



TRIGGERING THE CREATION OF BIOMASS LOGISTIC CENTRES BY THE AGRO-INDUSTRY

SUCELLOG project (IEE/13/638/SI2.675535)

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Fira Agrària de Sant Miquel
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Antecedentes

Escenario europeo necesidad energética



Nuevos biocombustibles sólidos para cubrir la demanda

Necesidades sector agrícola europeo



Aprovechar la oportunidad de importantes SINERGIAS entre producción biocombustibles sólidos y sector agroindustrial

Adaptar las agroindustrias para actuar como centros logísticos de biocombustibles sólidos de calidad con una pequeña inversión

Diversificar la actividad

- ✓ Equipos compatibles
- ✓ Actividad estacional
- ✓ Producción de residuos orgánicos en los alrededores
- ✓ Experiencia con materia prima orgánica
- ✓ Experiencia en garantizar la calidad del producto



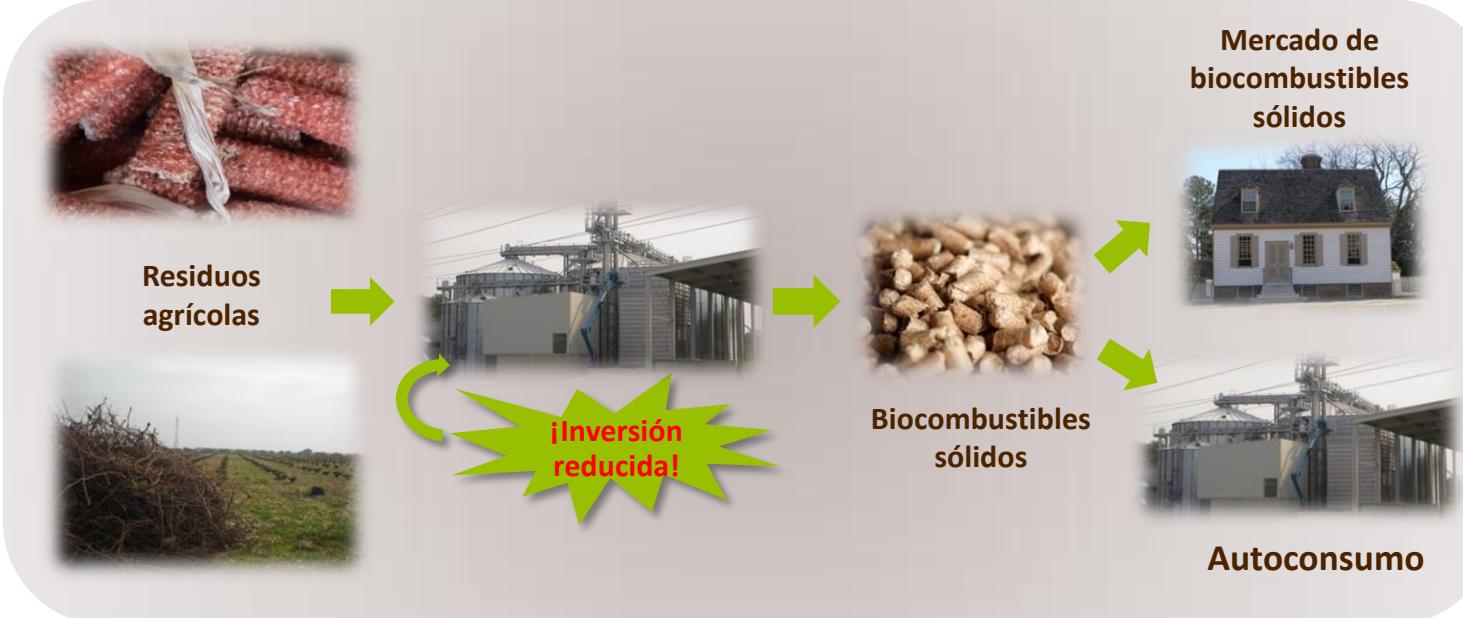
El proyecto SUCELLOG

AGROINDUSTRIAS como CENTROS LOGÍSTICOS DE BIOMASA ESTACIONALES

Operación
Habitual
(Nov-Feb)



Operación como
centro logístico
de biomasa
(Mar-Oct)

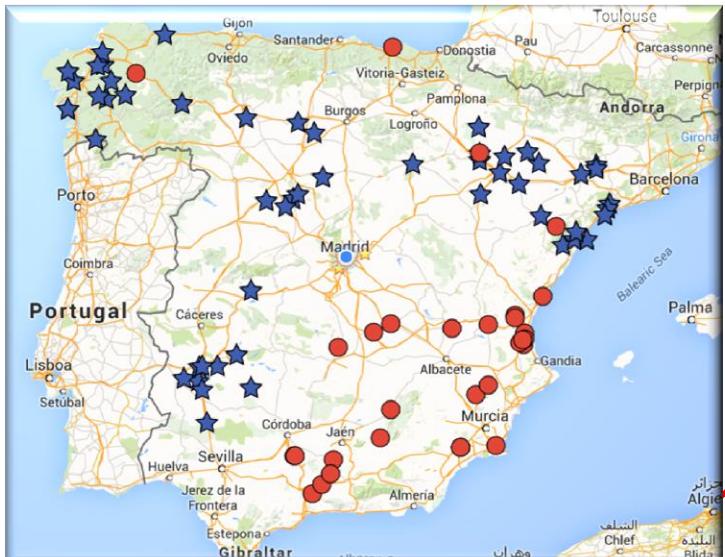


Partnership

sucellog

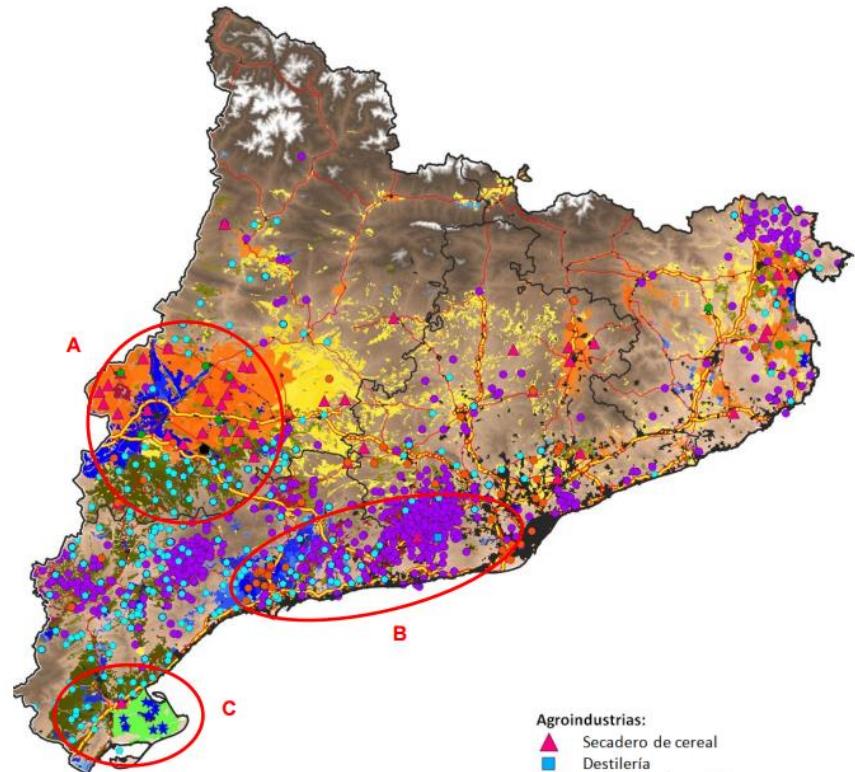
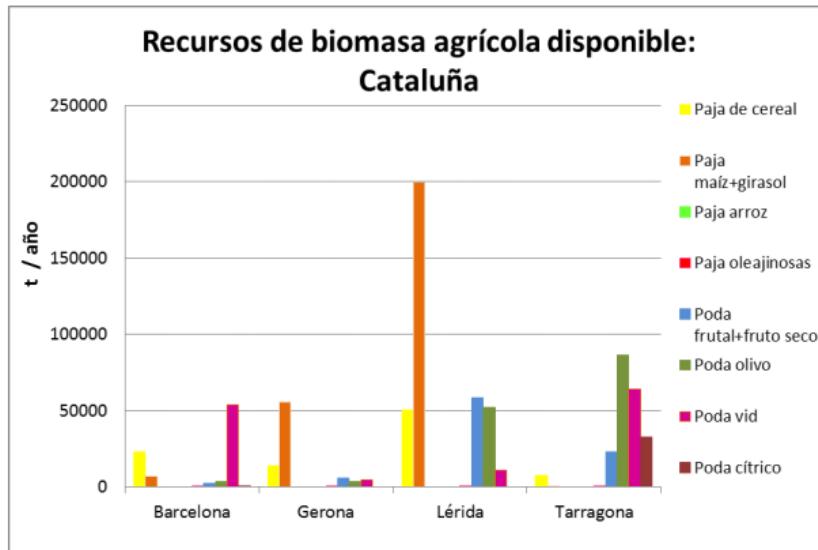


Regiones SUCELLOG



Actividades destacables

1. Determinación del MARCO REGIONAL e involucración de agentes interesados.



| | En | Feb | Mar | Abril | Mayo | Jun | Jul | Agos | Sep | Oct | Nov | Dic |
|------------------------------|----|-----|-----|-------|------|-----|-----|------|-----|-----|-----|-----|
| Secadero cereal y maíz | | | | | | | | | | | | |
| Deshidratadora forraje | | | | | | | | | | | | |
| Secadero arroz | | | | | | | | | | | | |
| Destilerías | | | | | | | | | | | | |
| Orujera | | | | | | | | | | | | |
| Secadero fruto seco | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Paja de cereal | | | | | | | | | | | | |
| Paja y zuro de maíz | | | | | | | | | | | | |
| Poda de cultivos permanentes | | | | | | | | | | | | |
| Cascarrilla de arroz | | | | | | | | | | | | |
| Raspón de vid | | | | | | | | | | | | |
| Granilla de uva y orujillo | | | | | | | | | | | | |
| Hueso de oliva | | | | | | | | | | | | |
| Orujillo de oliva | | | | | | | | | | | | |
| Cáscara de fruto seco | | | | | | | | | | | | |

- Recursos de biomasa disponible:**
- Paja de cereal
 - Cañote de maíz y paja de girasol
 - Paja de colza y otras oleaginosas
 - Paja de arroz
 - Poda de olivo
 - Poda de frutal y fruto seco
 - Poda de vid

- Agroindustrias:**
- Secadero de cereal
 - Destilería
 - Deshidratadora de forraje
 - Secadero de fruto seco
 - Orujera
 - Secadero de arroz
 - Industria del azúcar
 - Secadero de tabaco
 - Productoras de piensos
 - Bodega
 - Almazara

2. Desarrollo de un ESTUDIO DE VIABILIDAD y MODELO DE NEGOCIO específico.

- The SUCELLOG project supports 4 agro-industries in Europe to become biomass logistic centres using agricultural residues as raw material.
 - Cooperativa Agraria San Miguel - Aragón region - Spain
 - Luzéal-Saint Rémy – Champagne-Ardenne region - France
 - Società Cooperativa Agricola Le Rene s.r.l. – Toscana region – Italy
 - Tschiggerl Agrar GmbH – Styria region – Austria

3. CREACIÓN Y SEGUIMIENTO de los CENTROS LOGÍSTICOS DE LAS AGROINDUSTRIAS

4. DIAGNÓSTICO y AUDITORÍAS

5. Transferencia de CONOCIMIENTO

Resultados: ¿Estás interesado?

¿Qué es el biomasa y las compañías de bio



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tu región
existentes
roducción

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PRIORITARIAS

¿Qué
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NEGOCIO

¿Quieres cuenta conver

DES

ntos clave a tener en la posibilidad de ogístico de biomasa?

O MANUAL CONCEITUAL BÁSICA

ALREADY AVAILABLE

[www.sucellog](http://www.sucellog.com)

Available languages:
DE, EN, ES, FR, IT

A green arrow pointing to the right, indicating the direction of the next step.

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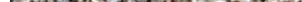
© sucello

Triggering the creation of biomass logistic centres by the agro-industry

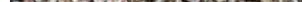
Handbook for agro-industries interested in starting a new

activity as biomass logistic centre: carrying out a feasibility study

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principales
estudio técnico-
convertir tu
centro logístico



Caso de estudio en España

Cooperativa Agraria San Miguel, Spain

| Current activities | Existing equipment that can be used | Available agrarian residues | Outcomes of the feasibility study | Outcomes of the market assessment |
|---|---|---|---|--|
| Production of fodder pellets and bales from alfalfa | Two alfalfa production lines can be used for the pre-treatment of the solid biomass | Cereal straw >11,000 t/year Maize stalks >8,000 t/year | Straw is the most interesting raw material Blending with wood is required | Price of the product: <ul style="list-style-type: none"> • 117 €/t • 0.027 €/kWh The price is positioned in the middle range local solid biomass market |
| Production of fodder pellets from agro-industrial food residues | | | The most competitive product is a Class B agro-pellet with a maximum 70% share of straw | Secondary benefits should be offered to consumers: <ul style="list-style-type: none"> • ash as low-cost fertiliser, • reduction of Cl content of the soil |

Recommended business strategy

Development of internal self-consumption chain targeted on the pig farmers (the members for cooperative) – being the suppliers of the straw and the consumers of the solid biomass. Biomass logistic centre should purchase the straw from pig farmers only under the condition that as well the annual or plurennial agro-pellet sale contracts are made.

Actividades en España

- Pelletizing tests have been performed using two different mixtures:
 - 70% straw/30% wood
 - 50% straw/50% wood
- Combustion tests have been performed in several surrounding pig farms using existing boilers (originally designed for combustion of wood pellets and olive pits) finding some performance problems.
- Current test are being carried out in different boiler models adapted to agrarian fuels in collaboration with boiler manufacturers.



Caso de estudio en Austria

Tchiggerl Agrar GmbH, Austria

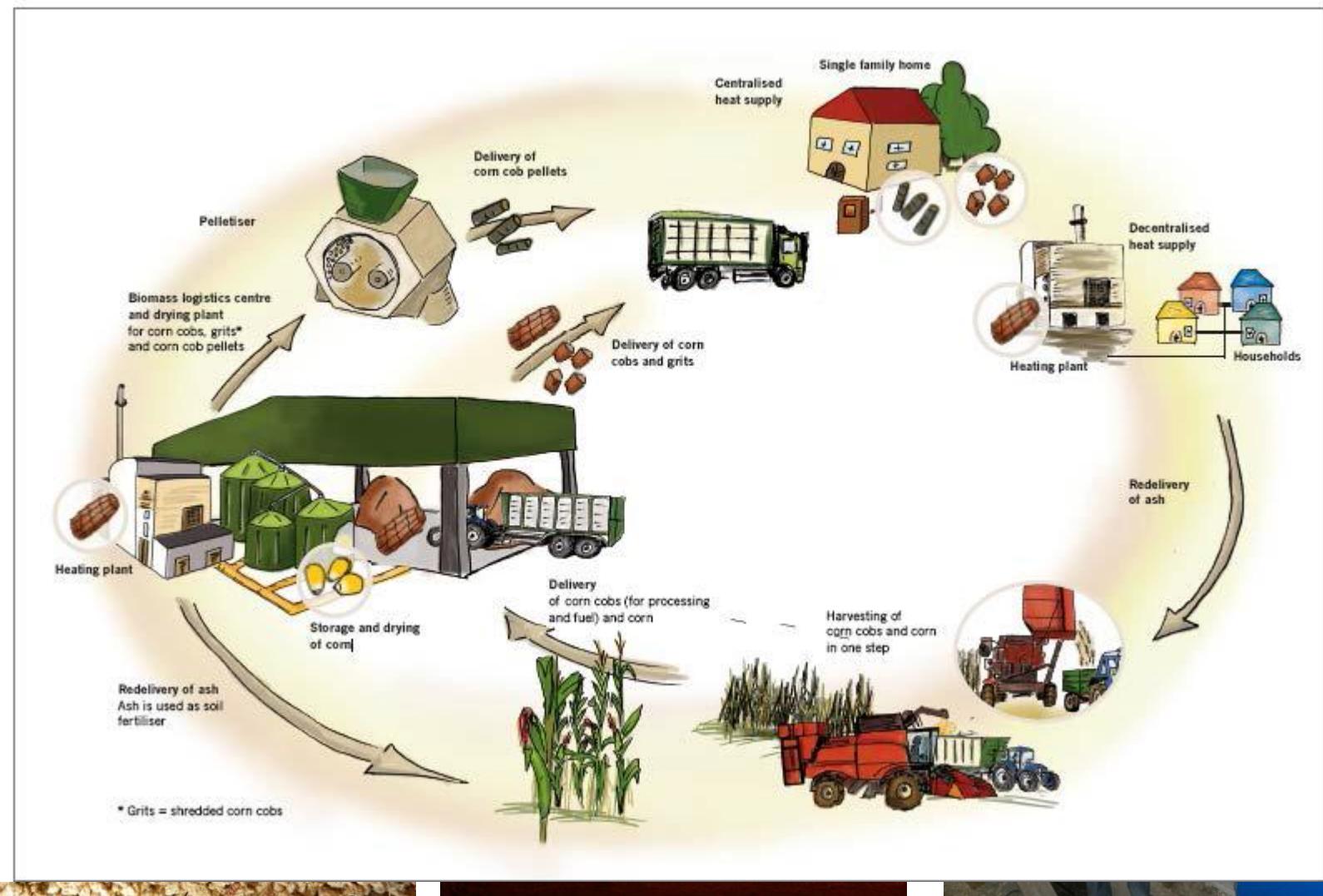
| Current activities | Existing equipment that can be used | Available agrarian residues | Outcomes of the feasibility study | Outcomes of the market assessment |
|---|--|---|---|---|
| Corn harvesting, treatment and trading | Drying facility that is currently used for drying the cobs (afterwards used in animal bedding) | Cereal straw 5,190 t/year Hay 200 t/year | Corn cobs are the most interesting raw material due to the lack of competitive uses | Only corn cob-derived products are feasible. Grits offer large potential market and chance of good profit. Price of the corn cob products: Loose cobs <ul style="list-style-type: none"> • 58 €/t • 0.017 €/kWh Grits <ul style="list-style-type: none"> • 144 €/t • 0.038 €/kWh Pellets <ul style="list-style-type: none"> • 192 €/t • 0.044 €/kWh |
| Logistic operating of straw | | | | |
| Pelletizing of corn cobs and straw for animal feeding and bedding | | Corn cobs 15,249 t/year | | |

Recommended business strategy

The main consumers are expected to be farms and industries using wood chips and pellets. The market would be extended to households, but they are currently not allowed to use corn cobs by law in Styria. The best strategy for the company would be also to produce a small amount of corn cob pellets to be proposed to the consumers as test products in order to facilitate the transition to grits.

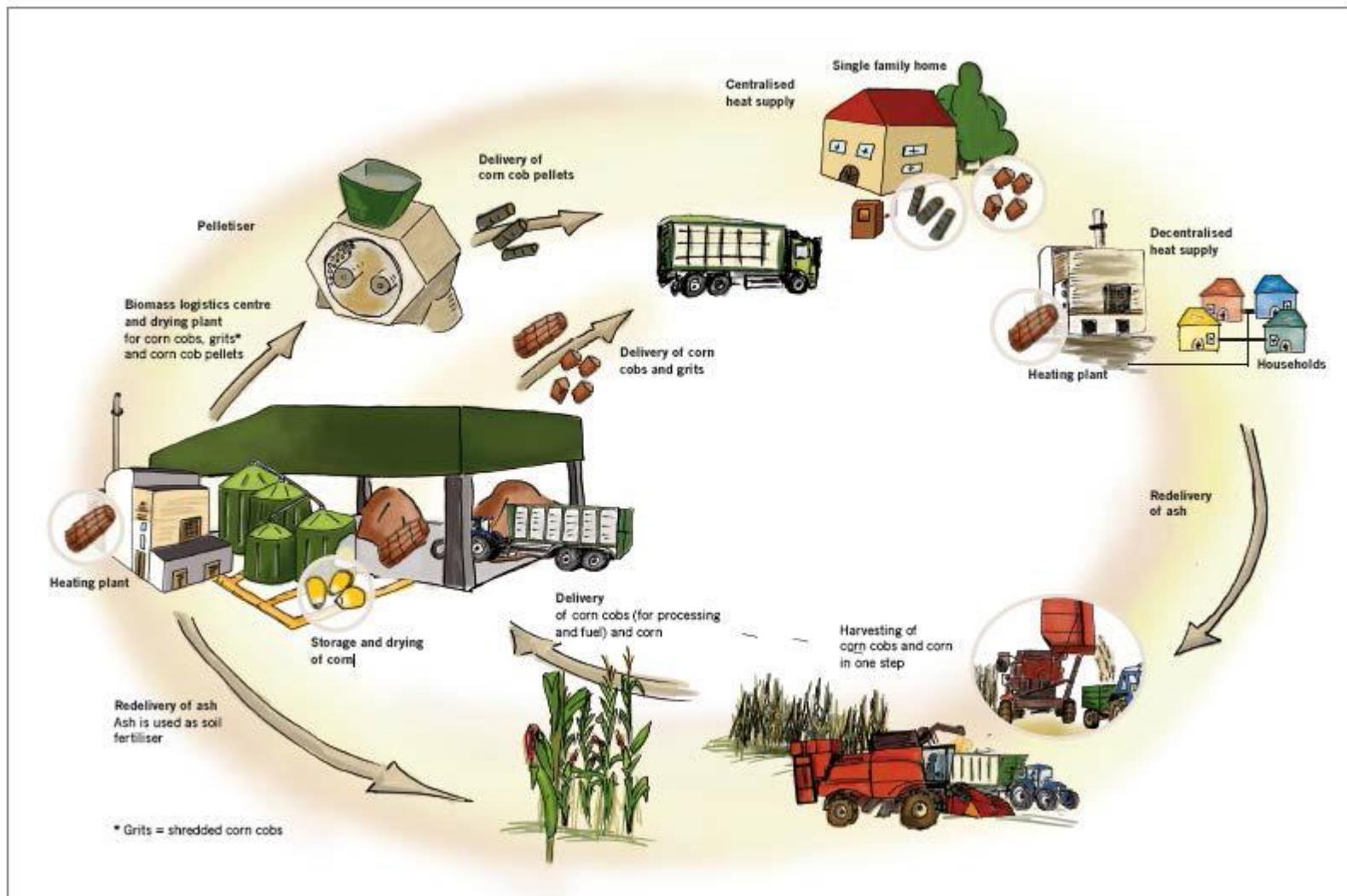
Actividades en Austria

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Actividades en Austria



Caso de estudio en Francia

Cooperative Luzéal-Saint Rémy, France

| Current activities | Existing equipment that can be used | Available agrarian residues | Outcomes of the feasibility study | Outcomes of the market assessment |
|---|--|---|---|---|
| Production of fodder pellets and bales from alfalfa | Two current alfalfa production lines can be used for the pre-treatment of the solid biomass with minor modifications | In a radius of 30 km: Cereal straw 32,000 t/year Rape straw >40,000 t/year Miscanthus, sawdust and wood chips are available for blending | Only cereal straw is considered, since rape straw is mainly left on the field as fertilizer Blending is required The most competitive product is a Class A agro-pellet with 60% straw/40% sawdust | Minimum selling price: 163 €/t 0.037 €/kWh The production costs should be reduced in order to be competitive in the local industrial market dominated by wood chips |

Recommended business strategy

Two scenarios are currently being assessed:

- 1) Reduction of production costs;
- 2) Extending the range of the services provided by the Cooperative – selling not only the biomass, but also heat, becoming an ESCO (energy service company).

Caso de estudio en Italia

Cooperative Luzéal-Saint Rémy, France

| Current activities | Existing equipment that can be used | Available agrarian residues | Outcomes of the feasibility study | Outcomes of the market assessment |
|---|---|--|---|--|
| Sunflower harvesting, treatment and trading | Vertical dryer used currently for corn and wheat drying is compatible with drying of olive pits | Industrial residues from own activity In 30 km radius: Olive pomace 1,500 t/year | Despite high availability, cereal straw are not considered in a first step because of their price | Precise market prices of the products are not defined yet, since the exact quality of the produced fuel (ash and Cl content) is not known. |
| Cereal drying (maize and rarely wheat) | Pelletiser | Corn cobs 3,500 t/year | The most competitive products are: | |
| Production of pine nuts | 25,000 m ² (open area) and 2,000 m ³ (warehouse) of storage capacity | Prunings of permanent crops 2,500 t/year | Class A agro-pellets and mixed agro-prunings chips | Production costs are comparatively low. Thus an attractive price for consumers can be offered. |
| Production of olive oil | | Olive prunings 1,900 t/year | and hog fuel | |

Recommended business strategy

The main consumers are expected to be households as well as medium to large consumers (industries, district heating plants, greenhouses). The manufacturing process of the agricultural prunings should be improved (diversifying the products obtained from them depending on the quality) and the residues from other processes (proper or connected with the agro-industry) should be re-used. The agro-pellets will represent the top product of

Retos y barreras: Técnicas

- **Propiedades de la materia prima no apropiadas para ser utilizada en los equipos existentes**
- **Riesgo de contaminación** por la utilización de la línea de producción habitual para la producción de bioenergía.
- **Falta de equipos de combustión adecuada** en los clientes.



Políticas, regulatorias y barreras legislativas

- **Incertidumbre sobre qué biomasa se puede utilizar y si es o no residuo:** Diferente interpretación del origen de la biomasa en la legislación nacional y regional existe.
- **Concepto nuevo** y, con frecuencia, la administración regional y nacional prefiere **otras fuentes de energía renovable más extendida** para formular **planes y opciones de inversión**.
- **Falta de compromiso político:** la biomasa forestal se utiliza como referencia. Biomasa agrícola no reconocida, mencionada o distinguida al abordar los problemas de energía sostenible a nivel nacional o regional.
- **Parámetros de combustible críticos y variables** que causan costes adicionales a lo largo de toda la cadena.
- **Diferentes impuestos** (materia prima, producto, combustible)



Conocimiento y concienciación sobre las barreras

- Cuestión de **aceptación social**.
- **Prácticas agrícolas existentes**.
- **Falta de información a los usuarios de biomasa**.
- **Falta de información en las agroindustrias**.
- **Falta de información en las cooperativas agrarias**.



Barreras de mercado

- **Falta general de experiencia y conocimiento acerca del uso de la biomasa sólida para la producción de energía.**
- **Gran exceso de biomasa forestal en el mercado.**
- **Bajos precios del petróleo y del gas.**
- **Baja actividad del mercado.**
- **Falta de tecnologías apropiados en el mercado.**



Barreras financieras y de organización

- **Falta de ayudas.**
- **Dificultad de garantizar acuerdos firmados.**
- **Suministro de materia prima y la disponibilidad variable.**
- **Mayores costes de inversión y de mantenimiento.**
- **Falta o alto precio de la tecnología de tratamiento de gases de combustión y de combustión para cumplir los umbrales de emisiones.**
- **Esfuerzos logísticos.**
- **Aumento de los costes específicos con menor capacidad.**





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