# A GUIDANCE ON BIO-BASED PRODUCTS IN PROCUREMENT

Procurement of Innovative Products: Bio-Based Products in Procurement

# 1 INTRODUCTION

## 1.1 European Policy Framework

This guidance on bio-based products in procurement supports the broader objectives of the relevant European Policy Framework, for example:

- The **Circular Economy Package** (adopted on 2 December 2015) aims to stimulate Europe's transition towards a circular economy. As per the press release about the adopting of the package, the proposed actions of the Circular Economy Package will 'contribute to 'closing the loop' of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy. The plans will extract the maximum value and use from all raw materials, products and waste, fostering energy savings and reducing Green House Gas emissions.' The responsible uptake of bio-based products in procurement is expected to contribute to improved resource efficiency and the use of raw materials which in many instances is still considered a waste stream.

- The **Bioeconomy Strategy** (adopted on 13 February 2012), addresses the production of renewable biological resources and their conversion into vital products and bio-energy. One of the purposes of the Strategy is to ensure that fossil fuels are replaced with sustainable natural alternatives as part of the shift to a post-petroleum society.

- **Innovation procurement**. By innovation procurement procurers can drive innovation in the bio-based economy from the demand side. In January 2014, the EU adopted new public procurement directives. These new directives open up a number of opportunities for innovation procurement. Innovation procurement combined with to the use of the appropriate criteria based on capabilities of such bio-based products and building upon available European standardisation documents, can help foster market uptake of innovative bio-based products and services.

## 1.2 Background to the project

The Executive Agency for Small and Medium-Sized Enterprises (EASME) has asked Royal HaskoningDHV (RHDHV) to develop a guidance document and other publication materials which facilitates the uptake of bio-based products in procurement. The aim is to obtain a successful uptake of this guidance by as many as possible national, regional and local procurement bodies.

### Part 1: General information

The first part of the guidance gives general information on the implementation of 'bio-based products in procurement' in organisations on the basis of the following questions:

- Why 'bio-based products in procurement?
- How to implement 'bio-based products in procurement' in organisations?
- What product groups to focus on?


This approach of asking questions is based on the 'Golden Circle' of Simon Sinek (why, how and what). You have to start with the 'why'. Procurers and their internal clients have to know the 'why': purpose, cause and belief can inspire them to take into account bio-based products in procurement. When they are convinced, it is less hard to start with the 'how': how to implement bio-based products in procurement? and the 'what': what product groups to focus on? This strategy is used in this guidance.

### Part 2: Fact sheets 'infrastructure' and 'gardening and landscaping'

The second part of the guidance gives specific information and approaches for 'bio-based products in procurement'. These factsheets are developed for product groups within the procurement sectors 'infrastructure: construction materials' and 'gardening and landscaping'.

The previously used questions of 'why, how, what' can now be used as follows for the example of the product group 'street furniture':

- Why bio-based street furniture?
- How to take into account bio-based products in procurement of street furniture?
- What bio-based street furniture is available?

In addition to answering these questions, the factsheet also address 'points of attention', as identified by procurers who participated in the questionnaire distributed by RHDHV to gain insight into the needs, concerns, existing knowledge and experience of procurers and policy makers with bio-based products in procurement.

## 1.3 What are bio-based products

This section addresses the definition of bio-based products, how this is determined and certified as well as bio-based products which are outside of the scope of this guidance by building upon the available information from relevant European Standardisation Documents.

### What are bio-based products?

Bio-based products are products that are wholly or partly made from biomass. A bio-based product is normally characterized by the bio-based carbon content or the bio-based content. The term "bio-based product" is often used to refer to a product which is partly bio-based. In those cases the claim should be accompanied by a quantification of the bio-based content. These definitions are obtained from the European Standard EN 16575:2014 'Bio-based products – Vocabulary'. This standard defines general terms to be used in the field of bio-based products.

**Explanation: Standards and labels to determine the bio-based content of products**

There are various methods which can be used for the determination of the bio-based content of solid, liquid and gaseous products. CEN/TR 16721:2014 gives an overview of methods. European Standard EN 16785-1:2015 specifies a method of determining the bio-based content in products, based on the radiocarbon (C14) analysis and elemental analysis. This European Standard is applicable to any solid, liquid and gaseous product containing carbon element, provided that a statement giving the composition and the origin of the product is available. This method is not needed for the determination of the bio-based content in natural products wholly derived from biomass[1]. ASTM D6866 was developed in the United States as a standardized analytical method for determining the bio-based content of solid, liquid, and gaseous samples. This test method uses radiocarbon analyses as a method to determine the bio-based content.

There are two certification schemes available for bio-based content; the 'OK bio-based' label which is awarded by Vinçotte and the 'DIN Geprüft Bio-based' label which is awarded by DIN CERTO.

A bio-based product can be an intermediate, material, semi-finished or final product. Bio-based products from forestry and agriculture have a long history of application, such as paper, board and various chemicals and materials. The last decades have seen the emergence of new bio-based products in the market. Some of the reasons for the increased interest lie in the bio-based products' benefits in relation to the depletion of fossil resources and climate change. Bio-based products may also provide additional product functionalities. This has triggered a wave of innovation with the development of knowledge and technologies allowing new transformation processes and product development. Bio-based products can also be 'bio-based versions' of traditional products or novel products with entirely new and innovative functionalities and offering the potential for new and existing markets. Many product areas could potentially feature products made entirely or partly from bio-based raw materials.

**For more information on what are bio-based products we refer to Factsheet # 1 'What are bio-based products' of the InnProBio project www.innprobio.innovation-procurement.org**

## Bio-based services

Many types of services could potentially benefit from bio-based products. An example would be the goal to contract a cleaning service from a company using bio-based surfactants and detergents, which can be derived from vegetable oils.

## Excluded bio-based products (out of scope)

Material or products such as food, feed and biomass used for energy production are excluded from the guidance.

## 1.4 Bio-based Economy within the Circular Economy

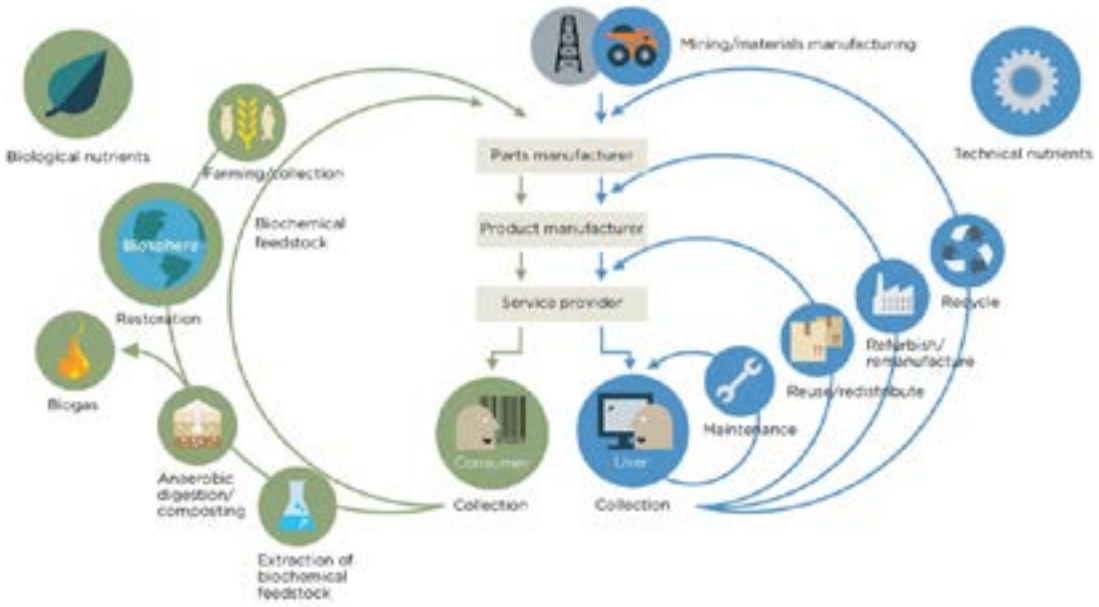
This section will address how the bio-based economy is linked to the circular economy.

### Circular Economy

The circular economy is an alternative to a traditional linear economy (in which we make things, use them and then dispose of them). In a circular economy we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life (adapted from: The Waste and Resources Action Programme[2]). According to the Ellen MacArthur Foundation, a circular economy is restorative and regenerative by design and aims to keep products, components and materials at their highest utility and value at all times. Within the circular economy, a distinction can be made between technical and biological cycles.

### Bio-Based Economy

In the bio-based economy, biomass materials substitute fossil materials. This replacement of fossil materials should have benefits such as reduced GHG emissions, increased resource efficiency and reduced dependency on crude oil (for more information see section 2.1 of this guidance). To be sustainable, this biomass should not be a source of food and feed or compete with food and feed over land. The biomass used to replace fossil based materials, should also be re-used or processed in a way that maximum value is obtained (i.e. production of compost at the end of life of the bio-based product). This approach and objective is similar to the circular economy and will support the development of a circular economy both through the circular use of biomass as well as by changing the mind-set and approach of people.




Source: Ellen McArthur Foundation

# 2 HOW TO IMPLEMENT 'BIO-BASED PRODUCTS IN PROCUREMENT' IN ORGANISATIONS

This chapter is structured in accordance with the following questions:

1. Why 'bio-based products in procurement?
2. How to implement 'bio-based products in procurement' in organisations?
3. What product groups to focus on?

## 2.1 Why 'bio-based products in procurement'?

The potential benefits of 'bio-based products in procurement' are split between potential general benefits and specific benefits. The potential general benefits are related to the bio-based nature of the product. The potential specific benefits are attributable to a specific product and how it compares to the conventional (not bio-based) product.

### 2.2.1 General benefits of 'bio-based products in procurement'

Potential general benefits of using bio-based products in procurement are related to the bio-based nature of the product. Examples of potential general benefits of 'bio-based products in procurement' are:

- Improved Resource Efficiency;
- Driver of the secondary material market and circular economy;
- Reduced Greenhouse Gas (GHG) emissions and avoidance of GHG emissions;
- Driver of innovation;
- Achieving social goals – contribute to political priorities;
- Reduced dependency on crude oil.

#### Improved Resource Efficieny

If for the production of bio-based products, use is made of by-products and waste streams, resource efficiency could be improved. Such by-products or waste streams could for example be forestry waste products (e.g. tree bark felling), agricultural by-products (e.g. the stalk of a corn cob) and grass cuttings from the municipal park. Resource efficiency is only improved if these by-products and waste streams were not used for other purposes in the baseline.

#### Driver of the secondary raw material market and circular economy

When using by-products and waste streams for the production of bio-based products, not only resource efficiency can be improved, but the secondary raw material market and circular economy is stimulated. Increased demand for materials conventionally perceived as waste will improve the use of these materials. Ideally, the higher value products will achieve preference for by-products and waste streams. This 'cascading' of use of by-products and waste streams will optimize resource efficiency. In a circular economy, no more waste streams exist and material cycles are closed.

### Reduced Greenhouse Gas (GHG) emissions and avoidance of GHG emission

The greenhouse gasses emitted during the production of bio-based products have the potential to be lower than their petrochemical equivalent[3]. This is amongst others influenced by the biomass location and cultivation methods applied. Reduced greenhouse gas emissions will in turn contribute to combating climate change. By using bio-based products which replace petrochemical products, GHG emissions can also be avoided. Fossil feedstock need to remain in the ground to achieve the limit of a temperature increase less than 2°C[4] as is included in the COP 21 agreement and ratified by UN-countries including the EU.

### Driver of Innovation

Bio-based products in procurement can be a driver of innovation, providing industry with incentives for developing bio-based products. Innovation procurement allows authorities to act as a launch customer for innovative products or services that are not yet available on a large-scale commercial basis. This is particularly the case in markets where the public sector is a significant purchaser. This can lead to increasing economic growth, better products and services and access to markets for new businesses, especially small and medium-size enterprises (SME's).

### Achieving Social Goals

Social issues such as rural area development, employment generation and support of small and medium sized businesses could, amongst others, be addressed through bio-based products in procurement.

### Reduced Dependency on Crude Oil

Crude oil is used as a base material for most synthetic products such as plastics and chemicals. The crude oil dependency rate of the countries in the European Union in total was 88.3% in 2013[5]. Switching to bio-based products could reduce the dependency on crude oil for the manufacturing industry.

### Secondary incentives

The previously mentioned potential general benefits of bio-based products are, though of importance, not issues which often can't be addressed directly in tender specifications. The EU-InnProBio-Project has named such benefits 'secondary incentives'. Though secondary incentives could stimulate the decision to procure bio-based products, this cannot directly be considered in tender specifications which need to be impartial (Directive 2014/24/EU). Therefore, these incentives are more relevant for the internal clients, internal decisions-makers and policy-makers than for the procurers themselves.

An example of a policy to stimulate bio-based products in procurement due to their secondary incentives can be found in the Provence of Zeeland (the Netherlands).

**Example: Policy on bio-based products in procurement – Province of Zeeland, the Netherlands**

The Province has the ambition to become a lower carbon intensive economy. To achieve this ambition, the following principles for procurement have been identified:

- Prefer bio-based products with a low carbon footprint and life cycle benefits
- Using a framework for suppliers to benchmark products and stimulate suppliers to improve
- Stimulate the local economy by supporting pilots to develop innovations

This policy has identified the secondary incentives which are important for the Province (lower carbon economy and stimulating the regional economy), identified criteria (low carbon footprint and life cycle benefits) and provided a framework to prove compliance with these criteria.

Source: (Buy with impact! (Martin Scherpenisse, Bruxelles, 27 October 2015))

### 2.1.2 Specific benefits of 'bio-based products in procurement'

Specific benefits of bio-based products in procurement refer to benefits which the bio-based product has in comparison to its conventional alternative. Examples of such benefits are:

- Financial efficiency (lower total cost of ownership);
- Benefit from (better) biodegradability;
- Product capabilities such as improved strength, flexibility or applicability

Furthermore, potential sustainability issues related to bio-based products will be addressed.

**Financial efficiency (lower total cost of ownership)**

Although bio-based products are often (still) more expensive, their specific capabilities may result in more favourable life-cycle costs. These benefits are often related to the "end of life costs" (related to the biodegradability capabilities of some bio-based products). Certain products (geotextiles, bio-based piping and tubing) can, for example, simply be left in the ground, reducing disposal costs. Mind: Not all bio-based products are biodegradable.

**Benefit from (better) biodegradability**

In some applications the use of biodegradable and/or compostable bio-based products can be of added value, for example:

- In situations where collection and separation of waste products is not viable or practical, for example in catering or outdoor events. In these examples there is usually a combination of crockery, cutlery and cups as well as biodegradable waste such as food and garden waste. By using compostable crockery, cutlery and cups, all waste can together be processed for compost or bio methane.

- Lubricants can leak from the structure they are applied to and spill in the environment. By using biodegradable lubricants, the environmental impact is reduced.

- The use of products which remain in the soil such as permanent shuttering and certain

anchoring systems for trees. By using biodegradable products, the presence of non-biodegradable materials in the soil is reduced.

**O** The use of biodegradable disposable products in hospitals which can be processed by digesters on site. This could reduce the environmental impact of these products and improve resource efficiency.

**Explanation: Biodegradability and compostability**

Biodegradation is a natural chemical process in which materials are being transformed into natural substances such as water, carbon and biomass with the help of microorganisms. Compostability is a characteristic of a product that enables biodegradation under specific conditions (i.e. a certain temperature, timeframe, etc.).

Source of definitions: ISO 472:2013 Plastics - Vocabulary.

**For more information on biodegradability, compostability and relevant standards we refer to Factsheet # 3 'Biodegradability – exposing some of the myths and facts' of the EU-InnProBio-Project www.innprobio.innovation-procurement.org**

### Product capabilities such as improved strength, flexibility or applicability

Organisations could consider bio-based products in procurement if they would benefit from one or more of the capabilities attributed to the bio-based product, for example:

**O** An **erosion mat** made from sheep wool has improved water retention capabilities, which in water constraint areas might lead to improved water use efficiency and increased yields.

**O** A **geotextile** which is lighter because the bio-based PLA is lighter than conventionally used polypropylene. This reduced transportation and application costs.

**O** Depending on the application, bio-based **lubricants** could improve safety of use as they have a higher flashpoint, constant viscosity and less oil mist and vapour emissions.

**O** Examples of bio-based **coatings** which contain no VOCs have been found. This reduces human health impact and climate change impact.

**O** Adding of a bio-based **additive** (based on vegetable oil) to asphalt has been found to improve the flexibility and workability of the asphalt. This could lead to reduced aging of the asphalt and easier application in more difficult environments.

**Explanation: Potential Sustainability Issues**

Although bio-based products potentially have different capabilities which are beneficial, it should be kept in mind that the overall environmental impact is not 'by default' positive. Aspects to keep in mind are environmental impact over the life cycle of the product (this could be determined through Life Cycle Assessment in accordance with ISO 14040) and the sustainable sourcing of the input material (this could be assessed in accordance with the sustainability criteria for bio-based products from EN 16751 in combination with CEN/TR 16957 - Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase). The EU, however, does not have a bio-preferred program like for instance the US.

**For more information on the sustainability of bio-based products we refer to Factsheet #2 'Sustainability of bio-based products' of the EU-InnProBio-Project www.innprobio.innovation-procurement.org**

## 2.2 How to implement 'bio-based products in procurement'

Two aspects of implementation will be discussed as part of the question 'how to implement bio-based products in procurement':

1. Within the organisation;
2. Within procurement systems.

### 2.2.1 How to implement 'bio-based products in procurement' in organisations?

To successfully implement 'bio-based products in procurement' within organisations, the following questions should be addressed within the organisation:

- Who to involve;
- How to create commitment;
- How to create a knowledge base.

This section of the guidance will provide information on how these questions could be answered and addressed.

#### Who to involve?

Typically, implementation of bio-based products in procurement would involve a number of different people and departments within an organisation. For example professionals from procurement, sustainability, finance and specialist departments such as construction or IT. It is recommended that from all different levels and departments within the organisation people are contacted and commitment is created.

**From experience: involve enthusiastic professionals**

A policy maker stressed during a meeting the importance of inviting 'enthusiastic' professionals to working groups or other working forms to implement bio-based products in procurement. His experience taught that enthusiasm and active participation is often a deciding factor to make new and innovative products succesful.

## How to create commitment?

- **High-level commitment**: Commitment of higher level management for the implementation of bio-based products in procurement can be a strong driver for implementation within an organisation. This helps to ensure the necessary co-operation between departments. Commitment can be operationalized in the form of a policy or strategy document. Also indicate who is responsible for implementing the policy (who is the change agent?).

- **Cooperation between policymakers and procurers**: This will assist with making the policy practical and with broad based acceptance and implementation of policy.

- **Setting up a working group**. Establishing a working group consisting of a number of different people and departments within an organisation to co-operate can help create commitment and to find the most effective means of implementation.

- **Networking and co-operation**. By making use of existing networks and available learning and knowledge, the uptake of bio-based products in procurement can be advanced. By being part of a network or through co-operation the experience and knowledge available could reduce the (perceived) risk of changing procurement to incorporate bio-based products.

## How to create a knowledge base?

Putting in place information, training, working groups, networking and monitoring activities are important to ensure to implement bio-based products in procurement:

- **Engaging the market**: good market intelligence about potential bio-based products available is highly beneficial for implementing bio-based products in procurement. Informing the market about your intentions in advance and engaging in open dialogue with potential suppliers (early market engagement) is an effective way to optimise the implementation of bio-based products in procurement.

- **Assist the procurer**: provide the procurer with training or information material. This information could contain definitions, product and supplier information and examples of criteria to be used during procurement.

- **Provide best practice examples**: by gathering best practice examples and distributing these within the organisation, not only commitment is strengthened and motivation improved, but in addition the knowledge base is build. Successful examples provide information which is easier to read and incorporate than theoretical information.

- **Take part in national and international networking activities**: this will provide information and possible sources of support.

- **Seek external advice or peer review**: this can be obtained from other organisations implementing bio-based products in procurement or from networks or training.

### 2.2.2 How to take into account bio-based products in procurement?

The following approach could be used to take into account bio-based products in procurement:

- Consult the market;
- Choose an appropriate procurement procedure;
- Identify capabilities of bio-based products;
- Specify requirements in tender.

#### Consult the market

In deciding which procedure to use and how best to include bio-based related criteria, it is useful to have some knowledge of the market – e.g. the availability, cost and possible practical implications of bio-based alternatives. Simple online market research can help to provide some basic information. To get a more detailed picture from the market you can also engage in dialogue with potential suppliers prior to tendering. Letting the market know well in advance about tenders who will include bio-based related criteria is advisable. This will give suppliers sufficient time to prepare for your requirements.

**For more information on procedures to consult the market we refer to the EU Green Public Procurement Handbook http://ec.europa.eu/environment/gpp**

**Example: Market research confirms the possibility of switching to bio-based coffee cups**

The Dutch Government has expressed the goal to stimulate the transition to a more sustainable society and a bio-based economy. In accordance with this aim, the Government's procurement manager for catering conducted market research into the availability of bio-based disposable coffee cups. This market research concluded that there are multiple suppliers of bio-based coffee cups which are competitive in price compared to conventional coffee cups. Following these findings, it was decided to include amongst others criteria on material composition, waste management processes and the option of changing to more innovative solutions during the contract period. The tender was won by Douwe Egberts, who will be supplying paper cups with a bio-based inside coating. The coating is made from corn instead of crude oil. It is agreed with Douwe Egberts that in the future this coating will be made from bagasse, which is a sugar industry waste product. This will further improve the sustainability of the product.

Source: Netherlands Enterprise Agency and Royal HaskoningDHV. 2016. [Inspiration book 20 showcases of bio-based procurement] (In Dutch).

#### Choose an appropriate procedure

The preparatory stage of any procurement procedure is crucial. Different procedures may be used to implement bio-based products in procurement, depending on the subject-matter of the contract and the information gathered during the pre-procurement stage. Procedures such as the competitive procedure with negotiation and competitive dialogue (procurement of innovation) may be suitable when you need to be able to adapt a solution to your specific needs.

### Traditional procurement procedures

**O** In an **open procedure**, any operator may submit a tender. All tenderers who meet the pass/fail conditions you have specified will be eligible to have their tender assessed. You will thus have access to the maximum choice of bio-based products or services. However, you will not be able to select who you invite to tender based on, for example their technical capacity.

**O** In a **restricted procedure**, you can assess technical capacity in a prior stage and also limit the number of operators you invite to tender. This staged procedure may help you to determine the appropriate conditions/requirements to aim for in your specifications, award criteria and contract performance clauses. By limiting the number of competitors however, it is possible that you will miss out on high quality offers.

### Innovation procurement procedures

**O** The **competitive procedure with negotiation** and **competitive dialogue procedures** can be used by public authorities for purchases which require an element of adaptation of existing solutions; design or innovation; or in certain other circumstances[6]. These procedures may offer advantages, as they introduce elements of flexibility not available in the open and restricted procedures and may allow for the effect (such as costs) of bio-based products to be better understood and controlled. However, both procedures require some level of skill and experience in engaging with suppliers if the best results are to be achieved.

**O** Where a contracting authority wishes to purchase goods or services, which are not currently available on the market, it may establish an **innovation partnership** with one or more partners. This allows for the research and development (R&D), piloting and subsequent purchase of a new product, service or work, by establishing a structured partnership[7]. It may be particularly suitable where the current state-of-the-art in a sector is not sufficiently advanced to meet the challenges identified by a public authority.

**For more information on procurement procedures we refer to the EU Green Public Procurement Handbook http://ec.europa.eu/environment/gpp and ICLEI Guidance on Public Procurement of Innovation http://www.iclei-europe.org**

**Example: Innovation Procurement provides environmental benefits and jobs in Skåne, Sweden**

The Swedish region Skåne followed an 'innovation procurement process' for the delivery of more than five million hospital aprons per year. The innovation procurement process was applied as a pilot project with support from the Swedish Energy Agency to support the target of the region to be fossil-free in 2020.

An innovation procurement process allows the client to specify and request quotes for a product that does not yet exist. Hospital aprons are conventionally produced from fossil based plastics and therefore impact on the climate. A dedicated project team, formed to get the best offer for hospital aprons made from bio-degradable material, engaged with potential suppliers. Resulting from this engagement, four qualified bids were submitted. Innovation procurement was conducted as a so-called negotiated procedure, which followed more engagement with the bidders in order for them to improve their offers. The winning bid was from Gaia Biomaterials. Its disposable aprons consist of 91% of renewable material. Gaia Biomaterials' bid improved 30% in price between its two offers and increased its locally sourced material. Gaia Biomaterials will deliver a test series to be evaluated by an independent third party. After the test phase, they will deliver about 5.2 million aprons.

Source: Håkan Samuelsson, 'Innovation Procurement provides environmental benefits and jobs in Skåne, Sweden', 08-03-2016)

### Identify capabilities of bio-based products related to the subject matter of the contract

When defining the subject-matter of a contract, contracting authorities have great freedom to choose what they wish to procure. Procurers can focus on specific capabilities of bio-based products in relation to the subject matter of the contract to favour the procurement of bio-based products. Each individual contract will have a different set of potential capabilities: depending on the subject matter but also on the type of contract: supply, service or works contracts. Relevant aspects related to bio-based products in procurement can be for example biodegradability or environmental impact (determined for example through a Life Cycle Assessment). The specific capabilities of the bio-based products can be used in the following step, when defining the specifications of the contract.

### Specify how to take into account capabilities of bio-based products

All procurement procedures mentioned before offer a number of stages to take into account bio-based products and address specific capabilities of bio-based products:

- **Technical specifications**: Technical specifications describe the contract to the market and provide measurable requirements against which tenders can be evaluated. They constitute minimum compliance criteria. Relevant options related to bio-based products in procurement are specifying production methods and materials (e.g. sustainable feedstock, bio-based content, and biodegradability) and using labels to define requirements.

- **Selection criteria**: Selection criteria assess the suitability of an operator to carry out a contract. A criterion related to bio-based products in procurement can be e.g. the experience and references of the tenderer applying bio-based products.

- **Award criteria**: At the award stage, the contracting authority evaluates the quality of the tenders and compares costs. Under the 2014 procurement directives, all contracts from public authorities must be awarded on the basis of most economically advantageous tender (MEAT). Award criteria need to be linked to the subject-matter of the contract. The same items as mentioned

for the technical specifications can be used to set award criteria. Cost or price will form also part of the assessment in any procedure and may be calculated on the basis of life-cycle costs.

Examples of criteria which can be used in tenders can be found for specific product groups in the second part of this guidance.

**Example: Capabilities for bio-based cycling route signs**

In 2015 the city of Leiden and organization 'Holland Rijnland', together responsible for the maintenance of local cycling routes, expressed the desire to investigate the possibility of procuring bio-based cycling route signs. A consultancy firm was appointed to conduct market research, specifically to find reference projects, and to determine reasonable characteristics of the signs as well as costs. Following positive feedback, it was decided to amongst others include criteria on durability, material composition and future re-use and maintenance options in the procurement process. Three companies responded to the request for proposals and in accordance with the pre-determined criteria, the company with the highest overall score was appointed. This company provided a bio-based sign which is currently being installed along the cycling routes.

Source: Netherlands Enterprise Agency and Royal HaskoningDHV. 2016. [Inspiration book 20 showcases of bio-based procurement] (In Dutch).

## 2.3 What product groups to focus on?

Most organisations will start implementation by identifying certain key sectors from which bio-based products could be procured. This section will provide overview of available product groups and addresses how key sectors can be identified.

### 2.3.1 Product groups

The following table provides an overview of procurement sectors and associated product groups:

| Procurement Sector | Product groups |
|---|---|
| Food, catering and events | Disposable cups and table ware from bio-based polymers<br>Packaging materials and utensils from bio-based polymers |
| Hospitals and laboratories | Disposable lab materials: tubes, gloves, petri dishes<br>Disposable nursing articles: bedpans, urinals, gloves, bed sheets, towels |
| Clothes and textiles | Textiles for public personnel |
| ICT & office supplies | Office supplies from bio-based composites<br>Toner for cartridge |
| Vehicles and mobility | Tires from natural rubber from dandelions or other innovative materials<br>Light weight automobile interior parts<br>Bio-based lubricants for vehicles and tools<br>Under the hood parts of bio-based polymers<br>Upholstery of soybean foams<br>Floor mats of bio-based polymers<br>Textiles for seating |
| Cleaning, hygiene and sanitary | Bio-based cleaning detergents including bio-based surfactants<br>Biodegradable plastic bags for disposal & other materials relevant for hygiene |

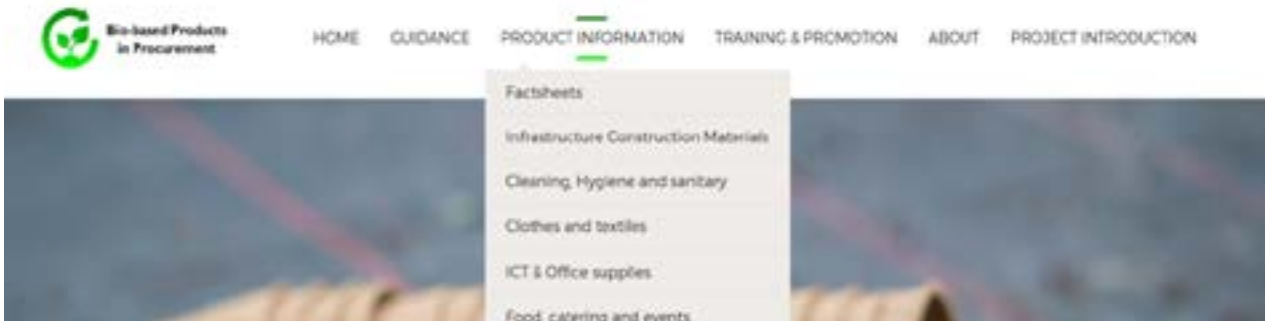
| Procurement Sector | Product groups |
|---|---|
| **Infrastructure: construction materials** | Road construction materials: Asphalt, Bio Asphalt Binder<br>Various elements for roads: guide rail, lampposts, sound barrier, railings<br>Concrete casting<br>Sewerage: Pipes from bio-based PVC<br>Street furniture: bins, benches, picnic tables<br>Road and street signs<br>Bridges and viaducts: construction materials<br>Concrete: bio-based filler, reinforcement, hemp concrete |
| Buildings: construction materials | Wooden-frame construction<br>Bio-based insulation<br>Decking<br>Facade panels<br>Bio-based painting and varnishes<br>Various bio-based indoor products for buildings |
| Furniture and indoor interiors | Office furniture from bio-based composites<br>Office upholstery and carpets from bio-based polymer fibres<br>Other innovative bio-based man-made textiles for interior |
| **Gardening and landscaping** | Biodegradable bio-based pots and seeding beds<br>Clips and binders from biodegradable bio-polymers<br>Erosion mats and geotextiles<br>Gardening tools with removable plastic parts<br>Drainage and pipes<br>Valorizing waste streams from gardenin |

These procurement sectors and product groups have been based on existing categories as determined by programmes such as EU GPP, USDA and the EU-InnProBio-Project. In addition, the categories were cross-checked on applicability and completeness using a list of available bio-based products in Europe.

For the procurement sectors ‘Infrastructure: construction materials’ and ‘Gardening and Landscaping’ (marked green in the table above) 10 factsheets with detailed product information are provided in the second part of this guidance.

### Dynamic Meta Database: www.biobasedinprocurement.eu

Each of the fore mentioned procurement sector is linked to existing bio-based product databases. The resulting dynamic Meta Database has been made available through the project website. For each procurement sector, links have been made to various bio-based product databases. Also links to other relevant information are available on the project website.



### 2.3.2 Identifying key sectors

As mentioned before, many organisations will start implementation of bio-based products in procurement by identifying certain key sectors. Section 2.3.1 provides an overview of procurement sectors and product groups for which bio-based products are available. The next question is how key sectors can be determined. Key sectors will differ per organisation and decisive factors in determining priorities could be:

- Products with high availability;
- Start with pilots;
- Major upcoming contracts;
- Potential to influence the market.

#### Products with high availability

Products which are widely available and have been used for a long time or on a large scale are the so called 'low hanging fruit'. Any (development) problems with these products are expected to be identified and solved and there is a lot of experience with the product in different circumstances. Such products are a good start for an organisation to convince sceptics of the possibility of using bio-based products, create commitment and gain experience with bio-based products. Examples of such type of products are tableware, lubricants and packaging materials.

#### Start with pilots

If there is no bio-based alternative of a specific product or if there is limited experience with bio-based products in procurement, it is recommended that first a pilot project is developed. Based on the results of the pilot project, uptake of the product could either become large scale or the project could be further developed.

**Example: Bio-based pedestrian bridge as a pilot for Schiphol, the Netherlands**

In 2014, Royal HaskoningDHV (RHDHV) presented the concept of 'grow your own bridge' to the Schiphol Area Development Company (SADC). This concept is about obtaining all raw materials needed to build the bridge from the local area where the bridge will be situated. It was decided that a student from the Technical University Delft would research the concept and its applicability for the SADC. The student developed a bio-based composite bridge. It was decided to rather use non-bio-based basalt fibre instead of bio-based basalt fibre as a life cycle assessment found the non-bio-based option to be more sustainable. The university and RHDHV together further developed the project and found a suitable location as well as material suppliers and a company which could construct the bridge. The bridge is a pilot project which shows the value of a co-creation process.

Source: Netherlands Enterprise Agency and Royal HaskoningDHV. 2016. [Inspiration book 20 showcases of bio-based procurement] (In Dutch).

#### Major upcoming contracts

The moment that major upcoming contracts are up for renewal is a good time to assess the option to switch to a bio-based alternative of the product or service. With a new contract, which could possibly be for a few years, the procurer has the opportunity to anew assess and specify its requirements and wishes for product or service capabilities. Examples of such contracts where a switch to bio-based product alternatives could be considered are supply of coffee vending machines with disposable coffee cups, cleaning services and office supplies.

### Potential to influence the market

Another determining factor can be the potential to influence the market. This can for instance be measured by:

- The size or visibility of the contract, or
- The market share of the product group (higher market share, more influence).

**Example: Compostable disposable tableware at the London Olympic Games: a high visibility intervention**

The Organizing Committee of the Olympic and Paralympic Games (LOCOG) of London 2012 decided to use compostable disposable tableware. The LOCOG implemented the procurement criteria that the tableware should be compostable and certified in accordance with EN13432.

Source: WRAP 'Working with compostable products and packaging in closed venue events' www.wrap.org.uk

# 3 FACTSHEETS ON HOW TO TAKE INTO ACCOUNT 'BIO-BASED PRODUCTS IN PROCUREMENT'

This part of the guidance consists of 10 factsheets which provide specific information and approaches for 'bio-based products in procurement'.

The following product groups and products are provided:

**Gardening and Landscaping:**

1. Pots and Seedling Beds
2. Clips and Binders
3. Geotextiles
4. Soil improvers
5. Plant foil

**Infrastructure Construction Materials:**

6. Street Furniture
7. Asphalt Additives
8. Coatings
9. Shuttering

# NOTES

1. https://standards.cen.eu/dyn/www/f?p=204:110:0::::FSP_PROJECT:40882&cs=19E43972886AD86B768106AF320EF87A9

2. http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy

3. Bio-based economy and climate change', Nova Institute, 2017-01

4. McGlade C. and Ekins, P. (2015) 'The geographical distribution of fossil fuels unused when limiting global warming to 2 °C', Nature 157.

5. Eurostat (online data codes: nrg_100a, nrg_102a and nrg_103a)

6. For the conditions under which these procedures may be used, please refer to Articles 26(4) of Directive 2014/24/EU. Contracting entities within the meaning of Directive 2014/25/EU may use the negotiated or competitive dialogue procedures generally.

7. The procedure for establishing an innovation partnership is set out in Article 31 of Directive 2014/24/EU. If you are purchasing R&D services only, you may be able to avail of an exemption from the directives and apply an approach known as pre-commercial procurement (PCP). This is described in COM (2007) 799 Pre-commercial Procurement: Driving innovation to ensure sustainable high quality public services in Europe

# C CONTACT DETAILS

**Jan Bart Jutte**
**T:** +31 88 348 3376
**M:** +31 6 2156 5011
**E:** jan.bart.jutte@rhdhv.com
**W:** www.royalhaskoningdhv.com