

# Session Bioenergy Production in Rural

**Areas:** creation of a biomass market in Mediterranean areas and regions with declining water resources

**Biomass power plants to  
produce electricity**

*Mr. S. Fox - Mr. P. Aledo – Mr. F. Saura*

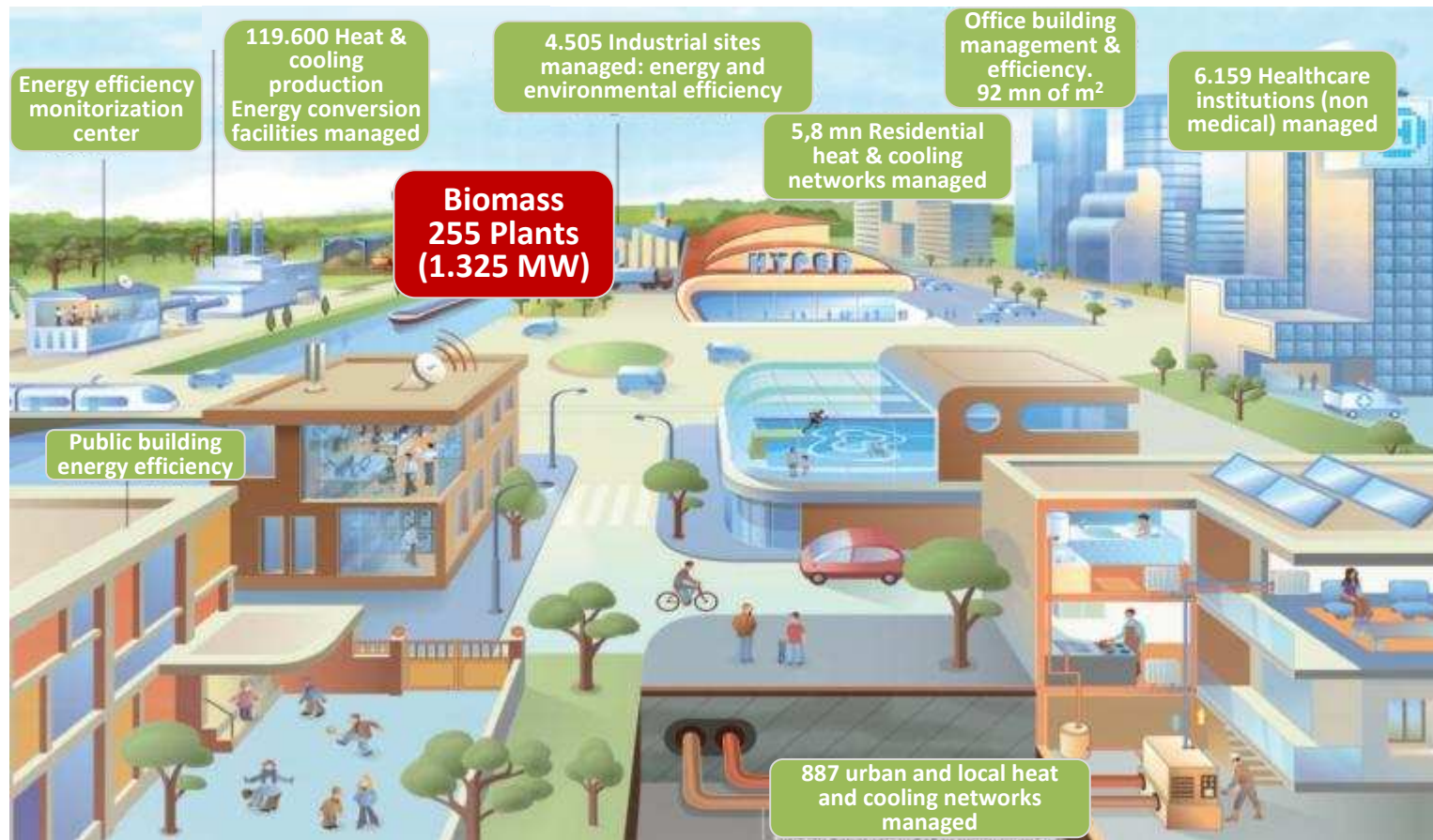
# 1. Introduction

# 1.1 Introduction

- Dalkia Group is one of the **leading players** rendering **energy services** in Europe. The Group, is owned by Veolia Environnement (66%) and EDF (34%)
  - It is present in **42 countries**
  - It has reported a total turnover of **€8.600** mn in 2010
  - It employs over **53.000 people**
  - DG has more than 250 biomass power plants in operation and maintenance globally
  - Dalkia manages more than 2 M tones of biomass annually
- Its Spanish subsidiary, **Dalkia España**, is undertaking an ambitious expansion plan within its biomass unit, which consists of **developing 9 biomass power plants** ranging from 10 MWe to 16 MWe **totalling 126 MWe** that will be fully operational by 2017
- EPC and O&M contracts to be provided by Dalkia

## 2. What is Dalkia?

## 2.1. Dalkia at a glance (i)

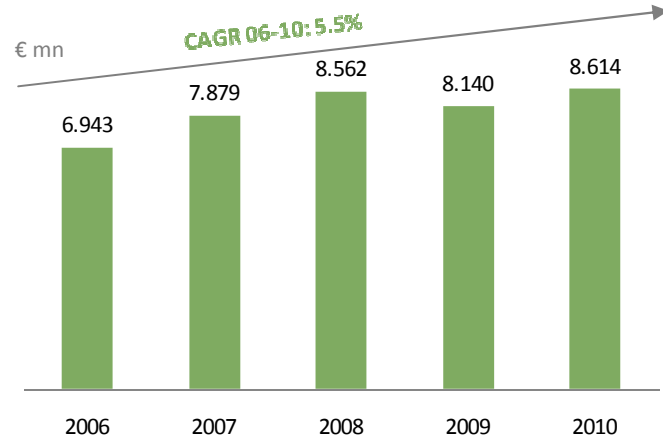


Dalkia is a global leading energy solutions provider that is present in all the value chain

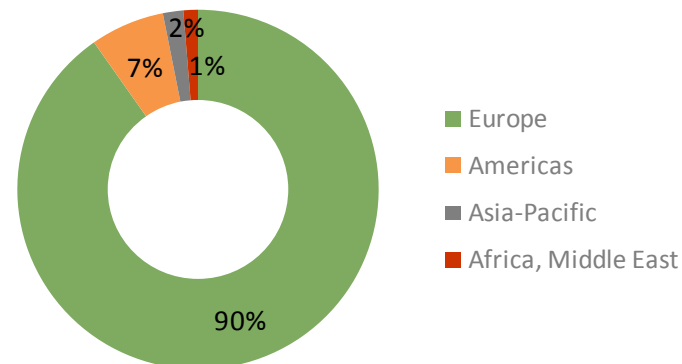


## 2.1. Dalkia at a glance (ii)

### Revenue

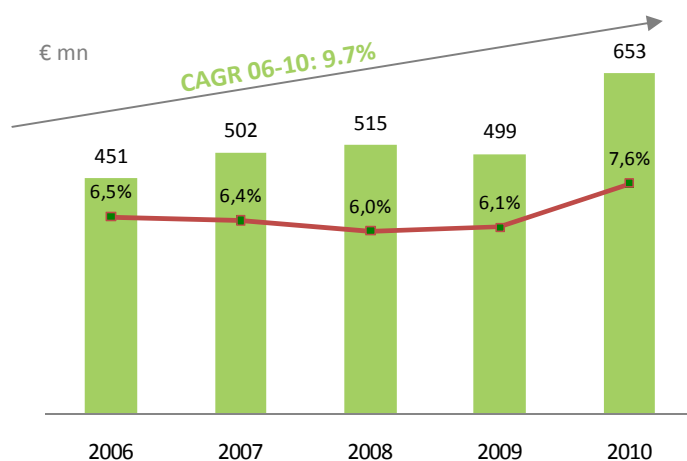


### Revenue breakdown by Region

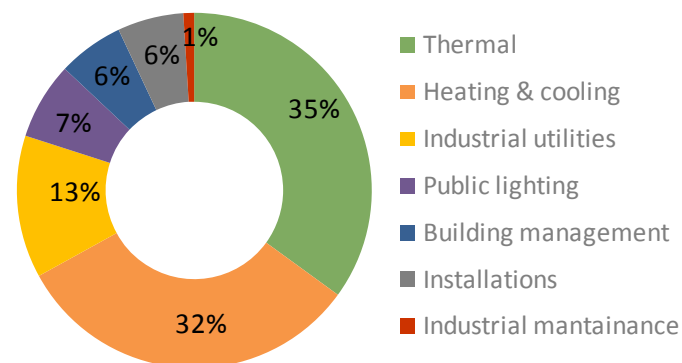


Total 2010 €8.614 mn

### Operating Profit

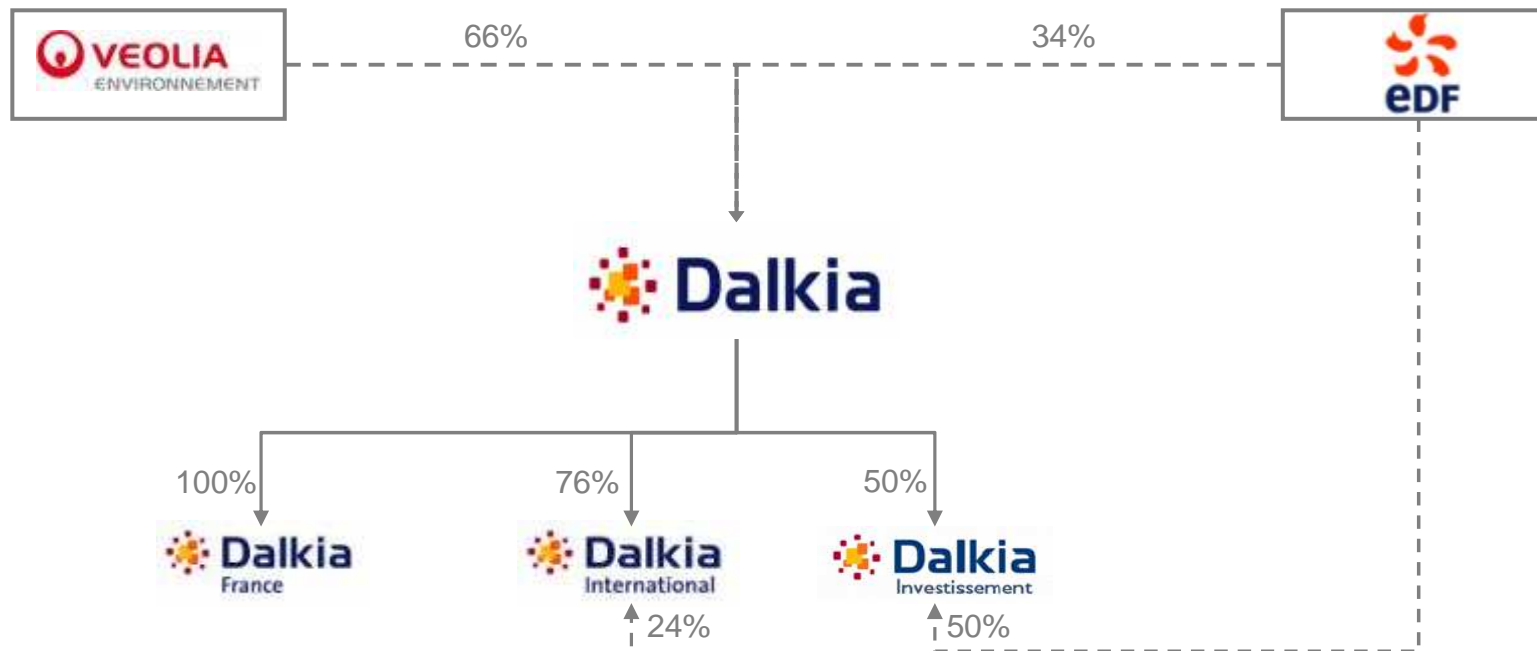


### Revenue breakdown by Business



Total 2010 €8.614 mn

## 2.1. Dalkia at a glance (iii)

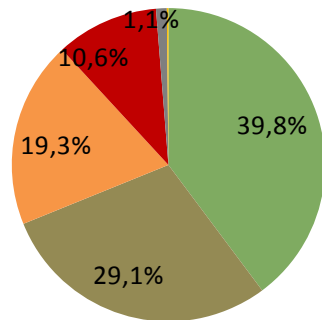


**Dalkia is a global leading player in energy efficiency resulting from a partnership involving two Tier-I European Utilities**

## 2.3. International presence

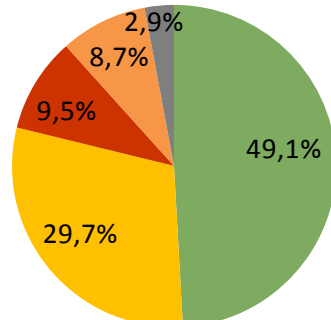
### Facilities managed globally

Housing units managed  
0,2%



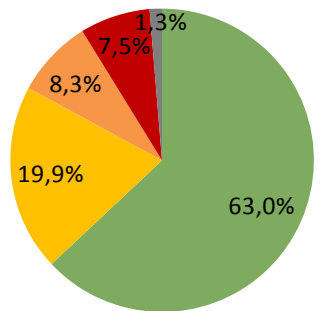
Total 5.679.364

Healthcare institutions



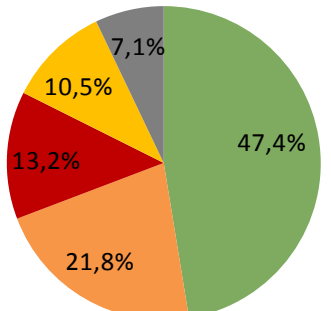
Total 6.159

Educational and sport facilities



Total 23.786

Industrial facilities



Total 4.505

■ France

■ Development

■ Proxiserve

■ Northern Europe

■ Central Europe

■ South

### International presence

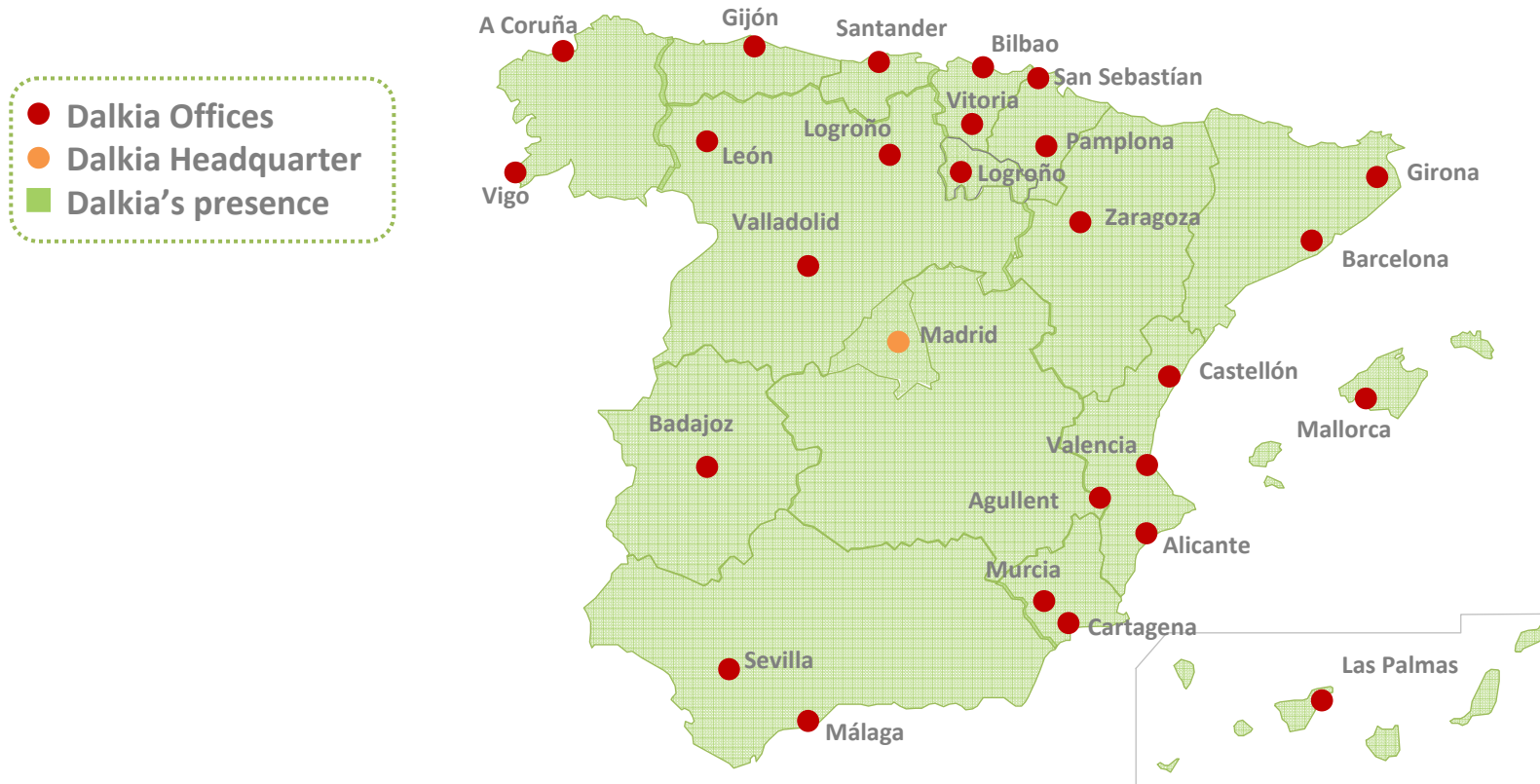


Global Leader: 42 countries



## 2.4. Dalkia in Spain

### Dalkia's presence in Spain



Dalkia has a broad presence within the Spanish market with over 20 regional offices throughout the country

## 2.4. Dalkia Spain

### Dalkia's activities in Spain

€412 mn Revenue in 2010

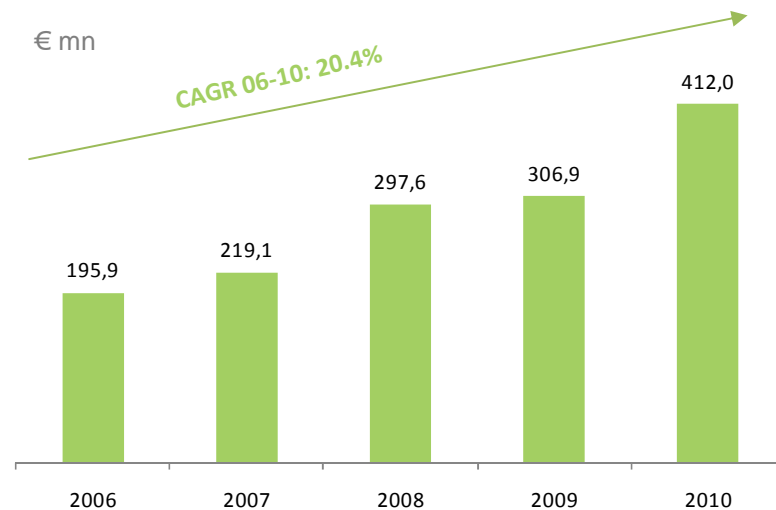
4.307 MW Thermal installed capacity

3.045 Employees

3,84 mn of m<sup>2</sup> managed

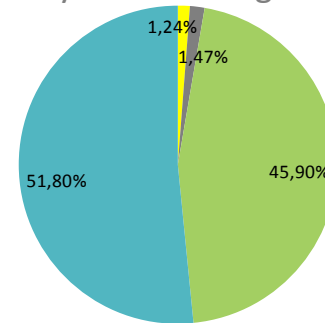
8.008 Installations under management

### Revenue



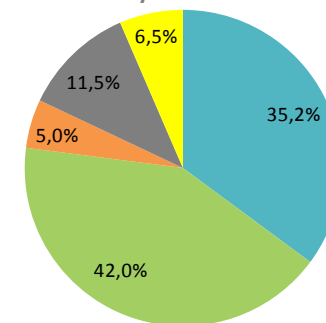
### Revenue breakdown

#### By Business segment



Industrial maintenance  
Building management  
Facilities  
H & C industrial utilities

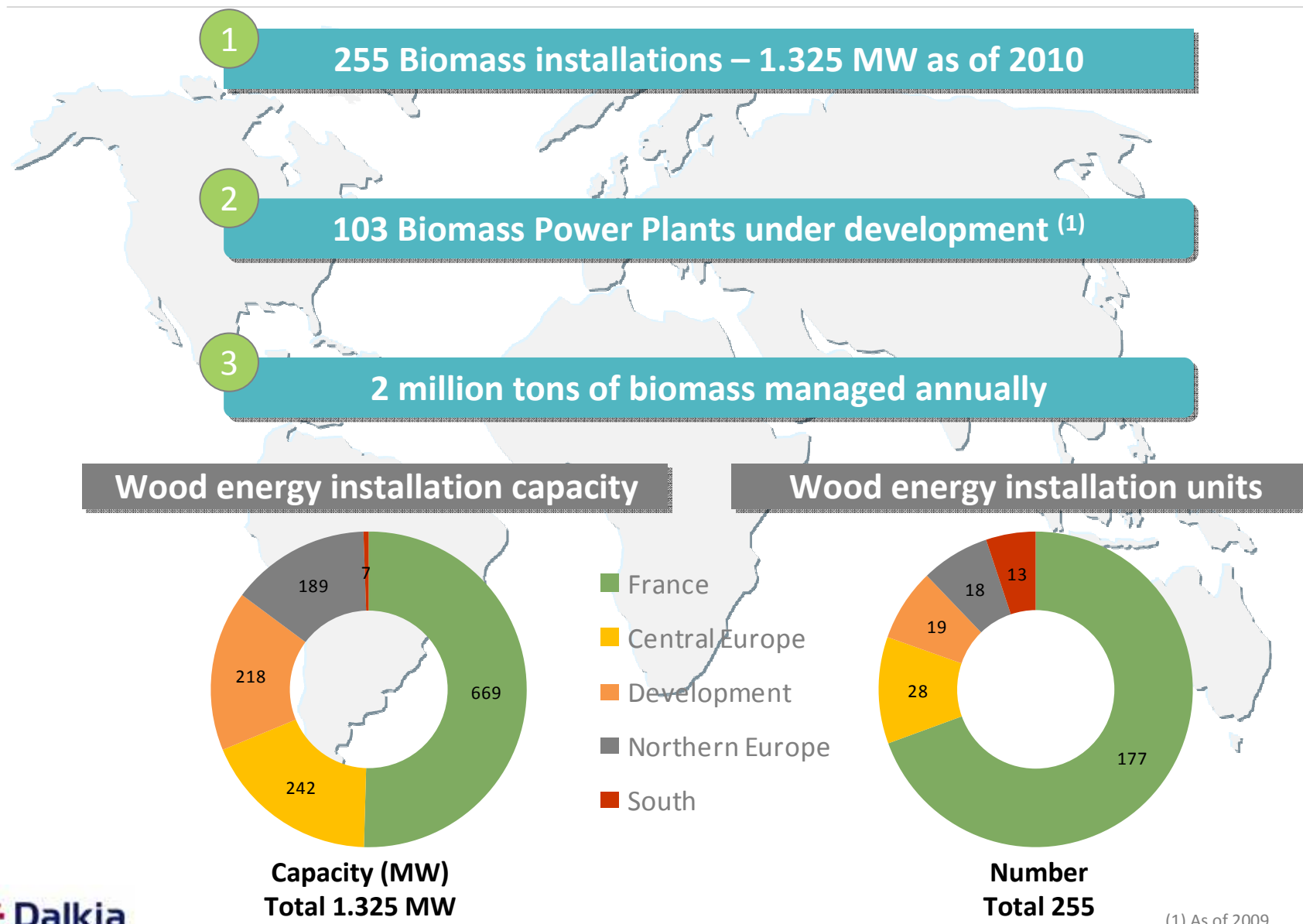
#### By Client



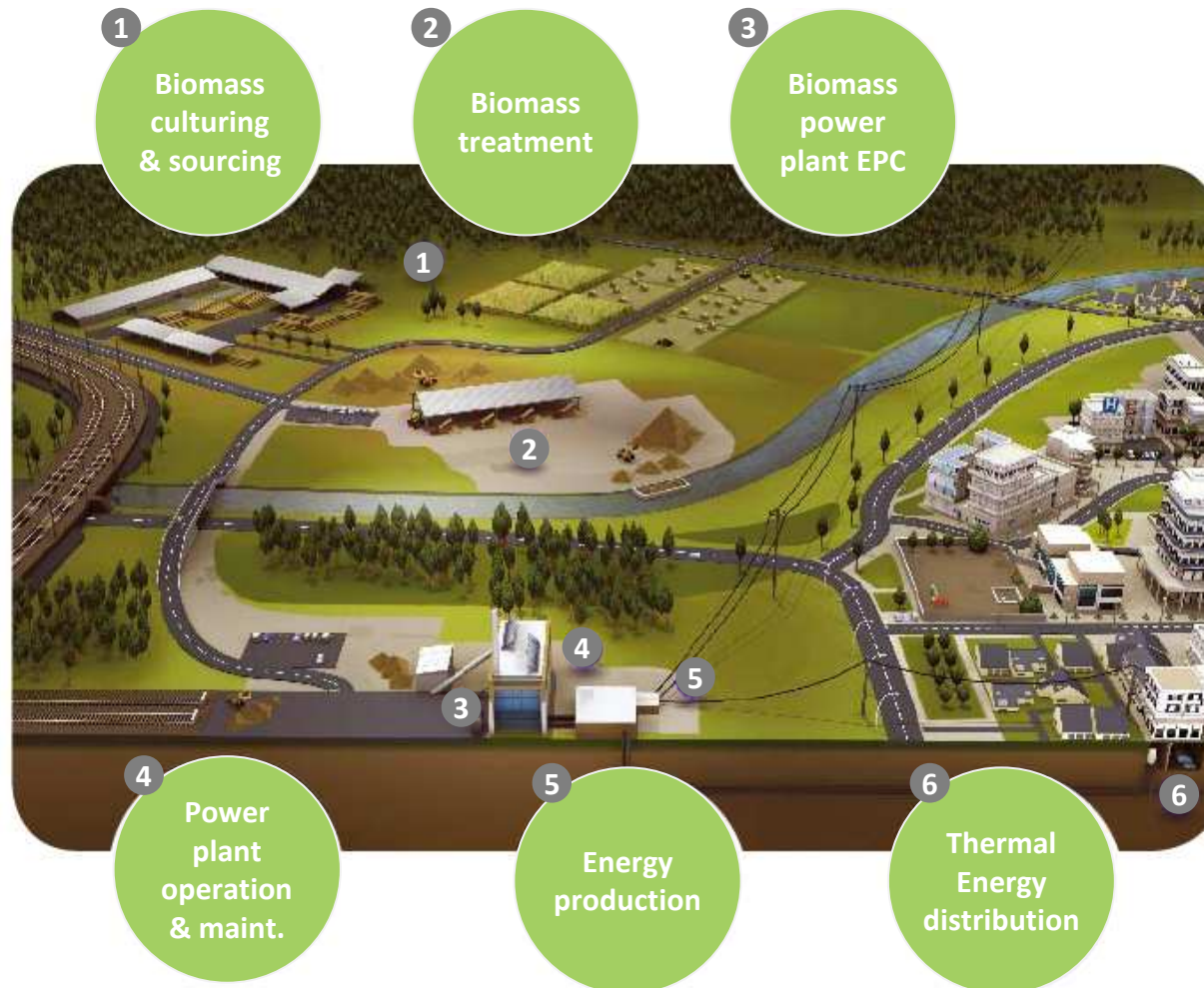
Healthcare  
Industrial  
Housing  
Services  
Public entities

### 3. Dalkia Biomass capabilities

## 3.1. Dalkia biomass capabilities(i)



## 3.2. Dalkia biomass capabilities



Dalkia services cover the whole biomass energy value chain



## 3.3. Dalkia selected Biomass credentials (i)

### 1 PECS (Hungary)



Type of facility	Heat & Cooling network
Client	PECS (162.500 people)
Facilities	Thermal capacity: 160 MW Electrical power: 50 MWe Steam production: 200 t/h at 99b and 540° C Technologies: BFB (KVAERNER)
Dalkia services	Power plant operations Network management
Fuel	Chips (100%)



### 2 Vilnius (Lithuania)



Type of facility	Heat & Cooling network
Client	Vilnius (542.000 people)
Facilities	Thermal capacity: 62 MW Electrical power: 12 Mwe Steam production: 78 t/H at 40b and 450° C Technologies: BFB (Kvaerner)
Dalkia services	Construction of the power plant Power plant operations Supply operations for 140.000 dwellings
Fuel	Chips (70%)



## 3.3. Dalkia selected Biomass credentials (ii)

3

### Smurfit Kappa (France)



Type of facility	Industrial cogeneration
Client	Smurfit Kappa
Facilities	Thermal capacity: 130 MW Electrical power: 47 MWe Steam production: 180 t/h at 120b and 520°C Technologies: BFB (KVAERNER)
Dalkia services	Construction of the power plant Power plant operations Network management
Fuel	Chips/Bark



4

### Masisa (Chile)



Type of facility	Industrial cogeneration
Client	Masisa Cabrero
Facilities	Thermal capacity: 51MW Electrical power: 8,8MWe Steam production: 26 t/h at 45b and 430 °C Technologies: spread stocker & travelling grate (Gotakverken)
Dalkia services	Construction of the power plant Power plant operations Network management
Fuel	Chips + sawdust + bark (100%)



## 3.3. Dalkia selected Biomass credentials (iii)

### 5 Tallinn (Estonia)



Type of facility	Heat & Cooling network
Client	Tallinn (430.000 people)
Facilities	Thermal capacity: 75MW Electrical power: 25,4MWe Steam production: 110b and 530 °C Technologies: BFB (Noviter)
Dalkia services	Construction of the power plant Power plant operations District Heat & Cooling network for 128.777 dwellings
Fuel	Chips (90%)



### 6 Boras (Sweden)



Type of facility	Heat & Cooling network
Client	Boras (62.000 people)
Facilities	Thermal capacity: 130MW Electrical power: 45MWe Steam production: 180 t/h at 50b and 400°C Technologies: spread stocker & travelling grate (Gotakverken)
Dalkia services	Construction of the power plant District Heat & Cooling network for 50.000 dwellings
Fuel	Chips (100%)

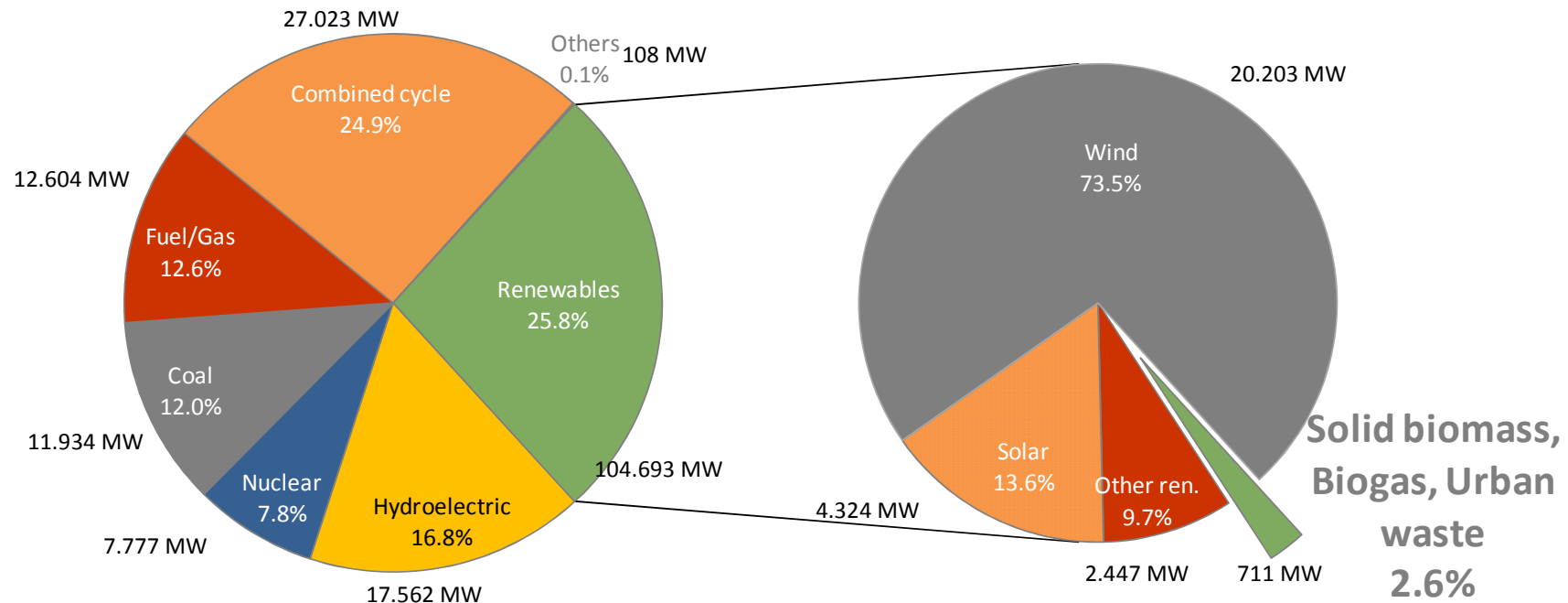


## 4. Biomass sector in Spain



## 4.1. Snapshot of the Spanish biomass sector (i)

Installed capacity breakdown in Spain (Dec. '10)



Strong growth potential as biomass energy generation in Spain is currently unemployed (3% of total renewable energies), while Spain is the third EU country by forestall area subject to be used for biomass energy generation

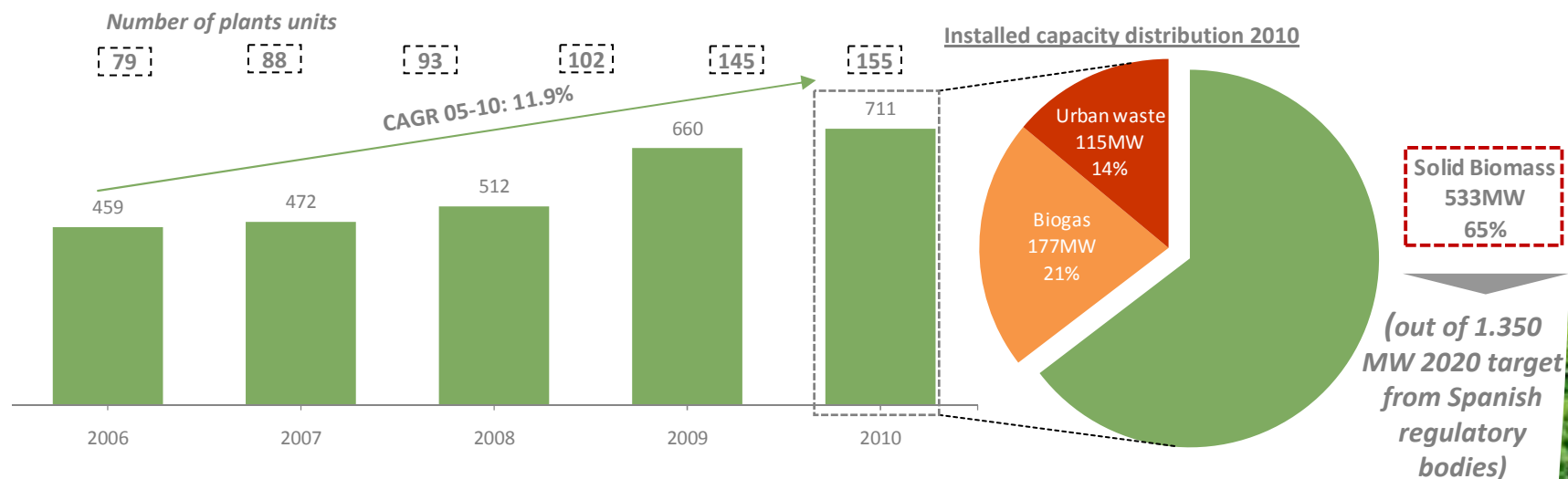


## 4.1. Snapshot of the Spanish biomass sector (ii)

### Current situation & future perspective

- The Ministry of Industry of Spain, is implementing several measures to foster biomass energy and maintain price visibility, vis a vis other actions taken towards other renewable energy sources.
- High barriers to entry: installing a biomass power plant is complex and requires a lot of expertise, experience and access to the fuel.

### Installed capacity evolution (MW) and power plants evolution (Units)



**Solid biomass installed capacity of 533MW as of 2010 out of 1.350 MW 2020 target from Spanish regulatory bodies**

# 5. Feedstock supply

## 5.1. The importance of feedstock

1

Complex biomass supply

3

Logistics are key

2

Know-how required

4

Specific regulation

5

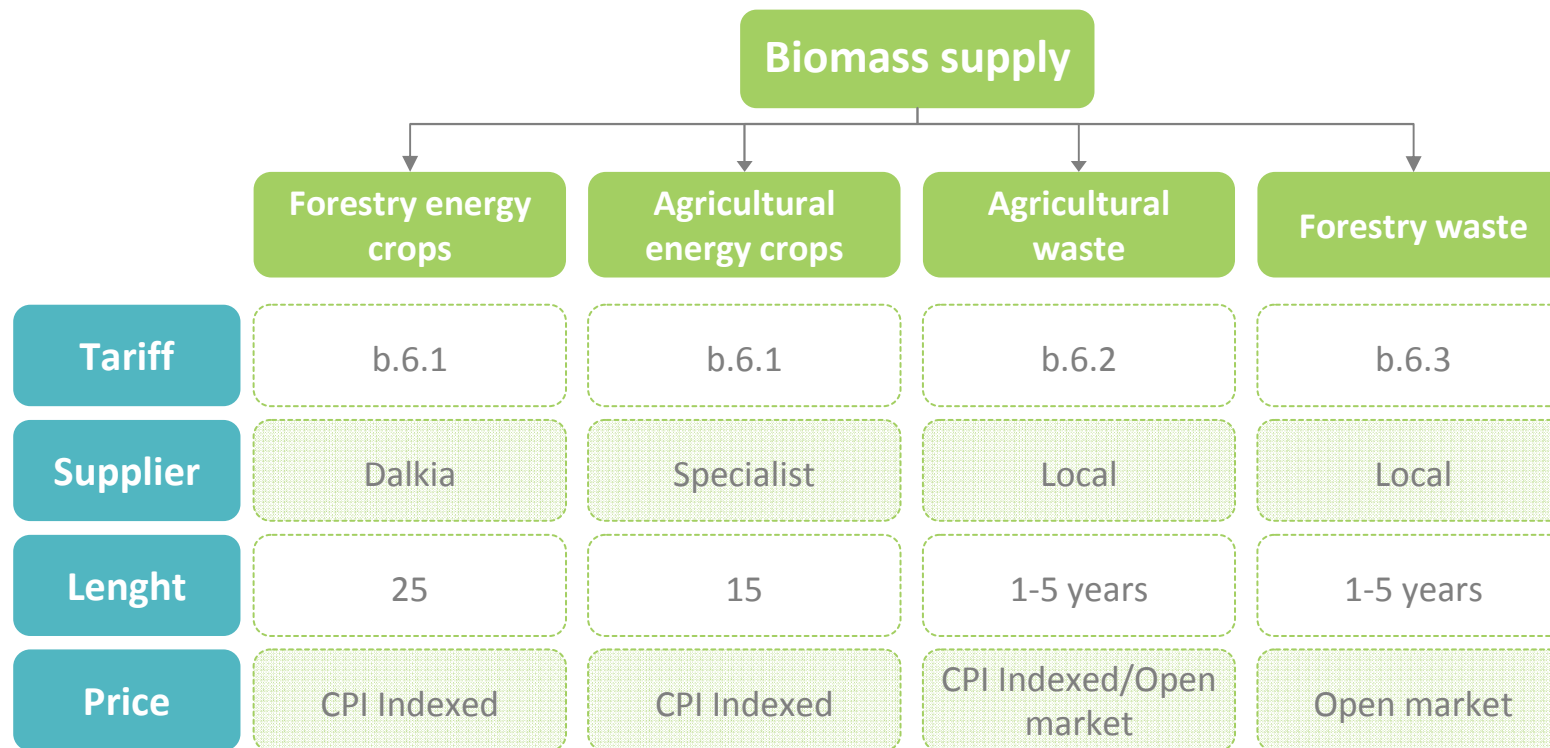
Investments required to grow crops

Feedstock supply is critical to the development of the biomass Project and an appropriate strategy is fundamental for its success

## 5.2. Our feedstock supply strategy (i)

### Supply scheme

Broad experience in Biomass has lead Dalkia to achieve an optimal supply strategy



- 1 Diversification
- 2 Guarantee supply
- 3 Supply flexibility
- 4 Vertical integration
- 5 Price control

## 5.2. Our feedstock supply strategy(ii)

### Goals of the supply strategy

#### 1 Diversification

- No dependence on any particular source of biomass

#### 2 Guarantee supply

- Long term contracts with Dalkia Biomasa and biomass specialist suppliers (framework agreement)
- Establishment of penalties (bank warranty) in case of no supply
- Establishment of stepping rights in favor of the SPV in case of liquidation

#### 3 Supply flexibility

- In case of efficiency improvements (less biomass required), up to 1/3 of supply is purchased at open market

#### 4 Vertical integration

- Capability to exploit Dalkia Biomass' rights on forestry energy crops

#### 5 Price control

- Through long term contracts and opportunistic purchases at open market



## 6. Project Cieza

## 5.2. Project Cieza (i)

1

### Cieza (Murcia)

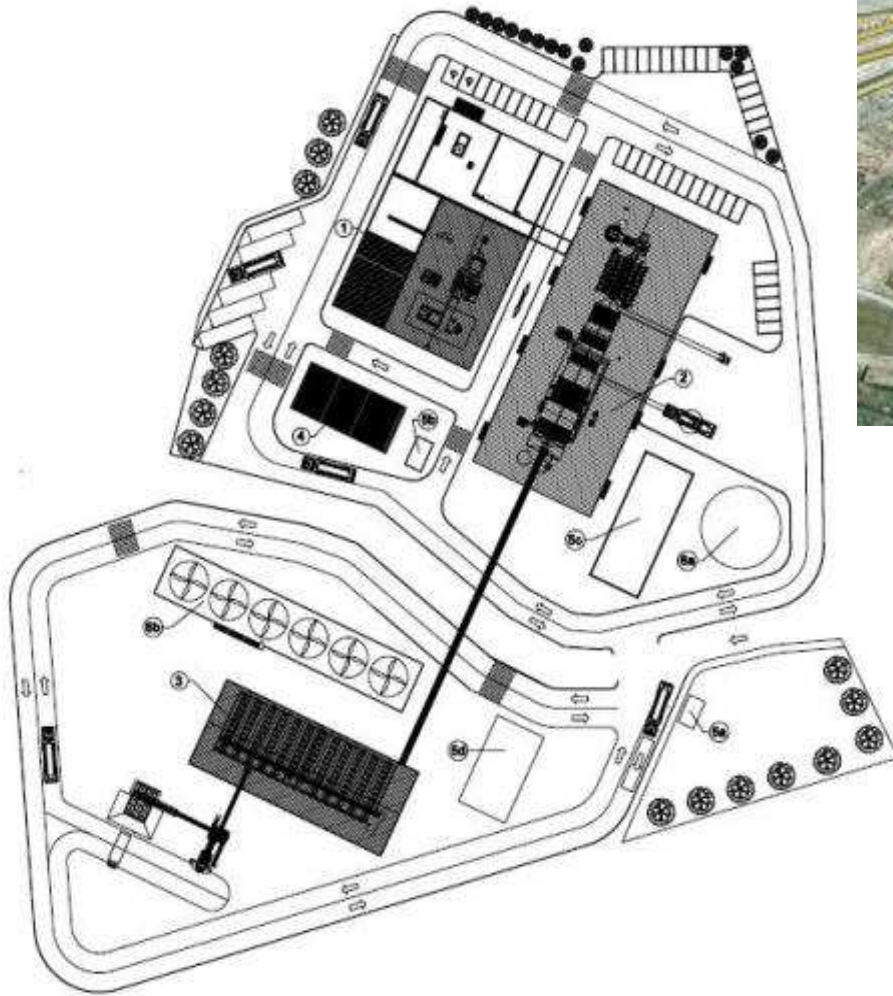
Current Development stage :

1 In process



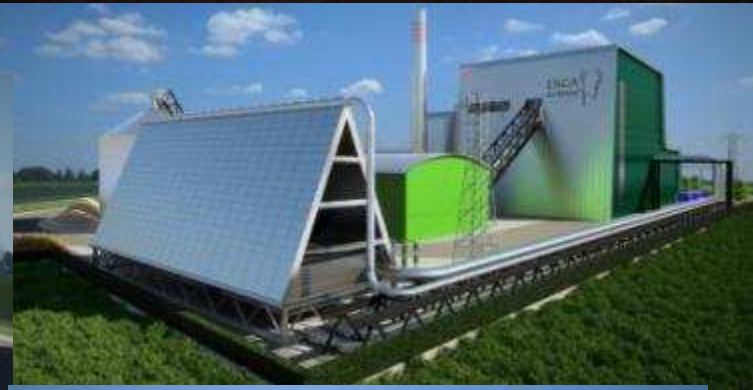
REGISTERED NAME:	<ul style="list-style-type: none"> <li>Ecoenergías de la Vega del Segura</li> </ul>
SHAREHOLDERS STRUCTURE:	<ul style="list-style-type: none"> <li>Dalkia España and subsidiaries (99,5%)</li> <li>ARGEM (0,5%)</li> </ul>
POWER:	<ul style="list-style-type: none"> <li>16 MWe</li> </ul>
ACCESS AND CONNECTION:	<ul style="list-style-type: none"> <li>SE Cieza (Iberdrola)</li> </ul>
TYPES OF FUEL:	<ul style="list-style-type: none"> <li>Acacia, poplar and pine tree (b.6.1.)</li> <li>Fruit tree pruning. Agricultural waste (b.6.2.)</li> <li>Pine tree. Forestry waste (b.6.3.)</li> <li>Annual supply 140,000 Tn/yr</li> </ul>
MAIN BIOMASS SUPPLIERS:	<ul style="list-style-type: none"> <li>Local suppliers</li> <li>Dalkia Biomass</li> </ul>

## 5.3. Project Cieza(ii)





## 5.4. Project Cieza(iii) Example design: Engabiomasa



# Thank you!



by

