

- Climate change impacts are hitting hard, so the UK government has taken control of the situation to keep our economy going and keep us all fed.
- We mass-produce nutritionally-fortified foods that ensure we all get a basic level of nutrition.
- All land that can be used as farmland is used to produce food, both in the country and around cities urban farms and greenery have gone though, as we need to house everyone efficiently.
- We genetically modify plants and animals to get the right production levels.
- Those who are nostalgic about the past create small vertical gardens on their high-rise balconies.

WHO ARE THE KEY INFLUENCERS?

- Central government regulates heavily, keeping control of key systems like transport, agricultural production, healthcare, water and waste services, and housing.
- Department of agriculture is hugely influential
- Large-food producers
- Cities don't have much control over policy, which is controlled at a national level.



How do we pay for it?

High taxes. People used to complain initially, but given the effects of climate change we don't have much choice. Food prices for staple foods at supermarkets are kept down. The government charges for food waste so there's an incentive to use everything.

WHAT ARE THE MAIN CHALLENGES?

- Heavy migration into the UK, because it is one of the best-managed wealthiest countries in the West. This is putting a strain on resources.
- Simmering discontent about heavy-handedness of the governance system. .

1: Government keeps me healthy

The government has taken charge to grow our food more efficiently in a centralized system - this is needed as the world has been rocked by climate change.



- There are global economic, security and climate challenges, but community spirit is high.
- We grow traditional heritage crops and eat organic and seasonally. We focus on soil health to keep this sustainable long term.
- But we have high-tech tools such as wireless sensors and drones to help us by remotely monitoring water and fertiliser and how the crops are growing, so farming is as efficient as possible.
- Community dining halls and recipe libraries are very in fashion. We share production and distribution locally. Family growing plots are popular
- Sometimes food is rationed if the harvest is poor. We import much less than before. Wherever possible, traditional and local climate-resilient crop varieties and animal breeds are used.

WHO ARE THE KEY INFLUENCERS?

- Community councils
- Wealthy communities which have a surplus of food or energy
- Regulated at city and local community level. Cities have oversight of key resource flows, but within cities local councils and neighbourhood communities have a lot more control over their own affairs than in the past.
- The national government regulates in a very light touch way. It gave up a lot of control when many councils rebelled against national policies and 'went off-grid'.



HOW DO WE PAY FOR IT?

Ourselves – there are few central government subsidies for food production. Food prices are extremely volatile, which means that sometimes we can't afford the nutrition we'd like. Communities are trying to organise emergency food banks and food waste restaurants; because depending on the crops, we sometimes have limited or uncertain access to food.

Some communities barter food for energy.

2: Pulling together locally

I collaborate with my community to grow much of our own food close to home.

- This system doesn't offer the same security that the central government used to. When there is a bad year, hunger and malnutrition increases, and our imports don't make up the shortfall.
- Inequality some communities prosper more than others, and without central government providing key services, inequality increases.



- Digitally, we are as connected to other cities and countries around the world as we are to the local countryside, or the neighbouring city.
- We love heritage foods; Swiss chocolate, Scottish whisky, French cheeses are a massive global market. Small urban farms give us a taste of 'real food' and are a cool tourist attraction.
- Most food is produced intensively, focused on high yields from animals and crops. Electric vehicles and dualfuel ships bring us food from all around the world, saving money on transport.
- We make money out of waste –giving leftovers to energy providers, biotech companies, fertilizer manufacturers. Global cities compete directly with each other: top cities offer high quality of life built on digital economies. But there is inequality as some cities and national economies are left behind.

WHO ARE THE KEY INFLUENCERS?

- China a massive owner of agricultural land behind the scenes, although the wider public is not aware of this.
- Specialty producers of heritage foods
- Big multinational businesses though the most successful ones are those who manage to develop strong, authentic local brand identities.
- City governments influence national regulatory frameworks in their favour and are powerful.
- The top tier of global cities have massive economic clout and cultural influence. In the UK, this includes London, Manchester, Glasgow and Dublin.



HOW DO WE PAY FOR IT?

Ourselves. Food is not cheap, but large intensive global manufacturing keeps prices down.

WHAT ARE THE MAIN CHALLENGES?

- Intensive farming and food processing is efficient but environmentally damaging and there are ethical issues around animal welfare.
- Smaller numbers of large multinationals controlling food and money
- Inequality

3: High tech globalised supply

Food is mostly high tech, sold and distributed globally. I want good quality food and authentic food experiences, and I buy food from around the world to get it.



- Large scale rural farmland is run using very precise agriculture techniques (e.g. wireless sensors and targeted GM interventions that influence nutrient levels and extreme weather tolerance).
- Urban farming also grows high value products on building roofs e.g. superfood greens, honey.
- Organic doesn't mean much anymore. We are so busy working that we want precisely-tailored nutrition and ready-made meals.
- Delivery drones bring our food, or we 3D print food using purchased ingredients, flavoring mixes and recipes.
- Supermarkets no longer exist...some people don't even have kitchens now.
- Zero waste: 3D printing of food means waste is no longer an issue.

WHO ARE THE KEY INFLUENCERS?

- Meal delivery service companies
- Plant-based meat replacement manufacturers
- Flavours and ingredients industry
- Manufacturers of key 'enabler' technologies like drones, sensors, and 3D food printers
- Celebrity chefs that sell recipe algorithms for 3D printed meals
- Various agencies that used to regulate biotechnology have merged into one, and co-regulate the food system along with the Food Standards Agency.
- A carbon tax is in place, increasing the cost of products like beef and dairy, which has pushed scientists to develop new alternatives (like seaweeds, insects, soy).



HOW DO WE PAY FOR IT?

There's enough food around – but it's a lot more expensive than it was. High-priced businesses give us the right kinds of healthy foods, even if they are heavily processed.

WHAT ARE THE MAIN CHALLENGES?

- Loss of cooking skills
- Loss of community and social networks
- "Real Food" counterculture movement pushes authentic, community-based food system

4: High-tech & functional

I want ready-made, speedy food, with good nutrition, and I have to pay a lot more for it. I rely on technology, 3D printing my own food or I have it delivered by drones.



- Energy prices are high despite investment from the public sector and overseas companies. High prices keep the energy supply secure and make profits for investors.
- Energy companies incentivize users to reduce the amount they use.
- As well as the centralised system there are affordable renewable solutions like shared solar panels, wind turbines, heat pumps, and better storage batteries, which enable households, businesses and communities to invest in private, local solutions.
- Some whole towns have gone 'off grid' and central government faces a problem if more people do this, they'll have to raise prices again for the rest of us.

WHO ARE THE KEY INFLUENCERS?

- National government
- Big power generators
- The growing number of households, businesses, communities and even cities defecting from centralized grid
- Oil and gas majors
- Nuclear industry
- National government continues to regulate and invest in infrastructure, agreeing to significant subsidies for certain forms of generation.



HOW DO WE PAY FOR IT?

High taxes and high energy bills. Fuel poverty has increased in some regions of the UK as a result.

#1: Big power

I get my heat & power from a centralised system – large scale nuclear, gas, renewable offshore wind, and new technologies for capturing and storing carbon from emissions. It's very expensive – I'm thinking of going off-grid to use local community solar and wind power schemes.

- High energy costs
- Opposition to big power and counter movement of "grid defectors"
- Local impact of large scale fracking
- Nuclear waste



- Powerful cities generate and trade energy, using their regional strengths, assets and resources.
- This includes solar, tidal, wind, biomass, some experimental small-scale nuclear, and clever demand response and storage technology. District heating and cooling systems are used.
- If I live in an 'energy rich' city I get free windfall power, if 'energy poor' I get some government emergency funding.
- The city states use automated, data-driven, trading technology to trade energy through the national grid.

WHO ARE THE KEY INFLUENCERS?

- City regions oversee planning and management of generation assets and distribution networks.
- National government oversees a national grid, regulates inter-city trading and data protection.
- Mayoral offices of energy rich cities take decisions
- Data and technology providers
- Holders of municipal and local energy contracts
- Renewable energy and storage providers
- We also need big grid and asset maintenance contracts, including installation, upgrade and repairs.



HOW DO WE PAY FOR IT?

People pay to city sponsored energy companies (e.g. York, Glasgow Renewables Co). The cost of energy is variable. In some cities energy is affordable. In energy poor cities and regions, however, energy bills are high. The national government subsidizes those who qualify as 'energy poor.'

#2: Intercity trading

My city generates energy locally for local people first, and trades the surplus.

WHAT ARE THE MAIN CHALLENGES?

Vulnerability to cyber attacks and data privacy violations Growing energy inequality between cities – energy prices vary widely. Climate shocks such as flooding and heat waves. We have had to stop extracting oil from the North Sea which has impacted the businesses and areas that relied upon this.



- New technology has helped local communities run their own local grids:
- Our fridges, heating systems and entertainment systems communicate with the internet to allow very flexible demand management, with better security systems for data.
- Big investment has improved renewable technologies; anaerobic digestion and bio-gas, better batteries,
- Local heat and power networks are connected to a highly flexible smart grid, new technologies help and reward us for reducing our demand for power.
- A basic national grid is maintained.
- There are lots of different energy companies and competition is fierce, giving us lots of choice.
- Some cities are fully powered by renewable energy, others languish behind at around 60%. Trust and security are critical, and people get really involved in improving their own cities.
- Everything happens online, we set out personal energy specifications, quickly compare prices and companies, and easily switch between them.

WHO ARE THE KEY INFLUENCERS?

- A deregulated open market with plenty of local brands, highly trusted.
- Regulation around the 'internet of things' (all our connected devices), consumer protection
- Community-orientated business models and interest groups
- City mayors, local authorities
- Technology companies



HOW DO WE PAY FOR IT?

Ourselves. There are no more government subsidies for energy, but the range of providers and community schemes keep prices cheap. It's easy to understand prices and switch between providers.

#3: Renewable communities

I get my energy from a very efficient community and neighbourhood scale system – I can choose to use very local renewable energy if I want to and I can also get involved in running the scheme myself if I want. I really trust it and the companies who run it.

- Cyber security
- Brand trust
- Cost of maintaining system whilst keep energy costs low
- Repurposing assets from the old energy system



Open data platforms where users' health data is openly and freely shared in exchange for health services. These give us more information about key health conditions, allowing for more effective, more tailored therapies.

- DNA mappers map your DNA and tell you what health conditions you might be at risk of, what therapies might work best for you (e.g. if you should adopt a dairy-free diet). This means I can be sure I am choosing drugs or treatments that work for me.
- Jewellery and clothes contain electronics, software, sensors and connect to the internet to collect and exchange my health data. These are much cheaper and easier to use these days.
- Holistic health spas address my physical health and mental wellbeing; I can book a personalised retreat to engineer my gut bacteria, take yoga classes or get treatment for an illness.
- Data is money: I lose some privacy but get services by sharing my data with healthcare companies.
- My taxes are lower: the NHS, as it was, is not there any-more there's no need for us all to contribute to a system that provides the 'same treatment for everyone'.

WHO ARE THE KEY INFLUENCERS?

- Open data health platforms, which own and manage incredible amounts of valuable health data.
- Drug manufacturers that specialize in how genes affect a person's response to drugs.
- Manufacturers of health devices like smart patches that monitor health vitals



HOW DO WE PAY FOR IT?

Ourselves – the healthcare market is dominated by private providers. However, health services are affordable, because there is so much choice in providers competing for business, and because the data we share with the companies makes it easier and cheaper for them to deliver tailored health services for us

#1: Open data platforms

There are many more healthcare providers than before. Health care is mostly delivered through private clinics, hospitals and new online services. I pay for my healthcare myself so I choose what to use.

I don't have to wait until I am ill – I manage my health day to day, relying on technology to help me. I wear health devices like biometric clothes and jewellery that measures my body vitals.

WHAT ARE THE MAIN CHALLENGES?

Increasing resistance to antibiotics

Regulation and quality control over the small health service providers.

Lack of privacy of patients' data.

Hackers of valuable data.

'Data dodgers' who refuse to share their personal information but still want the same services as everyone else.

- I rely on good connectivity and data sharing. Remote analytics and diagnostics are used and machines can 'learn' to deliver complex services
- Drones and other robots can deliver some services
- The NHS is there, but massively restructured and it has outsourced many of its services to private subcontractors. There are fewer large hospitals, but they are more evenly spread across the country and more specialised in terms of the care they provide, such as complex therapies like cancer care and surgical procedures – everything else is dealt with using remote care and local walk in services
- People suffer fewer health issues related to urban problems like air pollution, but mental health challenges like loneliness and depression continue
- Consumer health wearables, ingestibles (e.g. edible 'smart pills' which deliver treatment and monitor health outcomes) and implants

WHO ARE THE KEY INFLUENCERS?

- Companies who make health wearables like contact lenses which track the blood sugar levels of diabetics.
- Subscription-based online health services
- NHS



HOW DO WE PAY FOR IT?

Basic health services are still provided by the NHS, free at the point of use and tax-funded. But many choose to 'boost' their health and wellbeing options through private services, which provide better, faster responses across the country.

#2: Remote healthcare

I can work online and access services digitally, so I've moved to the countryside, out of the polluted, expensive city. My healthcare is more automated and virtual. Instead of going in person to my GP, I wear a wireless device which collects and transmits health data remotely and gives me a diagnosis, and get medicine delivered by drone.

- Cyberterrorism and hackers
- Bugs/ viruses in the computer systems
- Ensuring clinical safety and effectiveness given how many health services are carried out online

- The NHS is very aware of people's illnesses, health, lifestyle and fitness through constant computing and assessment.
 Everything is measured and fed into a central computer system. Predictive analytic programmes can predict disease patterns across the whole population
- Individuals are targeted for healthcare interventions
- Drugs have improved and become more tailored e.g. cognitive enhancement drugs to make you cleverer, eye implants to treat bad sight, medicines and therapies tailored to your genes
- As a result, the health system is highly effective at treating disease and the physical health of UK people is improving.
- I tend to rely heavily on the state and don't take a lot of responsibility for my own health
- Cities have become bigger and more crowded as people stay close to the government-run large network of hospital centres with well-connected suburban clinics
- State owned wireless health sensors placed on or embedded in a person's body which monitor certain vitals and reports them back to the NHS
- Certain services are subcontracted to private companies, but the NHS retains firm control at the centre.

WHO ARE THE KEY INFLUENCERS?

- The state
- Government service providers
- Drug companies



HOW DO WE PAY FOR IT?

Heavy taxation. People accept high taxes in exchange for their health being managed for them by the NHS.

#3: Targeted healthcare

A large, centralised NHS delivers highly targeted, efficient care. I pay more in tax, but have less say in my choice of treatment, as decisions about healthcare are made centrally for the benefit of everyone.

- Security and privacy
- How to fund this large, expensive health system
- Apathy people are less involved in managing their own health – if my health can't be fixed with a pill, I may not know what to do to look after myself.

- NHS is for the poor only, others pay for health services at private clinics which guarantee data security.
- People are increasingly obsessed with health particularly now that many pay for their health services
- Local governments are seen as just another service provider: people are willing to pay high taxes only if they see benefits and good outcomes. People pay to boost the infrastructure in their area, whether that's a better health clinic or improved policing. But only some communities can afford to do this, and cities have become very unequal.
- People who can afford it, either pay for private providers to fill the gap or move to cities which have better quality of life: clean air, state of the art gyms and public parks.
- Health services focus on prevention instead of treatment.
- Complex therapies like cancer care are provided by intensive care units which are much smaller but better linked to other experts and specialists than traditional hospitals.
- The open data revolution never took off. The health system in particular is full of privacy firewalls that protect from computer viruses and personal data theft. Health technologies collect and analyse your data, and feed it directly back to you so that you can choose how to act on the information.

WHO ARE THE KEY INFLUENCERS?

- Richer people who demand private services and increasingly unhealthy poorer groups
- Consumer healthcare companies (e.g. providers of health technology and advice).
- Private health clinics.



A two-tiered system of public and private healthcare provision, depending on what you can afford. I am focused on getting the best possible value for money in terms of my health, and protecting my data privacy.

HOW DO WE PAY FOR IT?

Taxes pay for a bare-bones NHS service which provides the basics to everyone, but not much else. The wealthy increase their access to health and wellbeing services by paying for private care.

WHAT ARE THE MAIN CHALLENGES?

The poor who get left behind, and the simmering discontent that inequality generates.



- Vehicle hire apps mean transport is available on-demand, with lots of competition and choice in terms of providers.
 I pay using digital devices
- We like our personal space and tailored solutions, so cheap short term hire vehicles and taxis are popular
- I stay in my local area; working remotely and flexibly is encouraged, so no more rush- hour commuting.
- Mass transit schemes such as trains and buses remain, but more for inter-city travel.
- The road network is well-maintained, but we do still struggle with traffic there are lots of personal vehicles around.
- Air pollution is also an issue, but less so, as we use solar power and electric-powered vehicles, and the batteries have improved.

WHO ARE THE KEY INFLUENCERS?

- Technology-enabled companies and platforms think Uber 2.0 who hold a lot of our personal data from payment info, to where we are located and how we move around.
- Manufacturers of (and investors in) electric vehicles
 both for personal and commercial use
- As businesses hold lots of our personal data, data protection is heavily regulated by national government. The increasing number of mobility providers have to adhere to minimum standards and codes of conduct on things like consumer protection, accessibility, health and safety.



HOW DO WE PAY FOR IT?

Digitally, using no cash. I'm happy to pay because it's affordable and I get private transport when and where I want. I'm not prepared to squeeze onto public trains and buses. Tax load is lighter because the government invests less in public transport, and there are more private providers.

WHAT ARE THE MAIN CHALLENGES?

- Legacy public transport infrastructure. People use more personal vehicles, and there is more choice, especially for short-term hire, which has made public transport feel somewhat obsolete. People use it less, and it gets less investment, so it's not in great shape.
- Cybersecurity
- Data privacy

#1: "Me mobility"

My city neighbourhood provides all the essentials in my local area. I walk around or travel by choosing and booking small electric cars and bikes online.

- City mayors can invest in the centre and maintain good mass transit infrastructure. But they fail to meet the demands of rapidly growing suburbs. Those on lower incomes who can't afford to live in the city are forced to the suburbs where the transport links aren't as good.
- In the city centre, mobility is much easier with access to train, tram, bus, and bike services, electric vehicle hire and charging points.
- City centre mass transit systems like buses and trams are well integrated, highly electrified, and automated. Retina recognition helps with charging and security.
- Congestion charge operates everywhere
- This has vastly improved air quality in the centre of many cities.
- Sensor and mobile technologies (e.g. transport data and security system that can track and record personal movements)
- Heavy public transport infrastructure investment

WHO ARE THE KEY INFLUENCERS?

- City mayor and related offices
- Community groups lobbying for change in the suburbs
- Businesses with long-term contracts with mayoral offices
- At both national and city level, there is integrated transport, housing and public health policy and regulation.



HOW DO WE PAY FOR IT?

Only the well-off who can afford to live in the city core can comfortably afford all the transport solutions. But everyone pays for transport infrastructure via taxes. Lowerincome households in suburban areas rely on cars and pay high prices for fuel.

#2: Two-tier town

City centres have well-run and integrated public transport provision but the suburbs are growing as people flock to cities. Suburbs have less good and more expensive public transport.

WHAT ARE THE MAIN CHALLENGES?

Poor connectivity in many suburban areas, with impacts on health, housing access etc.



- My city region is in charge of transport. National government manages the inter-city network of roads, rail and canals.
- Transport infrastructure remains under public sector control. I pay more in regional taxes but get more a less congested system, better access, fewer delays and breakdowns.
- New innovations like tram-trains operate on both inter-city and regional networks.
- New transport technology (e.g. improved train signalling)
- Biometric cards to track and charge users. I can tailor a monthly package of services just for me.
- The system assumes we share data to help it run well
- Lots of private companies compete to deliver services and they are innovative in bringing in new technologies.
- Because public transport is so good, I don't need to run a car any more.

WHO ARE THE KEY INFLUENCERS?

- Regional and city governments, but beholden to the local voters.
- Service providers, including tech companies, working to franchise concessions at the regional level.
- A national infrastructure commission focusses primarily on connections between city-regions
- Regional transport agencies focus on mobility within cities and regulation of commercial providers.



HOW DO WE PAY FOR IT?

Through heavy taxation, and moderately-priced fares.

#3: Regional renaissance

My city has invested in infrastructure, improved networks so public transport is much better. I now have more choice in where I live, work, and how I travel.

WHAT ARE THE MAIN CHALLENGES?

Helping the public transport system keep up with, and take advantage of, new digital technologies Increasing expectations of users

Cost of running the public transport system and improving the infrastructure



- Incentives like High Occupancy Lanes, taxation of private vehicles and Shared Car rebates mean that the majority of car journeys are shared
- New vehicle sharing services help us share
- Electric vehicles help us save money
- Buses and trains are stressed as city populations continue to grow and public investment remains patchy.

WHO ARE THE KEY INFLUENCERS?

- Technology companies
- Vehicle rental companies
- Government is limited to land use planning, regulation of transport networks and consumer protection.



HOW DO WE PAY FOR IT?

The high rates of vehicle sharing mean that transport costs are affordable. Plus, although the public transport system is dated, it is a cheap way to get around.

#4: Carpool

We share our cars now; with high oil prices, congestion, and austerity, it makes sense.

- Personal space
- Quality of public transport infrastructure



- We live in a much less wasteful society because we have no choice many resources are in short supply or just don't exist anymore.
- The things I buy are often made out of secondary (recycled) resources.
- I also make new things out of old products around the home, using craft websites to inspire me. My old jeans have become a chair cushion and my coffee grounds are sold to a local company that make biofuel.
- New materials and products are made to be easily recyclable
- Waste collection and resale is big business the stuff we used to throw away is now worth money.
- Sometimes waste is 'stolen' as it has a value and people can't afford as many new goods anymore

WHO ARE THE KEY INFLUENCERS?

- Waste collection and reprocessing companies
- Central government regulates waste prices and also the prices of new goods to make sure that cost of reprocessing or recycling is fully priced in.
- Local governments monitor waste disposal and processing
- Local repurposing businesses help you turn your waste into something useful



HOW DO WE PAY FOR IT?

The prices of products include the cost of reprocessing and recycling them. There is a 'carbon price' - less environmentally friendly goods cost more, to encourage me to keep things longer and waste less. The government contracts companies, who make money from collecting, reprocessing and recycling waste.

WHAT ARE THE MAIN CHALLENGES?

- Poverty
- Many people can't afford key goods

#1: Patching things up

A lack of resources means my city has to recover much more of its materials. I work hard to make the most of what I've got – I can't afford to just throw stuff away.

- There has been a backlash in society against high consumption. We are not as rich as we were but we need to buy fewer things.
- The things I own are made to last so I don't need to replace them often. Many of my things are 'for life' my mobile phone, furniture and car are high-end desirable items that I might pass on to my grandkids.
- Products have been designed so they produce little waste. What is left can easily be recovered and reused. The companies that make the products are responsible for paying for final disposal.
- Many products are 'modular' if it breaks I replace a small bit of it using businesses who specialise.
- I throw little away. I consume what I need and no more. I also share some products, like cars, clothing, gardening tools, leftover food through neighbourhood fridge schemes.

WHO ARE THE KEY INFLUENCERS?

- Campaigners, scientists and celebrities have helped change our attitudes so we consume less.
- Companies creating durable, high-end goods
- There is no need for strong regulation because change has been driven by consumers like me.
- The government regulates waste disposal and processing, but this reflects how people want to behave, rather than penalising or forcing people to change their ways.



HOW DO WE PAY FOR IT?

We buy one thing and keep it for life, which makes expensive things more accessible. We copurchase and share products when we cannot afford to buy our own. Municipal waste levels are drastically cut, which reduces our taxes.

#2: Repurposing

Like many other people, I buy less stuff but I really value the things I have and, because they are high quality and made well, I keep them for longer. The whole economy has been changed so that the things I buy are designed to create less waste.

- Some just cannot afford the high-end, durable products today, even if it will last a lifetime.
- Some people just cannot get used to a low consumption lifestyle, and create increasing demand for cheap products



- Waste levels are high, mainly because of our growing population. Waste per head is lower than before.
- Almost all materials are embedded with technology the different things a product is made from can be identified and tracked from inception to end of life.
- I have to do a lot of work separating my waste, but everyone benefits as it's then easier and cheaper to process it. I pay exactly for what I throw away and get fined if I get it wrong.
- Autonomous vehicles collect my waste. Some cities have automated underground waste systems.
- Significantly less waste goes to landfill, a very high percentage is recycled, and a big amount goes into energy generation it can be burned and organic material can be anaerobically digested.

WHO ARE THE KEY INFLUENCERS?

- Central government owns and controls the full waste disposal, collection and processing chain.
- Heavy regulation taxation, and fines to people who don't use it in the right way, helps pay for the efficient waste system.
- Track and trace technology providers



HOW DO WE PAY FOR IT?

I am charged for the waste I produce, both the amount, as well as type of waste – so I want to reduce the waste I produce. If I dumped my waste, or throw it away in the wrong way, I would be fined.

#3: Sorting things out

Waste is managed using government-run, technologyenabled systems that collect and process our waste efficiently. I do my bit because there are high charges to throw waste away and fines if I don't comply.

WHAT ARE THE MAIN CHALLENGES?

 Some people are unhappy with how much control there is in system. Those unwilling or unable to pay are tempted to dump.



- Water is now seen as a valuable local resource to be managed by the local users.
- My community self-polices, by putting social pressure on me to reduce my water consumption and to only use what I need.
- The local community group monitors the amount of water I use and I am penalised if I exceed my 'allowance'.
- The costs of products now incorporate the full water footprint, making most stuff a lot more expensive.
- I have had to change the way I use water. I use a smart meter to monitor my water use. Just like everyone else in my community, I collect rainwater and reuse 'grey' water from my bath and kitchen to water my green roof.
- When there is a surplus of water available in my community, we trade it with other communities.

WHO ARE THE KEY INFLUENCERS?

- Community cooperatives, which own and manage natural resources like water and engage in energy generation
- Green entrepreneurs that make the rainwater harvest systems, filtration tech, etc.
- The national government sets national standards and provides light oversight, but most of the power & regulation is in the hands of local communities and city governments.



HOW DO WE PAY FOR IT?

Through the local cooperative. Because my cooperative community monitors the amount of local water resources me and my neighbours use, I pay the real cost of the water I use. If I exceed my water 'allowance' I can buy credits from others in the scheme, but at a premium cost.

WHAT ARE THE MAIN CHALLENGES?

- Not everyone accepts the stricter standards on use of water and other resources. We have to live more frugal lifestyles and our neighbours know how much water we've used.
- It is not easy for national government to oversee and quality control the many local community groups.
- It can be difficult to manage large water resources (e.g. the Thames) - which community owns it?

#1: Community Patrol

Community co-operatives put pressure on local citizens like me to conserve and manage water. This means I reuse my water and my community can trade it.

- The city mayor has more power than in the past and there is widespread government investment in green infrastructure.
- I no longer have to think about water scarcity and water use efficiency my smart city takes care of it for me.
- Technology means there is much more focus on closed loop solutions. Smart pipes monitor water, filters recycle precious resources like phosphorus out of sewage water. Robots repair old water pipes.
- My home, as well as all others in the city centre, has a green roof and rainwater harvesting solutions. All the grey water in my home is reused thanks to smart appliances my washing machine waste water goes into my toilet tank, as does the water that I use to wash my hands.

WHO ARE THE KEY INFLUENCERS?

- City governments dictate the rules and boundaries
- Private water companies deliver the government-mandated services to cities
- Water technology providers (e.g. that reuse grey water in the home)
- City governments collaborate with water technology companies and utilities to create the right solutions, which are then rolled out.



HOW DO WE PAY FOR IT?

My water is very expensive, but technologies that help me use water efficiently have become widespread. This means my water bill is not too hard to bear. Cost of investing in infrastructure has been massive which has been underwritten by pensions funds so we have been paying through our pension contributions. I am also taxed heavily for high tech 'smart services', but I do not mind too much when everything runs so smoothly

#2: Smart Water

My city is 'smart' - everything from water pipes to footpaths collect data on usage and impact. There are many service providers competing to deliver water and sanitation services quickly and reliably.

- Paying for the expensive new infrastructure
- There is heavy reliance on technology when a technology malfunctions, the system finds it difficult to cope

- Extreme weather events due to climate change are now the new normal in the UK.
- Like most people, I have a 'make do and mend' attitude. I am more aware of the need to conserve resources, and I have changed my behaviour radically.
- Water supply has been re-nationalised.
- People are only allowed to water gardens at designated times. Every household has been given a rainwater harvesting tank.
- The government is working on developing desalination technology which can be used at scale across the UK. The result is that a growing number of people are able to have access to good quality drinking water.
- There is good community spirit in my city local people work together to take responsibility for managing their resources well, and people help each other out in droughts and floods.
- Water intensive businesses (e.g. agriculture and food processing) are moving to areas in the north with more reliable water supply.

WHO ARE THE KEY INFLUENCERS?

- National government Water supply is heavily regulated. This limits consumer choice but means we have enough water to go around.
- Companies which provide solutions that help households with their water supply (e.g. technology to harvest and filter rainwater)



Community Sopport

HOW DO WE PAY FOR IT?

We pay through tax and high water bills. I try to cut the costs of my water by installing rainwater harvesting and recycling solutions in my home.

#3: Regulated water

After many extreme weather events the government tightly regulates the water system to ensure there's enough to go around. I harvest and recycle water where I can, as it has become a necessity in daily life.

WHAT ARE THE MAIN CHALLENGES?

Water shortages which need continuous management