

**THE EUROPEAN INDUSTRIAL BIOENERGY INITIATIVE  
(EIBI)**

**CALL FOR EXPRESSION OF INTEREST  
IN EIBI**

**Implementing the European Industrial Bioenergy Initiative**

**ANALYSIS REPORT**

## 1. INTRODUCTION

The European Bioenergy Industrial Initiative (EIBI) is one of the six priority industrial initiatives of the Strategic Energy Technology (SET)<sup>1</sup> Plan. This initiative is implemented by an "EIBI Team" which brings together representatives of the European bioenergy industry, the EU Member States & FP7 Associated Countries<sup>2</sup>, and the European Commission. The EIBI was officially launched in Brussels, on 15 November 2010, in the context of the SET Plan Conference organised under the Belgian Presidency of the EU.

The EIBI Implementation Plan<sup>3</sup> is centred on the establishment of new public/private partnerships for the implementation of demonstration and flagship projects<sup>4</sup> around seven innovative bioenergy value chains<sup>5</sup>. It aims at boosting the commercial availability and large scale deployment of advanced bioenergy technologies, which are considered indispensable to achieve the EU targets of 20% renewable energy in the total energy mix and 10% renewable energy in transport by 2020, whilst complying with the sustainability requirements of the RES Directive (2009/28/EC)<sup>6</sup>.

Within the scope of the EIBI implementation, a Call for Expression of Interest (EoI) was issued with deadline 14 October 2011 to launch the process by establishing a clear picture of the industrial interest and readiness around the above mentioned value chains.

This report presents the procedure and the outcome of the analysis of EoIs put forward to the Call for EoI. Notably, it provides information gathered through the submitted EoIs regarding demonstration and flagship projects that would be ready to be launched and overall

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<sup>1</sup> [http://ec.europa.eu/energy/technology/set\\_plan/set\\_plan\\_en.htm](http://ec.europa.eu/energy/technology/set_plan/set_plan_en.htm)

<sup>2</sup> Current FP7 Associated Countries are: Switzerland, Israel, Norway, Iceland, Liechtenstein, Turkey, Croatia, the Former Yugoslav Republic of Macedonia, Serbia, Albania, Montenegro, Bosnia & Herzegovina, and the Faroe Islands.

<sup>3</sup> [http://www.biofuelstp.eu/downloads/presentations/EIBI\\_Hervouet\\_EBTP\\_151110.pdf](http://www.biofuelstp.eu/downloads/presentations/EIBI_Hervouet_EBTP_151110.pdf)  
[http://setis.ec.europa.eu/activities/implementation-plans/European%20Industrial%20Bioenergy%20Initiative - EIBI.pdf/view](http://setis.ec.europa.eu/activities/implementation-plans/European%20Industrial%20Bioenergy%20Initiative_-_EIBI.pdf/view)

<sup>4</sup> **Demonstration plants** normally follow pilot-scale projects. They are considered the last non-economic step to demonstrate the technical, environmental and economical performance and reliability of all critical steps in a value chain so that the first commercial unit can be designed and the technical performance guaranteed from the outcome of the demonstration unit. Demonstration applies to processes that have been successfully tested at least at pilot scale. **Flagship plants** normally follow demonstration projects. They are the first commercial units of value chains operating at an economically viable scale.

<sup>5</sup> **Value chain**

- 1 Synthetic liquid fuels and/or hydrocarbons (e.g. gasoline, naphtha, kerosene or diesel fuel) and blending components through gasification
- 2 Bio-methane and other bio-synthetic gaseous fuels through gasification
- 3 High efficiency heat & power generation through thermochemical conversion (propose limit e.g.:  $\eta_{el} > 45\%$ )
- 4 Intermediate bioenergy carriers through techniques such as pyrolysis and torrefaction
- 5 Ethanol and higher alcohols from ligno-cellulosic feedstock through chemical and biological processes
- 6 Hydrocarbons (e.g. diesel and jet fuel) through biological and/or chemical synthesis from biomass containing carbohydrates
- 7 Bioenergy carriers produced by micro-organisms (algae, bacteria) from CO<sub>2</sub> and sunlight

<sup>6</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF>

fulfil the basic EIBI criteria<sup>7</sup>.

The Call for EoIs did not aim to pre-select proposals for any future call for projects or other selection procedure. Rather, it gathered important information for the ongoing discussions between the European Commission and the Member States & Associated Countries on the ways and means of funding demonstration and flagship projects within the seven value chains defined in the EIBI Implementation Plan. Notably, it provided advice on "overall EIBI complying" demonstration and flagship projects that will be used to inform these discussions, thereby clarifying the different levels of technological maturity, the industry readiness to scale-up, and the need for additional support to enable such scaling-up.

A most immediate impact will be to provide input into the definition of a call for proposals directed at supporting part of the EIBI Implementation plan linked to demonstration plant projects (ERA-NET Plus action in Bioenergy included into the 2012 Work Programme implementing the 7<sup>th</sup> Framework Programme).

*Note:*

*All information presented herein is based on the 53 submitted EoIs, some of which may not have been fully presented due to time restrictions. Thus they do not prejudge, in any way, the overall representation of the bioenergy field or the full compliance of the underlying projects to the EIBI specifications. In addition, the analysis of this call was only qualitative, without scoring, ranking or selecting any of the submitted EoIs. Hence, the outcome is not a pre-selection basis for any future call for projects or other selection procedure.*

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<sup>7</sup> **Criteria**

<b>Relatedness</b>	At least 70% of the biomass based products are bioenergy (biofuels, heat, power)
<b>Innovation</b>	At least one "section" of the value chain or the integration of "sections" of the considered value chains should not have been deployed at demonstration / commercial scale before
<b>Site &amp; Consortium</b>	The site of the demonstration plant or flagship plant must be in the EU or in the FP Associated Countries Project consortia shall ensure an EU industrial cooperation dimension
<b>Sustainable feedstock</b>	Biomass based value chain Availability of sustainable feedstocks planned as specified in RED 2009/28/EC sustainability criteria
<b>Technology Concept</b>	Meets minimum 60% GHG emissions reduction and RED 2009/28/EC sustainability criteria Maturity of the technology concept, quality of the background knowledge Schedule plan fits with indicative time line of EIBI System optimisation quality regarding mass and energy integration Competitiveness of the concept (whole value chain), reference case oil 86 USD/barrel

## 2. OVERVIEW

The following table gives an overview of the EoIs within the scope of this report:

Value Chain	Total number of EoIs submitted to the Call	"EIBI complying" EoIs	" Possibly EIBI complying" EoIs	"Non EIBI complying" EoIs	"Overall EIBI complying" EoIs %
<b>1</b>	11	2	4	5	55
<b>2</b>	6	1	1	4	33
<b>3</b>	8	3	2	3	63
<b>4</b>	6	1	1	4	33
<b>5</b>	8	6	0	2	75
<b>6</b>	7	4	2	1	86
<b>7</b>	7	0	3	4	43
<b>Total</b>	<b>53</b>	<b>17</b>	<b>13</b>	<b>23</b>	<b>57</b>

## 3. EXPERTS AND ANALYSIS PROCEDURE

The analysis of the EoIs was carried out during the period from 24/10/2011 to 9/11/2011 with the assistance of 15 independent experts nominated by the EIBI Team members representing industry, the Member States & Associated Countries and the European Commission. These experts were organised in 5 groups of 3 experts. One of the experts in each group was designated as "rapporteur". 2 of the groups were assigned to the biochemical and 3 to the thermo-chemical and power generation pathway. The allocation of experts to EoIs took into account their expertise, their conflicts of interest and geographical balance.

The analysis included a remote phase from 24/10/2011 to 7/11/2011 during which the experts completed their individual analysis reports (IARs) online using the Strategic Energy Technologies Information System (SETIS)<sup>8</sup> and a consensus phase on 9/11/2011 with a consolidation meeting in Brussels between the experts and representatives of the EIBI Team Coordination group. During this meeting, each expert group firstly discussed the EoIs they had examined and the rapporteur completed on SETIS the Consolidated Analysis Report Form (CAR) on the basis of the comments of all individual experts having examined the same EoI. In the afternoon, the experts met in a panel to review all CARs, to confirm the assessments and advise the "EIBI compliance" of the demonstration and flagship projects. Following the consolidation meeting, the experts provided for each EoI a short commentary in order to formulate the feedback to the submitters.

The basis of the analysis was 5 blocks of criteria<sup>7</sup>, namely Relatedness, Innovation, Site & Consortium, Feedstock, Technology Concept, and also the relevance to the scope of this Call.

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<sup>8</sup> <http://setis.ec.europa.eu/>

### 3. OUTCOME

#### 3.1 EIBI Compliance

Overall 53 EoIs were submitted, 24 for demonstration plants, 26 for flagship plants and 3 without precise type of the plant. 17 EoIs were found "EIBI complying", 13 "possibly EIBI complying" and 23 "non EIBI complying".

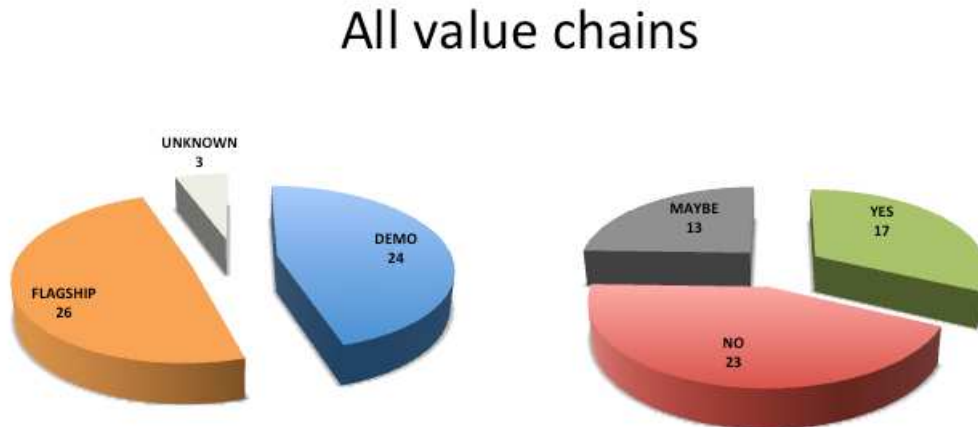


Figure 1. Overall EIBI compliance of submitted EoIs and type of projects

The repartition between submissions for demonstration and flagship plants is fairly balanced. The overall outcome is illustrated in Fig. 1.

Fig. 2 & 3 show the distribution of EIBI compliance per value chain for all 3 cases (yes-no maybe). The majority of the "EIBI complying" EoIs belong to the biochemical pathways (value chains 5-7), followed by value chain 3 on power generation of the thermo-chemical pathways.

The majority of the "non EIBI complying" EoIs belong to the thermo-chemical pathways (value chains 1-4), followed by value chain 7 on bio-energy carriers produced by microorganisms, from CO<sub>2</sub> and sunlight of the biochemical pathways. The main reason for "non EIBI compliance" was found to be the technology concept, notably the maturity of the technology and the system performance in terms of mass and energy balance. Other important reasons for non-compliance were the EU industrial cooperation dimension regarding the consortium composition in terms of organisation type and geographical origin, the relevance to the scope of the Call and the innovation aspect.

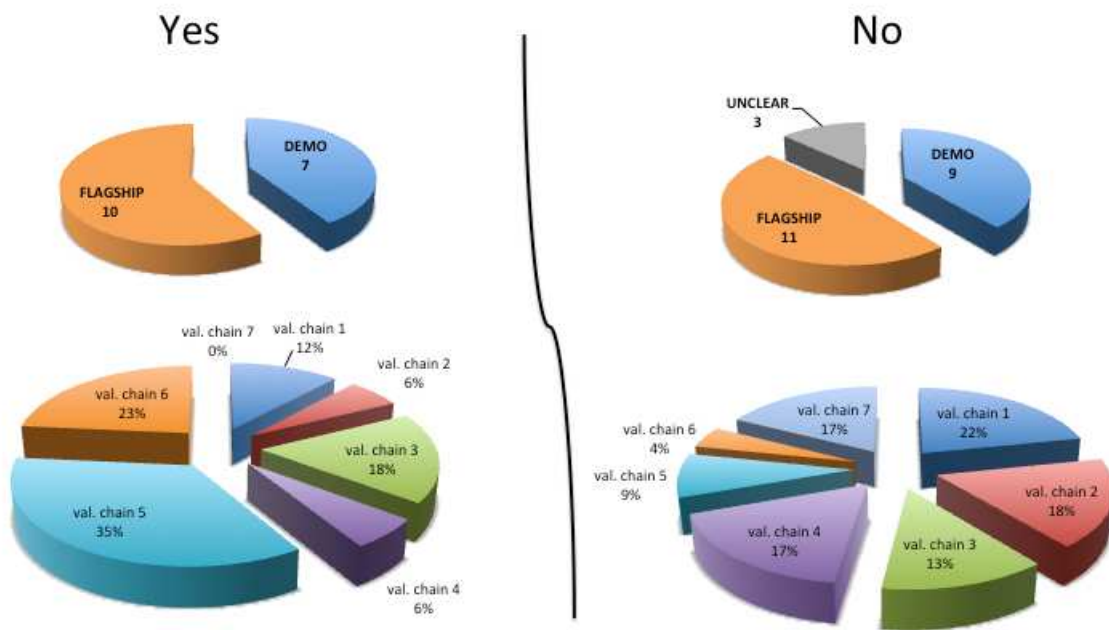


Figure 2. "EIBI complying" and "non EIBI complying" EoIs per value chain

For the 13 "possibly EIBI complying" EoIs important shortcomings were noted. These EoIs were almost equally distributed in both the bio- and thermo-chemical pathways. The main reason for "possible EIBI compliance" was found to be the technology concept, notably the system performance in terms of mass and energy balance, the time line of the project implementation, the GHG emissions aspect and to a certain degree the competitiveness of the concept. Some uncertainties were also raised regarding the site of the plant.

### Maybe

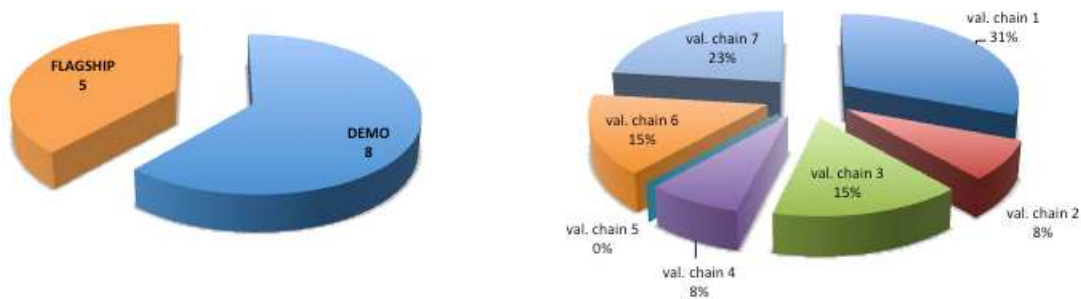


Figure 3. "Possibly EIBI complying" EoIs per value chain

The fulfilment of the analysis criteria for the 3 cases (yes, maybe, no) of "EIBI compliance" is shown in Fig.4.

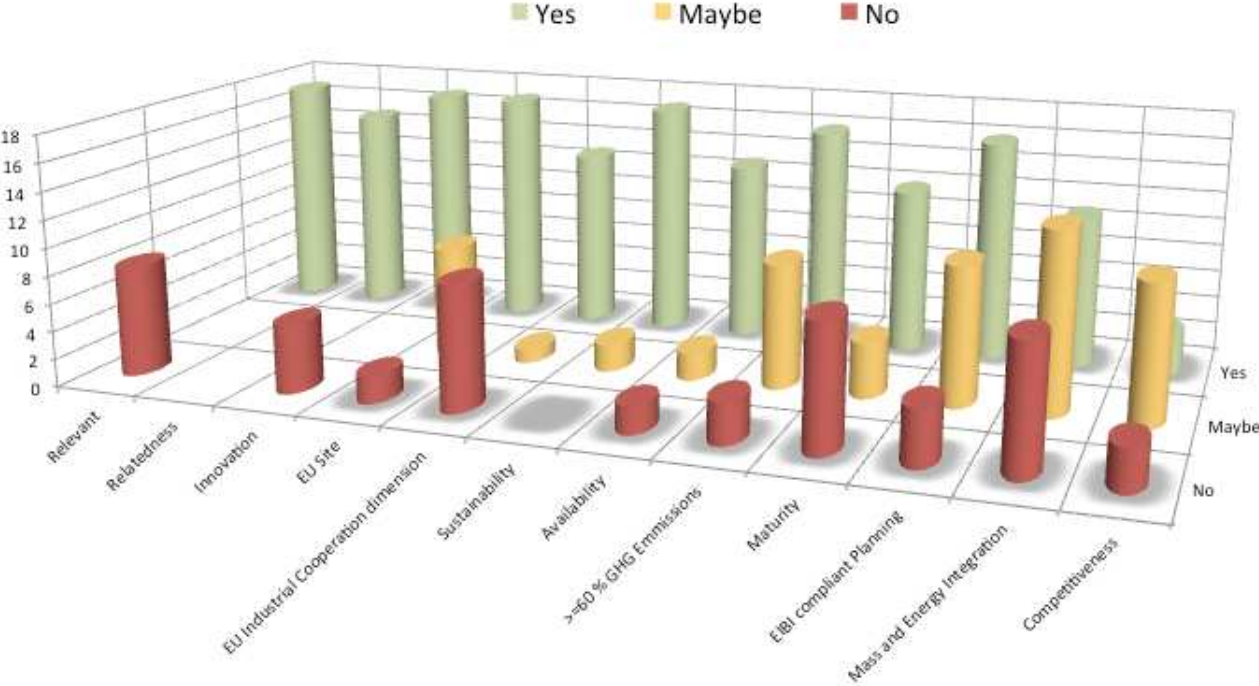


Figure 4. Reasoning for EIBI compliance of EoIs

### 3.2 Participation

A total of 200 participants were involved in the 53 EoIs submitted to this Call, of which 197 participants were from Member States & Associated Countries and 3 from third countries, namely USA and Australia.

123 participants are involved in the 30 retained (17 "EIBI complying" + 13 "possibly EIBI complying") EoIs, out of which 121 participants are from Member States & Associated Countries and 2 from third countries. The distribution of participants among countries is depicted in Fig. 5 (blue bars for submitted and orange bars for retained EoIs).

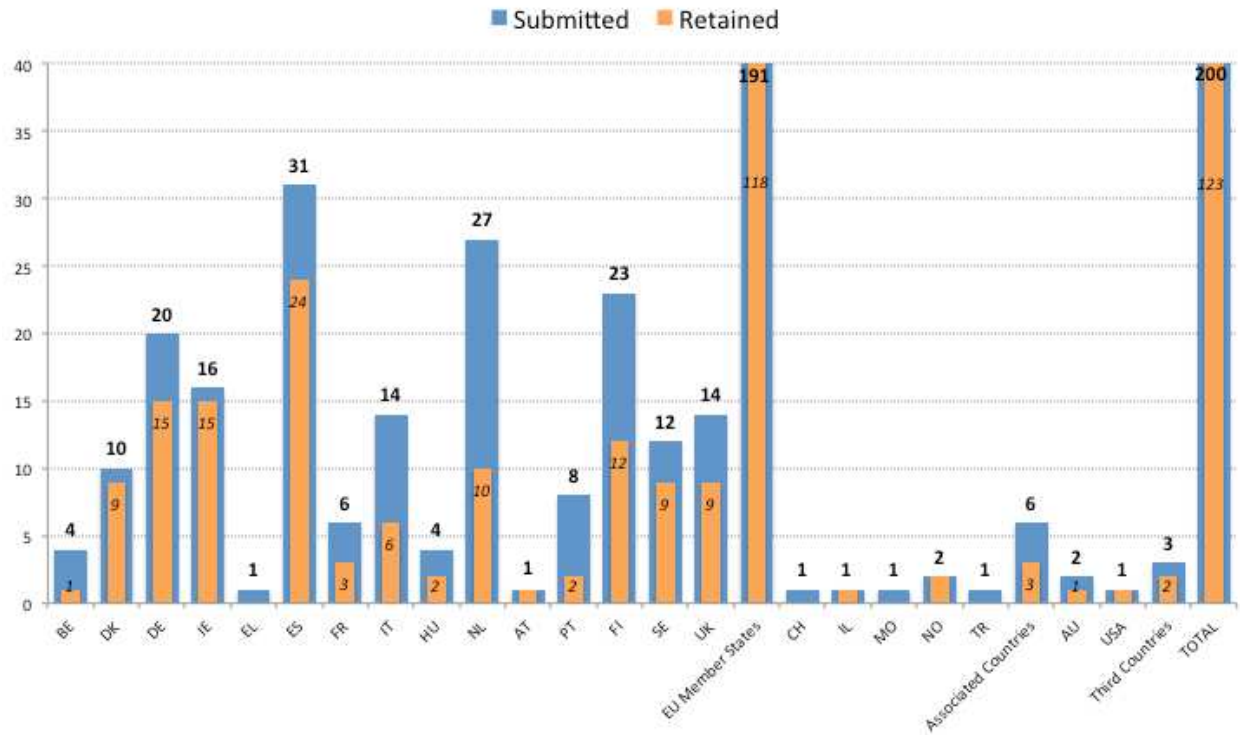


Figure 5. Overall participants per country

Industry is the principal participant in all value chains, especially in value chains 3, 1 and 5. The type of participant per value chain is presented in Fig. 6 for the retained EoIs.

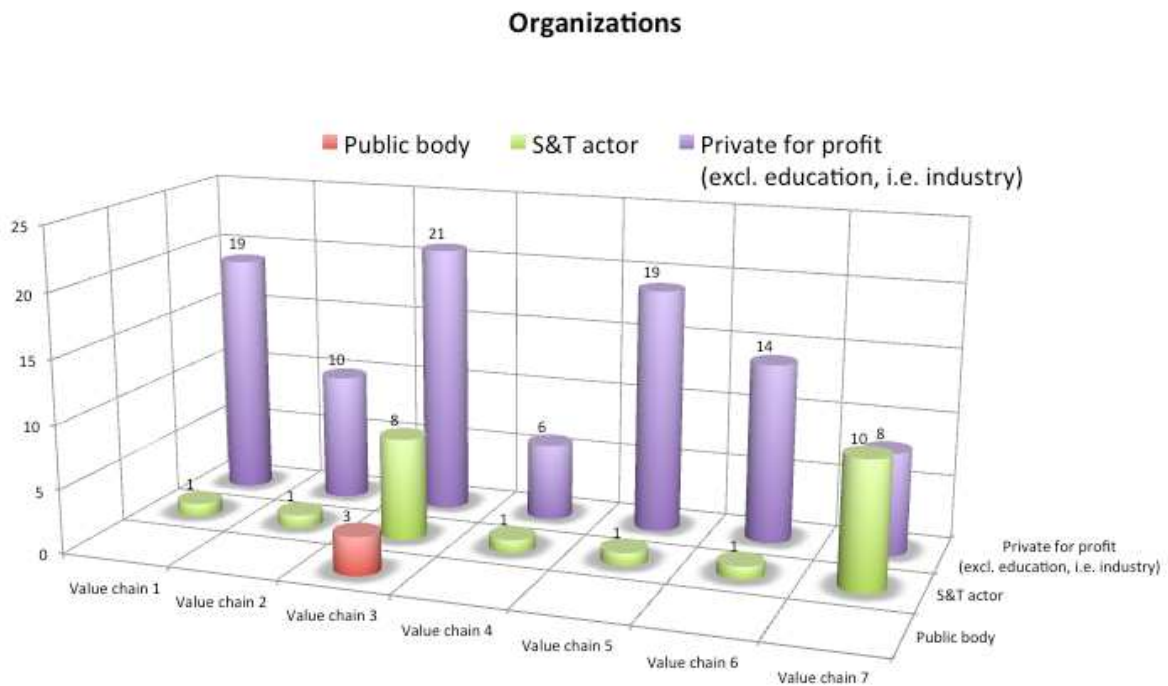


Figure 6. Type of participants in retained EoIs per value chain