Pandemic technology

Singular Super Champions

Governing the Commons

Meritocracy

Human-centrism

Local Loops

Empathetic Communities

Endemic technology

Governing the Commons

Alternative Sustainable Society 2: Supporting 8 000 kg Sustainable Lifestyles

Governing the Commons is a scenario mostly in digital reality that helps people to break free from many cultural constraints and, eventually, to reach sustainability. Ubiquitous computing enables the smart use of resources and, at the same time, redirects people's behaviour and focus of attention from material consumption and their physical surroundings to interaction in the digital realm. People abandon many institutions of the 20th century, liberate themselves in order to lead more meaningful lives and engage in new forms of collaboration.

You can manufacture products based on your very own design at the nearest corner shop! The rise of 3D printers made it possible for the first time for people to control their own production and consumption. In 2015, 3D technology was seen as something of a niche, but from the early 2030s it has altered lifestyles, and many businesses permanently. The drivers of mass consumption in the latter half of the 20th century are replaced by a culture of "self-creation" assisted by 3D printers and other similar tools. It offers endless possibilities to mould and re-create one's identity. People grow more aware of what is their own, either purchasing carefully selected items they like or constantly molding the same material into new versions of goods. New forms of do-it-yourself manufacturing would not be possible without the rich presence of the digital space.

The entire built environment can be seen through two separate layers, a digital and an actual, physical one. Billions of microchips embedded in machines, walls and pavement bring a new type of data to users and create new opportunities to live smart, sustainable lifestyles through powerful feedback mechanisms. Social networks continue to gain power and very soon traditional institutions that are outside of meaningful networks nearly vanish from sight for many people.

In the world of Governing the Commons, people have found new relationships with their peers both in virtual and material reality. This offers immense opportunities for different types of meaningful interaction, both economic and non-economic alike. People start to look for more meaning in jobs and life in general. Learning new skills is easy with all of the information, digitally assisted training tools and peer support. This gives rise to a new kind of entrepreneurship in which the next generation starts to redefine their expertise and source of motivation.

Multi-professional self-employment has replaced a steady income and employment in a company or public institution: The peer-to-peer (P2P) service economy has replaced big corporations and their offerings. New models of work and welfare have been formed.

Once people started seeing the collective potential of the new combination of highly skilled self-starters with digital communication, new political movements started to gain power. Networks of people with enthusiasm towards a shared issue gathered their skills and resources and directed their efforts to experimenting with new solutions, instead of just campaigning for change through political structures.

Experimenting with the help of thousands of volunteers turned out to have persuasive power in the field of politics. Therefore, "interest networks", combining policy with doing things gradually, replaced traditional parties as powerhouses of representative democracy. As a result of this new collaboration and tools, many parts of the political agenda are totally reformed and political participation is brought back into peoples' daily lives. This type of "wikidemocracy" has revived trust in politics and its capability of changing society towards positive social change.

How are sustainable lifestyles achieved?

The transition to people-power through different networks, models of wikidemocracy and ubiquitous technology are becoming part of everyday life, altering behaviour towards more sustainable lifestyles in the 21st century.

The impacts of ubiquitous technology continue to shape people's day-to-day practices even more strongly than many thought in the early 2000s. Different applications and personal services influence lifestyle decisions, consumer choices and motivate behaviour change that supports the 8 000 kg goals. Take mobility for instance – once personalized digital services are in place, co-using of cars and public transit starts to work, based on what is most practical for its users.

Energy efficient housing became the norm in the early 2020s as a new way to collect and mine data. Open energy consumption data gave a big boost to retrofit markets. Companies could easily identify inhabitants with significant potential for efficiency gains and savings. Homes turned into smart systems with easy to use gadgets to control energy consumption from lighting, heating, use of appliances and even the contents of the fridge. Ubiquitous technology started providing instant feedback loops that helped to change behavioural choices towards ones that support 8 000 kg sustainable lifestyles.

As the virtual environment is more and more prominent, physical consumption decreases sig-

nificantly. Urban space is freed out of old unused offices and remote work becomes a mainstream alternative. Infrastructure becomes a closed loop system combined with services taken over by the virtual world. Augmented reality services, along with 3D printers, make consumption more sustainable through the personalisation and digitalisation of lifestyles.

Governing the Commons scenario narrative – how did it all happen?
» The 3rd industrial revolution
» Ubitech economy
» Better work creates well-being
» Wikidemocracy

These drivers are depicted as events on the timeline.

What is life like in Governing the Commons?

	What changes between 2012 and 2050?
Education	The main focus of education is on Peer-to-Peer skills sharing. Learning by doing is emphasized, in iterative ways. Pandemic technology enables instant feedback loops, which accelerate sharing of knowledge. Focus on informal education where classrooms don't exist.
Work	People's sources of income have fragmented. Comprehensive use of skills are valued. Everyone has something to offer to society. Key words describing work include micro-tasks, crowdsourcing and being useful to one's peers.
City	Cities are based on already existing infrastructure. Office and school buildings have been converted into flats and public spaces. Urban experiences are enriched by augmented reality. People find personalized solutions to fulfil their needs and aspirations on both the physical and virtual layers.
Health	Peer-to-Peer network support is characteristic of both preventative and reactive health care. Public funding is provided for healthcare cooperatives. A wide variety of healthy lifestyles have become routinized. Digital feedback tools are used by everyone.
Living	People live in small flats and work in new office lofts. The digital layer is key to provide people with quality in their lives. Smart homes, austere furniture and digital services characterize domesticity.
Food	Food production and distribution are managed by global food systems and smart food storage mechanisms are in place. A multitude of diets are offered and energy intake is reduced. Vegetable choices and synthetic meats form differentiations in diets.
Mobility	Mobility is greatly reduced by the use of digital tools. Commuting is minimized and the construction of new traffic infrastructure has become unnecessary. Smart public transit and car and ride sharing are the main forms of transport.
Consuming	3D-printing personalizes consumption. Material consumption is reduced by using modular appliances, which enable do-it-yourself (DIY) repair and upgrade of products. High degrees of appliance personalization, virtual consumption and recyclable generic materials form new design and producer cultures, helping to reduce the overall number of appliances.
Economy	Micro-tasks characterize economic organization. New businesses are created in and by data-rich environments. Open source, open data and free distribution of information drive new innovation. Personal optimization, DIY, peer services and manufacturing are drivers of the new economy.
Sense of security	Sense of security is heightened by membership in Peer-to-Peer communities. Democratized data empowers people. Easy access to services, products and global knowledge-bases promote equality. Personalized appliances and direct participation increase a sense of belonging and security.
Leisure time	Leisure time is formed around a multitude of digital interactions. Home consumption, high quality household capabilities and digital crowd experiences are the main ways of spending free time.

The 3rd industrial revolution

2015: The first 3D printers for the mass market arrive. At first, consumers have to buy specifically packed materials for the printers to work. They are inspired by work at MIT's Fab Labs. Soon consumers start to come up with their own solutions.

2017: The Christmas markets see a flurry of excitement over 3D printing.

2018: Customised 3D printers that can use recycled materials start to dominate the markets and more traditional companies struggle to compete with goods produced at home.

My son never buys anything that is mass-produced. He wants to customise it all by himself. I think all of his clothes are custom made.

Ubitech economy

2014: Social media dominates global narratives. Peer-produced content starts to emerge in the global media. The events of the 2011 Arab Spring highlight the growing importance of accessible global information networks. People get increasingly acclimated to the idea of existing online and building their personal identity through virtual means. Media moderated reality hits new heights as the internet starts to define everyday life and connect communities worldwide, producing more interest-based social groups that only ever connect in the virtual realm.

2017: The use of mesh networks (community data systems) is spreading to recycling and green "interest groups". Initially these sub-networks were developed in Living Labs and were used by the anti-corporate activists of the 2010s economic downturn.

2018: Thanks to crowd-sourcing, we know that the economic impact of nearly everything: Ecopidia is created. Eventually this transforms into GEKS, the Global Exchange and Knowledge System, a tool that connects information and helps support sustainability worldwide.

"I found your flat to be very inefficient in energy use," states an energy repair service that has monitored my apartment.

Better work creates well-being

2015: The crises that started in 2008 eventually changes production structures and people's working patterns, especially in many European countries. Fewer and fewer people work permanently for one company. Diversification in work patterns increases.

2016: Companies promoting sustainability begin to dominate the markets: Several technology companies introduce Green Earth policies and sustainability indexes, as they are seen as as the only way to gaina a position as market leader.

2017: A Europe-wide study reveals that sustainability and ethics are the main motivational drivers for workers.

2019: Companies have embraced sustainable practices in order to increase employee motivation. Step by step this leads to a behaviour change in peoples' lives as well. Work and home behaviours start to overlap with each other.

Wikidemocracy

2013: Boycotts of politics taking worldwide help tackle climate change. Global treaties are out of reach, which drives people to express their frustration with governments' and corporations' inability to genuinely intervene in the increasingly apparent effects of climate change and rising resource prices.

2015: A global network of energy-conscious consumers starts openly using electric cars, smart consumption solutions and to monitor their personal everyday climate impact.These early adopters help create growing platforms for emerging technologies and momentum for supportive policies.

2019: Earth treaty by UN: national democracy has to respect the limits of the earth.

When I look outside the window, I can enjoy green walls blooming with flowers, the pump cleaning the water, the solar panels slowly turning to the sun.

I can use the highly efficient urban mobility system to buy groceries and have them delivered straight to my home.

2015

Augmented reality glasses

Multi-players open-air games

"My kids say there are enough exciting things to discover in digital schools, virtual tourism services and augmented reality games. You don't need to travel to have new experiences as I once did."

2019: Thanks to GEKS, diverse data regarding peoples' homes is gathered. Based on this data, inhabitants receive feedback which encourages home repairs that help to maximize energy efficiency.

2024: Consumer brands that have not yet started to operate sustainably start to overproduce. This cycle dramatically decreases the quality of the products and more people turn towards self-customization.

2024: City 3.0 and the "internet of things": sending information to apartment block-based 3D printers in order to create any objects e.g. computers. Reproduction starts at city level, which defines the structure of the physical space.

2020: The biggest company online launches its "smart life" and "smart cities" services offering several programmes that help make smart choices regarding things like healthy and resource efficient food, identifying the most sustainable mobility choices, setting the optimal temperature and lighting levels in your home or deciding when to retrofit your house or call someone to repair your inefficient fridge.

2020: Companies redesign their human resources strategies as an increasing number of talented individuals start looking for entre-preneurial opportunities.

A friend of mine came to take a look at my apartment with his heat camera. She checked my energy consumption and I ordered energy retrofitting from her on the spot!

2023: Augmented-reality services become available in 300 European cities. These services alter world-views and lifestyles significantly as the need to travel and construct decreases.

I'm a part of a No-Impact Group that was formed 5 years ago. It really showed people that it is possible to live within planetary limits.

2025: Based on the citizens' acts of the early 2020s, all EU countries reform their taxation to include environmental impacts in prices.

2021: A network of energy conscious consumers who have openly published their climate impact information, propose as a citizens' act to scale up their behaviour. Hackathon events power similar citizen initiatives across all EU countries. The goal is to reform taxation so that it supports sustainable consumer choices.

2025: People across different networks find a wide range of means to secure an income by doing different kinds of microwork.

CO-WORKING SPACE

Every village and suburb has a remote co-working space that allows people to get together, share thoughts and reduce the need to commute. Every municipality sets up these spaces for people to work or even to get new jobs, based on earlier shared brainstorming session and cooperation.

2020

2025

The 3rd industrial revolution

2026: Due to the 3D-print-ing market, the Nasdaq succeeds the Dow Jones as the globally relevant market index.

Ubitech economy

I only buy books with virtual money. It makes no sense for me to use "real" currencies anymore to buy books.

2027: A car sharing company that uses an "access" business model rivals traditional market leaders in mobility and acquires one of the traditional car companies.

The Wise Personal Food Shopper -application analyses user's genetic data and proposes healthy diets.

2029: 80% of Estonian citizens own a per-sonal appliance that optimizes their mobility, diets and electricity consumption through constant recognition and feedback of their consumer choices. These personal appli-ances, for example, help people to optimise public transportation use and enable different types of vehicle and ride sharing schemes.

2031: Smart technologies and augment services have produced a new business doubles its size each year for the next t According to studies this sector employ people Europe-wide.

"You should meet up on Wednes-day instead of Tuesday as there's very little difference in your preferences, but a huge gap in efficiency in regard to mobility, for instance." says my phone when I set up a meeting with my friend.

Better work creates well-being

2026: A new company that facilitates different microwork opportunities, is among the big-gest companies in Europe.

2027: Recognition is given to people in ways that do not make narrow assumptions about individual's work.
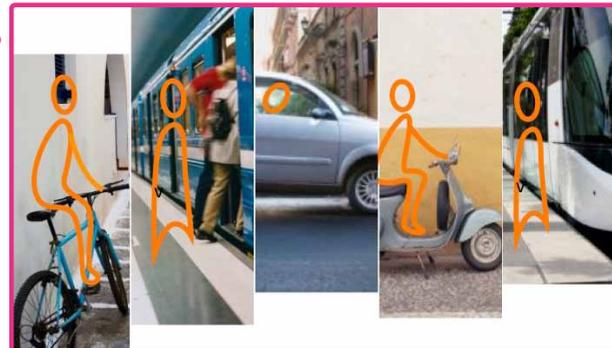
There's a high efficiency inter-modality system that lets me travel by bike, train and shared car – all within the same network.

Wikidemocracy

2026: User group oriented hospitals emerge and people who share similar genetic risk profiles for certain diseases help provide best possible care, knowledge and reaction time for its customers.

2027: The example of peer power that produced the famous citizen movement for sustainability in the early 2020s, inspires many more of these citizens' acts. Large numbers of people draft citizen movements that are based on noted best practices – these movements soon start to shape mainstream lifestyles.

2030: Universal transla-tor apps make it pos-sible for communities worldwide to commu-nicate with everyone everywhere.

"I often log on to these participative governance programs in order to meet people with whom I share common

2030

Deliberative processes on local governance

3D printing and self-prototyping facilities.

"When I finish picking up and customising items from virtual catalogues, I can just go downstairs and pick them up from the 3D printer space."

ed-reality
s sector that
hree years.
s eight million

2032: Copyright is found to be redundant, as the best method to map solutions is to crowdsource inputs to problems from relevant online communities. An explosion of immaterial creativity follows.

I don't even have to use repair services as I can just upgrade my modular appliance by printing off a new part for it.

2036: People move beyond the division between real-life and virtual identities; whatever happens in one automatically follows into the other as well. People -not corporations- are in charge of the networks.

"I spend most of my time very efficiently. Even when travelling, I'm completing a multitude of different microtasks."

My friend who's been partially disabled for the past 10 years is an active participant in society, as digital tools have empowered him to access information and services as efficiently as anyone could imagine.

2033: Value is crowdsourced through every piece of meaningful or meaningless action. It is gathered through different sensors and now exceeds the amount of time people spend explicitly working. The virtual environment has made it possible for neighbours not to compete within the material realm, which leads to, incredible amounts of new online content creation.

This old office building is renovated and will become a highly energy efficient home for many families. These are among the most wanted homes available!

A new book comes out describing how the last of the political parties is still hanging on in there. I find these parties to be a remnant of past. Now political decisions start from, and are intimately linked to, everyday practices.

interests. We regularly propose initiatives that later become the basis of new policies."

Local citizenship networks

2033: User group oriented hospitals initiate a citizens' act to allocate most available healthcare funds to supporting these hospitals specifically.

2034: The climate change denial of the 21st century is viewed as something comparable to the witch hunts of the 17th century.

2035

The 3rd industrial revolution

2040: Different interest groups provide blueprints for individuals to gather resources and "print" their own items, although in highly customised ways. Most corporations have been succeeded by such interest groups.

Ubitech economy

2042: A global act for self-surveillance takes place, initiated by many of the peer-to-peer networks. Every digital item connected to the global network operates within sustainable parameters. Exceeding these parameters is only possible outside the digital realm (which for the majority of the people is impossible).

Better work creates well-being

Sensors and feed-back systems

"Our Active House is constantly optimising the way we live, from suggesting green cooking recipes and automatically preventing food waste to implementing Energy Watcher dieting programs for the family."

Situated advise on energy consumption

2045: Newly set standards are formed for digital networks to serve as a platform for providing manufacturing blueprints. The internet is one of these ad-hoc networks of knowledge exchange.

I monitor my health constantly through these sensors that are installed in my arm. It's a relief. Whatever happens, my hospital is aware of my condition and I save a lot of money, energy and effort since I don't have to do the evaluations myself. I can trust my doctors to do them – no more futile visits to the hospital!

Wikidemocracy

2040: Sustainability is not even talked about anymore as by 2034 global knowledge of what can and cannot be done within the boundaries of one Earth became apparent to everyone. What were seen as sustainable lifestyles in 2012 are simply rational choices in 2040.

2044: Citizen movements replace traditional political mechanisms in decision-making. Peer-to-peer power forms the basis of "wikidemocracy."

I am a member of a health centre with my peers. This specific centre is optimised for people who have the same genetic risk profiles as I do.

2040

2045

My wife and I have some old cooking books that we use for home decoration as we have no other practical use for them. It amuses us that so much emphasis was once placed on the preparation of food. Instead, we just use our 3D printers to print synthetic food that has very high nutrition value.

2049: Consumers recycle everything in their "printers." The only traditional factory left in Europe produces apartment block-scale 3D printers.

Online task offers

Working agenda composed everyday.

Organic Growers of Brussels

The Domestic Feedback Service allows seniors in households to use user friendly smart home solutions to control and educate their families on sustainable living.

I design my home's new interior by putting my old chair into my printer so that I can get a new one as a result.

"My father studied bio-engineering and organic farming and now he is a cook. Every morning he looks for micro-job offers he can respond to, from coaching young farmers to doing sustainable assessments of the food chain. And he loves it!"

2046: The value of life comes from networks. To exist is to be part of a specific network. People build their reputations virtually and those with a good reputation can join networks more easily than others. While the rules and guidelines of different communities differ, interacting in the virtual realm is one of the basic forms of human behaviour.

2050

Gatekeepers for lifestyle changes

Consumer networks
…first organise into decision makers that affect local and global policies.
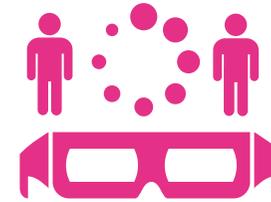
Agile marketing agencies
…make use of the peer information available in purchasing decisions.
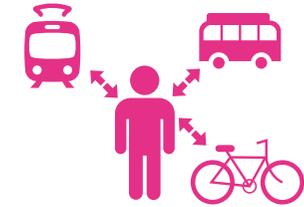
Construction companies
…start selling small scale energy retrofitting services to homeowners

Gaming industry
…grows in significance and turns into a giant crowdsourcing mechanism that combines playing and work.
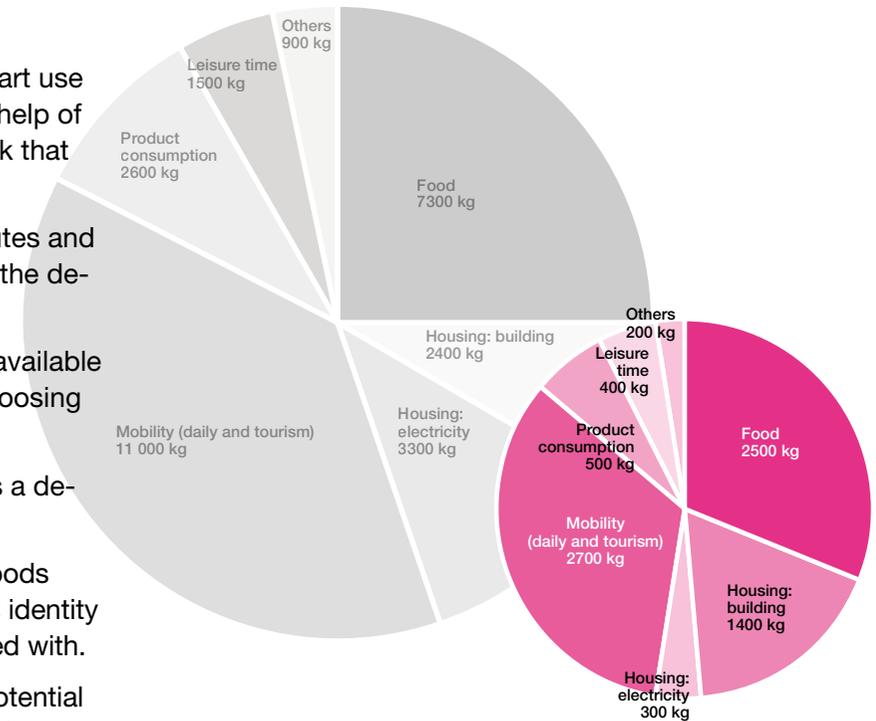
Smart mobility companies
…come up with personalized solutions that let people optimize their mobility based on their needs.

Six-pack of most influential lifestyle triggers

1. All appliances and buildings are equipped with the technology to advise their users on smart use and maintenance requirements. Smart, energy efficient use is the default option. With the help of diverse and plentiful data about their own and their peers' homes, people receive feedback that encourages them to repair their homes so they reach maximum energy efficiency.

2. Smart mobility services change the way people plan their time, and how they combine routes and modes of transport. These services help to optimize public transportation use and enable the development of vehicle and ride sharing schemes.

3. Ubiquitous technologies give rise to a new ecosystem of Peer-to-Peer—services that are available for people whenever they need or want them. These services with retrofitting homes or choosing sustainable dietary options, among other things.

4. A new generation of virtual reality and online communities becomes popular, which means a decrease in needs for large living spaces, furniture and even foodstuffs.

5. The scale up of 3D-printing changes the way people seek self-actualisation. Consuming goods designed and made by someone else is no longer the most elaborate way to express one's identity and style. Instead, people collectively design the goods they desire and want to be identified with.

6. Online networks built on a shared interest in lifestyle issues enable people to realise their potential and to constitute themselves as groups with political power. The example and support of other network members encourages experimentation with new sustainable lifestyle patterns. Gradually these networks and experiments grow into movements that start reforming the political agenda.

Others
900 kg

Leisure time
1500 kg

Product consumption
2600 kg

Food
7300 kg

Housing: building
2400 kg

Housing: electricity
3300 kg

Mobility (daily and tourism)
11 000 kg

Others
200 kg

Leisure time
400 kg

Product consumption
500 kg

Food
2500 kg

Mobility (daily and tourism)
2700 kg

Housing: building
1400 kg

Housing: electricity
300 kg

The average material footprint of a European in 2050 in the Governing the Commons scenario (8000 kg per person in a year) compared to the average material footprint in 2007 (29 000 kg).