



**EUSALP** EU STRATEGY FOR THE ALPINE REGION

[www.alpine-region.eu](http://www.alpine-region.eu)

# EUSALP Energy Survey 2019

## First Results

AG9 meeting

Bergamo, 21.10.2019

**Adriano Bisello, Eurac Research**

Antonio Novelli, Valentina D'Alonzo, Giulia Garegnani Eurac Research

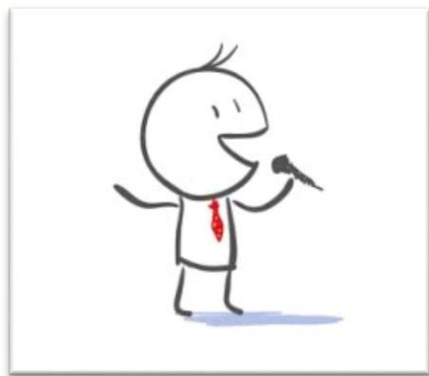
**eurac**  
research



80 million people, 7 countries, 48 regions,  
mountains and plains addressing together  
common challenges and opportunities



This project is co-financed by the European Union via Interreg Alpine Space



Who is  
speaking?

# Adriano Bisello **eurac** research

## Role:

Senior Researcher – Urban and Regional Energy Systems  
Eurac Research (EURAC)

## Background:

MSc in Urban, Regional and Environmental Planning  
PhD in Management Engineering & Real Estate Economics

## Research interests:

Co-benefits of energy transition  
Smart energy projects  
Energy communities  
Energy strategies

## BACKGROUND MOTIVATIONS - 2017

### Why the EUSALP Energy Survey?

The Energy Survey 2017, commissioned by the Action Group 9, had the aim **to depict the “state of the art” of energy policy targets, and energy consumption and production in the EUSALP area.**

The Energy Survey 2017 consisted of **29 open questions** organized in **7 sections**. Starting from March 2016, the English version of the Survey was made accessible online, by using the tool “Survey Monkey”, and an invitation to fill it in was sent all EUSALP territories representatives.

## EUSALP TERRITORY

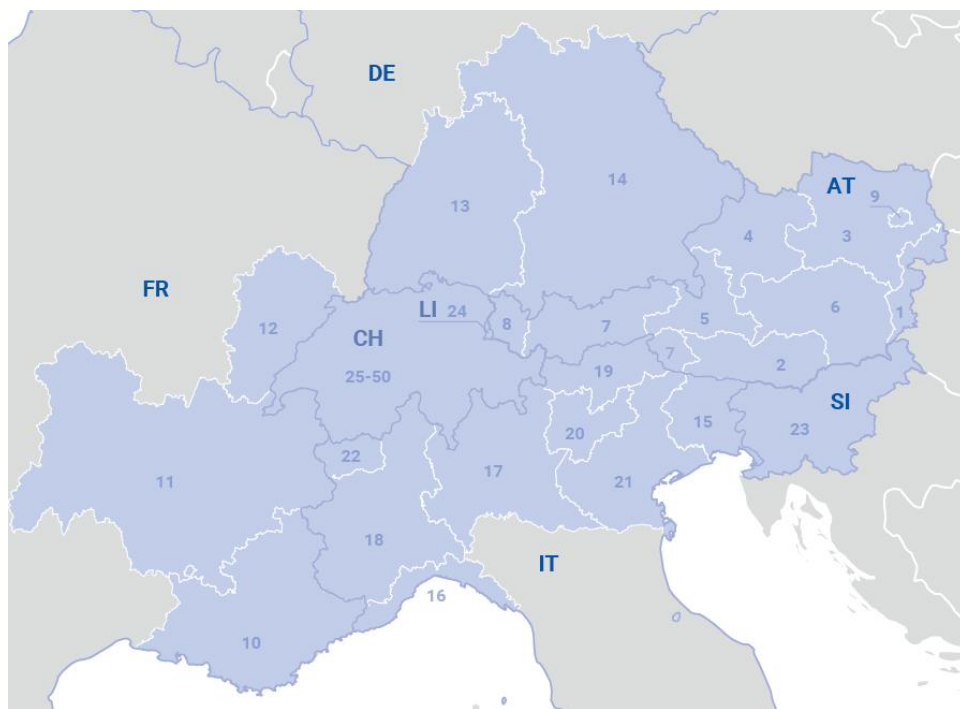
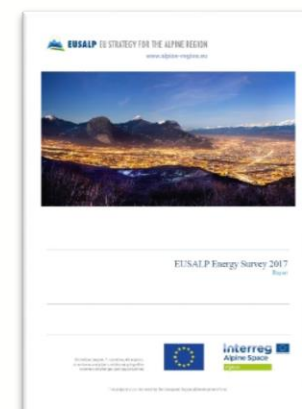
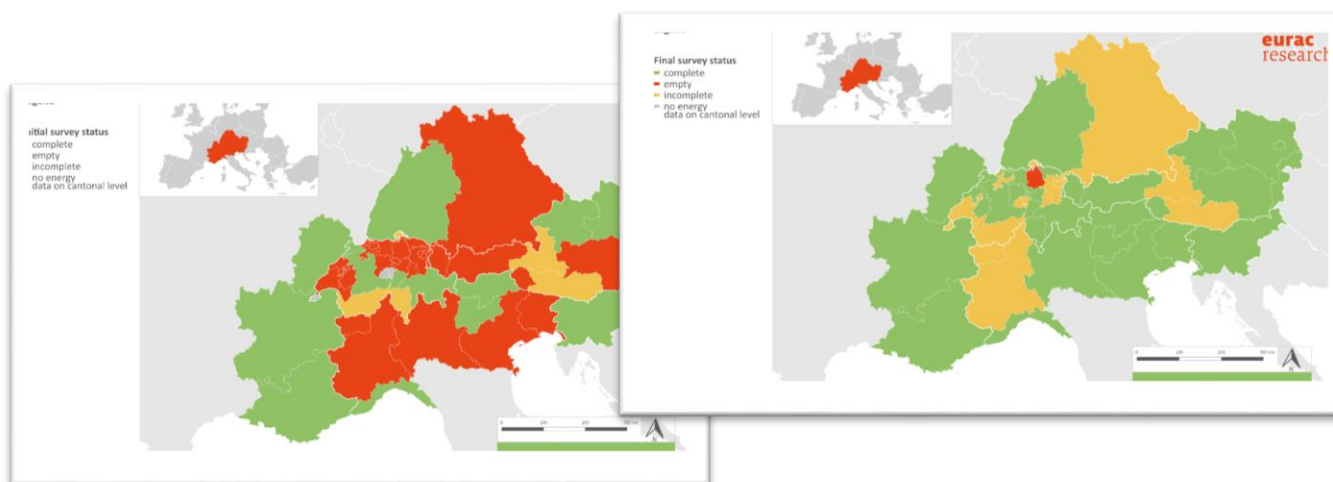


Figure 1. EUSALP area and member territories

5 EU member states		2 non-EU member states	
AT	1 Burgenland 2 Kärnten 3 Niederösterreich 4 Oberösterreich 5 Salzburg 6 Steiermark 7 Tirol 8 Vorarlberg 9 Wien	LI	24 Liechtenstein
FR	10 Provence-Alpes-Côte d'Azur 11 Auvergne-Rhône Alpes 12 Franche-Comté	CH	25 Aargau 26 Appenzell Ausserrhoden 27 Appenzell Innerrhoden 28 Basel-Landschaft 29 Basel-Stadt 30 Bern 31 Fribourg 32 Geneve 33 Glarus 34 Graubünden 35 Jura 36 Lucerne 37 Neuchâtel 38 Nidwalden 39 Obwalden 40 Schaffhausen 41 Schwyz 42 Solothurn 43 St. Gallen 44 Thurgau 45 Ticino 46 Uri 47 Valais 48 Vaud 49 Zug 50 Zürich
DE	13 Baden-Württemberg 14 Bayern		
IT	15 Friuli Venezia Giulia 16 Liguria 17 Lombardia 18 Piemonte 19 Provincia Autonoma di Bolzano / Autonome Provinz Bozen 20 Provincia Autonoma di Trento 21 Veneto 22 Valle d'Aosta / Vallée d'Aoste		
SI	23 Slovenija		

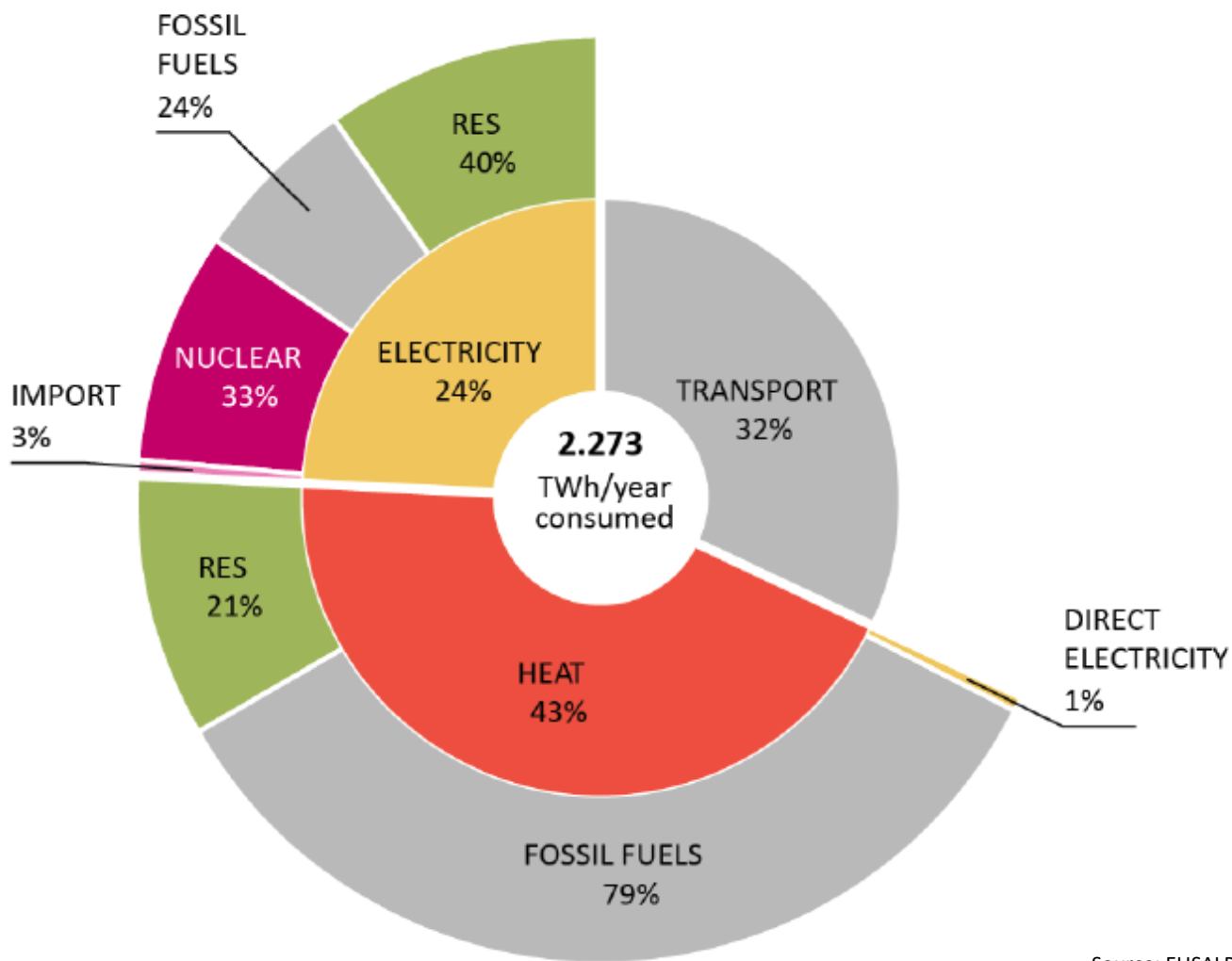
## EUSALP ENERGY SURVEY - 2017

- From March 2016 to March 2017 data collection by CasaClima
- From April 2017 to September 2017 data collection by EURAC
- From October 2017 to January 2018 data elaboration by EURAC and publication of the final version of the EUSALP Energy Report 2017

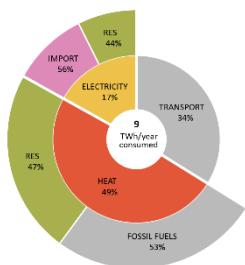




## EUSALP ENERGY CONSUMPTION - 2017

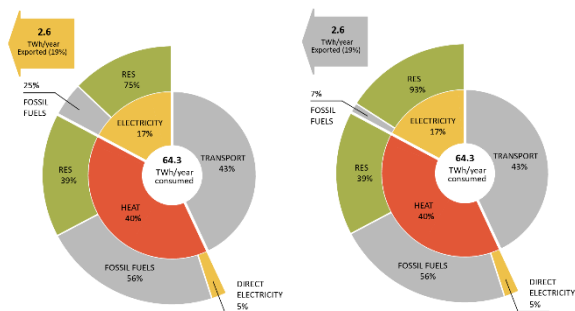


# ANNEX 1. AUSTRIA - 2017



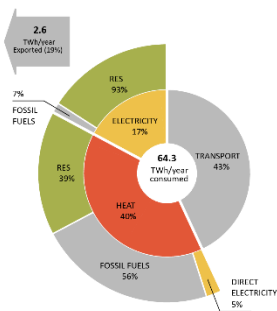
Source: Eurac Research

Figure 27. Burgenland



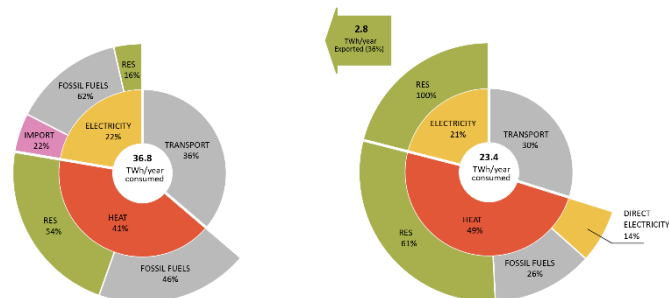
Source: Eurac Research

Figure 28. Niederösterreich



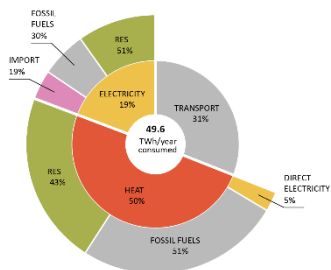
Source: Eurac Research

Figure 29. Wien



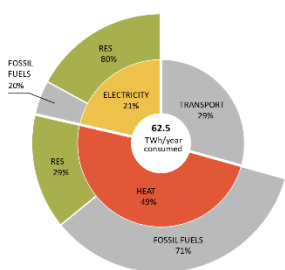
Source: Eurac Research

Figure 30. Kärnten



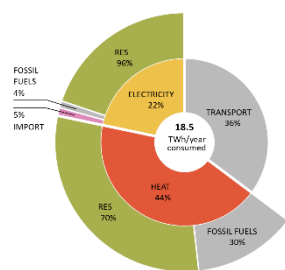
Source: Eurac Research

Figure 31. Steiermark



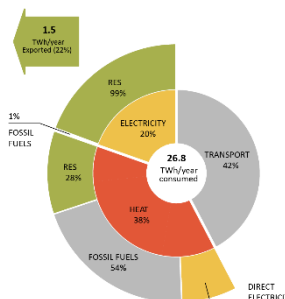
Source: Eurac Research

Figure 32. Oberösterreich



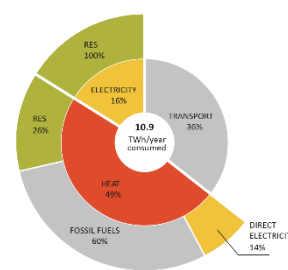
Source: Eurac Research

Figure 33. Salzburg



Source: Eurac Research

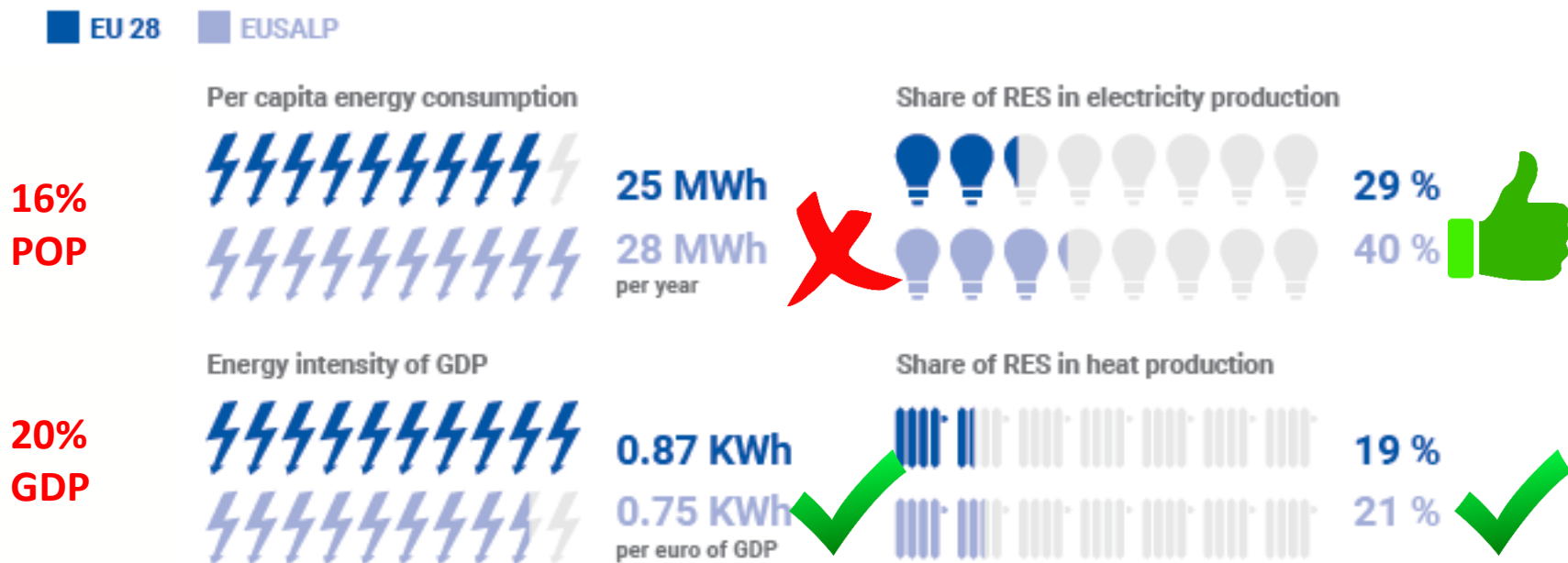
Figure 34. Tirol



Source: Eurac Research

Figure 35. Vorarlberg

## THE ALPINE MACRO-REGION IN NUMBERS - 2017





## EUSALP ENERGY SURVEY - 2019

- EURAC invited to the tender in February 2019
- From April 2019 to June 2019 preparation of the survey with AG9 members
- From July 2019 to September 2019 data collection by EURAC
- On October 2019 presentation of the results of the EUSALP Energy Survey 2019



## NEW QUESTIONNAIRE - 2019

The Energy Survey 2019, commissioned by the Action Group 9, aims to:

- **To carry out a general comparison of energy data collected in the 1<sup>st</sup> survey**
- **Sum up the main findings in the “Eusalp Energy Report 2019**
- **Support ALPGOV in the creation of on-line repository**
  - User friendly interface
  - Database for energy data sets

The Energy Survey 2019 is structured around **39 fields on the local energy balance + 15 qualitative questions on data collection issues and strategic measures in place.**

The survey was developed using OPINIO as an online questionnaire, and an invitation to fill it in was sent all EUSALP territories representatives.

## NEW QUESTIONNAIRE - 2019

Energy Balance:

- **PRIMARY PRODUCTION**
- **ENERGY IMPORT**
- **ENERGY EXPORT**
- **GROSS INLAND ENERGY CONSUMPTION**
- **FINAL ENERGY CONSUMPTION**
- **GROSS FINAL ENERGY CONSUMPTION**
  - From fossil fuels
  - From renewables (electricity / heating & cooling / transport)
- **GROSS FINALE ENERGY CONSUMPTION in TRANSPORT**

Renewables:

- **HYDROPOWER**
- **WIND**
- **PV**
- **BIOMASS**
- **SOLAR THERMAL**
- **HEAT PUMPS**

Integrated database /  
data management system /  
charts visualization /  
measurement units  
Excel sheet



## NEW QUESTIONNAIRE - 2019

Sectors:

- **RESIDENTIAL**
- **SERVICES**
- **AGRICULTURE / FORESTRY**
- **FISHING**
- **ENERGY BRANCH CONSUMPTION**
- **OTHERS**

Data collection:

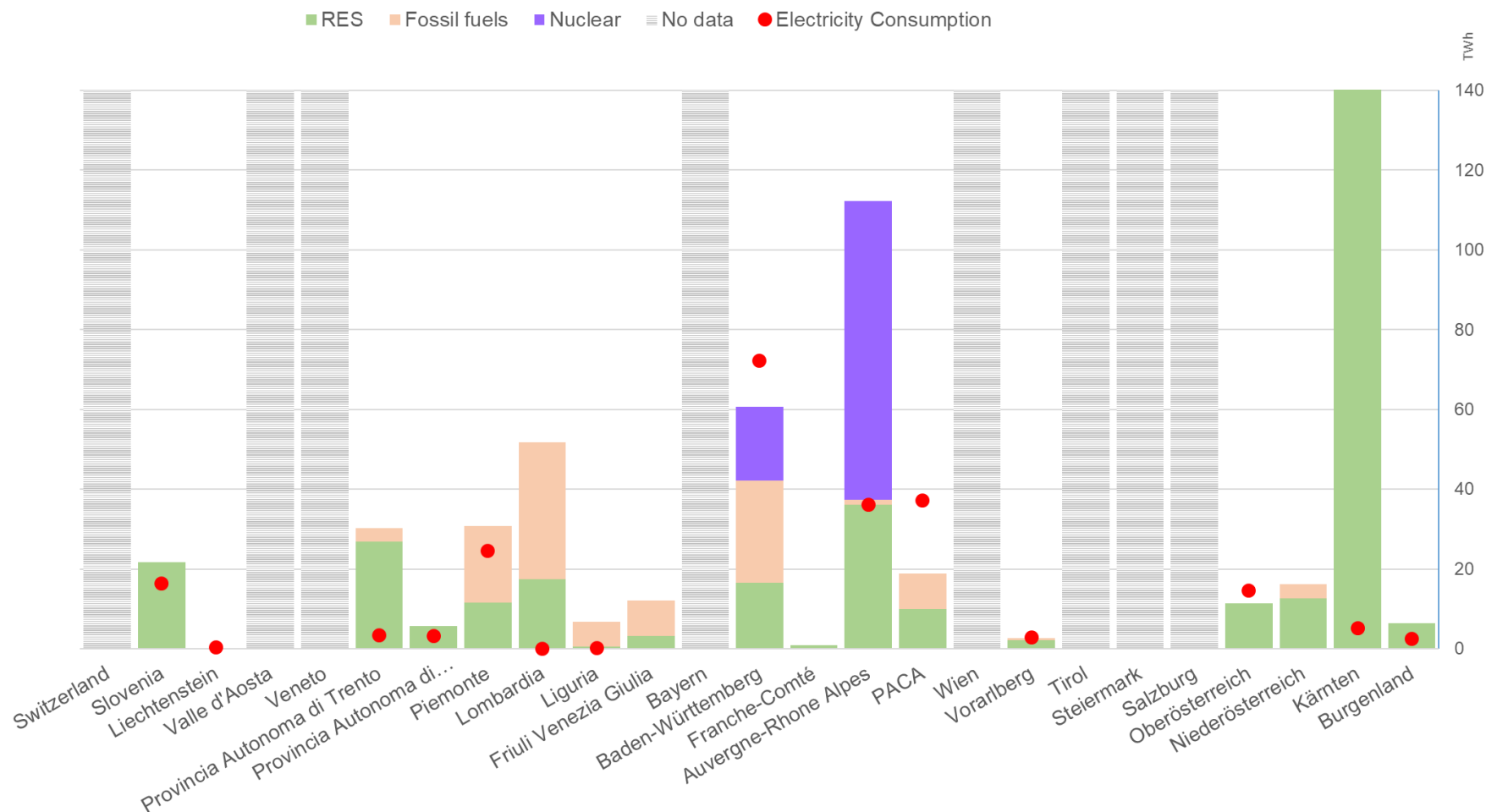
- **PURPOSES**
- **DIFFICULTIES**
- **GUIDELINES**
- **METHODOLOGY**
- **POLICIES**
- **EXAMPLES**
- **STRATEGIC INVESTMENT AREAS**

## DATA COLLETION 2019 - HOW IS GOING ON?

- **Invitation from EURAC: 9 July 19**
  1. AT21 Niederösterreich
  2. FR43 Franche-Comté
  3. DE1 Baden-Württemberg
  4. FR71 Auvergne-Rhone Alpes
  5. AT21 Kärnten
- **Reminder 1 from EURAC: 15 July 19**
  1. FR82 PACA
  2. AT31 Oberösterreich
- **Reminder 2 from EURAC: 19 July 19**
  - No answers
- **Reminder 3 from EURAC: 22 July 19**
  1. I Slovenia
  2. ITH1 Provincia Autonoma di Bolzano
  3. AT34 Vorarlberg
- **Personal invitations from CasaClima: 04 September 1**
  1. AT 13 Wien -> too much effort, it will be not fill
  2. AT 11 Burgenland -> too much effort
- **Personal invitations from Rohne Alpes: 04 October 19**
  - No answers
- **Personal phone calls from EURAC: 03 October 19**
  - ITC4 Lombardia
  - ITC3 Liguria
  - ITC1 Piemonte
  - ITH2 Provincia Autonoma di Trento
  - ITH4 Friuli Venezia Giulia
  - LI Lichtenstein
  - ITH3 Veneto -> committed to fill
  - ITC2 Valle d'Aosta -> committed to fill
  - AT22 Steiermark -> too much effort, it will be not filled
  - AT32 Salzburg -> no answer
  - DE2 Bayern -> no answer
  - CH Switzerland -> no answer
  - At 33 Tirol -> no answer

# LOCAL ELECTRICITY MIX IN EUSALP - 2017

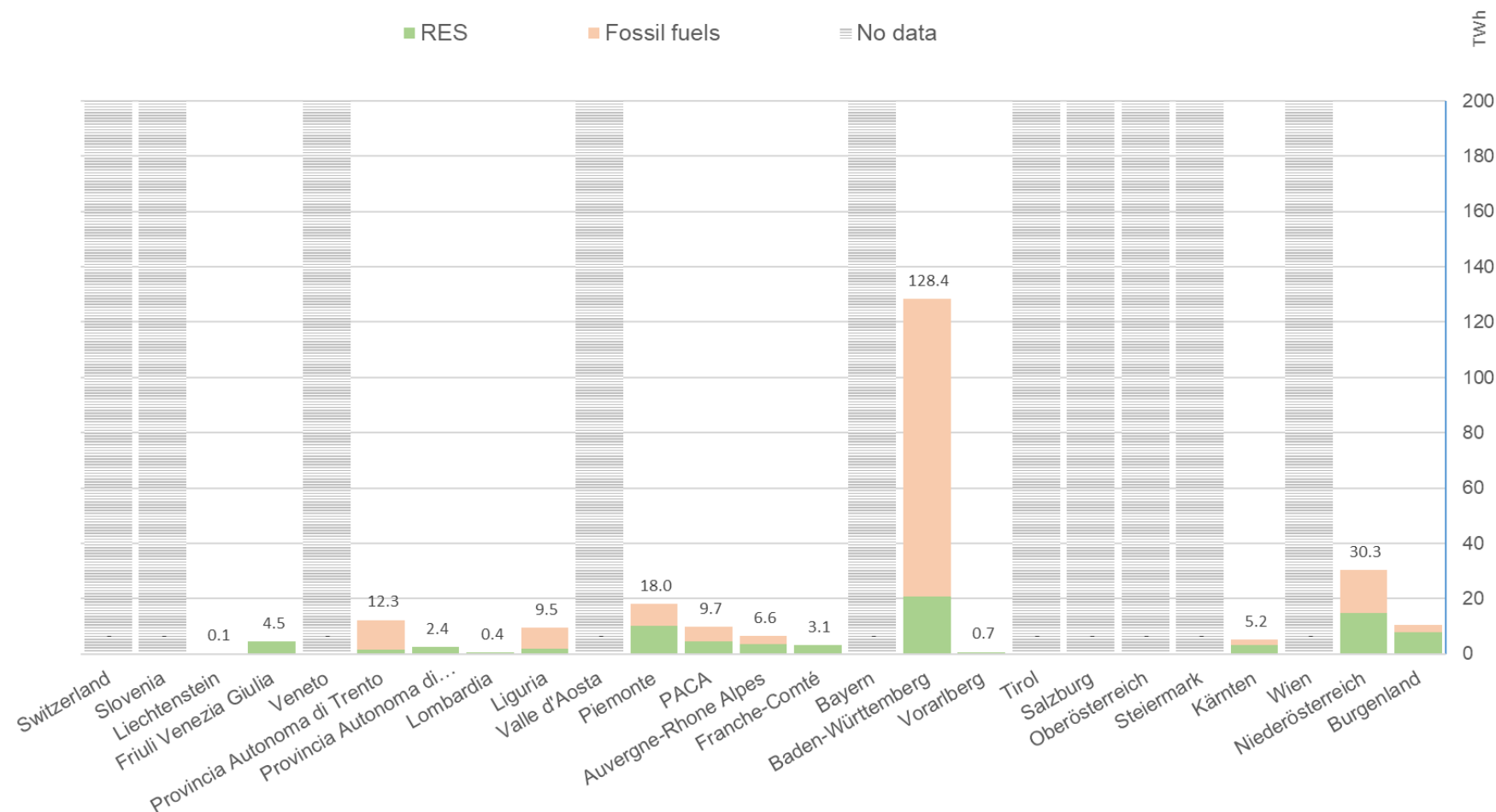
Electricity Production and Consumption - 2019

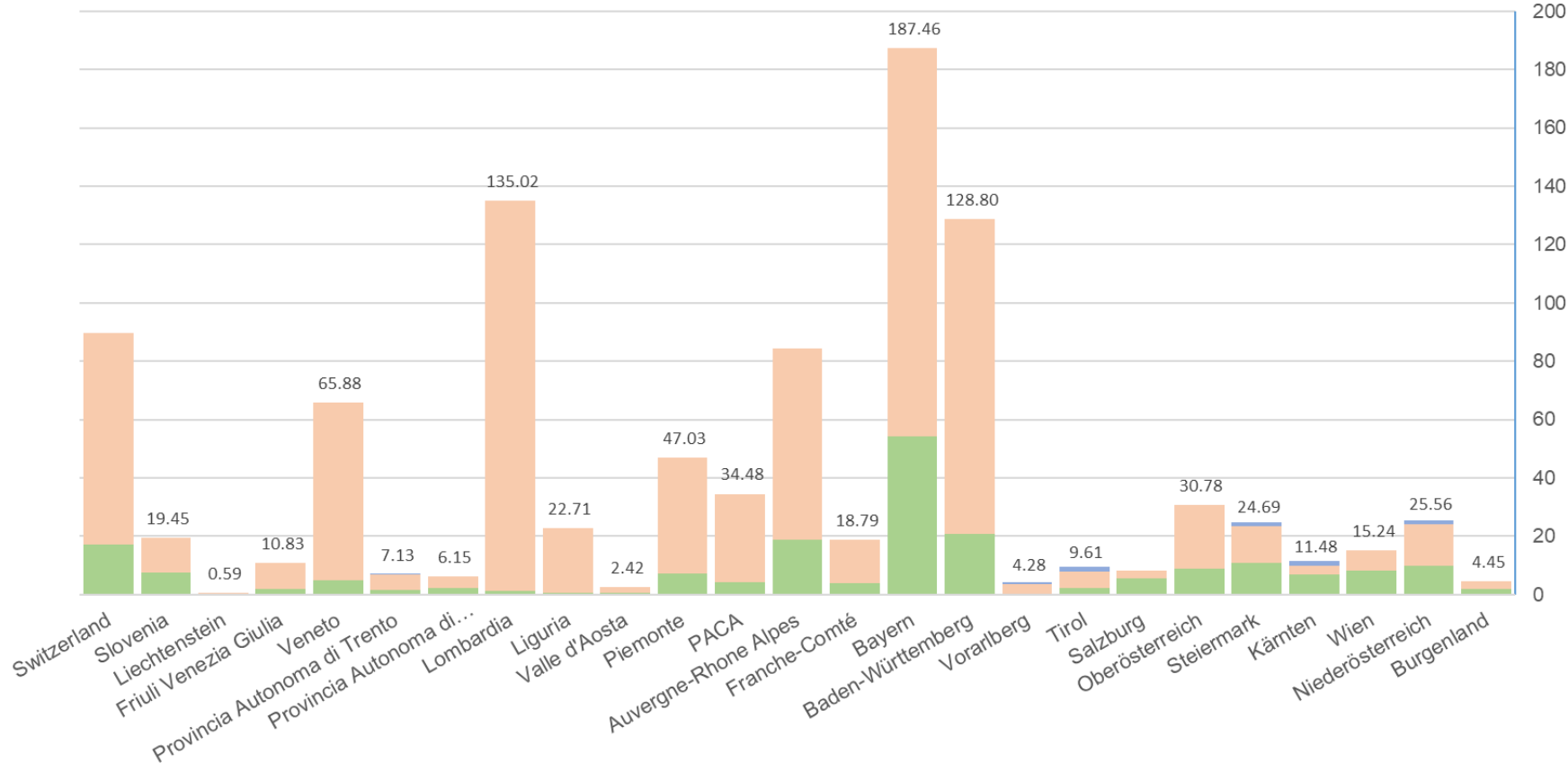




# LOCAL THERMAL ENERGY CONSUMPTION - 2017

Thermal Energy Consumption - 2019





## NEXT STEPS

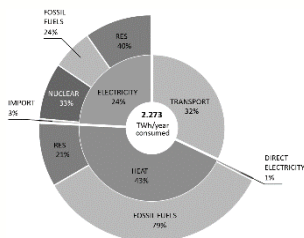
Verifying already  
collected data



Providing EUSALP 2019  
energy database



## EUSALP ENERGY SURVEY 2019



Updating  
EUSALP 2017 data



Engaging EUSALP  
territories – How?

# SSPCR 2019

HOME

TRACKS

CALL

COMMITTEES

VENUE

PAST

NEWS



**SAVE THE DATE**  
09 – 13 DEC 2019  
BOLZANO/BOZEN (IT)

3<sup>rd</sup> International Conference on  
**Smart and Sustainable Planning for Cities and Regions 2019**

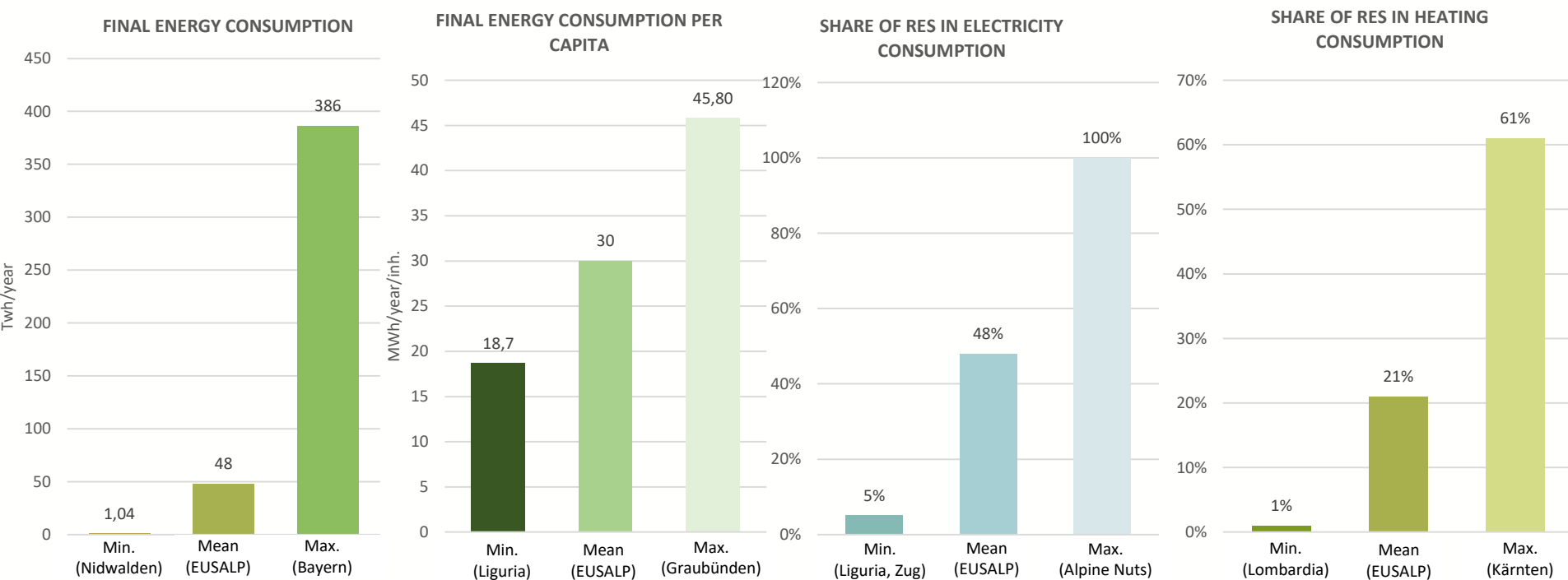
[www.sspcr.eurac.edu](http://www.sspcr.eurac.edu)

[adriano.bisello@eurac.edu](mailto:adriano.bisello@eurac.edu)

## DATA COLLETION - WHAT WE DID

- **Invitation from EURAC: 9 July 19**
  1. AT21 Niederösterreich
  2. FR43 Franche-Comté
  3. DE1 Baden-Württemberg
  4. FR71 Auvergne-Rhone Alpes
  5. AT21 Kärnten
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  2. AT 11 Burgenland -> too detailed, too much effort
- **Personal invitations from Rohne Alpes: 04 October 19**
  - No answers
- **Personal phone calls from EURAC: 03 October 19**
  - AT 13 Lombardia -> sent link
  - Liguria -> sent link
  - Steinmark -> too much effort
  - Veneto -> sent link
  - Piemonte -> sent link
  - Lichtensetin -> sent link
  - Salzburg -> no answer
  - Bayern -> no answer
  - Provincia Autonoma di Trento -> sent link
  - Friuli Venezia Giulia -> link
  - Switzerland -> no answer
  - Tirol -> no answer
  - Valle d'Aosta -> link

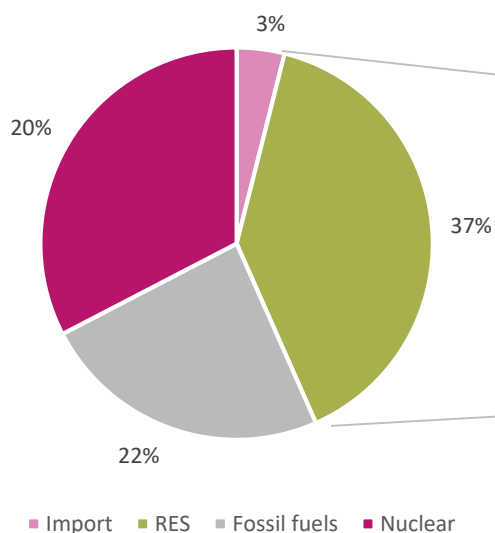
## EUSALP MAIN ENERGY DATA



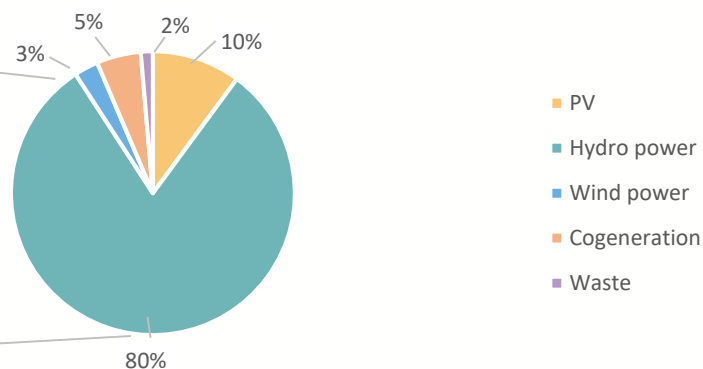
**Figure 3.** EUSALP main energy data. Source: EUSALP Energy Survey 2017 and EUROSTAT (demo\_r\_gind3)

## ELECTRICITY IN EUSALP

### Electricity consumption in EUSALP



### Electricity production by RES in EUSALP





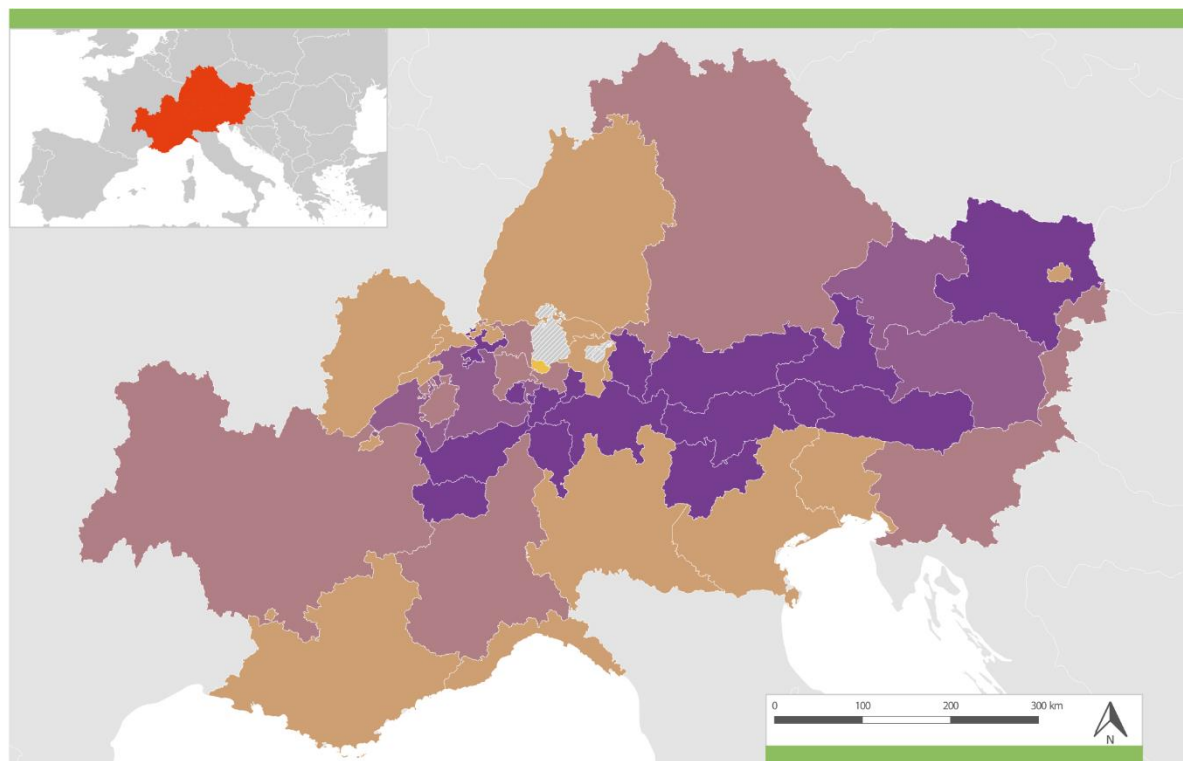
**Figure 4.** Electricity balance and RES production mix. Data source: EUSALP Energy Survey 2017

## SHARE OF RES IN ELECTRICITY PRODUCTION

### Legend

Share of electricity  
from RES [%]

-  no data
-  0 - 5
-  5 - 26
-  26 - 49
-  49 - 87
-  87 - 100



Source: Eurac Research

**Figure 6.** Share of electricity from renewable sources. Data source: EUSALP Energy Survey 2017

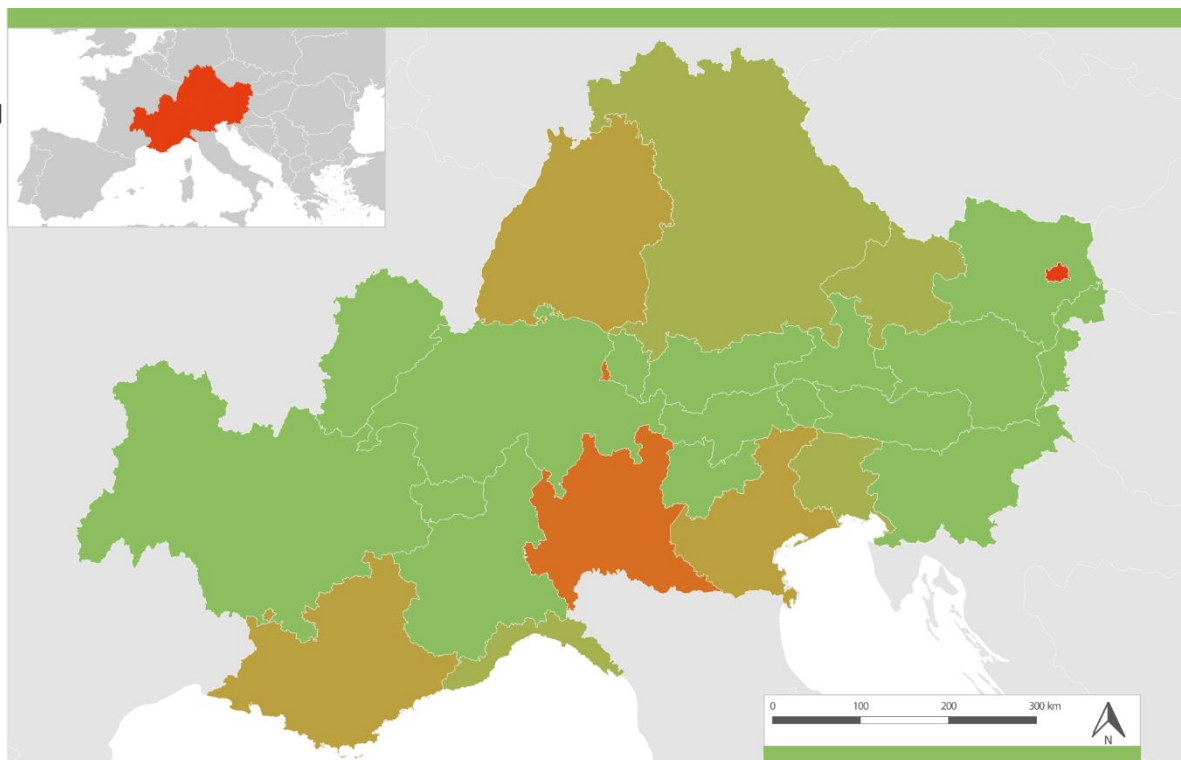


## ELECTRICITY CONSUMPTION PER AREA

### Legend

Annual electricity  
consumption [GWh/km<sup>2</sup>]

- 0 - 1
- 1 - 1.5
- 1.5 - 2.2
- 2.2 - 3
- 3 - 19.9



Source: Eurac Research

**Figure 7.** Yearly electricity consumption per area. Data source: EUSALP Energy Survey 2017

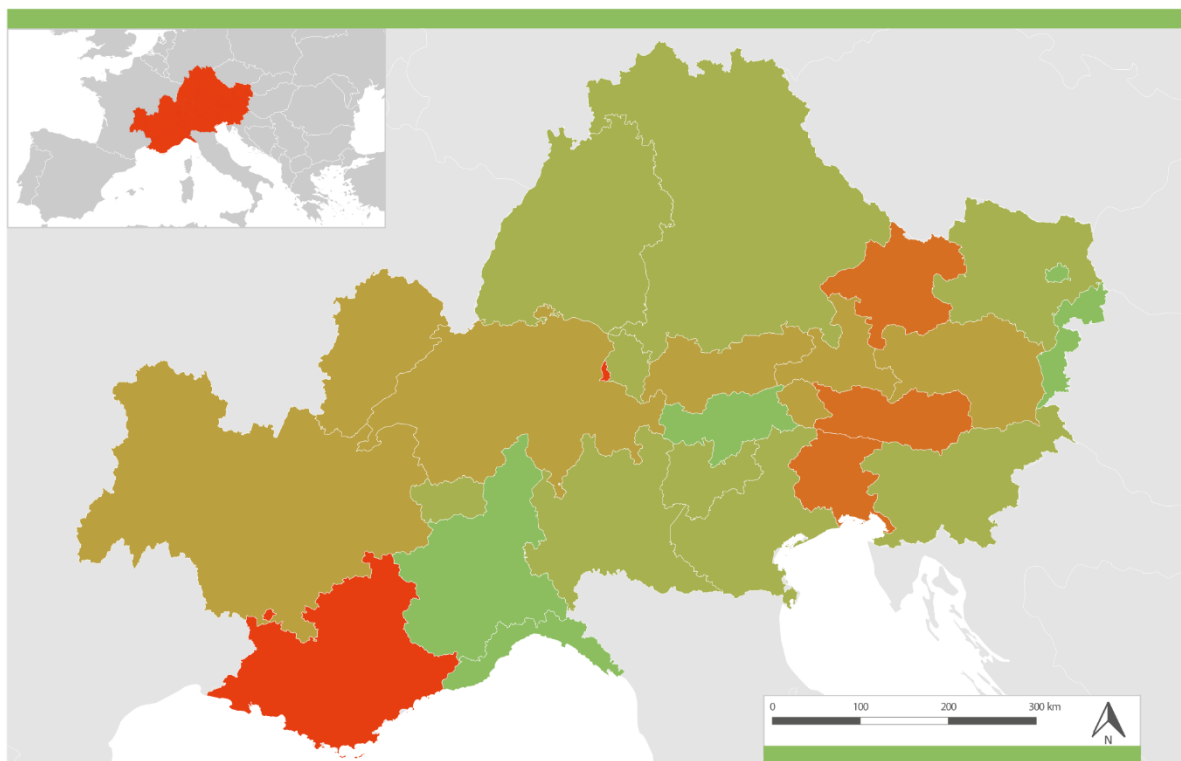


## ELECTRICITY CONSUMPTION PER CAPITA

### Legend

Annual electricity  
consumption  
per capita [MWh]

- 0 - 6
- 6 - 7
- 7 - 8
- 8 - 10
- 10 - 12.9

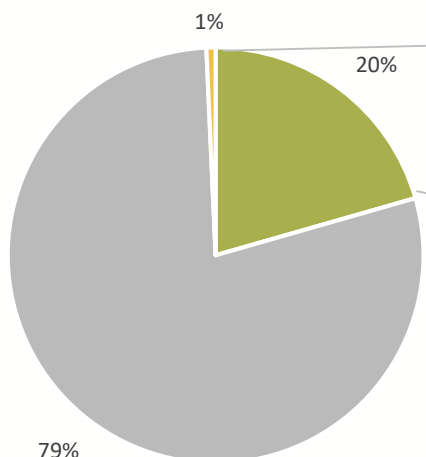


Source: Eurac Research

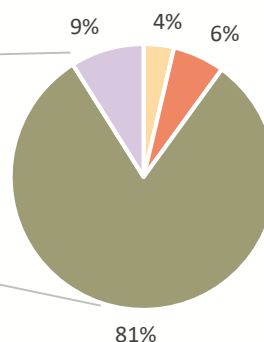
**Figure 8.** Yearly electricity consumption per capita. Data source: EUSALP Energy Survey 2017

# THERMAL ENERGY IN EUSALP

Heat consumption in EUSALP



Heat production by RES



- Solar thermal energy
- Geothermal energy and ambient heat
- Biofuels and biomass
- Waste

■ RES 
 ■ Fossil fuels 
 ■ Direct electricity

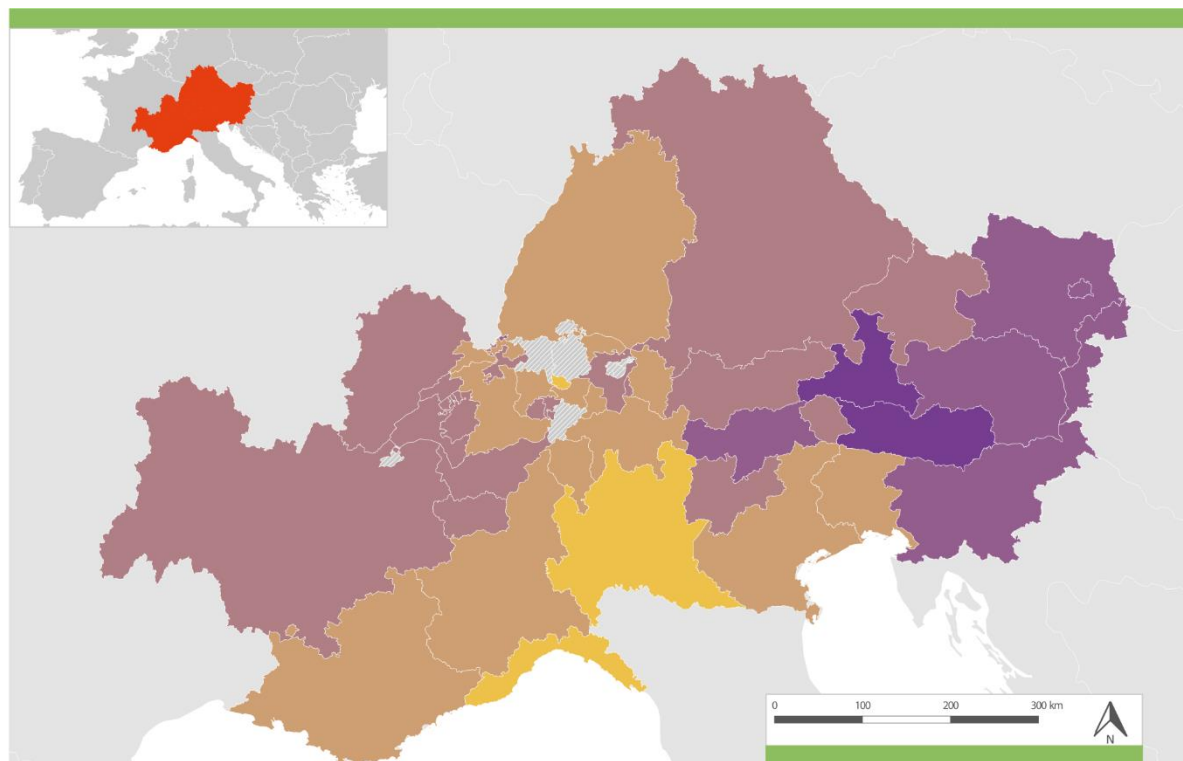
**Figure 9.** Thermal energy needs and RES production mix. Data source: EUSALP Energy Survey 2017 and Eurac research data elaboration

## SHARE OF RES IN HEAT

### Legend

Share of heat  
from RES [%]

- no data
- 0 - 7
- 7 - 18
- 18 - 35
- 35 - 58
- 58 - 100



Source: Eurac Research

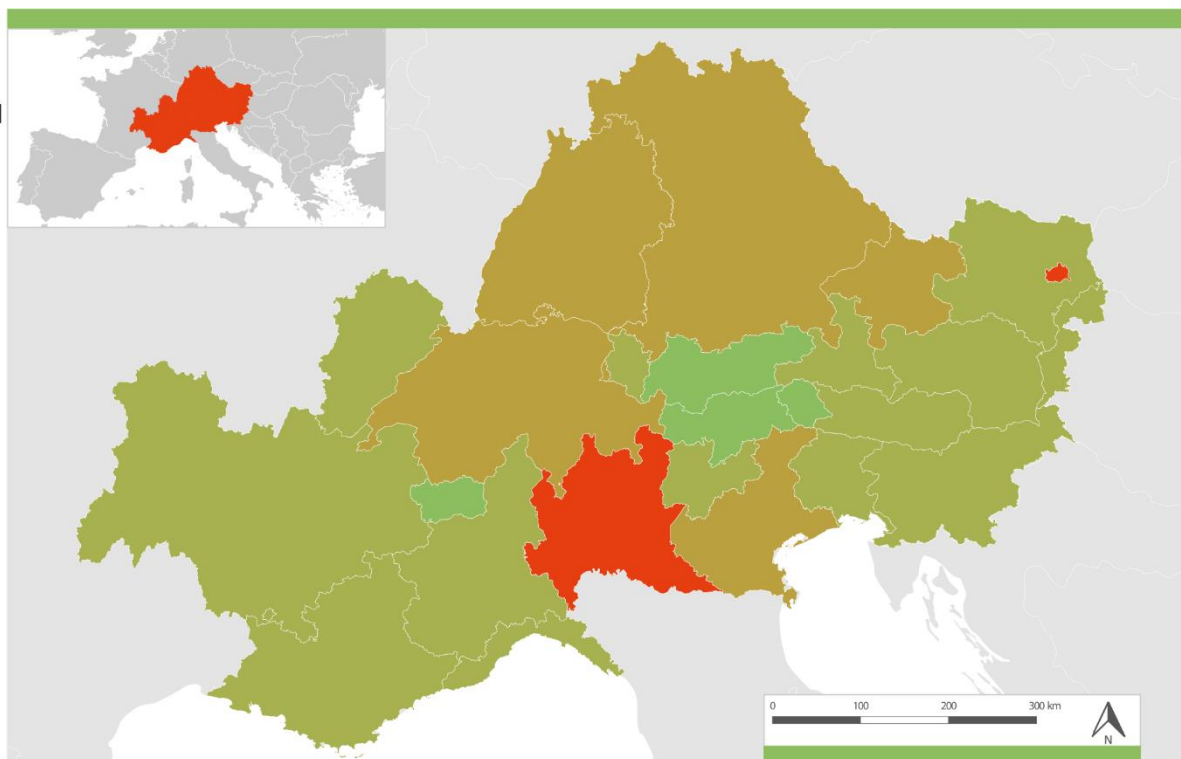
**Figure 11.** Share of heat from renewable energy sources. Data source: EUSALP Energy Survey 2017 and Eurac research elaborations

## HEAT CONSUMPTION PER AREA

### Legend

Annual heat consumption [GWh/km<sup>2</sup>]

- 0 - 1
- 1 - 2
- 2 - 4
- 4 - 5
- 5 - 37.0



Source: Eurac Research

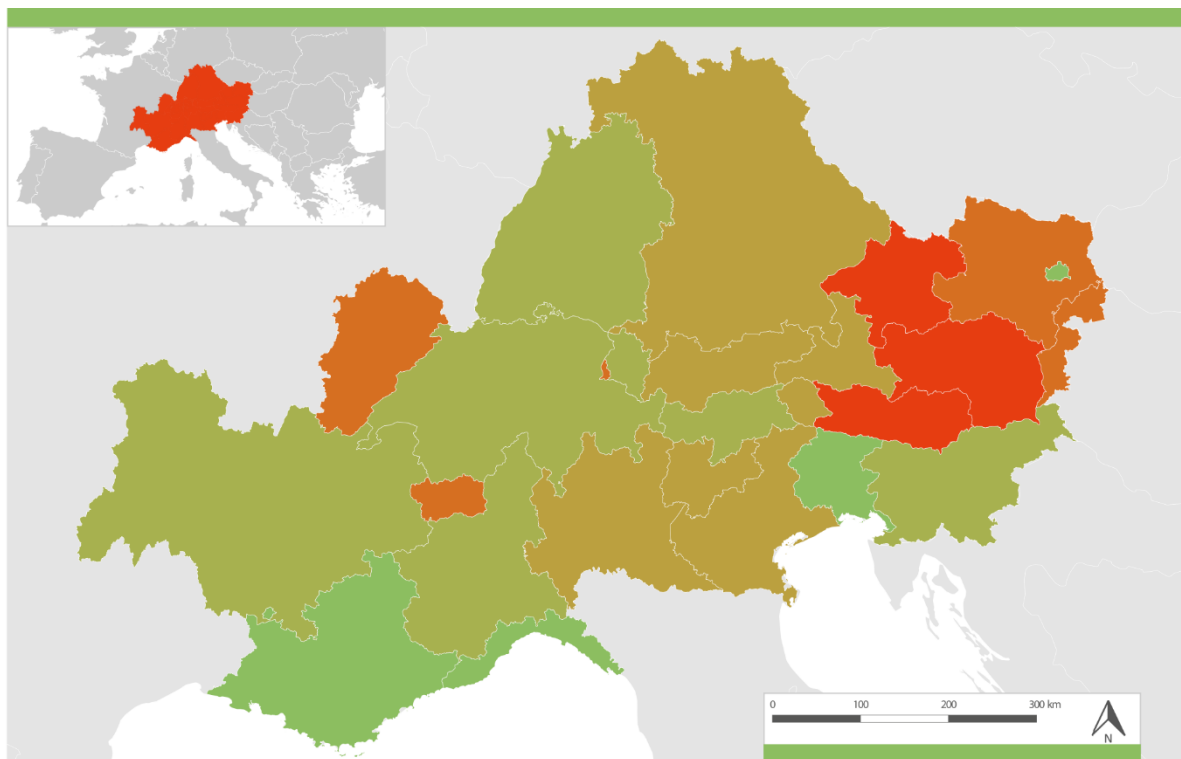
**Figure 12.** Yearly heat consumption per area. Data source: EUSALP Energy Survey 2017

## HEAT CONSUMPTION PER CAPITA

### Legend

Annual heat  
consumption  
per capita [MWh]

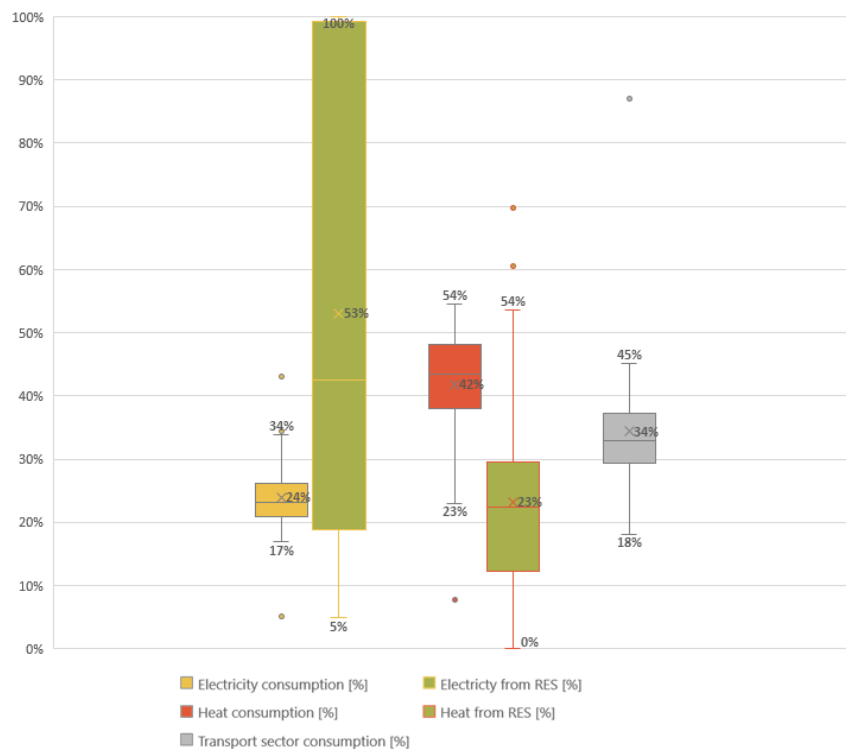
- 0 - 10
- 10 - 12.5
- 12.5 - 15
- 15 - 20
- 20 - 21.5



Source: Eurac Research

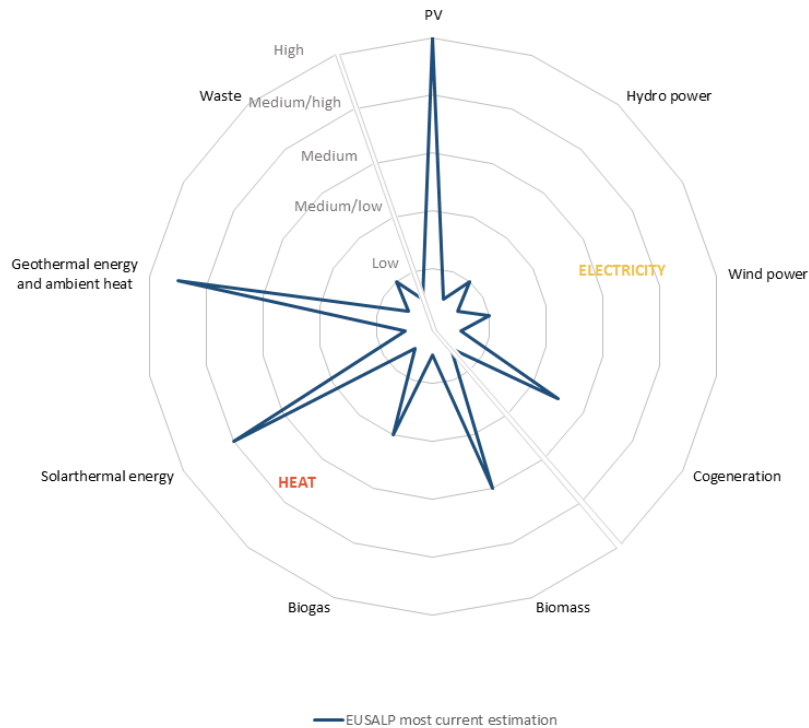
**Figure 13.** Yearly heat consumption per capita. Data source: EUSALP Energy Survey 2017

## DATA DISPERSION



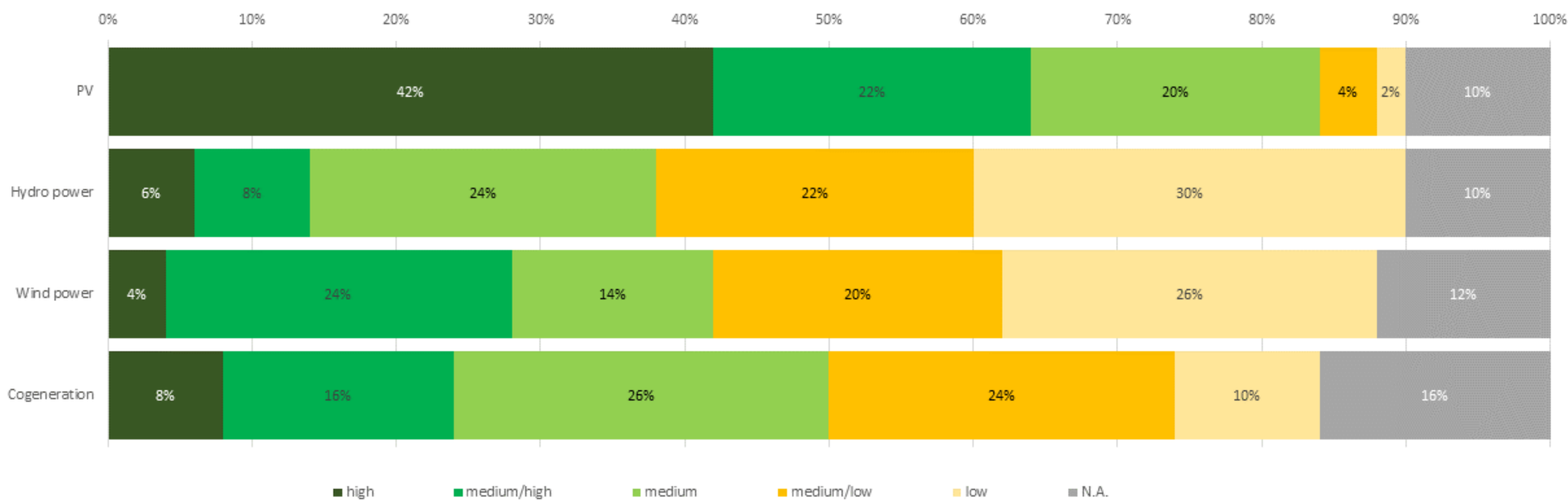
**Figure 15.** Statistic distribution of energy consumptions in the EUSALP. Data source: EUSALP Energy Survey 2017 and Eurac Research elaborations

## PERCEPTION OF REMAINING POTENTIAL OF RES



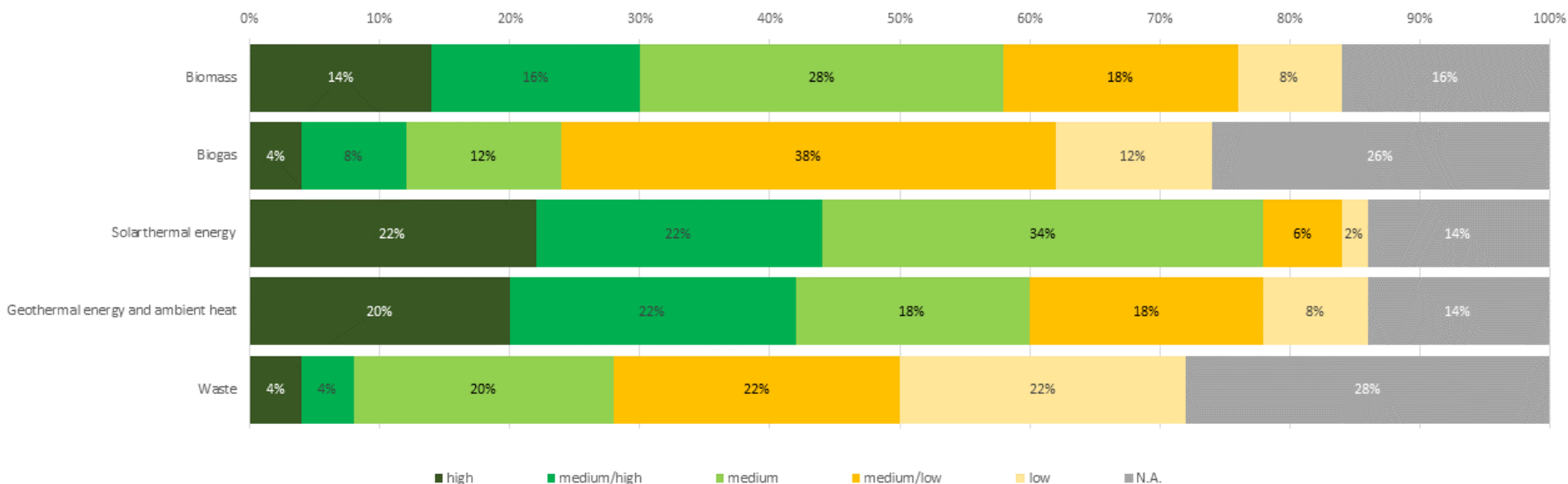
**Figure 16.** Self assessed remaining potentials of RES (most recurrent judgements). Data source: EUSALP Energy Survey 2017

## PERCEPTION OF REMAINING POTENTIAL OF RES IN ELECTRICITY



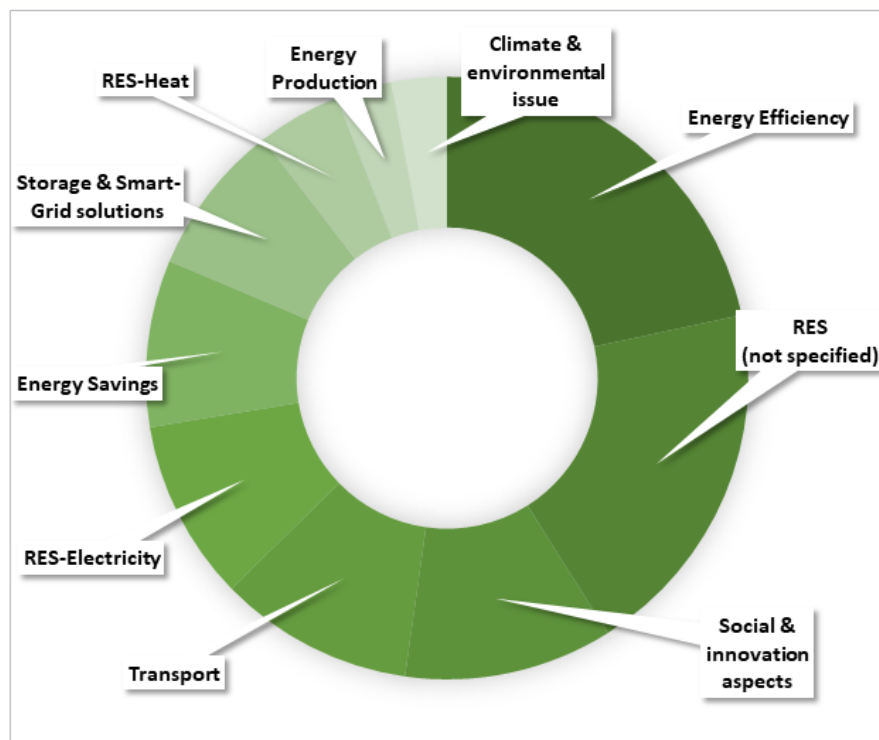
**Figure 17.** Self assessed remaining potentials of RES in electricity production. Data source: EUSALP Energy Survey 2017

## PERCEPTION OF REMAINING POTENTIAL OF RES IN HEATING



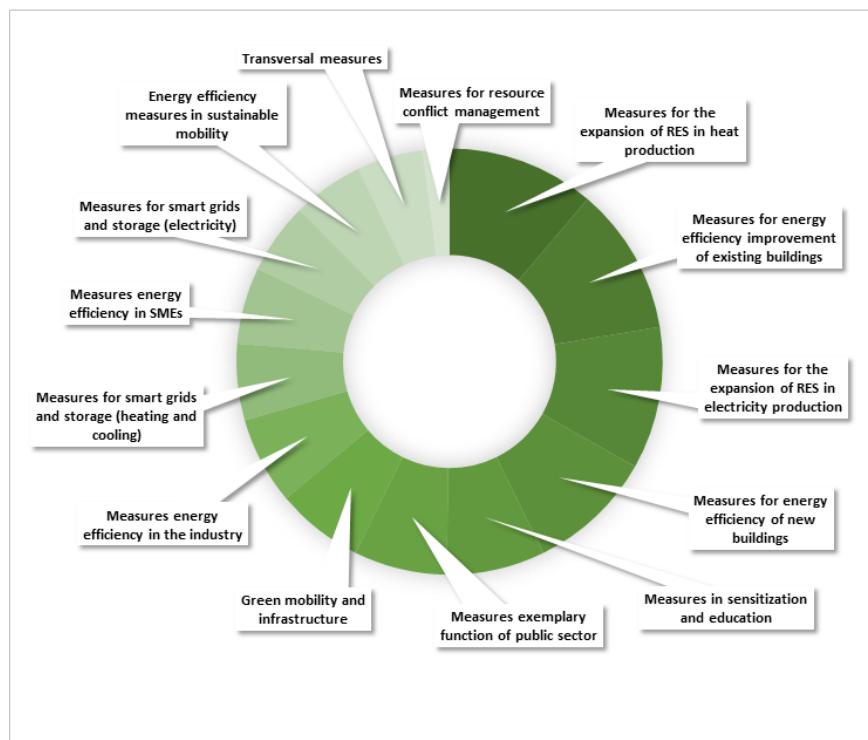
**Figure 18.** Self assessed remaining potentials of RES in heat production. Data source: EUSALP Energy Survey 2017

## FOCUS AREAS OF ENERGY STRATEGIES



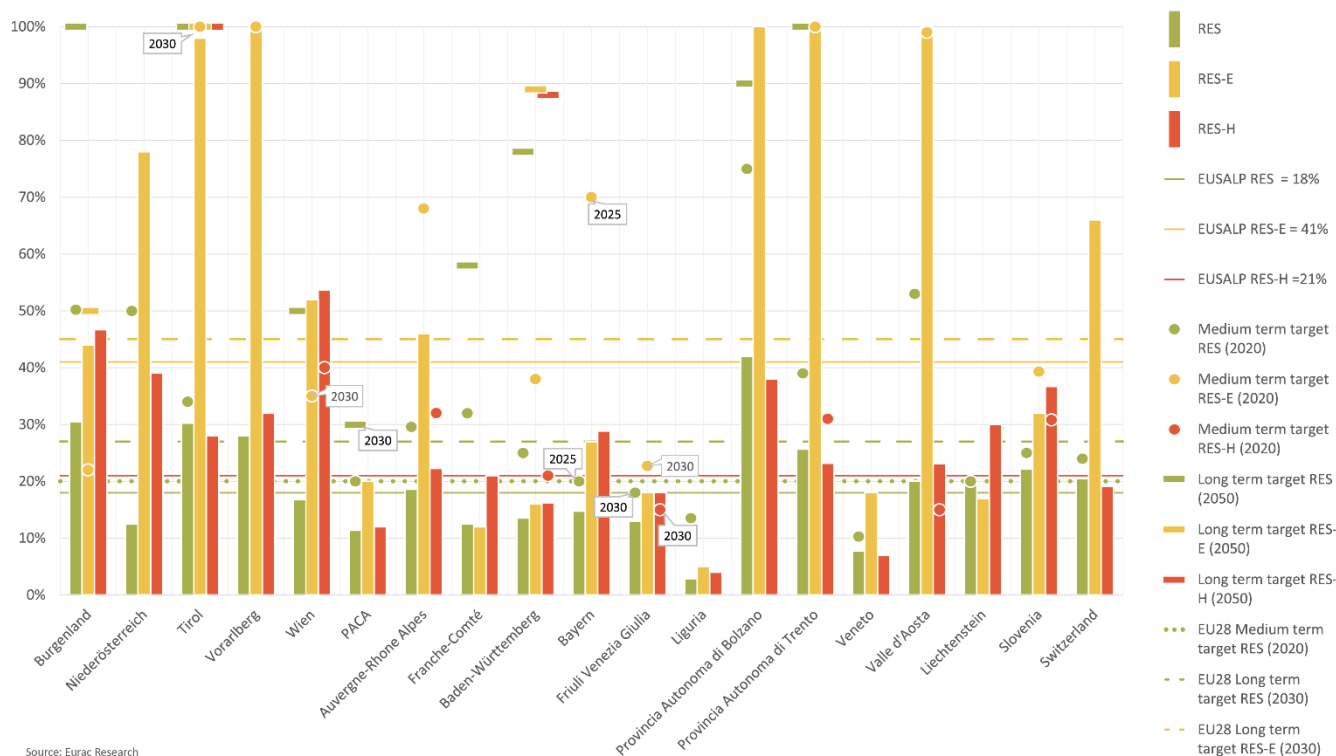
**Figure 19.** Focus areas of energy strategies in the EUSALP area. Data source: EUSALP Energy Survey 2017

# MEASURES OF ENERGY STRATEGIES



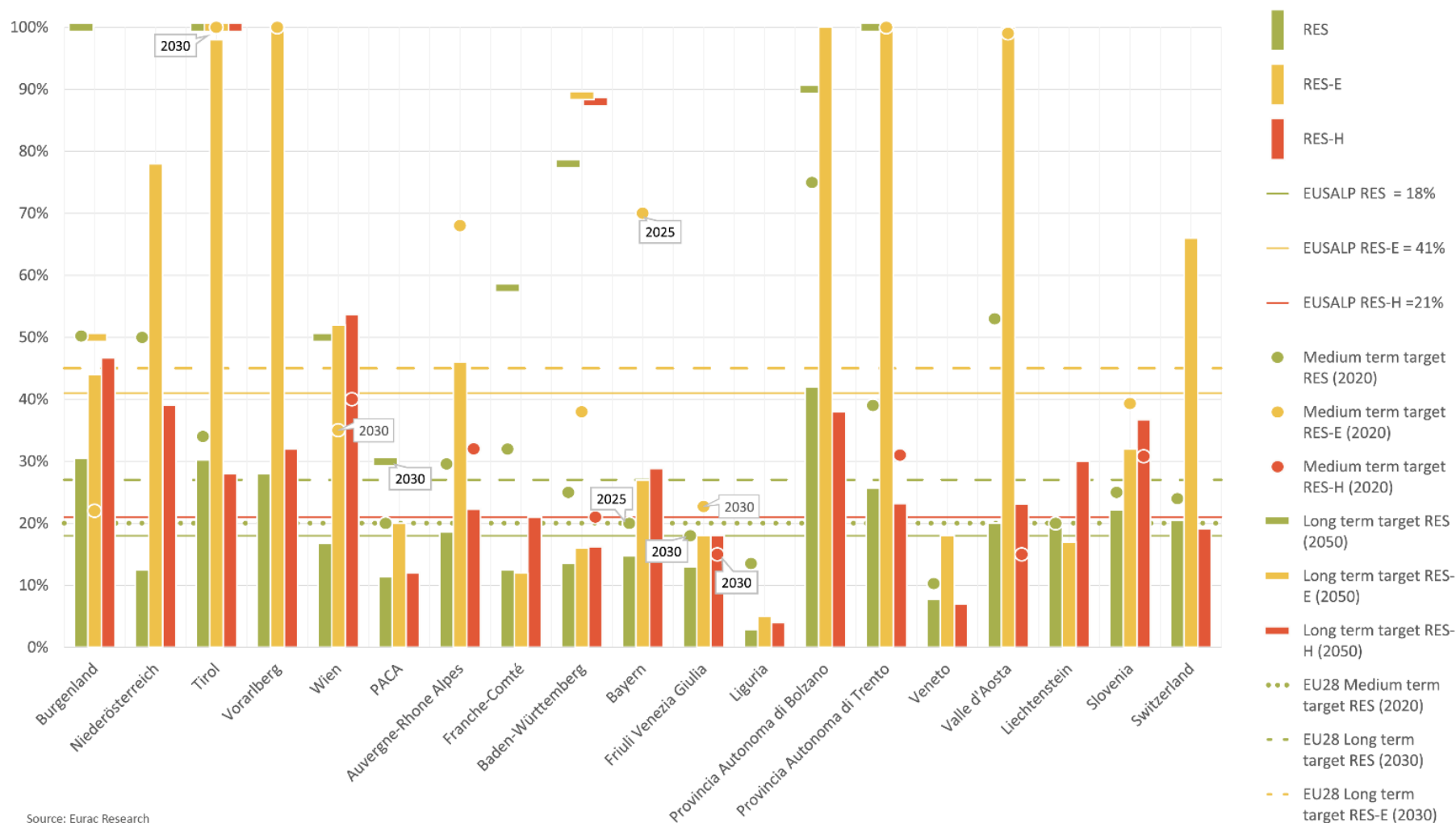
**Figure 20.** Measures in place to achieve the local energy targets. Data source: EUSALP Energy Survey 2017

# MEDIUM AND LONG TERM SHARE OF RES IN EUSALP



**Figure 21.** Status quo and future targets of RES penetration in the EUSALP area. Data source: EUSALP Energy Survey 2017

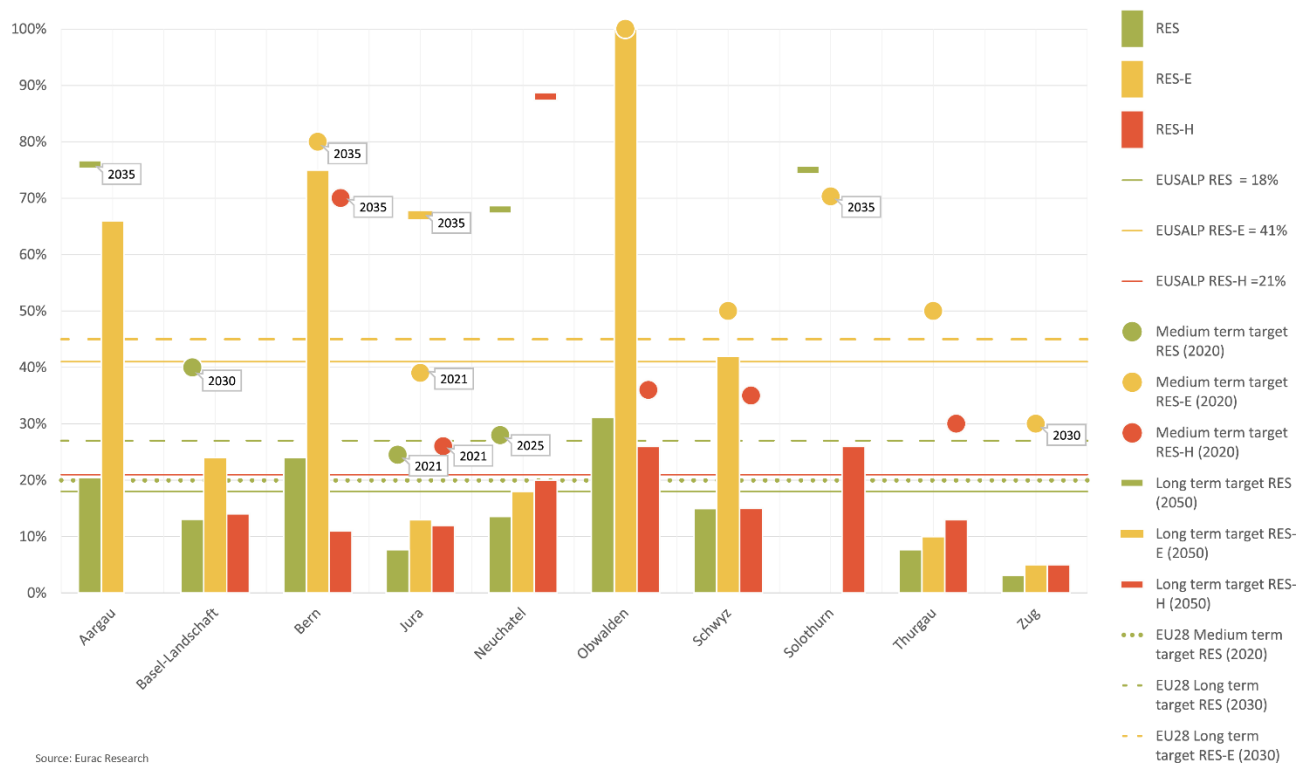
# MEDIUM AND LONG TERM SHARE OF RES IN EUSALP



Source: Eurac Research

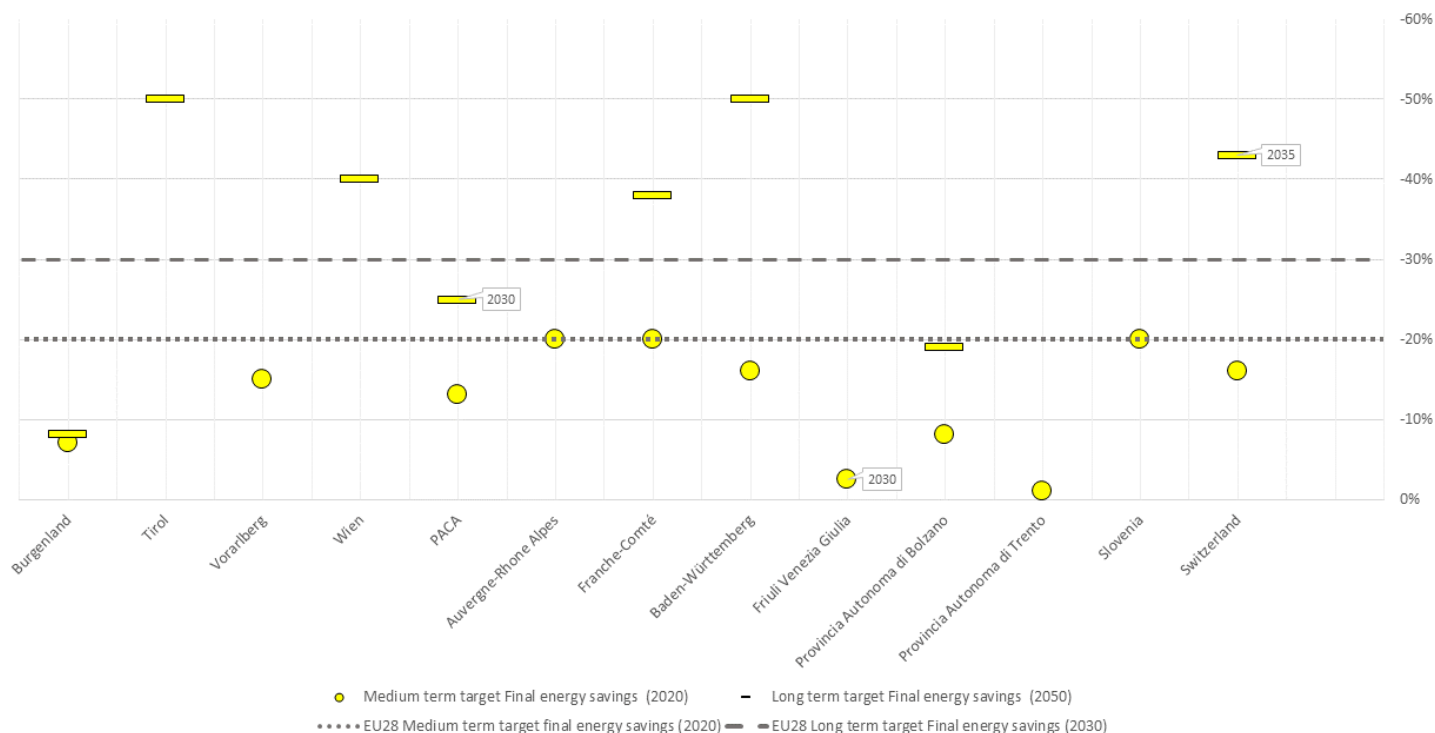
**Figure 21.** Status quo and future targets of RES penetration in the EUSALP area. Data source: EUSALP Energy Survey 2017

# MEDIUM AND LONG TERM SHARE OF RES IN SWISS CANTONS



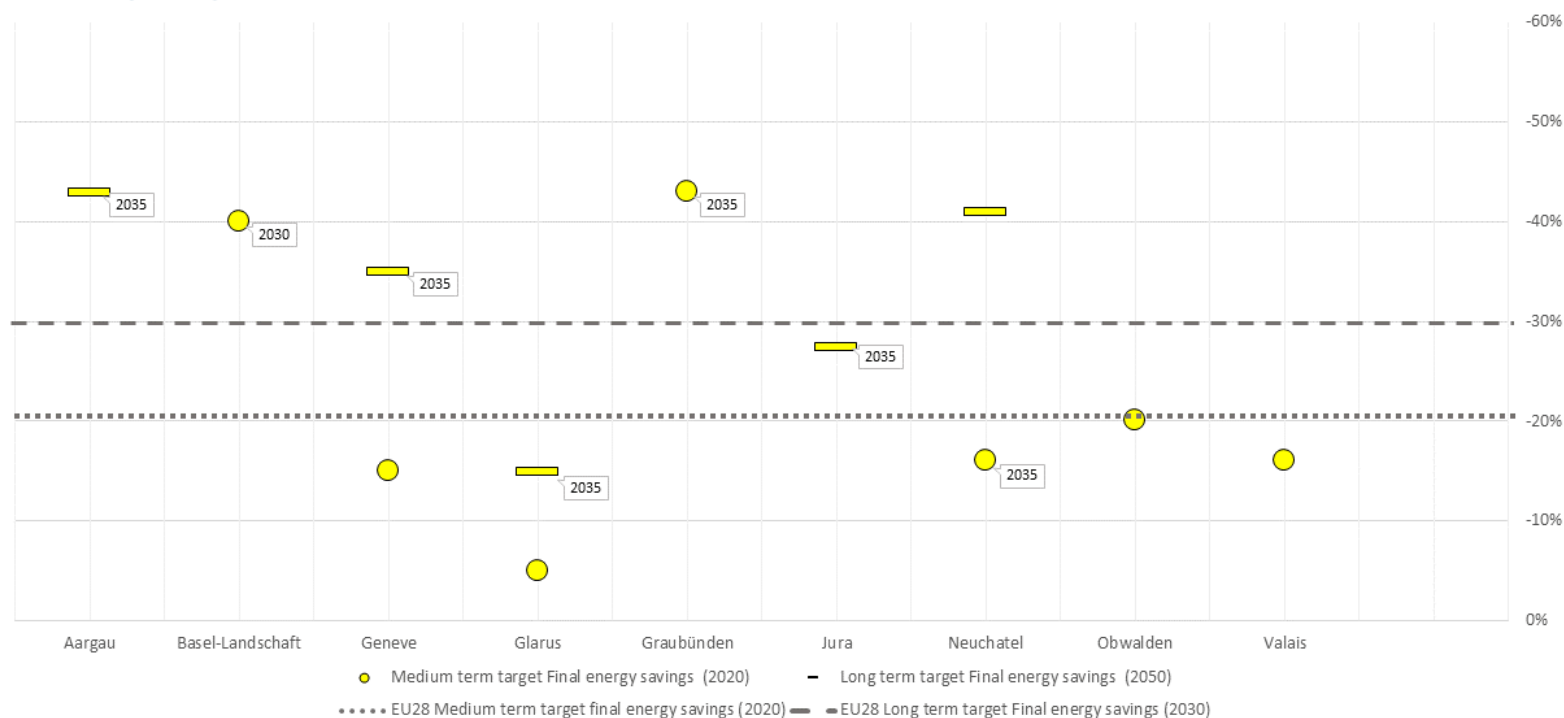
**Figure 21.** Status quo and future targets of RES penetration in the Swiss cantons. Data source: EUSALP Energy Survey 2017

## MEDIUM AND LONG TERM ENERGY SAVINGS EUSALP



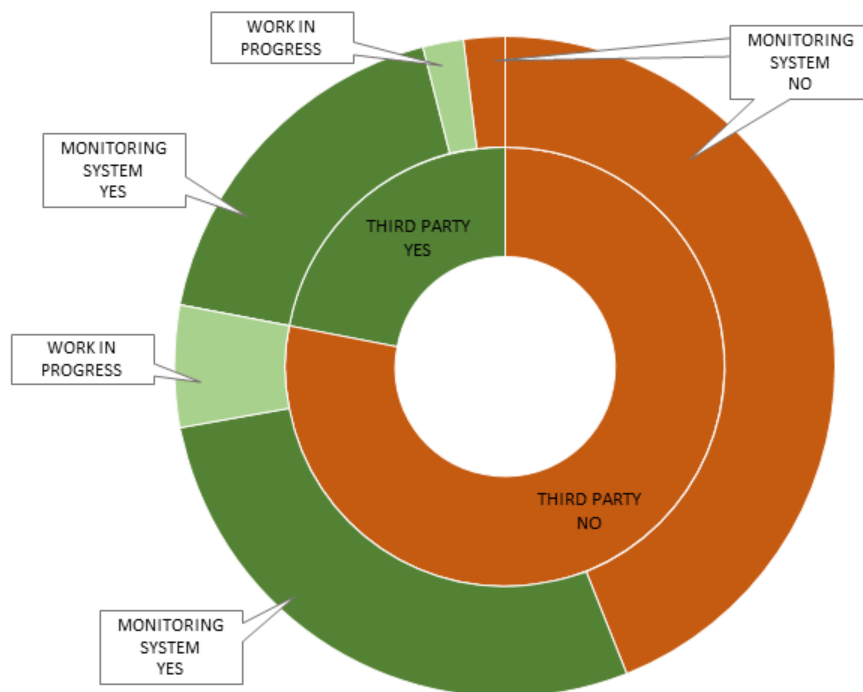
**Figure 23.** Energy savings targets in the EUSALP area. Data source: EUSALP Energy Survey 2017

# MEDIUM AND LONG TERM ENERGY SAVINGS IN SWISS CANTONS



**Figure 24.** Energy savings targets in the Swiss cantons. Data source: EUSALP Energy Survey 2017

## MONITORING SYSTEMS IN EUSALP



**Figure 25.** Monitoring systems and third parties involvement. Data source: EUSALP Energy Survey 2017



## FURTHER DEVELOPMENTS

### Recommendations from the EUSALP Energy Survey 2017 Report

#### 1. Regular update of the EUSALP Energy Report

- ✓ Standardization of energy data collection to permit a comparison among reliable figures
- ✓ Understanding of trends to support energy policy recommendations

#### 2. Deeper investigation of EUSALP Energy Strategies

- ✓ Identification of possible homogeneous clusters to enhance effective cooperation among territories
- ✓ Understanding of local strengths and opportunities to maximize public investment through funding schemes & business models

## CONTACTS

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