C3-ALPS

capitalising climate change knowledge for adaptation in the alpine space

FROM SCIENCE TO PRACTICAL APPLICATION

How to transfer climate change knowledge successfully

funding programme

Alpine SPACE

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Although all decisions we make are about the future, all our knowledge stems from the past.

(Ian Wilson, National Archivist of Canada)

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0. Introduction and objectives

Since mankind exists experiences and skills have been shared to survive. Knowledge how to make fire, which fruits and vegetables can be eaten, or how to hunt have passed through from generation to generation. That means simplified, knowledge transfer happens since millenniums, or since mankind exists. Sure, the process is not comparable to the current situation, but the basic motivation is still the same: solving problems, have a good life, and being prepared for the challenges of the future.

Climate change is one of the major problems humans actually face. Because of the uncertainty how higher temperatures will affect our planet and different sectors in detail, a constant dialogue between "knowledge generators/providers" and "knowledge users" is necessary. Knowledge transfer is also the key element of the C3-Alps-Project. Without developing and sharing the projects results, they have no value at all.

Between 2001 and 2004, CIPRA International has carried out an alpine wide project entitled "Future in the Alps", where knowledge transfer among alpine regions and different stakeholders has been organised with regard to different topics and via different information channels and products. At this time it was one of the first projects aiming at alpine wide knowledge transfer. The experiences gained with this project have been included to this compilation.

The aim of this paper is to give an overview on knowledge transfer, and how this process can be set up in your organization, community or region. We follow a practical approach with theoretical background. Specially created illustrations should help to simplify the content, too.

Figure 1: From making fire to Gutenberg's printing press...
Source: CIPRA International/Illustrations: Simon Kneebone

Figure 2: …knowledge transfer exists since time immemorial
Source: CIPRA International/Illustrations: Simon Kneebone

1. Key resource knowledge

An era, in which the key economic resource is knowledge, is startlingly different from an era in which the key resources were capital, raw materials, land, and labour.[1] This stresses the need for a new management approach and a new perspective and can lead to redeployment of traditional priorities or standard practices. Organisations, regions, communities or even countries who are able to organise and manage knowledge (internally and externally) will have a future strategic advantage when solving problems and developing new approaches.

1.1 About data, information and knowledge

At first, a distinction has to be made between data and information on the one hand and knowledge on the other hand: collecting data and information in databases for example doesn´t collect knowledge and doesn´t deliver any benefit to the organization, community or region, if there is no concrete application.[2]

Data and information are the theoretic basis, without practical use by humans, they can never be knowledge. This is created by concrete application of data and information by users. A non-fiction book or an encyclopaedia itself is only information, not knowledge because the reader acquires knowledge by reading it. In addition to get the knowledge skills like the ability to read are necessary.

[1] cf. Simard (2004)
[2] cf. Kunze (2008)

1.2 What is knowledge?

To answer the question what knowledge transfer is, we first have to take another detailed look on the term knowledge itself. Briefly said knowledge is information, facts and skills acquired through experience or education.[3] Generally it is not possible to speak of one, all-encompassing knowledge, because different forms of knowledge, like implicit (or tacit) and explicit knowledge exists. The differentiation to terms information, skills or know-how are ambiguous. In summary, knowledge has the following characteristics:

- It´s not exclusive, it is present at several places at the same time and can be used by lots of people simultaneously
- It can be relevant at short-term (weather forecast) or long-term (theory of relativity)
- Knowledge is still available after using it
- If knowledge gets sold, it is still available at the sellers point
- Knowledge that is spread cannot be recalled

Figure 3: What is knowledge?
Source: CIPRA International/Illustrations: Simon Kneebone

In addition knowledge has different forms of output:

- Content: like temperature data or measures on how to adapt to climate change
- Products: guidelines, reports, fact-sheets, maps
- Services: education, consultation, organized exchanges
- Solutions: management plans, implementation concepts

[3] cf. http://oxforddictionaries.com/definition/english/knowledge

Figure 4: Different forms of output
Source: CIPRA International/Illustrations: Simon Kneebone

1.3 The knowledge value-chain

After briefly explaining what knowledge is, we now take a look on how knowledge is created. Through the knowledge value-chain, information is transferred to knowledge in nine steps. This process is described as a series of states (stages of processing), with a series of action steps required to move from each stage of processing to the next:[4]

1. **Generate content**

   Knowledge generators like scientists or experts generate new content with intrinsic value and potential usability.

   Output: Knowledge, Wisdom

2. **Transform content**

   Knowledge developers transform content to knowledge products and knowledge services to increase its utility or value to others.

   Output: Products, Services

[4] cf. Simard (2005)

3. **Enable**

   Knowledge managers collect and prepare knowledge and make it accessible through databases, libraries, inventories, etc. The transfer to clients must be ensured.

   Output: Databases, inventories, libraries

4. **Use content, products and services internally**

   The new available knowledge services will be connected with own knowledge and experiences to accomplish organizational objectives. At this step the services get enriched with implicit knowledge.

   Output: New services and products

5. **Transfer content, products and services**

   Knowledge mediators or providers transfer knowledge services to different user groups (transfer, spread, exchange)

   Output: Workshops, media articles, factsheets, guidelines

6. **Add value**

   Different actors and organisations increase the availability, utility or value of knowledge services.

   Output: Changed and modified services and products

7. **Use Professionally**

   Knowledge services are used by clients with sector-related knowledge to benefit an identifiable sector.

   Output: projects, programs,

8. **Use personally**

   Single persons and the community use the knowledge services to realize personal benefits

   Output: personal action, action of communities

9. **Evaluate the knowledge service**

   The system is evaluated to improve its performance in supplying or fulfilling demands of knowledge markets.

   Output: Improvement suggestions

2. Types of knowledge

When knowledge provided by books, information, databases, etc. gets enriched with own experiences a different type of knowledge gets created. When setting up a knowledge management and knowledge transfer process it is essential to distinguish between the two different types of knowledge. For example the knowledge in a book, or in an online-database is much different than a craftsmen's one, which is based on years of practical experience. Normally two types of knowledge within knowledge management are defined, which are called explicit and tacit or implicit knowledge.

Figure 5: Different types of knowledge
Source: CIPRA International/Illustrations: Simon Kneebone

2.1 Explicit Knowledge – "know-what"

Explicit knowledge is knowledge that is formalized, codified and stored in certain media. It is easy to identify and retrieve, and can be readily transmitted to others. Explicit knowledge is about facts and figures, what we learnt at school, at university, etc. Most important aspects of explicit knowledge are:

- Easily written down
- Easy to articulate and communicate
- Easy to transfer between individuals and organizations
- Information technology plays an important role to maintain explicit knowledge

Explicit knowledge is not exclusively written but can also be audio, visual or both. Part of the explicit knowledge are books, guidelines, how-to-do manuals, databases, material for education, photographs, fact-sheets, recorded experiences, stories, speeches, diagrams etc.

Figure 6: Explicit knowledge is formalized, codified and stored
Source: CIPRA International/Illustrations: Simon Kneebone

2.2 Tacit or implicit Knowledge – "know-how"

This kind of knowledge is also called codified or formal knowledge. Implicit knowledge is difficult to transfer to other persons, because it can't be easily written down. For knowledge management systems it is very challenging to collect and store implicit knowledge. Most important aspects of implicit knowledge are:

- Very difficult to describe and express
- Difficult to transfer from one person to another
- Is often transferred by demonstration (master-apprentice relationship)
- Practical work related know-how that is learned informally on the job[5]

Some examples of implicit knowledge are body language or emotional intelligence, which are very difficult to teach. Implicit knowledge is often physical; everybody has mastered skills in different procedures for accomplishing tasks, e.g. ride a bicycle, swimming, keyboarding, etc. To learn these skills we had to make efforts initially, now we practice them easily. Implicit knowledge is often deeply rooted in ones actions, procedures, ideas, social values, etc. and, due to a lack of formal explainability, it is not easy neither to transfer nor to store. If circumstances allow, implicit knowledge can be communicated among individuals. Condition sine qua non for such an exchange of experience is trust, willingness to communicate, to share experiences and so on.

[5] cf. Wagner & Sternberg (1987)

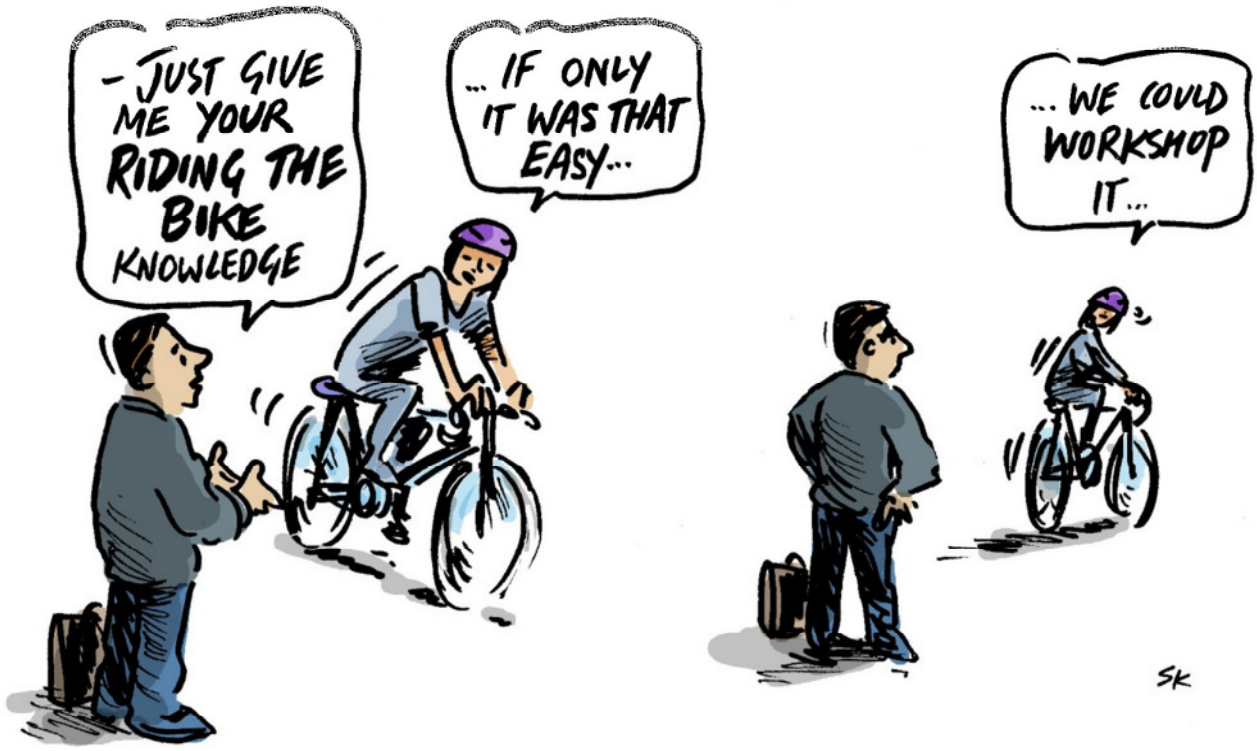

Figure 7: Implicit knowledge is mostly gained through personal experience
Source: CIPRA International/Illustrations: Simon Kneebone

3. What is knowledge management?

To make knowledge management successful, both types of knowledge (explicit and implicit) have to be taken into account. Knowledge management has numerous different characteristics and definitions. It always depends if it's used for a practical or scientific approach. Some examples show the range of definitions:

- Knowledge management is the act of collecting explicit and implicit knowledge through codification and personalization, and making this knowledge available.
- Knowledge management is all about acquiring, analysing, storing and exploiting the information for the benefits of organizations.
- Knowledge management is a systematic approach of set guidelines in which data is collected, accumulated and made easily available to all seeking knowledge.
- Knowledge management is getting the right information to the right people at the right time.

Figure 8: Applied knowledge management
Source: CIPRA International/Illustrations: Simon Kneebone

Some characteristics in the various definitions repeat themselves. There is not one common definition of knowledge management. It always depends on the individual goals knowledge transfer wants to achieve.
For the C3-Alps project the following definition can be assumed: ***Knowledge Management is the collecting of explicit data (scientific studies and experimental values) on climate change adaptation, verifying it with implicit knowledge by experts, translating it to a common language and make it easily accessible for the right people at the right time and enabling them to take action.***

4. Knowledge management in organisations

Knowledge management is chiefly a matter about individuals. Technical opportunities and organisational procedures complete this human dimension and form knowledge management to a strategic successfully approach.[6]

Figure 9: Dimensions of organisational knowledge management
Source: CIPRA International/Illustrations: Simon Kneebone

[6] cf. Schnell & Held & Scherer (2005)

4.1 Success factor human dimension

Primary characteristics are learning, competences and communication. In a good-case scenario, the organisational culture is trustful and motivating, enabling and ensuring a continuous flow of knowledge.[7] Employees own skills, knowledge, competencies and experiences of the organisation, they are an essential success factor in the knowledge management. Considerations to take into account, regarding the human dimension:

- Which abilities and knowledge are useful for employees in their daily work?
- How employees are motivated to share their knowledge?
- How about the ICT-qualifications of employees?
- Are there specific measures to develop these qualifications?[8]

4.2 Success factor organisation

The organisation develops methods to gain, store and transfer knowledge. Of particular importance is conscious and careful dealing with the resource knowledge and reorganising roles, hierarchies and networks for the purpose of an effective knowledge management, i.e. how knowledge can be used best to achieve maximum success. To consider before introducing a knowledge management system:[9]

- Which aims do we want to reach, when introducing a knowledge management system in our organisation?
- Which problems can be solved by means of knowledge management?
- Which measures were introduced in the past, regarding the storage of know-how?
- Can we rely on existing descriptions of organisational structures and procedures?[10]

4.3 Success factor technology

Information- and communications technology is absolutely crucial to reach the four core targets of knowledge management: create, store, transmit and apply knowledge. Options are intranet or other IT applications which facilitate cooperation and usage of information, for example extensions of existing standard-systems or complete and independent knowledge-management platforms. It must be acknowledged that technical systems only act in supporting; they must be adapted to existing organisational networks and procedures. Useful questions, regardless of the type of system to introduce:

- Which employees do have access to which communication channels and IT applications?
- Which technical tools are already in use?
- Which shortcomings in the current technical system have to be remedied?
- Which communication channels are actually served?
- Which employee has access to which communication channel and which IT application?[11]

7 cf. Hasler (2007)
8 cf. BMWi, Orth (2013)
9 cf. Hasler (2007)
10 cf. BMWi, Orth (2013)
11 cf. ibid

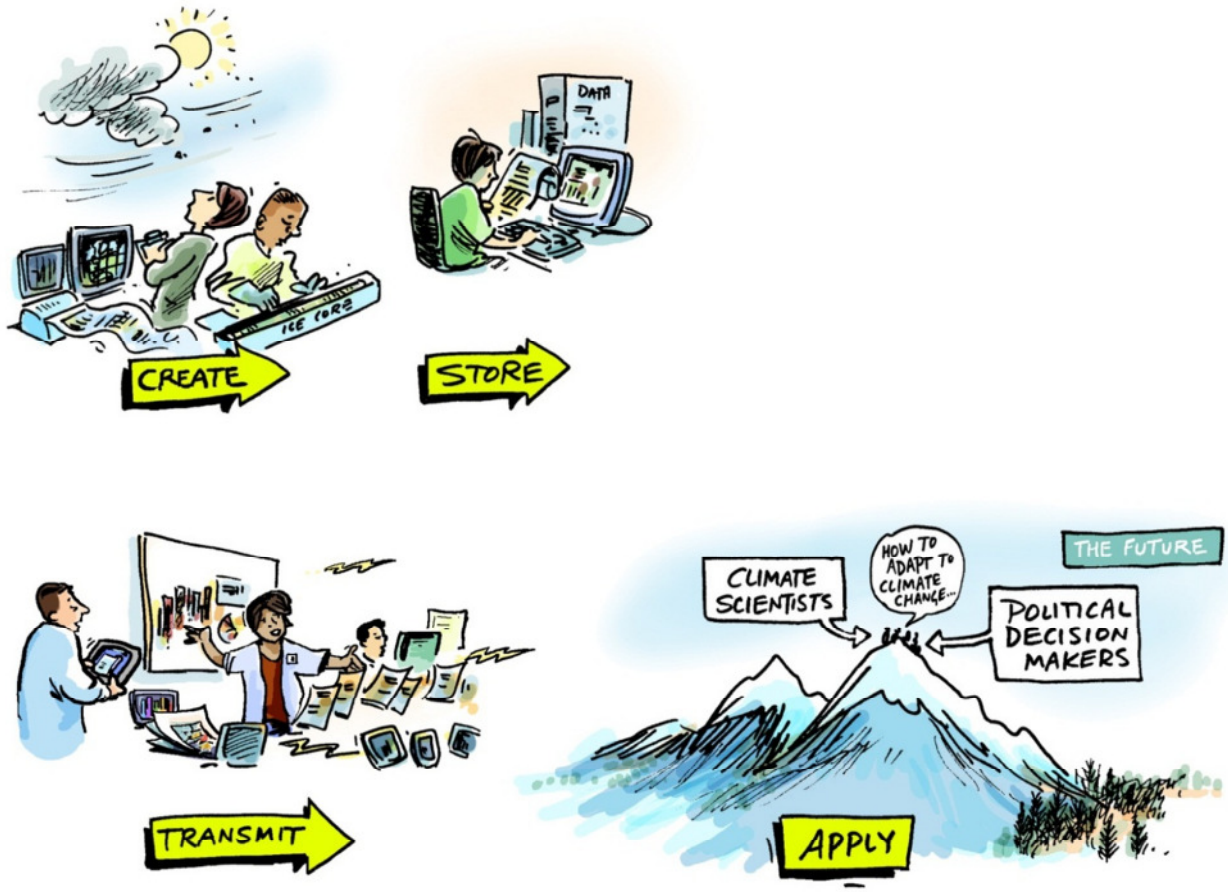

Figure 10: The core targets of knowledge management
Source: CIPRA International/Illustrations: Simon Kneebone

5. Applied knowledge management - the role of knowledge transfer

Once a knowledge management system is installed knowledge transfer can easily be placed on top of it. As mentioned in chapter 1, knowledge and experiences of employees are crucial and will get more and more important in the future. To work efficiently and successfully, this knowledge and experiences must be organized, created, captured and distributed in order to be available for future users. This is the task of knowledge transfer.

5.1 Underlying considerations

Knowledge transfer is about people. The watchword is: high touch is more important than high tech! The creation on “new” explicit knowledge requires willingness to participate and transfer knowledge. Different challenges have to be faced, actuating knowledge transfer: trust, safety, incentives, motivation, difficulty of explaining, different expertise, security and privacy, control, different languages, large distances or inadequate technology.

A (project) group of variable composition is advantageous in creating "new" knowledge, for the matter of fact that group members will or have to share different pools of knowledge and individual backgrounds for understanding.[12] Below you find a list of basic rules for a successful knowledge transfer:[13]

- Focus on learners or knowledge holders
- Create optimal learning environment
- Adequate knowledge transfer for specific recipients
- Mix of various methods lead to success
- Work with a relation to practice
- Personal experiences leave traces of memory
- Creativity in knowledge transfer
- Knowledge is a result of head work

Knowledge transfer is not just a communication issue, as knowledge resides in the employees' minds, their tools, tasks and networks. An important part of a company's knowledge is implicit. To transfer implicit knowledge it must be transformed to explicit knowledge. This can be done with formal and informal instruments. By asking questions and learning-by-doing, implicit knowledge gets explicit and tangible and can be represented in different modalities for future use. Some structures (formally and informally) support the exchange within organisations.

Formal instruments of exchange

- Transfer-workshops, reflection-workshops
- Mentoring (master-apprentice)
- Good practice, lessons learned
- Knowledge-maps
- Departments for knowledge-management
- Communities of interest, communities of practice
- Knowledge scoreboard
- Yellow-pages

Informal instruments of exchange

- Break room
- Chill-out areas (garden)
- Having lunch together
- After-work drink

[12] cf. Hagen (2006)

[13] cf. Kunz (2008)

5.2 How to transfer knowledge

Some, non-exhaustive approaches to transfer knowledge:[14]

Lessons Learned and good practice

This approach deals with collecting and sharing experience of (project) group members consolidates findings and leads to a concrete application. An adequate framework, which enables the exchange of knowledge, is crucial. Other, not involved employees, can access to this knowledge by means of documentation, reports, etc.

Figure 11: Good practice examples are a good way to transfer implicit knowledge
Source: CIPRA International/Illustrations: Simon Kneebone

[14] cf. Kunz (2008)

Blended learning

Blended learning is about knowledge transfer on the one hand via e-learning offers, on the other hand via personal contact. Learners can work independently and regardless of time and location on provided objective knowledge via e-learning. “Personal contact sessions” are complementary to e-learning: personal experience enriches and deepens objective knowledge.

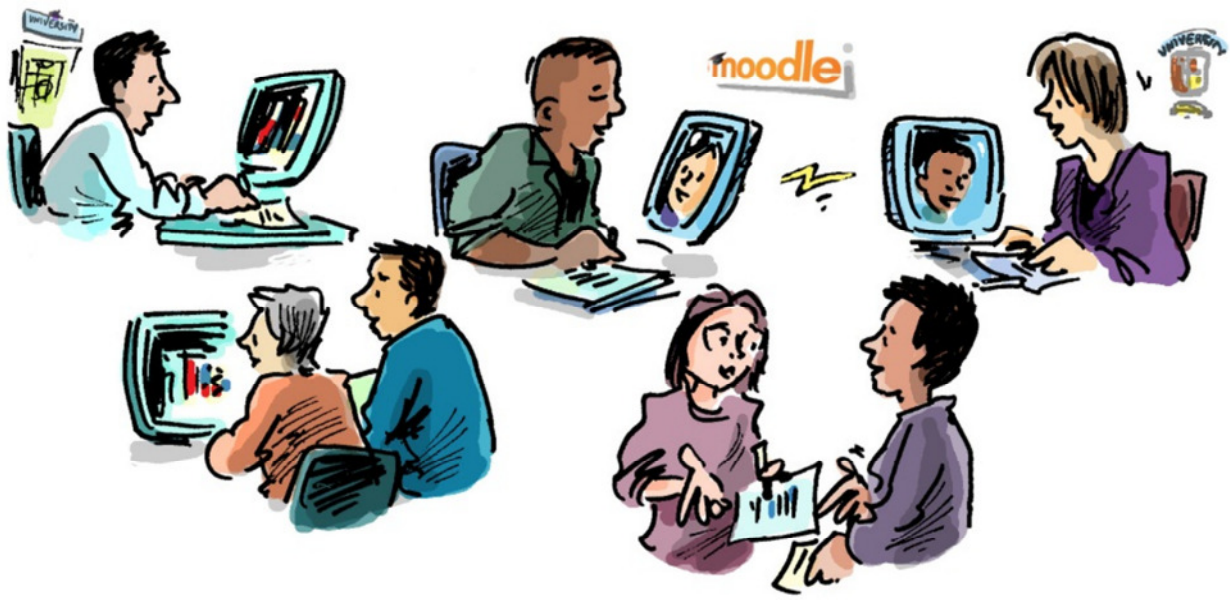

Figure 12: Blended learning provides input from different sources
Source: CIPRA International/Illustrations: Simon Kneebone

Tell-it!

Imagine a murky lake where different species of fish live in. You want to explore which ones, so you logically take an angle and after a while one fish will surely take the bait. But you will not know whether there are species which refuse your bait. It is the same with posing concrete questions: you will, in a best case scenario, receive the answer you are asking for and you will not have insights in the context; it will rest murky water. The knowledge transfer format story maintains the context, information on the experience made, dressing implicit knowledge in stories and pictures.[15] Individuals and organisations learn best from their own successes and failures and it is for obvious reasons much easier to remember a story than a theoretical guideline.

Figure 13: Asking the right questions is essential to get the right answers
Source: CIPRA International/Illustrations: Simon Kneebone

[15] cf. Erlach (2012)

Knowledge dialogue

”A conversation is one of the most important and effective forms of communication to transfer knowledge”.[16] Based on this assumption, dialogues play an important role. Unfortunately, a conversational based knowledge transfer is rather expensive and time-consuming, furthermore it reaches few people. Workshops, in the framework of conferences or else are an ideal opportunity to integrate knowledge dialogues. Another option is just having a drink with colleagues or partners.

Figure 14: Talk, Talk, Talk
Source: CIPRA International/Illustrations: Simon Kneebone

5.3 Good Practice examples of knowledge transfer

Project Future in the Alps[17]

Future in the Alps was a wide ranging knowledge management project (duration 2004 to 2007), realised by the International Commission for the Protection of the Alps (CIPRA) to establish and strengthen networks between the Alpine population, companies and institutions. By the means of these networks, the project aimed to spread and share useful knowledge and information in order to give new impetus for sustainable development in the Alps[18].

[16] cf. Takeuchi & Nonaka (2000)
[17] cf. Kunz (2008)
[18] cf. Pfefferkorn, Rauzi (2008)

A preliminary project competition reached 2'200 persons in the Alps and created a wealth of knowledge (in form of a database) of 570 projects – a precious network of experts and organisations in the Alpine countries to start from. In the project phase alpKnowhow, practical experience and the latest research findings were collated, evaluated and processed for further application. alpService made the results available to a multitude of players. Sustainable pilot projects which applied this knowledge were accompanied and supported in alpPerformance. Knowledge transfer was realised by transferring gained knowledge to players in the alpine space. Future in the Alps distinguished two forms of knowledge transfer: supply-led and demand-led. Supply-led knowledge transfer relied on the existing explicit knowledge. Knowledge was provided by the means of publications, websites, data bases and several other channels. Demand-led knowledge transfer created the framework (contexts and situations) to enable and encourage transfer of implicit knowledge. Based on these approaches, a wide ranging offer of services and products has been provided, such as 12 workshops in seven Alpine countries took place where 750 persons participated or furthermore by competitions, conferences, newsletter, teaching material (i.e. CD-ROMs), publication of the third Alpine Report, magazines, reports, advertising material, radio and TV appearances, etc. The knowledge transfer in the framework of Future in the Alps took place in several Alpine languages in an international context.

Further information's are available in all alpine languages at www.cipra.org

Network regiosuisse

regiosuisse is one of the most successful knowledge management/transfer networks in the Alps. Since 2008 it is the national network unit for regional development in Switzerland. It was launched by the State Secretariat for Economic Affairs (SECO) in order to accompany the new regional policy (NRP). Their main task is building up knowledge management for the NRP and regional development in general. All professionals working in the field of regional development should be supported and motivated by the knowledge management measures to stay adaptive, creative and last but not least innovative. These professionals and inhabitants living and working in the regions determine whether a NRP-project is successful and whether the competitiveness and innovative capacity of a region can be improved. The main aim of regionsuisse can be best described with their claim: "Create knowledge – make knowledge available".

regiosuisse as an address for knowledge management

With their knowledge management regiosuisse acquires knowledge which is relevant for practical use in the framework of the NRP and regional development. They develop and enrich the created knowledge with professionals working in the different fields and make it accessible and usable to a broader public. As already illustrated in Figure 8 the practical experience of regional development professionals is decisive because they enrich the knowledge and make it accessible, usable and available to others.

regiosuisse as a networking office

regiosuisse supports networking and cooperation activities of all professionals involved in regional development. Through their services they encourage the exchange of knowledge and experiences, as well as the expansion and consolidation of social networks.

regiosuisse as a service centre

The self-concept of regiosuisse implies a demand-driven service centre. The created concepts and services are updated and adapted to the user needs and expectations on a daily basis. The process of permanent exchange between the organisation and the professionals makes this knowledge transfer concept very successful.

Further information's in German, Italian and French are available at http://www.regiosuisse.ch

Project *Lernende Regionen* (Learning Regions)

Learning Regions, part of the Austrian and German Programme for Rural Development 2007-2013, are instruments aiming to enhance lifelong learning in rural areas. Regional knowhow, identity, learning, as well as education and training are established as strategic focuses for the participating regions (actually 41 Austrian regions, 76 in Germany), in order to shape actively and respond better to current economic and social challenges and changes. A professional and conscious dealing with knowledge has a crucial role in this process. Benefits of *Learning Regions* are:[19]

- New cooperation networks
- Encourage new stakeholders to take part in regional development
- Innovative projects contribute to the positive connotation of education and training
- Learning Regions provide opportunities to explore new ideas
- A regional centre and hub for education and training is established
- The advantages of cooperation become apparent to providers of education and training
- Learning Regions permit a better coordination of education and training programmes
- Learning Regions focus on issues that are often neglected in rural areas: low educational levels, immigration-related problems, young people without vocational training, etc.
- In Learning Regions small investments will yield high returns.

Further information in German are available at www.lernende-regionen.at (Austria) and http://www.bmbf.de (Germany).

[19] cf. http://www.lernende-regionen.at

5.4 Knowledge management in the C3-Alps project

Source: Jochen Bürgel/Illustrations: Simon Kneebone

The political discussion on how to adapt to climate change is pretty new. Besides mitigation, adaptation is the second strategic measure to fight against (or cope with) climate change. But nevertheless adaptation strategies exist sparsely on the political agendas of local and regional decision makers. There are some adaptation lighthouse initiatives (e.g. adapting mountain rivers, forests and cities) in the alpine space, some successful projects (AdaptAlp, Alp-Water-Scarce, ClimAlpTour, CLISP etc.), and lots of scientific material exists. Therefore the aim of the C3-Alps project was to capitalize this existing knowledge and make it easily accessible to local, regional and even national decision makers in the political and economic field. The fundament of knowledge transfer created in the project consisted of three main pillars:

Communication and products

One of the most important things when new approaches or findings have to be implemented is communication. The so called dialogue groups of the project were aware on climate change mitigation, but most of them had little experience what climate change adaptation is about. Therefore it was crucial to convince them to put climate change on their political agenda and take action. These people are called dialogue groups because there was a constant exchange on the communication efforts and products (usability, messages, etc.) between the product providers (C3 Alps project team) and some of the product users (political decision makers as well as administration at national/regional/local level, experts, NGO´s). In a first step an online survey asked about the dialogue group's knowledge and their media and information behaviour. Based on the results several communication products have been developed (selection):

- 10 sectorial factsheets on how to adapt to climate change with easy to understand key messages and good practice examples
- Compendium of examples how to communicate climate change adaptation in still and moving images

- Communication guide: How to overcome communication challenges in 7 steps
- Annual calendar: Climate change adaptation, tips and measures day by day

All communication products are available for download at www.c3alps.eu

Pilot Regions

In 12 regions pilot capitalisation activities aimed at long-lasting impacts have been implemented. The variety of activities ranges from composing a national adaptation strategy in Liechtenstein, to storm adapted forest management plans in Baden-Württemberg (Germany), water scarcity adaptation plans in the region of Veneto (Italy) and the Savoie region (France) to a mix of several adaptation measures at local and regional level in the pilot region of Mostviertel (Austria). Due to the constant exchange with experts working in the field of the pilot regions, knowledge has been created, adapted to the local needs and enriched with the experiences gained. Through this process (as described in theory in chapter 2.2) both involved parties – researchers and practitioners benefited.

Detailed descriptions of all pilot regions are available at www.c3alps.eu

KIP – Knowledge inventory platform

One of the main project outcomes is the online knowledge inventory platform. The online catalogue was compiled by experts with the needs of various user groups in mind (politicians, practitioners, researchers). The publications range from project reports over adaptation manuals to online tools, all of them specifically addressing the Alpine areas, from transnational to the local level. Currently more than 350 extensively tagged records with dedicated search functionalities exist. The portal provides structured in-depth information for those who want to go into detail. Publications are available in all alpine languages and English. http://portal.c3alps.eu/kip

6. Sources and further useful links

Erlach, Christine (2012): Wissenstransfer mit Storytelling. In: Reinhardt, R. (Hrsg.): *Wirtschaftspsychologie und Organisationserfolg*. Lengerich:Pabst-Verlag.

Hagen, Martina (2006): *Wissenstransfer aus Universitäten als Impulsfaktor regionaler Entwicklung*. Bayreuth.

Hasler-Roumois, Ursula (2007): *Studienbuch Wissensmanagement.* Zürich: Orell. Füssli Verlag AG.

Kunz, Stefan (2008): *Wissensmanagement in Nonprofit-Organiationen. Evaluation der Wissensarbeit im Projekt „Zukunft in den Alpen" der internationalen Alpenschutzkommission CIPRA.*

Pfefferkorn, Wolfgang & Rauzi, Serena (2008): *Future in the Alps: Getting knowledge across – Networking people*; in: Managing Alpine Futures. Proceedings of the Conference held in October 15-17, 2007, in Innsbruck, Austria.

Schnell, Klaus-Dieter & Held, Thomas & Scherer, Roland (2005): *Machbarkeitsstudie. Wissensmanagement Regionalentwicklung Schweiz.* Institut für öffentliche Dienstleistungen und Tourismus (IDT-HSG), Universität St. Gallen.

Simard, Albert (2005): Knowledge markets: More than providers and users

Takeuchi, Hirotaka & Ikujiro Nonaka (2000): Theory of organizational knowledge creation. In: Morey D., M. Maybury & B. Thuraisingham (Hrsg.): *Knowledge management*. Cambridge: MIT Press.

Wagner, R.K. & Sternberg, R.J. (1987): *Tacit knowledge in managerial success.* Journal of Business and Psychology.

Online sources

http://oxforddictionaries.com/definition/english/knowledge

http://www.bmwi.de/BMWi/Redaktion/PDF/W/wissensmanagement-fw2013-teil1

http://de.slideshare.net/Al.Simard/knowledge-management-value-chains

http://www.lernende-regionen.at

http://www.regio-suisse.ch

Links

http://de.slideshare.net/albertsimard/new-approaches-to-knowlege-management-part-2

http://rga.revues.org/485?lang=de