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D4.4 Recommendations for a trans-national research programme in the area of biorefineries research

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1. Introduction

The objective of this task was according to the Star-COLIBRI Description of Work to “*promote collaboration in the field of future R&D funding and facilitate the creation of Public-Private Partnerships in the area of biorefineries*”, or more specifically to “*Enable collaboration between established trans-national research programmes in the area of biorefineries*”.

The strategy to accomplish this quite significant objective was to focus on an instrument for trans-national collaboration already initiated by the European Commission: the ERA-Nets. ERA-Net projects fill an important need for connection between national and regional funding programmes. By targeting three running ERA-Nets active in areas relevant to biorefineries; *WoodWisdom-Net*, *ERA-IB* and *ERA-Net Bioenergy*, Star-COLIBRI has been able to contribute to further minimising the risk of inconsistencies or overlaps between these national research funding platforms and to promote a future trans-national research programme in the area of biorefinery. The beneficiary FTP has been mainly responsible for the interactions with WoodWisdom-Net, while the beneficiary EuropaBio has been mainly responsible for the interaction with ERA-IB “Towards an ERA in Industrial Biotechnology” and FNR has interacted mainly with ERA-Net Bioenergy.

The activities of Star-COLIBRI, especially the Research Roadmap, the analysis of StarClusters and the information in the Star-COLIBRI Biorefinery Portal can result in new ideas for research call topics. Regular contact with the ERA-Nets has led to the dissemination of these findings and future funding decisions will be based on more data. The importance of this task is underlined by the fact that about 85% of European research funding is carried out at Member States level.

One of the ambitions of Star-COLIBRI is to encourage the ERA-Nets to set up a joint trans-national call or research programme in the area of Biorefineries. This has in fact happened in the case of the joint call **Sustainable forest management and optimised use of lignocellulosic resources** and we will discuss this further on in the report.

1.1. Explanation of the ERA-Net Scheme

The Commission stakeholder consultation in 2004 on the future of European research¹ revealed a strong demand for more coordination of national research programmes from all categories of contributors. As a response the European Research Area Network (ERA-Net) scheme was launched under FP6. In FP7 an additional action - “ERA-Net Plus” was launched to favour the restructuring of the European Research Area. Complementing each other, these two actions favour the development of joint research calls and joint research programmes formed between national and regional research funding actors and actions supported together by several member states and the Commission.

- **ERA-NET actions:** Through the ERA-NET scheme the European Commission only funds activities like coordination, networking, opening of national/regional funding programmes, support of joint applications and development of joint funding strategies. However, the actual project work is nationally funded by the respective participating member states. Calls for proposals with a certain deadline are published on a regular basis. Project proposals can only be submitted in reference to a suitable call. Individual project partners seek funding from their national funding agencies in accordance with the relevant call and national funding rules.
- **ERA-NET Plus actions:** providing additional EU financial support, in a limited number of cases, to participants who build a common fund for joint calls for proposals between national and/or regional programmes. As such they differ from Article 185², which calls for the setting up of strategic cooperation programmes and requires a heavy co-decision procedure³.

1.2. Introduction to the three ERA-Nets addressed

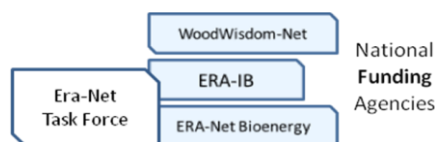


Figure 1: ERA-Nets targeted by Star-COLIBRI

¹ ftp://ftp.cordis.europa.eu/pub/era/docs/fp7_consultation_results.pdf

² Initiatives under Article 185 of the EU Treaty were previously referred to as Article 169.

³ As defined in [Article 294 of the Treaty For the EU](#), the co-decision procedure is the legislative process which is central to the Community's decision-making system. It is based on the principle of parity and means that neither institution (European Parliament or Council) may adopt legislation without the other's assent.

WoodWisdom-Net 2 (www.woodwisdom.net)

The first ERA-NET on wood material science and engineering, WoodWisdom-Net started in 2004 with 12 partners from 5 countries and was later in 2006 expanded with 6 new partners (3 countries). The project was initiated as a part of the European Commission's ERA-NET scheme which is to support the cooperation and coordination of research activities carried out at national or regional level. As the main result, the 1st Call of Joint Transnational WoodWisdom-Net Research Programme (2006-11) with 17 projects of a total volume of over 20 M€ was launched. The first phase of the WoodWisdom-Net ERA-NET project came to its end on Dec 21, 2008.

The follow-up ERA-NET project WoodWisdom-Net 2 - "Networking and Integration of National Programmes in the Area of Wood Material Science and Engineering in the Forest-Based Value Chains" was started in March 2009 (duration 36 months) and is run under the European Commission's FP7 ERA-NET scheme. The consortium now includes 19 partners from 12 countries and its aim is to further extend the co-ordination and integration of a common European research and funding platform within wood material science and engineering and set the basis for a long-lasting cooperation in the field.

Besides other activities, one of the main goals during 2009-12 is the launch of two new calls under the WoodWisdom-Net Research Programme: the 2nd Call (2009) of applied research and industrial development call with a focus on wood and fibre based products; the 3rd Call (2010) focusing on consortia combining basic and applied research, with a broad scope covering new and innovative production in forest-based value chains and promoting participation of researchers outside EU.

ERA-IB (www.era-ib.net)

The ERA-NET "Towards an ERA in Industrial Biotechnology" (ERA-IB) aims to reduce fragmentation of national research efforts in the area of Industrial Biotechnology. Industrial Biotechnology is the application of biotechnology for the environmentally-friendly production and processing of chemicals, pharmaceuticals, materials and bio-energy.

ERA-NET IB joins 16 partners from 12 states within the ERA-NET scheme. The ERA-IB network started in 2006 and in the five-year since then the partners have strived to reduce fragmentation of national research efforts and to achieve sufficient critical mass and better use of scarce resources in the field of Industrial Biotechnology. The project has followed the four steps to better cooperation and coordination proposed by the European Commission:

1. Systematic exchange of information and best practices, resulting in a status quo of IB research in Europe
2. Strategic actions towards joint procedures and strategies for the foundations of ERA-IB
3. Joint strategic activities between national and regional research programmes
4. Development of new transnational research programmes in close cooperation with the ETP Sustainable Chemistry

ERA-Net IB has taken an interesting initiative by initiating a platform of IB-related ERA-NETs which has the purpose of simplifying exchange of information and experiences and alignment of relevant activities.

ERA-Net Bioenergy (www.eranetbioenergy.net)

ERA-Net Bioenergy gathers authorities from ten countries in a network of national government agencies and ministries responsible for coordinating and funding national research efforts in bio-energy. The European strategy for renewable energy sources identifies bioenergy as the most important renewable energy source for the future: a source of cleaner, more secure and sustainable power for Europe. Bioenergy is a highly diverse area: crops are converted to biofuels for transport; landfill sites are tapped for biogas to heat towns; forestry residues are used to produce electricity, etc..

The goal of this network is to strengthen national bio-energy research programmes through enhancing cooperation and coordination between national agencies. The duration of this network has been from October 2004 – May 2010. From 2011 onwards, eight countries have been continuing the network and the important work on bioenergy research without EC funding. General information on respective research, programmes, calls etc. is publicly available. Target groups are for example researchers, programme managers and programme owners.

Figure 2: Country representation in the three ERA-Nets

Country	ERA-NET IB	ERA-NET Bioenergy	Woodwisdom 2
Austria		Austria	
Belgium	Belgium		
Croatia	Croatia		
Denmark		Denmark	
Finland			Finland
France	France		France
Germany	Germany	Germany	
Ireland		Ireland	Ireland
Israel	Israel		
Latvia			Latvia
Norway			Norway
Poland	Poland	Poland	
Portugal	Portugal		
Romania	Romania		
Slovenia			Slovenia
Spain	Spain		
Sweden		Sweden	Sweden
The Netherlands	The Netherlands	The Netherlands	
Turkey			Turkey
United Kingdom	United Kingdom	United Kingdom	

1.3. The Woodwisdom-Net and ERA-Net Bioenergy joint call

On 15th September 2010 the WoodWisdom-Net Research Programme and the ERA-NET Bioenergy opened their 3rd and 5th calls respectively as a joint call for Research and Development Proposals called “Sustainable forest management and optimised use of lignocellulosic resources”. In this call the European Research Area Networks (ERA-Nets) WoodWisdom-Net 2 and ERA-NET Bioenergy aim to increase the cooperation and coordination of research activities carried out at national and regional level by joining forces to promote innovative research and cooperation in order to help optimising the use of trees and forests.

The joint call covers the three research topics listed below and each proposal should address at least one or more of these.

- 1. Forest for multiple needs of society, including enhanced productivity and optimised use of forest feedstock.*
- 2. Advanced products and technologies for primary wood processing and manufacturing of wood and fibre-based products.*
- 3. Advanced biofuels and biorefineries.*

Joint Call press-release 15th of September 2010

Joint Call for proposals between two ERA-Nets: In this call the European Research Area Networks (ERA-Nets) WoodWisdom-Net 2 and ERA-NET Bioenergy aim to step up the cooperation and coordination of research activities carried out at national and regional level by joining forces to promote innovative research and cooperation to help optimise the use of trees and forests.

Both ERA-Nets have launched several joint calls in the past, two within the WoodWisdom-Net Research Programme (on wood material science and engineering in forest-based value chains) and four within the ERA-NET Bioenergy (on small-scale combustion, on cleaning of product gas from biomass gasification, on short rotation coppice and on clean biomass combustion). This is the first joint call integrating both ERA-Nets.

This joint call should bring together partners along the whole innovation chain from basic and applied research to industrial development, as well as promoting the participation of researchers outside EU. The scope is broad, covering forest management, land use and innovative production in value chains, in addition to promoting interdisciplinary collaboration and involvement of stakeholders and bridging gaps between research disciplines, producers, consumers and society.

Total public funding of ca. 18.5 M€ will be jointly provided by 19 national funding organisations (see table) during 2011-2014.

Figure 3: Information in the Joint Call press-release

The public funding is jointly provided by 19 national funding organisations from Finland, France, Germany, Ireland, Italy, Latvia, Norway, Poland, Slovenia, Spain, Sweden, Turkey and the United Kingdom during the period 2011-2014.

The call offers potential funding for basic, applied and industrial research and development. However, it does not offer funding for commercial scale pilot projects.

Call schedule Activity	Date
Call opened – invitation for pre-proposals	15 th of September 2010
Last date for submitting pre-proposals	1st of December 2010, 1 PM CET
End of joint evaluation and selection of pre-proposals; Successful consortia will be invited to submit full proposal	31 st of January 2011
Last date for submitting full proposals	31st of March 2011, 1 PM CET
Joint evaluation of full proposals by international Expert Panel	April – May 2011
Funding recommendation by Call Committee	14 th of June 2011
National funding decisions	Between July - October 2011
Projects start	1 st of October 2011 or 1 st of January 2012

Figure 4: Joint Call schedule

In order to handle the varying funding mandates applicable to the participating funding organisations, the joint call, like most other trans-national calls launched by an ERA-Net consortium, has to post additional “Specific National Rules”. The Specific National Rules can stipulate additional conditions for Intellectual Property Rights access, and even exclude companies or other potential applicants. They also specify the maximum funding available. The Specific National Rules for Ireland in the Joint ERA-Net call is included on the following page to illustrate what these additional requirements can look like.

Joint Call for ERA-Nets Bioenergy and WoodWisdom-Net 2

SPECIFIC NATIONAL RULES FOR IRELAND

Applications

SEAI and DAFF under the COFORD programme will work closely together in funding Irish applicants within this call.

At the “Invitation for Pre-Proposals Stage” there is no need for additional national application forms. The transnational application to the central call office is sufficient. Based on the thematic scope and type of project, the relevance to the funding programmes, and available funding, the Irish partners within this call will be funded either by SEAI or DAFF. Assignment of the Irish proposals between SEAI and DAFF will be decided by the funding organisations after submission of the transnational applications.

Only the Irish project partners of positively evaluated projects will then, in a second stage, be invited by either SEAI or DAFF to submit national application forms within one month after notification.

Funding Rules

Irish project partners are advised that total requested funding for all Irish partners within one consortium should not exceed €500,000.

Irish participants funded by SEAI

Funding quota of Irish participants can be up to 100% for universities or research organisations. In the case of companies, funding quota will be decided on a case-by-case basis depending on the size of the company, type of research/development, risk associated with the research activities and commercial perspective of exploitation. There is no obligation on the number of companies to be involved from Ireland but company participation is recommended for dissemination and exploitation of results.

Projects covered by SEAI will be funded under the Renewable Energy RD&D (RERD&D) programme, Category 3:- Commissioned Public Good activities (www.seai.ie/rerdd). Eligible costs under the SEAI RERD&D are costs directly associated with delivery of a project. These may include personnel, equipment, materials, travel, certain sub-contracting and other costs. Overhead is not an eligible cost. VAT is not an eligible cost, except where VAT cannot be reclaimed. SEAI must be notified of inability to reclaim VAT with proof from the Revenue Commissioners at the time of application.

Irish participants funded by DAFF

Funding will be available for researchers from universities and research institutions only. They can receive up to 100% of eligible costs which include personnel, equipment, consumables, travel, external assistance and overheads at an agreed rate.

Companies can participate in a project in two ways:

1. As External Assistance to the Irish partners, and in this way receive 100% funding for the services they provide. In this case they cannot avail of any Intellectual Property generated from the project.
2. As Partners by bringing their own funding, either as cash or benefit in kind. In this case they are eligible to share in any Intellectual Property produced by the project.

Figure 5: Example of specific national rules; Ireland

1.4. Introduction to the idea of StarClustering

The StarCluster strategy described in Star-COLIBRI deliverable 4.3 has some bearing on task 4.4 since it was predicted that many of the “Comet” projects and also some of the “Star” projects would be funded nationally or trans-nationally. A brief overview of the StarCluster strategy is therefore provided below.

The StarClustering strategy focuses on promoting role model project clusters that consist of a large, leading research project, called a Star project, and several smaller, more specific Comet projects, i.e. projects of excellence covering specific aspects, often funded at the national level with a shorter lifetime and fewer resources.

By working together on mutually beneficial terms, the Star- and Comet-Projects should be able to bridge technology gaps, combine resources to reach a critical mass, homogenise approaches, such as life-cycle analysis, and become more visible to the industry, society and policy makers.

The theoretical approach in the search for potential StarCluster constellations is divided into several subtasks: While the first step of the StarClustering strategy is to identify the Star projects⁴, the second step is to identify matching Comet projects that could gain from collaborating with a Star project whilst facilitating the success of the same Star projects.

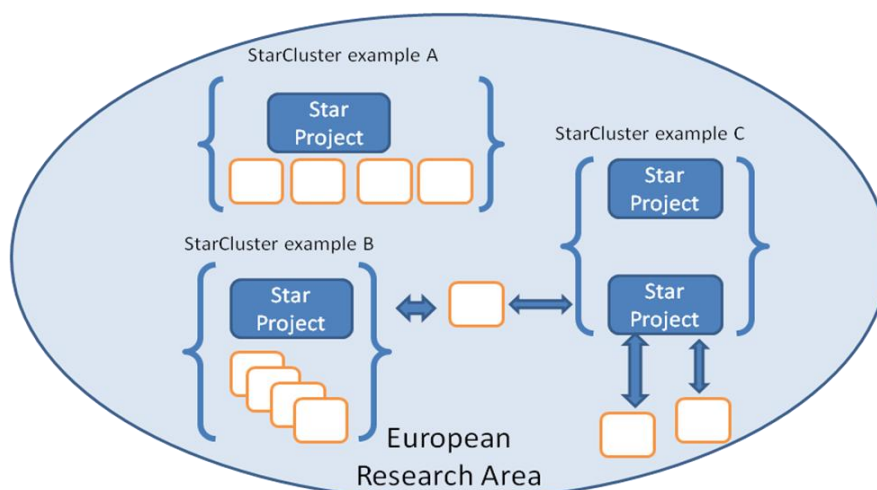


Figure 6: Illustration of StarClusters in the European Research Area

One big hurdle of the StarClustering process has been the uncertainty of additional financing for joint actions. It is therefore suggested to facilitate cross-project collaboration for instance by allocating a certain part of each project budget to dedicated cooperation and networking activities.

⁴ Star-COLIBRI: Deliverable 3.2: “Identifying potential Star projects and coordinating information collection via the ETPs National Support Groups”, 2010

2. Work process

Different parties involved in research projects should when complementarities are obvious collaborate with each other. One of the prerequisites for such a collaboration is the funding source. The project design and administrative regulations should be adapted in a way that allows research projects to more readily cooperate with one another.

Three of the ETPs participating in the Star-COLIBRI project have collaborations with the ERA-Net of their respective sector which had been established before the beginning of Star-COLIBRI. Based on these existing collaborations; the Forest-Based Sector ETP has interacted mostly with WoodWisdom-Net, while beneficiary EBio (the Suschem ETP) has interacted with ERA-IB “Towards an ERA in Industrial Biotechnology” and FNR (the Biofuels ETP) has interacted mainly with ERA-Net Bioenergy.

Already during the initial preparations of the Star-COLIBRI proposal (autumn 2008), representatives of the ERA-Nets were involved in the project’s planning and respective discussions. However, the concern at that time was that the ERA-Nets would perhaps not be active if and when Star-COLIBRI started. WoodWisdom-Net had come to the end of its first contract and had just applied for a second EC contract - the WoodWisdom-Net 2 “*ERA-NET on trans-national cooperation for new innovative products in the forest-based value chains*”. If this application failed WoodWisdom-Net would not be active as an ERA-Net when Star-COLIBRI started. ERA-NET Bioenergy started in 2004 and with a six year duration, they would have funding until 2010. What would happen afterwards was not clear. ERA-NET IB was supposed to end as late as April 2011 but still this would only allow Star-COLIBRI to work with them in the last months when no consecutive initiatives could be launched.

As Star-COLIBRI began in November 2009, one of the first tasks was to map ongoing national biorefinery activities. One of the potential uses of this information was to identify potential Comet projects for the StarClustering process. Hence, the first instance of information exchange with National and Regional Funding Providers – some of them participating in the targeted ERA-Net schemes - started in Task 2.3 “*Collection of information on biorefinery research projects and funding*” in which the mapping of national research projects was initiated by identifying the major research institutions and public funding agencies in each one of 27 targeted countries. Each Star-COLIBRI partner was responsible for collecting this specific information from their assigned countries. The names of essential research institutions and public funding agencies served as a starting point for the search for detailed information.

This first round of information gathering revealed that the data available from different funding agencies differed a lot. In many cases, only the starting date, project name and amount of public funding could be made available. Additional information was either confidential, difficult to enter into the template of the information storage system, or the

amount of additional work that the contact person in the funding organisation had to volunteer to do in order make the information available to Star-COLIBRI was simply too much. An example of what could make the work load un-proportionally high was that the funding database contained hundreds of projects but that there was no way of automatically sorting out biorefinery-related research projects.

Not long before the work on Task 4.4 was supposed to commence, the Star-COLIBRI partnership got the good news about a joint call related to biorefineries between ERA-Net Bioenergy and Woodwisdom-Net 2. The call was going to focus on optimising the use of trees and forests including an area for advanced biofuels and biorefineries.

Inspiring national funding providers to prepare this kind of trans-national call had in fact been one of the informal ambitions of Star-COLIBRI. The plans for a joint call showed that the early involvement of the ERA-Nets in the preparation phase of Star-COLIBRI had been appropriate and perhaps helped to inspire the initiative (which was not originally foreseen in the two ERA-Net's Descriptions of Work).

However, with this break-through accomplished without significant direct involvement of Star-COLIBRI, the Star-COLIBRI beneficiaries responsible for Task 4.4 discussed the task objectives again and the conclusion was that the work and aim of the task had to be adapted to the fact that a joint ERA-Net call was to be published. Instead of encouraging a trans-national call that might interfere with the coming ERA-Net joint call, Star-COLIBRI would support the ongoing joint call process and study the results before giving recommendations on a future trans-national research programme. It was also decided that Task 4.4 would indirectly benefit from some re-allocation of work efforts towards the preparation of the Star-COLIBRI Research Roadmap, as this document should serve to motivate a trans-national research programme dedicated to biorefineries.

Since then and up until now, representatives from the ERA-Nets have been regular participants in Star-COLIBRI events such as the Star-COLIBRI Expert Reference Forum conference in Budapest 12-13 April 2011. Star-COLIBRI has also tried to get them as involved as possible in the preparations of the Vision document and the Joint European Research and Innovation roadmap on biorefineries (D3.5). Although the ERA-Nets have been active when consulted on these documents, they have as one might assume as they are funding providers, been more interested in receiving impulses and ideas from this process than providing input.

3. Conclusions

3.1. Challenges related to trans-national funding such as ERA-Net schemes in general.

Challenges related to establishing the initial trans-national cooperation

- Setting up an appropriate partnership for an ERA-Net project has its own particular challenges. One such challenge is that most potential participants (i.e. national ministries or national or regional funding agencies) are active only within a limited field of expertise and/or within a limited geographical region. First of all one should distinguish between two main categories of organisations that can be participants;
 - 1) Organisations such as National Ministries and Departmental organisation having their own budget to allocate. In many cases, organisations in this category do not distribute their money directly to the end recipient but through agencies and organisations that manage application procedures and follows up on funded projects.
 - 2) Organisations mainly managing and following up on public funding but not necessarily in possession of their own funding to allocate. These managing organisations are often specialised in a particular geographic region and in a particular technical or scientific field. Our experience is that their mandates often only cover a part of the biorefinery area (for example “research on non-food agriculture crops”, “bio-energy production” or “industrial biotechnology”).

As can be imagined by considering the potential participants in an ERA-Net project, it is difficult to create a consortium that represent the appropriate coverage of the broad concept of biorefineries and at the same time also achieves good coverage in terms of geographic area.

Challenges related to distribution of national funding to trans-national projects

- One of the main problems related to setting up a trans-national call such as the ERA-Net calls is that each country contributes with a different amount of funding so that applicants from different countries have different levels of funding to compete over, even if they belong to the same project proposal. The consequence of this is a “funding bottleneck” whenever insufficient funding is available in a country to support its national applicants. This result in more administrative work and longer time required to select and negotiate projects funded under an ERA-Net scheme compared to a similar amount of national or regional funding being distributed.
- Another problem is that the promotion of an upcoming ERA-Net call on the national and regional level can be more or less successful. If fewer potential applicants have knowledge of the call in one country than in another, a lower number of participants

can obviously be expected from that country. This results in national budgets that are not being fully utilised, even when the ERA-Net call overall suffers from an oversubscription of applications. This is a sub-optimal result by which parts of the budget allocated for the joint call cannot be distributed while at the same time suitable applications cannot be funded. This problem will have particularly negative effects if the trans-national call is an ERA-Net Plus call. In this case, the European Commission will not be able to invest the amount budgeted for the call in well deserving initiatives.

Synergies between ERA-Nets and European Technology Platforms help to address some of the challenges

Collaborations between ERA-Net projects and European Technology Platforms (ETPs) such as those existing between the Biofuels ETP and ERA-Net Bioenergy; the Suschem ETP and ERA-Net IB; the Forest-Based Sector ETP and WoodWisdom-Net, are mutually beneficial and can help to alleviate some aspects of the challenges previously identified.

These collaborations are based on a shared acceptance of respective ETPs Strategic Research Agendas as a long term, industry-driven roadmaps towards a vision shared by stakeholders across the EU.

To the ERA-Nets, the support of an ETP can play a significant role in promoting the trans-national calls to potential applicants from different member states. The ETPs can also act to encourage national and regional funding organisations to allocate budget to a trans-national call.

To the stakeholders of the ETPs, the ERA-Nets constitute a mobilisation of national funding required for the implementation of the Strategic Research Agenda and thereby realising the long-term vision.

Multi-annual calls would make the ERA-Net Plus scheme more efficient

One strategy that could reduce the problem of “funding bottlenecks” would be to dedicate funding for several years – creating a multi-annual research programme. As long as it is possible for the participating countries to redistribute some of the budgeted funding from one year to the next or the other way around, the total amount dedicated to a call could be kept on a constant level. This would clearly be beneficial if the European Commission offers additional funding as is the case in the ERA-Net Plus scheme.

Sharing information and improving the collaboration between ongoing projects

One of the lessons from the StarClustering strategy is that the number of partners and the way that industry is involved in the project has consequences on external cooperation capacity. The bigger the consortium and the more industry-driven the project is, the more difficult external communication will be due to precautions concerning the participant's intellectual property rights. This creates problems as soon as alterations from the original project design are discussed – which would be needed to establish collaboration with another project. The risk of conflict on intellectual property right and confidentiality requires non-disclosure agreements (NDAs) for all large projects with industry involvement. The NDA proved to be a crucial document not only for the actual cross-project collaboration, but also as a basis to allow Star-COLIBRI getting an insight into the project's work. In four cases out of five, it proved to be essential for obtaining detailed project information and a thoroughly completed questionnaire as well as for organising meetings and having constructive discussions with the project coordinator.

Hence, it is most likely that improving the cross-collaboration between research projects, as devised by Star-COLIBRI, works much better with smaller, national projects because it is less complicated for those projects to open up for further collaboration. In contrast, the large, mostly EU-funded projects that were in Star-COLIBRI's focus (Star projects) demands a time-consuming amendment-request if significant project-to-project synergies are going to be achieved. This aspect was frequently mentioned in the discussion with Star project representatives. It was doubted that it would be possible to sign a contract with another project before the own project finishes, mainly because of the need for NDAs, requests for amendment to the respective funding organisation and modification of the projects' work plans.

3.2. Balancing future funding in the area of biorefineries

Funding for research and innovation of non-energy production could be increased

One of the conclusions of Star-COLIBRI is that research on biofuels and bio-energy production is receiving proportionally more funding than non-energy products derived from the biorefinery process. This is also the case in the joint call between ERA-Net Bioenergy and Woodwisdom and its topic on “*Advanced biofuels and biorefineries*”. Until 2020 we also have European initiatives such as the European Industrial Bioenergy Initiative (EIBI) and the NER300 scheme which sets aside 300 million rights to emit one tonne of carbon dioxide in the New Entrants’ Reserve of the European Emissions Trading Scheme. The money raised - which could be as much as 4.5 bn EUR – will be used for subsidising installations of innovative renewable energy technology and carbon capture and storage.

To strengthen the biorefinery sector in Europe, it would make good sense to increase the funding of research on non-energy products (chemicals, materials, fibres, feed and food) to a level comparable with the funding for energy products. Having said this, we would like to underline that we do not propose a decrease of the funding of research related to energy products.

Trans-national funding initiatives must reflect that different geographical regions demands different biorefinery concepts

In contrast to petroleum-based refineries, the viability of biorefinery facilities will depend foremost on the availability of biomass. Because of the inefficiencies inherent in transporting bulky low density biomass over long distances, biomass logistics is a crucial aspect and influences the entire biorefinery value chain. As a consequence, there will not be one but several biorefinery types in Europe, with a predominance of certain types according to the geographical location and the respective inherent biomass availability. This will also influence the national and regional funding requirements for research and innovation as well as the location of demonstrators. This has to be considered in setting up trans-national call topics. The regional biomass availability should be taken into consideration when the *Specific National Rules* are defined. However, it is also important to recognise that the evaluation and selection process must be representative as well. The experts used must represent the geographical area covered in the joint call and they must be provided with appropriate instructions.

A schematic overview of different biomass regions of Europe

- ✓ Biorefineries based on wood (locally produced biomass) are likely to be developed in Northern Europe or in densely forested rural area in “mid-Europe”.
- ✓ Biorefineries based on classical agricultural crops (cereal, sugar beets, oilseed crops, dedicated biomass feedstock) are likely to be developed in rural areas in “mid-Europe” (western, central and eastern Europe).
- ✓ Biorefineries based on imported biomass will be established mainly in or very near to large industrial harbours (like Rotterdam).

The development of biorefineries in Southern Europe is more difficult to predict. It could be either connected to industrial harbours or to the development of regionally-related crops productions (dedicated crops) in rural areas.

Figure 7: Examples of different biomass regions of Europe and how they influence the available biorefinery solutions

4. Recommendations

4.1. A future European strategy for public funding of research and innovation that includes a trans-national aspect

As discussed in the previous section, geographical conditions and access to biomass will be paramount for the type of biorefinery concepts relevant to a region. For this reason, public research and innovation investments must consider also region-specific requirements. Combining a multi-annual trans-national research programme with an EU funded initiative e.g. a Public-Private Partnership would be particularly well suited to accomplish this.

The advantage of a Private-Public Partnership (PPP) as opposed to establishing a specific research area for biorefineries within the EUs Framework Programme is first and foremost that the commitment of industry to a research programme ensures the industrial relevance of the public funding.

As established in the Star-COLIBRI report on potential Public-Private Partnerships (deliverable 4.1), the experiences from the European research-related PPPs only allow for two options regarding the legal base of the partnership between the EC and the private actors; either by *Joint Undertakings*, as is the case for the *Joint Technology Initiatives* or *Contractual Partnerships*, as in the case of the PPPs under the *Economic Recovery Plan* (e.g. *Factories of the Future*). We advise our stakeholders against pursuing the alternative presented by “Joint Undertakings”. The existing Joint Undertakings have suffered from extensive bureaucracy and a public funding rate that is not competitive with the funding rates offered by the 7th Research Framework Programme.

Another consideration is based on the fact that a PPP which includes several public stakeholders (i.e. the EC and a subset of EU Member States) takes a longer time to set up and might experience delays when the time comes to require national public funding.

Set up a Public-Public contractual partnership between the EC and Member States

Our conclusion is that the role of the member states in a contractual PPP partnership should be to commit to - and to manage - a multi-annual, trans-national funding programme for biorefinery-related research and innovation and that this programme should be managed by relevant national and regional funding organisations on the same principles as an ERA-Net project. The contract would be set up between the European Commission on the one hand and the participating member states on the other (i.e. a public-public partnership). This public-public contractual partnership would be an elegant solution allowing the ERA-Net strategy to play to its fullest potential. The public-public partnership contract should stipulate that the

European Commission tops up the national research funding as with the ERA-Net Plus scheme. By doing so, the contract would help to attract as well as to stabilise national funding while simultaneously reducing the administrative burden of the European Commission.

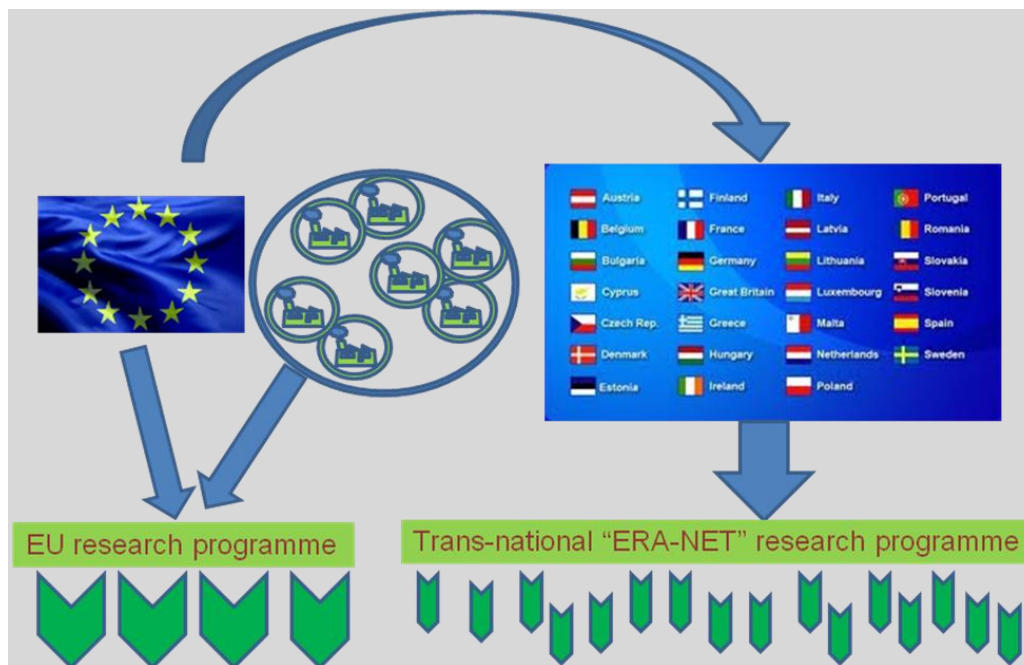


Figure 8: Public-Public and Private-Public Partnerships; The role of a trans-national funding programme in creating a European strategy for biorefinery-related research and innovation.

Set up a Private-Public contractual partnership with the European Commission as the public body

The second component of the European funding strategy for Biorefinery related research would be to set up a Private-Public partnership, i.e. a contract between the European Commission on the one hand and a private consortium on the other. This contract should make special considerations of confidentiality and Intellectual Property Rights. Experiences from Star-COLIBRI show that IPR-invoked confidentiality measures constitute a significant obstacle for open and efficient information sharing and the establishment of new collaborations.

The scheme would contribute to improving the coherence and coordination of research programmes across Europe to overcome fragmentation of the European Research Area (ERA). The scheme would also enable national systems to take on tasks collectively that they would not have been able to tackle independently.

Set up a public project database

Further on, to improve the information exchange in all aspects, a public project database should be set up. The Star-COLIBRI's Biorefinery Portal (deliverable 2.2) can handle project partners, projects, calls for proposals and public funding organisations within a logical framework. Experience shows that a simplified version of the Star-COLIBRI Biorefinery Portal would be suitable but that dedicated “information administrators” would be required to maintain the long-term integrity of the information.

Simplify collaboration between projects

As a lesson from the StarCluster activities, Star-COLIBRI recommends a certain budget for “external collaboration activities” be included in the project contract design. This budget should only be available when proof of “external” cooperation can be provided and when it is, according to a joint action plan with targets, going beyond the ambition of the collaborating project's original objectives.