UK SOCIO-ECONOMIC SCENARIOS

Ornella Dellaccio (Cambridge Econometrics)

Date: 8th March 2023

UK-SSPs

UK CLIMATE RESILIENCE PROGRAMME

Met Office

cambridge econometrics
clarity from complexity

UK Centre for Ecology & Hydrology

THE UNIVERSITY of EDINBURGH

UNIVERSITY OF EXETER

Motivation for the project

- No regionally enriched versions of the global SSPs are publicly available for the UK to combine with the UKCP18 climate projections
- Main aim was to develop a set of internally consistent socioeconomic scenarios for the UK that is coherent with the global SSPs
- Outputs are intended to provide the basis for further UK research on climate risk and resilience

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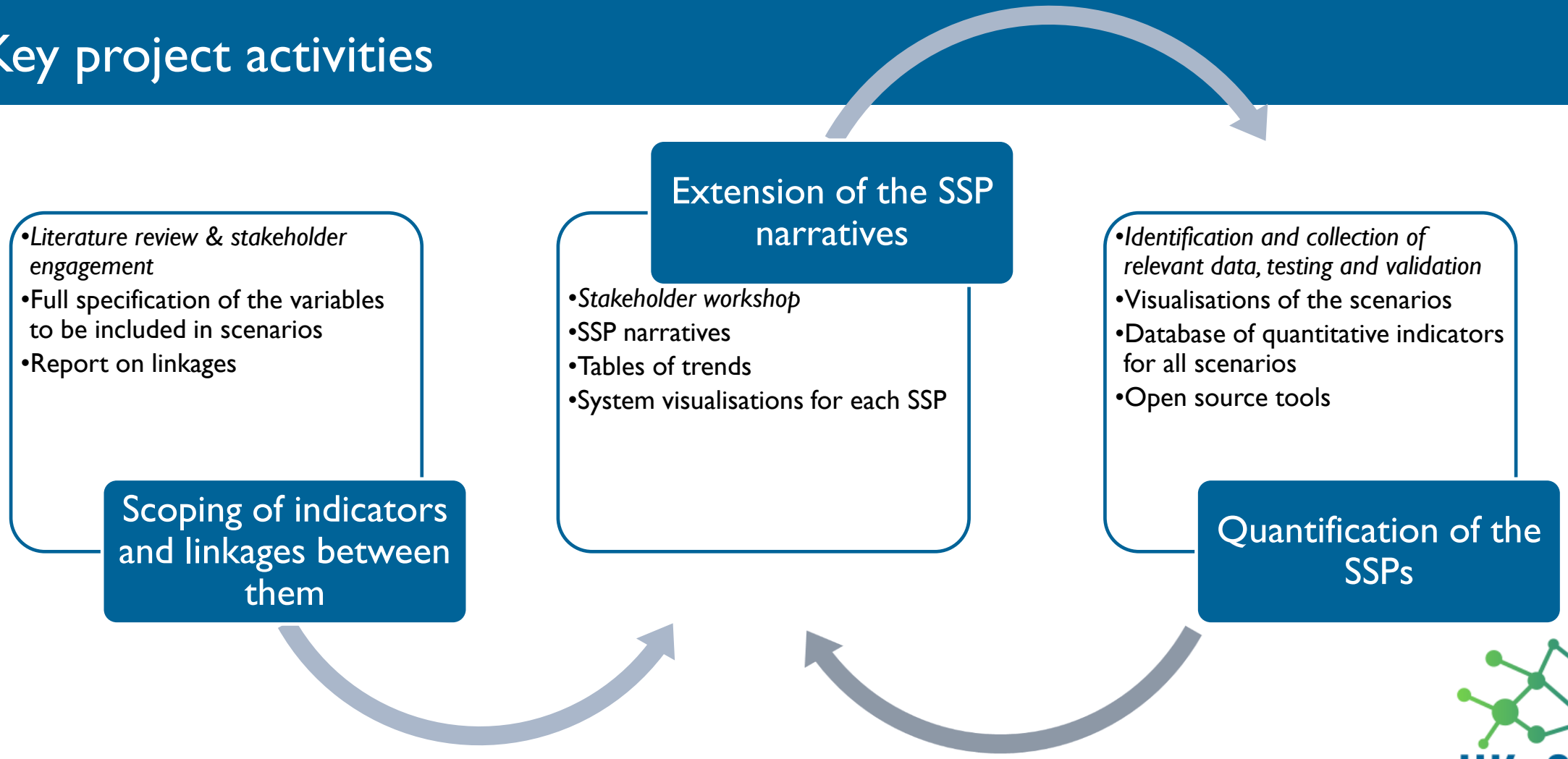
EXTENDING THE GLOBAL SSPS ➡ UK-SSPS

Extensions to the SSPs are required to support more detailed analyses of impacts, risks and response options in particular sectors, locations or at different scales:

- **Spatial extensions:** The global SSPs are used to contextualise regional scenario development.
- **Temporal extensions:** The SSPs describe general trends for the 21st Century. Extensions can provide additional detail on relevant temporal aspects and how sequential events may arise over time.
- **Sectoral extensions:** The SSPs provide only broad indications on sectoral developments that can be expanded.

Key project activities



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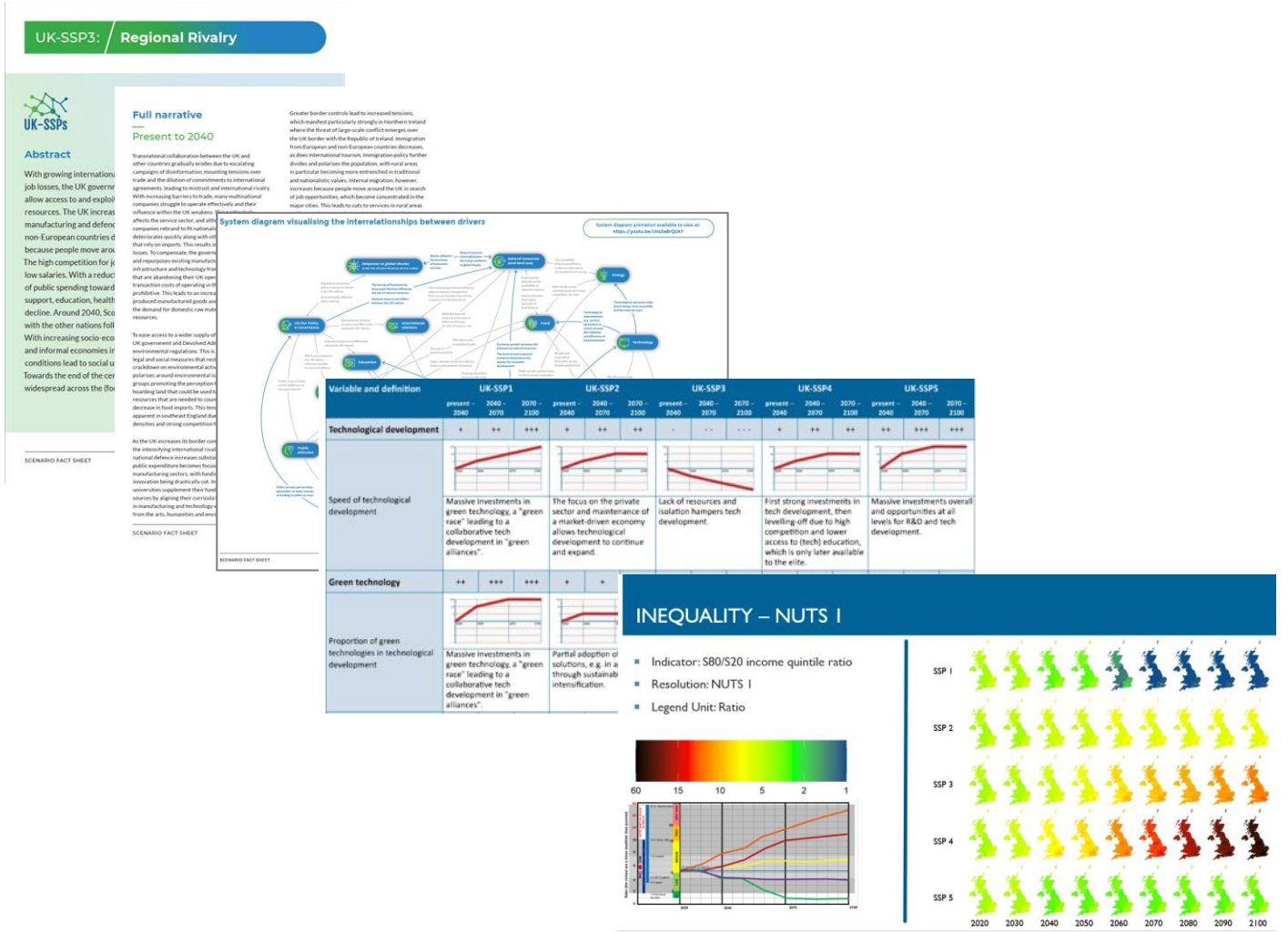
Project outcomes

- **Narratives for all five SSPs** for the UK and its constituent countries that have been regionally, sectorally and temporally extended from the global SSPs
- **A set systems diagrams** that visualise the interrelationships between the key drivers represented in the scenarios
- **Tables of semi-quantitative trends** for a wide range of socioeconomic indicators
- **Quantifications for specific indicators** at the appropriate temporal and spatial resolution



Semi-quantitative trends

A set of 50 key socioeconomic variables and their semi-quantitative trends

Society

Population
Ageing
Physical mobility
Public transport
Migration
Social mobility
Urban population
Urbanisation
Education
Health investments
Health care
Social cohesion
Human capital
Social capital

Technology

Technology development
Green technology
Tech transfer
Diffusion of tech
Infrastructure
Renewables
Bioenergy
Energy efficiency
Water abstraction change
R&D
Manufactured capital

Environment

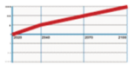
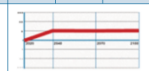
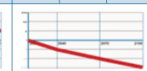
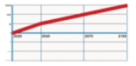
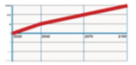
Protected areas
Land use regulation
Agricultural yields
Agriculture area
Fertiliser use
Natural capital

Economy & Lifestyle

GDP
Household income
Tourism
Industry
Funding transfers
Inequality
Consumption level
Consumption source
Meat consumption
Resource waste
Financial capital

Policies & Institutions

Imports of natural resources
Globalisation of trade
International cooperation
Environmental policy
Effectiveness of institutions
Participation in governance
Devolution of decision-making
Public engagement

Variable and definition	UK-SSP1			UK-SSP2			UK-SSP3			UK-SSP4			UK-SSP5		
	present – 2040	2040 – 2070	2070 – 2100	present – 2040	2040 – 2070	2070 – 2100	present – 2040	2040 – 2070	2070 – 2100	present – 2040	2040 – 2070	2070 – 2100	present – 2040	2040 – 2070	2070 – 2100
Technological development	+	++	+++	+	++	++	-	- -	- - -	+	++	++	++	+++	+++
Speed of technological development															
	Massive investments in green technology, a "green race" leading to a collaborative tech development in "green alliances".			The focus on the private sector and maintenance of a market-driven economy allows technological development to continue and expand.			Lack of resources and isolation hampers tech development.			First strong investments in tech development, then levelling-off due to high competition and lower access to (tech) education, which is only later available to the elite.			Massive investments overall and opportunities at all levels for R&D and tech development.		
Green technology	++	+++	+++	+	+	+	-	- -	- - -	++	+++	+++	-	- -	- -
Proportion of green technologies in technological development															
	Massive investments in green technology, a "green race" leading to a collaborative tech development in "green alliances".			Partial adoption of green solutions, e.g. in agriculture through sustainable intensification.			Lack of resources for the development and implementation of green technology. Also not a political priority.			Tech sector revolutionises from the beginning and sets the transformation to green tech throughout the scenario.			Strong decrease due to the focus on economic development (at all costs) and fossil fuels for energy generation.		
Technological transfer	+	++	+++	+	+	++	-	- -	- - -	+	0	0	+	++	+++
Intensity of exchange of technologies and know-how between countries and sectors															
	Increasing national and international collaboration lead to a "green alliance" characterised by exchange of technologies and know-how.			Tech transfer increases but is limited by the role of competition between public-private partnerships.			Decreasing societal and international collaboration and exchange prevent technology transfers.			Slight increase due to initial focus on tech development, which partially emerges from exchange of know-how between companies. Later, strong competition and absorption of SMEs by large companies results in a return to current levels.			Increase due to less strict legal barriers to exchange of tech development and strong focus on economic development and trade.		
Diffusion of technology across society	+	++	+++	+	+	+	0	+	++	+	- -	- - -	+	++	++
Intensity of diffusion and utilisation of technologies across different segments of the society															
	Increasing collaboration in society and (later) free movement of people foster the exchange of sustainability ideas, knowledge and practices.			Technological solutions on the micro-level spread across society (e.g. driver-less cars, micro-energy).			Diffusion of subsistence technologies grows as people have to increasingly rely on themselves to sustain their livelihoods.			First, an increase due to active SMEs as well as multinationals and new high-tech lifestyles. Then strong decrease as SMEs are taken over and the masses struggle to utilise new tech due to poverty, lower education and skills.			An increase due to lower inequalities, therefore more people are engaged in the development and utilisation of technology.		

Quantified indicators

Society

- Population
- Urbanisation
- Health
- Social Cohesion
- Education

Economy & Lifestyles

- GDP
- GVA
- Employment
- Incomes
- Savings
- Inequality
- Food demand and trade
- Pro-environ Lifestyles

Environment

- Emissions
- Land use
- Food production
- Agricultural inputs

Technology

- Energy
- Technological development
- Produced Capital

Policies & institutions

- Regional Transfers
- Healthcare
- R&D
- Road Infrastructure
- Rail Infrastructure

Key challenges

- **Internal consistency of narratives, semi-quantitative trends and quantifications** at national and smaller scales
- **Importance of ongoing communication** with stakeholders
- **Meeting the varied requirements of stakeholders** in terms of topics, indicators and outcomes
- **Quantifications for specific indicators** at the appropriate temporal and spatial resolution

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How these product could be used

- **Qualitative analysis** of the existing narrative content (e.g. to assess factors related to climate risks, adaptive capacity, barriers/enablers to actions, etc.)
- Use to **stress-test the robustness of climate** (or other policies) under the different futures
- Use as the basis for co-creating **adaptation/mitigation/transformation pathways** to desirable futures or policy goals (e.g. net zero)
- Use as the basis for further **extensions**:
  - For specific regions, e.g. LADs, cities
  - For specific sectors, e.g. health, water
  - For specific time periods, e.g. next 10 or 30 years, or climate or societal extremes/shocks
  - semi-quantifications/quantification of variables not already covered
- Build on the systems diagrams, e.g. further elaboration, **participatory systems modelling**
- Use alongside **climate modelling frameworks**

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PROJECT OUTPUTS CAN BE FOUND HERE:

PRODUCTS OF THE UK-SSPS PROJECT - (UKCLIMATERESILIENCE.ORG)

CONTACT US

ORNELLA DELLACCIO OD@CAMECON.COM)

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