



## **European Technology and Innovation Platform – ETIP Bioenergy**

### **Position on the SET-Plan – Issue Paper “Strategic Targets for bioenergy and renewable fuels needed for sustainable transport solutions in the context of an Initiative for Global Leadership in Bioenergy” from 26 October 2016**

ETIP Bioenergy welcomes the European Commission’s initiative to clarify and prioritise the actions and research needs within the updated SET-Plan and matching them to the pillars of the Energy Union. We appreciate the opportunity to participate in the dedicated stakeholder’s consultation and to comment this Issue Paper which follows an Issue Paper on Action 8 "Strengthen market take-up of renewable fuels needed for sustainable transport solutions", published on 13 May 2016. Our position below complements the Input Paper submitted by EBTP/ETIP Bioenergy on 26 May 2016. We would like to stress the importance of bioenergy in the future energy sector, with a particular focus on advanced biofuels.

#### **General remarks**

The targets set for 2020 and 2030 correspond to the already set regulatory targets from the EC under Directive 2015/1513 EC and thus are consented by us even if they will be difficult to achieve unless bold measures are immediately taken. To take action on renewable transportation fuels is seen as crucial as the transportation sector is currently the one furthest away from fulfilling the (relatively modest) targets set. In order to make targeted increases in bioenergy and renewable fuels needed for sustainable transport solutions possible, stronger policy instruments will be needed (more or less immediately). Target price levels and industry’s willingness to invest in new processes will be highly dependent on this, as will the competition between different technology development routes.

A special focus on high-quality energy carriers, such as transportation fuels (and electricity) does not necessarily mean less availability of biobased heat, since heat constitutes a side stream of energy available from most processes discussed (such as biorefineries). The ETIP Bioenergy and RHC-ETIP, as the key ETIPs representing the bioenergy sector, in general pursue the same objectives in terms of bioenergy and renewable fuels in sustainable transport solutions and will cooperate when it comes to the implementation draft.

Overall the document could be shortened considerably. We suggest to delete Annex A and to discuss relevant actions when developing the Implementation Plan.

## Do you agree with the targets set in the issue paper?

Past and present bioenergy shares as well as future targets are presented at length in chapter 1, 2, 3 and 5 (chapter 4 is missing). This could be condensed considerably; a clear distinction between likely developments and projections under the National Renewable Energy Action Plans (NREAP), which are not very recent, should be made. Looking from November 2016, 2020 is coming up very soon and any SET-Plan activity will have a very limited market impact by this year. So it is important to have a forward looking approach to 2030 and beyond.

The targets and expected development of biofuel production are stagnating, compared to the development of biomass-based electricity, which is expected to continue to increase strongly. At the same time, the need for action is more acute for the transportation sector. This is correctly pointed out on p. 9: “Moreover, the urgent need for greenhouse-gas emission reduction in transport sector as part of non-trading sector reduction of 30 % by 2030 compared to 2005 calls for advanced renewable fuels.” This should be stressed from the beginning of the document. The replacement of biofuels produced from food crops by advanced biofuels will have only a limited impact on the decarbonisation of transport; the first aim should be to replace fossil fuels!

In the chapter on Strategic Targets in Renewable Fuels for Transport (p. 9) it is stressed that “[...] these fuels should be based on *non-food biomass feedstocks*, residues and wastes [...]. In an integrated approach the criteria for sustainable biomass available should be on an integrated common level and thus the same for all (bioenergy) purposes. Furthermore, ideally, the criteria for advanced biofuels should in any case necessarily base on sustainability targets, including type of land utilized, GHG emissions, biodiversity, positive and negative side-effects etc. The criteria “non-food” is probably an important one, but it is chosen arbitrarily. It may help to give a clear definition on “sustainability” or “sustainable use” with respect to the production or deployment of biofuels in transport right at the beginning of the issue paper. The SET-Plan document should acknowledge that improvements in sustainability assessment and safeguarding are also essential to the future of biobased options, and that this requires RD&D as well.

The main purposes of utilizing bioenergy and biofuels are common; i.e. contributing to increased sustainability and overall reduction of GHG emissions, European economic development and security of supply. Furthermore, in an integrated approach, the potential of biorefinery solutions should be taken into account more consistently. Therefore, common targets could and should be developed concerning the following aspects:

- Targets for increasing the availability of **sustainable feedstock**, the level of sustainability of feedstock systems and for decreasing feedstock cost. (See also the EBTP Input paper from 26 May on feedstock, p 3.). These aspects are not static, but can be developed through technological and non-technological advances. In the current Issues paper, the importance of feedstock availability, sustainability and cost is stressed under the “barriers to address”. However, these barriers are then not included in the target section (except for intermediate bioenergy carriers).
- Targets for **overall performance in biomass conversion**, in terms of total efficiency from feedstock to useful products (including energy products). For large scale biomass cogeneration (Target 3. Bioenergy) a criteria of >90% efficiency is used, this could be used generally. As above, the potential benefits of biorefinery developments are discussed under barriers, but not taken into account in the targets proposed.

It is important that the type of quantitative targets proposed are very clearly defined, e.g. include also definitions of efficiency. It may be challenging to fully account for system aspects and energy integration in such definitions of “efficiency”. Therefore, they should be complemented with targets for overall performance or more qualitative formulations on the value of integrated solutions. Energy carriers such as hydrogen require very precise specifications to make comparisons meaningful.

With regard to the set target estimated greenhouse gas (GHG) emissions savings from the use of advanced renewable fuels, the 60% reduction target, required in Directive (EU) 2015/1513 Article 7b (amended), should be considered a minimum level which should not be possible to come below. The target should be to go beyond this (on average) and that the best biofuel production units should reach substantially higher reductions. Appropriate incentives should be created that drive such a development<sup>1</sup>. The target of GHG reduction should ideally be based on overall sustainability criteria.

We are further missing targets for a substantial increase of sustainable biofuel production that necessarily should be included. Otherwise the overall targets for de-carbonization and climate change mitigation remain unattainable.

The time left until 2030 is limited and the deployment of new technologies and the construction of advanced biofuel plants are challenging. Policies and incentives should be in favour of the new advanced biofuels development and investments. For the time being it is also still unclear which capacity for conventional biofuels will still be on the market for 2030<sup>2</sup>.

To improve production performance is another important target mentioned (p. 9). Targets for efficiency of conversion to biofuels may not fully capture the value of integrated production in which biofuels are produced from side streams in a biorefinery. The target itself should be clarified. Does it mean, e.g., that a conversion efficiency of 50% should be increased to 65% by 2030? An “absolute” target is preferable, e.g. net process efficiency of conversion to end biofuels products at 60%/65%. Such a target would to a higher degree drive towards development of the technological pathways with best potential.

We do not see any reason for a specific target for hydrogen.

### **Do you think that the level of ambition (targets/cost reductions) is correct?**

Biofuels will compete with fossil fuels (liquid and gaseous), including environmental costs for both. The recently published study ‘Integrated Fuels and Vehicles Roadmap to 2030’ from Roland Berger<sup>3</sup> points out that biofuels are the most cost-efficient solution for the society in the area of passenger vehicles having a look at the GHG abatement costs and the lifetime mileage. Applying the principle of lowest abatement cost for society, future regulatory frameworks need to be introduced to support

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<sup>1</sup> Ibid. p. 2

<sup>2</sup> Ibid. p. 1

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[https://www.rolandberger.com/publications/publication\\_pdf/roland\\_berger\\_integrated\\_fuels\\_and\\_vehicles\\_roadmap\\_to\\_2030\\_v2\\_20160428.pdf](https://www.rolandberger.com/publications/publication_pdf/roland_berger_integrated_fuels_and_vehicles_roadmap_to_2030_v2_20160428.pdf)

these technologies until 2030. Such a framework has also to ensure a path to low and zero carbon emission technologies at lowest possible costs for society beyond 2030<sup>4</sup>.

Cost-competitiveness of biofuels is challenging particular with respect to low prices for fossil based fuels. The general target of parity with fossil based fuels explicitly includes policy incentives for CO<sub>2</sub> reduction what renders this target acceptable. However, to reach the cost reductions described, substantial investments in scale-up and “early” plants are vital. It does not become clear in the SET-Plan Issue Paper which kind of measures is envisaged to address the target of cost-reduction. Yet, feedstock and taxes are key factors affecting the final consumer price and therewith cannot be disregarded (referred to 5.3.1 in the SET-Plan Issue Paper). A low cost feedstock may require are more sophisticated and thus expensive conversion technology. To achieve transparency, both elements are needed: The pure feedstock cost at plant gate, thus including logistic and intermediate upgrading aspects, and the conversion costs.

Finally, externalities should play a role in the final cost structure of advanced biofuels vs fossils and apparently this is not considered in the draft document.

The knowledge about the cost of algae based biofuels is currently low, which makes a specific target for cost reduction of these highly uncertain (referred 5.3.2 in the SET-Plan Issue Paper).

### **Are there any standing issue(s) in the way to reaching the proposed targets/priorities?**

The successes and failures of recent years provide a clear indication of standing issues. E.g. there was high industrial interest to NER300 flagship projects, totally 14 projects have been approved for funding with total volume of 937 M€. However, most of the projects in bioenergy area have been postponed or halted due to several reasons. One argument has been lacking post 2020 EU and MS policy on advanced biofuels. It is expected that when there will be clear post 2020 EU and national policy decisions done, the industrial interest to invest on development and demonstration projects will be active at least in countries that have high targets for advanced biofuels and renewable fuels in 2030<sup>5</sup>.

There is still a lack of reliable policies that facilitate industrial investments applying innovative technologies in demonstration. An unsecure policy framework hinders further development of existing as well as of new, innovative technologies. RD&D efforts must be followed by implementation of promising technologies in the form of advanced demo and flag ship plants. It also becomes increasingly more difficult to judge appropriateness of the strategic targets if advanced demos etc. are not built and operated over longer periods of time.

Biofuels of the second generation still face strong economic barriers. As is pointed out in the issue paper, there is a lack of supporting policies. The relatively low oil-prices render large-scale production of cost-competitive drop-in fuels challenging. The operators’ experiences with the

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<sup>4</sup> EBTP (2016): Input Paper Version 2 – SET-Plan Action n°8 Issues Paper “Strengthen market take-up of renewable fuels needed for sustainable transport solutions”, p. 2

<sup>5</sup> Ministry of Employment and the Economy Finland (2016): Action 8: „Strengthen market take-up of renewable fuels needed for sustainable transport solutions.” Finland’s view. p. 8

production of biofuels of the first generation should be included in any further policy development and implementation.

### **Additional recommendations on the proposed priorities/targets**

Efforts should be made with respect to the development of smart concepts for RES-hybrid integration on power plant and system level, and system integration. The fuel flexibility for large-scale combustion/co-firing/gasification processes should be increased to be able to use more complex and low cost and low quality biomass fuels (e.g. agrobiomass and waste recovered fuels/sludges). It would be important to maintain high operational electrical efficiency, close to nominal, for variable feedstock and/or variable load. Further, there is a need for the development of cost-competitive polygeneration production plants.

Besides the topic of intermediate bioenergy carriers, there was no proposal how to improve feedstock supply that is accountable for more than 50% of the costs in advanced solid and liquid biofuels. The set-up of sufficiently reliable feedstock supply chains is pivotal to the success of any biobased project. In order to meet future challenges regarding bioenergy and renewable fuels needed for sustainable transport solutions several topics have been identified that should be discussed in the future:

- Optimization of feedstock selection, storability, pretreatment and quality (blended raw material use, reduction of impurities and losses, use of residues) for the requirements of advanced biomass fuels production or heat, cool or electricity production;
- Novel methods to improve biomass and non-traditional biomass production and intensification of biomass supply to reduce supply cost and carbon foot print;
- Reduction of fossil fuel consumption in harvesting, transportation and pretreatment of biomass for various end-users.

These topics should be discussed jointly with other bioenergy related actions of the SET-Plan.

### **Identify groups of stakeholders and areas of cooperation on the priorities/targets proposed in the issue paper**

The actors will emerge by the market, once clear and long-term targets and policy frameworks are in place. E.g. the 0.5% target for advanced biofuels is not binding and MS might adopt different targets. This scenario will simply jeopardize the advanced biofuel market and will negatively impact European potential investors.

However, it is important to point out the importance of building on existing industrial infrastructure to achieve a development on this scale. Innovative biofuel and bioenergy value chains will differ in various parts of Europe and industrial clusters will have to build around these specificities. This includes e.g. the forest industry and oil industry with already developed large-scale logistic systems; the pulp and paper as well as food industry developing their side streams into new products rather than developing a new “industry”; existing conventional and advanced biofuel and fossil fuel industry, with market and process know-how and possibilities to utilize and integrated existing equipment for extending their resource base and so on.

The frameworks must therefore be set NOT to exclude actors or create additional barriers for these actors.

## Summary of key recommendations:

- Ensure a balanced presentation of all bioenergy, biofuel and renewable fuel pathways including integrated approaches of biorefining.
- Renewable fuels and intermediate energy carriers have got a proportionally too large space in the document
- There is a specific need to decarbonise the transport sector with the 30 % reduction target of GHG emissions for the non ETS sector by 2030.
- Be clear on targets, costs and efficiencies with defined points of reference
- Take a forward looking approach with a focus on 2030 and beyond
- The whole value chain has to be cost competitive and all steps have room for optimization- so both overall cost numbers and targets as well as specific ones for feedstock and conversion are needed
- Anticipated cost reductions will require industrial investments in scaling up innovative technologies and “first” plants. Therefore urgent actions are required.
- In order to make these investments and the targeted increases in bioenergy and renewable transport fuels possible, reliable policies and stronger policy instruments will be needed more or less immediately.
- Build on existing industrial clusters and their experiences to make a fast increase possible, e.g. existing conventional and advanced biofuel plants.