Online meeting
4th of March 2021

Peer to Peer learning on energy monitoring systems

PROSPECT2030 | Piemonte Region| Silvio De Nigris

ENERGY DATASETS FOR LOCAL AUTHORITIES IN PIEMONTE - PIEMONTE REGION

The concept and outputs of the Regional Energy Observatory in Piemonte

The schemes for data provision to Municipalities

Workload and availability of data

Information about the processing methods – by Polytechnics of Torino

Concept and goals

REGIONAL ENERGY OBSERVATORY

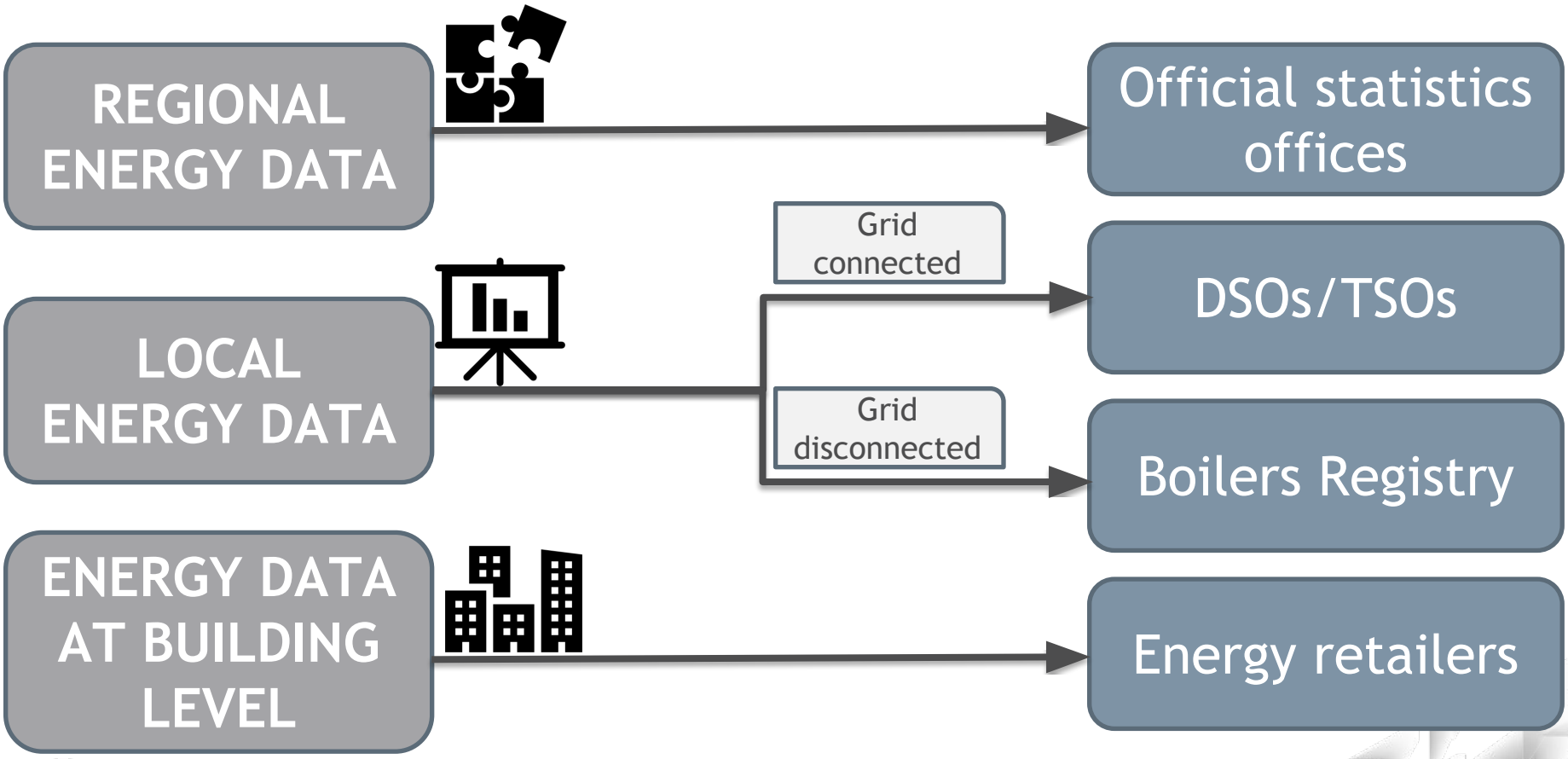
SCOPES:

1. TO SUPPORT THE ENERGY PLANNING ACTIVITIES
2. TO MONITOR THE ENERGY TARGETS SET OR ENVISAGED
3. TO SUPPORT MUNICIPALITIES IN THEIR ENERGY RELATED PLANNING ACTIVITIES

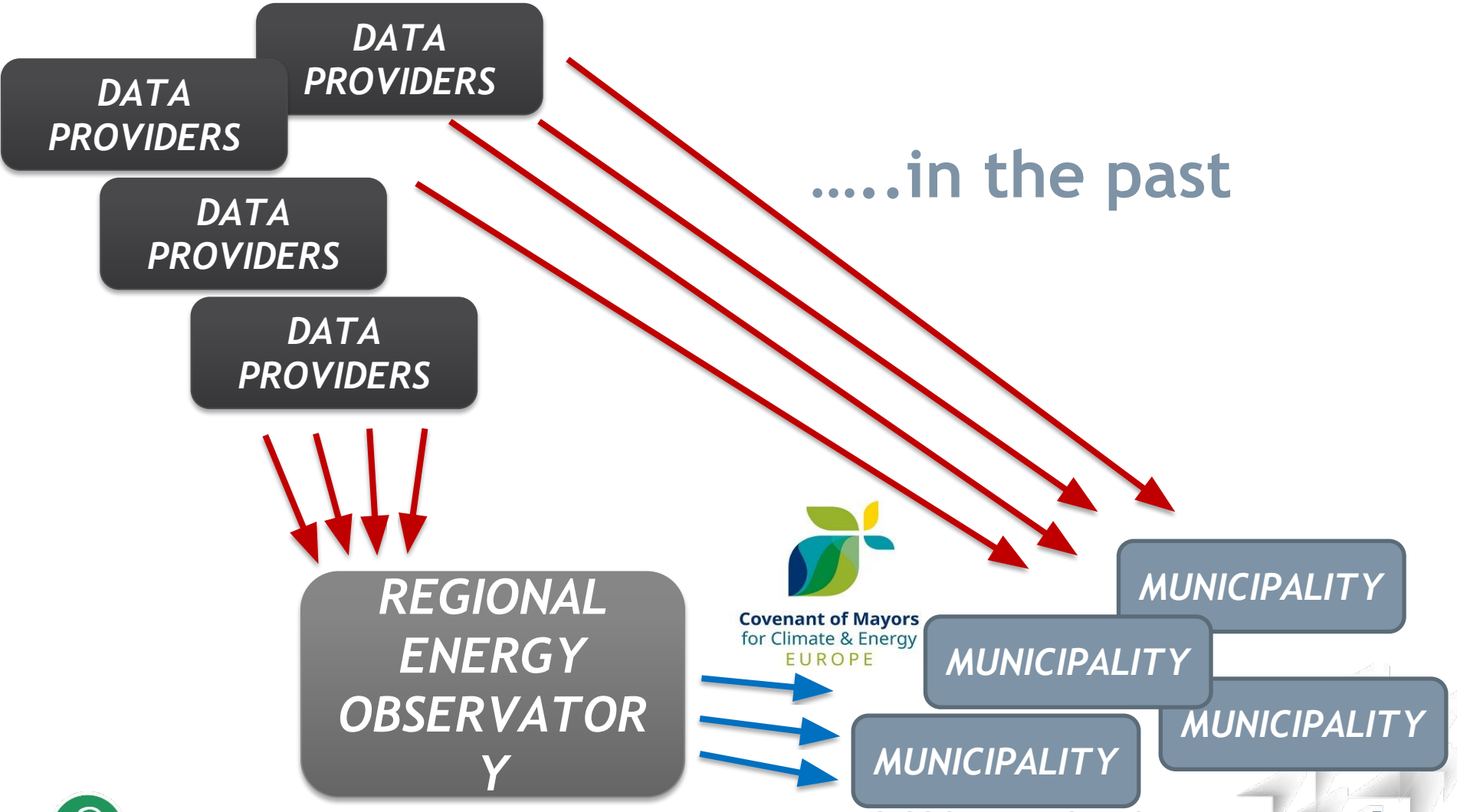
OUTPUTS:

1. NO SPECIFIC
2. REGIONAL ENERGY REPORT
3. FEED UP ONLINE PLATFORMS

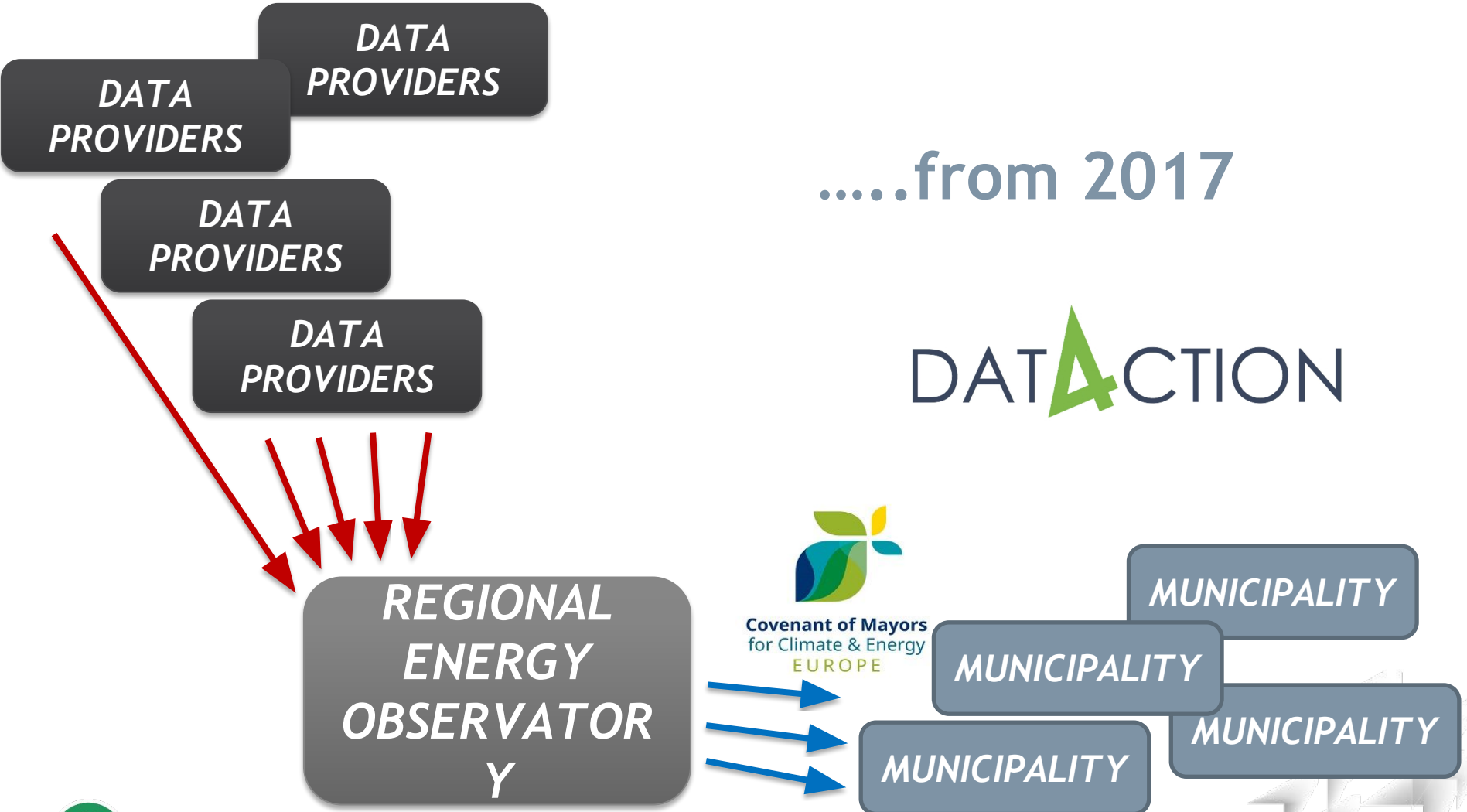
Data collection process



NO COORDINATED PROCESS



COORDINATED PROCESS



.....from 2017

DATACTION

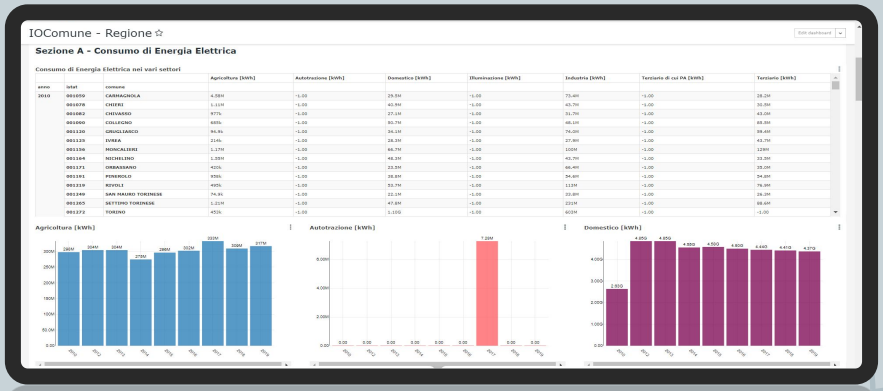
COORDINATED CLOUD PROCESS

DATA PROVIDERS

DATA PROVIDERS

DATA PROVIDERS

DATA PROVIDERS



REGIONAL ENERGY OBSERVATORY

Covenant of Mayors for Climate & Energy EUROPE

MUNICIPALITY

MUNICIPALITY

MUNICIPALITY

MUNICIPALITY

COORDINATED CLOUD EXTENDED PROCESS THANKS TO PROSPECT2030

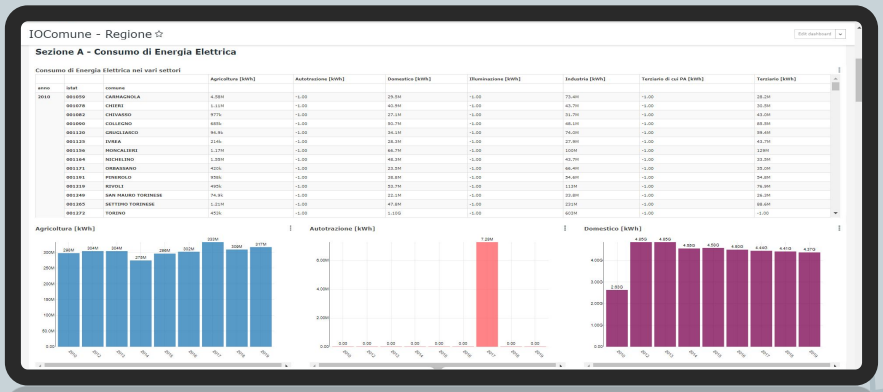
Interreg CENTRAL EUROPE
European Union European Regional Development Fund
PROSPECT2030

DATA PROVIDERS

DATA PROVIDERS

DATA PROVIDERS

DATA PROVIDERS



REGIONAL ENERGY OBSERVATORY

REGIONAL DATABASE

Covenant of Mayors for Climate & Energy EUROPE

MUNICIPALITY

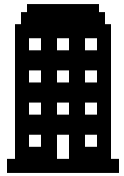
MUNICIPALITY

MUNICIPALITY

MUNICIPALITY

MONTHLY DATA AT BUILDING LEVEL

- Joint procurement procedure for the selection of the energy retailers for the public administration
- Standardization of the obligation of providing energy information for each point of delivery
- The awarded energy retailers are obliged to upload the data in a cloud platform
- This is based on benchmarking approach and provides data processed results (e.g. energy signature, etc...)
- Each Municipality can access its own data/results



MONTHLY DATA AT BUILDING LEVEL

DATA RETAILERS

JOINT PROCUREMENT

REGIONAL ENERGY OBSERVATORY

MUNICIPALITY

MUNICIPALITY

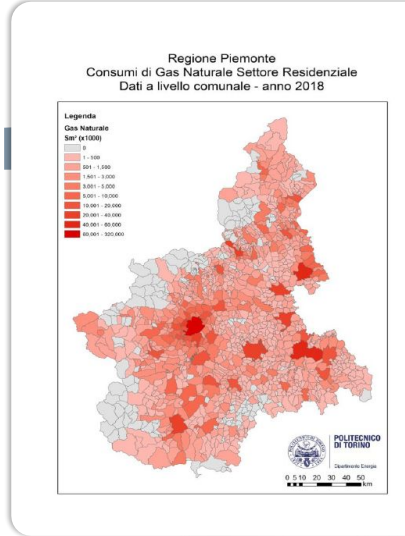
MUNICIPALITY

MUNICIPALITY

AVAILABLE DATASETS

NOWADAYS WE PROVIDE A DETAILED DATASET AT MUNICIPAL LEVEL BROKEN DOWN INTO SECTOR FOR:

- NATURAL GAS – ALL SECTORS: 2018, 2019
- ELECTRICITY – ALL SECTORS: 2010-2019
- OIL PRODUCTS – RESIDENTIAL AND TERTIARY SECTORS: 2015-2019
- THERMAL SOLAR: 2015-2019
- ENERGY PERFORMANCE CERTIFICATES: 2020 ONWAI

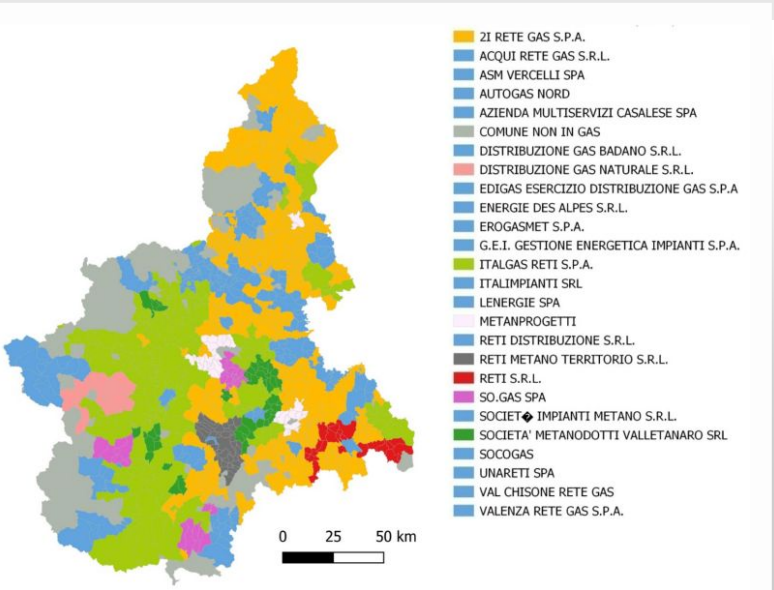


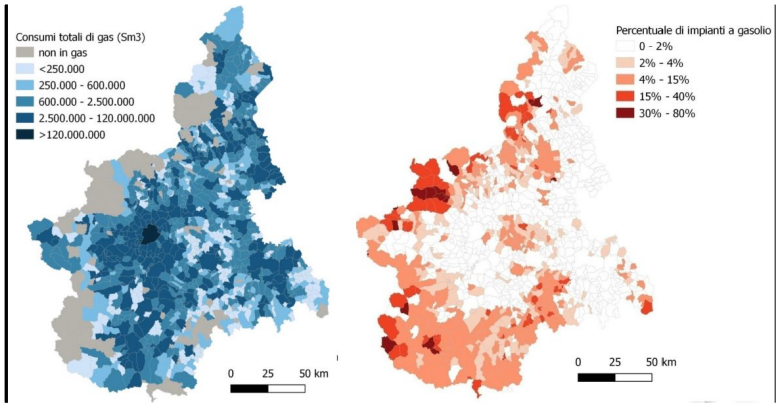
UNDER CONSTRUCTION:

- *DERIVED HEAT FROM DHS: 2015-2019*
- *PHOTOVOLTAIC: 2010-2020*

…..DATA UPDATES WILL COME IN AUTUMN THE LATEST

THE WORKLOAD





1. More than 50 sources of information contacted,
2. Several datasets processed
3. 1200 municipalities

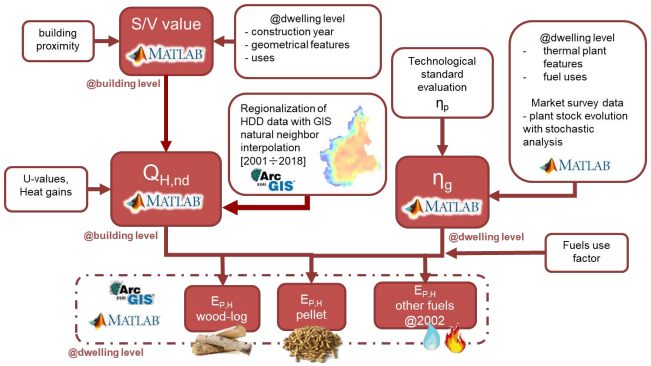
Usual timeframe: 6 month, starting from April to October every year

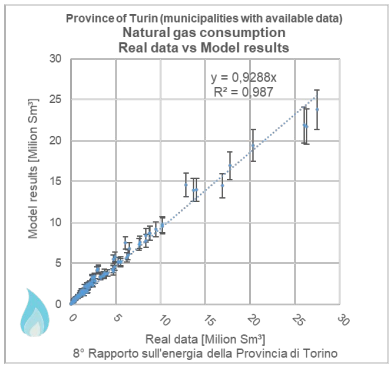
Covenant of Mayors for Climate & Energy EUROPE

THE PROCESSING METHODS

1. EVALUATE AVAILABLE DATA
   - collect them all
   - analyse it
   - validate it
2. DEFINE THE MODEL SCOPE AND USES
3. DEFINE THE MODEL COMPLEXITY

Regione Piemonte PRQA Model. Complex model for scenario assessment and evaluation of residential sector pollutants emissions at regional level | Detailed data on houses and thermal plants for about 2 million houses and local daily temperatures.





PROS
- good for planning and policy making

CONS
- estimated consumption
- it needs real dataset to be validated

NATURAL GAS | DATA COLLECTION

- GOAL | NATURAL GAS FOR SECTOR AT MUNICIPALITY LEVEL
- DATA OWNER | 26 NATURAL GAS DISTRIBUTORS
- DATA DETAIL | MUNICIPALITY LEVEL
- DATA AVAILABILITY AND QUALITY | NOT OMOGENEOUS

USES	SECTORS	USERS
cooking heating cooling	residential (A)	houses (a)
		apartment block (b)
	tertiary (B+C)	public services (c)
		other (e)
tech.	industry (D+E+F)	

55% NATURAL GAS Sm^3
275 MUNICIPALITIES

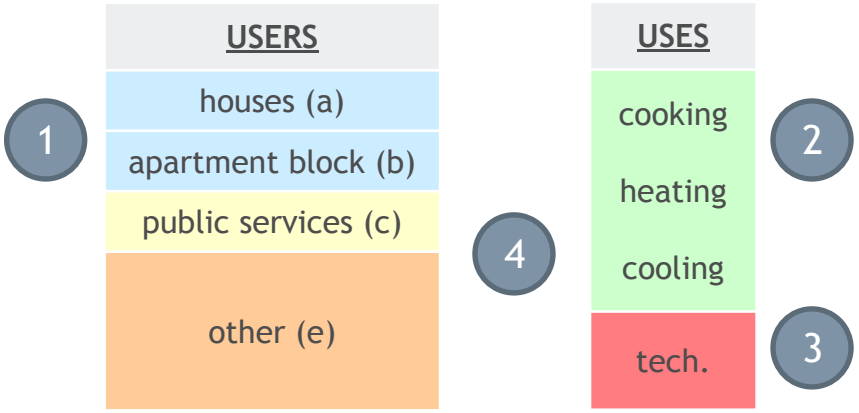
MISSING DATA

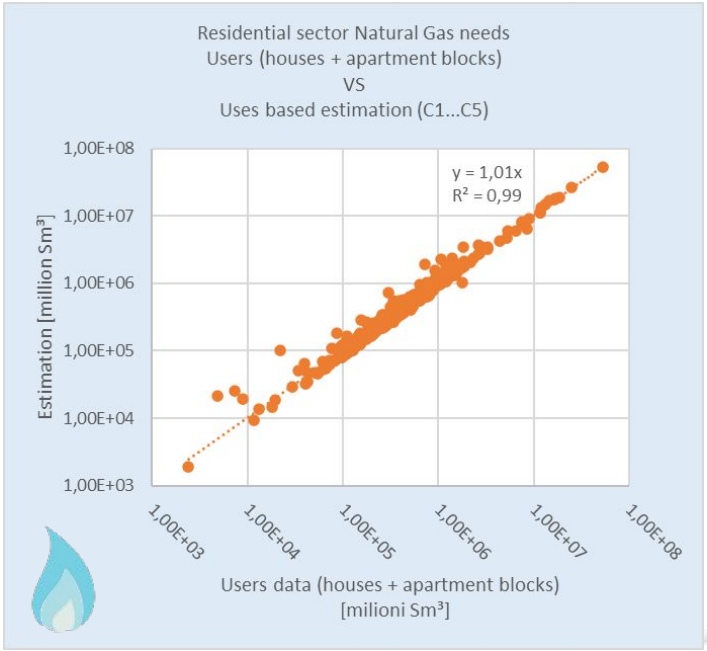
	2019		
DISTR. ID	SECTOR	USERS	USES
#01			X
#02	X	X	X
#03	X	X	X
#04	X	X	X
#05	X	X	X
#06		X	X
#07	X	X	X
#08	X	X	X
#09			X
#10		X	X
#11		X	X
#12			X
#13			X
#14	X	X	X
#15			X
#16		X	X
#17	X	X	X
#18	X	X	X
#19	X	X	X
#20		X	X
#21			
#22			X
#23	X	X	X
#24		X	X
#25	X	X	X
#26	X	X	X

NATURAL GAS | ANALYSIS AND METHOD

- THE DATA BY SECTOR WERE NOT CONFIDENT WITH DATA BY USES AND USERS
- THE DATA BY SECTOR PRESENTED MANY CRITICALITIES AND ERRORS

1. RESIDENTIAL DATA FROM USERS WHERE AIVALABLE
2. RESIDENTIAL ESTIMATION MODEL FROM USES BASED ON % OF SECTOR SHARE AND INHABITANTS
3. INDUSTRY NEEDS BASED ON TECH USES VALUE
4. TERTIARY ESTIMATION



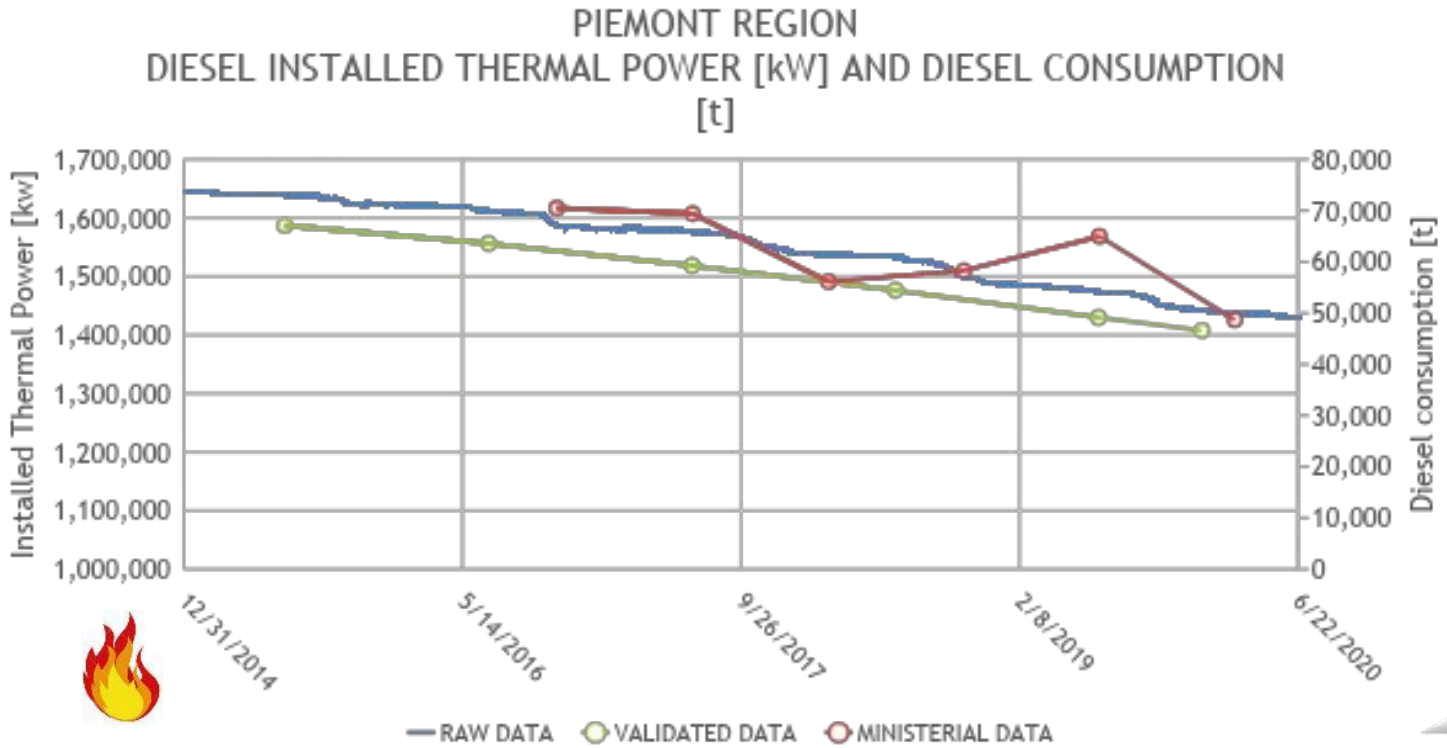


DIESEL AND LPG| DATA ANALYSIS

- GOAL | DIESEL USES FOR CIVIL SECTOR AT MUNICIPALITY LEVEL
- DIESEL DATA OWNER | MINISTERIAL DATA
- DIESEL DATA DETAIL | ANNUAL @ REGIONAL LEVEL

MODEL DATA INPUT

- CADASTRE OF THERMAL PLANTS - OWNER | REGION
- CADASTRE OF THERMAL PLANTS - DATA DETAIL | SINGLE PLANT



DIESEL AND LPG| PROCESSING METHOD

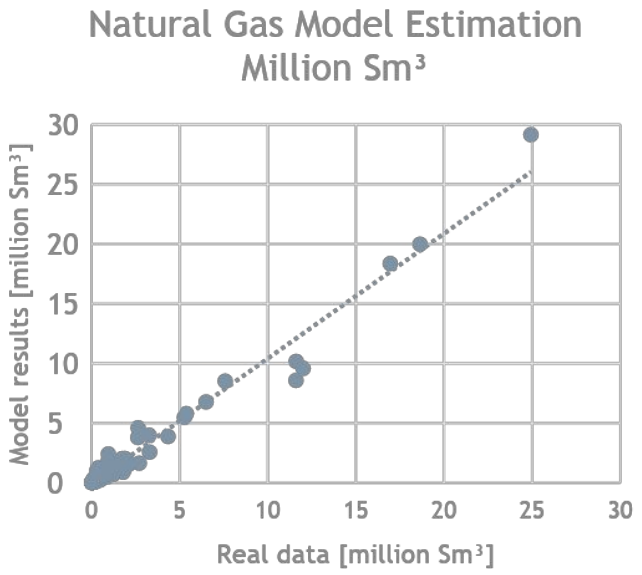
1. ANNUAL REGIONAL CONSUMPTION
2. INSTALLED DIESEL THERMAL POWER @ MUNICIPALITY LEVEL (ITP)
3. DEFINITION OF DIESEL CONSUMPTION (DC) PROXY BASED ON:

   - Design External Temperature (DET)
   - Degree Day (DD)

   ITP depends on DET and houses energy efficiency (EP) ITP≈(20-DET)*EP
   DC depends on DD and houses energy efficiency DC ≈DD*EP

   - Proxy: (ITP/DET)*DD

4. MODEL VALIDATION WITH NATURAL GAS DATA
5. MODEL APPLICATION [2015 to 2019]



SOLAR THERMAL | PROCESSING METHOD

1. THERMAL PLANT CADASTRE WITH INSTALLED SINGLE SOLAR THERMAL PLANT «AREA»

2. DEEP DATA CLEANING PROCESS
   - 28.400 SOLAR THERMAL PLANT
   - ~1.000 WRONG DATA
     - 50% OF ORIGINAL GROSS AREA