



Zukunftsregion
Ennstal

KLAR!

Klimawandelanpassung vo und für'd Ennstoler!

Climate Adaptation Model Region „KLAR! Zukunftsregion Ennstal“

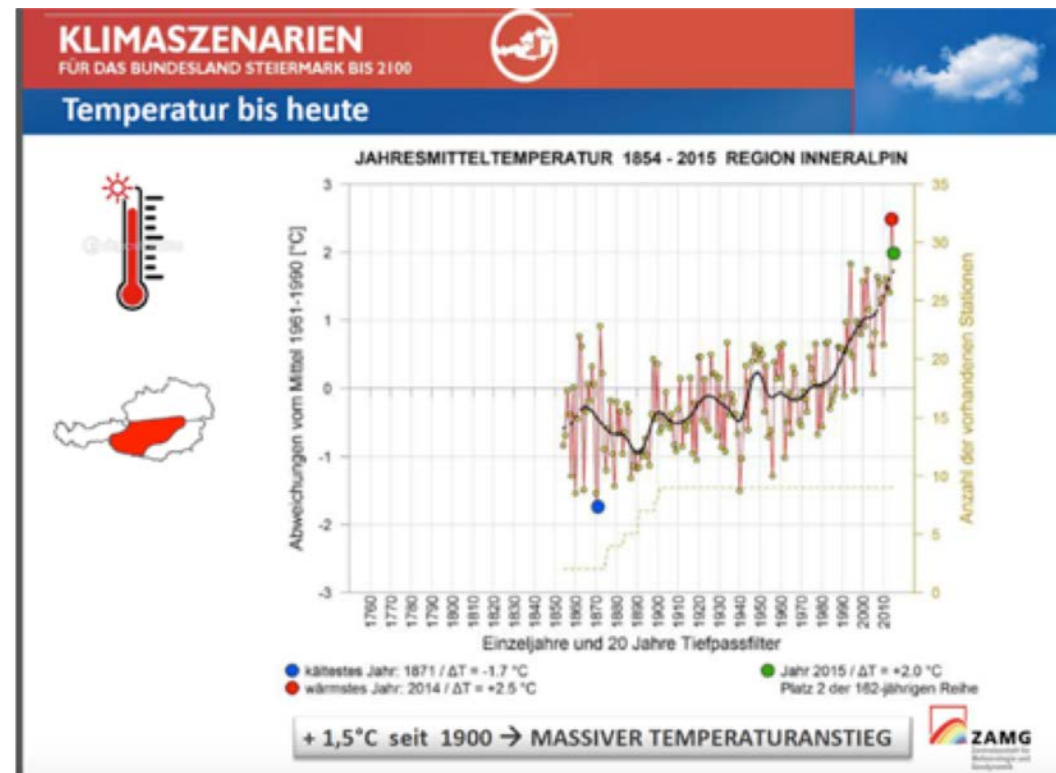
Dr. Natalie Prügler
Global Aspects in Landscape Planning Excursion
Öblarn, 02.05.2018

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energie
fonds



Climate change has happened! The earth has got temperature!

- In the last 200 years yearly average temperature has risen by $+2,0\text{ }^{\circ}\text{C}$
- In coming **only** 30 years we will most probably face an increase of $+1,4\text{ }^{\circ}\text{C}$



Quelle: ÖKS15 - Klimaszenarien für Österreich

The effects have already been perceptible in the region.

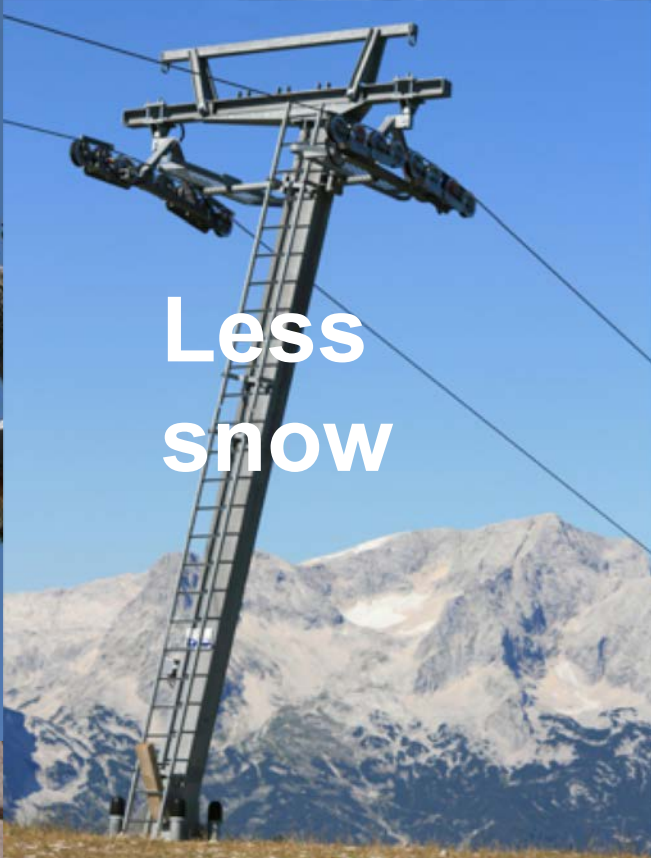
What are the drivers of our KLAR! Model Region?



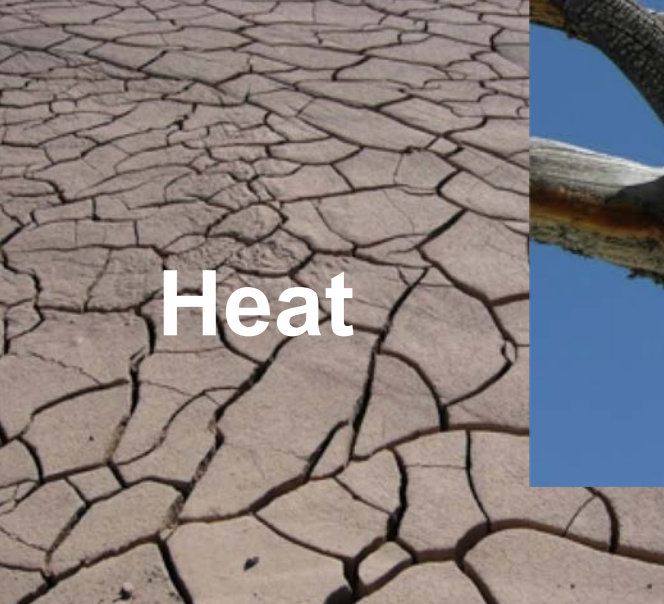
Forest decline



Mudflows



Less
snow



Heat



Vermin



Floods

Climate change has happened!

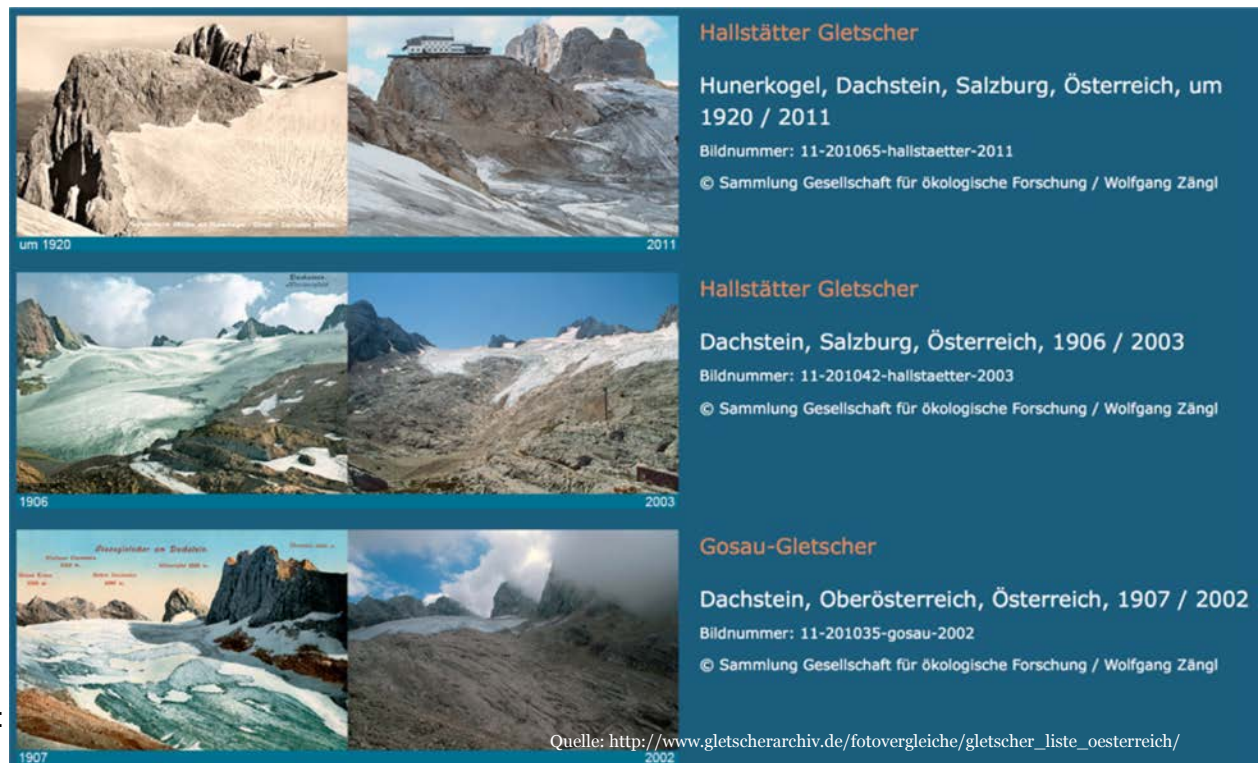
The earth has got temperature! Temperatures are increasing!

- The impact on Austria – hence the Enns Valley too – as an Alpine Region is stronger than the European average
- Ice-Albedo-Feedback in the mountains: **Glacial melting** → **low reflection of solar radiation** → **higher absorption of energy** → **regionally stronger warming** → **higher evaporation** → **local heavy rainfalls**



Bildquelle: Medienwerkstatt-online.at

The Dachstein glacier from different perspectives:





Severe storms (local heavy rainfalls) 4.-5.8.2017, Großsölk Valley,
© Stefan Falkensteiner

Sölk Valley – Großsölk Aug. 2017



Öblarn Aug. 2017



Severe storms (local heavy rainfalls) and flooding of the town centre of Öblarn by mudslides/ driftwood jam on 05.08.2017;
© Klaus Bliem

Öblarn – Walchen Valley Aug. 2017



Severe storms (local heavy rainfalls) on 4.-5.8.2017 in the Walchen Valley close to Öblarn,
© Thomas Brixler

Specific effects of climate change:

Challenges:

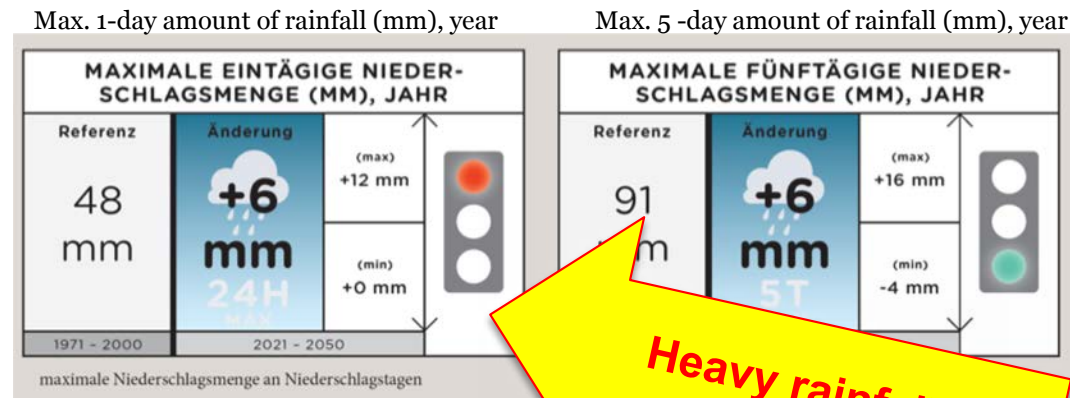
- Temperature is rising
- Summers become little warmer → **higher need for cooling and shadowing**
- Winters become warmer & more humid → **clearly fewer freezing days**
- Means less snow → **clearly fewer days with snow cover**
- Strong **increase of heavy rainfalls**
- **Vermin, protective forests are in danger**

Chances:

- Surplus of water
- Green landscape
- Untouched natural landscapes
- Longer transition periods/ shoulder seasons
- Summer retreat

Data analysis of the Central Institute for Meteorology and Geodynamics (ZAMG) for the Enns Valley

Rainfall:



Source: ZAMG 2017, „Klima im Wandel“ Zukunftsregion Ennstal; Average of ÖKS15 Climate Models (Business-as-Usual Scenario)

Heavy rainfalls

Freezing days, days with frost hazard (daily minimum below 0°C):

Reference 1971-2000: average 173 days/ year

Future 2021-2050: **average* - 27 days/ year**; between - 35 & - 17 days/ year

Cold episodes (5 days below 0°C):

Reference 1971-2000: average 42 days/ year

Future 2021-2050: **average* - 13 days/ year**; zw. - 18 & - 6 days/ year

Fewer freezing days & days with snow coverage

Ice days (Max. temperature of the day below 0°C):

Reference 1971-2000: average 62 days/ year

Future 2021-2050: **average* - 15 days/ year**; zw. - 23 & - 10 days/ year

* „average“ means the „average change to be expected“

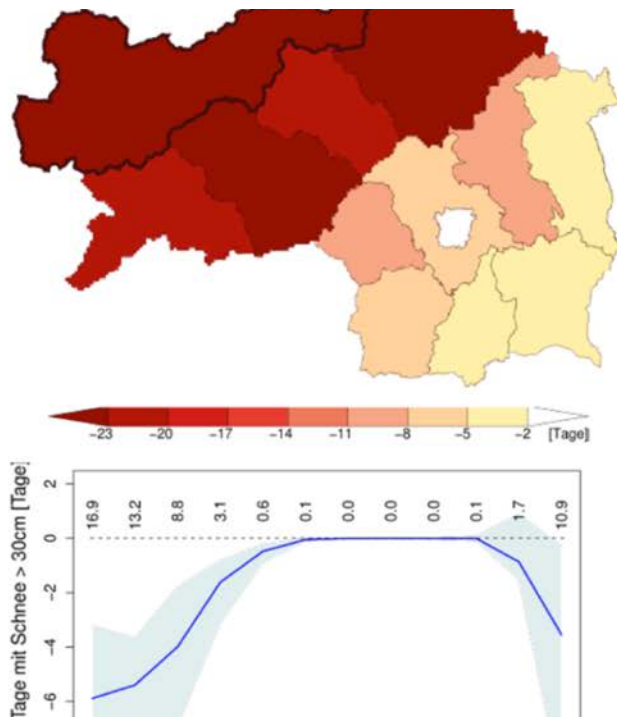
Source: ÖKS15 - Klimaszenarien
für Österreich, Gobiet, 2016

Auswirkungen des Klimawandels

Schneetage bis 2050 (A1B)

Effects of climate change –
Days of snow until 2050

Region Liezen compared to the
federal state of Styria



Days with snow coverage

2021 – 2050 vs. 1971 – 2000

[Days > 30 cm depths of snow]

- In Liezen the reduction of day with snow cover in Liezen by -23,2 days per year is probable
- Bandwidth lies between -29 and -10,4 days in winter.
- In Liezen the reduction lies far above the average in Styria of -16 days

→ Worse weather conditions for winter tourism
= CHALLENGE!

Data analysis of the Central Institute for Meteorology and Geodynamics (ZAMG) for the Enns Valley

Summer days (above 25 °C):

Reference 1971-2000: average 8 days/ year

Future 2021-2050: **average* + 6 days/ year**; between + 5 and + 13 days/ year

Hitzetage (über 30 °C):

Reference 1971-2000: average 0,5 days/ year

Future 2021-2050: **average * + 1,3 days/ year**; between + 1 and + 3 days/ year

Vegetationsperiode (5 Tage über 5°C):

Reference 1971-2000: average 174 days/ year

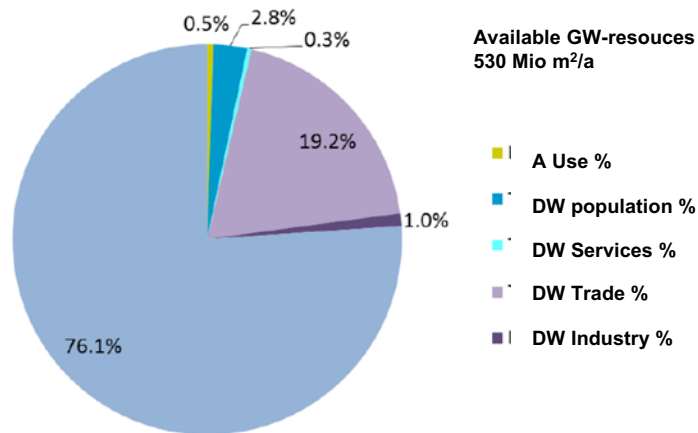
Future 2021-2050: **average * + 21 days/ year**; between +12 and + 29 days/ year

* „average“ means the „average change to be expected“

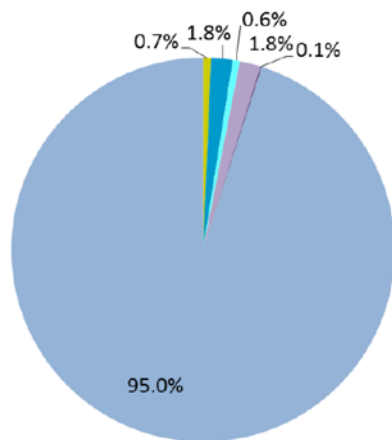


→ Pleasant weather during summer (summer retreat) and longer vegetation periods = CHANCE!

Northern Calcareous Alps



Low Tauern incl. Greywacke zone



Water demand

Use of ground water

- < 25% of yearly available resources

Change of seasonal water demand

- **Winter**
 - Artificial snowmaking
- **Summer**
 - Watering (Agriculture & temporary timber yards)
 - Tourism
 - Cattle on alpine pastures (springs)

**→ Surplus of water and beautiful, green landscapes
= CHANCE!**

Source: Martine Broer, MSc., Umweltbundesamt Wien, presentation of 13.9.17

- ✓ Adaptation **MUST** happen regionally!
- ✓ Support for custom-made adaptation measures on a regional & local level!
- ✓ Our region is amongst these 20 pioneer regions (unique in Europe)
- ✓ 75% federal funds, 25% municipal funds

www.klar-anpassungsregionen.at, www.klar-ennstal.at



Implementation of the
adaptation measures for
the municipalities:

Öblarn

Michaelerberg-Pruggern

Sölk

→ Funding for the implementation of 12 measures

- ✓ Awareness-building – knowledge – Know-how – acceptance – quality of life
- ✓ Face challenges specifically, seize chances in time
- ✓ Far-sighted planning: „**We are prepared**“ instead of „*It's too late!*“
- ✓ Prevent / minimise economic damage
- ✓ Design custom-made solutions in time – implement/ test chances and ideas in 4 areas – accompanied scientifically
- ✓ Entrench „**KLAR! Zukunfts-Region Ennstal**“ as a pioneer-region in climate change adaptation



Cooperation partners

KLAR! measures will be implemented within KLAR! municipalities and together with over 20 partner institutions

Our implementation partners in agriculture & forestry:



Our implementation partners in disaster protection & infrastructure:



Our implementation partners in tourism:



Our media partner:



Adaptation measures

AGRICULTURE & FORESTRY

LF1:
Forests in climate
change

LF2:
Tree-species map

LF3:
Demo-Forest

LF4: Forestal Info-
Service

DISASTER PROTECTION & INFRASTRUCTURE

KAT1:
KAT/ emergency info
leaflet

KAT2: Training
emergency
communication

KAT3: Self-protection
in case of floods

KAT4: Adapted
parking lots

KAT5:
Demo-Damming

TOURISM & LOCAL RECREATION

T1: Alternative
tourism concepts

EDUCATION

B1 Regional
education initiative:
– Experience
festival
– Education pool
– School (degree)
projects

B2: Shading facilities
& drinking fountains

General: Project management, awareness-building & communication concept (website, media relations, etc.)

Agriculture & forestry

AGRICULTURE & FORESTRY

LF1:

Forests in climate
change

LF2:

Tree-species map

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Demo-Forest

LF4: Forestal Info-
Service

LF1:

- Information / trainings / excursions in cooperation with the Austrian Research Centre for Forests
- Target Group: all forste owners; especially small ones
- Schedule: 3x in 2018-2020, 1st: 16.02.2018
- Goal: Informing & awareness-building about challenges of climate change, adaptation measures in forests, reduction of threats, motivated forest owners, etc.

LF2:

- Simple description and with few criteria, which tree species are suitable for which location; criteria are e.g. sea level, type of soil, water supply, etc.

LF3:

- Installation of 3 fixed demonstration forest areas / education paths (valley vs. mountain, different rocks, etc.); for awareness-building, seinsibilisation of population, farmers, forest managers about possible or necessary adaptation strategies, challenges and chances, etc.

LF4:

- Coordination of activities and informations-services regarding challenges und chances due to climate change in forestry; main topics: Protective forests & maintenance of forest roads; in close cooperation with public authorities



www.klimafitterwald.at



Disaster protection & infrastructure



DISASTER PROTECTION & INFRASTRUCTURE

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Demo-Damming



© Raumberg-Gumpenstein

KAT1:

- Instrument for municipalities to provide citizens efficiently and unbureaucratically about situation in case of emergency or catastrophe, the available essential information, standard procedures and responsibilities

KAT2:

- Training of key-actors within KLAR municipalities about how to communicate among each other and citizens in cases of emergency or catastrophe (heavy rainfall, mudslides, avalanches, rockfall, storms, etc.);
- Information about responsibilities and statutory / organisational procedures;
- Joint elaboration of a Fact-Sheets or check-list: „*What do I need to do in case of emergency or catastrophe and how?*“
- Training of municipal staff for communication with citizens

KAT3:

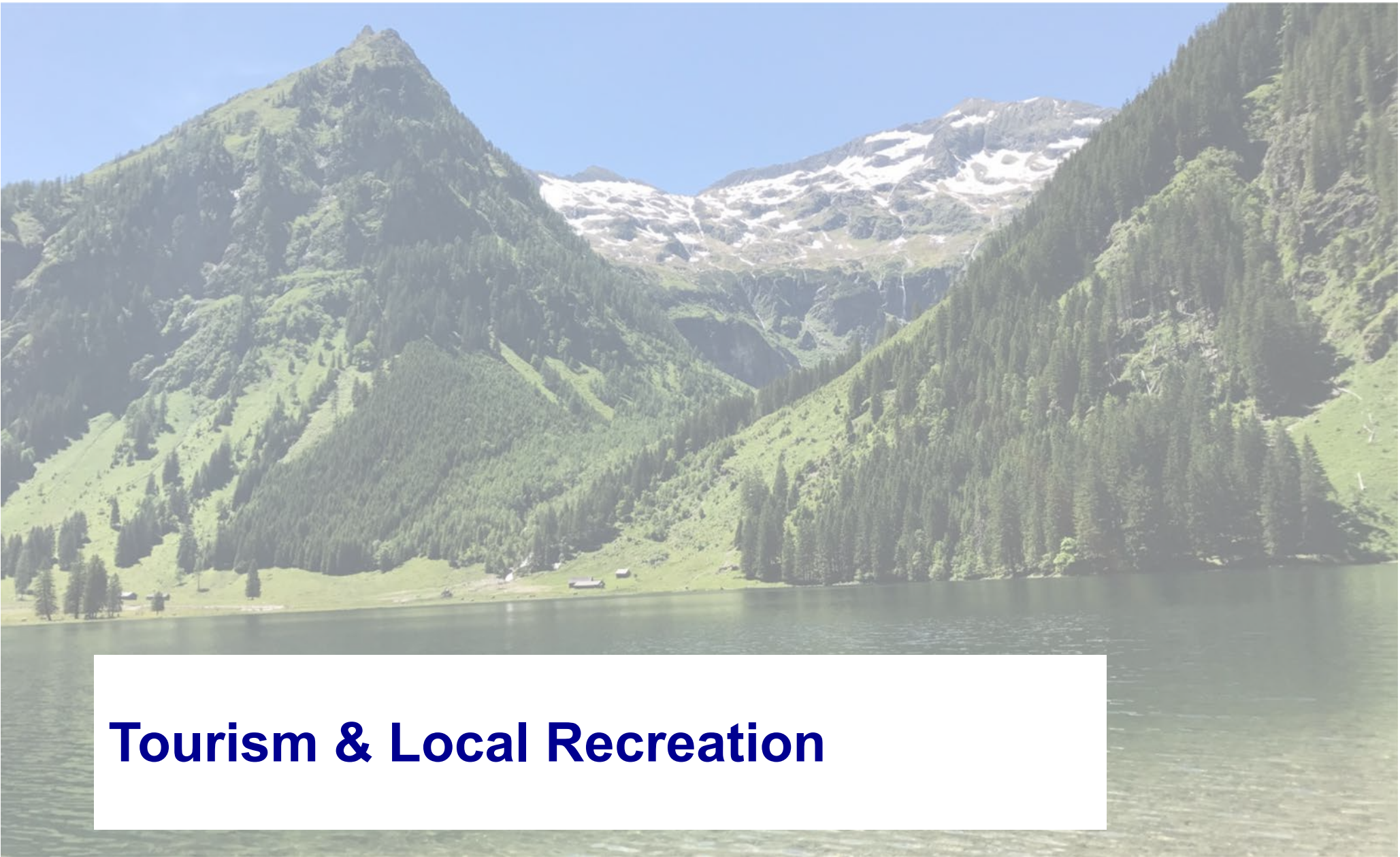
- Information and training of citizens about self-protection options/ preventive measures for cases of floods or mudslides; cooperation with the campaign „Selbstschutz Hochwasser“ of the federal government

KAT4:

- Excursion of key municipal staff to good practice example “adapted parking lot” and discourse by an expert

KAT5:

- Organisational support with the goal to install a fixed demonstration damming site to show the effect of natural hazards (floods, mudslides) on towns, houses, the environment within the Biber Berti Program (WLV); especially for kid & schools;



Tourism & Local Recreation

TOURISM & LOCAL RECREATION

T1: Alternative tourism concepts

T1:

- Development of 3 different alternative tourism concepts for the KLAR! Region – taking especially into account climate change adaptation challenges and chances in the region;
- Students of the the Institute of Landscape Development, Recreation and Conservation Planning (ILEN), University of Natural Resources and Life Sciences (BOKU, Vienna) have visited the KLAR! Region within the framework of the course „Nature Conservation Related Planning“ in April 2018
- Topics were elaborated in cooperation with relevant regional actors
- During the field work over 30 key persons of municipalities and in tourism were involved.
- Final public presentation of results on 09.04.2018 in Schloss (Castle) Großsölk.

Education

EDUCATION

B1 Regional education initiative:

- Experience festival
- Education pool
- School (degree) projects

B2: Shading facilities & drinking fountains



© Petra Hofer

B1:

Experience Festival:

- The KLAR! Kids Experience Festival of Climate Change Adaptation will be on May, 18. 2018 at the HBLFA Raumberg-Gumpenstein.
- The topic climate change adaptation will be made alive at all thematic levels especially for kids but also adults.
- 4 different experience stations are designed child-oriented for kids at the age of 5-10
- Morning: invited classes (schools & kindergarten)
- Afternoon: Families with kids
- Aim at broader public awareness; generation-overlapping

Education pool:

- Collection and user-friendly preparation of all topic-relevant education offers within the region for all age levels
- At the KLAR! Website („Bildungspool“)

School (degree) projects:

- Announcement and (co-) supervision of innovative measures for climate change adaptation within the framework of e.g. degree projects at high schools
- Projects could involve e.g. innovative solutions for shading (e.g. natural shading) and water provision and cooling in education facilities (drinking fountains, spray mist, water playing stations)

B2:

Co-financing of shading facilities & drinking fountains in education facilities or on public places



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