

# Standardization in research and innovation projects

Success story: **bio-based economy**

## KBBPPS:

One of the main challenges for the real take-off of bio-refineries and the bio-based economy is a clear, harmonized and unambiguous set of standards about the properties of the products. The KBBPPS (Knowledge Based Bio-based Products' Pre-Standardization) project covers bio-based content determination and biodegradability test schemes for these products. Practical solutions for lab and field tests on biodegradation or biological derived elements are investigated. The goal is copying the results one-to-one into European standards. By participating in CEN and by doing pre- and co-normative research, KBBPPS allows European stakeholders to progress with well-defined, sound test methods correlated to actual field behaviour and applicability in the lab.

## THE PROJECT

KBBPPS has been initiated to execute pre- and co-normative work for bio-based products. The project covers research and demonstration activities on bio-based carbon content determination, biomass content methods not solely dependent on 14C-analysis, as well as biodegradability and ecotoxicity test schemes. Identification and resolution of functionality related bottlenecks with the view to developing, harmonizing and validating test methodologies are undertaken. The possibilities for improving sample preparation, fractionation and thermal treatments are studied in order to cover bio-based carbon and other bio-based elements determination. The project develops practical solutions for stakeholders, lab and field tests on biodegradation or determining the amount of biologically derived material or elements. The goal in the end is that the results can be copied one-to-one into European standards, mostly under CEN/TC 411 on "Bio-based products". The project runs from September 2012 until August 2015.

## STANDARDS: A SOLUTION FOR MARKET UPTAKE

One of the challenges for the take-off of bio-refineries and the bio-based economy is a clear, harmonized and unambiguous set of standards about the properties of the products placed on the market as being 'bio-based'. To ensure that consumers receive accurate product information, standardized test methods should set the benchmark for specifications, which encompass well-defined pass criteria for different characteristics (e.g. biodegradation, environmental safety, bio-based content, performance). KBBPPS is supporting the pre-normative research on these topics.

<http://www.kbbpps.eu>

 The KBBPPS project aims at facilitating and increasing the application of bio-content and functionality standards, labels and certification systems for bio-based products. A correct identification of the biomass content, applicable to a wide variety of bio-based products is of great relevance for the further development of the biotechnology and biomass industry in Europe and worldwide. 

Darden Hood,  
President of Beta-Analytics, USA

## HOW WAS THE STANDARD DEVELOPED?

As first research task, the KBBPPS project reviewed current biodegradation and ecotoxicity standards. A public report has been made available concluding that there is good progress in standards development but significant gaps remain.

A European pre-standard has been established based upon research and lab experiences: The CEN/TS 16640 "Bio-based products - Determination of the bio based carbon content of products using the radiocarbon method". As KBBPPS has assessed the technique only for some products and more work is envisaged completing round robin investigations with more labs, a TS was published, but it is expected to become upgraded towards a full European Standard (EN) soon.

Further KBBPPS studies will be on mass-balance techniques or indirect determination which will be supported by processing scheme checks or elemental analysis. In addition, KBBPPS has developed software programmes that partition products in their biological and non-biological elements and can calculate theoretical biomass contents. The link with standardization is visually supported by the fact that the project information is presented on the same website as the public information of CEN/ TC 411: [www.biobasedeconomy.eu](http://www.biobasedeconomy.eu)

## BENEFITS OF LINKING WITH STANDARDIZATION

Standardization is a key dissemination activity for the project, and is seen as fundamental for the potential long-term use and impact of project results. The work of the KBBPPS project can be considered as pre- and co-normative work.

The Technical Specification CEN/TS 16640 provides the reference test methods for laboratories, producers, suppliers and purchasers of bio-based product materials and products. It is also useful for authorities and inspection organisations.

The developed methodologies should form a concept for all bio-based products and are not product specific. The bio-content and degradability methods will be tested with respect to their repeatability in order to present indications of quality levels, classes and correlation with actual field behaviour. Related standardization activities should follow.

The work on biodegradation and functionality gaps will be further developed under another FP7 project, Open-Bio. The results and developed draft test methodologies will be presented to CEN and other standardization bodies for further standardization.

## LONG-TERM EXPECTED IMPACT

The challenge is for the KBBPPS work - eventually continued by the Open-Bio project - to result in a correct, reproducible and reliable set of standards that describe the functioning of each bio-based product. This allows the producer to present his product in fair comparison to the regular non-bio-based products on the market. It shall give users, consumers and policy makers confidence, and present them an idea about the fossil resources they avoided using, thus contributing to market uptake of bio-based products.

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One of the challenges is to look to the carbon element ... also including other atoms. Question is whether the carbon in products is derived from renewable raw materials. Then you can simply determine the bio-based content ... the same way you determine how old a given substance is as used in archaeology. For bio-based products performing well, clear standards are required.

Frederic Petit, Sustainability Director of DSM and Chairman of CEN/TC 411

[www.cencenelec.eu/research](http://www.cencenelec.eu/research)



Every project is different. The CEN-CENELEC Research Helpdesk can provide you with advice on how to include standardization in your project. Please feel free to contact us!

**Email:** [research@cencenelec.eu](mailto:research@cencenelec.eu)  
**Tel.:** +32 2 550 08 11  
Avenue Marnix, 17 - B-1000 Brussels, Belgium