Wanting it all - is a stakeholders' Vision for Europe compatible with meeting Europe's food demand under high end climate change?

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A Vision for Europe in 2100 - why?

Better than now

Worse than now

Time

State
Today

Where we’re at:
“Baseline”

Where we want to be

VISION

Where we might get:
Pathway

Where we’re heading:
$RCP_n \times SSP_y$

Shortfall
Additional actions

What we need to do to reach Vision
Pathways (A, M & T)
European SSPs

- **SSP1** - We are the World
- **SSP2** - Riders on the Storm
- **SSP3** - Icarus
- **SSP4** - Low Carbon intensity
- **SSP5** - Fossil-fuelled Development

Carbon intensity

Inequality

- **RCP4.5**
- **RCP8.5**
European SSPs ➔ RAPs

High ‘capitals’
Low population growth
Low ‘food miles’
Low meat diet
Low intensity agriculture

Low ‘capitals’
High population growth
Global food trade
High meat diet
High intensity agriculture

Medium (unequal) ‘capitals’
Population decline
Increased food trade
Technological innovation
Increasing agricultural efficiency

Low ‘capitals’
Population decline
Reducing food trade
Technological decline
Declining agricultural efficiency

SSP1 - We are the World
SSP4 - Riders on the Storm
SSP5 - Fossil-fuelled Development
SSP3 - Icarus

High
Low
Carbon intensity
Inequality
Cross-sectoral systemic approach needed

Adaptation

- Urban
- Biodiversity

Agriculture (inc bioenergy)

- Competition for land
- Competition for water

Mitigation

- Forests
- Coasts

Impacts / synergies / tradeoffs
Scenario results - landuse

RCP4.5
SSP1

Agricultural expansion
Loss of forest
Unmet food / timber demand

SSP4

Climate constraints

Agricultural contraction
Expansion of ‘unmanaged land’ (inequality)

RCP8.5
SSP5

Climate constraints

Cranfield University
A Vision for Europe in 2100 - how

Literature review

Stakeholder email survey

Compilation (Draft1)

Stakeholder workshop

Revision (Draft 2)

Stakeholder survey

Revision (Final)
Improving 100 = Vision element meeting Vision

- Circular economy(ies)

- Sustainability embedded in governance at all levels (local to international)

- Wealth equally distributed through society

- Atmospheric CO2 at <450 ppm CO2 eq
Meeting the Vision?

SSP1

SSP4

SSP3

SSP5

- Self-sufficient communities
- Wealth duly distributed
- Lack of Water vulnerability
- Lack of Food vulnerability
- Atmospheric CO2
- New modes of Governance
- Lack of Flood vulnerability
- Maintain current species extent
Adaptation

Behavioural change

Technological change

Diet

Environmental protection

Social capital

Landscape connectivity

Agricultural intensification

Changing flood management

Resource allocation priorities

Spatial planning

Human capital

Trade

Nature reserves

Agricultural greening

Climate-optimised trees

Environmental protection

Agricultural intensification

Landscape connectivity

Climate-optimised trees

Resource allocation priorities
Meeting the Vision?

SSP1
- Self-sufficient communities
- New modes of Governance
- Lack of Flood vulnerability
- Lack of Water vulnerability
- Lack of Food vulnerability
- Maintain current species extent
- Atmospheric CO2

SSP5
- Self-sufficient communities
- New modes of Governance
- Lack of Flood vulnerability
- Lack of Water vulnerability
- Maintain current species extent
- Atmospheric CO2

SSP4
- Self-sufficient communities
- New modes of Governance
- Lack of Flood vulnerability
- Lack of Water vulnerability
- Lack of Food vulnerability
- Maintain current species extent
- Atmospheric CO2

SSP3
- Self-sufficient communities
- New modes of Governance
- Lack of Flood vulnerability
- Lack of Water vulnerability
- Maintain current species extent
- Atmospheric CO2
Can we have it all?

• No, but.......  
• Food demand is met  
• Mixed picture  
  – We can meet food demand in most Euro-SSPs / RAPs  
  – Biophysical impact (species / flooding) - challenging!  
  – Vulnerability - building coping capacity - effective  
  – Mitigation - achieving 1.5oC without trade-offs? Sustainable Intensification to make space for BECCS?  
  – Transformative change?
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