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Tagung der Alpenkonferenz
Réunion de la Conférence alpine
Sessione della Conferenza delle Alpi
Zasedanje Alpske konference

XIV

01.08.2016

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RELAZIONE SULLO STATO D'AVANZAMENTO NELL'ATTUAZIONE DELLA VISIONE "ALPI RINNOVABILI "

A Relazione del Segretariato permanente

B Proposta di decisione

Allegati

I. **Relazione sullo stato di avanzamento: Progress report: Recent developments supporting the Vision "Renewable Alps"**

A Relazione del Segretariato permanente

Con la decisione AC XIII/B1a/10 la XIII Conferenza delle Alpi ha chiesto al Segretariato permanente di presentare alla XIV Conferenza delle Alpi i progressi realizzati in merito alla visione delle “Alpi rinnovabili”. Sulla base dei contributi di tutti i paesi alpini e di CIPRA International e grazie al supporto fornito sia sul piano finanziario che su quello dei contenuti dall’Ufficio federale svizzero per lo sviluppo territoriale, il Segretariato permanente ha elaborato una relazione sullo stato di avanzamento che illustra i principali sviluppi nel contesto politico delle Parti contraenti dal 2014, oltre a singoli strumenti e attività delle Parti e degli organi della Convenzione delle Alpi.

Tutte le Parti contraenti hanno riferito di essersi dotate di una strategia per la politica energetica fino al 2020 e in molti casi anche fino al 2030 o 2050. Esse hanno adottato con successo misure volte a migliorare l’efficienza, in particolare negli edifici, e ad aumentare in termini assoluti e percentuali l’utilizzo di energie rinnovabili. Sono state inoltre attuate politiche per il miglioramento della governance energetica attraverso il coinvolgimento e la formazione di soggetti locali. Per quanto riguarda il trasferimento delle conoscenze e l’innovazione sono state indicate solo poche iniziative; nell’ambito della Convenzione delle Alpi varie Parti contraenti, oltre al Segretariato permanente, hanno comunque realizzato diverse attività di sensibilizzazione, in genere estese all’intera regione alpina. Soprattutto per quanto attiene al trasferimento delle conoscenze e all’innovazione, ma anche per la realizzazione di un sistema energetico europeo sostenibile e attento ai cambiamenti climatici, si rilevano ulteriori margini di sviluppo in tutti i paesi alpini con la possibilità di intensificare il dialogo nell’intera regione alpina. Tutte le Parti contraenti devono moltiplicare i propri sforzi per promuovere la decarbonizzazione della produzione energetica nelle Alpi, in conformità con le decisioni adottate alla COP 21 di Parigi. In quest’ambito potrebbero essere individuati alcuni temi specificamente alpini o montani da approfondire nel contesto della Convenzione delle Alpi.

La bozza della relazione sullo stato di avanzamento dei lavori è stata presentata al 61° Comitato permanente. Il Comitato permanente ne ha preso atto e, in attuazione della decisione della XIII Conferenza delle Alpi di Torino, ha deciso di trasmettere alla XIV Conferenza delle Alpi la relazione allegata.

B Proposta di decisione

La Conferenza delle Alpi

1. prende atto della relazione sullo stato di avanzamento nell'attuazione della visione „Alpi rinnovabili" e ringrazia il Segretariato permanente e la Svizzera per le attività intraprese ai fini della stesura della relazione, nonché tutte le Parti contraenti e gli Osservatori che vi hanno contribuito;

2. invita le Parti contraenti ad adoperarsi anche in futuro per l'attuazione della visione attraverso la promozione dell'efficienza energetica, delle energie rinnovabili e di una governance energetica trasparente, prestando particolare attenzione al potenziale specifico delle Alpi, ma anche alla loro fragilità;

3. invita le Parti contraenti a intensificare il trasferimento di conoscenze sui sistemi energetici sostenibili nelle Alpi e a mettere in pratica le relative innovazioni, in conformità con le decisioni adottate alla COP 21 di Parigi e della visione "Alpi rinnovabili", al fine di promuovere uno sviluppo delle reti europee di accumulo e distribuzione di energia che sia sostenibile, compatibile con le esigenze della regione alpina e attento ai cambiamenti climatici;

4. invita il Segretariato permanente a presentare alla XV Conferenza delle Alpi una relazione sui progressi ottenuti nelle Alpi dalle Parti contraenti in merito alla visione delle "Alpi rinnovabili".

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ANLAGE/ANNEXE/ALLEGATO/PRILOGA

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Progress report

Recent developments supporting the vision "Renewable Alps"

2015-2016

Draft, June 2016

Editors:
Gilles Chomat, Permanent Secretariat of the Alpine Convention
Helen Lückge, Climonomics
Nathalie Morelle, Permanent Secretariat of the Alpine Convention

Contributors:
Austria: Martin Ploß, Energy Institute Vorarlberg
France: Isabelle Paillet, Ministry for the Environment, Energy and the Sea
Germany: Eike Christiansen, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Georg Hellmich, Federal Ministry for Economic Affairs and Energy
Italy: Adriano Bisello and Wolfram Sparber, European Academy of Bolzano/Bozen (EURAC)
Liechtenstein: Helmut Kindle, Office of Environment, Denise Ospelt, Office of Construction and Infrastructure
Slovenia: Jože Nerad, Ministry of Economic Development and Technology, Blanka Bartol, Ministry of the Environment and Spatial Planning
Switzerland: Silvia Jost, Federal Office for Territorial Development
CIPRA International: Anita Konrad

Revision: Permanent Secretariat of the Alpine Convention.

The report has been finalized thanks to the financial and technical support of the Swiss delegation to the Alpine Convention.

Contents

1 Background: The vision "Renewable Alps" and its role for the Alpine Convention

Background: launch of the Energy Platform by the XII Alpine Conference

The Energy Protocol of the Alpine Convention was signed in 1998. Subsequently, several studies and guidelines were produced by the Convention's working groups and platforms, for instance, on hydropower, by the Water Management Platform[1]. The topic of an overall sustainable energy strategy in the Alps was selected by the Alpine Convention at the XII Alpine Conference in Poschiavo (September 2012) as well as by the organizers of the AlpWeek 2012 which took place under the title "Renewable Alps". The Alpine Conference confirmed the "importance of the topic of energy infrastructures in the Alpine region and their consequences in particular on the environment and landscape" and set up an Energy Platform.

A specific mandate for the Energy Platform was agreed upon by the Permanent Committee during its 52nd meeting (Decisions PC 52/ B5/ 1-2). Specifically, the Energy Platform was commissioned to launch an exchange of experiences in the fields of energy production and energy consumption. Switzerland assumed the presidency of the Energy Platform in 2013-2014.

Energy Platform 2013-2014 under Swiss presidency

The specification of the vision "Renewable Alps" was at the core of the Energy Platform's work programme in the period 2013-2014. Under the Swiss presidency, the Energy Platform discussed and developed activities along five major elements:

- Consumption: promoting efficient energy consumption strategies, especially in the building sector
- Production: developing renewable energies according to sustainability principles
- Governance: continuing exchange on local and regional strategies for energy governance
- EU interface: towards defining a European Energy System acceptable for the Alps
- Knowledge transfer and innovation: strengthening knowledge transfer on sustainable energy systems in the Alps.

Consumption and production are the two core elements that shape the "Renewable Alps" vision, governance, knowledge transfer and the definition of the EU interface are cross-cutting elements that frame both consumption and production strategies.

In the years 2013 and 2014, the Platform operated on two levels: as a core group of experts and at the same time in the form of expert workshops with a wider range of stakeholders. Three workshops focusing on energy production, energy consumption and energy distribution were organised in this period. An activity report, published in October 2014,

[1] "Alpine Signals Focus 1: Common Guidelines for the use of small hydropower in the Alpine region", Permanent Secretariat of the Alpine Convention (2011), http://www.alpconv.org/en/publications/alpine/Documents/SHP_common_guidelines_en.pdf

summarizes the Platform's activities and gives an overview on the workshops' results. It also defines specific decision proposals for the XIII Alpine Conference in Torino.

Confirmation of the vision and further steps

At the XIII Alpine Conference, ministers welcomed the activity report of the Energy Platform and confirmed their willingness to develop the Alpine region into a model region for sustainable energy systems and thus to pursue the vision "Renewable Alps". Several further steps were agreed on: the third edition of the "Constructive Alps" competition, the organisation of a side event during the EXPO in Milano and a collection of best practice in energy projects as regards dealing with nature protection and land use issues.

The XIII Alpine Convention in Turin in 2014 mandated the Permanent Secretariat – with support of the Contracting Parties and of the Observers – to report at the XIV Alpine Conference about the progress towards the Vision Renewable Alps.

Objectives of this report

This progress report shall give an overview of activities supporting the Vision Renewable Alps. Section 2 gives an update on developments at national and regional level in the Contracting Parties and interprets them in the light of major trends at European and international level. Section 3 then summarizes activities that have been undertaken as a follow-up of the Energy Platform as well as related activities of the Alpine Convention under the German Presidency.

The overview on recent developments is structured along the five elements that have been used in the activity report of the Energy Platform. The interactions of these five elements are illustrated in the following figure with energy production and efficient energy use in the Alps in the centre, knowledge, innovation and governance as supporting activities and the embedment in the EU energy system as framework.

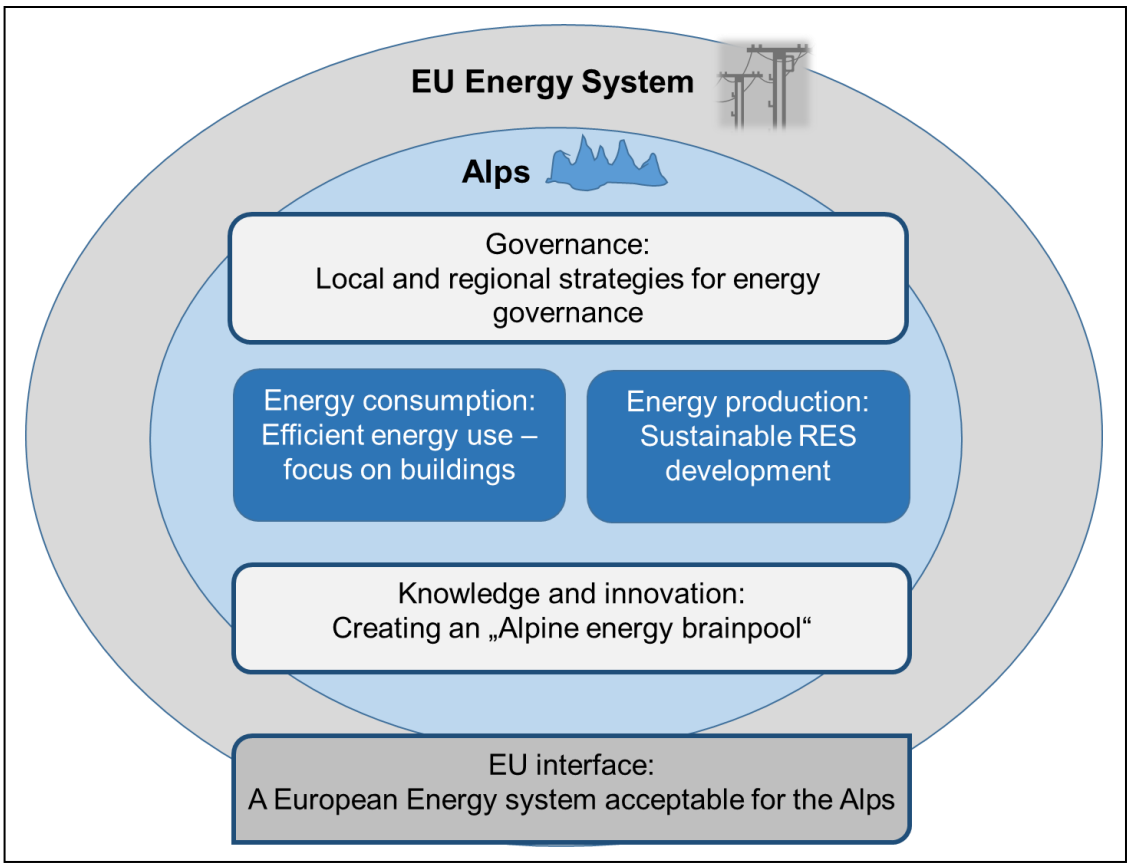

Figure 1: The five elements of the Renewable Alps vision (adapted from the Activity Report Energy Platform, 2014).

2 Activities at national and regional level

This chapter gives an overview on current developments in the Contracting Parties at national as well as regional level.

- The first section gives a background on relevant strategies that frame the transition towards a renewable energy system in each country.
- The second section is based on national inputs provided by the delegations and shows specific activities as well as new measures and instruments that have been implemented in the last two years.
- The third section discusses these activities in the light of recent developments at EU level

2.1 The policy framework in the Contracting Parties

For a better interpretation of recent developments and new regulations in the Contracting Parties, this chapter provides a short summary on the overall policy framework in each country. Reference data is also included in Annex 1. The following overview highlights major national strategies and regulations which set the scene for energy transition:

In **Switzerland**, a new Energy Strategy 2050 was decided in 2011 with the aim to completely withdraw from nuclear energy. The five remaining nuclear power stations shall be decommissioned at the end of their lifetime and shall not be replaced. Instead, renewable energy production shall be increased (hydropower as well as "new" renewable energies). In addition, energy efficiency shall be improved in buildings, the transport sector and appliances. The first action plan to implement the Energy Strategy 2050 was approved in 2012.[2]

In **Austria**, energy policy has been focusing on renewable energies since the 1990s. In 1999, the national law for a nuclear-free Austria („Bundesverfassungsgesetz für ein atomfreies Österreich") was adopted, prohibiting nuclear power plants on the level of the Austrian constitution. The Energy Strategy 2020 sets the framework for the next years and is based on three pillars: i) energy efficiency with a stabilization of final energy consumption (target value for 2020: 1,100 PJ), ii) further development of renewable energies with a focus on hydro power (including pump storage), wind power, biomass and photovoltaic and iii) increasing security of supply through a diversification of sources.[3] The Energy Strategy 2020 is designed to meet the objectives for Austria according to the EU Energy Package 2020, especially the renewable energy target according to Directive 2009/28/EC (34% share of renewable energy up to 2020).

In the preparation of the COP 21 conference, the **French** government launched an energy transition process which has the objective to strengthen renewable energies and to reduce the dependence on nuclear energy. With the "Energy transition to Green Growth Act" (loi relative à la transition énergétique pour la croissance verte, LTECV), the government defined specific targets to reduce France's energy dependency and CO_2-emissions.[4] It aims at reducing greenhouse gas emissions by 40% until 2030 (compared to 1990), reducing final energy consumption by 50% until 2050 (compared to 2012) and increasing the share of renewable energy sources to 40% of the electricity production by 2030. The share of nuclear power shall be reduced to 50% by 2025. Specific actions to reach these targets have been identified for several sectors: renovation of buildings, development of clean transport solutions, circular economy as well as the promotion of renewable energies. For the building

[2] Energy Strategy 2050 for Switzerland and first action plan:
http://www.bfe.admin.ch/themen/00526/00527/index.html?lang=en
[3] Energy Strategy Austria 2020
http://www.bmwfw.gv.at/EnergieUndBergbau/Energiebericht/Documents/Energy%20Strategy%20Austria%20%28engl%20Kurzfassung%29%20%282%29.pdf
[4] Energy transition to Green Growth Act in France:
http://www.developpement-durable.gouv.fr/-France-launches-its-energy-

and housing sector, the LTECV builds on existing legislation: with the transposition of the Energy Performance of Building Directive (EPBD) and the two "Grenelle" laws, France already has an important set of regulations aiming at decreasing the energy consumption of the building and housing sector. Those regulations deal with the energy performance of newly constructed buildings and existing buildings where renovation work is carried out. The Energy Performance Certificate (EPC) has also raised awareness of citizens on the energy performance of their dwellings.

In **Italy**, a National Energy Strategy (Strategia Energetica Nazionale - SEN) was approved in 2013[5]. It defines four main objectives for the Italian energy system: i) reduction of energy costs by aligning prices to European averages, ii) meeting and going beyond European targets as set out in the 2020 European Climate & Energy package and the National Action Plan of 2010, iii) improving supply security and iv) boosting growth and employment by mobilizing investments in the energy sector. An improvement of energy efficiency is at the core of the SEN and it is foreseen to reduce final energy consumption by 15.5 Mtoe between 2011 and 2020. The SEN also foresees further support to increase the share of renewable energies. The development of non-hydropower renewable energy production has increased very sharply between 2008 and 2013 due to generous feed-in tariffs. This trend is expected to continue in the coming years but Italy will still remain dependent on energy imports.[6]

Germany is implementing a long-term overall strategy which embraces all sectors of the economy and aims to restructure the energy supply to make it secure, economic and environmentally compatible. The main pillars of the energy transition ("***Energiewende***") are boosting energy efficiency, cutting energy consumption and further expanding renewable energy in order to cover the remaining demand.[7] Basic targets of the *Energiewende* have been established in the "Energy Concept", which was adopted in 2010. It determines that Germany will *inter alia* reduce its GHG-emissions by 40% till 2020 and by 80-95% till 2050 (compared to 1990), raise the share of renewables of gross final consumption to 18% (2020) and 60% (2050) and increase final energy productivity by 2,1% each year till 2050. An action plan which followed the Energy Concept in June 2011 after the events in Fukushima foresees a complete phasing-out of nuclear energy until 2022. Germany's efforts have resulted in a considerable success of renewable energy deployment, particularly in the electricity sector. In 2014, the share of renewables in gross final energy consumption reached 13.5% (27.4% of gross electricity consumption). In Bavaria, the renewables share was even higher, with 18.8% in gross final energy consumption and 36.2% in gross electricity consumption.

Liechtenstein adopted in 2012 its National Energy Strategy 2020. The Strategy is based on the 20-20-20 target system and defines six areas for action. Improving energy efficiency of buildings had been an important pillar in the previous energy concept and will be continued

[5] Italian National Energy Strategy:
http://www.sviluppoeconomico.gov.it/images/stories/normativa/20130314_Strategia_Energetica_Nazionale.pdf
[6] Deloitte (2015): European energy market reform: Country profile - Italy
[7] Energy transition in Germany: overall strategy and additional information:
http://www.bmwi.de/EN/Topics/Energy/energy-transition.html

until 2020. In addition, energy efficiency shall be improved in appliances and processes as well as the mobility sector. Also, the Energy Strategy 2020 foresees the further development of renewable energies, an awareness raising campaign as well as the improvement of the knowledge-base and energy data.[8]

Slovenia adopted its National Renewable Energy Policy in 2010 for the period 2010-2020.[9] The most important renewable source of energy in the country is wood biomass, followed by hydroenergy, while in recent years development has been most dynamic in exploiting solar energy and biogas. The potentials of these energy sources, plus wind and geothermal energy, shall contribute to increased consumption of renewable energy sources. The objectives of Slovenia's energy policy for renewable energy sources are to ensure a 25% share of renewable energy sources in final energy consumption and a 10% share of renewables in transport by 2020. Under current predictions, this will involve a doubling of energy generated from renewable sources relative to the baseline year of 2005, halting the growth of final energy consumption as well as implementing efficient energy use and renewable energy sources as economic development priorities. In the long term, the share of renewable energy sources in final energy consumption shall be further increased. There are also two action plans for fostering activities in the field of energy efficiency: i) an Action plan for energy efficiency for the period 2014-2020, and ii) an Action plan for nearly zero energy buildings 2014-2020 and Long Term Strategy for Mobilising Investments in the Energy Renovation of Buildings. In 2015, Slovenia and Croatia have agreed to extend the lifespan of the jointly-owned Krsko nuclear power plant in Slovenia from 40 to 60 years, based on their evaluation of the plant's record in operational safety and economic results.

The **Principality of Monaco** has a large number of seawater heat pumps, which constitute an important energy asset. Nevertheless, there is still significant potential for limiting emissions and improving energy efficiency in existing buildings. As part of its efforts to achieve its emissions targets and communicate its post-2020 commitment, the Principality decided to define a reduction strategy for buildings throughout the country. This strategy will require performance and energy substitution measures. It should lead to the formulation of an energy master plan which will cover supply, energy carriers and local production, with the long-term goal of carbon neutrality.

Synthesis:

→ The countries have developed overall policy frameworks for a comprehensive energy transition. The energy policy frameworks of participating Alpine States include a strengthening of renewable energies, an improvement of energy efficiency and thus also the support of climate change mitigation and adaptation policies. While some countries initially had a lower share of renewable energies (e.g. Italy, France, Germany), other countries already started from an energy system with a large share of renewables (e.g. Austria and

[8] National Energy Strategy Liechtenstein:
http://www.regierung.li/files/attachments/Energiestrategie_Kurzfassung.pdf?t=635582014477562293
[9] National Renewable Energy Action Plan 2010-2020 (NREAP) Slovenia, Ljubljana, July 2010:
http://www.energetika-portal.si/fileadmin/dokumenti/publikacije/an_ove/an-ove_eng.pdf

Switzerland, with a strong focus on hydropower). All countries aim at a further development of renewable energy sources, with the most ambitious targets of a nearly 100% renewable energy system until 2050 in Switzerland and Austria and shares of 60% in gross final energy consumption and at least 80% in gross electricity consumption until 2050 in Germany. While some Alpine countries like Austria or Liechtenstein have never operated nuclear power plants, others have stopped producing nuclear energy (Italy), decided to phase it out (Switzerland, Germany), or are reducing their dependency on nuclear energy (France).

→The national strategies are in line with the 2020 European Climate-energy package which defines specific targets for GHG reduction, energy savings as well as the share of renewables in final gross consumption (see Annex 1 for an overview). Most Alpine countries have also already put in place energy strategies for the timeframe 2030 or even 2050 which consider the – still not differentiated – target system of the 2030 EU Energy Strategy.

2.2 Recent initiatives as reported by the Contracting Parties

All Contracting Parties have delivered inputs, including information on the different elements of the vision Renewable Alps. The following table gives an overview on the reported developments. It can be seen that the Contracting Parties have reported overall policy programmes as well as specific measures and instruments. Some information also relate to specific experiences with measures and instruments.

	Name of programme/measure/instrument	**Implementing country**
Element 1 energy consumption	National Action Plan on Energy Efficiency (NAPE), including reinforcement of CO_2– related buildings modernisation programme; Energy Efficiency Strategy for Buildings (ESG) Climate Action Programme 2020 with > 100 measures	Germany
	Tax deduction for energy refurbishments	Italy
	New regulations on sustainable buildings in the frame of the Energy transition to Green Growth Act	France
Element 2 energy production	Review and adjustment of the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG)	Germany
	Experiences with feed-in tariff scheme for solar power (PV)	Italy
	Feed-in tariff scheme for renewables and CHP	Slovenia
Crosscutting elements 1 and 2	Climate protection initiative "klima**aktiv**": 4 thematic headings: building and renovation, saving energy, renewable energy and mobility	Austria
	SwissEnergy programme with focus on buildings, renewable energy, mobility, industry and services sectors, electrical appliances	Switzerland
	Energy efficiency Law, including support for energy efficiency measures as well as solar thermal, heat pump boilers and photovoltaic systems	Liechtenstein

	Name of programme/measure/instrument	Implementing country
	Mission for Energy Transition	Monaco
Element 3 Governance	Climate and Energy Model Regions, support for regions that follow the target of becoming independent of fossil fuels	Austria
	Support for local implementation in the Bavarian Energy Programme: communal energy coaches, preparation of local energy management plans and energy concepts, build-up of energy agencies, Energy Efficiency Networks etc.	Germany
	Cities and municipalities, training and further education, and communication parts of SwissEnergy	Switzerland
Element 4 EU interface	Pentalateral Forum	Germany, France, Switzerland, Austria (with Benelux countries)
	Electricity Neighbours	Germany, France, Switzerland, Austria, Italy (with 7 additional countries)
	EUSALP	France, Switzerland, Austria, Italy, Germany, Slovenia, Liechtenstein
Element 5 Knowledge transfer and innovation	Green Economy Action Plan, including Masterplan Cleantech	Switzerland
	Framework programme for a transition to green economy with action programme and plan of activities for 2015-2016	Slovenia

2.2.1 Core elements 1 and 2: energy production and consumption

As many recent activities relate to both energy consumption and production, these two elements are merged for this progress report.

Austria has set up a comprehensive climate protection initiative. "klima**aktiv**" is an integral part of Austria's climate strategy and brings together all activities at the interface of climate an energy policy. klimaa**ktiv**'s primary objective is to launch and promote high-quality climate-friendly technologies and services. Under the four thematic headings of Building and Renovation, Saving Energy, Renewable Energy and Mobility, klima**aktiv** outlines new solutions, sets quality standards, increases the knowledge and competence of the players involved and advises companies, municipalities and private households.
The Building and Renovation ("bauen & sanieren") programme is being implemented in all areas of market activity, so that energy-efficient building and utilizing renewable sources of energy help to cut back on greenhouse gases. The central component of this strategy is the "klima**aktiv** building standard" which is Austria's own specific building sustainability rating system.

With respect to renewable energy systems compatible with the Alpine environment, the quality management for biomass district heating systems is another interesting element of klima**aktiv**. It is recognised that wood is a regional energy source that needs to be used efficiently in district heating systems. Under the heating plant quality management, each district heating plant needs to undergo a quality control process to identify options for efficiency improvements and thus an efficient use of regional biomass.[10]

In **Germany**, the policy framework for the *Energiewende*, including both an increasing share of renewables and the improvement of energy efficiency, is evaluated in a monitoring report on a yearly basis. Following discussions on the costs of the *Energiewende*, the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz EEG), as major policy instrument for the deployment of renewable energies, was reviewed in 2013/2014. The EEG 2014 aims at ensuring that Germany can continue on its path towards a renewable energy system by defining a reliable deployment corridor, committing all larger installations to market their electricity directly and testing the allocation of funding for renewables through tendering. Thus, renewable energies are more and more integrated in the regular energy market so that costs for consumers can be minimised. In addition, an overall blueprint for the electricity system was developed in 2015 with a White Paper on electricity markets (Weißbuch Strommarkt), based on extensive consultations including with neighbouring countries.[11]
In addition, Germany further developed its energy efficiency policy. Adopted in December 2014, the National Action Plan on Energy Efficiency (NAPE) sets out Germany's efficiency strategy until 2018. Key elements include the reinforcement of the CO_2 building modernisation programme, the introduction of a competitive tendering scheme for energy efficiency projects and the creation of energy efficiency networks of companies[12]. Additionally, Germany adopted an Energy Efficiency Strategy for Buildings (ESG) in November 2015 to boost efficiency in a sector that accounts for up to 40% of final energy consumption. The German Federal Government set the ambitious goal of achieving a virtually climate-neutral building stock by 2050. In order to achieve this, the demand for heating and cooling energy will have to be reduced significantly through suitable efficiency measures and an increasing share of renewable energy to cover the remaining demand.
Adopted in December 2014, the Climate Action Programme 2020 contains additional measures the German government has put in place to achieve the 2020 GHG reduction target. Germany will also develop a Climate Action Plan 2050 describing further reduction steps to be taken up to the target year of 2050 in the light of the outcome of the Paris climate change conference in 2015 and will back it up with actions developed a broadly based dialogue process.
The Bavarian Energy Programme includes a focus on energy efficiency in buildings. Innovative solutions for building renovation and heating are supported in the frame of the

[10] klima**aktiv** –the Austrian climate protection initiative: http://www.klimaaktiv.at/
[11] Ein Strommarkt für die Energiewende, Weißbuch Strommarkt (2015): http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/weissbuch,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf
[12] National Action Plan on Energy Efficiency (NAPE): http://www.bmwi.de/BMWi/Redaktion/PDF/M-O/nape-national-action-plan-on-energy-efficiency,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf

"10'000 houses-programme" which provides financial aid for renovation measures as well as new low-energy buildings. In addition, new highly-efficient heating systems are supported.[13]

A comprehensive programme to promote renewable energies as well as energy efficiency is also being implemented in **Switzerland – SwissEnergy**. Its main focus lies on energy efficiency in buildings, renewable energy, mobility, industry and services sectors, electrical appliances, cities and municipalities, training and further education, and communication. The decision by the Federal Council to withdraw step-by-step from the use of nuclear energy means that the objectives of SwissEnergy will gain in importance, and the programme will therefore play a significant role in the restructuring of Switzerland's energy supply in the coming decades. The cantons are among the most important partners of SwissEnergy. All cantons have their own energy offices and often also regional energy advice centers as well as support programmes.
Improving the energy-efficiency of buildings is a crucial pillar of the Swiss programme. It is foreseen that all new buildings reach a passive-house standard with respect to heat demand and a near self-sufficiency for electricity supply. The programme provides funding for renovation measures and foresees a review and strengthening of the existing labeling systems for buildings (MINERGIE standards).[14]

In **Italy**, a **feed-in tariff scheme for photovoltaic** (PV) was implemented from 2005 to 2013. PV systems feeding electricity power into the grid were subsidised through a 20 years feed-in tariff (FIT) at a constant rate. The combination of high solar radiation and a very attractive FIT led to an unprecedented growth of the national PV market, as well as to a relevant share of clean energy production: from less than 90 MW of installed capacity in 2007 to 18.5 GW in 2014 (with a peak in 2011 with 9.3 GW installed). Italy is now the 4th global country for cumulative installed PV capacity (year 2014) even if it will soon be overtaken by the USA. At national level, in 2014 PV already covered more than 7% of domestic power demand (where the EU average is 3.5%), while in 2009 the share was just close to 0.2%.
However the scheme was revised five times in eight years, often in an unpredictable way or timescale, sometimes with retroactive effect. Nowadays, PV plants installation is encouraged only through a tax credit and indirect incentives such as net metering / net billing scheme (scambio sul posto), which was recently extended to PV plants with nominal power up to 500 kWp PV size (however with a negative effect to the emerging market for storage systems).
The outcomes of Italian FIT are currently under debated, from several points of view. From the environmental perspective, this is a successful story for a clean energy source penetration. With respect to the stability of the national energy system and the adequate response capability to distributed generation, there are contradictory opinions. The same goes for the actual and long term financial impact on consumers' energy bills and public balance. The contribution to the national economy has cetainly been relevant, although not necessarily positive: the unpredictable variations of yearly installation has had the effect of

[13] Bavarian Energy Programme:
http://www.stmwi.bayern.de/fileadmin/user_upload/stmwivt/Publikationen/2015/2015-21-10-Bayerisches_Energieprogramm.pdf
[14] Energie Schweiz Detailkonzept 2013-2020:
http://www.bfe.admin.ch/energie/00553/index.html?lang=de&dossier_id=04650

creating a very unstable PV market (from industries to engineering and installers), thus preventing the development of reliable industrial plans.

To improve energy efficiency in buildings, a **tax deduction system for the renovation of buildings** was introduced in Italy in 2007. According to this mechanism, a share of costs incurred for the energy refurbishment (65% in 10 fiscal years) can be deducted from national income tax. Beneficiaries may be all taxpayers, such as individuals, professionals, companies and enterprises. Similar to the PV feed-in system, the tax deduction mechanism for renovation is hampered by an unstable legal framework. As it is related to state financial laws, the mechanism needs to be reinstated for each new financial year. This led to several changes concerning: the schedule of the tax credit, the share of deductions as well as the eligible interventions. Still, the scheme has had a strong positive impact on the building stock refurbishment sector and on fostering energy efficient urban regeneration – as well as boosting employment in the building sector. According to the latest official data, from 2007 to 2013, the overall final energy saving related to this policy was slightly higher than 0.85 Mtoe[15].

In **France**, the Energy Transition for Green Growth Act (LTECV) is the latest legislation that deals with sustainable buildings. It focuses on speeding up the energy renovation of housing and on improving the energy performance of new buildings and at the same time creating 75 000 jobs. The law sets an objective of 500'000 thermal renovations each year. To achieve this goal, art. 14 requires insulation work to be done in case of facade restoration or roof refurbishment. In addition, existing financial incentives such as the "Energy Transition Tax Credit" (a 30% tax credit for thermal renovation work) and the "éco-PTZ" (a 0% loan to finance thermal renovation) have been extended.

In order to raise awareness of citizens on their energy consumption and improve its monitoring, article 26 of the LTECV makes the installation of heating consumption individualisation systems mandatory for all buildings with collective heating systems. Energy performance of non-residential building is also addressed in the LTECV, through its article 17. This article requires non-residential buildings landlords or tenants to have an energy audit performed on their buildings and to carry out energy efficiency measures.

Though the thermal regulation for new buildings is already ambitious (since it is considered to be the French transposition of Nearly Zero-Energy Buildings addressed in the EPBD), the LTECV goes beyond by combining environmental requirements with thermal requirements. Indeed, the next thermal regulation for new buildings will take into account CO_2 emissions in its requirements, considered over the life cycle of the building. Energy consumption requirements will also be toughened to the extent that all new buildings will be "positive energy buildings". In order to mobilise construction actors, these requirements will already be applied to buildings constructed for public authorities. Private developers can also build such ambitious buildings, with a financial "constructibility bonus" in exchange of it. This possibility improves the economical balance and contributes to absorbing the additional project costs.

[15] Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) http://www.enea.it/it/pubblicazioni/pdf-volumi/rapporto-55-65-2013integr.pdf

Finally, measures to support small hydroelectricity (changes in tendering procedures) are being implemented.

In **Liechtenstein**, the **energy efficiency law** was implemented in 2008 as core policy instrument and further developed in 2015. Under this law, energy efficiency measures (e.g. building and renovation of buildings, combined heat-and-power systems) as well as solar thermal collector, heat pump and photovoltaic systems receive a subsidy.

In **Slovenia**, based on the Energy Law, a **feed-in tariff support scheme for renewable energy sources and CHP technologies** was implemented in 2008, with a choice between several purchasing mechanisms. Up to 2016, around 3920 power plants have received funding from this scheme, predominantly small hydropower and PV installations (total installed capacity is about 434 MW).
The feed-in scheme, as well as energy efficiency measures are financed through a dedicated surcharge on the network fee bills of all users of electricity in Slovenia.
The new Energy Law (2014) introduced changes of the support scheme that were notified to the European Commission in May 2015. The support for new electricity capacity from renewable energy sources or CHP will be granted in a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria. The first public call for RES/CHP projects will be announced four to six months after the positive decision from Commission is obtained.
Energy efficiency measures are implemented on the basis of the **National Action plan for energy efficiency** for the period 2014-2020 which was published in 2015.[16] The action plan includes measures on energy efficiency in buildings, on raising the energy efficiency of public bodies as well as for the sectors of industry and transport. It also includes a special section on efficiency in heating and cooling as well as on energy transformation, transmissions, distribution and demand responses.

The Principality of Monaco decided to establish in 2016 a Mission for Energy Transition. The role of this Mission will be to support the development of major renewable energy production and distribution projects, and to develop renewable energy sources for the benefit of the Principality and lead energy efficiency improvement work. The Energy and Sustainable Development Fund of the Principality, currently dedicated to financing innovative projects in the fields of energy management and developing renewable energy, will focus on the activities of the Mission for Energy Transition.

[16] National Action Plan for energy efficiency 2014-2020 for Slovenia:
https://ec.europa.eu/energy/sites/ener/files/documents/NEAPSLOVENIA_en.pdf

2.2.2 Element 3: Governance – continuing exchange on regional and local level

In **Austria**, the **programme "Climate and Energy Model Regions**" which is funded through the Climate and Energy Fund (since 2007) is one of the most successful initiatives related to climate governance. With this initiative, the Climate and Energy Fund supports regions that follow the target of becoming independent of fossil fuels. This target is fulfilled by drawing on the regions' own resources and by meeting energy demand with a smart mix of renewable energy generation, enhanced energy efficiency and smart controls. The programme has by now developed a great dynamic in Austria, and has created 99 Climate and Energy Model Regions with 899 participating communities. Together, these regions represent 2.5 million citizens.
An important element of this programme is the networking and training programme: At least twice per year the Austrian model region managers meet for a two-day training and networking event. [17]

A similar approach is being implemented in **Bavaria** in the **Bavarian Energy Programme**. This programme includes a comprehensive instrument mix to improve local implementation of the Energiewende. These include the financial support for communal energy coaches, the preparation of local energy management plans and energy concepts, the build-up of energy agencies and many others.

2.2.3 Element 4: EU interface – a European Energy System acceptable for the Alps

Since increasing the share of intermittent renewable energies in the energy system is easier in more integrated markets, and integrated markets also offer the most cost-effective way to guarantee security of supply, it is important for the Contracting Parties to coordinate and cooperate with their neighbours when developing their energy policies.[18]

In the Pentalateral Energy Forum, the Contracting Parties France, Switzerland, Austria and Germany have been working together with the Netherlands, Belgium and Luxemburg on electricity issues such as market coupling, security of supply and flexibility in the electricity markets. In 2015 the Forum issued the first regional generation adequacy report.
Furthermore, in 2014 Germany started a series of discussions with neighbouring countries ("electricity neighbors") dealing with questions of electricity markets and security of supply, which included *inter alia* with the Contracting Parties France, Switzerland, Austria and Italy and which resulted in a common declaration signed in June 2015. In the SEN, Italy reports

[17] Climate and Energy Model Regions An Austrian blueprint for a successful bottom-up approach in the field of climate change and energy: https://www.klimafonds.gv.at/assets/Uploads/Downloads-Frderungen/KuE-Modellregionen/Fact-Sheet-Climate-and-Energy-Model-Regions.pdf
[18] EU Commission, Communication (2015) 80 final, p.10.

3.000 MW of foreseen increase in transmission lines capacity in the northern sector, and markets integration.

2.2.4 Element 5: Knowledge transfer and innovation

In 2013, the **Swiss Government adopted the Green Economy Action Plan**. In doing so, it intends to conserve natural resources, make consumption more environmentally friendly and strengthen the circular economy. To strengthen innovative technologies for a Green Economy, the Action Plan includes the "Masterplan Cleantech" for energy efficiency and renewable energy sources (action 21). The Masterplan Cleantech has the objective to bring together all relevant stakeholders and to create synergies, e.g. through an improved cooperation between the private and public level or an improved knowledge-transfer between science and SMEs. The Masterplan illustrates the potential for green innovations on a global scale (patents, exports) and defines targets as well as specific actions to strengthen Swiss competitiveness.
The Federal Office for the Environment (FOEN) has the lead and other ministries are pursuing the Action Plan 2013 for a green economy.[19]

The **Energy Strategy of Liechtenstein** includes several specific measures which foster the knowledge transfer between different stakeholders. Several training measures are implemented in the frame of the strategy, aiming at the university students but also other stakeholders in the building sector. Awareness raising measures as well as an exchange on Best Practices are targeted at the general public. An Energy coaching programme as well as the implementation of energy agencies (Energiefachstellen) shall support the implementation of specific measures on all levels.[20]

The **Slovenian governmental Programme "Connected for Growth, Green-Smart-Efficient"** adopted last year aims at fostering the transition to a green economy as a response to the development challenges of modern society. The document builds upon synergies among environmental, economic and social aspects, highlightening RES and energy efficiency. Special attention is given on achieving a wider social consensus and the more active participation of everyone in the process of shifting to a green economy. A structured dialogue or partnership of all stakeholders is set in order to ensure smooth implementation of the adopted Programme.

[19] http://www.bafu.admin.ch/wirtschaft/11350/12928/index.html?lang=en
[20] Energy Strategy 2020 for Liechtenstein:
http://www.regierung.li/energiestrategie-2020

2.3 Reflection on recent activities in light of developments at EU and international level

National energy policies need to be seen in the light of the relevant framework legislation at EU level. The **EU Energy Strategy 2020** sets targets to increase the share of renewable energies as well as greenhouse gas emissions and formulates specific targets per member state (Renewable Energy Directive 2009/28/EC, Directive 406/2009/EC on effort sharing). In addition, Member States are committed to define specific targets to improve energy efficiency and to develop national action plans with specific measures (Energy Efficiency Directive 2012/27/EU). Specific targets per member states are summarized in Annex 1.

The **climate and energy policy framework for the period 2020-2030** which the European Council agreed on in its conclusions of October 2014 has the objective to further develop the three main elements of the 2020 framework and to define the further target pathway. The 2030 framework demands that until 2030 GHG emissions shall be reduced by 40% (compared to 1990), that renewable energies shall reach a share of at least 27% in gross final energy consumption and that energy efficiency shall be improved by at least 27%. The European Council also agreed that the 2030 efficiency target will be reviewed before 2020 with the view to raise it to 30%. While the target for GHG emission reduction – with regard to the sectors not covered by the ETS – will be translated into binding targets for EU Member States, this will not be the case for the targets for renewables and efficiency. With regard to the renewables target, it was decided that it shall initially be achieved by Member States contributions, complemented by EU mechanisms, which will become operational if necessary to ensure target achievement.

In February 2015, the European Commission published its **Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy**[21] which sets out the main pillars for developing an EU Energy Union to give consumers secure, sustainable, competitive and affordable energy. It builds on the fact that an integrated energy market is needed to create more competition, lead to greater market efficiency and produce affordable prices for consumers.
The Energy Union strategy has five mutually reinforcing and closely interrelated dimensions designed to bring greater energy security, sustainability and competitiveness:
- Energy security, solidarity and trust;
- A fully integrated European energy market;
- Energy efficiency contributing to moderation of demand;
- Decarbonising the economy, and
- Research, Innovation and Competitiveness.

Under the dimension "fully integrated European energy market", the framework strategy mentions the further development and integration of energy infrastructures. It builds on the

[21] COM(2015) 80 final.

2014 European Energy Security Strategy which identified 33 infrastructure projects which are essential to improve security of supply and to better connect energy markets. While the first list of priority projects did not include any infrastructures related to the Alpine region, the updated list of 2015 does.[22] Before these projects are further developed, it will be necessary to ensure a design sustainable for the Alpine environment.

The **first progress report on the Energy Union** (COM(2015) 572 final) illustrates first achievements in the different dimensions and also indicates if Member States are on track to reach their 2020 targets. Regarding GHG reductions, it mentions that Austria will need to take additional action, while all other countries are on track. Regarding the renewables targets, all Member States have met their interim targets 2013/2014 and are mostly on track to reach 2020 targets; of the Alpine Convention countries, only France will have to review its progress. Regarding energy efficiency, all member states are asked to increase their efforts. However, it is noted that some member states (including Germany, Austria and Italy) have adjusted their targets, taking on more ambitious energy efficiency targets.

To interpret recent national achievements and targets, it is also necessary to consider the results of the **COP21 in Paris**. At this conference, 195 countries adopted a universal, legally binding global climate deal, the Paris agreement. The agreement sets out a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C. The agreement is due to enter into force by 2020 and includes the following key elements on climate change mitigation:

- Targets: holding the increase in global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, since this would significantly reduce risks and the impacts of climate change;
- Pathway: the agreement recognises the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries; also, it is seen that rapid reductions have to be undertaken thereafter in accordance with the best available science.
- In addition, the agreement includes elements on adaptation, finance, loss and damage and inter-national support.

Meeting these ambitious targets will require further effort and coordination at EU and national level. On March 2nd 2016, the European Commission presented an assessment of the implications of the new global climate agreement for the European Union ("The road from Paris")[23]. The assessment looks at the next steps in the process and examines how the Paris Agreement will be implemented in the EU. Especially, it is noted that the 2030 Climate and Energy package needs to be specified as soon as possible, setting greenhouse gas

[22] For further information please refer to the Union list of projects of common interest which is part of the Energy union Package: https://ec.europa.eu/energy/sites/ener/files/documents/5_2%20PCI%20annex.pdf
This list includes for example the following infrastructure projects: Cluster Germany - Austria - Switzerland with capacity increase in Lake Constance area (PCI No. 2.11), several storage projects in Austria and Germany (PCI No., 2.18 – 2.22) or several projects to reinforce the interconnection between Austria and Italy as well as Austria and Germany (PCI No. 3.1. – 3.4).

[23] COM(2016) 110 final

reduction targets per member state and defining an improved governance system for the post-2020 period.

In 2015, the **European Union Strategy for the Alpine Region (EUSALP)** was approved and a corresponding action plan defined, whereby action nine strives to make the Alpine region a model region for energy efficiency and renewable energy[24].

Finally, national strategies and objectives are also being implemented at regional and local levels. **International networks of municipalities**, such as the Covenant of Mayors for Climate and Energy, the European Energy Award and the Climate Alliance foster local energy efficiency measures.

Synthesis:
Recent developments at European as well as international level re-confirm and strengthen the transition process towards a low-carbon economy and require further efforts at all stages. Especially, the transition towards a renewable energy system will have to be accelerated and additional measures to improve energy efficiency will be necessary. While the Contracting Parties of the Alpine Convention are largely on track to meet their targets under the EU 2020 framework, efforts will be necessary, especially to meet the ambitious targets of the Paris global climate change agreement.

3 Activities in the framework of the Alpine Convention

Many individual activities towards the vision "Renewable Alps" are being implemented in the frame of the initiatives reported above. Several activities have also been pursued in the frame of the Alpine Convention itself, by one or several Contracting Parties, the Permanent Secretariat or Observers. The main elements are reported in this chapter.

As agreed by the XIII Alpine Conference, the German presidency launched a **best practice collection of energy projects** with a focus on avoiding **conflicts concerning land-use and nature protection**. The best practice collection was delegated to an external contractor. In its report the contractor will identify forward-looking, economically viable projects and especially efficient technological solutions that demonstrate effective solutions in conflicts with nature conservation and land use issues. The contractor will also evaluate procedural aspects of the projects, e.g. participation of stakeholders, information exchange and planning methods. The focus will be on successfully implemented energy projects that produce, transmit or store energy rather than research projects. The final report will be presented during the Alpweek in October 2016.

[24] EU Commission, EUSALP Communication(2015) 366 final, p.7.

Initial results show that the significant renewable energy potential of the Alpine region can be used in a manner that observes nature conservation and avoids land use conflicts, by mitigating the physical impact of energy projects on nature and by including the relevant stakeholders during planning, construction and operation of the project. Although there are clearly renewable technologies with a greater impact on nature and a greater potential for land use conflicts – e.g. hydropower compared to roof-top PV – there are sensible solutions to mitigate risks and, therefore, successfully develop the renewable energy potential of the Alpine region.

As follow-up to its activities within the Energy platform's presidency, Switzerland organised an **Energy Forum** at the Expo in Milan in June 2015. The main objective was to share ideas and results of the Energy platform's activities with stakeholders on national, regional and local as well as EU level and to discuss on how to improve further cooperation for the "renewable alps"-vision. After different keynote speeches, the stakeholders discussed common principles for renewable energy systems in the Alps as well as potentials for cooperation towards "renewable alps". The discussion clearly confirmed the need for further exchange of know-how and best practice examples on all levels, including local and regional. The interest for the report of the German Presidency on best practices was strong. A large number of stakeholders also expressed their interest in further Energy forums with specific thematic focus.

Switzerland together with Liechtenstein also carried on with the organisation of the "**Constructive Alps**" award. The international architecture competition was launched for the third time in December 2014 and prize winners were announced in October 2015. "Constructive Alps" has the objective to develop a cross-border approach on innovative solutions for energy-efficient buildings and aims at identifying "lighthouse" models. In 2015, the 50.000 Euro-prize was shared between buildings in Austria, Switzerland and Italy. Eight additional buildings received a special recognition. The main prize-winners were:

- First prize: Pfarrhaus Krumbach/AT: a major meeting place for the local citizens, the new building shows a good example for a modern building based on regional construction materials. The building is fully constructed in wood and was developed by local craftsmen.
- Second prize: Türalihus and Gasthaus am Brunnen, Valendas/CH: Türalihaus is a historic building which was renovated to become a holiday home. The historic building structure was mainly preserved and some modern facilities blended to a high-quality accommodation. The "Gasthaus am Brunnen" is a combination of a renovated historic building and a new annex building and gives an example for sustainable tourism in the Alps.
- Third prize: Casa Riga, Comano Terme/IT; the new building is hardly visible and seems to disappear in its environment. It is used by the local fruit farmers and includes a Bed & Breakfast. The building is embedded in the ground and the surrounding soil balances the temperature inside. The building has received the "KlimaHaus Gold" certificate.

The **1st Alpine Building Conference** was organised in the framework of the German Presidency of the Alpine Convention by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the Bavarian Chamber of Architects and the Technical University of Munich. It took place in Garmisch-Partenkirchen on 16 and 17 March 2016 and was attended by more than 200 participants from eight countries. The rich tradition and potential of the Alps in adapting to the landscape, making use of local natural resources, taking the whole life cycle of buildings into account, especially considering renovation before new building, and last but not least encouraging participative processes to shape the future of communities, were some of the main guiding principles of successful Alpine building discussed throughout the conference. The participants called for the establishment of a regular alpine-wide exchange in this field.

In April 2016, the first pan-Alpine **workshop on "Climate change and energy efficiency in hotel and restaurant businesses**" was organized by the German Presidency. Participants of almost all Alpine countries were present. The aim of the workshop was to discuss experiences on how hotel and restaurant businesses can be best supported in their energy efficiency efforts. Experiences with support programmes and implementation of specific energy efficiency measures were disseminated. In addition to the workshop, a website as well as a mobile app are being developed to provide a platform with information on climate mitigation and energy effiency initiatives as well as best practice projects in the Alps.

The **2nd Alpen-Forum-Innsbruck** entitled "Climate change and Energy" was organized in Innsbruck on 20 October 2015 by the Permanent Secretariat, the alpS research institute, the French Institute, the University and the Municipality of Innsbruck. Part of a series of information evenings on climate change organised by this partnership and aimed at the general public, it gave an insight into the challenges and best practices from Austria and France, followed by a discussion.

Starting from 1995, the meetings of the Alpine Convention statutory bodies have systematically been organized as **green events**; the Permanent Secretariat has developed a check list to support the Contracting Parties in endorsing this approach for their own events.

Alpine Convention Observer CIPRA International is developing with the support of the German Presidency the **project 100max**, in which more than 70 households in different parts of the Alps carry out trial measurements of the impact of everyday activities on their carbon footprint. The objective is to bring the topic of carbon neutral Alps from technical questions down to aspects of individual action, behaviour and empowerment of citizens.

Finally, Green Economy is one of the priorities of the German Presidency. The **6th Report on the State of the Alps** will deal with this subject, including energy as one of the major aspects.

Contracting Parties of the Alpine Convention as well as the Permanent Secretariat and observers also participated in several events and projects related to the vision Renewable Alps, especially:

- The German presidency supported the **conference "Climate change mitigation now! Alpine municipality are implementing" („Klimaschutz jetzt! Alpengemeinden setzen um")** which was organized by CIPRA together with the network "Alliance in the Alps" as well as the association "Alpine Town of the Year" in October 2015 in preparation of the COP21 conference in Paris. The conference provided a platform for 120 decision makers from the local level to exchange their experiences with climate change policies as well as on the role of the local level to implement ambitious climate change targets. [25]

  At this conference, a call for action for the COP21 conference in Paris was agreed upon. The call for action refers to the important role of the local level for an ambitious climate change policy and includes specific claims on the role and support of municipalities in a global climate agreement (financial support to develop relevant infrastructures, development of ambitious legal frameworks as well as coaching for municipalities, improvement of knowledge transfer and innovation, etc.). At the same time, the municipalities in the Alpine region agreed to contribute to an ambitious reduction of greenhouse gases, mainly through improving sustainable mobility, energy efficiency in buildings as well we an improvement of sustainable consumption patterns.[26]

- The Permanent Secretariat participated as an observer in the project **"Recharge Green"** (2012-2015) funded under the Alpine Space Programme, which had the objective to offer solutions for developing renewable energy systems in the Alps in a sustainable way – avoiding conflicts with nature protection and land-use. 16 partners developed strategies and tools for decision-making on such issues. The analysis and comparison of the costs and benefits of renewable energy, ecosystem services, and potential trade-offs were key components in this process. The project, for example, produced a renewable energy atlas for the Alpine Space region and a decision support system used in the pilot areas to identify and quantify the areas suitable for the installation of renewable energy systems based on criteria of sustainability and land conservation. Many other tools and documents are available on the homepage of Recharge Green.[27]

[25] Information on conference „Klimaschutz jetzt": http://www.cipra.org/de/veranstaltungen/klimaschutz-jetzt-alpengemeinden-setzen-um

[26] Call for action "Climate change mitigation now!" http://www.cipra.org/en/positions/climate-change-mitigation-now?set_language=en

[27] http://www.recharge-green.eu/

4 Conclusions

Energy is an issue of particular importance in the Alps: energy demand is high both from within the region (where, due to climate and topography, the energy consumption for heating and transport is higher than the European average) and from outside (due to the role of the Alps as a major hydropower and energy storage provider). However, energy production needs have to be balanced with the scarceness of land and the necessity to protect the exceptional nature and landscape. At the same time, the Alps have valuable specific assets as regards the production of renewable energy. It is therefore essential to progress toward the implementation of the vision Renewable Alps and to establish the role of the Alps as a model for other regions.

The overview of recent trends and activities in the contracting parties shows a diverse set of policies and measures aimed at implementing the vision. Some major directions can be identified which could become the basis for further activities:

- Most countries have implemented support schemes to further develop renewable energies. The specific design mechanisms differ in each country, depending on potentials for each technology, costs and acceptance. Several innovative elements are currently tested in some countries (e.g. tendering mechanism in Germany) and an exchange on these elements could be used to streamline and improve the various national frameworks.

- Nearly all countries have identified the building sector at the core of their energy efficiency policies. Many support programmes have been implemented, including specific standards and rating systems (e.g. Austria, Switzerland) as well as tax deduction mechanisms (e.g. Italy, France), both for new buildings and, perhaps more importantly, for renovation of the existing building stock. An Alpine-wide exchange has been initiated at the 1st Alpine Building Conference and evidenced the rich Alpine tradition in energy-efficient building making a smart use of local topography and resources. The exchange of expertise on energy efficient building and renovation while preserving the cultural character of Alpine settlements could be further pursued.

- Recent developments as reported by the Contracting Parties mainly relate to energy production and energy consumption. In addition, energy governance is of particular importance for the Alps due to potential land-use conflicts and prevalent landscape protection issues. Knowledge transfer has been initiated with this progress report and the Best-Practice collection on the avoidance of conflicts between land-use/nature protection and energy systems commissioned by the German Presidency.

- In each alpine country, there is still a margin for further developments, especially in the transfer of knowedge and innovation, as well as towards a sustainable energy system at European level, taking climate change into account, and for a more intensive dialogue at alpine level.

- The recent European framework aims at a further integration of EU energy markets (EU Energy Union). The relevant framework strategy foresees *inter alia* the further improvement of cross-border infrastructures as crucial milestones and several projects of major European interest have been defined. Several of those are located in the Alpine Convention perimeter and will have to be developed in compliance with the Convention and its protocols.

- Meeting the targets of the Paris Agreement will require strong efforts in all Member States. Especially, the transformation of energy systems to widely greenhouse gas-neutral energy systems will need to be achieved. The outcomes of the Paris agreement are especially relevant for the Alps, since the Alpine area is particularly affected by climate change. The Contracting Parties of the Alpine Convention could define specific contributions from the Alpine area in order to reach the Paris goals.

- An ad hoc Working Group under German Presidency is preparing a Report on the State of the Alps focussed on Green Economy which will also adress several synergies with the vision "Renewable Alps"; the report is expected to further support the identification of relevant fields of action for the promotion of the vision.

Annex 1: Overview of the energy situation and targets in Alpine Convention countries

National targets for EU Member States							
	Share of energy from renewable sources in gross final consumption of energy			**Energy efficiency: Final energy consumption**			**Greenhouse gas reduction[1]**
	Target 2020[2]	2005[2]	2015[3]	Target 2020[4]	2005	2014	Target 2020 (% reduction compared to 2005)
Germany	18%	5.8%	13.8%[5]	194,3 Mtoe	218.5 Mtoe	208.9 Mtoe	-14%
Austria	34%	23.3%	33.1%	25,1 Mtoe	27.8 Mtoe	26.8 Mtoe	-16%
France	23%	10.3%	14.3%	131,4 Mtoe	160.2 Mtoe	141.7 Mtoe	-14%
Slovenia	25%	16.0%	21.9%	5,1 Mtoe	4.9 Mtoe	4.6 Mtoe	+4%
Italy	17%	5.2%	17.1%	124,0 Mtoe	137.2 Mtoe	113.4 Mtoe	-13%[6]

National targets for non-EU contracting Parties							
	Renewable energies development			**Energy efficiency**			**Greenhouse gas reduction**
	Target 2020	2005	2015	Target 2020	2005	2014	Target 2020
Switzerland	2020 target relates to "new" RES production: 4400 GWh in 2020 (without hydro)[7]	1045 GWh (without hydro)[8]	2616 GWh (without hydro)[8]	Energy consumption per person shall be reduced by 16% in 2020 (compared to 2000 = 154 GJ/person)[9]	152 GJ/person	136 GJ/person	-20% (compared to 1990)[10]
Liechtenstein	20%[11]	8.2%[12] (2008)	n.a.	Stabilisation of final energy consumption at 1390 GWh/a (level of 2008)	1'358 GWh[12]	1'228 GWh[12]	-20% (compared to 1990)[11]

1 Decision 406/2009/EC of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse reduction commitments up to 2020
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009D0406&from=EN

2 According to Directive 2009/28/EC on the promotion of the use of energy from renewable sources

3 Eurostat

4 Absolute level of final energy consumption in 2020 [Mtoe] as notified by Member States in 2013, in the NEEAP 2014 or in a separate notification to the European Commission in 2015

5 Figure for 2014

6 In the SEN, Italy commits further to a reduction of -21%.

7 According to Swiss Energy Law, Art. 2. In addition, there is a 2035 target for the further development of hydropower (37 400 GWh in 2035).

8 Schweizerische Statistik der erneuerbaren Energien, Ausgabe 2015

9 Gesamtenergiestatistik Schweiz und Bevölkerungsdaten, own calculation.

10 http://www.bafu.admin.ch/klima/13877/14510/index.html?lang=de

11 Energiestrategie Liechtenstein

12 Energiestatistik Liechtenstein