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Participatory Approach to Long-Term Socioeconomic Scenarios as Building Block of a Local Vulnerability and Risk Assessment Tool – The Case Study Lienz (East-Tyrol)

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and others, see last slide

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Session NH9.6 – Resilience and vulnerability assessments in natural hazards and risk analysis

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The overall aim of the project

Adaptation and Decision Support via Risk Management Through Local Burning Embers

Developing a decision support system for climate-sensitive iterative risk management as a key adaptation approach

- Identifying and bridging the gaps between global CCA and DRR frameworks, research and policy and national, subnational as well as local risk management, adaptation needs and requirements
- Downscaling IPCC's "Burning Embers - Reasons for Concern" to the local level (LBE) with respect to hazard types and sectors including a consideration of **key risk drivers**
- Supporting the building of resilience and adaptation capacities at the local level via an LBE-integrated, iterative risk management approach

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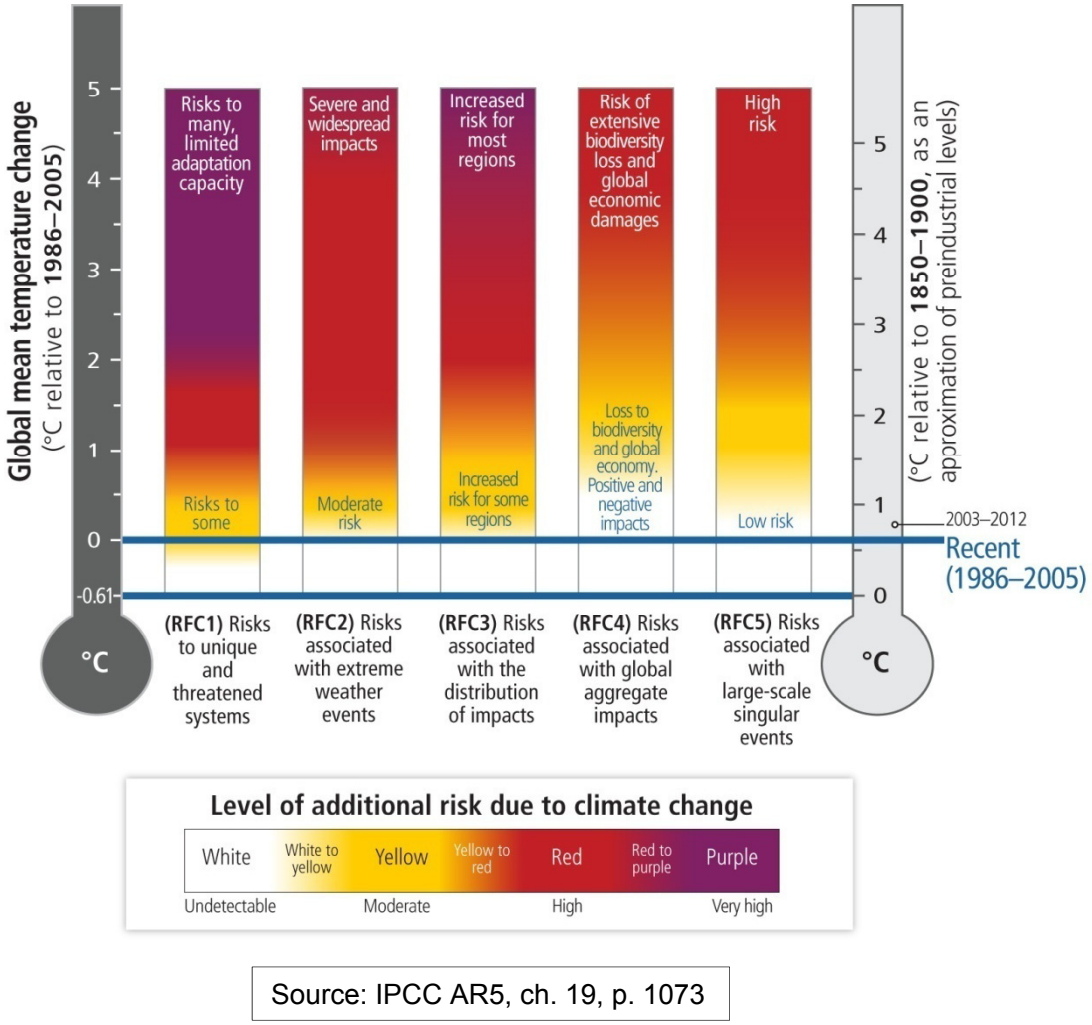
IPCC Burning Embers – Global Reasons for Concern (RFC)



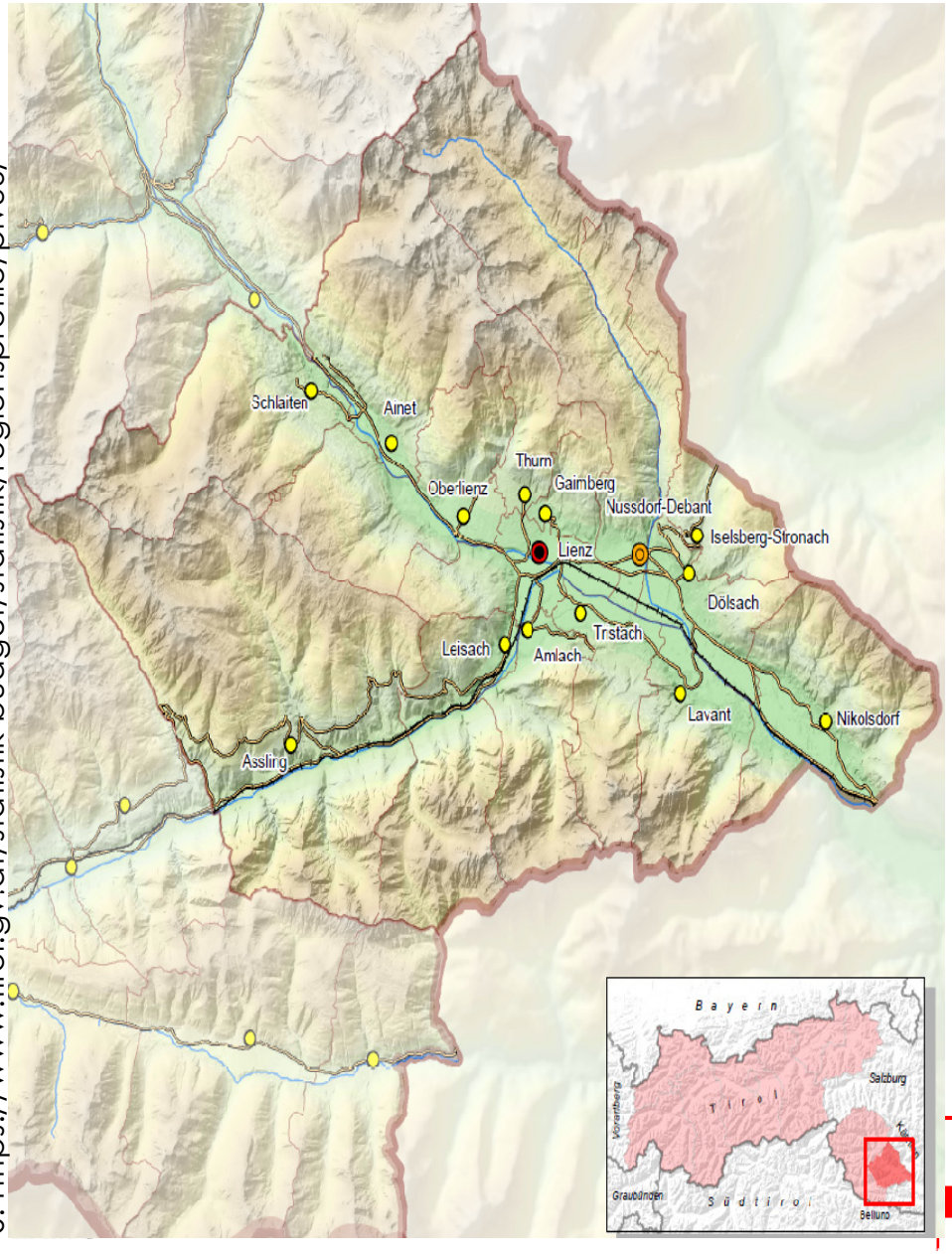
Source: IPCC AR5, ch. 19, p. 1073

IPCC: Risk management is central to limit impacts of climate change on society, economy and ecosystems.

Representation of the **5 risk categories (Reasons for Concern) as " Burning Embers "** using a color scale that shows the increasing risk along with rising global mean temperature

Mahony, Hulme (2012):
"The Colour of Risk"
"…a new visual convention in the representation of the risks associated with climate change."

Downscaling "Global Reasons for Concern" to the local level



S: https://www.tirol.gv.at/statistik-budget/statistik/regionsprofile/plv36/

Background: From Global to Local

First application of global Burning Embers concept at the local government level

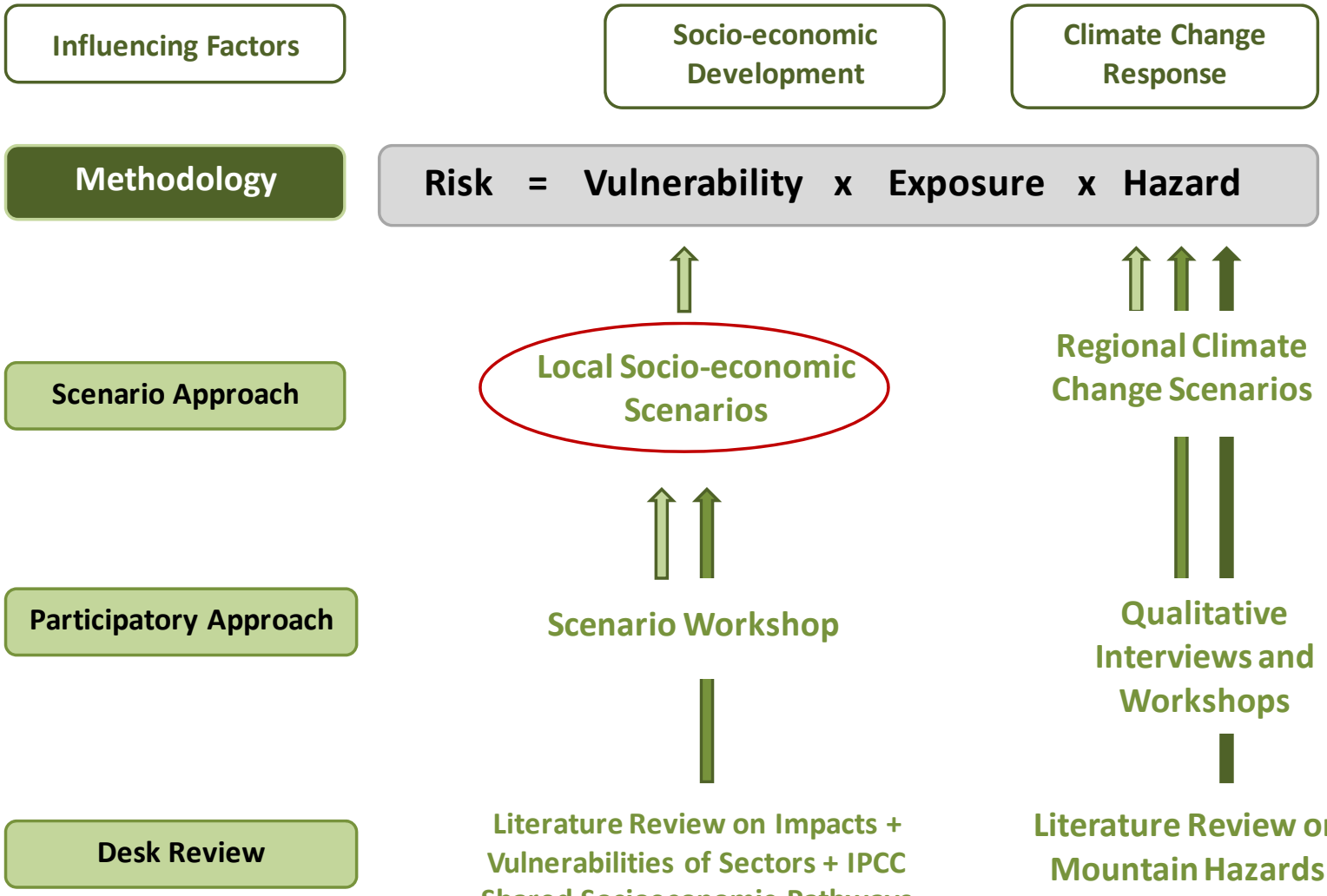
Study site: City of Lienz, East Tyrol, Austria (considered as peripheral, mountainous region)

Considering the wider Lienz region is relevant for mountainous tourism, agriculture and forestry

Inhabitants:

Lienz city: 11,903
Surrounding regions: 15,945

Schematic Positioning of Socioeconomic Scenario Building in ARISE local risk assessment



S: WIFO compilation

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Methodological Approach

- **Hybrid approach** of top-down and bottom-up as well as model-driven and participatory methodologies
- **Co-creation of knowledge** and co-design of tools and measures
- Participatory and transdisciplinary research approach

➢ **Integration of local knowledge and expert knowledge**

➢ **Science-stakeholder dialogues as contribution to social learning**

➢ Collaborative design of Local Reasons for Concern

➢ Collaborative Assessment of local adaptation measures

Input Data to Scenario Workshop (1): Downscaled Climate Scenarios – A1B for East-Tyrol

Temperature

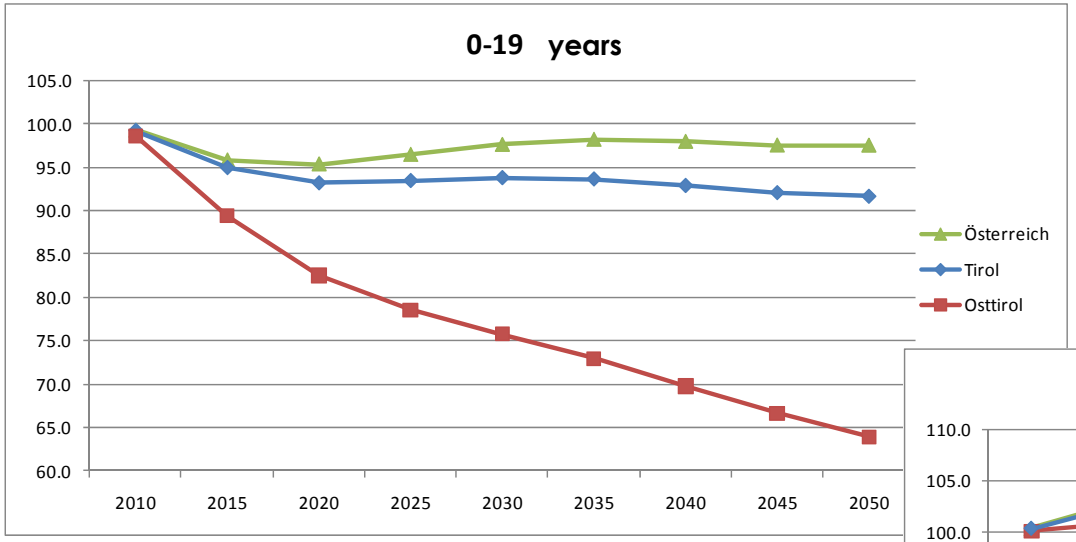
	Changes until mid-century (reference period 1981-2010)
Mean temperature	+ 1.6 – 2.8°C
Summer days (tmax > 25 °C)	0 – +10 days
Hot days (tmax > 30 °C)	0 – +1.3 days
Frost days (tmin < 0 °C)	- 45 – - 22 days

Precipitation

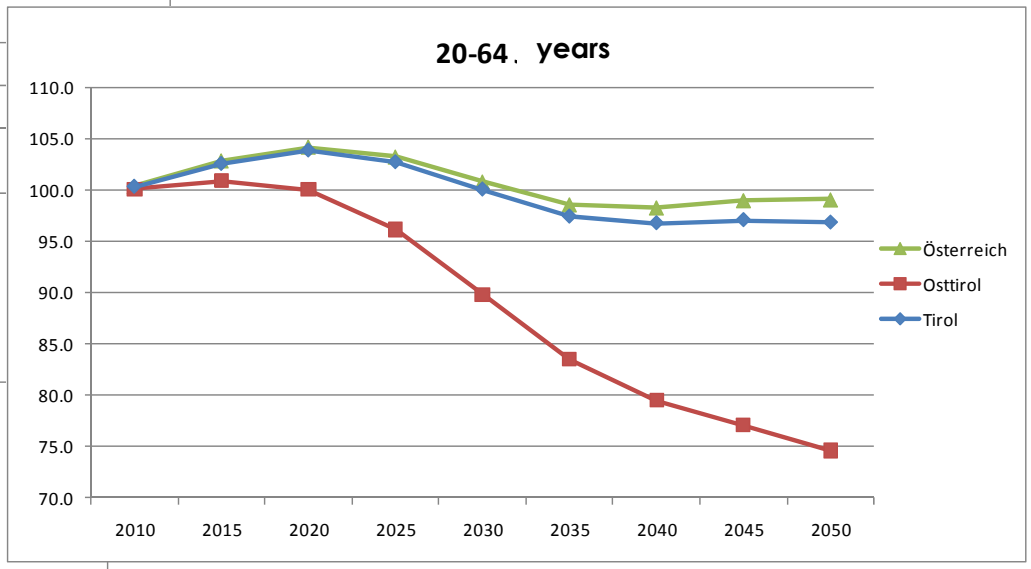
Annual precipitation	-200mm – + 100mm
Heavy precipitation days (precipitation >= 30mm)	- 2.5 - + 2.7 days

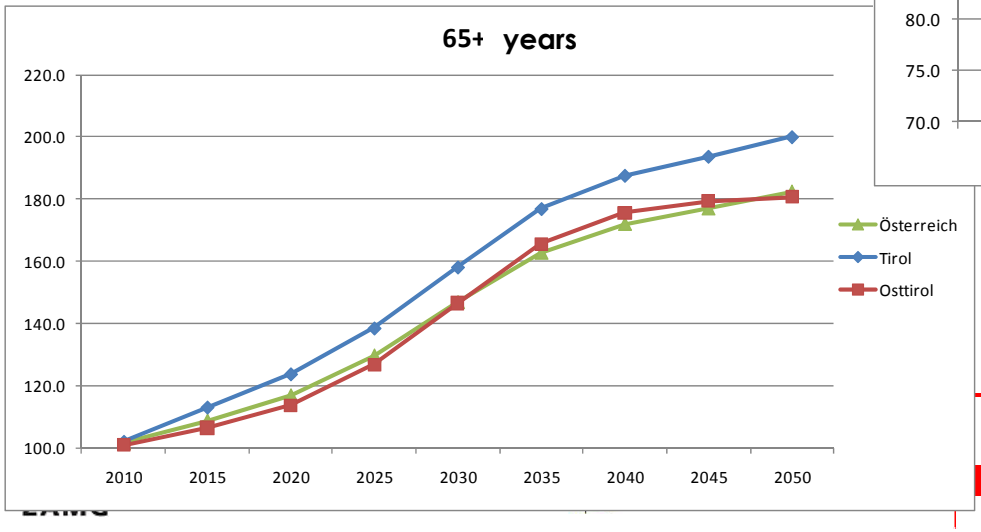
Q: ZAMG

Input Data to Scenario Workshop (2): Population scenarios by ÖROK (2010) – Austrian Conference on Spatial Planning



Austria
Tyrol
East-Tyrol





S: ÖROK, 2010, WIFO compilation

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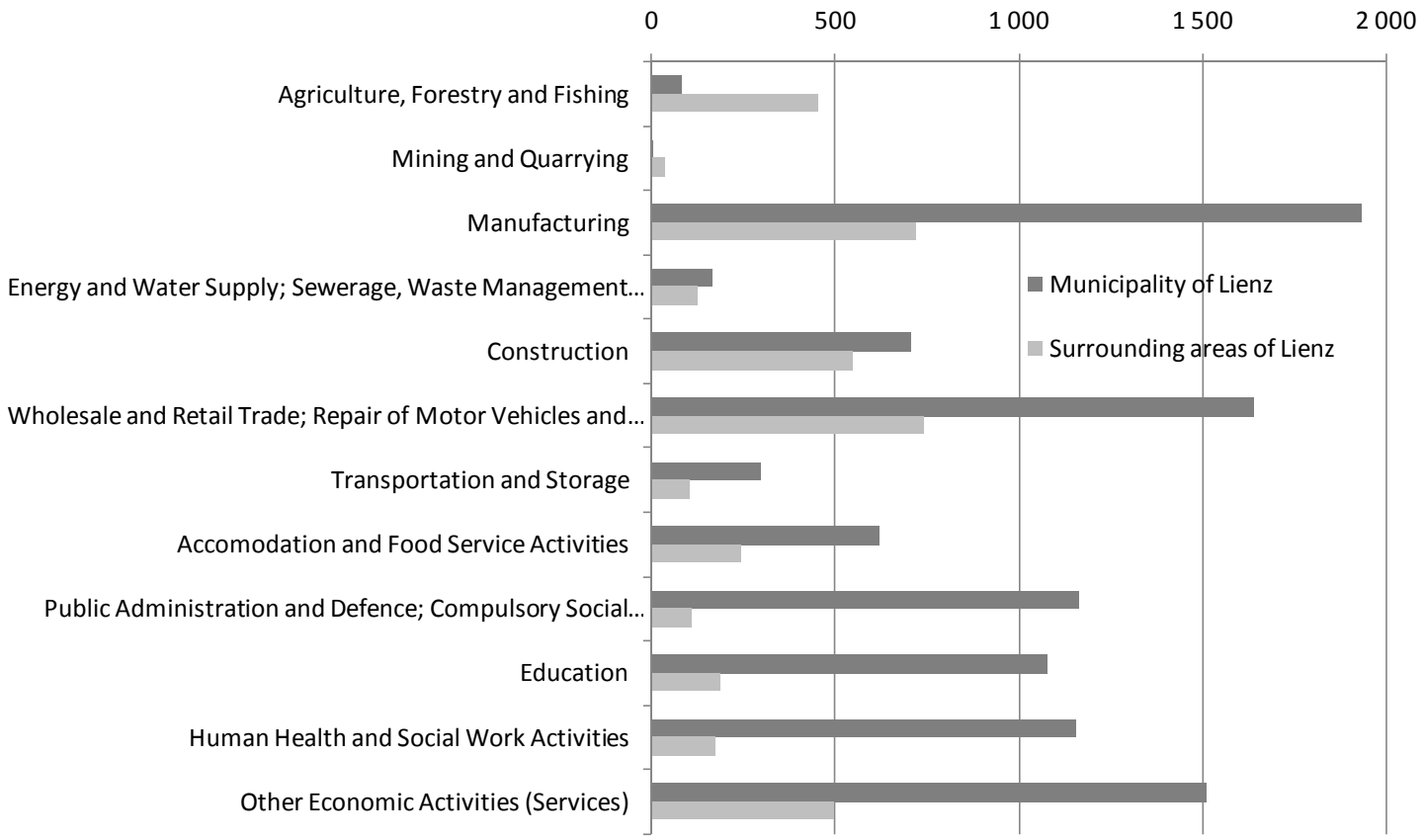
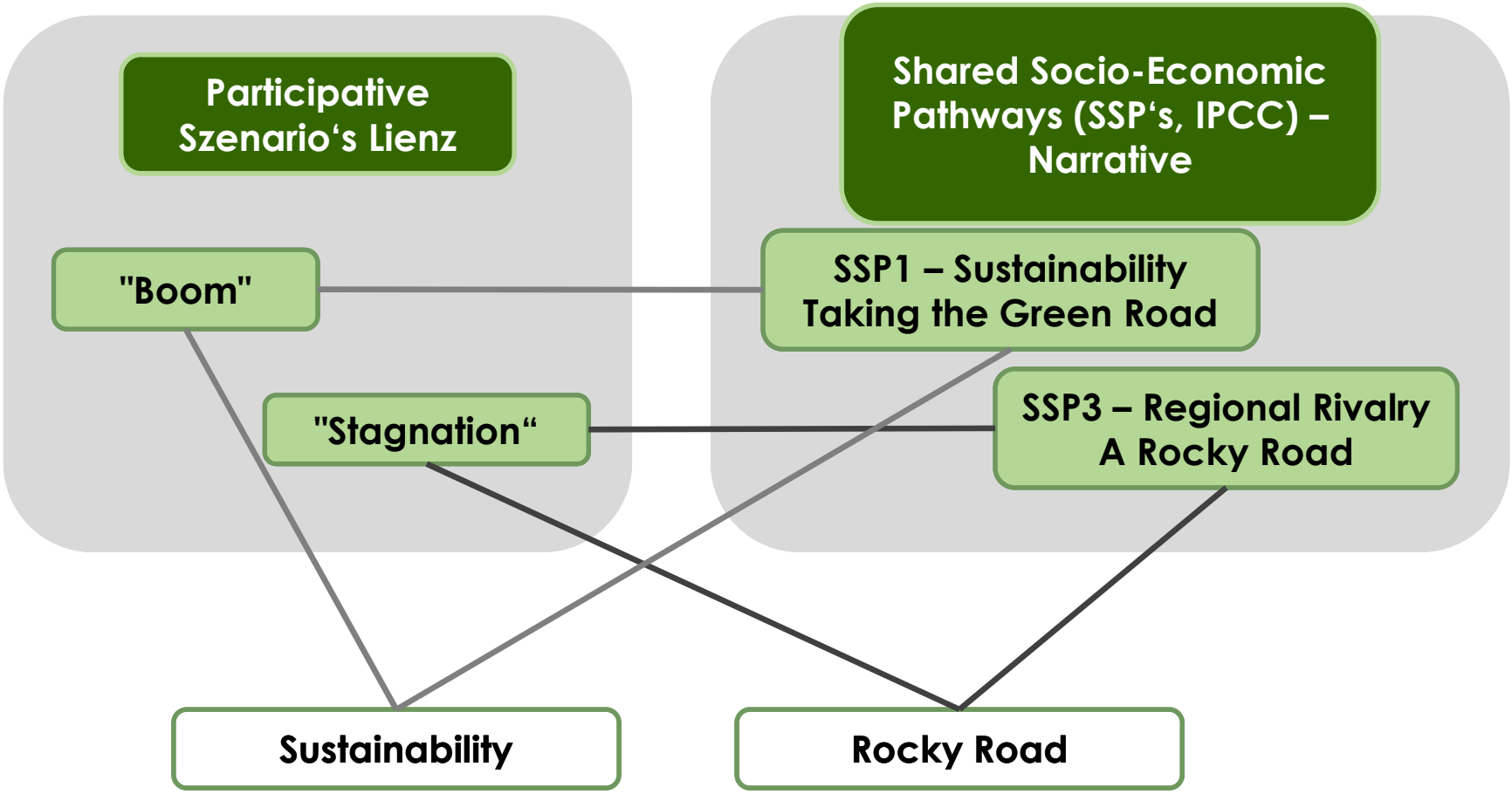
Input Data to Scenario Workshop (3): Employment by sector in Lienz and the surrounding region



S: Arbeitsstättenzählung 2011, Statistik Austria, WIFO compilation

Heuristics: "Matching" of stakeholder scenario narratives with the Shared Socio-Economic Pathway's narratives



S: WIFO compilation

Some results from the stakeholder workshop

Stakeholders were asked to envision and characterize two distinct futures for Lienz: A „Boom“ and a „Stagnation“ scenario

Boom

- **Tourism:** Create innovative offers for summer tourism, cater for “tourism refugees” from Mediterranean and the urban agglomerations, focus on backcountry skiing and elevations above 1500m, water world, make use of water
- **Agriculture/Forestry:** new markets through diversification of woods and plants (wine, fruit), self sufficiency of region, increased demand for timber as energy source
- **Industry & manufacturing:** important for peripheral region, strengthening regional value-added chains, endogenous innovation, niche production for global market, energy prices central for competition, migration, high-skilled labour, soft-factors: awareness for regional products
- **Education, health & services ...**
- **Policy & administration ...**

Stagnation

- **Tourism:** today’s winter tourism stagnates, costs increases with cablecars and artificial snow
- **Agriculture/Forestry:** Outward migration – missing cultivators for steep terrain, pests, aridity, erosion and storm losses, high irrigation costs, difficult cultivation of alpine pasture
- **Industry & manufacturing:** Competitive disadvantage due to bureaucratic overload, increasing out-migration of skilled persons, shortage of education options in region, “self-marginalisation” of region
- **Education, health & services:** Ageing negatively affects health und education facilities
- **Policy & administration:** Territorial thinking as barrier for economic growth, policies inhibit innovations, reactive policies

Implicit challenges for adaptation & mitigation given by different SSPs

The different SSP narratives represent **specific combinations** of **socioeconomic challenges to mitigation and socioeconomic challenges to adaptation** without explicitly considering climate change itself (O'Neill et al., 2015).

2 Scenarios for Lienz:
„Sustainability" and
„Rocky Road"

„Rocky Road" as underlying narrative for local risk assessement and analysis of adaptation options

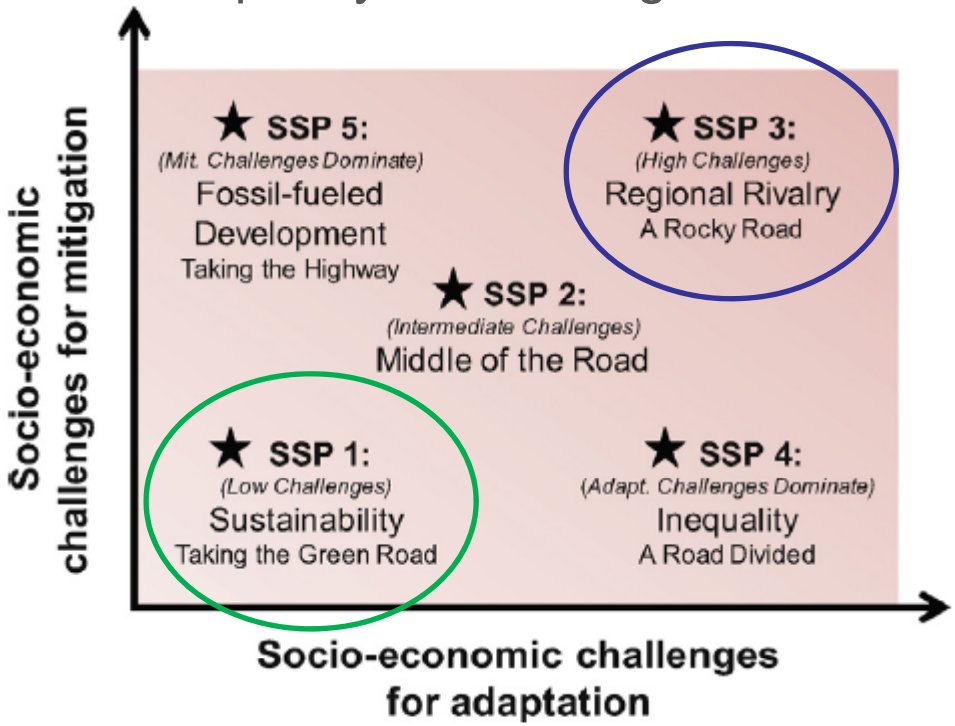
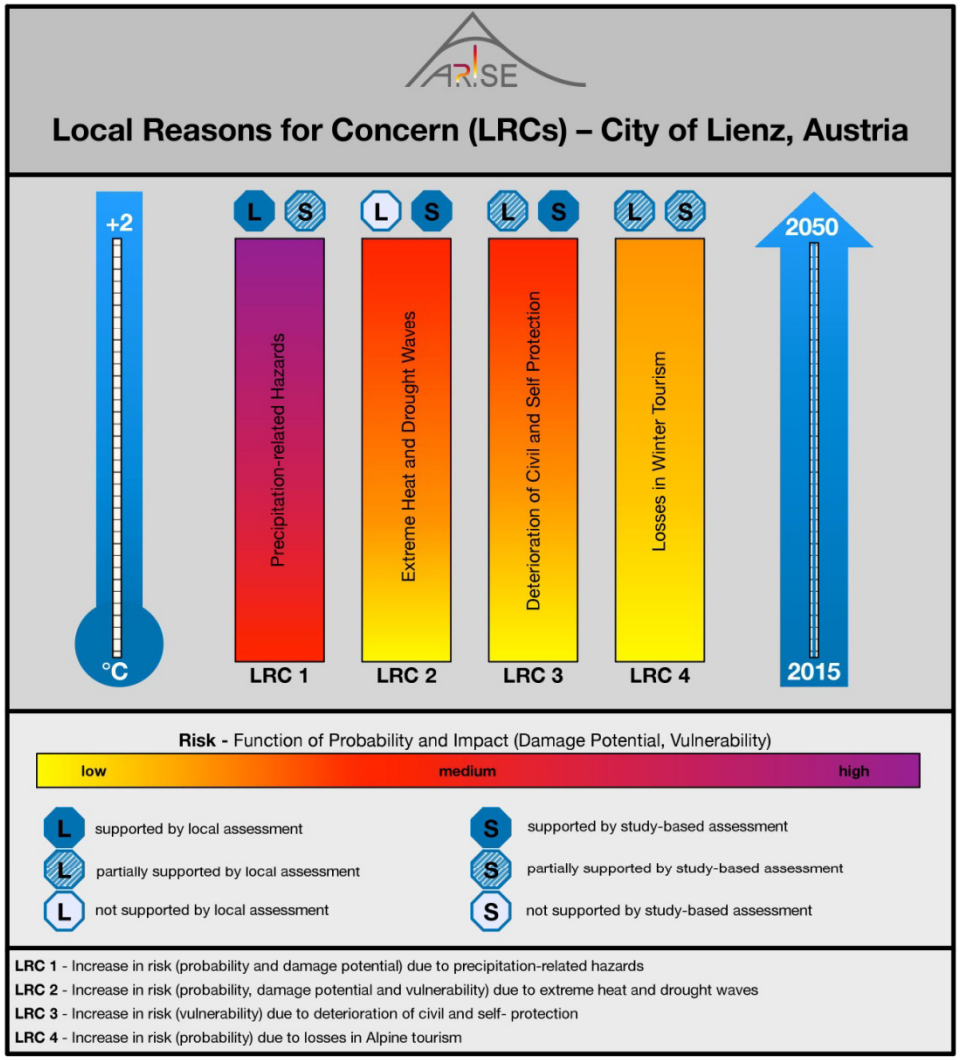


Fig. 1. Five shared socioeconomic pathways (SSPs) representing different combinations of challenges to mitigation and to adaptation. Based on Fig. 1 from O'Neill et al. (2014), but with the addition of specific SSPs.

Local Reasons for Concern for Lienz



*LRC 3 mainly due to demographic change, in particular aging

For further information on the project:

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