The Nexus concept for a resource efficient Europe; co-benefits of climate mitigation and adaptation measures

ECCA Conference – Sub-theme: 5.2 – Food-water-energy Nexus

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Achieving resource efficiency in Europe is a challenge

- **Achieving resource efficiency is a challenge. It requires exploitation of synergies and mitigation of trade-offs across water, energy, food, climate and land. Implementations needs the active participation of government, the private sector, academia and civil society. Nexus concept will support this**

- **Resource efficiency is supported by knowledge on how Nexus sectors operate: how to create synergies in climate action with water, energy, food and land? Search for policy coherence**

EU Climate Action - Objectives

Reduce GHG emissions to keep global temperature increase to 2 degrees

Increase efficiency of the transport system

Support the development and uptake of low-carbon technology

Support the development and uptake of safe CCS technology

Incentivize more climate-friendly land use

Promote adaptation in key vulnerable EU sectors and in Member States

Mostly coherence between climate and water-land-energy-food policies

Climate > Water-Land – Energy- Food

Total	Positive	Negative	Pos. or neg.
80	62	7	11

Water-Land – Energy – Food > Climate

Total	Positive	Negative	Pos. or neg.
68	50	15	3

Important in what context and how objectives are reached

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European Climate Change Adaptation conference

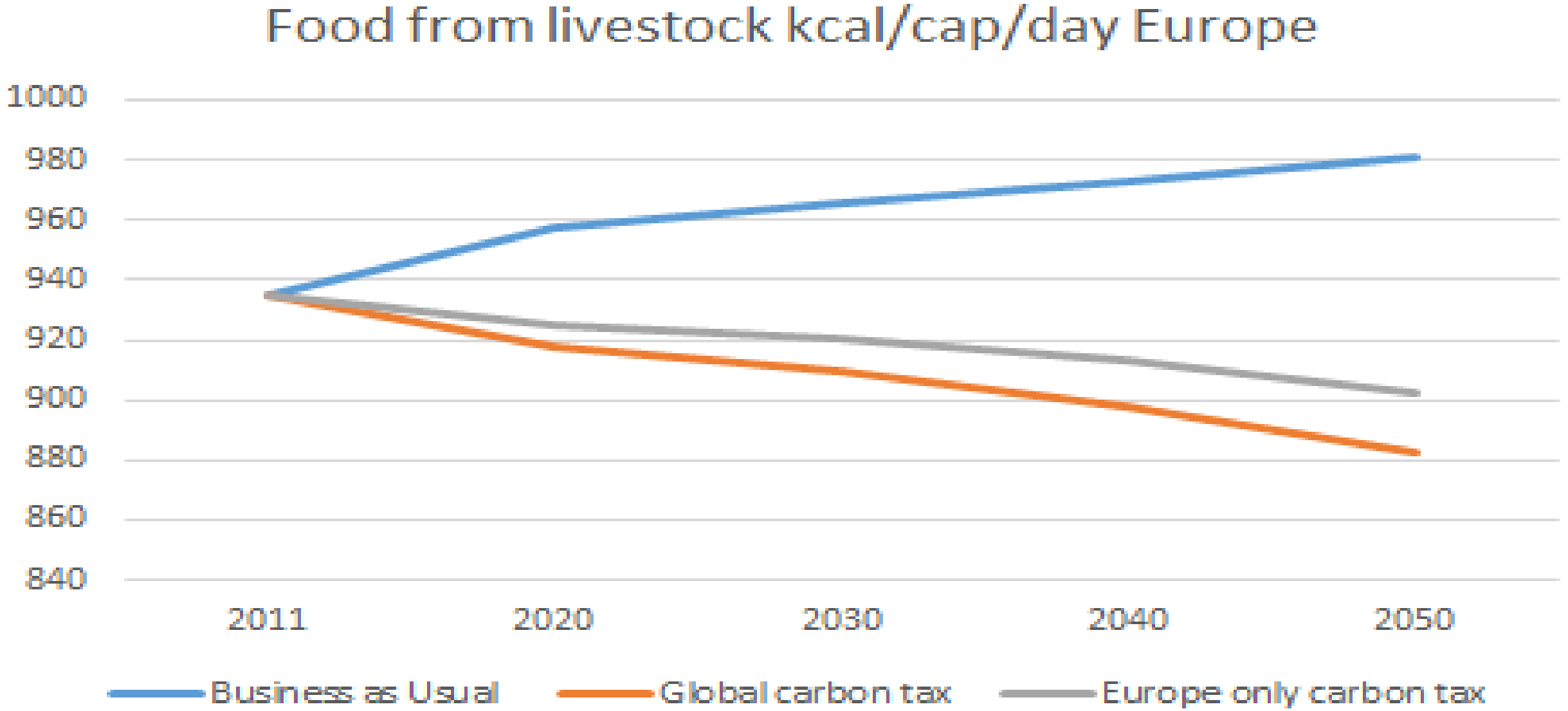
Synergies and trade-offs in Nexus of water-land-energy-food-climate

Synergy: good practices in water and land management: **1) nature-based solutions** to combat flooding and drought; **2) synergistic with climate change mitigation and adaptation** and **3) support agriculture.**

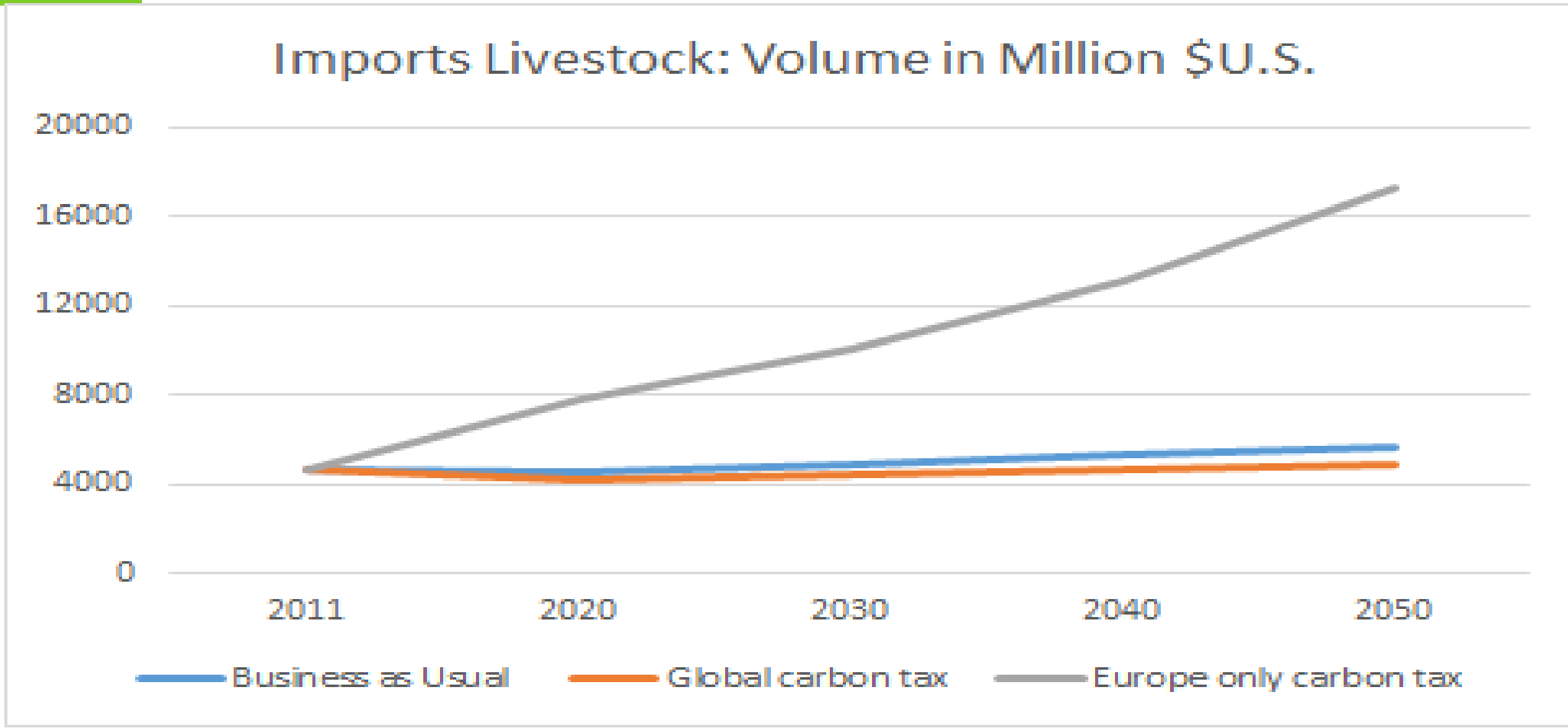
Synergy: increasing energy and water efficiency in the agro-food chain; synergies with climate change mitigation and adaptation.

Ambiguous: Water supply and management of flooding and drought have positive effects within the nexus, but water supply may increase energy demand and cause rebound effects. **Nature-based solutions** more synergistic with land management and climate change mitigation than technical solutions (canals, artificial reservoirs, pumps)

Food consumption impacts of climate mitigation, Europe



Emissions and Leakage: Imports of Livestock into Europe



The proposition in SIM4NEXUS

A Serious Game is developed to learn from modelling tools, using impact assessment approaches and expert knowledge. SIM4NEXUS develops the game through 12 cases across Europe. The case studies use transdisciplinary approaches, driven by stakeholder needs

Main question addressed by the 12 SIM4Nexus case studies

Does the goal of becoming a fossil-free nation interferes with some of the national environmental objectives such as sustainable development of water and forest resources ?

Is it possible to enlarge energy self-supply, by widening the use of renewable energy sources in Latvia ?

How the governance of energy, water and agriculture effects sustainable food production, the provision of water and wastewater services and the move to a smart and flexible system for resource management ?

What can be the role of biomass in the Dutch transition to a low-carbon economy by 2050?

Does the landscape structure dominated by monoculture-like crop areas in some of the lower parts and its alterations by energy production affect the water cycle in an unfavorable way?

What are the Nexus issues at the global scale?

Impacts of a low-carbon economy in Europe?

How national policies in water management, renewable power production and land, affect each other and result in changes in food production, tourism, GHG emissions, quantity & quality of water resources ?

How can agricultural and environmental policies be integrated to address pressures on land and water whilst promoting their sustainable use and economic development?

How to achieve both the transition to low-carbon economy and the sustainable management of water resources in the Rhine region ?

How to reach a resilient system able to satisfy all demands under climate change?

What are the implications of Azerbaijan's transition to a low-carbon economy on the different Nexus domains ?

Playing the SIM4NEXUS Serious Game

- Credible and accessible knowledge, and navigability of the visualisation tool
- Beta version (use Use Chrome)
- Link to game site: http://seriousgame.sim4nexus.eu/
- Game in action - youtube: https://youtu.be/oNQ7-akoaaw

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SIM4NEXUS

Thanks for your attention!

For further information please consult
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