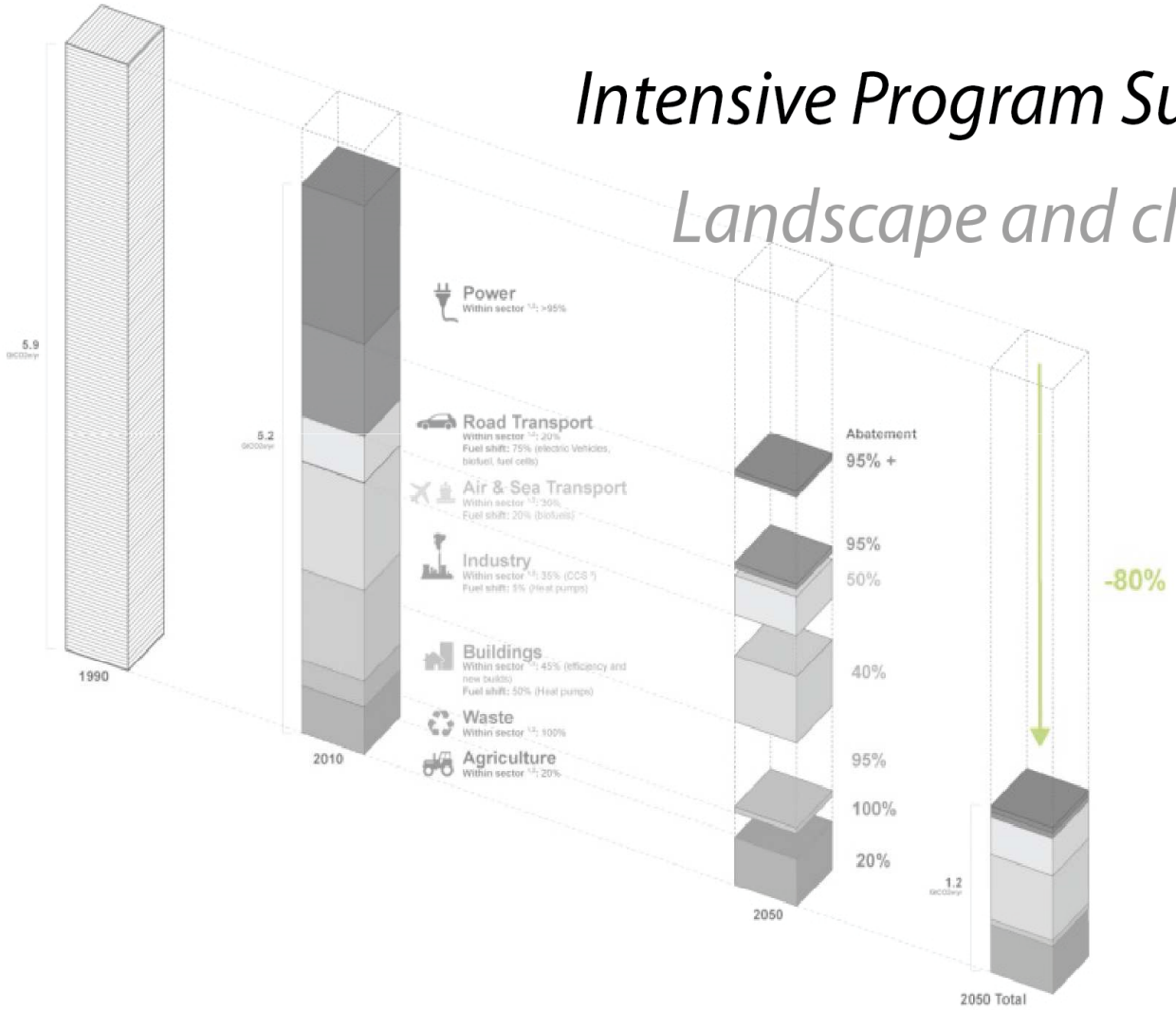
Intensive Program Summer School

Landscape and climate change

Olot - Catalunya - 9/21 Juli 2012



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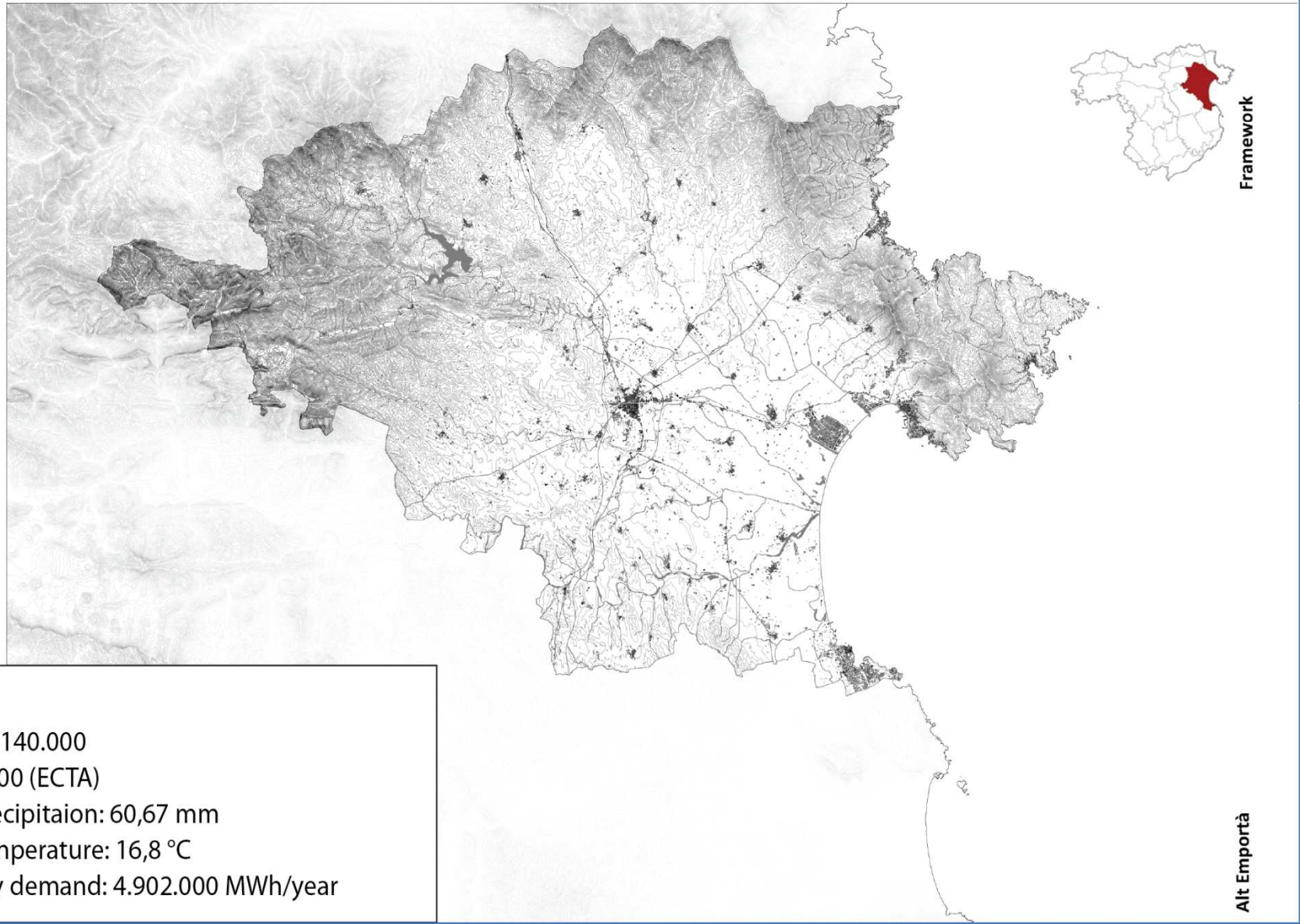

2012

Population: 140.000
Turists: 20.000 (ECTA)
Medium precipitaion: 60,67 mm
Medium temperature: 16,8 °C
Total energy demand: 4.902.000 MWh/year

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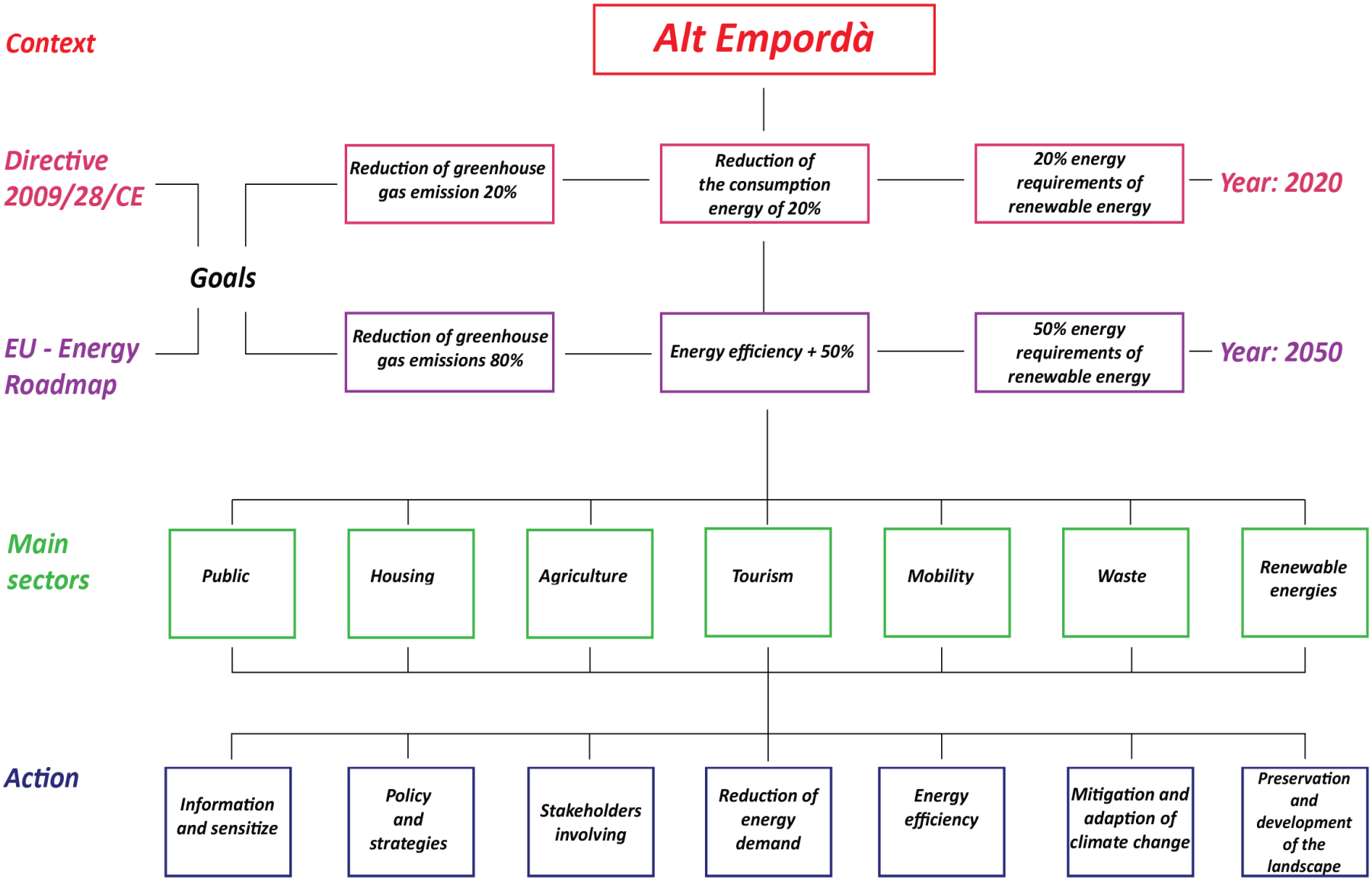
Scenaries 1 - Low	Scenaries 2 - High
Population +14%	Population +40%
Tourists +20%	Tourists +30%
Medium precipitaion -0,3%	Medium precipitaion -3,5%
Medium temperature +3,6%	Medium temperature +4,8%
Total energy demand +14%	Total energy demand +84%

conceptual scheme



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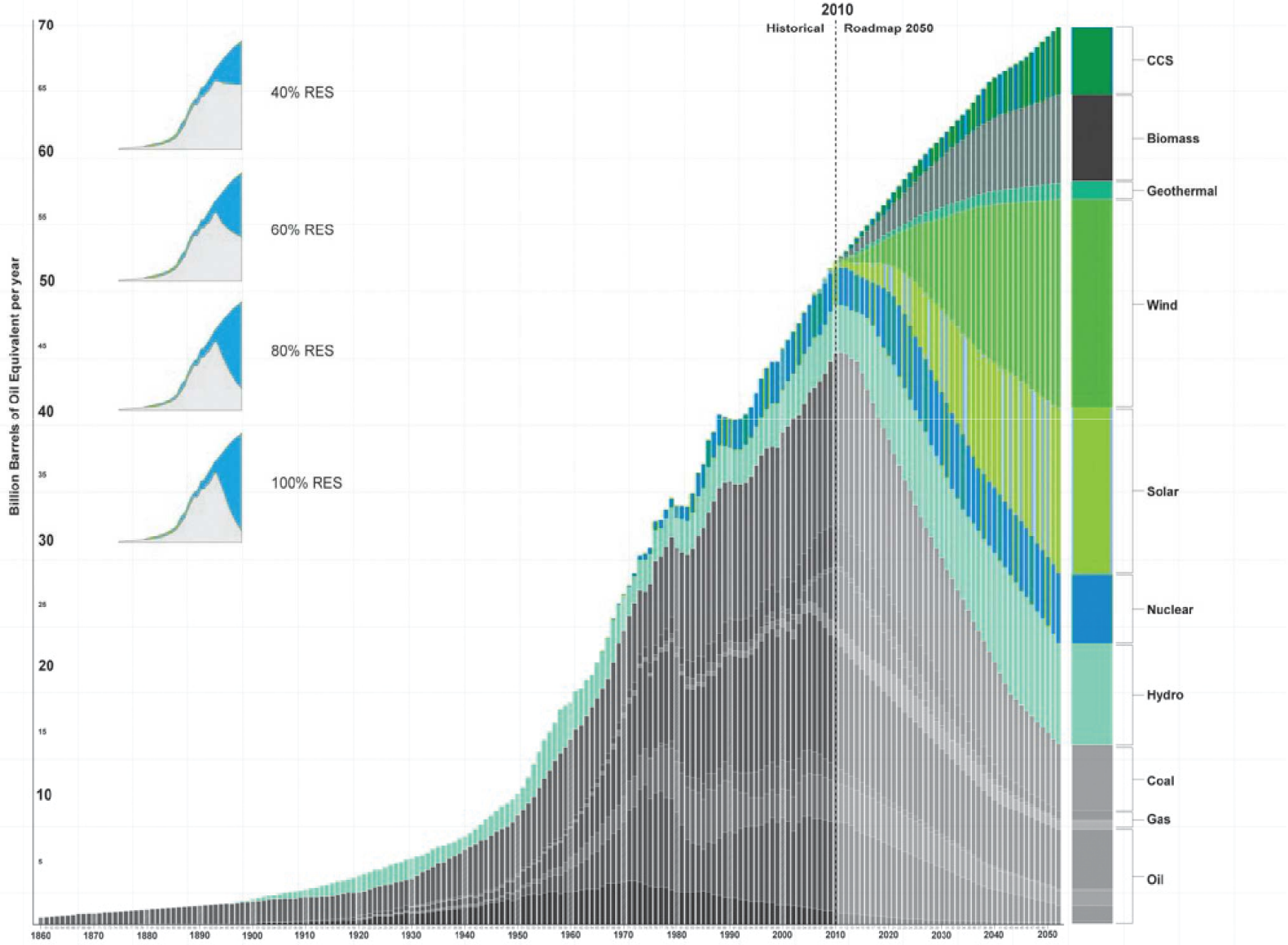
Energy Roadmap



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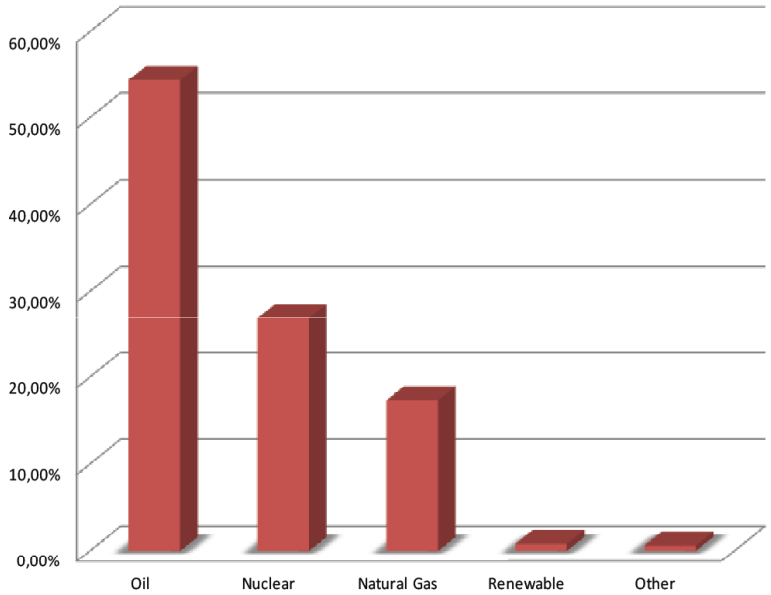
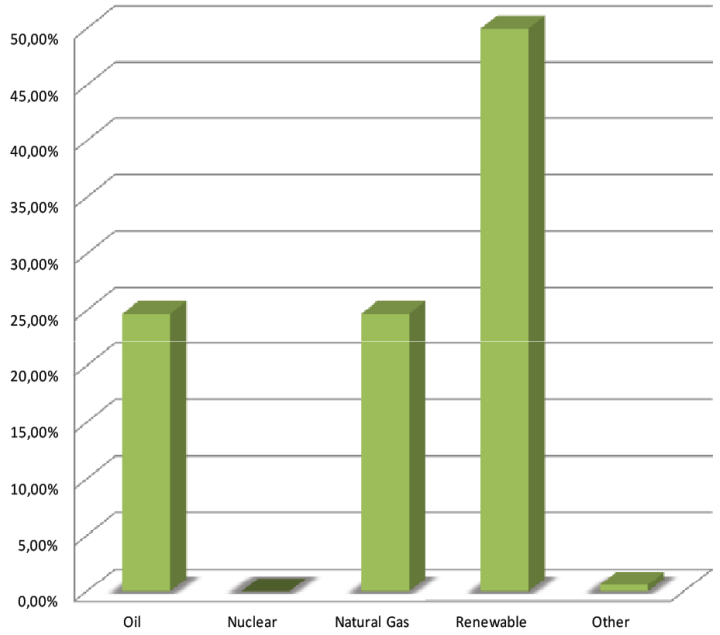
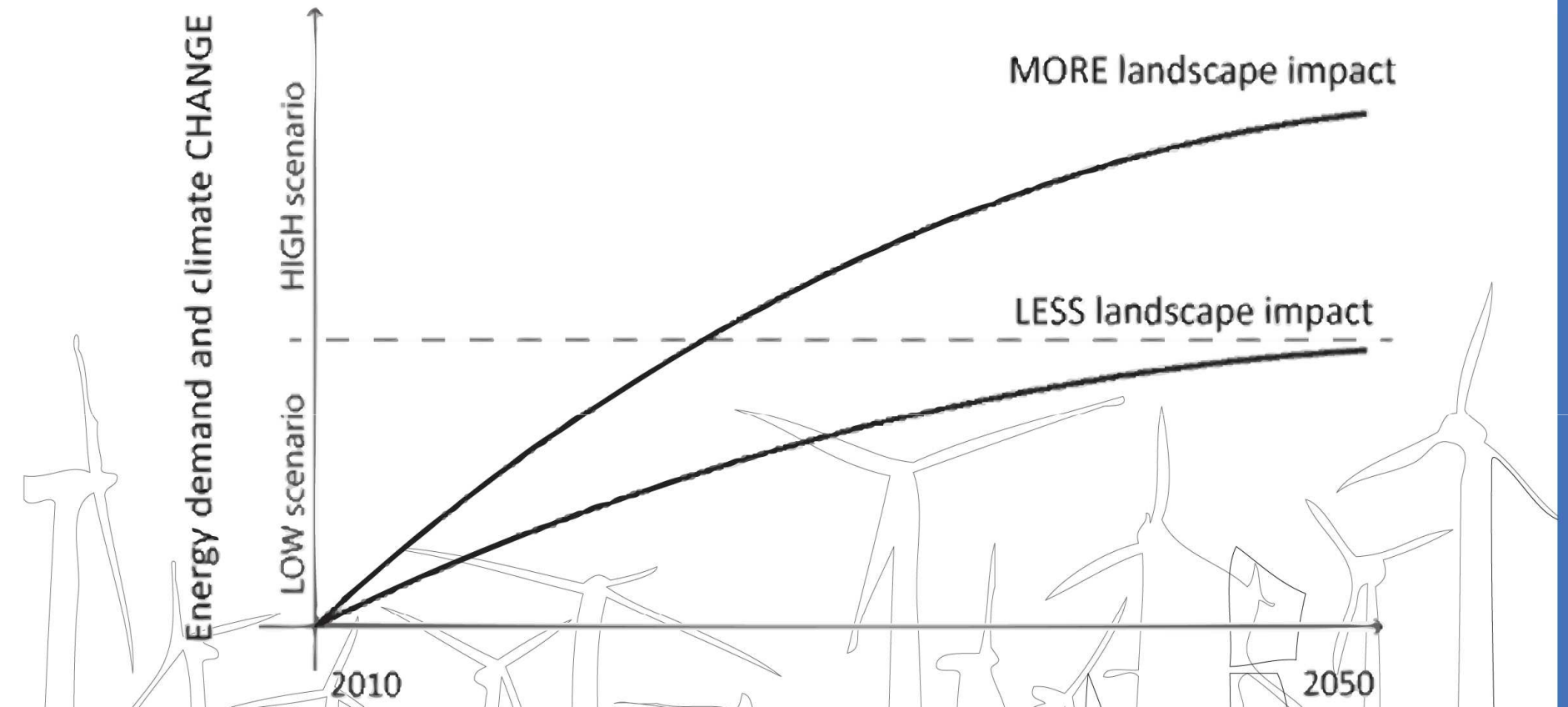
Total Energy Demand at 2012
Tot: 4.902.000 MWh/year



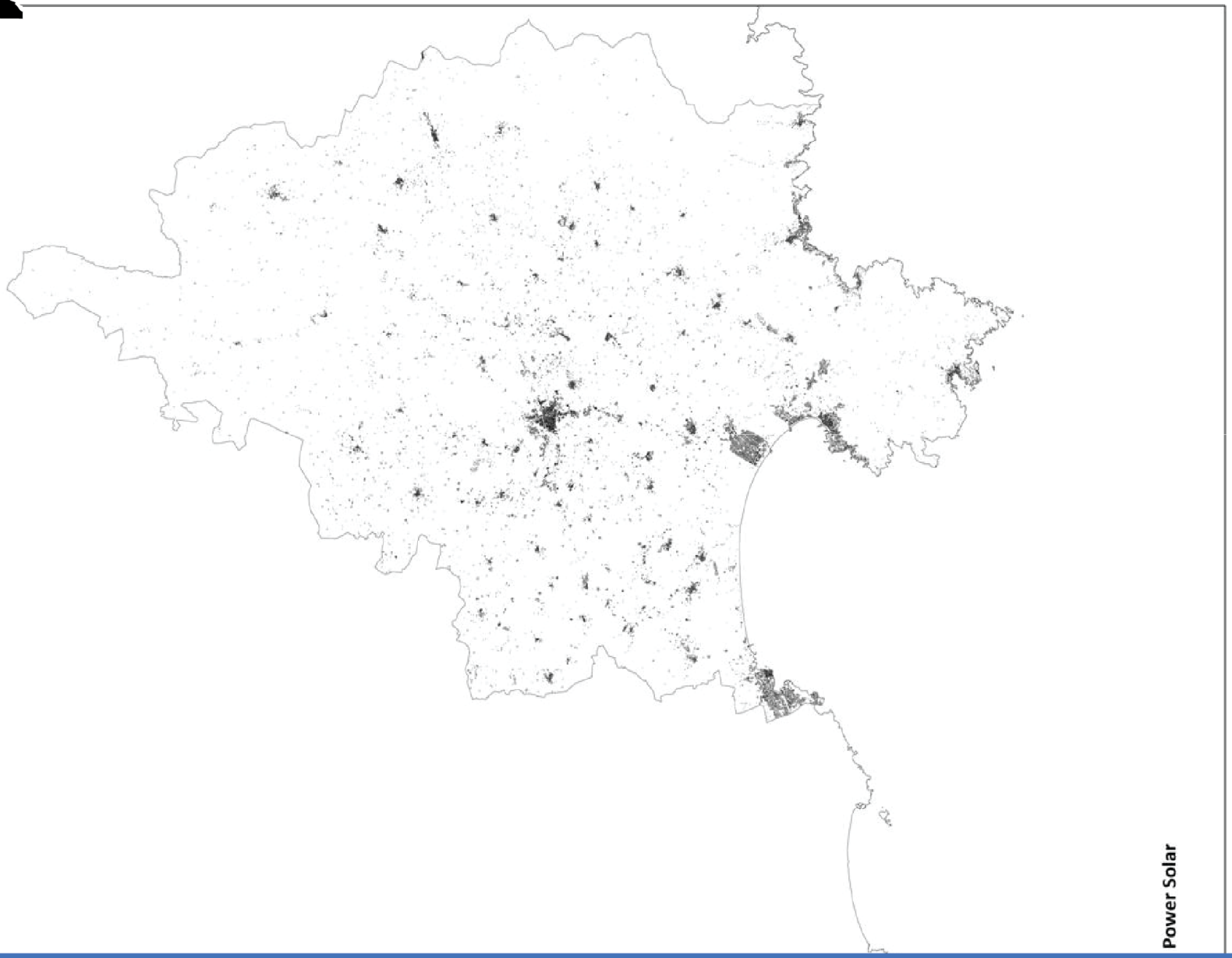
+50% energy saving

Total Energy Demand at 2050
Tot: 2.451.000MW/h/year





photovoltaic ***eolic*** ***biomass***



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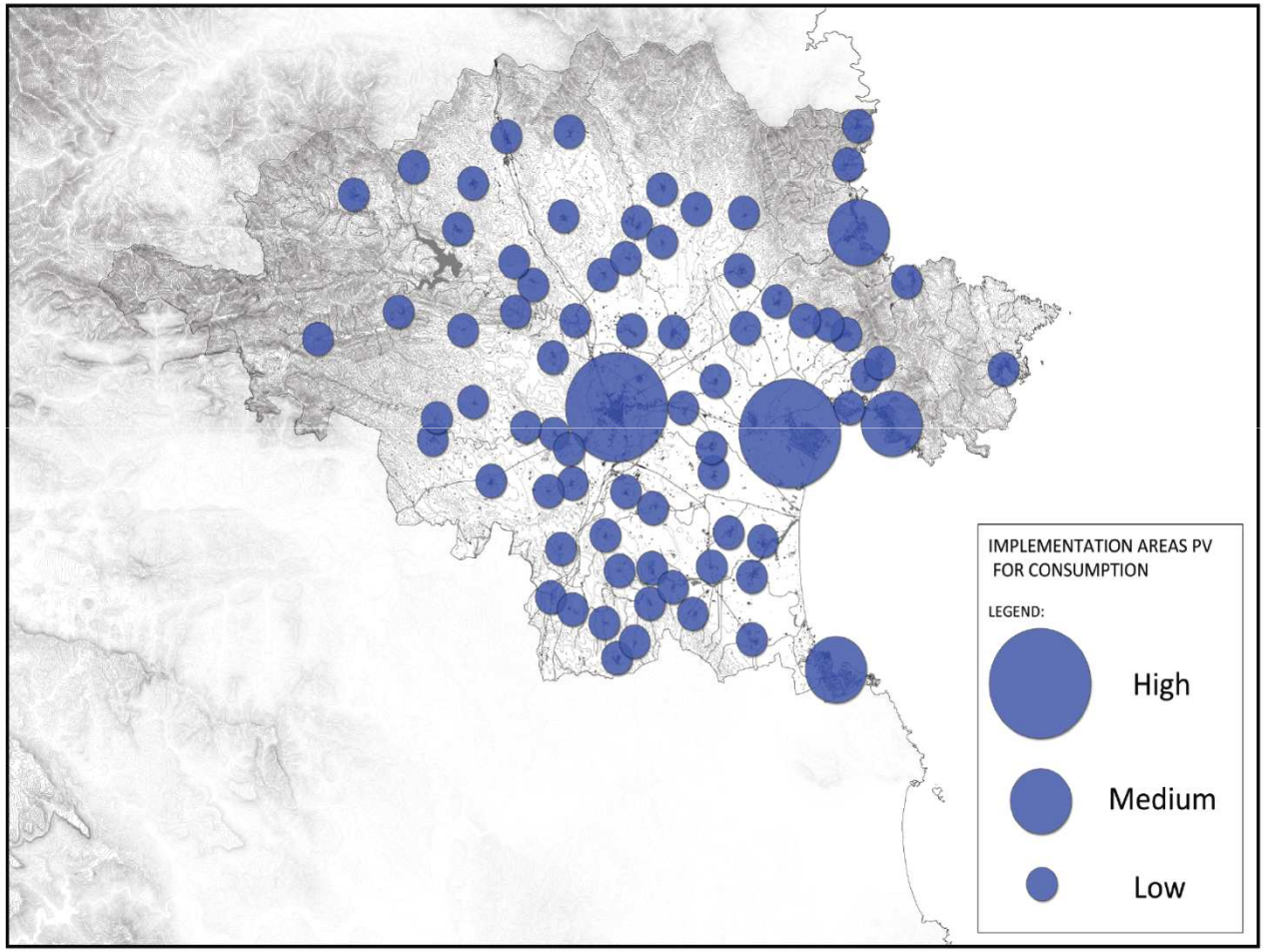

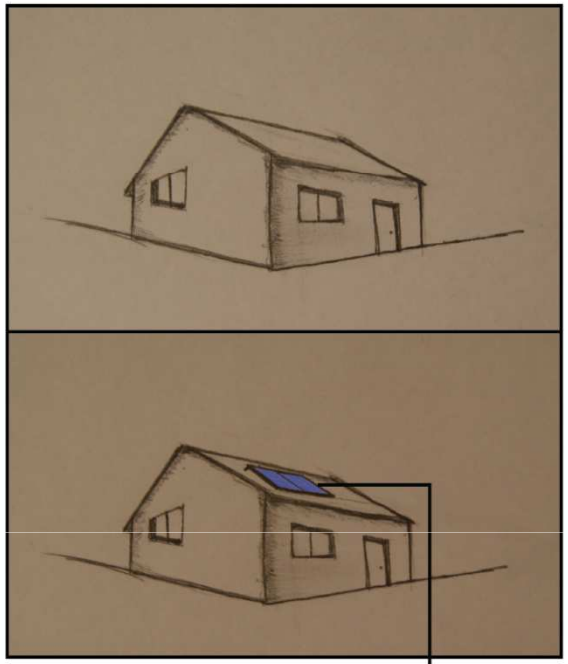

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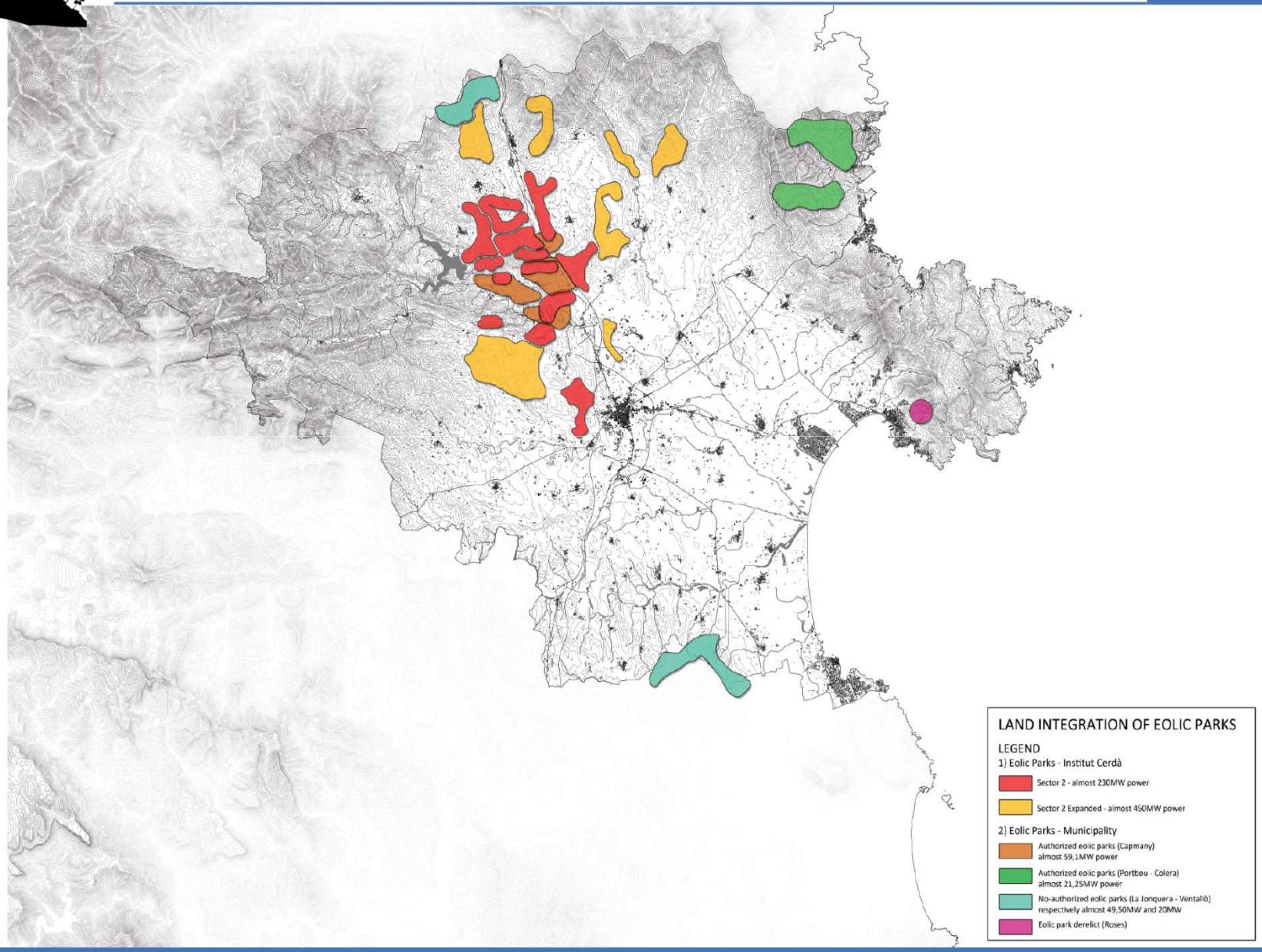
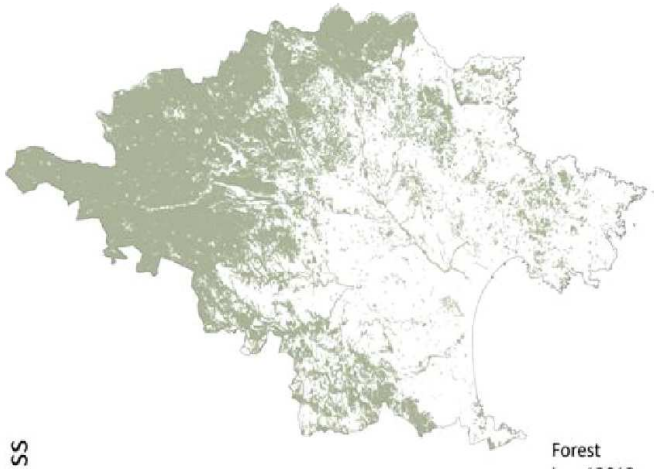
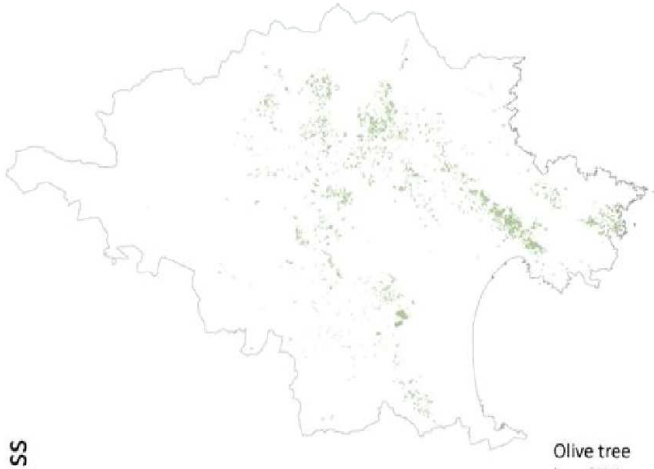

LAND INTEGRATION OF EOLIC PARKS
LEGEND
1) Eolic Parks - Institut Cerdà
Sector 2 - almost 230MW power
Sector 2 Expanded - almost 450MW power
2) Eolic Parks - Municipality
Authorized eolic parks (Capmany) almost 59,1MW power
Authorized eolic parks (Portbou - Colera) almost 21,25MW power
No-authorized eolic parks (La Jonquera - Ventalló) respectively almost 49,50MW and 20MW
Eolic park derelict (Roses)

potential energy: Biomass - Biogas



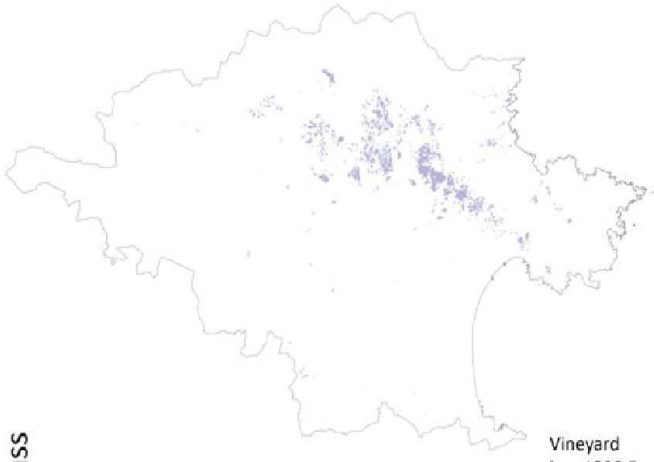
Biomass

Forest
ha= 13813
t/ha anno biomassa= 29007
H.P.(Mj/kg)= 12
MWh= 33842



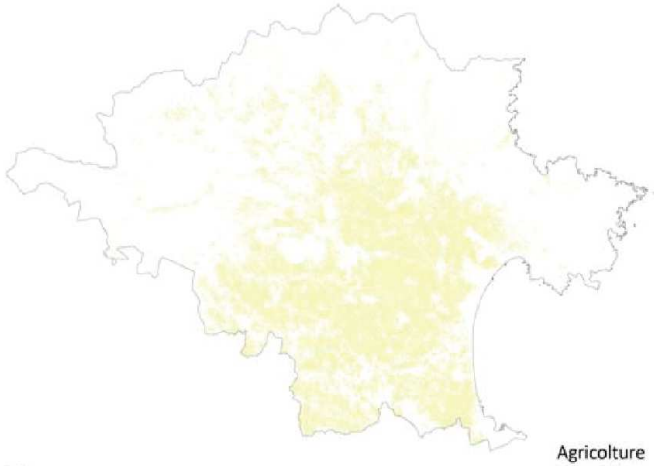
Biomass

Olive tree
ha= 87,1
t/ha anno biomassa= 300
H.P. (Mj/kg)= 17-18
MWh= 1150



Biomass

Vineyard
ha= 1228,5
t/ha anno biomassa= 2457
P.C.(Mj/kg)= 18
MWh= 4300,5



Biogas

Agricolture
ha= 6935
t/ha anno biomassa= 69350
P.C.(Mj/kg)= 16,5
MWh= 111248

Studies to

Extract the matter for Biomass

	YES	NO
Forest	. Low Slope . High risk of Fire . Near Roads (better for Mechanical Extraction)	. Not old forests/High ecological value . Not riparian forests . Not in Natural Reserve . Not dry stone walls . Not High Social use
Vineyard	. Low Slope	---
Tree Plantations	. Low Slope	---
Olive	. Low Slope	---
Fruit Trees	. Low Slope	---
Urban trees	OK	---
Energy Crops	. In derelict lands	. Not affecting symbolic views . Not in Landscape singularities ("closes", dry stone landscapes) . Not in irrigated land . Not in Potential land for orchards

Locate the Facilities for Biomass

1 MAIN FACILITY

- . Low visibility → Map, Tree lines, Land barrier - Hill, Not in Scenaries, Not in MountainTops, Not near Heritage
- . Equidistance/ Proximity to sources of Biomass
- . Proximity to city and/or industrial area for the heat use
- . Annex to water treatment Plant
- . REuse Buildings → Heritage, Farms, Factories, Store Houses
- . 2Km from inhabited

SEVERAL SMALL FACILITIES

- . Distributed in Public Buildings (schools, city walls, Hospitals, etc.)
- . Rural development - Complement to Farming

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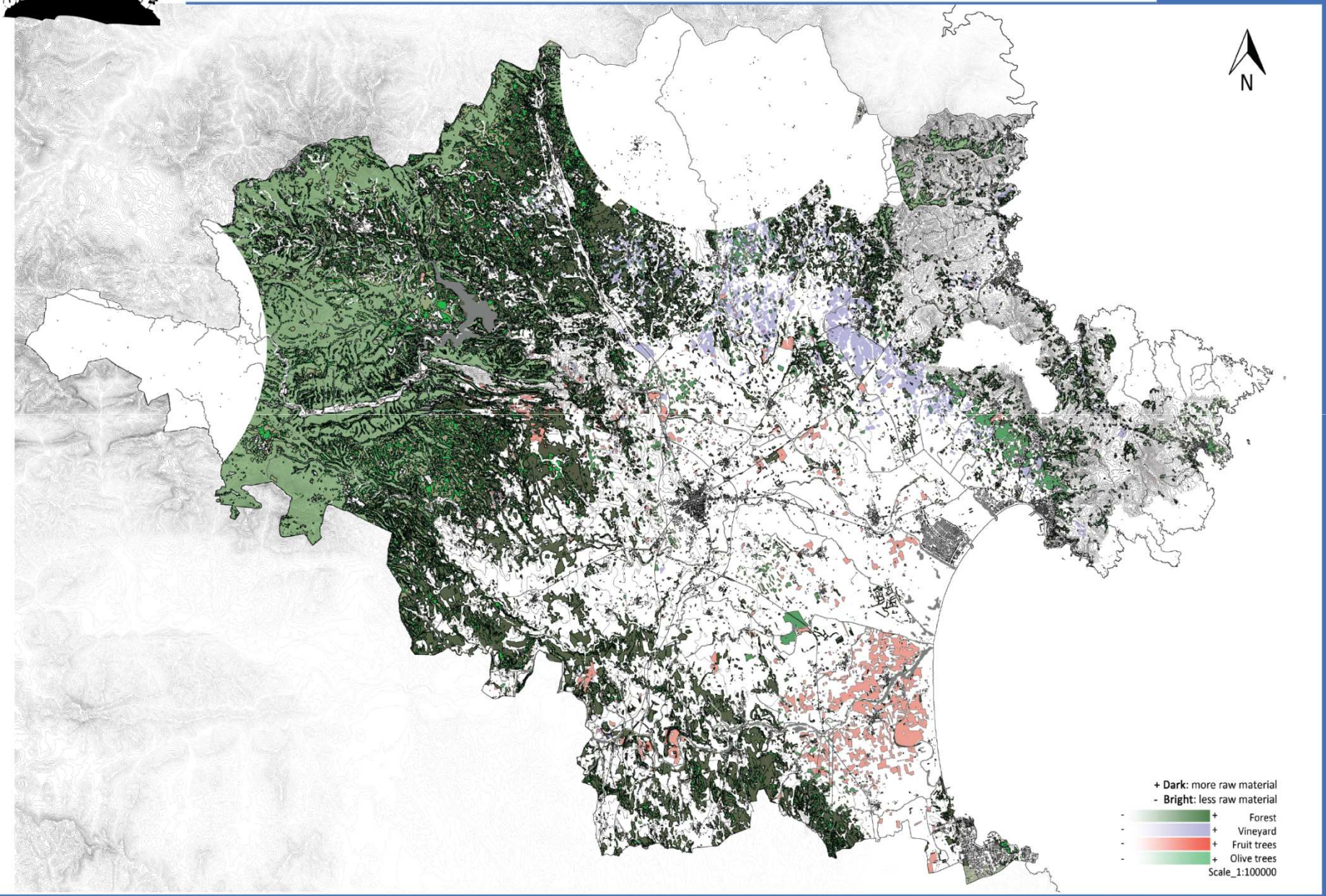

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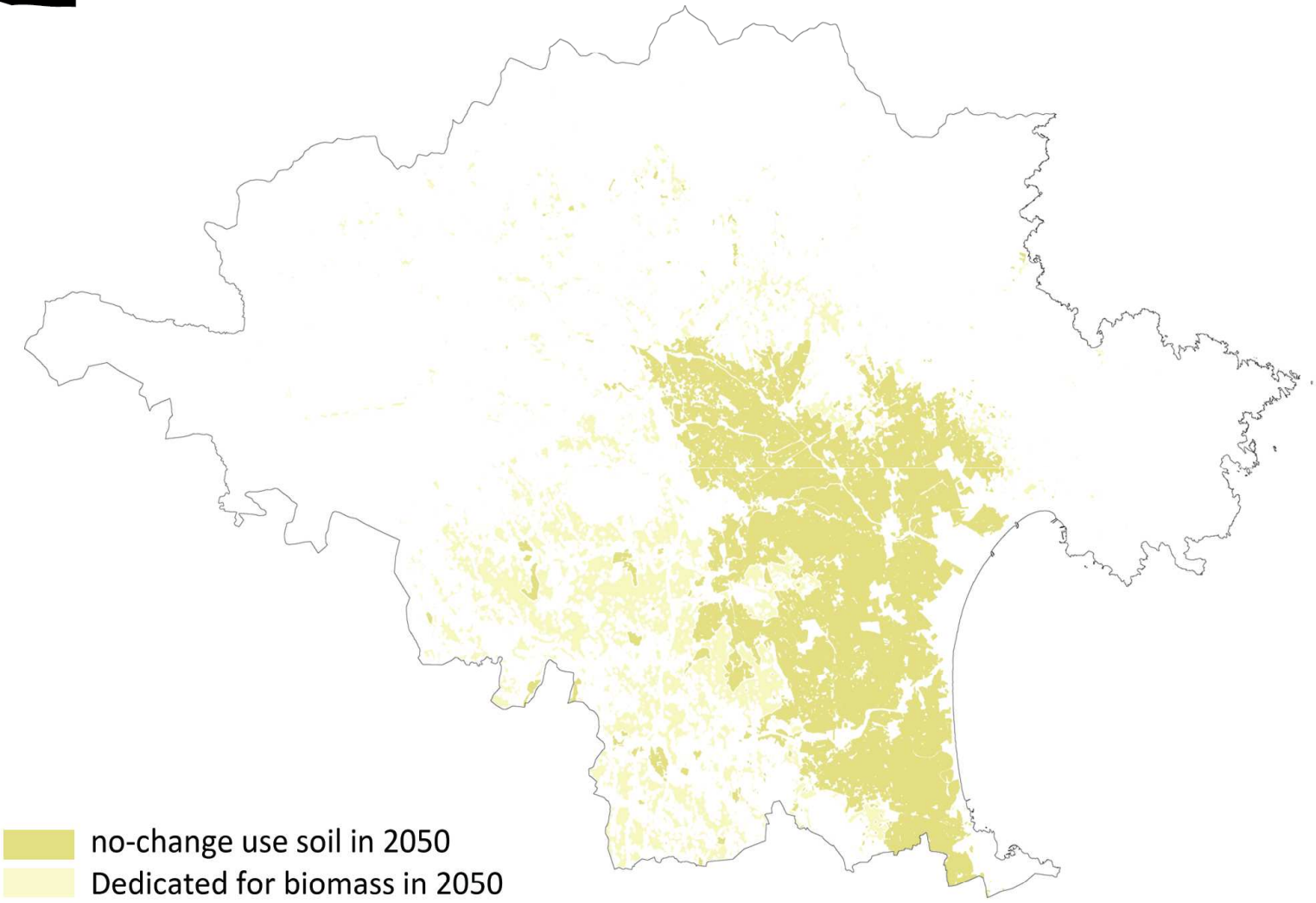
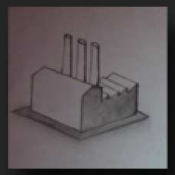
change of the landscape



LOCALIZATION OF THE FACILITIES

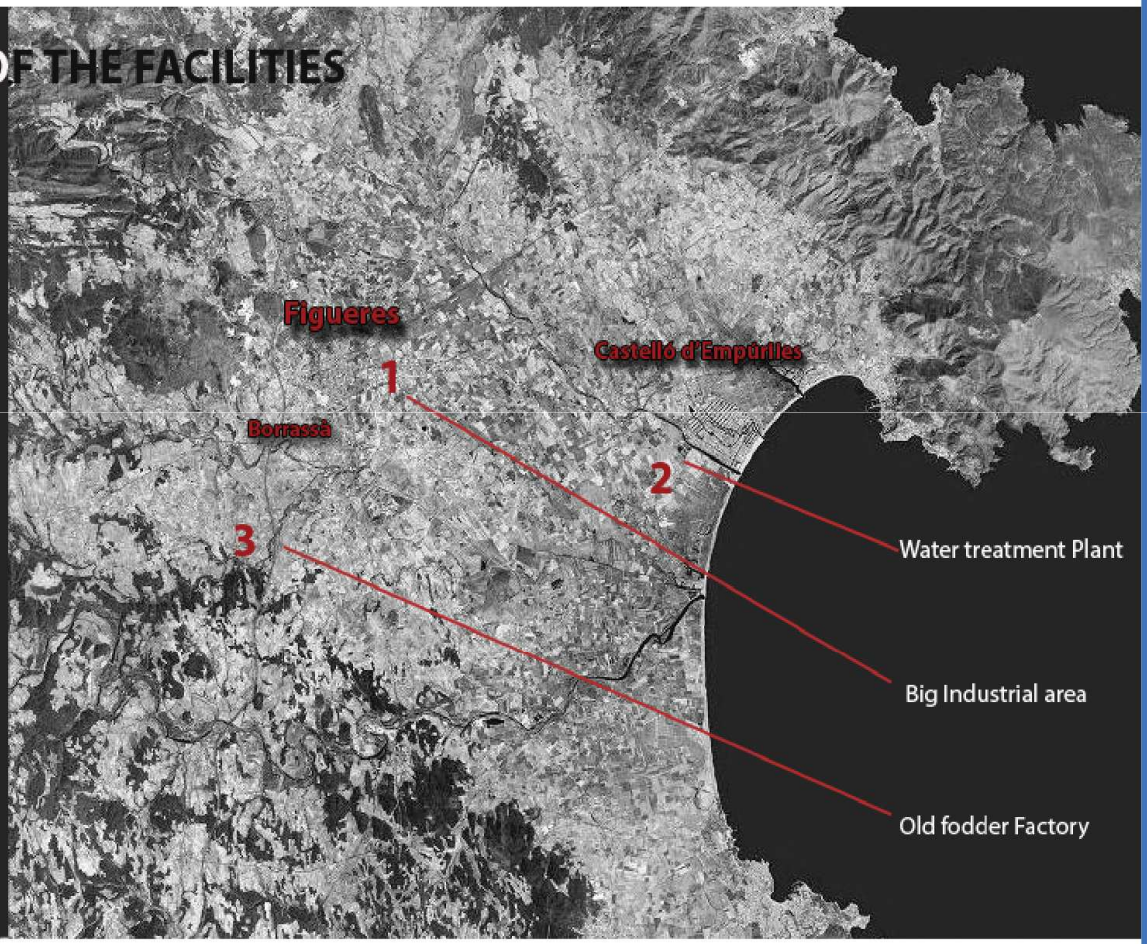
1 Industrial area
The facility implanted in his contextualization



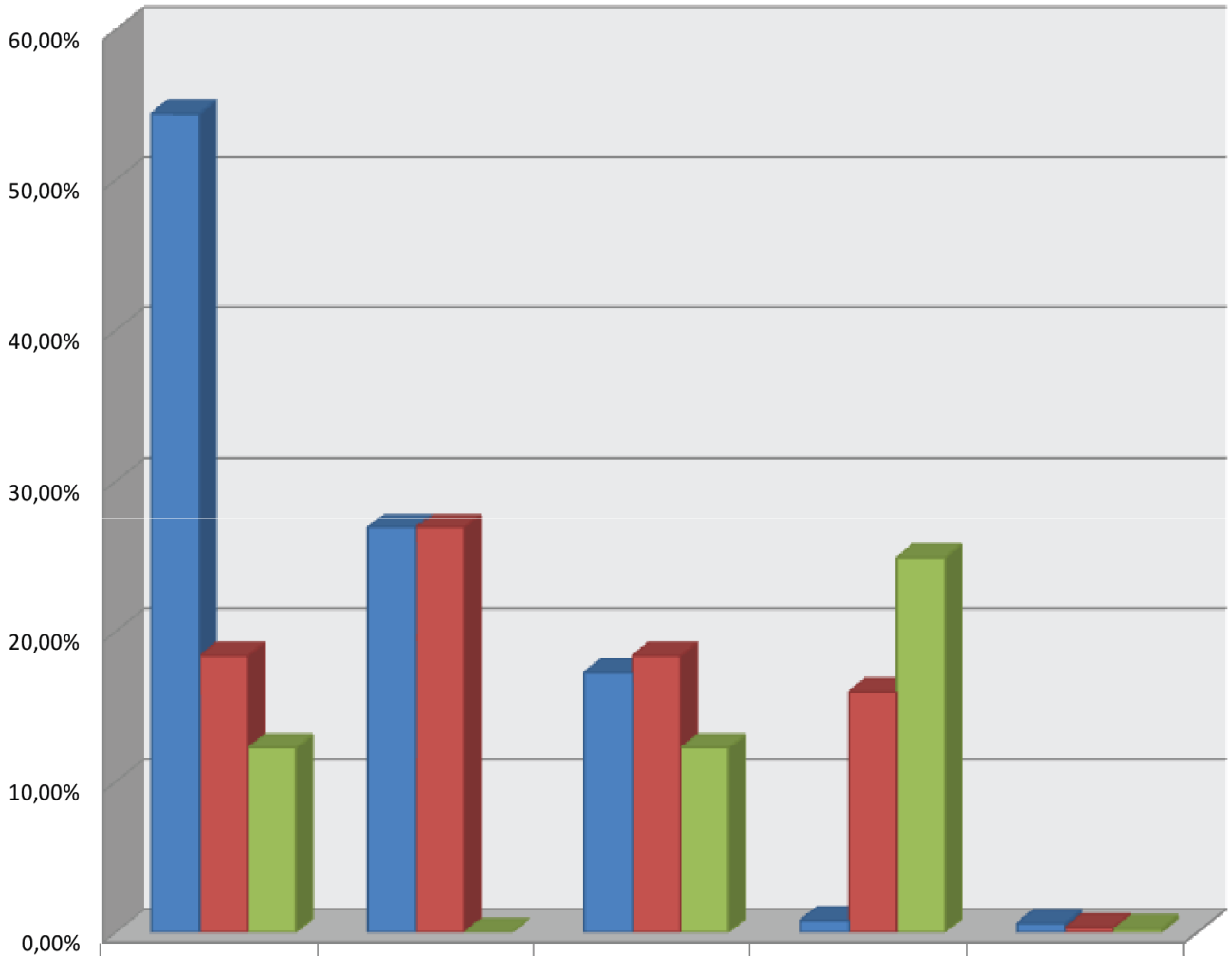
2 Protected area
Hide the facility reducing the impact on the landscape

3 REuse the old buildings
Example of an old factory near Borrassá

4 Small facilities
use of small facilities in public buildings (Hospitals, Schools, etc.)



variation of total energy demand



	Oil	Nuclear	Natural Gas	Renewable	Other
2010	54,40%	26,90%	17,30%	0,80%	0,60%
2020	18%	26,90%	18%	16%	0%
2050	12,30%	0%	12,30%	24,90%	0,25%