



A successful example of energy generation from forest biomass: E.ON Gardanne

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17/03/2015 - Barcelone

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Provence Plant :from coal to biomass



	Former coal Plant	Expected biomass Plant
Power	250 MWe	150 MWe
Fuel	100 % fossil	13 % fossil / 87% biomass
Running regime	Half-peak	Base
Electric production	2500 h/yr \approx 600 GWh	7500 h/yr \approx 1 125 GWh
Efficiency	33,8 %	40% (+ heat = \nearrow 49%)
Carbon footprint	1 143 kg CO ₂ eq/MWh	245 kg CO ₂ eq/MWh

2 years of work, 250M€ financed by E.ON, start-up date early 2016



Turbine



Buffer silos



Bag filter



Conveyers



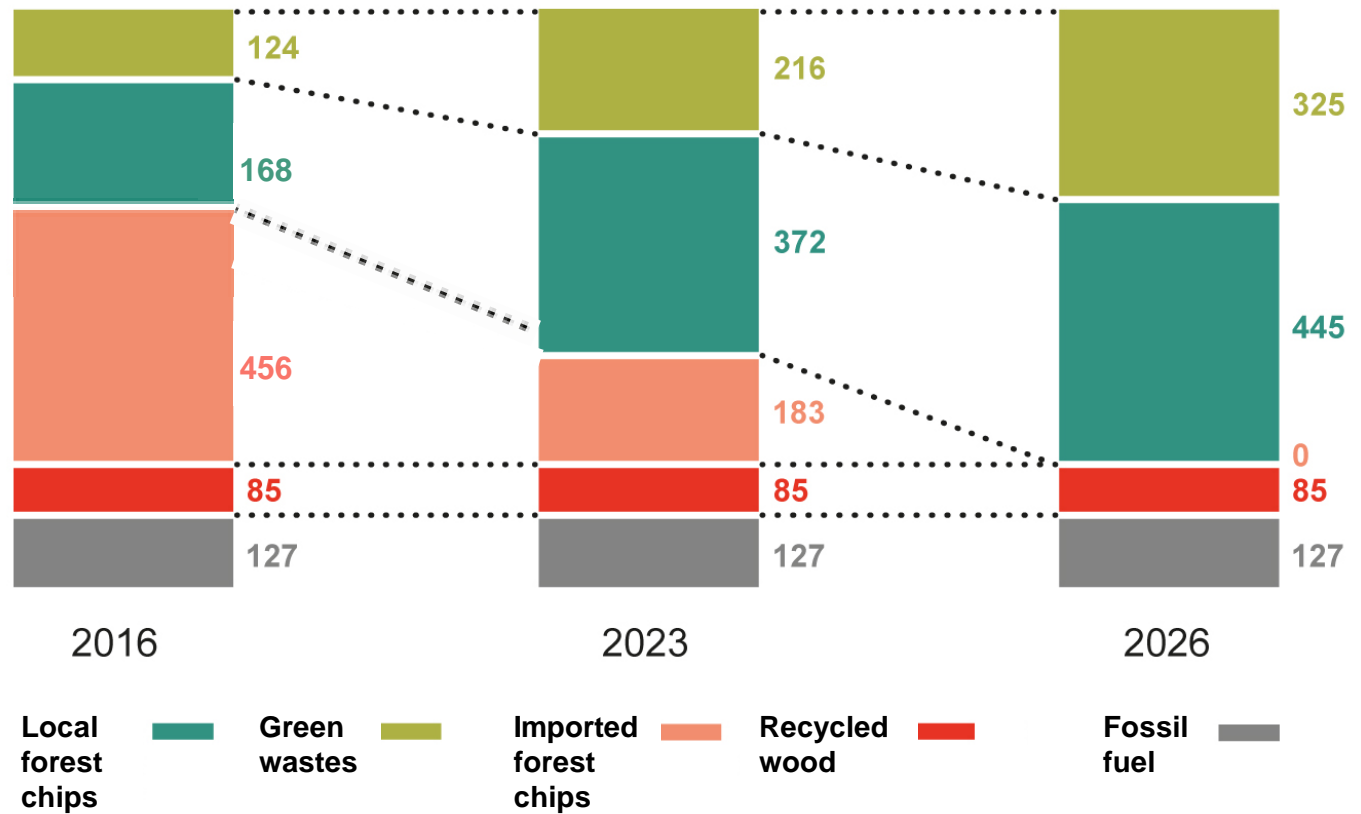
Chips storage silos



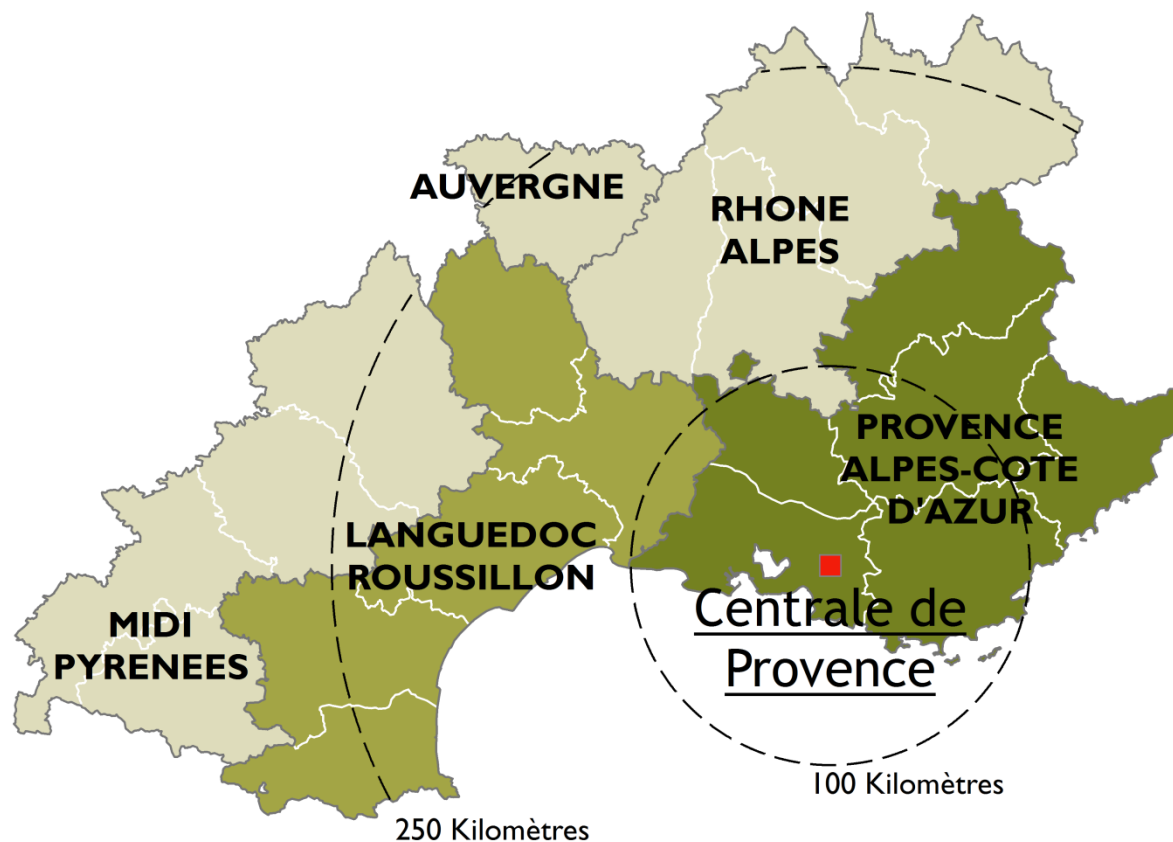
Chipping platform

A diversified supplying plan, adapted to Mediterranean location

Consumption (Kilo ton per yer)



Geographical origin of forest biomass



Mobilization per region

- 50% - Provence-Alpes-Côte d'Azur
- 33% - Languedoc-Roussillon
- 17% - Other regions

50 Km

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E.ON, an additionnal customer for non-collected wood

Current consumption:

- 1,3 Mton/year

Forest growth:

+ 5 Mton/year

Wood stock in the
Mediterranean Forest
(PACA + Languedoc-Roussillon)
186 Mton

P4B consumption :

- 0,38 Mton/year

65 million € / 400 jobs

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Forest dynamics: price

2
ideas

- Reduce collecting costs

- Pay for marginal cost

Wood collecting costs

€/t

Current price

Private forest owners payment

Current market

Current volume

Curved line of marginal cost
of forests

E.ON encouraged a performing
industry: more wood on the market at
the same price

Volume on the market
t/year

Gouvernement wishes :
increase wood collection

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Forest dynamics: price

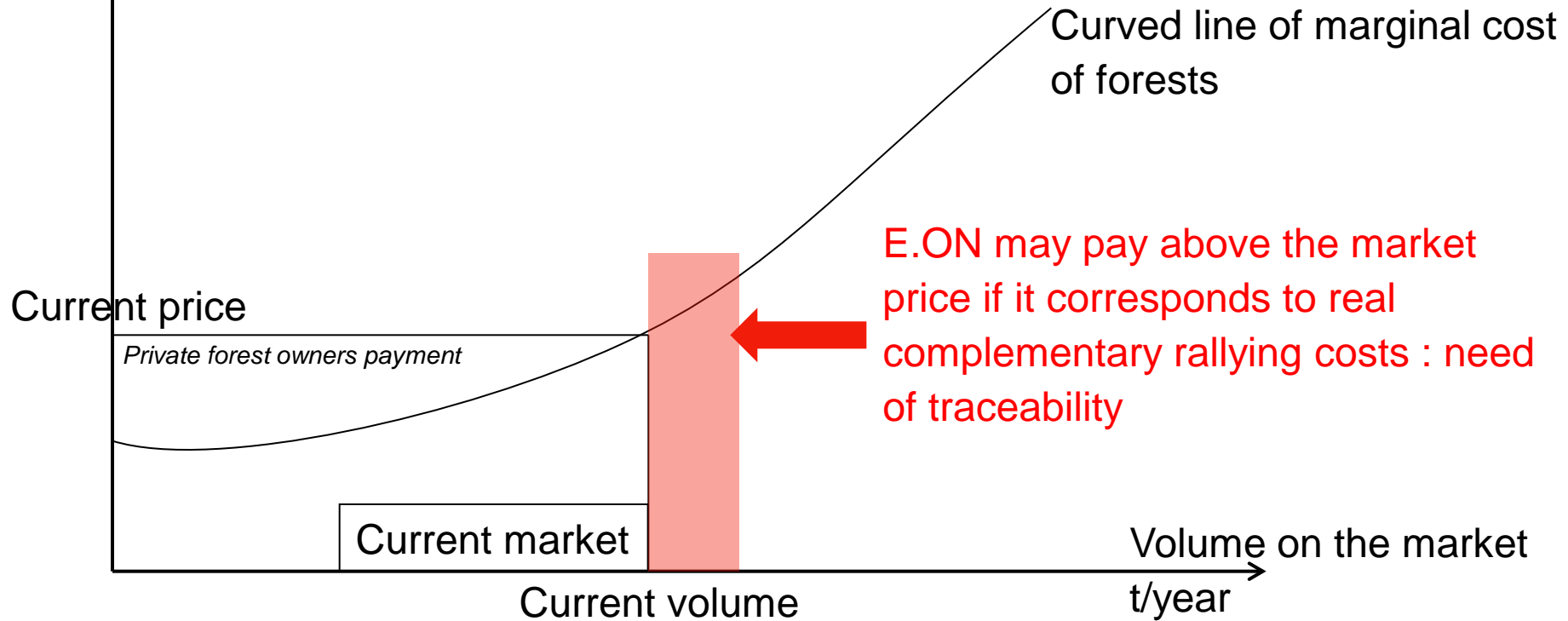
2
ideas

- Reduce collecting costs

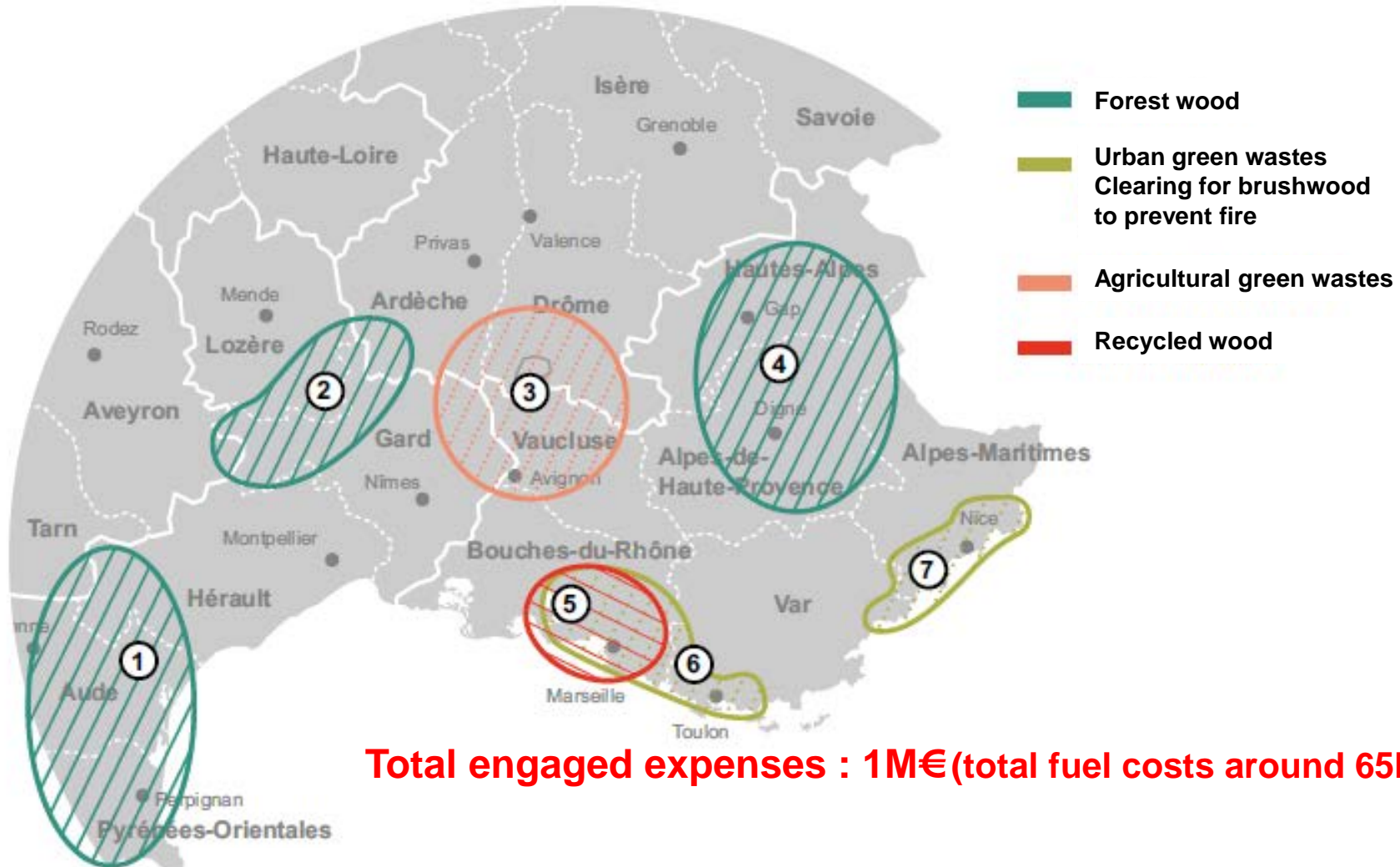
- Pay for marginal cost

Pay wood at marginal cost for wood products with a value above the market price

Wood collecting costs
€/t



« Wood plus »: E.ON strategy to expand harvest



Total engaged expenses : 1M€ (total fuel costs around 65M€/yr)

- ① Partnership with Société Forestière
- ② Working protocol with the Cévennes National Park and support to innovative initiatives
- ③ Testing of agricultural green wastes collection
- ④ Support to innovative initiatives
- ⑤ Sorting platform for recycled wood in cooperation with Véolia
- ⑥ ⑦ Optimization of green wastes collection and fire risk control