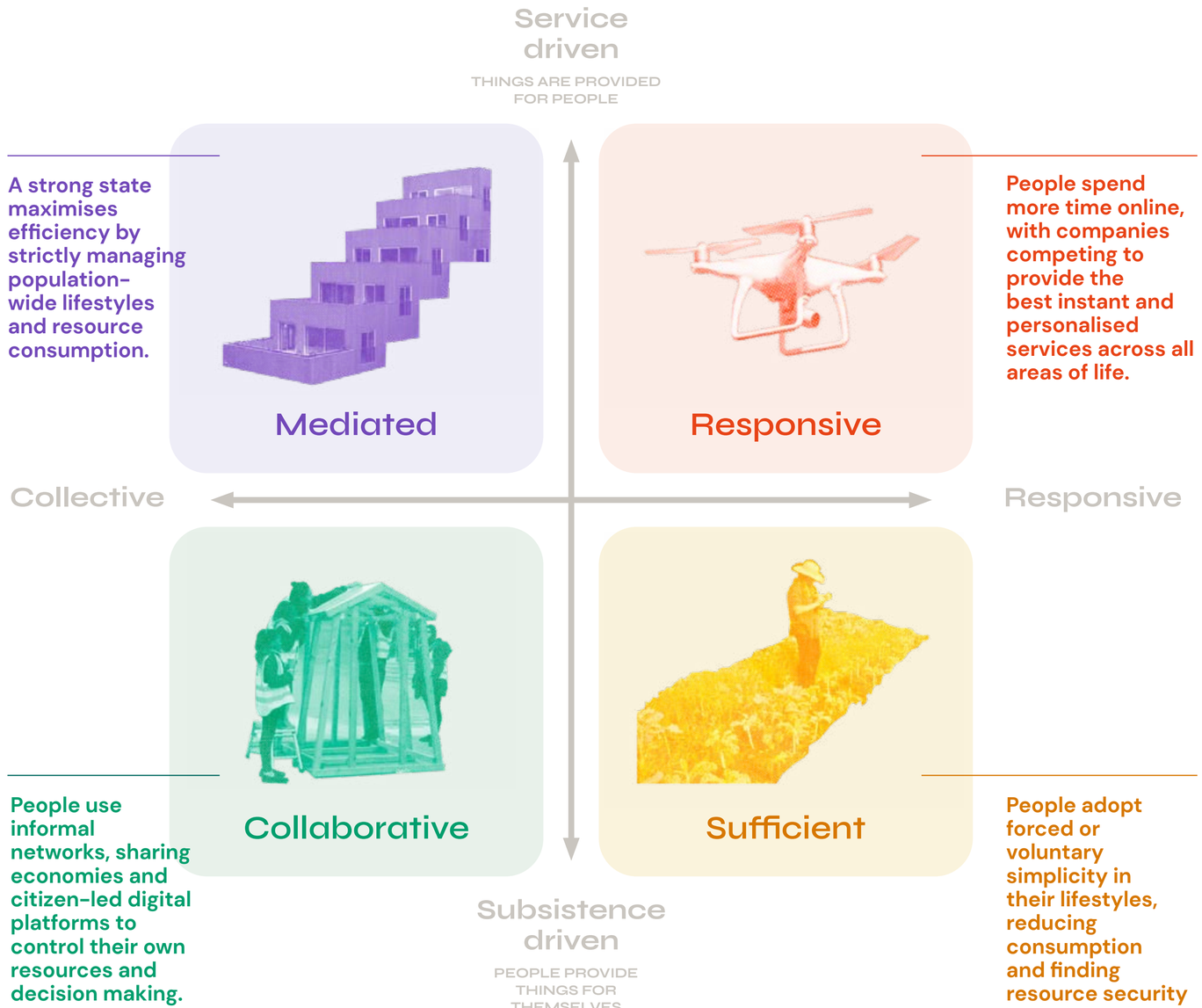
Scenarios

These four energy vulnerability scenarios for 2050 explore how lifestyles might change in the coming decades, and how this will in turn shape interactions with energy.

These scenarios demonstrate four examples of different societies built on two axes representing critical uncertainties. This approach gives four distinct and different perspectives on how our world may reshape in the coming decades.

Each scenario has undergone a period of transition from today's world. Some factors such as an ageing population and climate change are key unstoppable forces, and drivers of lifestyle change considered across all scenarios. However, other uncertainties are pulled to extremes to give a variety of possibilities. All four scenarios are depicted at an equilibrium state where a functional system has fully emerged from what came before, and all four assume that we are living within planetary limits.

Whilst none of these scenarios are likely to fully come to pass, it is most likely the future will be some combination of all four. These scenarios therefore bring imagined human stories to life as a way to challenge existing assumptions about the future and to identify both emerging risks to customers, and opportunities for innovation.



Mediated

In this scenario people have limited control of their individual lives and energy usage. A strong state maximises efficiency and sustainably manages resource consumption across the whole population.

Services are provided at scale for greater efficiency, making them more consistent between households and offering limited choice in service provider or opportunities for switching. Alongside the government, a few large organisations hold power to manage service provision and quality, particularly those in control of resource production. The need for scale has also driven widespread urbanisation to enable greater efficiency.

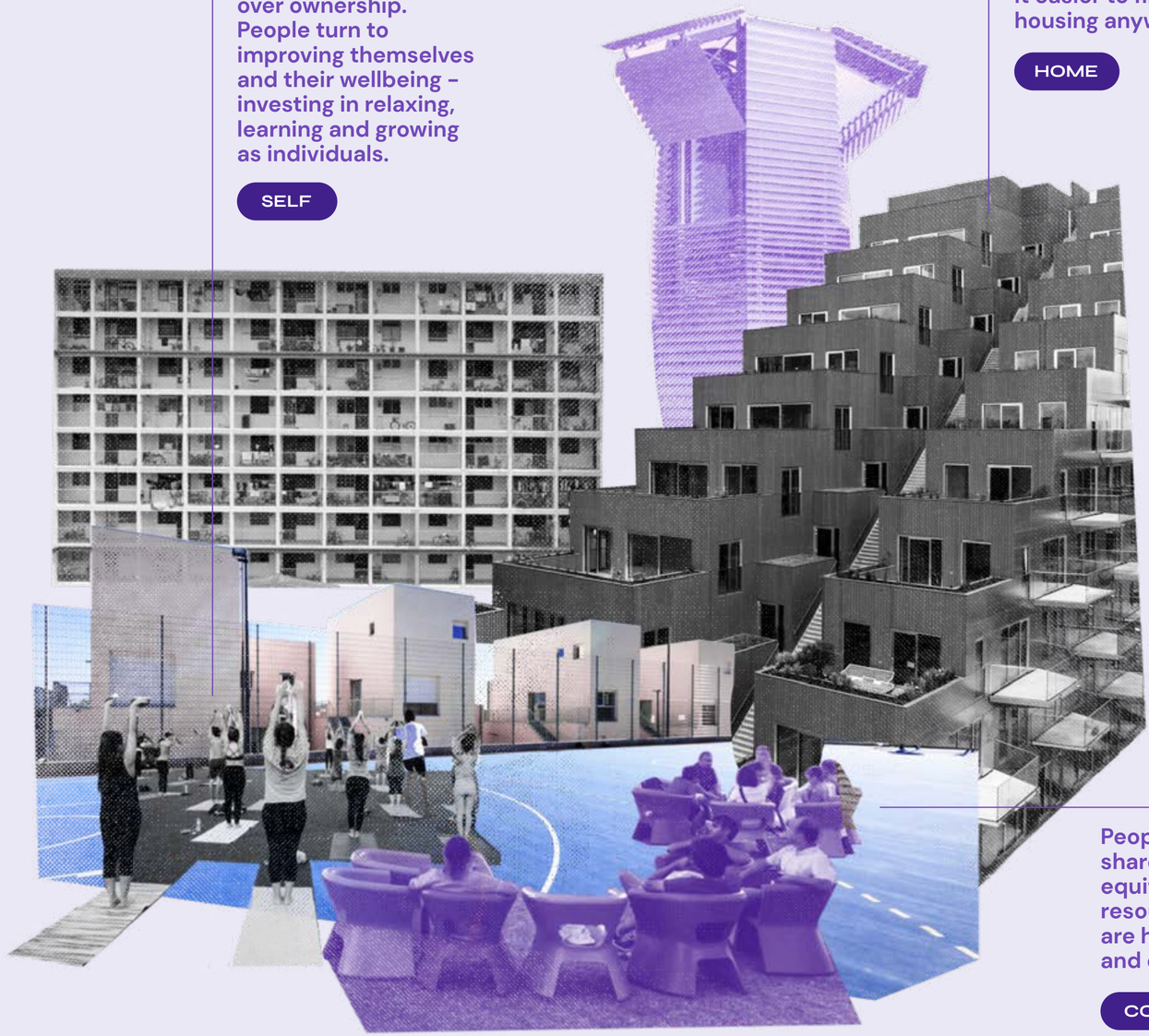
The government takes a strong role in providing for everyday needs with high levels of taxation. To maximise resource efficiency each family or citizen is provided with an individual provision of energy, food, internet and household items on a temporary service driven model. At the end of their lifecycle all items are returned and recycled. This enables the country to manage environmental impacts and social support in a sustainable way. Upgrades to the basic services can also be purchased, but society has become less material, and shifted to increasingly value the consumption of welfare and cultural services over physical goods.

Experience is valued over ownership. People turn to improving themselves and their wellbeing - investing in relaxing, learning and growing as individuals.

SELF

Homes are built more uniformly, and at scale with sustainable materials. Social housing models make it easier to find secure housing anywhere.

HOME



People feel united over shared services and equitable distribution of resources. Connections are highly structured and easy to access.

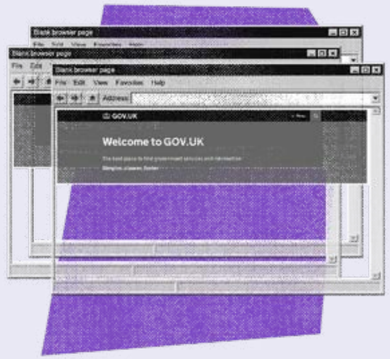
CONNECTIONS

Rhianna is slipping into another energy related depression. Her whole building has centrally set living temperatures and she feels like her agency is slipping away. Last week it was too cold and now it is claustrophobically warm. She is struggling to work and the frustration has set in. She can't open a window, or adjust the temperature. She feels utterly powerless.

VULNERABILITY SELF

Out of control

Maximising efficiency breeds a lack of control. If you can't access the services you need, or protest when things go wrong then you might feel frustrated, complacent and hopeless.



Now Rhianna is facing a cold winter because she is waiting for new insulation and retrofit installation. But she has been trying! The problem is that there are months-long waiting lists for government approved installers that are contingent on each other. The departments just aren't talking to each other.

VULNERABILITY HOME

Service misalignment

If you can't get the technology or upgrades needed to participate or meet quotas, you fall outside the system. Many energy systems are interdependent, but might operate at different speeds and with different metrics.

Rhianna's neighbourhood has strict energy use quotas calculated per family member at each address. It works great for most people, but Rhianna is often an informal carer for her younger sister who lives between different homes. She can't get this acknowledged in her quota, and can't even trade with neighbours. When her sister is staying she just has to make do with less.

VULNERABILITY CONNECTIONS

Between definitions

If you don't fit the standard template of behaviours, infrastructure, or cognition then everything gets harder. There will always be people who could use extra support or flexible standards but defy definitions.

Responsive

In this scenario people are highly reliant on electricity and internet access, and have a high degree of control over the services they are provided in a wide open market.

Instead of physical goods, time and money is invested into instant and personalised virtual services. These services, including energy provision, are provided by many different companies, which compete to provide more immediate, seamless and data driven optimisation of everyday interactions. Energy demand is higher, and electricity bills form a larger part of people's income. Each individual must find the best deal for them on any product or service.

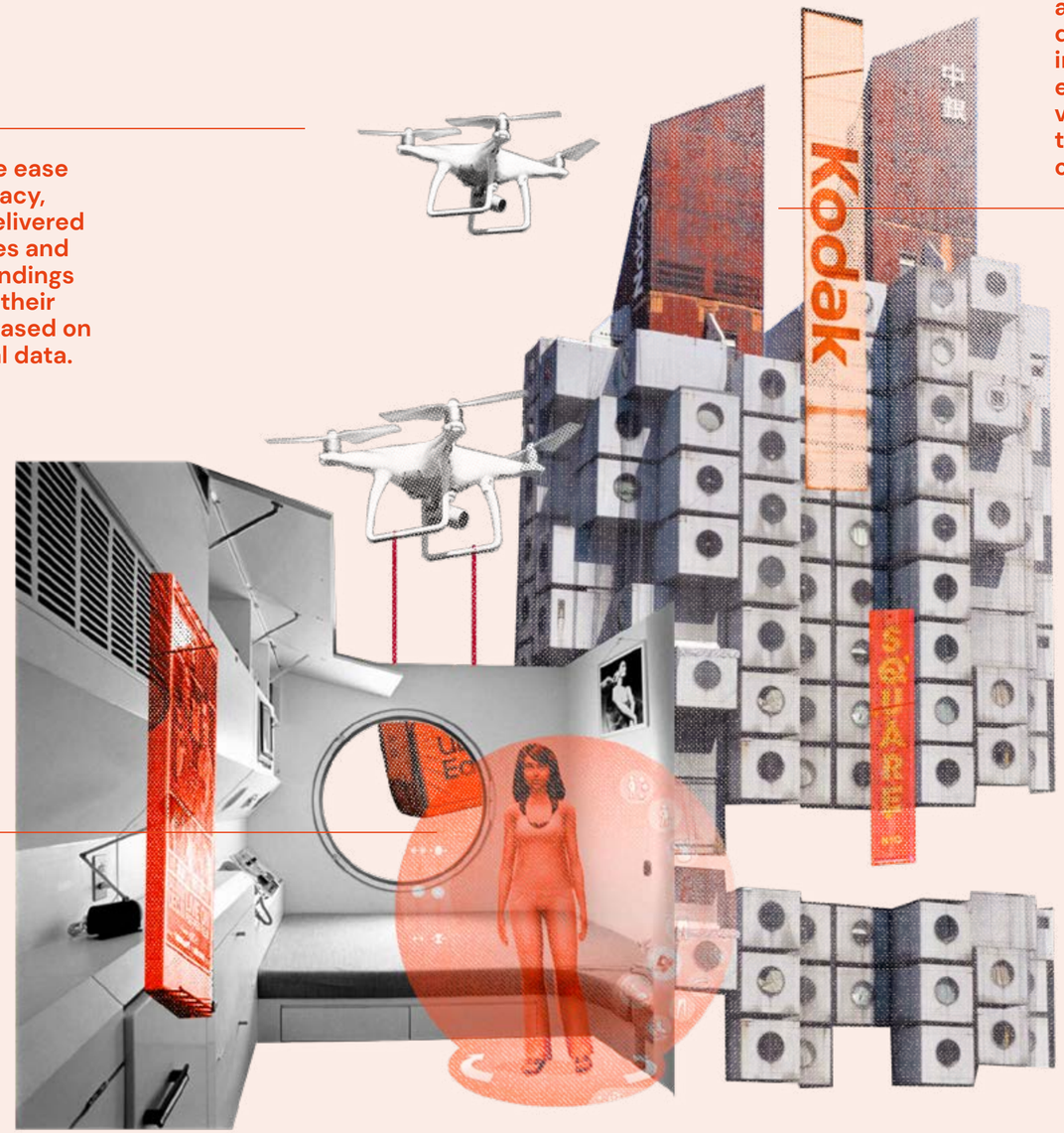
Most people work multiple jobs, often virtually, and with fewer ties to their physical environments many people live highly mobile lives. Relationships and friends are normally found through matching websites or virtual communities, and people tend to live alone, or in small family units. People are spread all over the country, although many live in dense urban centres where services are cheaper to acquire and higher quality.

People value ease and immediacy, with food delivered at meal times and their surroundings adapting to their mood - all based on live personal data.

SELF

HOME

Homes are small, bare and integrated with affordable IOT devices. People invest more energy in their virtual spaces than physical ones.



Connections are mediated through avatars and short form communication. Many people have totally different virtual and real identities.

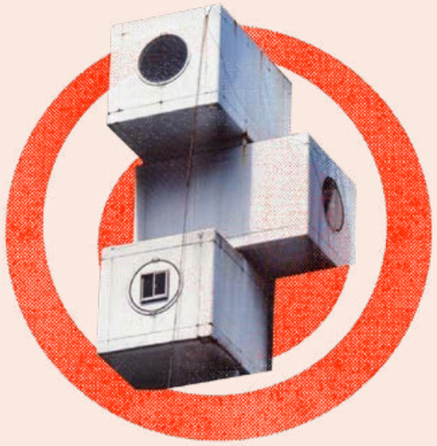
CONNECTIONS

An alert pops up on Adam's phone during his breakfast. There's been a storm and energy prices are rising fast again. Pop, pop, pop. Adverts appear from various new energy providers saying he should switch immediately. None of the deals seem great and the cheapest ones are disappearing fast. If only he could afford a service with backup provision.

VULNERABILITY SELF

Unmitigated risk

If you can't afford to mitigate risk then you are open to greater anxiety and fluctuation in price and quality of service, at worst preventing access without warning.

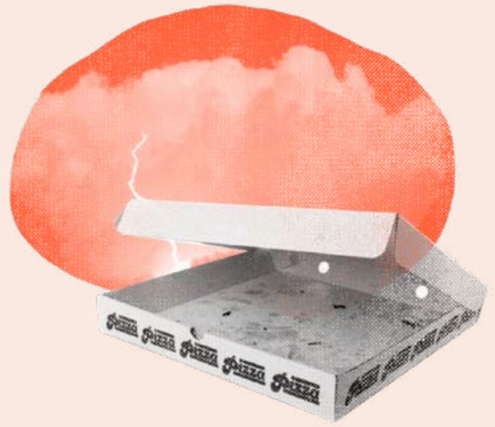


It wasn't long ago that Adam rented a flat in the countryside but it just wasn't flexible enough to thrive in his uncertain life. His part time jobs vary month by month, his bills are always changing, and rural services were slower and more expensive. Now he rents an urban pod for one, with his life saved in the cloud so he can just swap plans when he needs to.

VULNERABILITY HOME

Rural disadvantage

If you live in a rural area, access to services is more disparate and inefficient. This reduces people's resilience in a world that requires instant adaptation and rapid access.



Adam goes down with a bad flu on the same day as a storm. The drones are down so everyone is using his meal delivery service and its on surge pricing. He doesn't have a fridge and neither would any of his neighbours. Even if they did he'd never dream of knocking on someone's door - all his relationships are made virtually these days. By lunchtime he still hasn't eaten.

VULNERABILITY CONNECTIONS

Untethered

Without meaningful connections, you have no buffer to build resilience and cooperate.

Sufficient

In this scenario people adopt forced or voluntary simplicity in their day to day lifestyles. Consumption has been dramatically reduced as people find resource security in their local communities.

After a series of dramatic national resource shortages, many people learned to look after themselves, prioritising food production and forming isolated units of resource management. Day to day life is structured around essential care and stewardship - caring for buildings, the land and learning skills needed to maintain the community. These communities use very little energy, but what energy they do use is self generated, or sourced from gas or wood which are simple to operate and maintain.

Power in this society is held by families, villages and communities, with little engagement with national bodies. These small communities produce food and energy to provide for their own, and people pull together to respond to disaster. With a growing focus on survival, strong leaders tend to emerge, with strict rules and customs that the group must follow as they are totally reliant on shared resources. Land is the most important resource, and many people move from urban environments to seek it out.

Families grow their own food, generate their own energy and build or extend their own homes as their families get bigger.

HOME

New closely-knit communities form among neighbours, who all pull their weight to make group function.

CONNECTIONS

Individuals increasingly value self preparedness to cope with uncertainty and spend time learning new skills and honing their crafts.

SELF

Hannah just moved to a farm outside North Petherton, with her three children, parents and her sister's family. The community they joined was very hostile and wouldn't share food, energy and they struggled to access local services. The village was living lean, and didn't want even more people to support.

VULNERABILITY SELF

Community exclusion

Many may go without support as groups become more closed and survivalist. If you're new to a community and in search of stability, you may be excluded and cut off.

Hannah used to live in London but the costs and difficulty of living just kept rising. She was growing food and generating energy on the roof of her building but there wasn't enough space to support the whole block. They didn't have the room to store emergency resources so the whole community was exposed to food shortages.

VULNERABILITY HOME

Urban disadvantage

Limited access to space means you are poorly equipped to generate your own resources, to be independent, or to contribute to and get support from a community.

Hannah's rural family learned to live without external energy provision during the National outages of 2032, insulating their home themselves, cooking with gas canisters and sparingly using a diesel generator. The family now takes pride in their resilience and are very resistant to outside support. They don't trust external service providers, and make it very clear that they are not welcome.

VULNERABILITY CONNECTIONS

Foundational trust

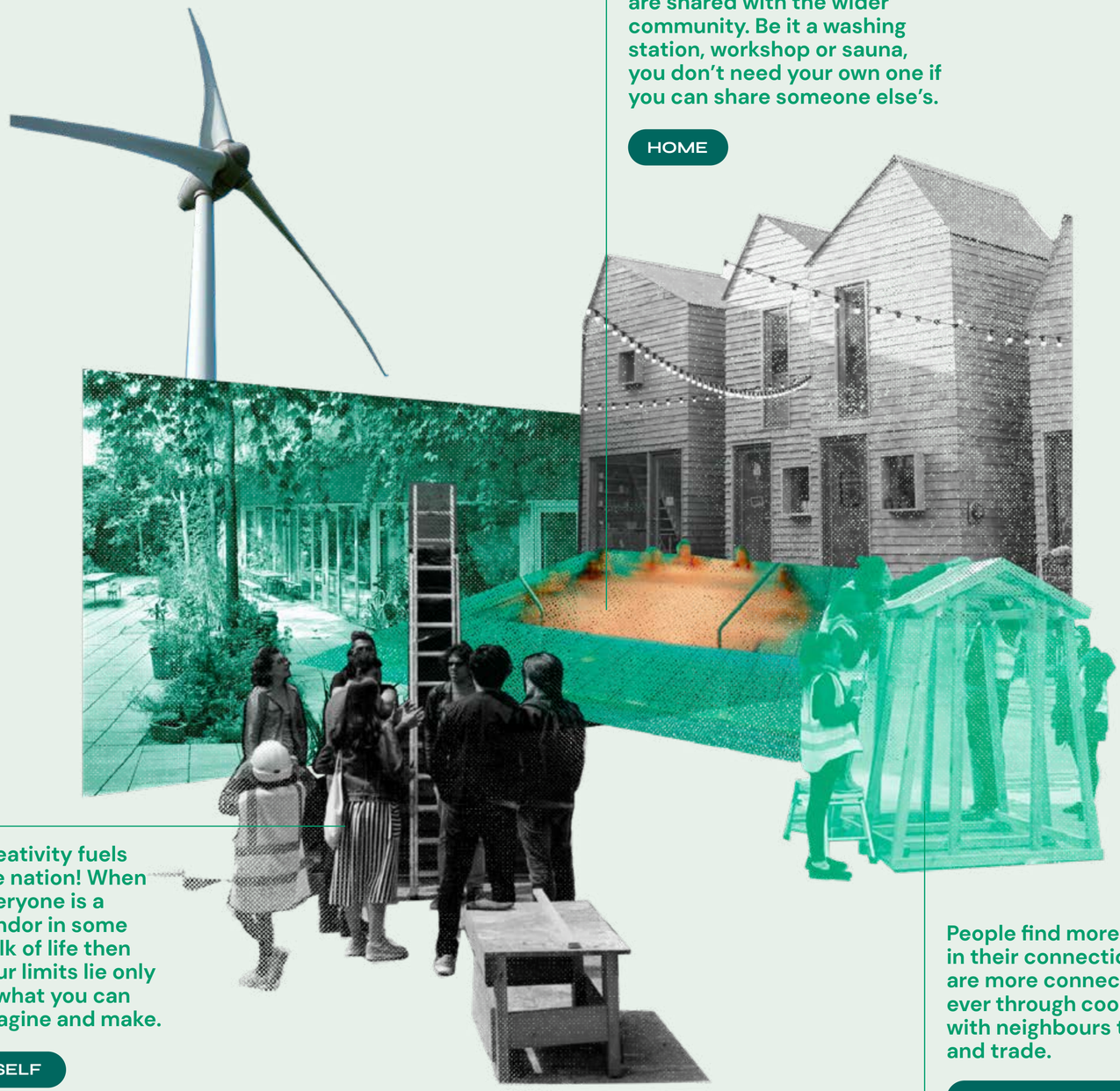
If you are operating without much capacity for error, then much more trust is needed within your energy system (such as between local communities and external bodies). This trust is also more easily broken down and needs to be carefully managed.

Collaborative

In this scenario people and their local communities control resources and decision making through locally networked and digitally enabled movements. Resources are acquired and shared through an informal economy.

Trading, sharing and borrowing practices define the way people interact and how they get what they need. Individuals, and groups of individuals manage their own resource sharing with citizen led digital platforms. Technology is key for connecting, socialising and managing local resources, as well as sharing knowledge and inspiration through national and international networks.

The informal trading economy means that goods and services are mostly small-scale and locally oriented, with people acting as producers as much as consumers. Whether collecting rubbish, caring, cooking, building or local software development, people openly trade their time, skills and energy through the informal economy. Energy is generated and stored locally, and communities trade between themselves, leveraging personal storage and generation to reduce price for themselves and the collective. Many people self organise to form networks of renewable microgrids.



Homes have rooms that are shared with the wider community. Be it a washing station, workshop or sauna, you don't need your own one if you can share someone else's.

HOME

Creativity fuels the nation! When everyone is a vendor in some walk of life then your limits lie only in what you can imagine and make.

SELF

People find more value in their connections and are more connected than ever through coordinating with neighbours to share and trade.

CONNECTIONS

Safoora finds it so draining to manage her energy and resources. She has to buy her electricity from a blockchain enabled community microgrid at specific times of day and she shares responsibility for coordinating neighbourhood cooking and laundry facilities. It's really easy to get it wrong and find that her whole community is low on power.

VULNERABILITY SELF

Burden of knowledge

People have to manage more information, and invest considerable time and effort to coordinate their energy supply. If you don't have capacity, knowledge gaps and communication challenges will arise.

Safoora wishes she could get her own solar panels but she can't pay upfront - and she doesn't have her own roof or garden anyway. The community all invested in a wind turbine before she joined but nobody wants to sell her their share. It's frustrating that she's stuck paying into it rather than earning like the rest of them.

VULNERABILITY HOME

Asset reliant

Without something to trade - be it knowledge, space or resources - you are not able to participate in energy systems.

Safoora really struggled when people first started managing things like this. She was introverted, her English was poor, and as a cook she lacked status or connections through her work. Even if she was offering a similar exchange people shared things first with their friends and those in high status jobs.

VULNERABILITY CONNECTIONS

Relationship dependent

Everything in this system depends on building and maintaining relationships. If you don't have existing connections, or can't build them effectively you will be left out.

Emerging contextual vulnerabilities

Introduction to vulnerabilities

From each scenario, three key vulnerabilities have been drawn out and highlighted. These represent how emerging contextual issues might make someone vulnerable to a situation arising in the future. Together - as shown on page 16 - they act as a set of twelve prompts for considering future work on energy transitions.

Many are not exclusive to one scenario but represent recurring themes seen across the project, and therefore key areas for demonstrating the impact of access to resources, community and agency.

By considering how these situations might be either mitigated, or avoided altogether, we can begin to design for just transitions.

Deploying the vulnerabilities

These vulnerabilities can be provide a framework for exploring potential unintended consequences. They can be used to identify potential problems, brainstorm questions, and find new opportunities for proactive responses.

The template shown on page 17 demonstrates their use for generating questions, and thinking expansively. Further suggested actions are given here, and there are many more ways in which they can be deployed to prompt thought and action from key energy stakeholders.

SUGGESTED ACTION #1

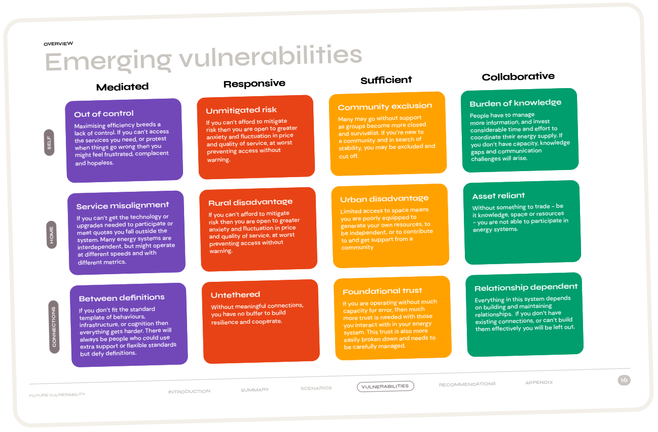
Consider how your idea might impact people through each of these 12 lenses

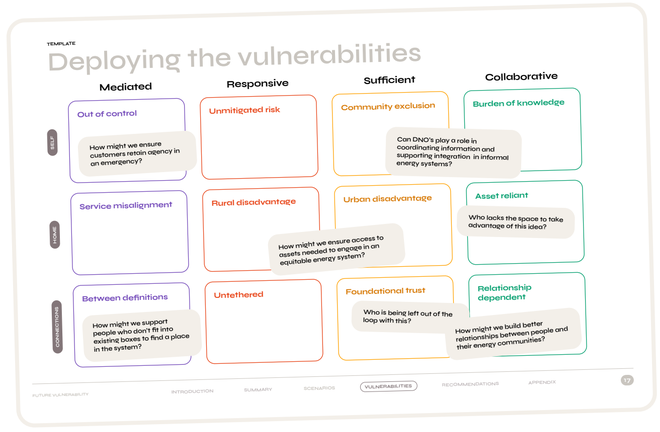
Exploring the unknown in a structured way can help make better decisions at the outset of a project. Use these as prompts for brainstorming in the development of any new initiative or when incubating an idea.

SUGGESTED ACTION #2

Consider who you might need to build new working relationships with

These are not challenges that can be addressed by any single organisation alone, but will require a sector wide response to create a just energy future for all. Use these as a way to explore new partnerships and energy communities.





Emerging vulnerabilities

	Mediated	Responsive	Sufficient	Collaborative
SELF	**Out of control** Maximising efficiency breeds a lack of control. If you can't access the services you need, or protest when things go wrong then you might feel frustrated, complacent and hopeless.	**Unmitigated risk** If you can't afford to mitigate risk then you are open to greater anxiety and fluctuation in price and quality of service, at worst preventing access without warning.	**Community exclusion** Many may go without support as groups become more closed and survivalist. If you're new to a community and in search of stability, you may be excluded and cut off.	**Burden of knowledge** People have to manage more information, and invest considerable time and effort to coordinate their energy supply. If you don't have capacity, knowledge gaps and communication challenges will arise.
HOME	**Service misalignment** If you can't get the technology or upgrades needed to participate or meet quotas, you fall outside the system. Many energy systems are interdependent, but might operate at different speeds and with different metrics.	**Rural disadvantage** If you live in a rural area, access to services is more disparate and inefficient. This reduces people's resilience in a world that requires instant adaptation and rapid access.	**Urban disadvantage** Limited access to space means you are poorly equipped to generate your own resources, to be independent, or to contribute to and get support from a community	**Asset reliant** Without something to trade - be it knowledge, space or resources - you are not able to participate in energy systems.
CONNECTIONS	**Between definitions** If you don't fit the standard template of behaviours, infrastructure, or cognition then everything gets harder. There will always be people who could use extra support or flexible standards but defy definitions.	**Untethered** Without meaningful connections, you have no buffer to build resilience and cooperate.	**Foundational trust** If you are operating without much capacity for error, then much more trust is needed with those you interact with in your energy system. This trust is also more easily broken down and needs to be carefully managed.	**Relationship dependent** Everything in this system depends on building and maintaining relationships. If you don't have existing connections, or can't build them effectively you will be left out.

TEMPLATE

Deploying the vulnerabilities

	Mediated	Responsive	Sufficient	Collaborative
SELF	**Out of control** How might we ensure customers retain agency in an emergency?	**Unmitigated risk**	**Community exclusion** Can DNO's play a role in coordinating information and supporting integration in informal energy systems?	**Burden of knowledge**
HOME	**Service misalignment**	**Rural disadvantage** How might we ensure access to assets needed to engage in an equitable energy system?	**Urban disadvantage**	**Asset reliant** Who lacks the space to take advantage of this idea?
CONNECTIONS	**Between definitions** How might we support people who don't fit into existing boxes to find a place in the system?	**Untethered**	**Foundational trust** Who is being left out of the loop with this?	**Relationship dependent** How might we build better relationships between people and their energy communities?

Recommendations

Looking across the scenarios and vulnerabilities, a number of key themes emerge from the work, informed by the most impactful uncertainties at play in the scenarios. These represent areas that need further work to understand the impacts of shifting access to resources, links within communities, and levels of personal agency on individual vulnerability.

VULNERABILITY DRIVER

Changing resources and stability

Many vulnerabilities were strongly informed by people's stability and access to physical resources. Whether land for food growing, ownership of green energy assets, or indeed the lack of possessions to enable mobile lifestyles, people's access to, and stability of resources was a strong indicator for contextual vulnerability.

VULNERABILITY DRIVER

Changing forms of community

Changing lifestyles will lead to new forms of community (and isolation from communities) with new ways needed to engage and include people. From virtual identities to sharing communities and clubs that form around self sufficiency, network operators and customers alike will face changing contexts and challenges when trying to reach, integrate and gain the trust of societal groups.

VULNERABILITY DRIVER

Changing consumer power and control

The other critical uncertainty emerging from the foresighting was the level of agency - power and control - that people have over their lives. Relationships between customers and network operators could have very different power dynamics and responsibilities. For example, whether or not people accept a service driven model, the degree of choice they have over those services and if consumers become activated in new ways.

RECOMMENDATION #1

Use the vulnerabilities to understand diverse implications of different contexts

While the vulnerabilities show that people's context drives their vulnerability, they also show that one set of assets or physical and geographical contexts can mean different things for vulnerability in different future scenarios. These scenarios and vulnerabilities should therefore be used as a tool to unpack customer contexts and to understand their different possible implications.

RECOMMENDATION #2

Invest in understanding changes to customer values and relationships

These uncertainties highlight the need for more work with customers to understand how lifestyles, values, attitudes and communities are changing, and how this may affect people's energy relationships. More diverse research methods are needed to understand the customer more deeply, including working with young people to understand changes stemming from the next generation.

RECOMMENDATION #3

Develop a vision for sectoral leadership

These are relationships and responsibilities that the industry can proactively shape. The scenarios should be used to create a vision for a preferred role for network operators to play in the sector and in people's lives. This may involve accepting a broad range of new responsibilities, including around individuals, communities and technology.

Appendix

Project method

This project utilised foresighting techniques to develop scenarios grounded in established work in this area. These three phases bring a critical human centered perspective to planning just transitions.

Treasure hunting

What is happening to shape emerging lifestyles?

Gathering insights and exploring trends to build a picture of how lifestyles will change from a human centered perspective. Focussing on socio-cultural drivers, and leveraging interviews with stakeholders to synthesise the **three signals of changing lifestyles.**

Key activities

- Interviews with SSEN internal stakeholders
- Theoretical grounding in sustainable energy transitions and related research
- Trend exploration and analysis of weak signals and wild cards

Scenario building

What might lifestyles look like in the future?

Imagining future trajectories of the signals, and building pictures of the possibilities. Mapping out a broad spectrum of distinct futures through iterative scenario development. Refining storytelling through workshops and discussion with stakeholders to propose **four future lifestyle scenarios.**

Key activities

- Uncertainty mapping and benchmarking against established futures research
- Workshop with SSEN internal stakeholders to reframe and refine scenario contexts
- Structured synthesis and storytelling

Vulnerability extrapolation

What might this mean for future vulnerability?

Extracting potential vulnerabilities from the scenarios, and exploring the most commonly emerging themes and most surprising and impactful possibilities. Reframing the signals to extract and cross reference key insights into the **twelve contextual vulnerabilities**

Key activities

- Concepting potential vulnerabilities and clustering issues
- Framing against signals and cross referencing to identify recurring and impactful issues
- Discussions with sector stakeholders to refine focus and storytelling

Signals of changing lifestyles

How will the lives of SSEN customers change in the coming years? These three signals provide a snapshot of the most influential factors shaping lifestyles in the UK. They are drawn from the biggest changes on the horizon across politics, society, environment, emerging technology and the ongoing impacts of the pandemic.

Changing Self

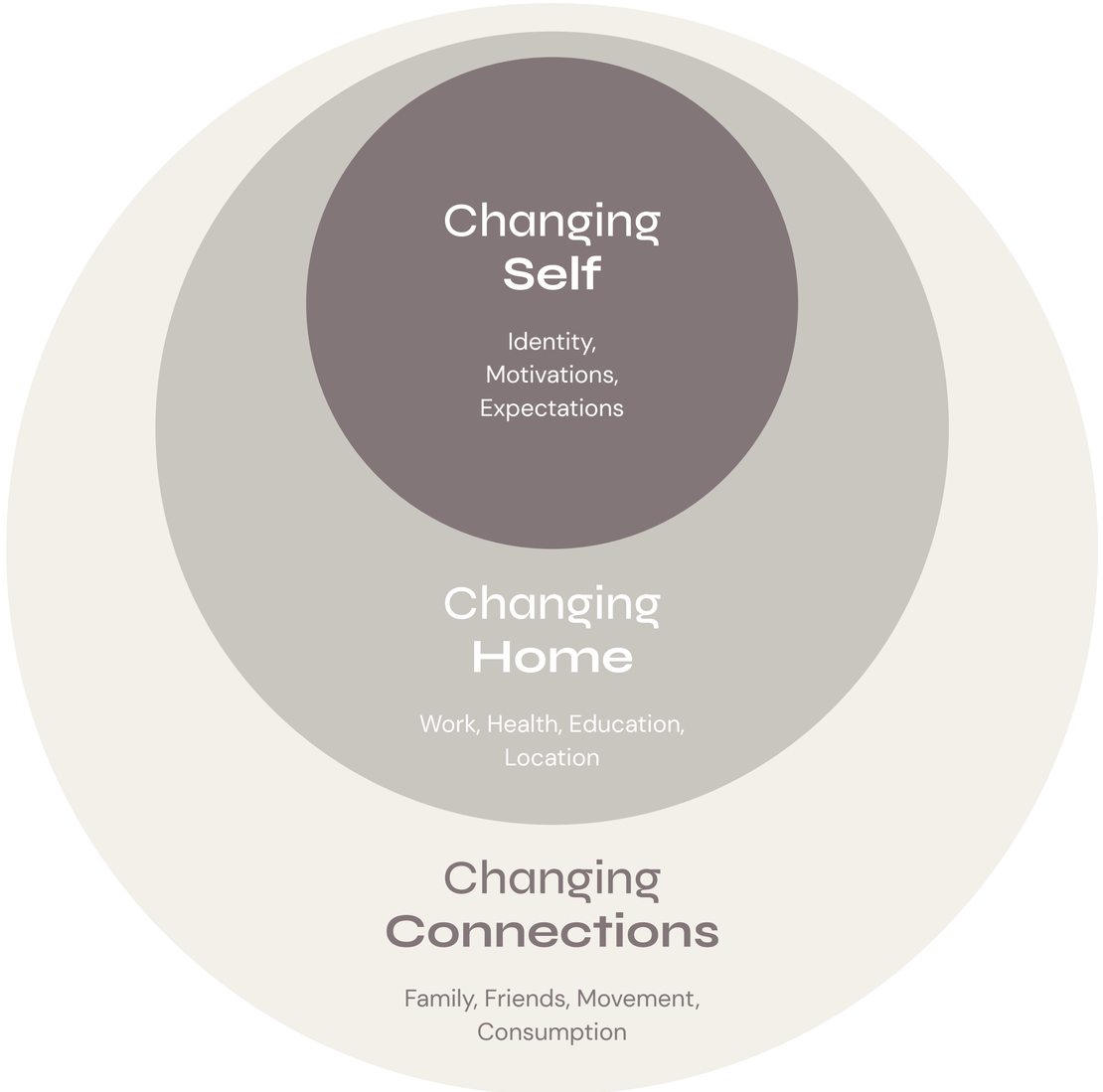
The way people view themselves is changing dramatically. People are looking inwards for meaning, as well as looking outward at those around them. The world is simultaneously becoming more divided, and more inclusive as people seek meaning and self-actualisation.

Changing Home

The way we live in our homes is undergoing a national makeover. We are spending more time at home and demanding more to happen in our spaces. Our relationships with our homes will become more long term, but also more transient as our lives and homes become more responsive.

Changing Connections

They way we interact with each other and the world around us is shifting. We are exchanging information, ideas, and physical goods with people both near and far using technology. We are redefining our ideas of family and community and our support networks are changing shape over new distances and hierarchies.



Changing self

How might a changing sense of self, and shifting drivers of motivation and identity change our lifestyles?

Drivers for Change

We are more aware of ourselves than ever, due to forced reflection from the pandemic, a growing forum for dialogues about mental health and wellbeing, and rising awareness of global issues with inequality, climate change and more. The world is becoming more empowered and educated, but these threats to the status quo combined with the impacts of social media are also building rifts and breeding distrust, tribalism and individualism.

Trends with momentum

There are a number of trends which have great momentum and will shape our society through shifting perspectives, abilities and expectations:

- Ageing Populations
- Rising Mental and Neurological Issues
- Shorter Attention Spans
- Decreasing External Responsibility
- Information on Demand
- Customised Everything
- Survivalism and Self Care

Greatest Uncertainties

Some polarising trends are emerging that are dividing society and will significantly impact how we view ourselves and others:

- **Free Time vs Full Time** - Do we gain more leisure time?
- **Personalisation vs Privacy** - Do we share our data to make life 'easier'?
- **Communal vs Individual** - Do we respond together or apart?

Redefining "free" time

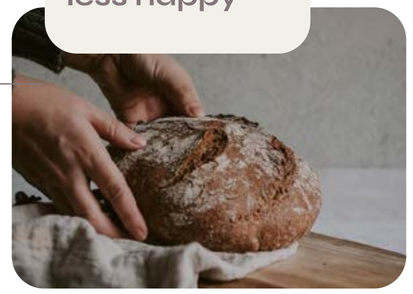
REFERENCE 01

Many young people are filling their free time with social action, while others view working more as a badge of honour.

"The way we view free time is making us less happy"

REFERENCE 02

Traditionally laborious activities like baking bread see resurgence to become soothing hobbies.



Privacy as equity

"To bet the farm on technology that redesigns our entire streets and relies on apps and sensors doesn't really jive with how human beings actually use public spaces - and how they want to live."

REFERENCE 03

Toronto swaps smart city plans for more human approach

REFERENCE 04

Start ups such as Mine are emerging to support users in managing their personal data footprint and reducing online exposure.

Independence 2.0

dezeen

REFERENCE 05

Initiatives like the See Through Pavilion are emerging to showcase how self care can be a collective activity as we understand more about the power of community togetherness.

"People now have the opportunity to decide if they feel like their life isn't serving them"

REFERENCE 06

The rise in AI and technology is feeding individualism.

Changing home

How might a changing home environment shift the way we live and work in our spaces?

Drivers for Change

The pandemic has forced us to examine how we live, and accelerated the journey to the future as technology enables access to work, health and education in our own homes. With rising divorce rates, and the desire to gain more space at home, the already stretched housing market continues to boom. This is forcing many to remain in place and in rented accommodation long term, as the size of our spaces shrinks whilst the utility grows.

Trends with momentum

There are a number of trends which have great momentum and will shape our homes and our lives within our homes by reforming how we grow, shop, play and even die:

- Things on Demand
- Healthcare at Home
- Lifelong Learning
- Rise in Rental
- Self Sufficiency
- Shrinking Spaces

Greatest Uncertainties

Some polarising trends are emerging that are shaping our physical spaces, and determining where we might settle, or not:

- **Moving vs Improving** - Do we prize convenience or restoration?
- **Large vs Small -** Will we embrace micro living?
- **Migration vs Immigration** - Will cities stop growing?
- **Isolation vs Connection** - Will we start closing our doors?

Shrinking spaces

REFERENCE 07

Unaffordable homes and rent are changing the shape of family homes, demanding multipurpose spaces for longer.

"Young adults returning to their parents' home until well into their 20s or early 30s – is now a permanent feature of UK society"

REFERENCE 08

More people are moving into temporary or mobile structures, or 'tiny homes' due to the cost of living.

Convenience Rules

REFERENCE 09

A preference for the convenience of new homes is on the rise, as people turn to renovation to convert old housing stock to new needs.

Reversing brain drain

"Rural areas which attract new residents in their 20s and 30s also see more business start-ups."

REFERENCE 10

As cities become less desirable new economies are springing up in rural areas.

Closing doors

REFERENCE 11

The need for multi-use spaces is reducing the allure of open plan as people seek privacy at home.

Changing connections

How might a changing relationship to people around us change the shapes of society and how we live day to day?

Drivers for Change

We are rethinking fundamentals such as relationships and family due to changing social norms, and even concepts such as ownership due to scarcity and climate change. Technology enables families to keep in touch over longer distances, young people to form movements, and the sharing economy to blossom. This is bringing new challenges of how we build community and trust without the shared bonds of location, culture and accountability.

Trends with momentum

There are a number of trends which have great momentum and will shape the way we connect with people, as well as goods and services, across all aspects of our lives:

- Digitalisation
- Crowd Economy
- Modular Careers
- Smaller Families
- Acquaintance Communities
- Reducing Trust

Greatest Uncertainties

Some polarising trends are emerging that are shaping our worldview and how we build communities and connections:

- **Together vs Fragmented** - Do we reform a new sense of local?
- **Distributed vs Centralised -** Do we re-distribute our networks?
- **Communal vs Individual** - Are we in this together?
- **Mobility vs Locality** - Will we move around less?

Community by Design

REFERENCE 12

Interventions like Happy to Chat benches are tackling the loneliness epidemic across the UK.

BBC

REFERENCE 13

Platforms like NextDoor can create cohesion and division in neighbourhoods.

"While communities evolve over time, they can also be rapidly affected by new social conditions....[social media] platforms become part of contemporary life by displacing previous systems, customs and habits."

Conscious travel

"More than a fifth of train services that were running before the Covid pandemic have not returned"

REFERENCE 14

Travel for work and leisure were at an all time high pre-COVID, but post pandemic eco and active travel are booming instead.

Rethinking togetherness

REFERENCE 15

Frome started treating loneliness as a medical condition and prescribing human connection, and hospital visits fell significantly.

Choosing local

REFERENCE 16

The relocalisation of all aspects of life are on the rise, including at home healthcare like this DIY at home dialysis machine.

Scenario backgrounds

Behind each scenario is a theory of change that describes the key shifts or steps that might enable each scenario to arise. The background of each scenario is represented as a timeline of events between today and 2050.

The timelines are not intended to be exhaustive, nor are they accurate predictions of future events. Instead they serve to illustrate and to give a flavour of the kinds of changes that may bring each scenario into being.

The four scenarios were developed using a mixed methods scenario approach, principally drawing from Jim Dator's Manoa Archetypes, Causal Layered Analysis and the IFTF System Mythologies referenced on page 27.

Responsive

This scenario is driven by the rising power and popularity of technology, technology companies, sensors and personalised data driven services.

2025

- **Peer to peer social media replaces traditional media as the most popular source of information**
- **Driverless mobility decreases journey times by 30% in urban areas**
- **The average screen time reaches over 10 hours per day in the UK**

2030

- **AI and voice enabled personal assistants exist in every piece of smart technology**
- **Technology companies become increasingly powerful with strong influence on public policy.**

2040

- **Apps allow universal translation to enable global, online communication**
- **75% of Brits own a wearable that optimises their diets, exercise and social lives**
- **A new generation of immersive VR reduces the need for large or personal living spaces**

2050

- **More than 50% of the UK population has an IOT implant**

Collaborative

This scenario is driven by the growth of citizen power and grassroots movements, including peer to peer sharing, collective intelligence and virtual networks.

2025

- **Fifteen minute cities become the mainstream policy priority across the UK**
- **Diversification and localisation of work patterns makes network management a key life skill**
- **New 'networked cities' pioneer local transparency and digital connectedness**

2030

- **Oil, gas and energy prices continue to rise prompting reduced mobility**
- **Governments implement wholesale devolution in response to soaring national inequality**

2040

- **Citizen-led initiatives inspired by climate movements gain momentum globally**
- **Local governments invest in informal, locally resourced solutions - e.g.. for energy provision**
- **Most UK communities now have local sharing centres and community design labs**

2050

- **AI enabled development lets citizens and local authorities create their own platforms**

Scenario backgrounds

Mediated

This scenario is driven by a strong and egalitarian state response to growing resource constraints due to climate change.

2025

- Growing costs of living makes it harder for the poorest in society to meet their basic needs
- Governments invest in communal or subsidised food, shelter, and a state run energy company
- Government incentives & penalties reduce waste and transform supply chains to circular systems

2030

- The price of basic goods rises with increasing environmental and manufacturing standards
- The government trials including lifestyle goods and services as parts of a benefits offer

2040

- The UK and EU impose transparency laws for open up data sharing around products and services
- Homebuilding targets prioritise multi occupancy buildings and access to shared services
- A few large companies and government agencies manage end to end circular supply chains

2050

- The government offers standardised lifestyle services to citizens in return for increased taxation

Sufficient

This scenario is driven by a collapse of supply chains and resource availability which forces communities to fend for themselves.

2025

- Unemployment rises as care, childcare and travel costs start to outweigh salaries
- Small groups increasingly share homes and experiment with local food production
- Rural house prices soar with land for food production becoming a premium

2030

- A year of drought causes a supply chain failure. Some large businesses and banks collapse
- National food shortages cause people to look locally for resources and commodities

2040

- The Edelman trust barometer shows a record low of 6% trust in government
- The efficiency of food production drops as local variety is prioritised over scale
- Decisions that affect people's lives are entirely made by families, towns and villages

2050

- 30% of people in urban areas are malnourished, with mass migration to rural areas

Next steps

This foresighting is a part of the Vulnerability Future Energy Scenarios project (VFES) funded by the Network Innovation Allowance NIA_SSEN_0063

VFES Context

The VFES project seeks to combine foresighting, machine learning and expert validation to explore how to anticipate the needs of vulnerable energy customers in the future.

Next steps for the work involve undergoing an expert review process by National Energy Action. This process will combine the insights from this human centred foresighting approach with data analysis and machine learning approaches to explore how to support better-informed investment planning that takes into account the needs of future vulnerable customers.

This foresighting work will therefore be considered alongside these wider project activities in the next phases of VFES.

Deploying the Vulnerabilities:

A number of opportunities can be readily drawn out from this foresighting stage of the work beyond the recommendations outlined. The vulnerabilities identified here may play a number of different roles, including being used to:

- Identify new sources of data from which to gather insights, and model risk factors for future vulnerability.
- Contextualise and make sense of vulnerability scores from both a customer centric and future oriented perspective.
- Evaluate investment decisions based on how they align with anticipated customer needs.
- Identify gaps in knowledge and activity across the business when exploring the innovation project portfolio.

Deeper Expansion

In addition to this, a number of more immediate opportunities might be pursued to deepen the foresighting work and explorations of vulnerability from a human centred perspective, including:

- *Ethnographic Development:* Engage with customers and external stakeholders and add their voices into the work, building on themes identified in the scenarios and vulnerabilities to validate, and deepen the initial findings here.
- *Co-Creation:* Engaging with internal stakeholders across SSE in facilitated workshops to draw out implications of the vulnerabilities and identify opportunities for their deployment across the business.
- *Innovation Projects:* Develop new projects to tackle the themes highlighted by the recommendations.

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"I don’t pretend we have all the answers. But the questions are certainly worth thinking about."

ARTHUR C. CLARKE