

EUROPEAN INDUSTRIAL BIOENERGY INITIATIVE (EIBI) - AN OVERVIEW

Objectives and activities

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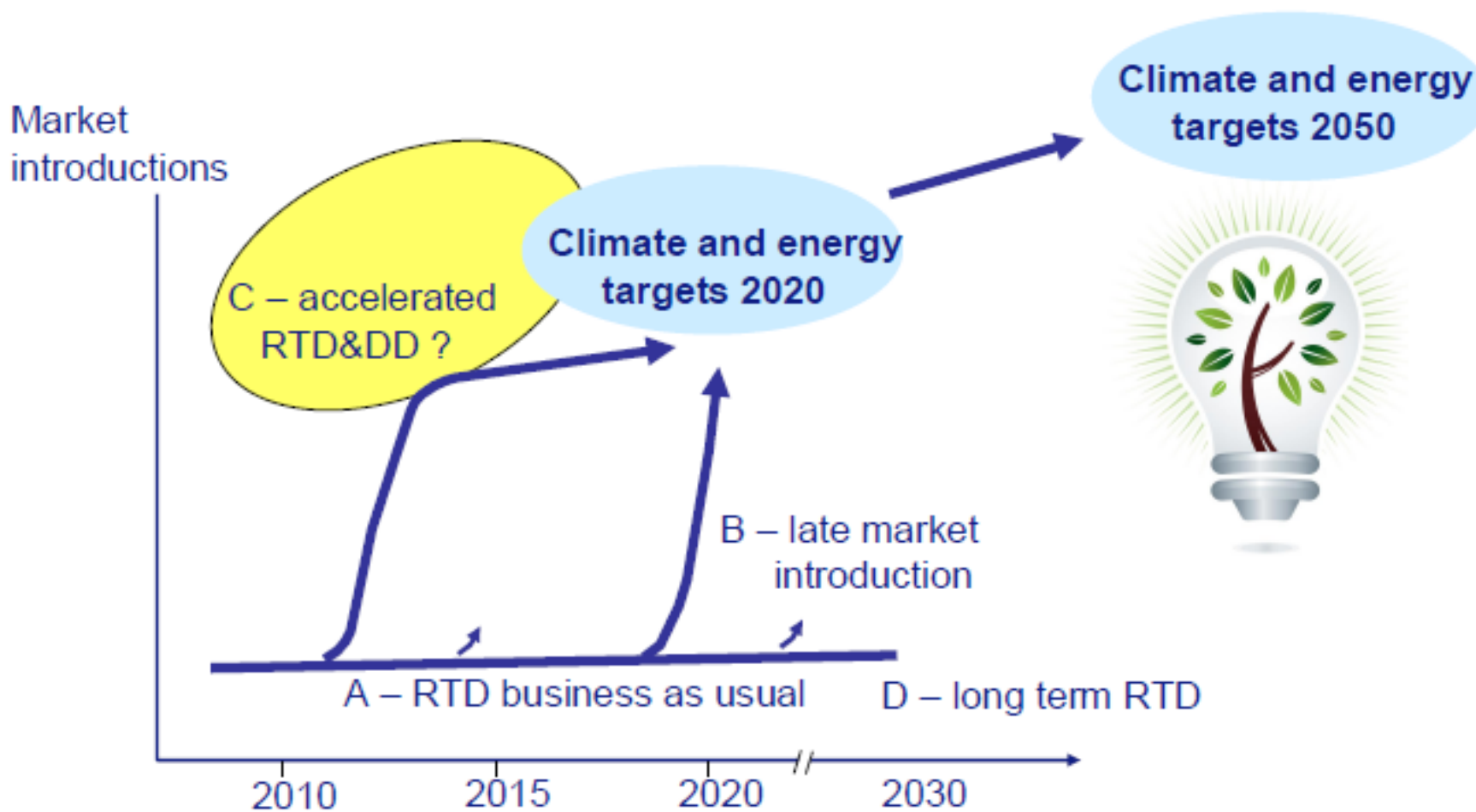
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Why an Industrial Initiative on Bioenergy at EU level ?

- Thanks to R&D activities of EU actors (academia, research institutions, industry) innovative technologies to tackle the challenges of deploying a larger feedstock base, processing more difficult feedstocks and producing more added value per unit of raw feedstock (biorefining) are being developed.
- Those technologies most likely to bring significant contribution to the 2020 targets, in addition to existing commercial technologies, are too risky and too costly to be developed for commercial and industrial deployment by private actors alone.
- Feedstock suppliers, technology vendors, industrial project developers and operators likely to deploy the innovative projects needed for demonstration and first industrial units are based in different member states.

Routes to 2020 targets



Source: Erik ten Elshof, 2008

EIBI: objective, activities, budget

Key objectives

- Enabling commercial availability of advanced bioenergy at large scale by 2020, including advanced biofuels covering up to 4 % of EU transportation energy needs by 2020.
- Strengthening EU world technology leadership for renewable transport fuels, in particular for diesel and jet engines, serving the fastest growing area of transport fuels in the world.

Core activity

- Selection and funding of demonstration and reference plants, via calls for projects
 - **Demonstration:** outcome of demo unit should allow first commercial unit to be designed and performance guaranteed.
 - **Reference plant:** first commercial scale unit

Estimated budget : 8 billion € over 10 years, to fund 15 to 20 demonstration and / or reference plants

d) Budget, Timing & Funding

7 "generic" value chains		Estimated # of demo / reference needed	Total estimated budget M€	Public funding M€	Comments Ratio Public Grant /RSFF*
1	Synthetic fuels / hydrocarbons from biomass via gasification	1 D 2 R	1300-1700	650-850	50%/50%
2	Bio-methane and other gaseous fuels from biomass via gasification	1 D, 2 R	500 - 800	250-400	50%/50%
3	High efficiency power generation via gasification of biomass	2 R	600 - 900	300-450	50%/50%
4	Bioenergy carriers from biomass via other thermochemical processes like pyrolysis, torrefaction etc.	2 R	300 - 400	150-200	50%/50%
5	Ethanol and higher alcohols from carbohydrates containing biomass ^[1]	1D 2 R	900 - 1200	450-600	50%/50%
6	Renewable hydrocarbons from carbohydrates containing biomass via biological and/or chemical process	2 D 1 R	400 - 500	200-250	50%/50%
7	Production of bioenergy carriers from CO ₂ & sunlight through micro-organism based production (algae, bacteria etc.) and further upgrading into transportation fuels and valuable bio-products	2-3 D 1 R	1200 - 1500	600-750	50%/50%
Additional activities					
B	- Contribution to production and harvesting of biomass - Reserve for still unidentified value chains		800 - 1000	400-500	50%/50%
	TOTAL		6000 - 8000	3 000- 4000	

Overview on estimated Budget per value chain

*RSFF = Risk Sharing Finance Facility

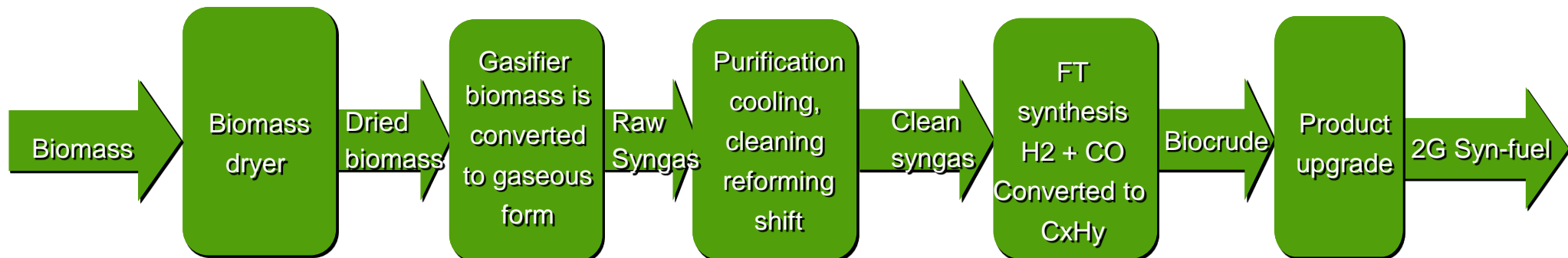
Current status:

- .Conceptual study completed
- .Out Side Battery Limit Engineering study for Kymi & Rauma completed
- .Environmental Impact Assessment in 3 locations
- .Biomass dryer test runs completed
- .Piloting of biomass gasifier on going
- .Demonstration of the whole concept planned

Next steps:

- .Final technology / concept decision Basic Engineering & Permitting

TOTAL INVESTMENT COST ABOUT 350 MEUR.
FUNDING IS EXPECTED THROUGH PUBLIC/PRIVATE PARTNERSHIP.



Why do we need several demonstration and reference plants?

- Significant variations within the individual generic value chains: feedstocks & conversion technologies
- EIBI does not intend to pick winners up front; economic actors have to come forward with proposals and be ready to take financial and market risks to be shared with public actors

Basis for the budget estimation per value chain/plant

- Combination of investment costs, feedstock costs and operation costs could vary substantially from one value chain to another and within some value chains
- Plant size will vary between different chains
- Budget estimates based on published figures and EBTP expertise

First steps towards establishment of a procedure: criteria for projects selection and evaluation

EBTP's Proposal for Project Eligibility and Selection Criteria discussed at Technical Workshop with European Commission, with active contribution of EBTP and other technical experts (September 2009).

A 2-steps procedure is proposed:

- In the first step, eligibility (go/no go)
- In the second step, quantitative criteria with a range of scores and weights.

Criteria for projects selection and evaluation

- **EU dimension:** Consortium actors from at least 3 Member States
- **Scale:** if demo exist, appropriate for further industrial scale up at low risk. If industrial appropriate for being profitable.
- **Industrial leadership:** clear industrial leadership to operate the project and bring private funding along public funding.
- **Innovation:** at least one “technology brick” or the integration of “technology bricks” within the considered value chain should not have been deployed at demonstration / commercial scale.

Criteria for projects selection and evaluation

- **Feedstock and market potential for industrial scale:** realistic scenario for feedstock sourcing for future industrial units should be described and volume potential of corresponding bioenergy market should be outlined.
- **Timeline:** deployment of project outcome should be realistic to bring first commercial contribution by 2015-2017 for the projects selected in first demonstration call and by 2020 for the second demonstration call.
- **Sustainability:** all RES Directive relevant provisions should be met.