

# AWARD OF EXCELLENCE



featuring

GLOBAL  
DISTRICT  
ENERGY  
CLIMATE  
AWARDS



## Emerging Market

Torrelago District Heating

Laguna de Duero, Spain



JAVIER MARTÍN

5<sup>th</sup> Global District Energy Climate Awards Ceremony

[www.districtenergyawards.org](http://www.districtenergyawards.org)

#17GDECA



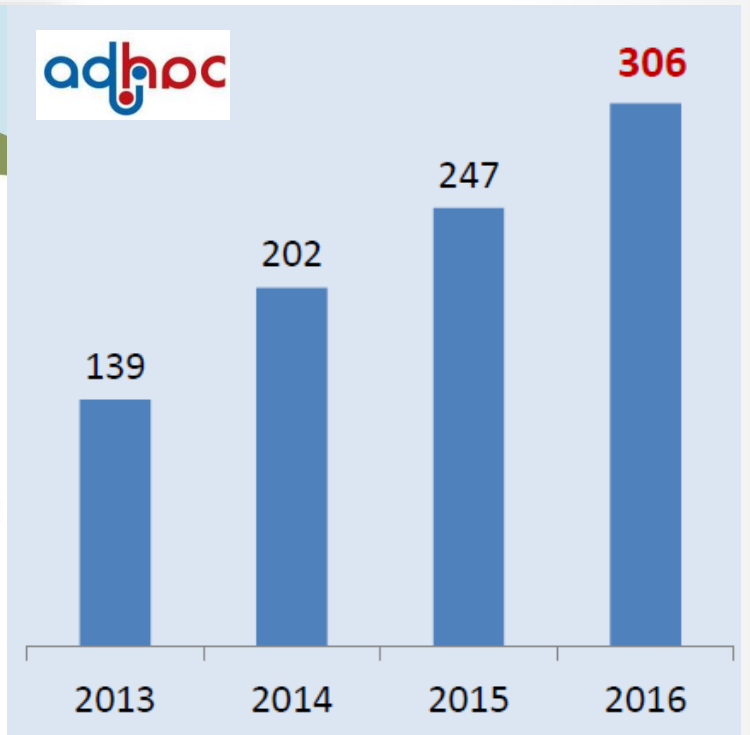
# Emerging Market



306 networks  
1,219 MW  
550 km  
4,030 buildings  
< 1% people

74% RES  
97% biomass  
180,000 TnCO<sub>2</sub>

90% heating  
23% residential  
48% private



Source: ADHAC (District Heating and Cooling Companies Association in Spain)



# Veolia Global Figures 2016

**24,390 M€**  
turnover

**163,226**  
employees

## WATER



**100**  
million people supplied with drinking water

**61**  
million people connected to wastewater systems

**4.052**  
water production plants managed

**2,928**  
wastewater treatment plants operated

## WASTE



**40**  
million people provided with collection services on behalf of municipalities

**45**  
million metric tons of treated waste recovered into energy

**764,477**  
business customers

**591**  
waste treatment facilities operated

## ENERGY



**44**  
million MWh produced

**37,339**  
thermal installations managed

**2.086**  
industrial sites managed

**551**  
heating and cooling networks operated

# CITyFiED Project



featuring

GLOBAL DISTRICT ENERGY CLIMATE AWARDS

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## CITyFiED

RepliCable and InnoVaTive  
Future Efficient Districts and cities

01

Methodology for urban renovation at district scale



02

Better business models



03

Energy-efficient renovations at district scale



04

Reduction of the energy demand and CO<sub>2</sub> emissions in districts



05

Replicability and citizen engagement



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# Torrelago District (1/2)





# Torrelago District (2/2)



31 residential buildings  
Built in early 80's

1,488 dwellings  
140,000 m<sup>2</sup> conditioned

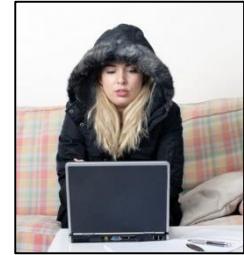
Two heating networks  
Fossil fuels (natural gas)

Consumption: 14 GWh/yr  
Power installed: 15 MW



# Owners needs

- **Low comfort** level at home and **regular damp**s in the walls
- **Old equipment** and bad performance of the energy facilities
- **Inefficient** management of the district **heating** system
- Expensive **energy bill** and operation costs
- Instability of the **energy price** due to external conditions





# Energy Measures (1/3)

## 1. Building retrofitting

## 2. District heating upgrading

1. Overall energy management
2. 3 high-efficiency biomass boilers
3. 1 high-performance CHP unit
4. Variable flow pumping system
5. New substations
6. Optimized control strategies

## 3. HEMS

1. Smart energy metering
2. Simulation and monitoring
3. Home temperature control







# Energy Measures (2/3)

## 1. Building retrofitting

## 2. District heating upgrading

1. Overall energy management
2. 3 high-efficiency biomass boilers
3. 1 high-performance CHP unit
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5. New substations
6. Optimized control strategies

## 3. HEMS

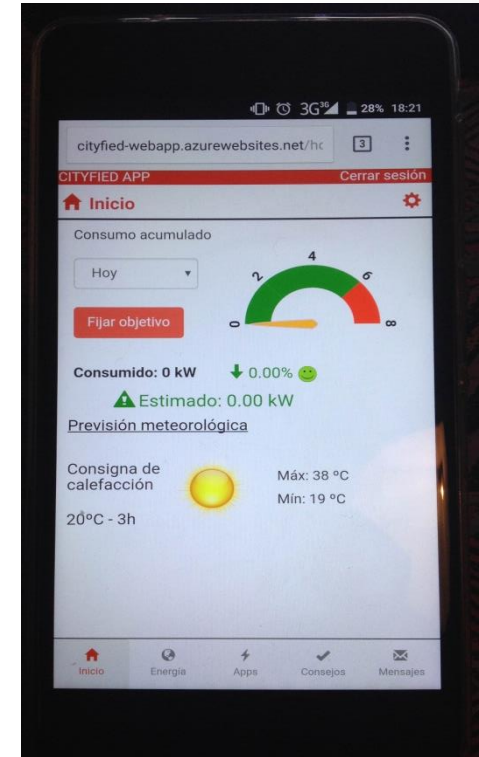
1. Smart energy metering
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# Energy Measures (3/3)

1. Building retrofitting
2. District heating upgrading
  1. Overall energy management
  2. 3 high-efficiency biomass boilers
  3. 1 high-performance CHP unit
  4. Variable flow pumping system
  5. New substations
  6. Optimized control strategies
3. HEMS
  1. Smart energy metering
  2. Simulation and monitoring
  3. Home temperature control





# Key figures in Torrelago

- Total share of **energy savings: 50%**
- **CO<sub>2</sub> emissions avoided: 3,392 tCO<sub>2</sub>/yr** → **94% CO<sub>2</sub> avoided**
- **Thermal power installed: 3.5 MW** (biomass) + **73.4 kW** (CHP) + **9MW** (gas)
- **Electric power installed: 33 kW** (CHP)
- Contract: Long-term (**25 yr**)
- Total **investment** for district retrofitting: **16.5 M€** (EC + ESCO + Building)
- Total **investment per conditioned area: 118 €/m<sup>2</sup>**
- Total **revenues: 1.1 M€/yr**



# Key figures in Torrelago



Thank you for your attention!

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