

Strategies for Biorefinery Development

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SPECIFIC SUPPORT ACTION
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▷ Strategies for Biorefinery Development

Key factors of success identified

- ✓ On-site existing of a **major bio-industry is attractive** for the development of the other one.
- ✓ On-site existing of an **R&D center** already well developed and experimented for the implantation of another company.
- ✓ **Proximity to the local agrosources** which facilitate the contract relations with the farmers allowing to define specifications and impose a regularity and a quality of the (long term) supply.
- ✓ **The main product has a guaranteed market** (in volume and in long time) and is **supported at the national level.**

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Key factors of success identified

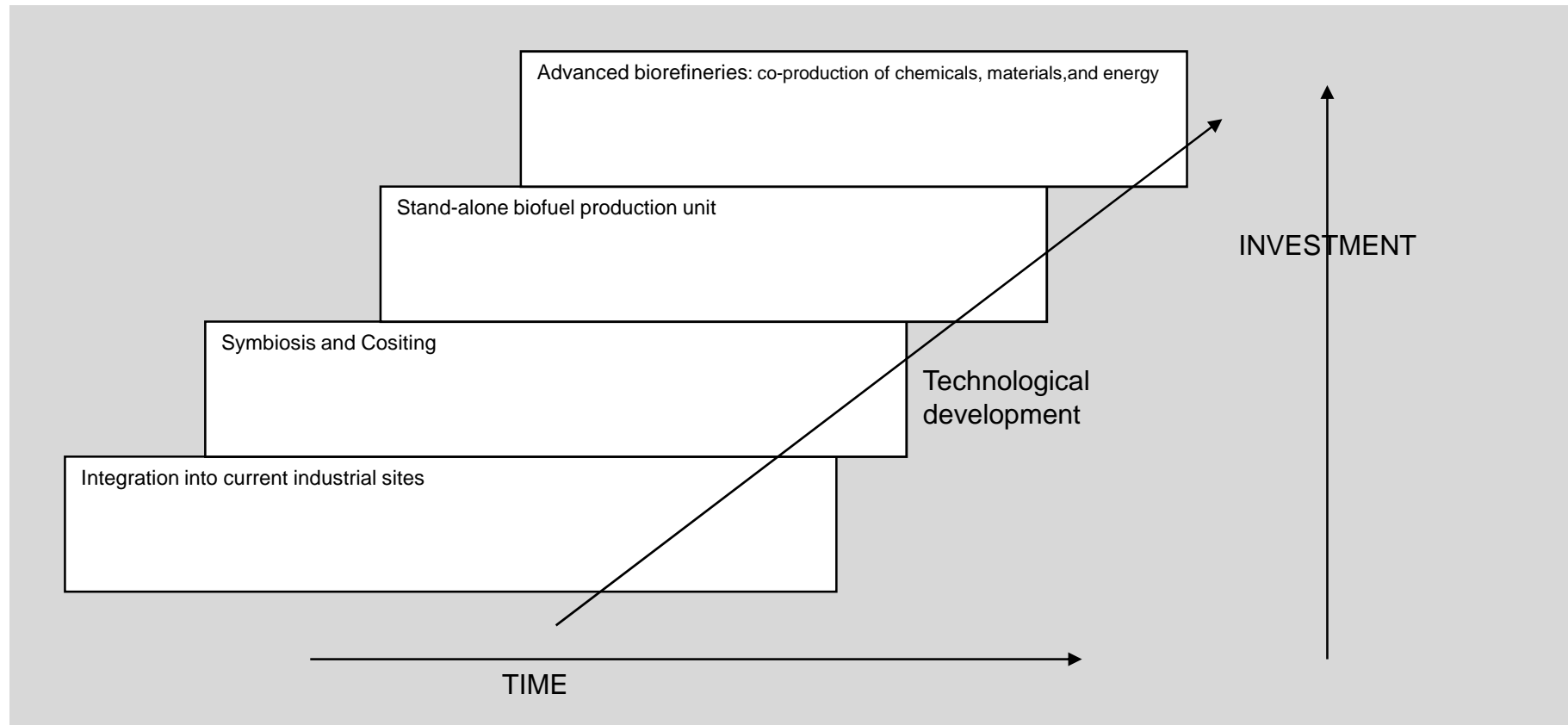
- ✓ Proximity with **transportation facilities**.
- ✓ Real **synergy between actors** (Industrial Ecology).
- ✓ **Integration of sustainability** in future developments.

Recommendation

- ▶ Take into account these key success factors for fostering the development of future biorefineries.

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Subsequent steps of success for biorefineries



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Recommendations

1. Focus on renewable resource availability
2. Foster the development of the different biorefinery concepts
3. Foster the integration of the biorefinery concept into current industries
4. Stimulate advanced biofuels development
5. Increase R & D efforts on new technologies
6. Stimulate pilot and demonstration plants
7. Develop a European strategy towards 2020

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1. Focus on renewable resource availability

The access to biomass will be limited in the future.

To overcome this challenge, three “access to renewable raw material strategies” have been identified:

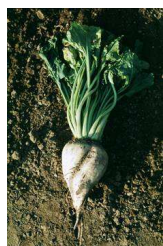
- ✓ **Develop biorefineries based on local agro-resources**
- ✓ **Develop biorefineries near major harbours (biomass import)**
- ✓ **Develop a decentralised network of small sized biorefineries (biomass pre-treatment)**

Each country or region must promote options best suited to its own resources and needs.

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2. Foster the development of the different biorefinery concepts

Foster the development and/or integration of the biorefinery across all concepts together with the promotion and facilitation of access to market for biobased products (Lead Market Initiative).



The focus should NOT be on the development of a single type of biorefinery.

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3. Foster the integration of the biorefinery concept into current industries

Additional efforts should be done to convert existing agro- or chemical industries into full-fledged biorefineries :

- ✓ by the integration of extra conversion processes such as to maximally valorise the incoming biomass and minimize the waste produced
- ✓ By industrial collaboration between different industries, like the formation of industrial clusters (industrial metabolism).



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4. Stimulate advanced biofuels development

One of the most relevant **success factors** was that **the main product** of a biorefinery plant **must have a secured market**, in (high) volume, in price and in (long) time.

It seems (WP1) that the current European and national policies to promote biofuels have leveraged the development of most integrated industrial biorefineries in Europe !

► **We recommend to promote the development of advanced biofuels plants (2nd generation)**

On the long term these plants would be further developed into advanced biorefineries.



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5. Increase R&D efforts on new technologies

Special attention has to be paid on technologies that make **optimal use of the cellulosic biomass** and waste to convert it into a broad spectrum of bioproducts and bio-energy.

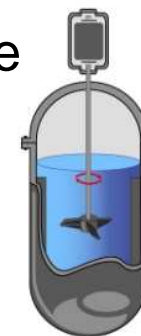
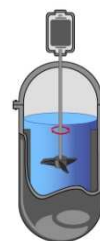
- ✓ Increase R&D efforts on **thermochemical conversion processes**, especially gasification, pyrolysis, syngas catalysis, syngas fermentation,...
- ✓ Increase R&D on **enzymatic hydrolysis of lignocellulosic biomass**.
- ✓ Increase R&D on **waste conversion technologies** .
- ✓ Support R&D for the Integration of new technologies such as biotech into traditional (chemical, biochemical) production processes.
- ✓ Perform R&D and pilot scale activities to investigate **integration efficiencies of different conversion technologies**, especially the integration of CHP in existing biorefinery concepts.

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6. Stimulate pilot and demonstration plants

Stimulating the construction and financing of pilot and demonstration plants is therefore one of the most important measures that can be taken. The possible scenarios should include the following steps:

- ✓ an update of the a mapping of different pilot/demonstration plants already existing in the EU, including a description of available infrastructure (<http://www.bio-economy.net>)
- ✓ an inventory of future (technological) needs & gaps,
- ✓ better coordination, improving the access (sharing) and use of pilot plants,
- ✓ access to funding for pilot and demonstration plants should be coordinated and facilitated at EU level,



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7. Develop a European strategy towards 2020

The definition of a strategy towards 2020 would enable to focus on the key factors of the development and to increase R&D, especially in the form of **Public-Private Partnerships**, to develop new applications both for primary products such as platform chemicals and for transformed/ consumer products.



www.biorefinery-euroview.eu

Questions ?