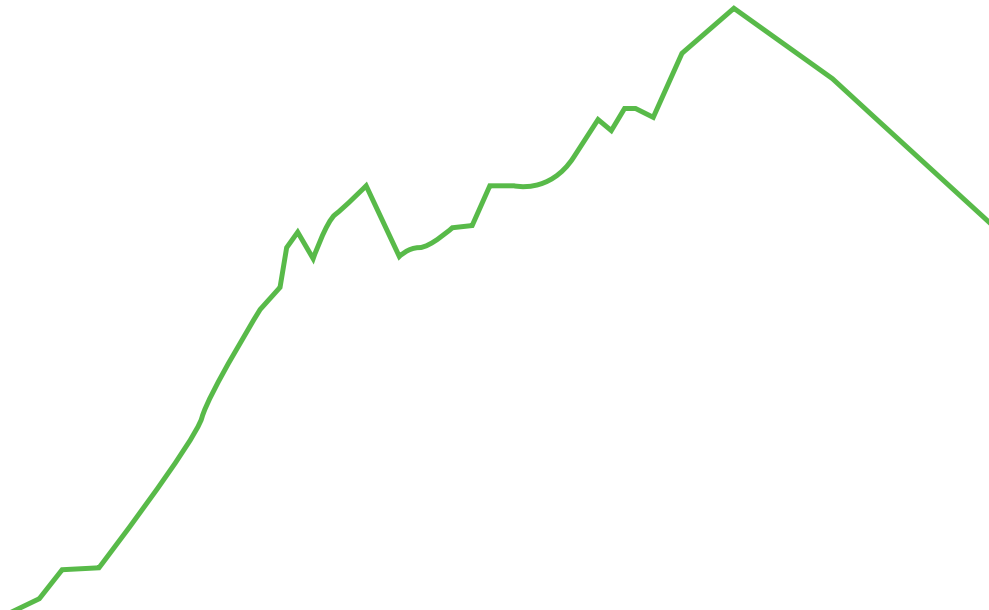


No 1

YOUrALPS

Collection und analysis of existing
mountain-oriented education (MoE)
practices and approaches





For an
inspiring
future in
the Alps

Content

04	INTRODUCTION
06	METHODOLOGY & APPROACH
10	CHAPTER A: COLLECTION OF BEST-PRACTICE EXAMPLES OF MOE
18	CHAPTER B: SURVEY AMONG YOUNG BENEFICIARIES
28	CONCLUSIONS AND RECOMMENDATIONS
30	BIBLIOGRAPHY

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Acknowledgement

The authors of the report would like to thank all participating young beneficiaries, educators, stakeholders, project partners and observers for contributing to our work and ensuring such a comprehensive and multifaceted report.



EUROPEAN REGIONAL DEVELOPMENT FUND



Global developments such as the depletion of natural resources, accelerating global warming or rapid demographic changes will pose challenges for mankind and require societal transformations. With their unique ecological, economic, and cultural value, mountain environments represent the complex interrelatedness and are essential to the survival of the global ecosystem. Especially young people (in mountain regions and lowlands) will not only be longer and more intensively confronted with these challenges but will also play a crucial role as future decision makers in business, politics and science. Among many other competencies and attributes, environmental awareness and nature-connectedness are key prerequisites to sustainable lifestyles in mountain regions. However, experts acknowledge a „nature deficit disorder“ (Louv 2009), affecting also the young generations in the Alps. A lack of a relationship to the environment entails a loss of Alpine identity and know-how, with a distorted perception of the mountains. Among Alpine youth, this may lead to the dying out of Alpine identity and mountain-related experiential knowledge.

In this context, mountain-oriented education (MoE) plays a key role to instill in young generations the sensibility and knowledge of Alpine cultural and natural heritage and highlight opportunities for their future. There is a need to raise youth's environmental aware-

ness on what the Alps can offer them also in terms of sustainable social and economic opportunities. MoE is a challenge for the Alps and needs to be better integrated in the formal education.

A stronger coordination between formal and non-formal education represents therefore a big potential for the sustainable valorization of the Alps. YOUrALPS takes up the challenge to increase the sensibility and value of the Alpine heritage especially among youth by better integrating related topics into the educational curricula and practices. Extensive research involving multiple stakeholders has been undertaken in order to orientate future endeavors at the diverse needs of all key actors in MoE. The status quo analysis report 2.0 at hand includes main results and conclusions of the variety of surveys as well as a comprehensive collection of MoE practices throughout the Alps.

Thereby, the report does not only provide relevant scientific insights from multiple perspectives, it also showcases how MoE is currently implemented throughout the Alps. Building on the current state of research in the field of education for sustainable development (ESD) and on empirical results in the course of extensive social science research, the authors attempted to distill success factors and recommendations for the implementation of MoE in the Alpine space and beyond.

„In this context, mountain-oriented education (MoE) plays a key role to instill in young generations the sensibility and knowledge of Alpine cultural and natural heritage and highlight opportunities for their future.“



Methodology and approach

„An open and flexible approach to learning that is both lifelong and life-wide is claimed to be crucial in a constantly changing world which is characterised by new levels of complexity and contradiction. If education alone cannot solve current and future challenges, it can at least contribute to a new development model in a humanistic and holistic sense that enables all people to realise their potential for a sustainable future and a life of dignity“

(UNESCO 2015).

Formal and non-formal education have to work hand in hand in order to fulfil the requirements of lifelong and life-wide learning.

But how can these necessary objectives be achieved under the predominant circumstances and by respecting the needs of all stakeholders (students, teachers, institutions, policy makers, etc.)?

How can young people's concepts, educators' teaching principles and stakeholders' educational tasks be integrated in order to lay the foundation for the transformation of education and society towards sustainability in the Alps?

1.

To approach possible solutions to these questions, a first step consists of screening what is already established and undertaken in the field of MoE in the entire

Alpine space. In doing so, analysis and evaluation of collected best practice examples of MoE in the Alps help stakeholders from both formal and non-formal education to better shape their future MoE activities and learning settings for each specific target group (Chapter A).

2.

The second part of this comparative analysis report consists of an empirical study of three actor groups relevant for MoE:

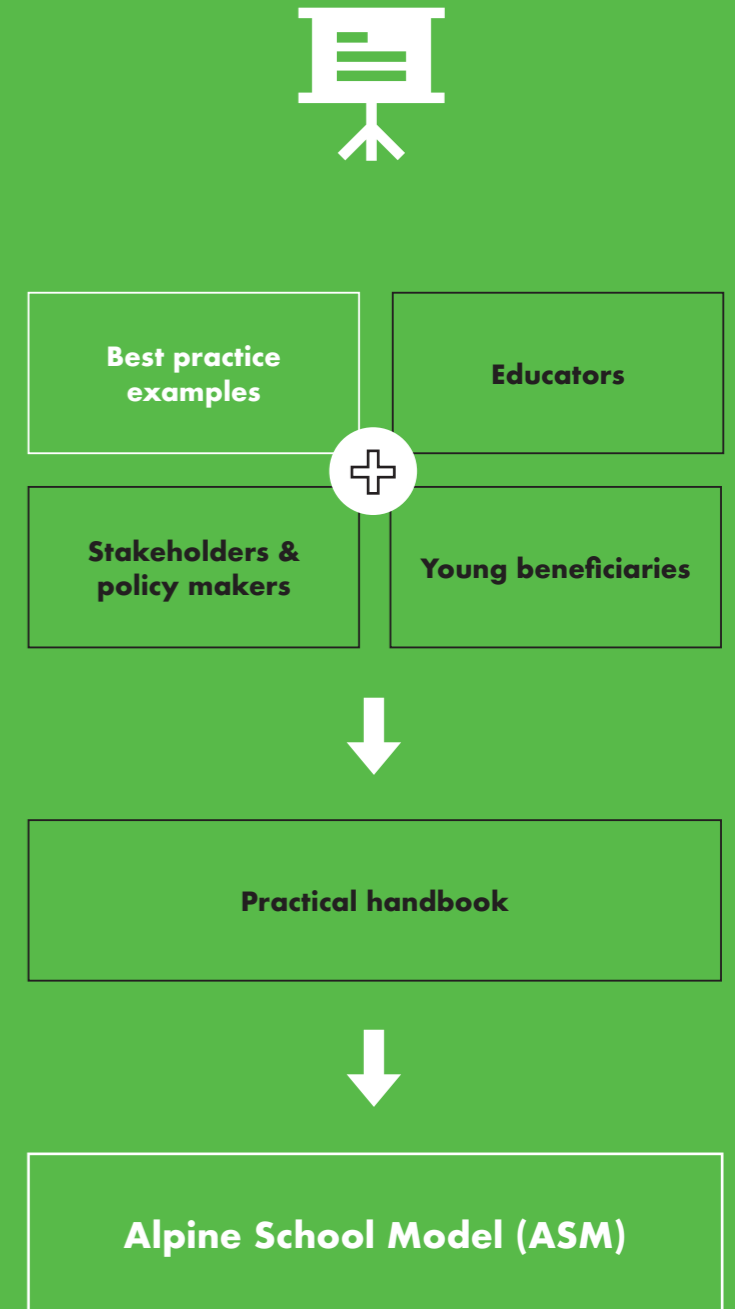
- 1 Young beneficiaries from 10-30 who are the main target group of already existing and future activities (Chapter B)
- 2 Involved practitioners in both formal and non-formal education sectors (Chapter B.2)
- 3 Responsible persons of NGOs, legacy, protected areas, etc. that are main decision-makers in the field (Chapter C)

This mixed-methods research design ensures a holistic approach to the object of investigation. Strictly speaking, data triangulation (Flick 2008) as performed here aims at deepening and widening one's understanding of this object (Olsen 2004).

The results of all taken actions (surveys, interviews, collection of best practice examples, literature review) can be regarded as input factors for the development of a so-called Alpine School Model (ASM) in which all activities and measures of MoE are being bundled, theoretically underpinned and promoted for its future implementation in and extension to various learning settings throughout the Alps.

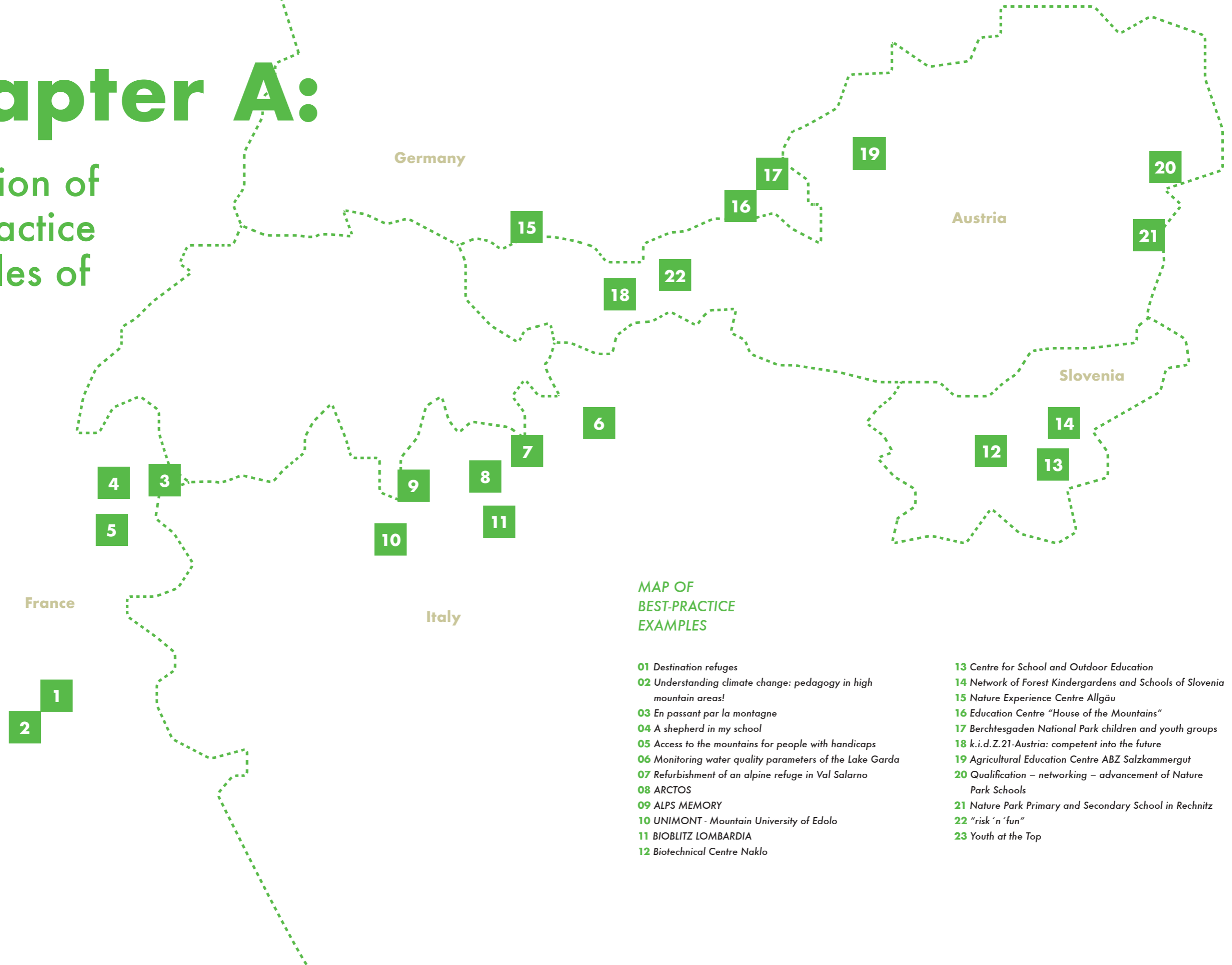
This mixed-methods research design ensures a holistic approach to the object of investigation.

Analysis of political strategies



Chapter A:

Collection of best-practice examples of MOE



MAP OF BEST-PRACTICE EXAMPLES

- 01** Destination refuges
- 02** Understanding climate change: pedagogy in high mountain areas!
- 03** En passant par la montagne
- 04** A shepherd in my school
- 05** Access to the mountains for people with handicaps
- 06** Monitoring water quality parameters of the Lake Garda
- 07** Refurbishment of an alpine refuge in Val Salarno
- 08** ARCTOS
- 09** ALPS MEMORY
- 10** UNIMONT - Mountain University of Edolo
- 11** BIOBLITZ LOMBARDIA
- 12** Biotechnical Centre Naklo
- 13** Centre for School and Outdoor Education
- 14** Network of Forest Kindergartens and Schools of Slovenia
- 15** Nature Experience Centre Allgäu
- 16** Education Centre "House of the Mountains"
- 17** Berchtesgaden National Park children and youth groups
- 18** k.i.d.Z.21-Austria: competent into the future
- 19** Agricultural Education Centre ABZ Salzkammergut
- 20** Qualification – networking – advancement of Nature Park Schools
- 21** Nature Park Primary and Secondary School in Rechnitz
- 22** "risk 'n 'fun"
- 23** Youth at the Top

The Specifics of the best practice examples

Click [here](#) for further information



17 of the initiatives aim to integrate the natural and cultural heritage of their region

France

No. 1: "Destination refuges"

Every year USEP 05 (Sportive Union of Primary Schools) organises the program "Destination refuges", allowing 1,000 pupils a first experience of the mountains, spending 2 days (1 night) in a mountain hut.

No. 2: "Comprendre le changement climatique: pédagogie en altitude! / Understanding climate change: pedagogy in high mountain areas!"

The National Park Ecrins and Lycée Aristide Briand à Gap together put up a scientific project to document climate change in high altitudes.

No. 3: "En passant par la montagne"

The project is targeted at young people and adults in difficult situations, like social exclusion, school failure, illness or disability and aims to encourage them to overcome their situation through stays in the mountains

No. 4: "Un berger dans mon école / A shepherd in my school"

School children are to be acquainted with the world of alpine pastures through visits of shepherds in (primary) schools and – in return – visits of the pupils on alpine pastures.

No. 5: "Réseau Empreintes" / Access to the mountains for people with handicaps

Réseau Empreintes is an environmental education network focusing on the establishment of access to the mountains for people with handicaps. The network offers logistic and pedagogical support to people with disabilities who would like to stay in the mountains.

Italy

No. 6: "Monitoring water quality parameters of the Lake Garda"

Students of E. Fermi High School in the province of Brescia analyse water quality of Garda Lake every year.

No. 7: "Rifugio Val Salarno / Refurbishment of an alpine refuge in Val Salarno"

The project provides high school students with the relevant competencies to plan the rebuilding of an alpine refuge considering environmental characteristics of the territory and technical specifications of the structure in Adamello Regional Park.

No. 8: "ARCTOS"

ARCTOS is a LIFE project in the alpine area of the provinces Sondrio, Lecco and Bergamo. Its aim is to preserve the Brown Bear from extinction and to demonstrate its importance by means of specific activities tailored to local people, students and children as well as the staff of mountain parks.

No. 9: "ALPS MEMORY"

The project of Secondary School Damiani in Morbegno, Sondrio aims to develop territorial sensitivity towards the enhancement and protection of the cultural and environmental heritage and promotes knowledge and respect of environmental values in the Alpine region.

No. 10: "UNIMONT - Mountain University of Edolo"

The Mountain University of Edolo is an innovative training and research centre specialised in the academic study and analysis of issues regarding mountain areas.

No.11: BIOBLITZ LOMBARDIA

In a two-day activity citizens and students collect and report data about the presence of animal and plant species in the network of Lombardy Region's Protected Areas. People are accompanied by experts who help detecting and recognizing the most interesting species. Animals and plants are photographed and data entered in a web platform.

Slovenia

No. 12: Biotechnical Centre Naklo

The educational programs combine nature preservation, organic agriculture and food processing with technical aspects. The students learn to recognise the business opportunities offered by the local environment.

No. 13: Centre for School and Outdoor Education

The 23 facilities of the Centre for School and Outdoor Education offer curricula-compatible educational programs. They include accommodation, meals, equipment and are carried out by qualified teachers.

No. 14: Network of Forest

Kindergartens and Schools of Slovenia
The main purpose of this network is to encourage schools and kindergartens to maximise the use of the local natural environment for educational purposes. The project contributes significantly to the exchange of knowledge, good practice examples and the development of pedagogical approaches.

65 % explicitly aim to integrate formal (e.g. schools) and non-formal education

Germany

No. 15: Nature Experience Centre Allgäu

The Nature Experience Centre Allgäu is building up networks between environmental-educational actors and people responsible for tourism in order to strengthen nature tourism. It offers environmental education in the entire area of Allgäu. With only 1.5 permanent jobs and the support of voluntary workers about 700 environmental-education offers can be generated every year.

No. 16: Education Centre "House of the Mountains", Berchtesgaden

The triad of exhibition, education centre and outdoor area is unique. The four main living spaces water, forest, alps/meadows as well as rock in all seasons are the focus of the exhibition "Vertical Wilderness".

Motto: "Inspire not instruct"

No. 17: Berchtesgaden National Park children and youth groups

The USP here is: Long-term thinking! Some children spend more than 10 years in these groups – over these years, a solid relationship to the National Park can be established and a sustainable education can take place.

8 examples address explicitly high school students, most projects to various age groups

Austria

No. 18: k.i.d.Z.21-Austria: competent into the future

Topic: Discovering and experiencing climate change from different perspectives. Educational potential: learning-on-site, learning to understand climate change in the alpine mountains. Cooperation between science and society is strengthened. The integration into everyday school life is a central part of the concept.

No. 19: Agricultural Education Centre ABZ Salzkammergut

Close cooperation within the frame of the Austrian "Nature Park Schools" offered at a vocational school focusing on agriculture together with a Nature Park (at the moment Austria's only secondary level Nature Park School).

No. 20: Qualification – Networking – Advancement of Nature Park Schools in Burgenland

On this platform school authorities, the college for education (school for teachers), Nature Parks, Nature Park Schools and the communities, work together in qualification, networking and advancements of the Burgenland Nature Parks. This constellation is unique in Austria.

No. 21: Nature-Park Primary and Secondary School in Rechnitz

- The concept of the school and the educational objectives are especially matched with the characteristics of the Nature Park.
- The principals are members of the Nature Park executive committee.
- The students can also participate in voluntary care-services outside of school hours in the Nature Park as "junior rangers".

No. 22: "risk'n'fun"

Trainings for free riders and climbers intended to transfer alpine-technical knowhow and –equally important – the basics for individual strategies of risk optimisation. "risk'n'fun" is organised by the Austrian Alpine Club Youth.



Mapping of environmental changes in high mountain regions as part of the k.i.d.Z.21-Austria project (No. 18).

Also 65 % include more than one external stakeholder, e.g. tourist organisations, protected areas or other organisations

They differ in their organizational framework: the providers are protected areas or organizations specialised in mountain orientated education or environmental education

Alps as a whole region

No. 23: "Youth at the Top"

„Youth at the Top“ is an international project, a form of collective action simultaneously organised in six alpine countries (Austria, France, Germany, Italy, Slovenia and Switzerland). „Youth at the Top“ aims to create links between the different countries and symbolically go beyond administrative and language barriers by considering the Alps as an entity.



Own discoveries in an inquiry-based education arrangement.

LEARNING BY DOING



"Learning with the head, heart and hands"
(H. Pestalozzi)



Unique experiences and community spirit.

Chapter B:

Survey among young beneficiaries

Data collection & sample

The *survey* started April 2017 and lasted until the end of October 2017. Invalid cases were deleted and obtained data checked with regard to irregularities and degree of completeness of open-ended items. From the overall 609 completed questionnaires, 567 can be regarded as valid because they meet the predefined minimum criteria (age 10-30; residency of one of the territorial Alpine states which are at the same time member of the EU).

Descriptive analysis

299 female and 258 male respondents make up the sample, while ten neither checked on of the options. For further analysis purposes the 569 cases were classified into four age groups (10-14, 15-19, 20-24 and 25-30). Students from

Slovenia and France make up more than 2/3 of the sample (table 1).

Due to the heterogeneity of school systems in the Alpine countries and designation of their own school by those surveyed, sound distinction between types of school can only be made in terms of lower or higher secondary level. The group with the label Higher secondary/Vocational/Technical high school is an aggregation of all students who attend either a grammar school with a specialisation on nature sciences or a form of vocational school that combines general education and professional training. 36 persons are not attending any course of formal education currently and are, thusly, employed, self-employed or unemployed. With a total of 450 young people from 10-19,

one of the two main target groups (6-9 and 10-19) of planned activities in the field of MoE is well represented in the sample. Consequently, the sample allows for valid statements about the age groups 10-14, 14-19 and 20-24 and tendencies about the age group 25-30. Due to high response rates, valid statements can be made about Slovenia and France, tendencies about the other participating countries as well as for the sub-set which is currently not in educational training (n=36, table 2).

University and college students make up another 101 students and therefore allow for group comparisons between pupils and students. Another sub-set which enables cross-comparison between different groups are people who indicate being apprentices (n=73).

Survey – Quality of Life

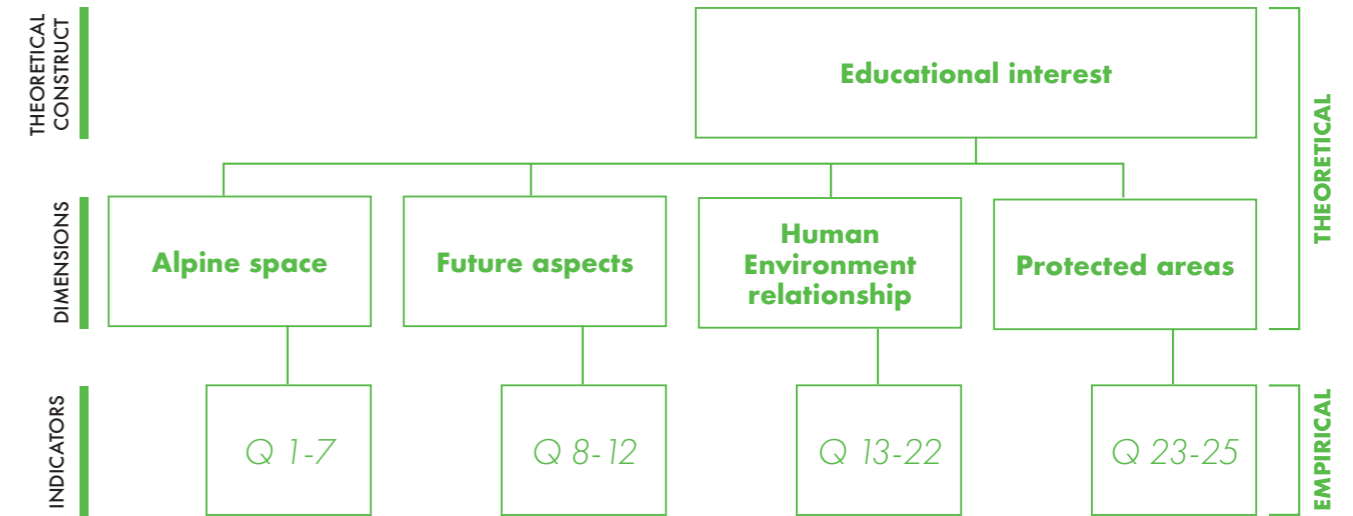


TABLE 1

N=567		Frequency	Percent
Gender	female	299	52,7
	male	258	45,5
	n.a.	10	1,8
Age group	10-14	137	24,2
	15-19	313	55,2
	20-24	92	16,2
	25-30	25	4,4
Country	Germany	42	7,4
	Austria	50	8,8
	Italy	51	9
	France	195	34,4
	Slovenia	229	40,4

Socio-demographic properties of respondents (source: own research).

TABLE 2

N=567		Frequency	Percent
Type of school	Lower secondary school	106	18,7
	Higher secondary school	324	57,1
	University/College	101	17,8
	Curr. not in ed. training	36	6,3
Highest level of education	Still in education	373	65,8
	Finished without qualification	3	0,5
	Compulsory school leaving certificate	33	5,8
	High school degree	50	8,8
	University/College	69	12,2
Other	39	6,9	

Showcase of attended type of school and highest completed level of education among respondents (own results).

Survey results

Intergenerational justice as well as future orientation are key principles in education for sustainable development. Hence we want to examine young people's orientation towards the future, implying optimism and potential deviation depending on the dimension they are asked for. Unsurprisingly, they generally regard their own future brighter than they do the one of the earth. Regarding the latter, the mode can be found in the class signified as rather negative, whereas it lies in the highest class ("positive") in terms of their own personal future. Regarding the Alpine space, the vast majority of those surveyed envisions its future as positive or rather positive. This overall positive connotation with the Alpine space is though highly contrasted by general findings that the warming in the greater Alpine region will be twice as large as the global trend (Brunetti et al. 2009) with its undoubted increasing consequences for both bio- and anthroposphere (BMU 2007).

For interpretation of these findings, it is important to take into account the different concepts of young generation concerning the Alpine space. Only then sound conclusions can be drawn from these results. Results show a close match between young people's concepts of a protected area and the Alpine space in almost all queried

domains except from one: Clearly more people consider a protected area such as national or nature parks as a place where learning takes place. One can conclude that the expression "Alpine" in the term Alpine space might directly refer to the mountains as a perceived wild and remote territory and less to mountain regions which also includes the inhabited valley floors, Alpine foreland and settlements. **The above mentioned outcomes concerning the prospects of the Alpine space together with these possible explanations hold substantial significance for implementation for the planned activities and measures during testing phase of pilot sites:**

a) To stress the human-nature-interaction. This makes the Alpine space a perfect test tube because wide areas with a visible human impact are in vicinity of rather pristine zones.

b) To tackle the rather idealised concept of the Alpine space as a safe haven in comparison to the doomed planet earth. This implies that the effects of global change will be less noticeable in the Alpine space according to the students' comprehension.

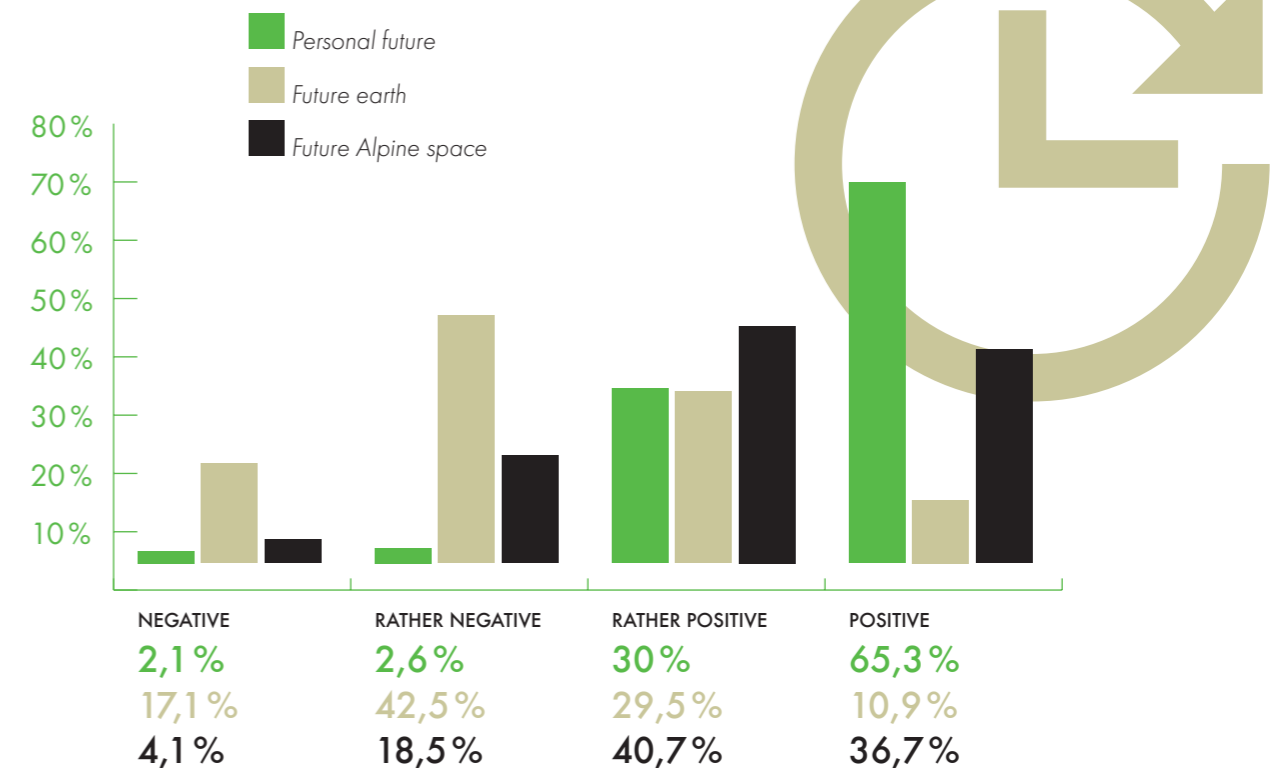
Differing results by country of residence

First results show a statistically highly significant relation ($p < 0,01$) between country of residence and future prospects of the earth as well as regarding the Alpine space. While respondents from Slovenia envision the future of the earth (\bar{x} : 2,75, s : 0,851) as well as the one of the Alpine space (\bar{x} : 3,40, s : 0,697) predominantly positive, the vast majority of young people from the other Alpine countries reports a more negative outlook for the planet and the Alps (e.g. France: \bar{x} : 2,03 or rather 3,00; s : 0,796 or rather 0,831). For these findings, several explanations seem plausible: either the information policy in the "old" EU Alpine states (excluding Slovenia) is very biased towards a rather pessimistic prospect of the earth which might stem from not solely environment-related information provided by mainstream media, but also from the general content of teaching in compulsory schooling; or the general atmosphere in the relative young state of Slovenia is rather positive and so is the future outlook. In accordance with findings from other studies that reveal the importance of positive framing of climate change related topics and dismiss so called 'alarmism' (Riede et al. 2016), educational activities in the sense of MoE always ought to be solution-ori-

„Educational activities in the sense of MoE ought to be solution-oriented emphasising positive messages.“

Future prospects

n=567



Male respondents agree to a higher extend to the statement that future challenges of society can be met mainly with technical progress

ented with predominant positive connotations. Together with the result highlighted just above, it is crucial for educators to have a rough idea of the pre-concepts of their students in order to be able to offer education which helps them questioning their predefined and often cemented universal idea of the world.

As compared to France, but also to the other examined Alpine states, respondents from Slovenia agree less often to the statement that it is the task of politicians to promote environmental friendly behaviour, e.g. through law making or financial support (\bar{x} : 2,76, s: 0,902), that both, scientists and researchers contribute to global change mitigation and adaptation by i) finding solutions for the challenges in the Alpine Space (\bar{x} : 2,70, s: 0,736) and ii) companies by producing environmental friendly products and thereby contributing equally in their specific realm (\bar{x} : 2,91, s: 0,828) and that NGOs should stand up for environmental protection (\bar{x} : 2,79, s: 0,817). Therefore, it can be stated that young Slovenian Alpine residents want rely less on (non-) governmental and public structures when it comes to in how far different actor groups are in charge to contribute to finding solutions for the challenges of global change. Findings pertaining to the ascribed responsibil-

ity of science & research in the realm of global change can be considered as either a lack of students' contact and therefore inadequate interest in the academic world or shortcoming on the social mandate of science towards those who finance it primarily. Taking this into account, the available results hold a strong indication for the promotion of transdisciplinarity in order to highlight the value and the service of science for the society. For a clear statement in this respect, further research is needed.

When asked whether future challenges inside and outside the Alpine space are clearly different, Slovenian respondents rather tend to agree (\bar{x} : 2,93, s:0,852), while at the same time German respondents are less conclusive (\bar{x} : 2,51, s:0,731). Considering the statement according to which more knowledge is required to meet future challenges as a society, to which Slovenian (\bar{x} : 2,95, s:0,858 and Austrian (\bar{x} : 2,86, s:0,930) students have the tendency for lower approval compared to e.g. France (\bar{x} : 3,51, s:0,657), one can draw the conclusion that both the effects of global change and thereupon aiming solutions are located among queried students from Slovenia, and to a lesser extent also from Austria, more on a regional scale compared to the three bigger Alpine states Italy, France and Germany.

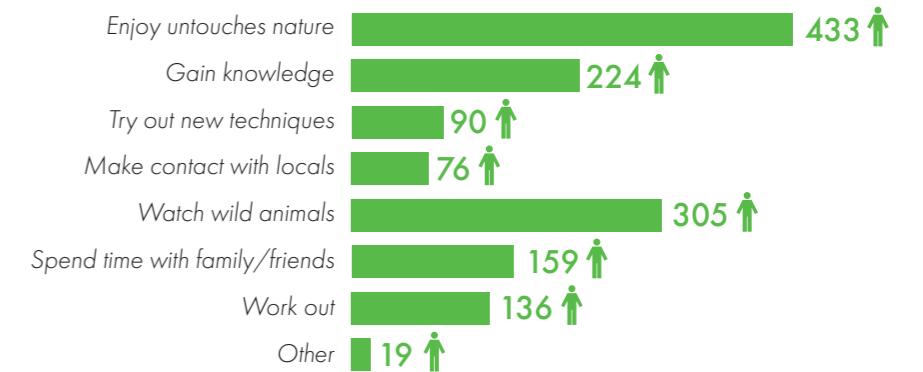
Respondents from France and Germany have the tendency to rather concur with the proposition that future challenges of society can be met with active involvement (\bar{x} : 3,56, s:0,637 or rather \bar{x} : 3,66, s:0,530) in comparison to survey participants from Slovenia (\bar{x} : 3,28, s:0,890).

Finally, statistically highly significant ($p < 0,01$) or significant ($p < 0,05$) results could be also detected regarding the tendencies of respondents with different residency concerning the following attributes:

- Queried students from both France and Italy state a closer connection to the natural landscape in their region and show a higher preference for unspoilt nature compared to students in the residual Alpine states
- Regarding the queried item 'I don't feeling comfortable in nature at all', students from Slovenia exhibit a higher mean but also a higher standard deviation which entails a relative higher rate of agreement
- Students from France have a relative lower tendency in agreeing to the statement that 'Human beings are part of nature'
- Compared to the other Alpine states, especially to German students, respondents from France show a bias towards rather disagreeing to

Expectation of stay

in protected area n=567



the statement 'As a single person I cannot make a huge contribution to nature conservation'

- Unlike interviewees from other states, in particular from Austria, French students express a higher level of personal responsibility for preserving nature

Differing results by age group

Because of lower numbers of respondents in the sample belonging to the age group 25-30, the following analyses refer to group comparison of students aged 10-14, 15-19 and 20-24. Regarding the future prospects of both the earth and the Alpine space, the cohort of 15-19 exhibit the lowest mean values (\bar{x} : 2,21, s:0,867 or rather \bar{x} : 3,03, s:0,0847) compared to the respondents aged 10-14 and those 20-24, respectively, the central tendency towards a more positive outlook on the Alpine space, however, is depicted in all cohorts included in this research. This finding is consistent with cross-border comparison as highlighted above. The younger age group (10-14) assigns to a lesser extent (\bar{x} : 2,93, s:0,916) responsibility to companies to produce environmental friendly products and therefore help protecting environment than the intermediate and oldest age group (\bar{x} : 3,25, s: 0,770 or rather \bar{x} : 3,23, s:0,776). The central tendency of the item 'Personal responsibility to act environmentally

friendly' performs in a similar way (10-14: \bar{x} : 3,29, s:0,848; 15-19: \bar{x} : 3,52, s:0,695; 20-24: \bar{x} : 3,76, s:0,526) at a general high level of agreement to the assertion.

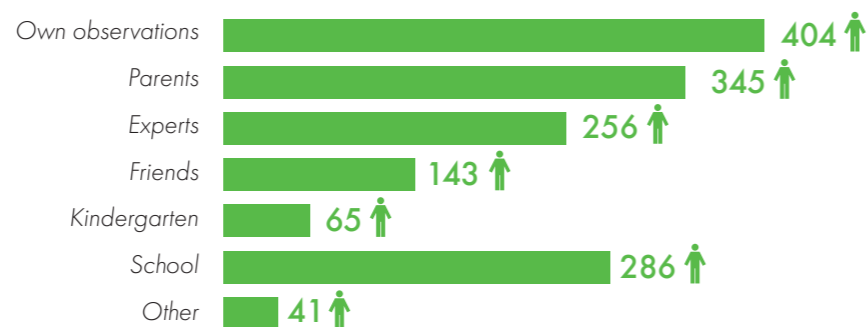
When asked what the respondents think would be vital prerequisite in their judgement for the society to tackle current and future grand challenges, statistically significant distinctions can be reported concerning the items 'More knowledge is required' and 'Through active involvement future challenges can be met' as a function of age group as follows:

The intermediate age group (15-19) exhibit the highest values of central tendency (\bar{x} : 3,30, s:0,803) relative to the other age groups (e.g. 20-24: \bar{x} : 3,12, s:0,768) as regards the question whether more knowledge could help dealing with future grand challenges. Regarding the level of agreement to the assertion that active involvement is key element when it comes to build more resilient societies, one can conclude on the basis of the obtained data that the older the respondents are, the higher the approval to acknowledging one's own portion and relevance is in coping with global change.

Female students rather agree that NGOs have the obligation to stand up for environmental protection

Source of knowledge about nature

N=567



But which implications for didactical and pedagogical measures do arise from these findings? In formal education, topics are regularly covered starting from a certain point of view which is determined by a subject's specific epistemic interest. When one assumes that future grand challenges cannot be limited to single spheres, thinking and teaching in (school) subjects represents consequently no suitable approach for finding neither the right questions nor the potential answers to the most urgent problems of our era.

In line with these findings are detected differences concerning the item 'Nature protection as every human's duty': The age group of secondary school I (10-14) agrees to a lesser extent to this claim (\bar{x} : 3,35, s:0,863) in comparison with the other examined age groups (15-19: \bar{x} : 3,60, s:0,659; 20-24: \bar{x} : 3,73, s:0,576). With regard to the consent to the assertion that human beings are part of nature, less conclusive bias can be reported in relation to the age of those queried. In that respect, the intermediate age group shows a tendency towards the lowest approval among all compared age groups (\bar{x} : 3,16, s:0,820). Further statistically highly significant ($p < 0,01$) results as a function of age group regarding the general tendency of respondents towards the following attributes can be reported:

Generally speaking, the older the respondents are, the more they agree with the statement that...

- Nature is an essential ingredient of life
- Being in nature makes me happy
- I feel a close connection to the natural landscape in my region
- I'm trying to spend as much time as possible in nature
- I have a preference for unspoilt nature

As against the younger the respondents are, the less they disagree with the statement that...

- I'm not interested in nature at all
- I don't feel comfortable in nature at all
- Nature is something unknown for me

Therefore, it can be concluded that older students value to a higher extent the natural landscape which is in the field of mountain-oriented education put on a level with the natural heritage of the Alps. When criticising a potential lack of connectedness with nature, especially among youth, one should not forget that i) interests can change again with time and that ii) young people often equate "pristine" nature with boredom and absence of possibilities (e.g. transport, entertainment facilities etc.), which are, among

others, vitally important at a certain life stage. Although a certain level of sensitisation is crucial for behaviour change regarding consumer and transport behaviour among youth, there is potentially a real risk that a wrong dose of inherently "right" topics and interventions could be eventually counterproductive when, for instance, special human behaviour and needs is portrayed in a too negative way and help is literally not at hand.

Differing results by gender

Interesting gender differences concerning several enquired parameters can be reported, although most of them only confirm already well-known gender-specific characteristics towards e.g. personal responsibility for action taking in environment protection or belief in technical solutions for the current global change. These observed gender-biased discrepancies pertaining to awareness of global environmental change and its subsequent challenges should sensitise educators in a way that suitable interventions which enable students to question their ascribed their own roles and the ones of all sexes towards their share of contribution to both the cause and possible solutions to global environmental change are indispensable. If predefined concepts (including gender roles) are not made a subject of discussion, it is very likely

that adaptation and mitigation policies on a global scale will not be expedient (Denton 2010) if gender-biased decisions towards job choice, consumer behaviour or willingness to act more environmental friendly will continue to be reproduced in future (Büro für nachhaltige Kompetenz 2013).

The most striking gender-related stereotype that is confirmed by our findings is that male respondents agree to a higher extent to the statement that future challenges of society can be met mainly with technical progress (\bar{x} : 2,92, s: 0,882). Besides that, they show a lower level of disagreement with the assertion that humans have the right to transform nature to their benefit (\bar{x} : 2,18, s: 0,922). On the other hand, female respondents show a higher degree of consent of feeling personally responsible for preserving nature (\bar{x} : 3,58, s: 0,685) can be reported, but at the same time female students think that a single person can only contribute to a small extent environment protection (\bar{x} : 3,39, s: 0,726). In this respect, it doesn't seem astonishing that female students rather agree that NGOs have the obligation to stand up for environmental protection (\bar{x} : 3,13 s: 0,793).

Expectation and carried out activities in protected areas

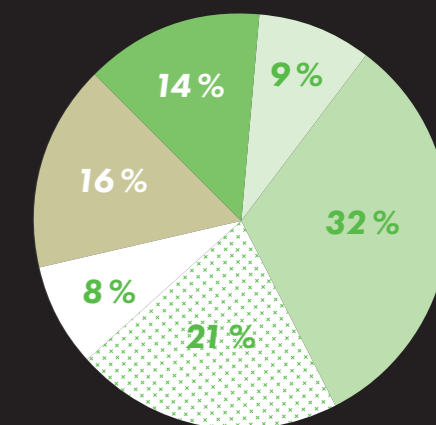
The next question is then what young

people expect when they are about to visit a protected area. Therefore, a set of possible expectations was provided as multiple selection with the option to add any missing item. The two most often checked options among the respondents are, as expected, to enjoy untouched nature as well as to watch wild animals. Less often but nevertheless considerable is the frequency of mentions of both to gain knowledge and to spend time with family/ friends. The underrepresented options are more related to activities in nature parks which involve getting in touch with the local population as well as trying out new techniques or practices that are part of the cultural heritage of a certain area. Despite the apparent lower importance among the consulted students, these activities in direct contact with the local community and their craftsmanship can be regarded as added value of merging formal and non-formal education compared with conventional in-class teaching in many schools.

What did the visitors eventually do when they have been to a protected area lastly? Of the 567 students aged 10-30, the ones who haven't been to a protected area within the last 12 months are subtracted which reduces the sample in this regard to 514 cases. Among these, most respondents hiked on a nature trail or took a guided tour.

Stays in protected areas within 12 months

(N=567)



More than 90 % of the respondents from 10-30 have been at least once to a protected area during the last 12 months.

Those activities can be regarded as the classic forms of non-formal environmental education interventions in the context of protected areas. The high number of persons who checked the residual option indicated that they have either done any kind of work-out (e.g. hiking,), have been working or have been living there at the time when the survey was completed. All of the mentioned activities though are either teacher (or guide)-centered, whereas pupil-centered hands-on activities and methods such as explorative or research-oriented learning still seem to be unterrepresented among (educational) activities offered and thus performed in protected areas. Moreover, the mismatch between appreciation of nature on the one hand and real action on the other hand as already mentioned above can be regarded as an important indicator for hands-on experience when planning outdoor activities or formats which focus the integration of formal and non-formal environmental education activities.

Stays and activities in protected area (PA)

More than 90 % of the respondents from 10-30 have been at least once to a protected area during the last 12 months. Within those who visited, a relative majority (~32 %) indicates

only one or two stays in e.g. a nature park. Surprisingly, almost 30% (= 167 persons) in total say that they have been to a conservation area 3-10 times, the same number has been there even more frequently. Among the latter ~14 % (= 77 persons) are permanent residents or working in a protected area and are therefore regularly in protected areas.

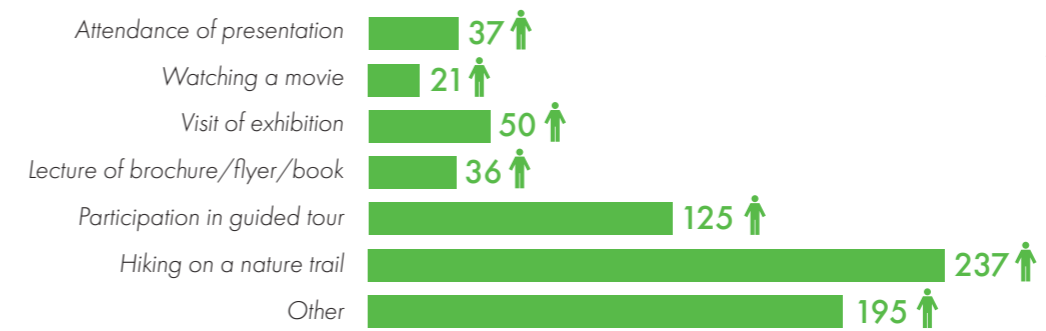
When planning educational measures and activities in the running school year, interviews with involved educators in the field of non-formal mountain-oriented education reveal the importance of more frequent visits or multi-day stays in protected areas as single interventions probably won't have the desirable effects on youth's awareness and action towards a more sustainable lifestyle. These assumptions are underpinned by other findings related with the frequency of stays in a protected area: The more often young people have been to protected areas during the last 12 months, the more they feel personally responsible to act in an environmental friendly way (>3x in a PA: \bar{x} : 3,55 s:0,680; never in a PA: \bar{x} : 3,20 s:0,790) and show higher self-belief regarding their contribution to environment protection (> 10x in PA: \bar{x} : 3,53, s: 0,688; 1-2x in PA: \bar{x} : 3,29 s:0,751). Consequently, frequent visitors or residents think that future challenges of society can be met mainly with active

involvement of each individual (\bar{x} : 3,46, s: 0,831). They even say that they want to spend as much time as possible in nature (\bar{x} : 3,55, s: 0,718)!

For interpretation purposes and subsequent conclusions for didactical implementation of these results, it is crucial to bear in mind that in various approaches in environmental psychology, the sense of self-efficacy is seen as a fundamental driver for action taking. When aspects of environmental conservation are addressed to young people, these findings underline the importance of delimited and feasible projects for students that neither surpass their capabilities nor remain a theoretical construct.

On the contrary, but not surprisingly, the less often people have been to protected areas lastly, the less interest they show in nature in general (\bar{x} : 1,79, s:1,016), the more uncomfortable they feel in nature (\bar{x} : 1,59, s: 1,150), and, the less they disagree with the statement 'nature is something unknown to me' (\bar{x} : 1,60, s:0,817).

Sources of knowledge about nature For pedagogical concerns in connection with non-formal education, it is important to find out what youth thinks which are their main sources of knowledge about nature.



Activities

in protected area N=514

It is very interesting that more young people select the option from my own observations rather than from my parents or from school when it comes to sources of knowledge about nature. Experts and peer groups (friends) as sources of nature-related knowledge are selected by 45,1 % or 25,2 % of the respondents, respectively. Although informal learning in families or peer groups cannot be treated in greater detail, these results hold though substantial implications for

the design of learning settings related with formal-non-formal education partnerships as are pilot sites in our project. Moreover, intended MoE-related educational measures should be guided by principles of educational methods and concepts such as inquiry-based or explorative learning, assisted by a facilitator who does not automatically need to have an education background. "Inquiry-based learning includes problem-based learning, and is generally used in small scale investigations and

projects [...]" (University of Manchester 2017).

In line with the findings presented above, it can be concluded that the majority of key competencies that educators think will prepare students for future grand challenges are more effectively developed due to educational concepts which centre students' life-world and pre-conceptions compared to traditional pedagogical approaches (see Stötter et al. 2016).

Conclusions and recommendations for implementation

CHAPTER A: GOOD-PRACTICE EXAMPLES

- **Extensive collection of good-practice examples of moe:** The range of good practice examples of mountain oriented education collected in this paper covers the whole Alps. In total you can find 23 examples: 5 from France, 6 from Italy, 3 from Slovenia, 3 from Germany, 5 from Austria and 1 which addresses the Alps as an entire region.
- **Diverse approaches to the subject:** The examples show a wide variety of different approaches to the subject:
- **Diverse organisational frameworks:** the providers are protected areas or organizations specialized in mountain orientated education or environmental education. They cooperate with one specific school (7 examples) or provide a wider range of schools or specific target groups with their offers.
- **Diverse age groups are addressed:** 8 examples addresses explicitly to high school students, most projects to various age groups
- **Integration of formal and informal education:** 65% explicitly aim

to integrate formal (e.g. schools) and non-formal education.

- **Variety of stakeholders involved:** Also 2/3 integrate more than one external stakeholder, e.g. tourist organisations, protected areas or other organizations.
- **Integration of cultural and natural heritage:** 17 of the initiatives aim to integrate the natural and cultural heritage of their region.
- **Diverse target groups:** 57% focus on one target group (e.g. pupils), 43% offer education for diverse target groups.
- **High action-orientation:** Most of them - 80% - are action-oriented.
- **Only little self-determination:** Most of the educational programs cannot be adopted by the participants. Approximately one third offer self-determination (e.g. content, methods, and process) to the participants.

CHAPTER B.1: YOUNG BENEFICIARIES

- **Age structure:** The sample allows for valid statements about the age group 13-18 years, tendencies about the age group 19-25 years and no valid statements about young people from 26-30.
- **Participating countries:** Valid statements can be made about Slovenia, tendencies about Austria and Italy. In France and Germany, the sample sizes are far too low to allow for any conclusions.
- **Current occupation:** By far most young beneficiaries are students at high schools or vocational schools.
- **Lack of contact to natural sphere:** We cannot report such a deficit regarding the awareness of problems accompanying global change, at least among the majority of the respondents included in this count. The older the students, they more connected they are to the natural landscape in their region.
- **Future prospects:** Respondents exhibit brighter prospects concerning the future of the Alpine space compared to the one of the entire planet. In Slovenia, challenges within the Alpine

space are regarded as somewhat more differently in comparison to those outside.

- **Number of stays in protected areas:** A large portion of the sample has been "once or twice" (32%) or "3-5 times" (21%) in a protected area over the last 12 months. Only very few (9%) have cognitantly never been to one.
- **Expectation of protected area:** „Enjoying untouched nature“, „seeing wild animals“ as well as “gaining knowledge” and “spending time with family/friends” are the most common expectations of young people when visiting protected areas.
- **Activities in protected areas:** „Walking on nature trails” and “taking guided tours” are the most popular activities in protected areas.
- **Sources of knowledge about nature:** Personal observations are the most important source of knowledge about nature for young people before parents, school and experts.
- **Environmental responsibility:** While humans are seen as part of nature by most young people (80%), they are not seen as having the right to make use of nature. Nature conservation

is commonly regarded as human obligation and in many cases seen as personal responsibility. The sample though does not allow for a clear picture about self-efficacy of young people.

- **Ascription of responsibility:** Responsibility for nature conservation is predominantly ascribed to businesses, NGOs and politicians – not so much to scientists.
- **Tackling present & future challenges:** Acquiring more knowledge and getting actively involved are regarded more important to tackle present & future challenges than technical (adaptation) solutions or the return to traditional values, techniques and practices.

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