

Direct Usage of Geothermal Energy

ZORLUENERJİ
GELECEĞİN ENERJİSİ

13.10.2023

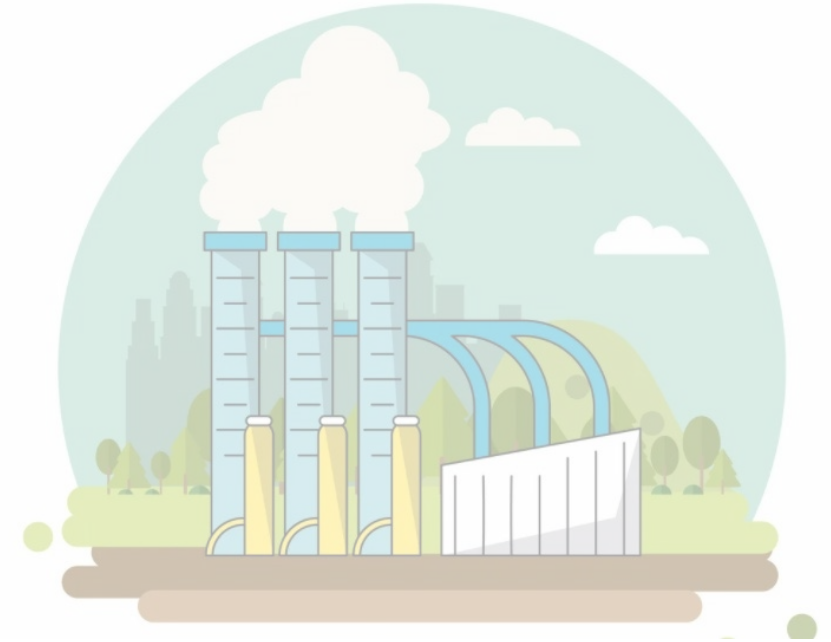


1 Energy Communities

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Energy Communities



In EU, 2021:



Households accounted for **27%** of final energy consumption



Natural gas represented **33,5%** of the final energy consumption in households



64,4% of final energy consumption for household heating

CHALLENGES

- Price
- Supply Interruptions
- Air Quality
- Sustainability

Geothermal Energy: A Sustainable Solution



Reliability



Sustainability



Local Energy Production



Economic Benefits

Geothermal Energy: Integrated Usage



Electricity Production

Renewable Energy sources

Base load



Household Heating

It reduces foreign dependency on gas and coal with residential and building heating and cooling.

It ends the dependency on external emission generating sources such as coal and natural gas. emission-generating



Food Drying

It provides hygienic, high-quality food production.



Thermal Tourism

It provides points of interest for tourists such as natural exits and spas.



Greenhouse

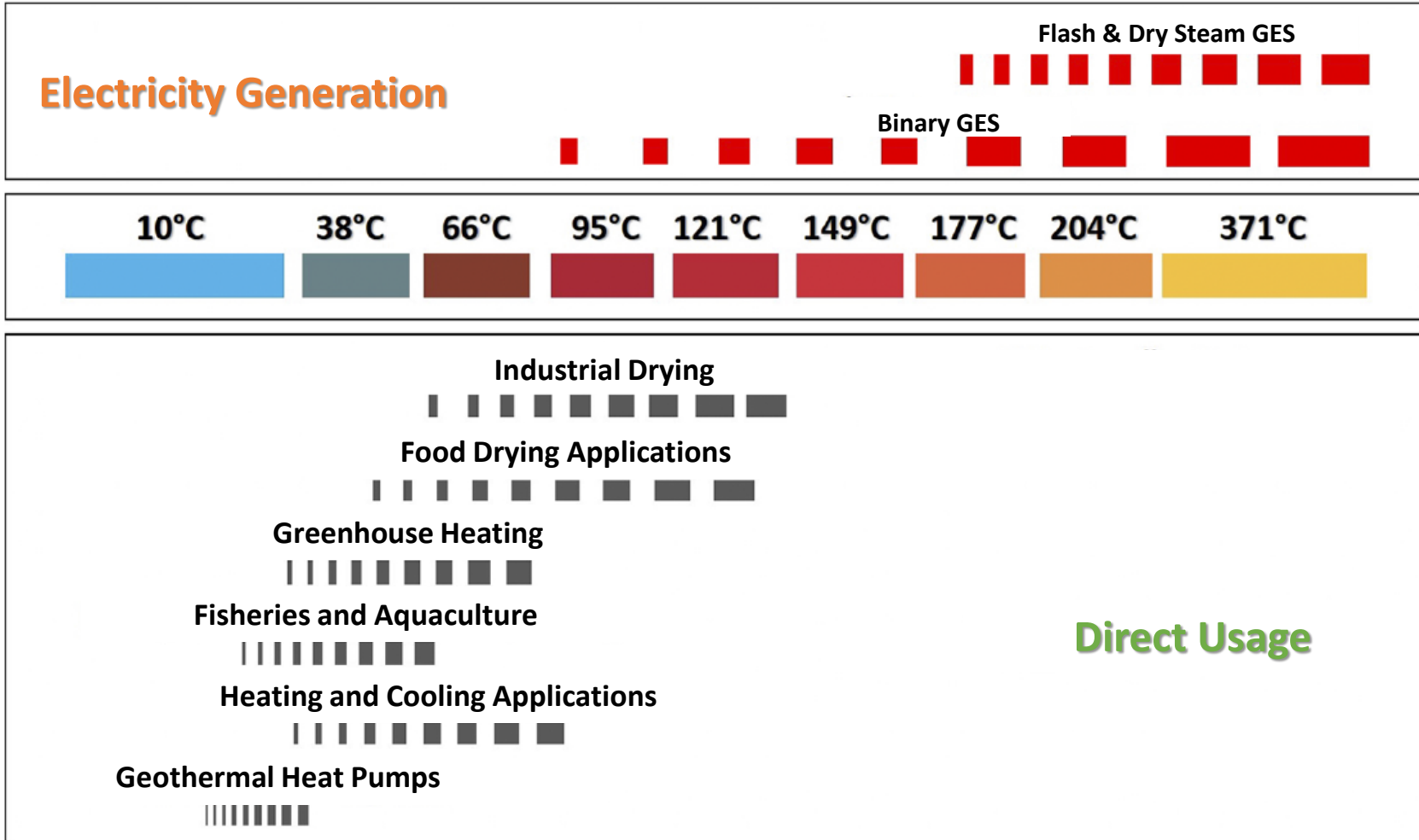
Quality and continuous production with good agriculture for 12 months of the year with greenhouse heating.



Mining

Precious metals, especially lithium, can be obtained with geothermal power.

Direct and Indirect Usage of Geothermal Energy



Source: Türkiye Geothermal Resources Strategy Report, Ministry of Energy and Natural Resources (Jun. 2022)

GEOHERMAL ENERGY IN TURKEY



Geothermal Potential in Turkey



DISCOVERED GEOTHERMAL HEAT CAPACITY 62.000 MWt



Geothermal Power Plant



5.000 MWe

1.719 MWe



Greenhouse



25.000 Decare

5.293 Decare



Endorsement: 2.000.000
TL/year/acre (2020)



Residential Heating



5 Million Residence

156.000 Residence

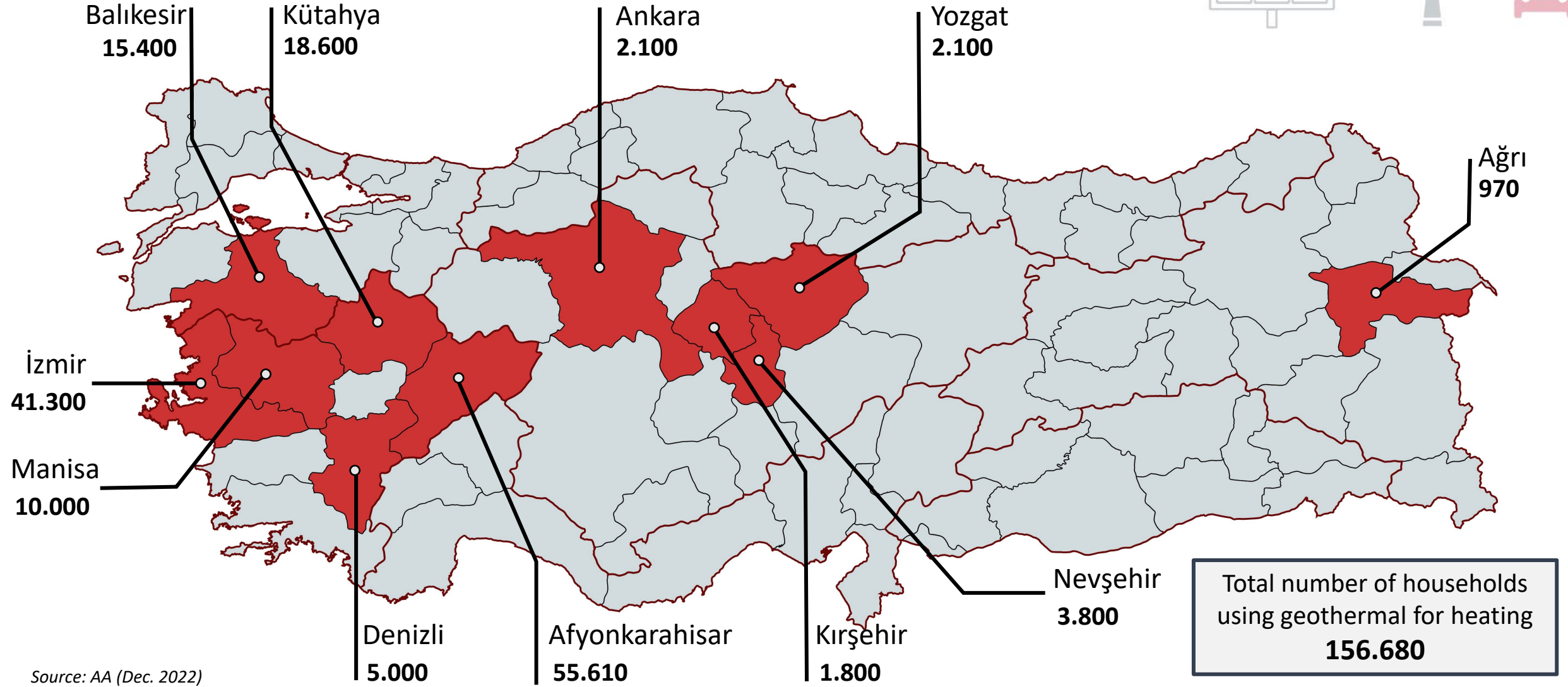
Heating expense
~2.000 TL/year
100 m² residence (2022)



62.000 MWt Energy equivalent of potential

~50 Billion m³ natural gas / year

Residential Heating with Geothermal in Turkey



Source: AA (Dec. 2022)

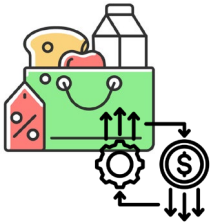
Geothermal Heat for Greenhouses



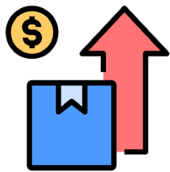
Summer vegetables in winter conditions
(e.g. tomato production at -35 °C in Ağrı/Turkey)



Elimination of transportation



Increased production, reduced prices



High value-added products (tropical plants and fruit)



ZORLU ENERGY



ZORLUENERJİ



CONSTRUCTION OF POWER PLANTS

Power plant engineering, procurement and construction (EPC)

- 2.323 MW Project Capacity
- 4 Billion USD Project Budget

MAINTENANCE, REPAIR, AND OPERATION SERVICES

Zorlu O&M Energy Facilities Operation and Maintenance Services (Zorlu O&M)

Serving over **2.500 MW** Installed Capacity at almost 30 Power Plants

EV CHARGING STATIONS

«electrip»

3.416 active charging points



ELECTRICITY DISTRIBUTION

6.9 TWh through 1.9 M Subscribers
Covering 5 provinces



R&D Innovation

38 R&D and Innovation Project

8 Horizon 2020	1 Eurogia 2020
1 Horizon Europe	2 Era-NET
	26 EMRA

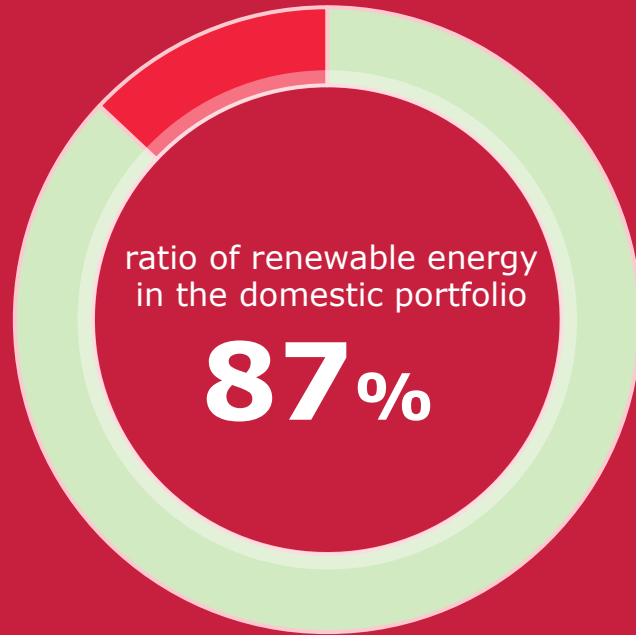
ELECTRICITY SALES AND TRADING

Zorlu Electricity
8.6 TWh

NATURAL GAS DISTRIBUTION TRADING

2.2 bcm
through 825k subscribers
covering 5 provinces

TOTAL INSTALLED CAPACITY OF ZORLU ENERJİ



996 MW



5

NATURAL GAS POWER PLANT

373 MW

2 IN TURKEY – 3 IN ISRAEL

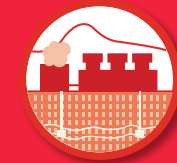


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HYDRO POWER PLANTS

118 MW

7 IN TURKEY



4

GEOHERMAL POWER PLANTS

305 MW

4 IN TURKEY



2

WIND POWER PLANTS

191 MW

1 IN TURKEY – 1 IN PAKISTAN



3

SOLAR POWER PLANT

6,2 MW

1 IN PALESTINE, 2 IN TURKEY AS HYBRID PROJECT

All in One Facility



Electricity Production

1.400 GWh Energy Production
470K Households Electricity Consumption



Thermal Tourism

Thermal water is provided to
2 different hotels in the region.



Household Heating

5.000 Household Heating = Approximately 5
Million m³ of natural gas



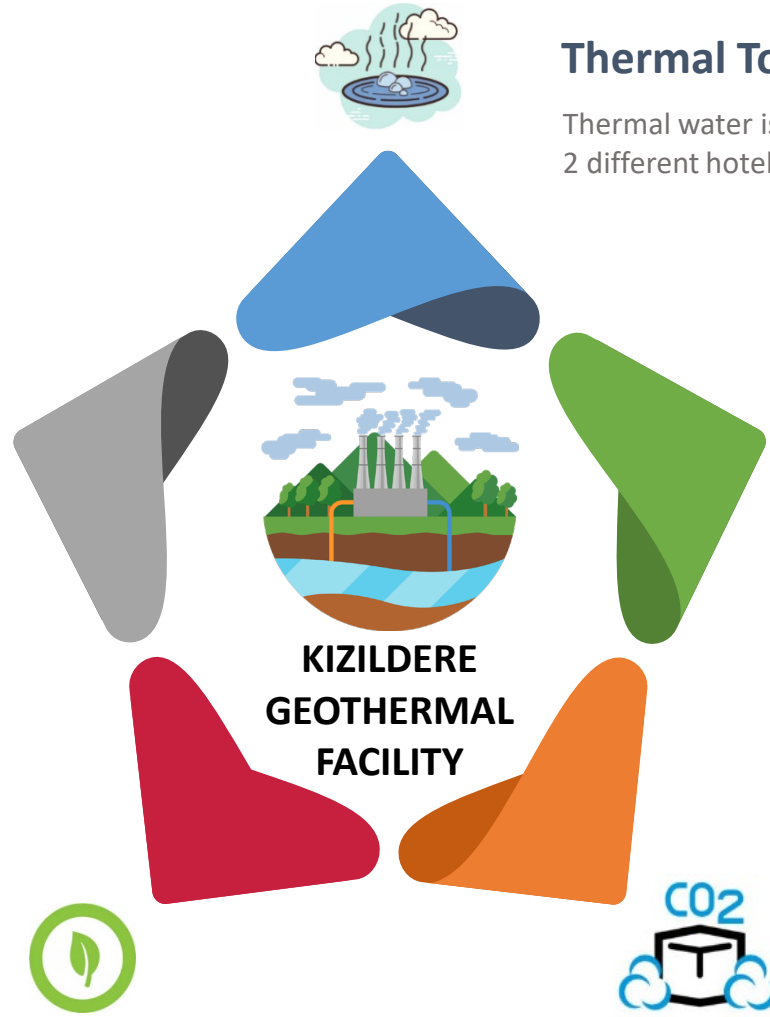
Greenhouse Heating

It is planned to produce 15 thousand tons of
vegetables annually by heating a 500 decares
vegetable greenhouse.



Dry Ice Production

The release of 110 thousand tons of CO₂ gas into the
atmosphere is prevented by production of dry ice.





Greenhouse Heating



Dry Ice Production



Thermal Tourism



Zorlu Energy - Geothermal

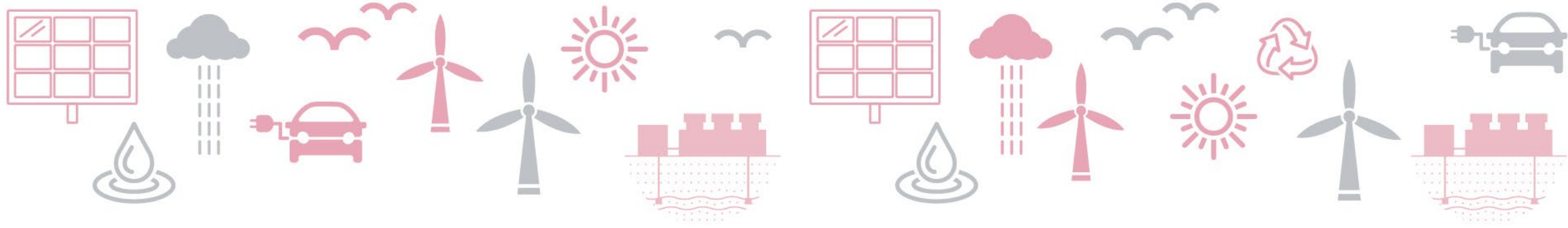


Alaşehir, Manisa/Turkey



Fruit Drying

- ✓ Local employment
- ✓ Regional development
- ✓ Social benefit



Thank You.

ZORLUENERJİ
GELECEĞİN ENERJİSİ

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