Office franco-allemand pour
les énergies renouvelables (OFAEnR)

Neoen's experience of agrisolar parks

Paris, Tuesday April 12th, 2016

neoen
renouvelle l'énergie

What is at stake

- To alleviate the mutual exclusion between competing uses of a rare land resource (LIFO principle):
  - PV Solar vs agriculture
  - PV Solar vs natural areas
- To increase available land by arranging the coexistence of multiple uses for a given land property
- To raise acceptability by tangible and common sense beneficial synergies with surrounding territories
- To pave local pathways for a rooted energy transition

Agenda

1	The agrisolar park of Ortaffa
2	Our partnership with La Bêle Solution
3	Conclusion

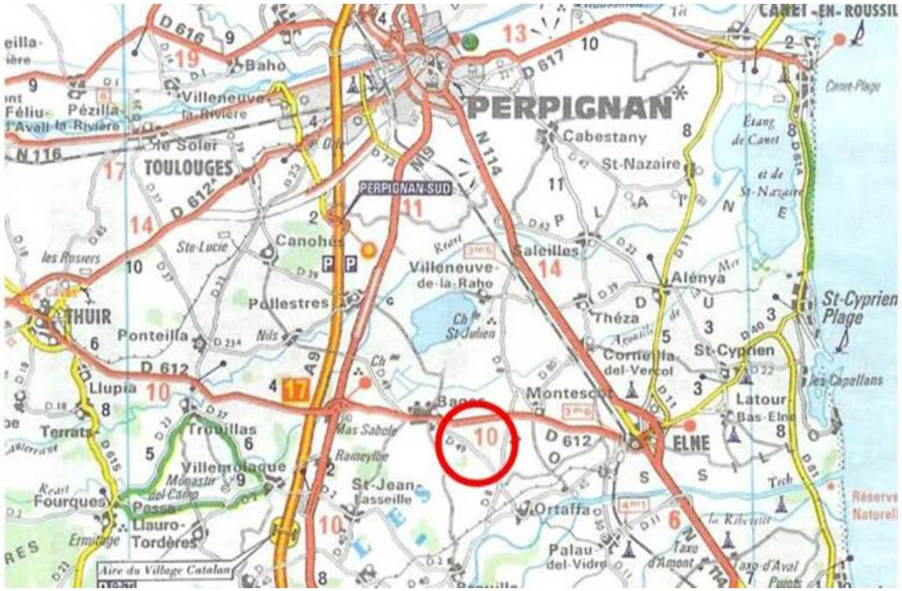
The agrisolar park of Ortaffa

Where

- On the territory of the municipality of **Ortaffa**, within the *communauté de communes* **Albères – Côte Vermeille** (Pyrénées Orientales, 12 km south of Perpignan)

By whom

- Development through a partnership between a visionary **mayor**, a local and PV self-educated vine and territory **expert**, together with a **rooted development team** (now Neoen)
- A PV plant now owned by a 3rd-party investor and operated by Gensun, a subsidiary of Neoen



Key figures

- Installed capacity: **24,9 MWc**
- Surface: **87 ha**
- Commissioning : **2013**
- Annual production: **35,8 GWh**
- Powered population: **15.000**
- Spared CO2 emissions: **311.000 t**
- Spared fuel: **6.570t/y**
- Spared uranium: **20 t**
- Spared radwaste: **14 t**

Initial situation

- 2 mains zones:
  - » 1 zone of fallow land, classified Nde (50%)
  - » 1 zone of vines, classified ZA (50%)
- Medium/Low vine growing potential
- Few environmental stakes
- Poor, wet and sandy ground

Development strategy

3 major orientations assigned to the project together with the municipality

1. A community project: **42** families, **74** signatories of land leases

2. Three charters for a net increase of local agricultural activities:
   - » A vine growing Charter to preserve the planted surface and upgrade its vine growing potential
   - » A sheep-breeding Charter
   - » A bee-keeping Charter to increase biodiversity

3. A harmonious integration in a divided landscape
   - » Divided land lots
   - » Bocage landscape
   - » Numerous brooks

The vine-growing Charter

- An agreement signed on October 31st, 2009 with the municipality

- Developer's commitments and achievements:
  - » Full compensation by 2015 of the uprooted vine surface (43 ha)
  - » **≈ 4.000** vine seedlings replanted by local vine growers per uprooted hectare by **2015**
  - » Seedlings from **100%** from controlled origins (96% **AOC**, *Appellation d'Origine Contrôlée* and 4% **IGP**, *Indication Géographique Protégée*)
  - » Subsidization of investment in vine plantations in order to increase the quality of the production and improve the CO2 footprint of the vineyards

- Economics: rents from land leases and higher added value from the activity

The sheep-breeding Charter

- An agreement signed on July 26th, 2010 with the municipality and a local shepherd.

- Developer's commitments:
  - » 60 hectares of fenced pasturage at a local shepherd's free disposal for a given local sheep endangered specy: the *« Rouge du Roussillon »*
  - » Customized height of the structures
  - » Full planting of the area with fodder crops to be chosen with the shepherd
  - » Refurbishing of old abandoned shelters in local style freely used by the shepherd

- Business model: cost savings for both partners, the shepherd and the PV Plant

The bee-keeping Charter

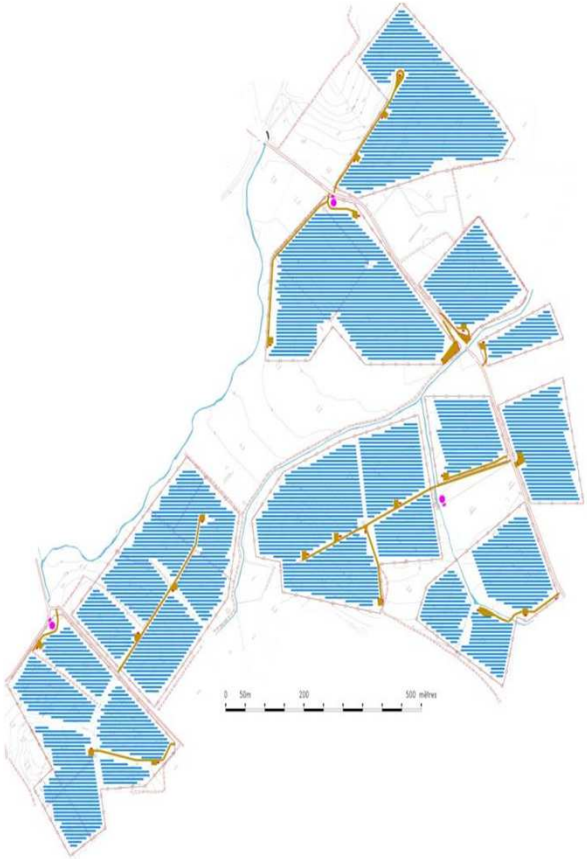
- An agreement signed on October 28th, 2010 with the municipality and a local bee-keeper.

- Developer's Commitments:
  - » To buy selected and certified bee queens and swarms (*« Abeille noire du Roussillon »*)
  - » Funding of Equipment for bee-keeping (hives etc.)
  - » 11 hectares sowed with seeds of honey plants to be chosen with the beekeper
  - » Out of which 1 fenced hectare dedicated to the beekeeper and his hives (up to 200)

- Business model: cost savings for the beekeper vs increased site biodiversity for the developer

Integration into the landscape

- Division of the PV park in **10 irregular lots** to merge into the bocage lines and shapes
- To preserve and maintain the network of brooks and streams
- Plantation of hedge rows with locals species along the RD49 in order to hide the residual impact on the landscape



Final output

- A mosaïc of activities
- A positive integration in the landscape
- A pragmatic and common-sense contribution to local activities and economy
- A high level of consensus
- A reference for local dialog to build upon for further combined developments of territories and renewables

Two agrisolar experiences

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La Bêle Solution's concept

Contractual set-up

a win-win partnership between stakeholders

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Service Level Agreement

- Scope of works
- Other obligations (training, certification)
- Reporting
- Obligation of results (especially for the recruitment of shepherds)
- Remuneration

2

Subcontract with a shepherd to be recruited by LBS

- Scope of works (mowing, care of sheep, etc.)
- Other obligations (training)
- Reporting
- Obligation of results
- Remuneration

Benefits for the shepherds

- **Free fodder for sheep**

- **Substantial increase of their incomes**
  - » In France the average yearly revenue for a shepherd is about 22,000 €
  - » In 2015, La Bêle Solution paid an average remuneration of 8,500 € for shepherds (+ 38 %)

- **Secured area with water**
  - » Protection against wolves (if any) and other predators

- **Opportunity for new shepherds to start their activity in a secured environment**
  - » The partnership with NEOEN give the opportunity to a young man and a former woman's vet to begin their activities

La Bêle solution
VOTRE TONTE ECO-LOCALE

Benefits for NEOEN

- **Reduced maintenance costs**
  - » Cost savings of [10 – 20%] depending on the initially required number of mechanical mowing

- **Better service**
  - » No projections or breakings from machines
  - » Positive impact on biodiversity
  - » Permanence of the service
  - » Shepherds to visit their sheep twice a week, immediate report if any visual problem in the park

- **Better dialogue with territories and other stakeholders**
  - » *« (…) high proportion of farmers among local representatives due to the number of small rural towns»* source. http://www.collectivites-locales.gouv.fr/files/files/Chapitre_7(3).pdf
  - » *Importance of the specialized press, ex.* http://www.lafranceagricole.fr/gestion/mes-brebis-entretiennent-une-centrale-photovoltaique-1,0,19834074.html

- **A reference to showcase the possibility to substitute cooperation and synergies to competition for land resource**

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Benefits for Nature and … La Bêle Solution

- **Increase biodiversity on sites**
  - » The natural mowing keep more vegetals and animals species alive

- **Lower CO^2 emissions**
  - » A mowing machine produces in average **2,5 g. CO^2 /m^2**
  - » Pastoralism transform earth as a **carbon sink** as well as forest; It is considered that one hectare of *eco pastoralism* stocks more than **170 kg. CO^2 /year**

- **A good deal for La Bêle Solution a green and social start-up**
  - » To enlarge his shepherd network
  - » To get a real expertise in solar's parks
  - » An opportunity to be a *bridge* between farmers, industrials and institutionals
  - » A faster growth for a green start-up
  - » To be with you today

La Bêle solution
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References

Site	Département	Surface ha	MWc	Sheep
Rochefort	Gard	30	11	500
Kertanguy	Côtes d'Armor	5,4	2,6	up to 70
Ygos	Landes	15	6,7	85
Luxey	Landes	21	8,5	50
Garein	Landes	18	10	100

La Bêle solution
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Conclusion

1. Developer‘s guidelines:
   - » Be micro, not macro, be concrete (i.e. tangible not « béton »)
   - » Think global … and local, act local
2. Authorities:
   - » Controlling rather than forbidding a priori
   - » Foster local dialogue and creativity to find out solutions
1. Duplication, concepts to be duplicated over other activities:
   - » Subject to the general arrangement of PV tables: aromatic plants, bee-keeping, snail farming, grape nursery, etc.
   - » Subject to the design of innovative PV structures: to be determined, a programme for ADEME call for projects?
3. Extrapolation:
   - » 1.500.000 ha for pastoralism, 20.000 sheep farmers in France (source Interbev 2014)
   - » New PPE ≈ 20.000 MW of additional solar capacity by 2023
   - » Typical solar density: 2 ha/MWc