



Modelling diet and GHG emissions mitigation scenarios in the context of the Paris Agreement

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Context: Pillar II paper, modelling sustainable FNS

- Models with different purpose in the SUSFANS toolbox



Reality is diverse & complex



Model is a rough approximation



Purpose affects models' shape & focus



Context: Pillar II paper, modelling sustainable FNS

- Models with different purpose and features in the SUSFANS toolbox
- Combined use of models for diet scenarios
 - is a key contribution of SUSFANS
 - devil is in the details when combining models
- Aim = get specific by running a harmonized scenario with the long run models
 - on challenges of defining diet changes
 - inputs & outputs for linking to other parts of SUSFANS



Tools in the SUSFANS box

Macro-economy

MAGNET
Complete economy
Income effects
Long run
Global, countries

Diet & health

SHARP
Product detail
Specific diet needs
Short run

EU4

DIET
Consumers preferences
Health & environment
Short run

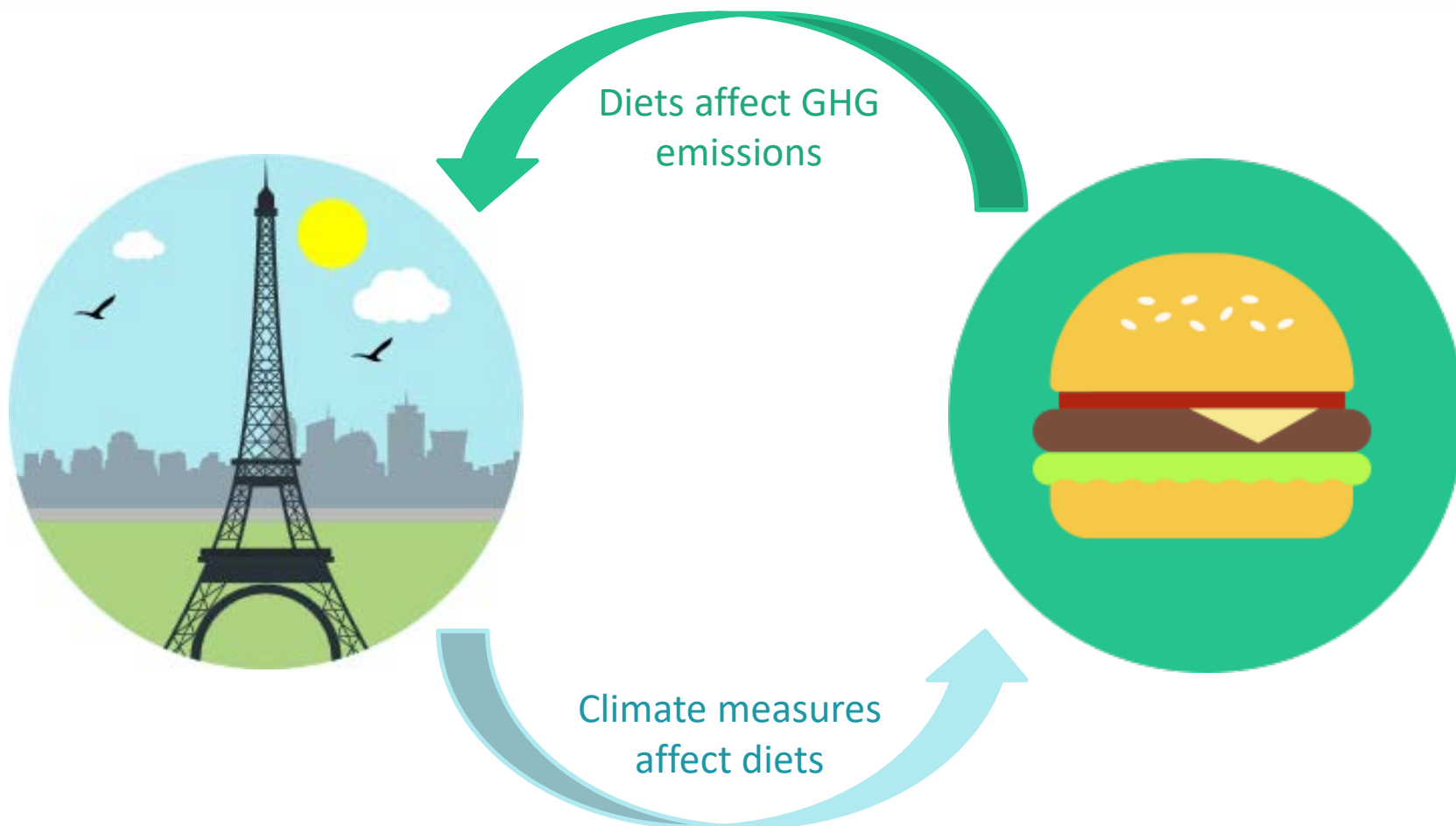
EU3

Agricultural production

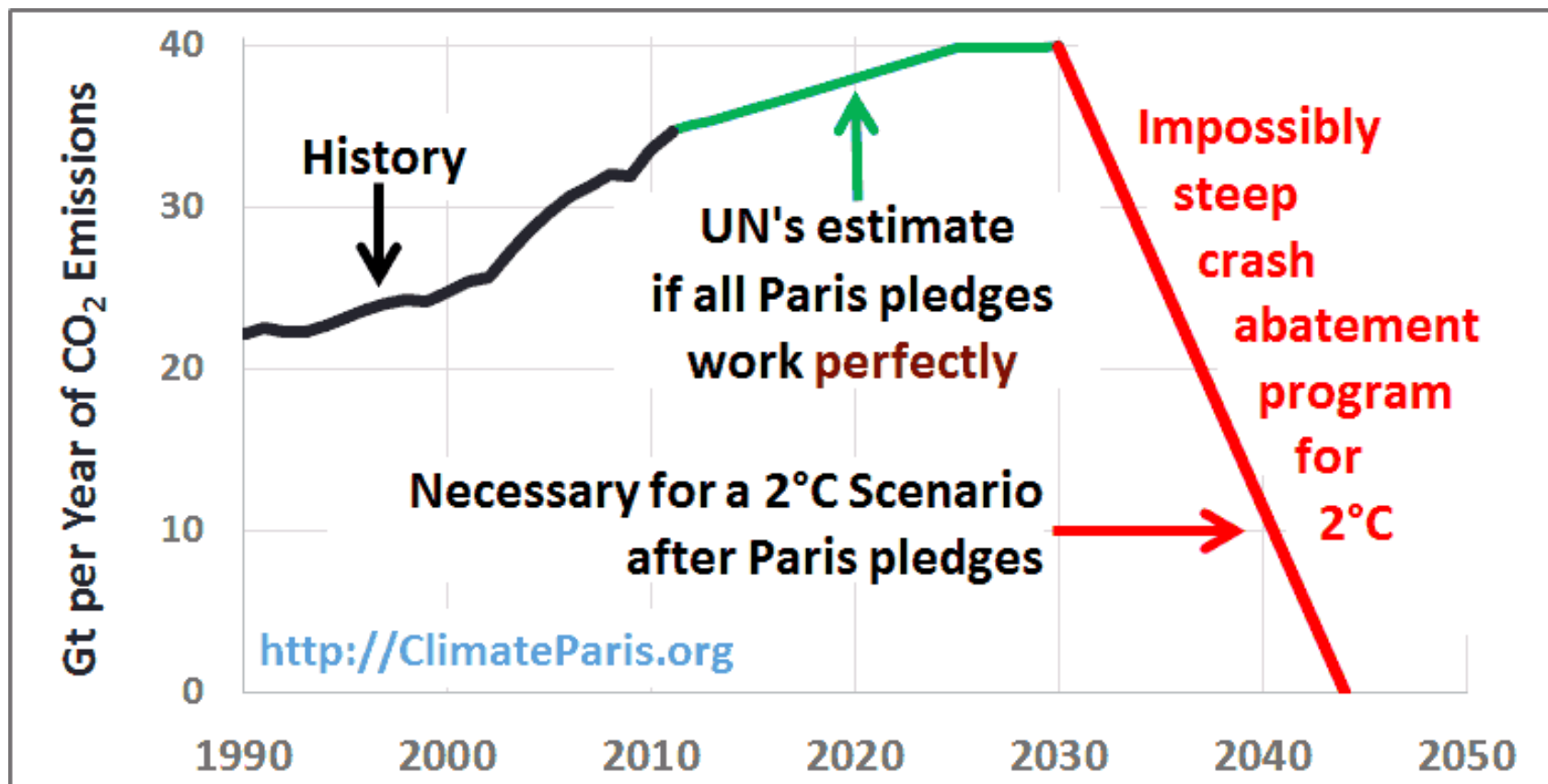
GLOBIOM
Spatial detail
Environmental impacts
Long run
Global, grid

CAPRI
EU detail
Production detail
Long run
Global, EU, NUTS2

Paper: diets against backdrop of climate change mitigation

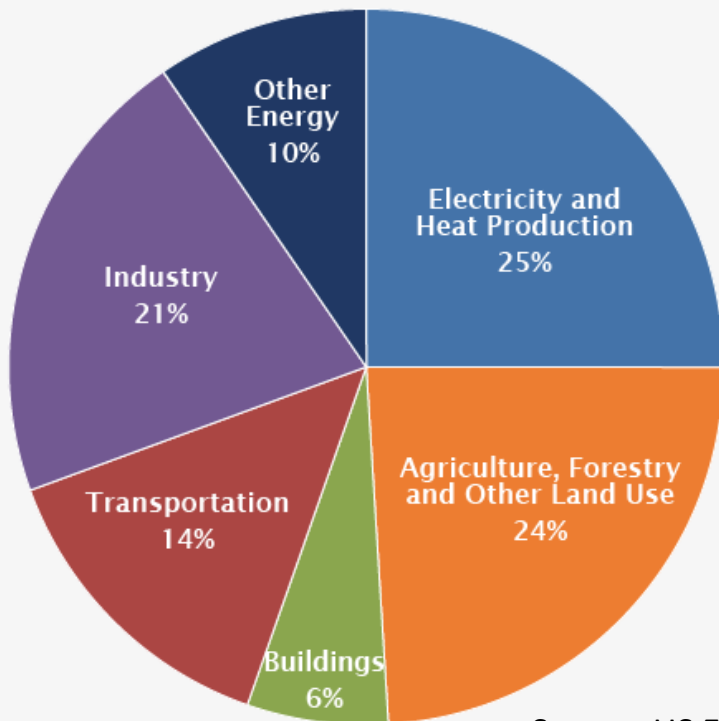


The mitigation challenge



Agriculture has a role to play

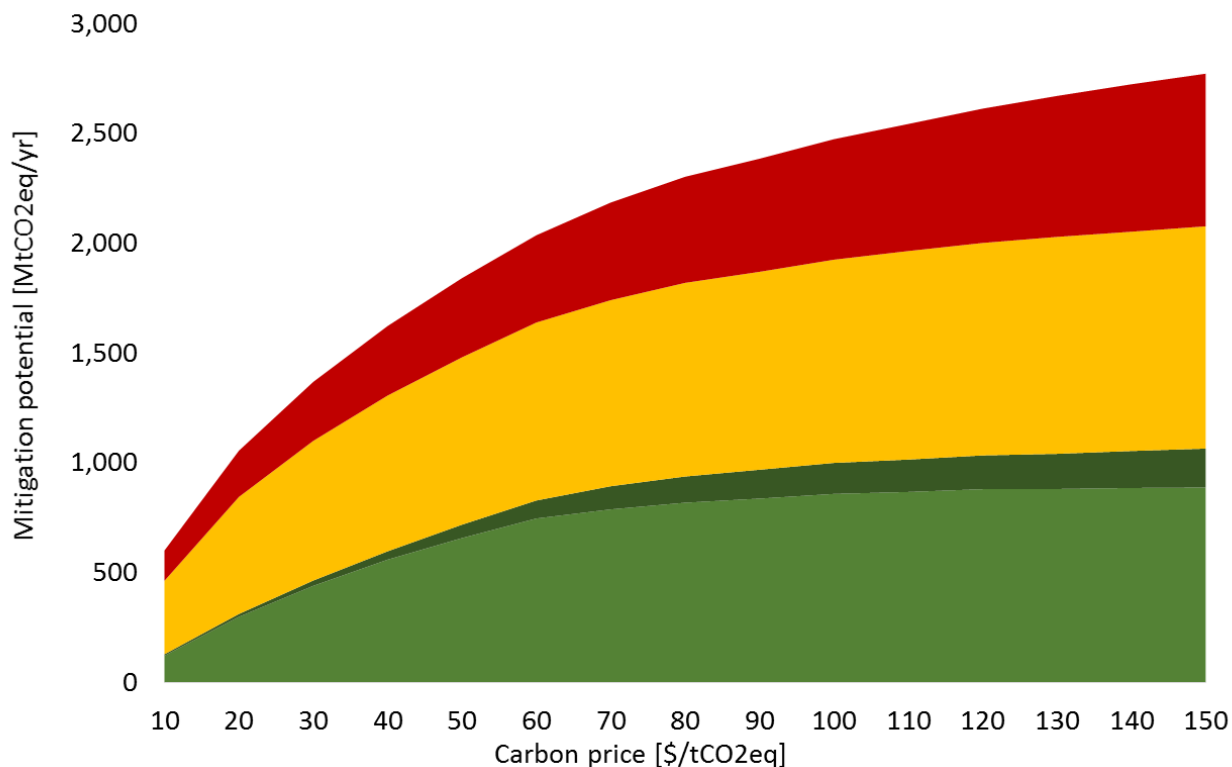
Global Greenhouse Gas Emissions
by Economic Sector



Source: US EPA

- Contribute by reducing its GHG emissions, while being affected
- by changes in other sectors (eg increase in input costs),
- and general mitigation measure (CO2 tax)

Scope for change in agriculture – annual non-CO₂ abatement potential by 2050



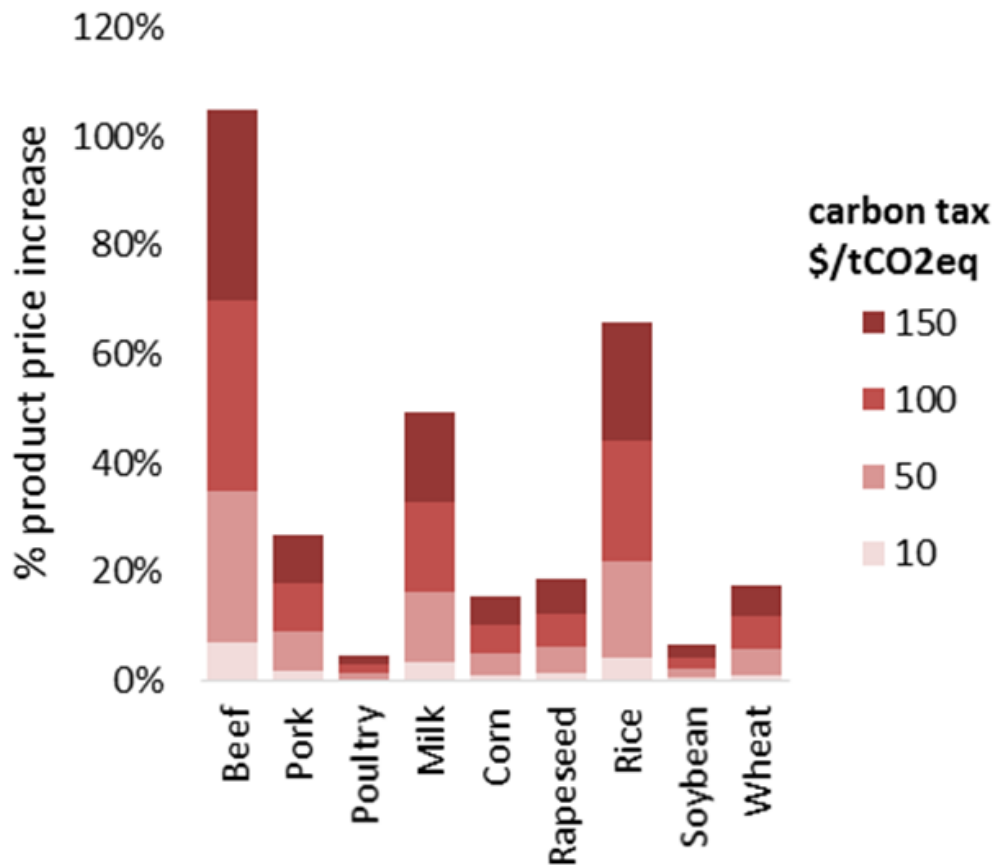
Consumption change
(response to price change + additional diet shifts)

Structural change
(relocate production & international trade)

Technical options
(changes in technology)

Source: Frank et al., forthcoming

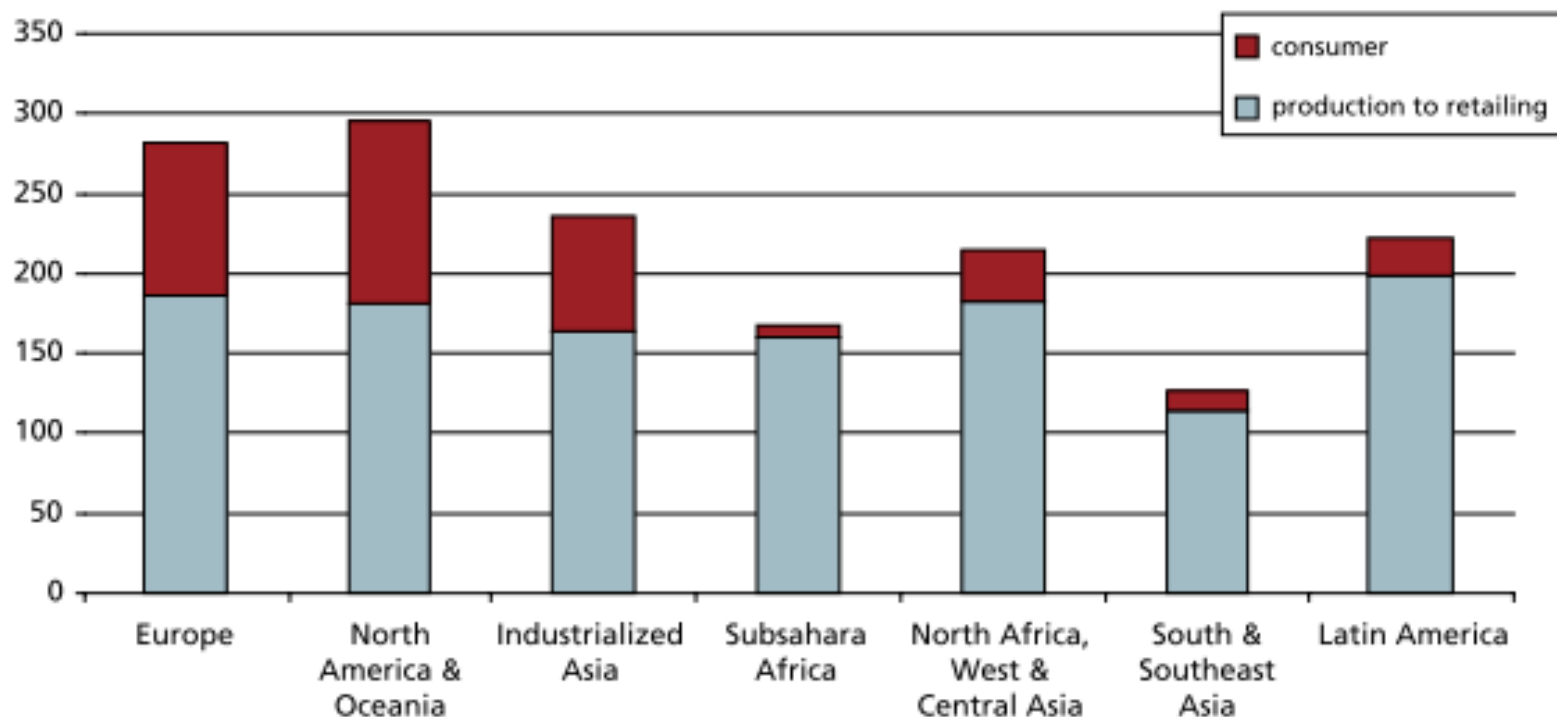
Carbon tax has differential impact on product prices, thus changing consumption



Source: Frank et al. ERL (under revision)

Waste reduction could be quick win, with high-income bias

Per capita food losses and waste (kg/year)



Source: Gufstavsson et al., 2011

Scope of the paper

- Harmonized baseline towards 2050
 - Allows comparison with & without situation
- Contribution of diet change away from animal products + reduction in losses & waste
 - Focus on impacts in Europe within global context
 - Against backdrop of mitigation measures to limit climate change

Limitations & links

- Partial coverage of the models in the toolbox
 - Rough diet assessment due to limited model detail
- Only first step towards SUSFANS scenarios
 - Imposing a diet shift to assess mitigation potential
- Connect modelling work with insights from other parts of SUSFANS:
 - Consumer behaviour & scope for change
 - Innovation potential (case studies)