

Natural England Board

Meeting: 17
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Paper No: **NEB PU17 03**

Title: **Natural England's Scenarios for the Natural Environment in 2060**

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1. Purpose

1.1 The purpose of this paper is to seek endorsement from the Board for the scenarios and to set out how these will be used across the organisation.

2. Recommendation

2.1 It is recommended that the Board consider and endorse the Scenarios Stories set out at Annex 1 and our plans for their wider communication.

3. Background

3.1 Natural England has developed a unique, robust and powerful set of scenarios around a focal issue '*What could affect England's natural environment to 2060?*' The scenarios will help Natural England build a sound perspective on some of the long-term challenges to the natural environment, inform the development of our vision for the natural environment to 2060, and will be used to test Natural England's strategies and policies. Above all, we expect the scenarios to stimulate debate on the big issues facing the natural environment.

3.2 The core of each scenario (Annex 1) is described from the point of view of a person in 2060 looking back on events over the previous 50 years. At the launch, these narratives will be supported by a wealth of intelligence including timelines and a narrative of the implications for a range of terrestrial and marine habitats.

3.3 Natural England has been working closely with Defra/DCLG Foresight project which is carrying out a study on the future of land use, a component of which is the development of scenarios. Given the common and pervasive nature of many of the key drivers including demographic change, economic development and technological innovation, there will be complementarity between Natural England's scenarios and those derived by Foresight. We have been collaborating to validate evidence about future trends and drivers. There is however significant distinction between the two sets of scenarios, namely that;

- The Foresight scenario cover the UK and includes only uses of land, whereas Natural England's scenarios cover England only and includes both terrestrial and marine environments,
- The Foresight scenarios are focused on land use as an *activity* i.e. the range and patterns of usages to which land is put. In contrast, the Natural England

scenarios are focussed on the natural environment as an *entity* i.e. how the natural environment looks and functions and how people engage with it.

4. Developing the scenarios

4.1 The scenarios have been developed around the key issues, *what could affect England's natural environment to 2060?* Three big questions have been posed:

- Will the world have found a way to live sustainably?
- Will technology have provided a 'get out of jail free' card or will there be a values change that allows for sustainability?
- What will be the world order - will it be dominated by free market globalisation, or not? (and what other paradigms may take its place?)

4.2 The scenarios have been built by examining how over a 50-year timescale people's values and behaviours may influence the decisions and choices that could affect the natural and explore:

- What new concepts, ideas, and paradigms will emerge to help us make sense of the world?
- How will we live together on planet Earth?
- What arts and technologies will we use to connect people, places, and things?
- As human beings what will we be inspired to create?
- How will we use the earth's resources?

4.3 In every scenario the same two major shocks have been introduced, (2020 drought and 2050 flood). The purpose of including these is not only to reflect that major weather events are increasingly likely under climate change but also to test how society reacts to such events in scenario.

4.4 An extensive programme of staff, stakeholder and public engagement has been fundamental to developing the scenarios, providing opportunities for key groups, including non-usual suspects, to inform, test and quality assure the developing set of scenarios. This engagement has contributed to the robustness of the scenario development process and included:

- Interviews with 14 intellectual decision-makers from inside and outside Natural England;
- Involvement of over 50 people, including 10 external partners, in the scenario creation process;
- Involvement of 90 participants, 53 from outside Natural England, in the testing/refining workshops;
- Public involvement covering four disparate groups and 111 people in total;

- Testing the scenarios with 14 eminent experts from outside Natural England through a Virtual Advisory Panel involving experts with international reach, and an independent futures perspective.

5. Future Plans

- 5.1 We intend to launch the scenarios in November, as part of the Environmental Leadership Development Programme, and expect this to be a key opportunity to instigate debate on the future of the natural environment. The launch will showcase the scenarios across academic and government audiences. The launch will implicitly and explicitly link to an understanding of the present and future benefits to society of a healthy natural environment.

Annex 1

Scenario 1 – GO FOR GROWTH

Life in 2060: Making money is a priority and economic growth is driven by consumption and new technology. Few people worry about the environment and continue to consume. The country has reacted to devastating events by spending money on food from abroad and developing technology. There is growing concern this may not always solve the problems Britain's faced with.

William Campbell, London, aged 75 (born 1985)

Working in London at the turn of the century we were driven by money, just as we are today. Private companies had taken over most services by the time I was a teenager so, for me, the world has always revolved around wealth. Personally it's meant I've had a happy life, with everything I need.

We've benefitted from progress. Back in 2010, people were still sceptical about robots but now they staff coal mines, factories and hospitals; they produce food and generally keep things going. They also weren't keen on the idea of chips to boost brain power, but I've had treatment to increase my memory and pass on knowledge. I think everyone should get enhanced – it helps drive the country's economy.

What's shocked me most over the years are big unpredicted events, both natural and man-made, that really changed the world. I remember the September 11 attacks in 2001, the Indian Ocean tsunami in 2004, and the Credit Crunch in 2008. But the heat-wave of 2020 and the widespread drought it caused, was on a completely different scale. Food supplies shrank very quickly but our country was fortunate as we could buy food from abroad to deal with shortages.

In 2025, a few years after the drought, we invested heavily in biotechnology to mass-produce food that could tolerate little water. Things seemed to be going well but when oil prices reached \$300 a barrel that year we finally realised energy wasn't on tap. Lots of cars were converted to run on electricity and we had to build 20 nuclear power stations in just a few years. By 2040, nuclear power was piped to the UK from countries including Turkey and Slovakia.

Manufacturing was advancing dramatically and in 2042, the International University won several Nobel prizes for developing nanotechnology to improve food, medicine and energy. More businesses adopted this new way of making things, particularly as it merged with developments in brain science, computers and biology.

In 2050, the London and east coast floods shocked everyone. I was still working in the City and joined a consortium to build up the sea defences along the North Sea. As a nation, we celebrated our progress at the 2051 Festival of Britain. This opened up our heritage and landscape to the world through high-definition virtual reality which attracted 6 billion visitors from across the globe.

Our sense of achievement suffered a blow last year when some of Britain's poorer areas needed famine relief when further droughts struck and fishing collapsed. Food supplies were badly affected again. We were lucky that countries with a lot of resources, like Russia, bailed us out and we avoided starvation, but this really brought home how the world is changing. We'll have to pay back the Russians soon, though, or our gas supplies will be cut off.

We've always done well as a nation, but I'm worried we won't be able to feed ourselves over the next 50 years as the population continues to grow, particularly through

immigration. Many problems have been sorted out, like cheap energy but things could get a lot worse very quickly.

Scenario 2 – KEEP IT LOCAL

Life in 2060: Society revolves around feeding and providing for itself. The country is split into land for food and land for housing. Many decisions are made regionally and people are very protective of their local area and belongings. Resources are limited and are tightly controlled but consumption remains high.

Betsy James, Nottingham, aged 25 (born 2035)

When my Gran tells me stories of travelling around the world by plane, and having food, cars, furniture and clothes imported, I'm always left wondering why people didn't think about the effects this might have on the globe. People wanted children – but most of them didn't seem to care about looking after the world their kids would grow up in.

Gran says some people made an effort at the beginning of the century, growing their own food and using their cars less, but it wasn't until the hot summer of 2020 that society suddenly became more aware of how vulnerable we are. People realised the 'global economy' didn't provide all the answers and they had to try and make England self-sufficient.

That was the first year people understood the food wasn't unlimited either. Many more started growing their own wherever they could, digging up National Parks, green spaces in cities and nature reserves. The government didn't do anything to control this, so people turned to their local councils for help. Gradually, more things that mattered were decided locally and central government became irrelevant to most people.

Gran had to move house because the local government wanted to use her land to build a dam to store water and generate power. Everyone thought more about energy, buying cars that didn't use scarce oil, taking local holidays and adding solar panels to their roofs. They realised they had to start relying on themselves. English businesses thrived, supplying us with the things we needed on our doorsteps. We don't have pineapples now, but at least we don't have to rely on unreliable imports from unstable parts of the world that seem to get worse every year.

Gran grew her own food, which also fed my mum and dad, so the government didn't come down on her like they did on other people. She taught my parents how to farm and they were allowed two children to help with the work. I feel lucky to have a sister.

Gran says she feels sorry for me living in today's world where we are threatened by raiders who come from the east coast every time they get flooded. She remembers England differently – people would travel around spending time in different regions for fun and most communities weren't gated. Now we have to protect our homes and local area, and never get to travel very far. I have to take her word for it as I've never been more than 50 kilometres from Nottingham. But then again, we've all got high definition virtual reality now. Years ago, people couldn't even see what was going on in other parts of the world but I use HDVR all the time. I guess that's one of the biggest changes, along with nuclear energy and using robots for defence when the raiders come.

We're still looking at ways we can use technology to develop strength and intelligence, but it's not quite there yet. I'd like the government to protect our country, stop water exports to Europe, and give us more time away from the allotment. I can't grumble too much. At least I've got enough to eat and we're safe most of the time. It's just that the world Gran grew up in just seems much more relaxed.

Scenario 3 – SUCCEED THROUGH SCIENCE

Life in 2060: The global economy is driven by innovation and everyone relies on business to keep the country growing. London and the south east are important but the rest of the country is also booming as both cities and their surroundings produce so much. People trust technology to enable growth within environmental and resource limits but some worry it may not always have the answer.

Sangeeta Chaudhry, Leicester, aged 100 (born 1960)

When people find out I'm 100 years old, they expect stories of dramatic change, but it's comforting that a lot of the change has been gradual. I already car-shared when I was in my twenties; people talked about carbon trading when I was in my forties; I've always gone on holiday; and London and the south east have always generated the most money.

What's changed is the pressure to innovate – and that's got even more important as the environment began to suffer and competition with other countries reached fever-pitch. We used to leave it to the scientists, but now we're all at it - wherever I go, I hear talk about the latest invention that hadn't even been thought of a few years back.

Huge developments have taken place in producing food, managing the environment, building and manufacturing. At the turn of the century, people talked a lot about 'sustainable energy' but they weren't very good at capturing the power of the sun, wind, waves, tides and fusion. Over time, society cracked it. The Severn Barrage started up in 2035 and is doing well.

My grandchildren call me primitive when I tell them how we used to dig the soil, plant, water and 'fertilise' seeds, and wait for them to grow. They can't believe plants went from fields to factories, then from shops to homes. It was a strange process, but it was normal back then.

Food is produced industrially now and we have EcoPack food grown in huge facilities. It may be vitamin-enriched with added anti-ageing and brain enhancement, but it just doesn't taste the same as natural food – I'd do anything for a real mango!

The food riots in London in 2020 showed the effect a hot summer could have. The government fell and was taken over by a party that promised to work with business to train more scientists and develop new foods, artificial land and oil replacements. Big, old and slow companies were against this but the new government was backed by new technology-savvy entrepreneurs who were better able at squeezing money out of the City as they regained confidence after the long Credit Crunch. They created strong global, local, public and private partnerships and convinced people our future depended on producing more and innovating to help save resources – innovation became the new mantra.

In 2030, the United Nations set up the Forum for EcoInnovation and this became really important. They brought together China, America, Brazil and Europe to cooperate on a joint energy project to turn the Sahara Desert into a solar power factory and started setting prices for natural resources and controlling carbon trading.

Locally, Leicester became a much greener place, with a million trees planted to cool the city. National Parks became like giant machines; In 2040, the Yorkshire Dales became the Dales EcoTech Park, which is now a big water purifier and carbon store.

We've had some shocks over the years. We predicted the 2050 floods and made preparations - but we hadn't prepared enough. The floods were still overwhelming and thousands of people really suffered. Coastlines flood, but the effects are a lot less than they could have been without the natural defences we've put in place.

So many people live in England now. Technology and science have created successes in so many areas, but will they be enough to keep us safe? China cleaned up its act through heavy enforcement – I hope we don't have to go down that route.

Scenario 4 – CONNECT FOR LIFE

Life in 2060: People connect through vast global networks. Decisions and economies are based locally but through billions of world-wide connections they create a bigger and more effective system – a global super-brain. Social and environmental values have changed a lot over the years – loyalty lies with communities connected for common purposes across the globe; national government has relatively little influence.

Jacob Wilcox, Somerset, aged 52 (born 2008)

My father said that when he was at university, one day he was writing letters by hand, the next he was emailing people all over the country. It must have been pretty exciting living in such a fast-moving world – just imagine seeing NetOne - what we call the first generation internet – come on stream!

He was quite adventurous and even travelled to different continents. He went to Asia where he saw the effects of overcrowding and real hunger at first hand. He met lots of people and used NetOne to link up with groups across the globe – some as friends but all with similar political interests.

My father wanted to help change the world so he joined a movement that lobbied the EU and the UN to create a set of tough targets for 2050. But they came to nothing. It was 2019 – European voters still worried about cars, holidays, immigration and terrorism and the effect of inflation. Even though NetTwo had evolved by then and people were using it create a new wave of bottom-up activism, it drives me mad that very few cared enough about the environment to change. I suppose most people thought ‘why should I change if no one else is bothering?’ The issues were so huge everyone waited for governments and technology to fix things – but they didn’t.

I remember the summer of 2020 when the whole of Europe was hit with soaring temperatures and crop failures. My father said people started to take notice then because they could see that oceans were dying and carbon emissions were rising. As I grew older, more electricity was generated locally through solar cells and water recycling became common. New strains of crops were developed and environmentally-friendly food became the norm.

Although there were local developments, globally there were big breakthroughs including nuclear fusion and cheap hydrogen-powered vehicles. Europe started to change, but by the forties, the world’s population was rapidly approaching 9 billion and we couldn’t cut human CO₂ emissions everywhere. Food supply was dwindling as fish couldn’t survive in the acid oceans and all the best land had already been taken. In 2050, floods hit people all over the world. There was a lot of suffering because 70% of the world’s population lived in cities back then and many were at sea level.

It was tough, but we kept our spirits up. Most of us were born this century, and we seem more optimistic than previous generations. We connect with people socially, politically and economically and value our close relationship with nature. Technology helps, but only so much. We stop and think about whether we really needed something and the effects it may have now and in the future, here and in the rest of the world.

To help deal with the challenges, I joined a Transition Cities group to look at ways of living on and around water. We ran a virtual congress last year with over 50 million people including city mayors. We can’t keep the floods out, so we’re developing proposals for huge scale floating buildings and artificial land. We’re still trying to get these off the ground!

I do all this online and live in a much tighter community. NetThree came on stream a few years ago and the high definition virtual reality makes you feel like you're really 'there'. With more food and other things produced locally, we don't really need to travel very far, and if we do, it's by bike or H-car.

I hope society continues to work together. New forms of ownership became common by 2030 and we've largely solved our food problems by using mega-industrial scale manufacturing, even though there are 10 billion of us on the planet. I just hope, for my son's sake, the world can cope.

Annex 2

	Foresight Land Use Futures	Natural England ScENE 2060
Number of scenarios	Three	Four
Scope	<ul style="list-style-type: none"> • UK • Terrestrial • Use of land • 2060 horizon 	<ul style="list-style-type: none"> • England • Terrestrial and marine • Look and function of the natural environment • 2060 horizon
Focus	<ul style="list-style-type: none"> • Land use as a system; economic, social and environmental aspects. • The unifying structure for the scenarios is currently emerging; but is likely to be based around a scenario trilemma framework which explores the uncertainties around three major forces: population growth, environmental insecurity and economic growth. 	<ul style="list-style-type: none"> • Natural environment in the round, including people's engagement; encompassing the full range of social, technological and scientific, economic, environmental and political factors that could affect the natural environment. • The unifying structure for the scenarios is based on the ethnographic futures framework, focusing on people, their values and behaviours.
Timing	End June 2009 for the scenarios themselves, with full LUF project launched 27/28 January 2010.	Storylines by April 09; products by Autumn 09; scenario launch 12 November 09, as an integral part of Natural England's Environmental Leadership Delivery Plan.
Method	Underpinned by wide evidence gathering, including utilisation of existing work (eg Cabinet office's strategic challenges), commissioning of state of science reviews, and, systems and scenario workstreams involving external engagement (see below).	Desk research and outputs from elite interviews conducted with senior staff and stakeholders, shaped the preparation of fourteen global drivers of change to 2060, processes which were supported by internal and external engagement (see below).
Engagement	Expert dominated, with stakeholder input. Considering the possibility of public / land manager input.	Broadly based, with staff, stakeholder and public input.
Products	Set of systems maps and scenarios, with accompanying storylines and timelines. Plans not yet finalised to create illustrations and potential multi-media expressions of the scenarios and timelines for greater public accessibility and use.	A set of scenarios with accompanying storylines and timelines (produced in a range of formats) to be used to develop 2060 Vision etc. to be launched in March 2010.