



# **Bio-based Products in Procurement**

**How to consider innovative bio-based products in procurement**

July 2017

## About this training

The purpose of this training is to provide procurers and other interested parties with information about bio-based products thereby enabling them to consider innovative bio-based products alongside other products in procurement.

This training presents the content of the guidance document 'bio-based products in procurement' and for more information reference is made to this document.

This training will provide an opportunity to share experiences and through interaction with other participants improve the understanding of the content of the guidance.



# **Bio-based products in procurement**

## **Introduction**

# European Policy Framework

To implement bio-based products in procurement could support the objectives of the following European Policies:

- **The Circular Economy Package** (adopted on 2 December 2015) aims to stimulate Europe's transition towards a circular economy.
- One of the purposes of **The Bioeconomy Strategy** (adopted on 13 February 2012) is to ensure that fossil fuels are replaced with sustainable natural alternatives as part of the shift to a post-petroleum society.
- **Innovation procurement** is stimulated through the Public Procurement Directives (adopted January 2014). Through innovation procurement procurers can drive innovation in the bio-based economy from the demand side.

# 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.*

# Standards and labels for bio-based content

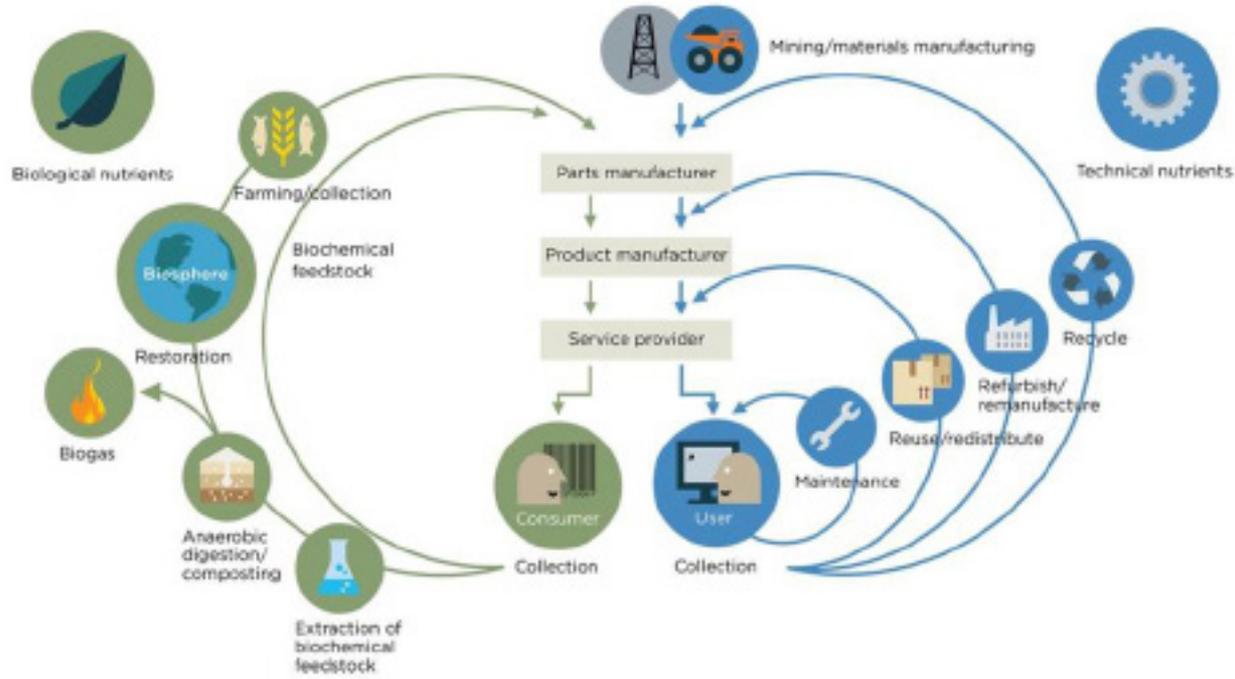
Standards available to determine bio-based content:

- CEN/TR 16721:2014 Overview of methods
- EN16785-1:2015 Bio-based products - Bio-based content - Part 1: Determination of the bio-based content using the radiocarbon analysis and elemental analysis
- ASTM D6866 Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis

Labels available confirming bio-based content:

- OK bio-based label (Vinçotte)
- DIN Geprüft Bio-based label (DIN CERTO)

# Bio-based Economy within the Circular Economy



Source: Ellen McArthur Foundation



## **Part 1: Why bio-based products in procurement?**

# General Innovation Features

Potential general innovation features of using bio-based products in procurement are related to the **bio-based nature** of the product. Examples:

## **Reduced Greenhouse Gas (GHG) emissions and avoidance of GHG emissions;**

the GHGs emitted during the production of bio-based products have the potential to be lower than their petrochemical equivalent.

### **Reduced GHG emissions**

Biobased PLA has the potential to reduce GHG emissions approximately 30% compared to its petrochemical counterpart. This comparison takes into account CO<sub>2</sub> uptake from the atmosphere, polymer production and incineration but excludes GHG avoidance. Future PLA production could amount to 80% savings.

*Source: 'Bio-based economy and climate change', Nova Institute, 2017-01.*

## General Innovation Features (continued)

**Other innovation aspects:** the following aspects are difficult to address directly in tender specifications. However, they directly answer to the different policy aims expressed in the different EU Policy Communications related to the Resource Efficiency, the Circular Economy and Bioeconomy.

- **Reduced dependency on crude oil:** biomass replaces crude oil as a base material in bio-based products. The crude oil dependency rate of the countries in the European Union was 88.3% in 2013.
- **Driver of innovation;** bio-based products in procurement can be a driver of innovation by providing industry with incentives for developing bio-based products.

## General Innovation Features (continued)

- **Achieving social goals** – contribute to political priorities; issues such as rural area development, employment generation and support of small and medium sized business could be addressed through bio-based products in procurement.
- **Driver of the secondary material market and circular economy**; increased use of secondary materials will improve their value and therefore optimize resource efficiency. Through the shared vision of ‘waste is a resource’ the use of biomass waste and by-products will stimulate the circular economy.
- **Improved Resource Efficiency**; this is achieved when using by-products and waste streams for the production of bio-based products.

# Specific Innovation Features

Specific innovation features of bio-based products in procurement refer to innovative features which the bio-based product has in comparison to its conventional alternative. Examples of such specific innovative features:

- **Financial efficiency (lower total cost of ownership)**; although bio-based products are often more expensive, their specific capabilities may result in more favourable life-cycle costs. Such an innovation feature could be related to the biodegradability capability of some bio-based products. For example, certain products such as geotextiles, or bio-based piping and tubing can be left in the ground when they're biodegradable but have to be removed when they're not. This capability has the potential to reduce life-cycle costs.

## Specific Innovation Features (continued)

- **(Improved) biodegradability**; In some applications the use of biodegradable and/or compostable bio-based products can be of added value:
  - When collection and separation of waste products is not viable and one of the waste products is biomass. For example in catering or outdoor events, food waste and crockery/cups/cutlery is collected. By using compostable products, everything can together be processed for compost.
  - Lubricants can leak from the structure they are applied to and spill into 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.

# 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.*

## Available standards to determine biodegradation/compostability:

- EN 13432:2000 Requirements for packaging recoverable through composting and biodegradation
- NF T51-800:2015-11: Plastics – Specifications for plastics suitable for home composting
- ISO 17556:2012 Plastic – Determination of the ultimate aerobic biodegradability of plastic materials in soil
- ASTM D5988-12 Standard test method for determining aerobic biodegradation of Plastic Materials in Soil'

## Specific Innovation Features (continued)

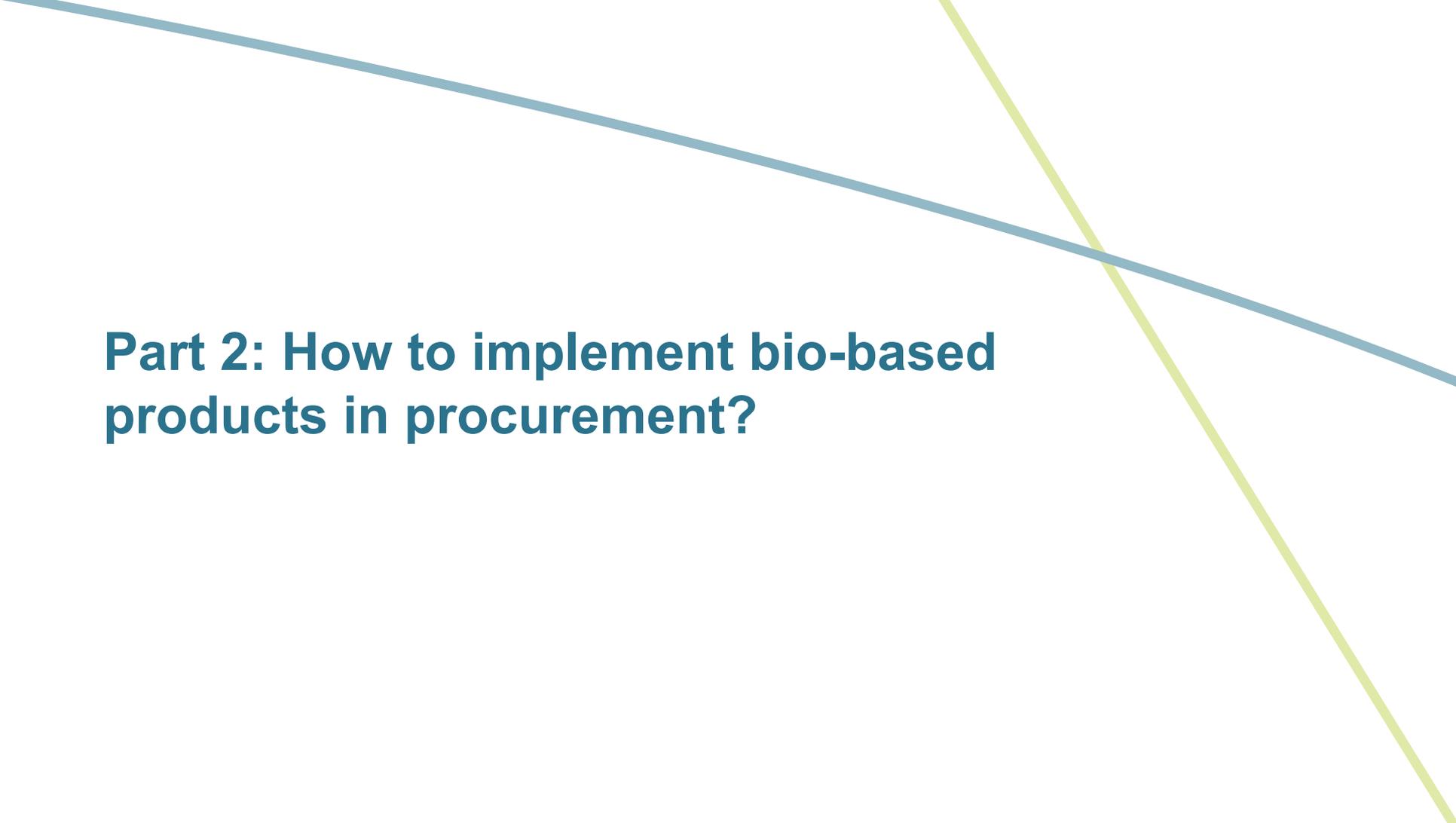
Organisations could consider bio-based products in procurement if they would benefit from one or more of the capabilities attributed to the bio-based product, for example:

- 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.
- A **geotextile** which is lighter because the bio-based PLA is lighter than conventionally used polypropylene. This reduced transportation and application costs.
- 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
- Examples of bio-based **coatings** which contain no VOCs have been found. This reduces human health impact and climate change impact.

# Potential Sustainability Issues

Although bio-based products potentially have different capabilities with potentially innovative features, the following aspects should be kept in mind

- **Environmental impact over the life cycle of the product** (this could be determined through Life Cycle Assessment in accordance with ISO 14040) and;
- **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).



## **Part 2: How to implement bio-based products in procurement?**

# How to - In the organisation?

## Who to involve?

- Enthusiastic people from different departments within the organisation.

## How to create commitment?

- Obtain high-level commitment
- Cooperation between policymakers and procurers
- Setting up a working group
- Networking and co-operation

## How to create a knowledge base?

- Engaging the market
- Assist the procurer
- Provide best practice examples

## How to - 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 and innovations related to bio-based products
- Specify requirements in the tender

Each of the above mentioned activities will be discussed in more detail.

## Consult the Market

In deciding which procedure to use and how best to include bio-based products related criteria, it is useful to have some knowledge of the market – e.g. the availability, cost and possible practical implications of bio-based products.

Consulting the market can start with online market research, followed by engagement with potential suppliers prior to tendering.

# Specific Innovation Features (continued)

## Traditional procurement procedure:

- Open procedure: any operator may submit a tender
- Restricted procedure: the technical capacity can be assessed in a prior stage and the number of operators invited to tender is controlled.

## Innovation procurement procedure:

- Competitive procedure with negotiation / competitive dialogue procedures: changes are required compared to existing solutions
- Innovation partnership: the goods or services to be procured are not currently available on the market

# Identify capabilities of bio-based products

- What is the subject matter?
- What type of contract (supply, service or works)?
- Which standardisation documents and labels are available?
- What capabilities are required, i.e.:
  - Biodegradability;
  - Environmental impact;
  - Specific product capabilities;

# Specify how to take into account capabilities

The specific capabilities of bio-based products can be addressed through:

- Technical specifications: these describe the contract to the market and provide measurable requirements against which tenders can be evaluated.
- Selection criteria: these assess the suitability of an operator to carry out a contract.
- Award criteria; these are used by the contracting authority to evaluate the quality of the tenders and compare costs.



## **Part 3: What product groups to focus on?**

# Procurement Sectors and Product groups

## Procurement sector

Food, Catering and events

Hospitals and laboratories

Clothes and textiles

ICT & office supplies

Vehicles and mobility

Cleaning, hygiene and sanitary

Infrastructure: construction materials

Buildings: construction materials

Furniture and indoor interiors

Gardening and landscaping



HOME GUIDANCE **PRODUCT INFORMATION** TRAINING & PROMOTION ABOUT PROJECT INTRODUCTION

- Fact sheets
- Infrastructure Construction Materials
- Cleaning, Hygiene and sanitary
- Clothes and textiles
- ICT & Office supplies
- Food, catering and events
- Furniture and indoor interior
- Gardening and landscaping
- Building Construction Materials
- Vehicles and mobility

**PROJECT INTRODUCTION**

Dynamic Meta Database: [www.biobasedinprocurement.eu](http://www.biobasedinprocurement.eu)

# How to identify key sectors

Key sectors will differ per organisation and decisive factors in determining priorities could be:

- Products with high availability;
- Start with pilots;
- Major upcoming contracts;
- The market situation.



# **Factsheets on how to take into account 'bio-based products in procurement'**

# Specific information for product groups

## Gardening and Landscaping:

- Pots and Seedling Beds
- Clips and Binders
- Geotextiles
- Soil improvers
- Plant foil

## Infrastructure Construction Materials

- Street Furniture
- Asphalt Additives
- Coatings
- Shuttering

# Content of the factsheets

## How to take into account specific capabilities of street furniture in procurement?

### Procedures and purchasing strategies

Procurement within the gardening and landscaping sector often implies procurement of services or works. Clips and binders are likely to be procured as part of a service or works contract or form part of a supply contract for other products, such as plants. The capabilities of the bio-based clips and binders in procurement could be described in terms of GHG emissions, compostability and biodegradability.

#### Example 1. GHG Emissions

The potential capability of reducing GHG emissions would be an important benefit and could therefore be confirmed as part of the procurement criteria.

Minimum Requirement: The carbon footprint of the raw material used for fabrication of the clips and binders should be less than the carbon footprint of an appropriate reference raw material.

Additional information: The carbon footprint of the raw material

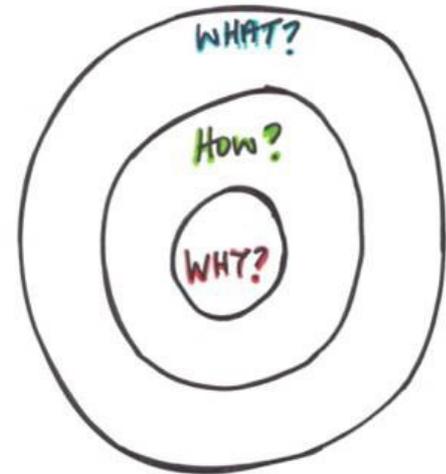
should be conducted in accordance with ISO 14067 or equivalent. An example of a reference raw material could be polypropylene or polyethylene.

Verification: The tenderer shall provide information on the raw materials used and the carbon footprint results, which shall be reported according to ISO 14067 or equivalent. The comparison with the reference raw material shall be included in the report as well as a motivation for the choice of reference material.

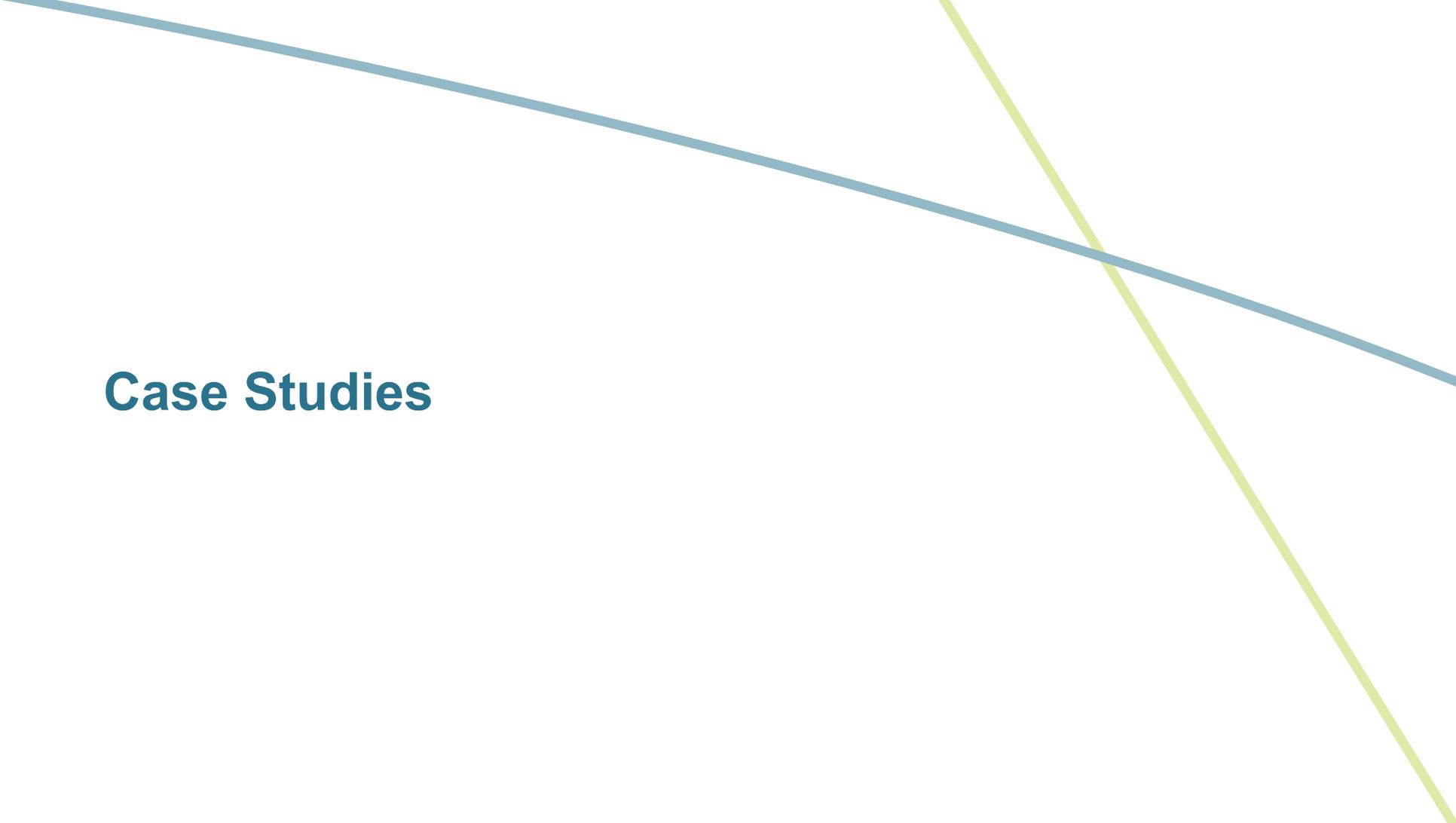
#### Example 2. Compostability

This criterion can be used if the procurer wishes to compost clips and binders. Compostability should be determined for either industrial or home composting conditions.

should take place to match home composting conditions. The manufacturer could also prove compliance with EN 13432 and include an explanation of the testing procedure used to determine biodegradability under home composting conditions.



Points of attention

The image features a white background with two thick, solid lines. One line is a muted teal color and slopes downwards from the top-left towards the right edge. The other line is a light lime green color and slopes downwards from the top-right towards the bottom-right. The two lines intersect in the upper-right quadrant. The text 'Case Studies' is positioned on the left side of the image, below the teal line.

**Case Studies**

## Questions for case-study

- Why would you consider bio-based products in procurement? What (general or specific) benefits are most important and why? Would you consider bio-based products in procurement because they are bio-based or do they need to have specific capabilities?
- How would you consider bio-based products in procurement? Make a distinction between the organisation and procurement.
- What bio-based products would you consider in procurement and why?
- What capabilities do you find most important and what procurement criteria would you use to control this?
- Based on the 'points of attention' in the factsheet of choice, do you foresee any potential difficulties with implementing the bio-based product in procurement?



# **Additional Information**

# Important sources for additional information

## **Innovative Procurement**

[www.innprobio.innovation-procurement.org](http://www.innprobio.innovation-procurement.org)

## **Local Governments for Sustainability**

<http://www.iclei-europe.org>

## **Bio-based in Procurement**

[www.biobasedinprocurement.eu](http://www.biobasedinprocurement.eu)

## **Bio-based Economy**

[www.biobasedeconomy.eu](http://www.biobasedeconomy.eu)

## **Circular Economy Strategy**

[http://ec.europa.eu/environment/circular-economy/index\\_en.htm](http://ec.europa.eu/environment/circular-economy/index_en.htm)



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