



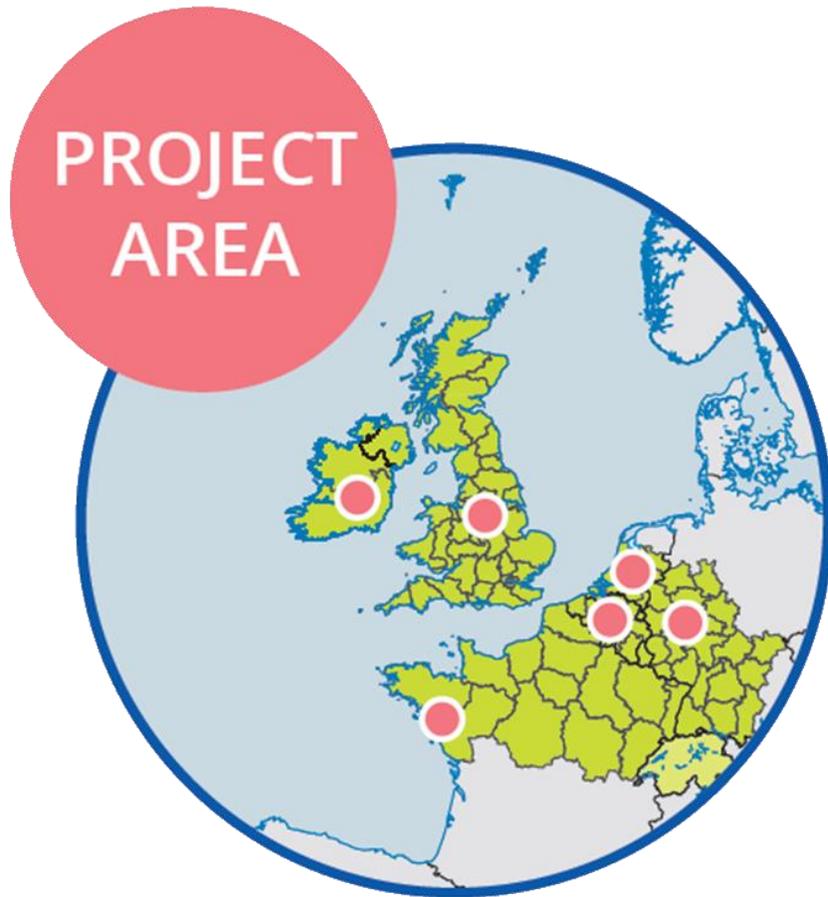
Use of LCA as a support for developing the activity of start-ups and SMEs of the bioeconomy

Feedback from the Interreg NWE BioBase4SME project

Olivier Talon, Lucy Montgomery,
Benjamine Belloncle, Tanja Meyer

What was the BioBase4SME project?

NWE Interreg BioBase4SME (2016-2019)



Bio-Innovation Support for Entrepreneurs throughout North-West Europe

9 project partners / service providers from 7 NWE countries

Innovation coupon system

Trainings, workshops, innovation biocamps...

Innovation coupon system

Process development and scale-up in pilot plant

Pre-pilot equipment for pyrolysis and anaerobic digestion

Application testing for fibers, bioplastics...

Market research, value chain assessment

Mentoring on social acceptance

LCA & eco-design coaching



Innovation coupon system

Process development and scale-up in pilot plant

Pre-pilot equipment for pyrolysis and anaerobic digestion

Application testing for fibers, bioplastics...

Market research, value chain assessment

Mentoring on social acceptance

LCA & eco-design coaching



3 studies performed

The logo for Vibers, featuring the word "vibers" in a bold, lowercase, green font with a slight shadow effect, set against a white rectangular background.

Needs

Delivered output

Produces
miscanthus

Sells miscanthus-
based bioplastic,
paper & cardboard
and bio-concrete

www.vibers.nl

Information for
customers proving
the environmental
added value of
miscanthus in such
materials

Eco-profile for one
bio-plastic compound
formulation

Evaluation of benefits
from miscanthus
incorporation into a
series of plastic
matrices

Feedback

« We can now prove much clearer the environmental and social benefits of our products »

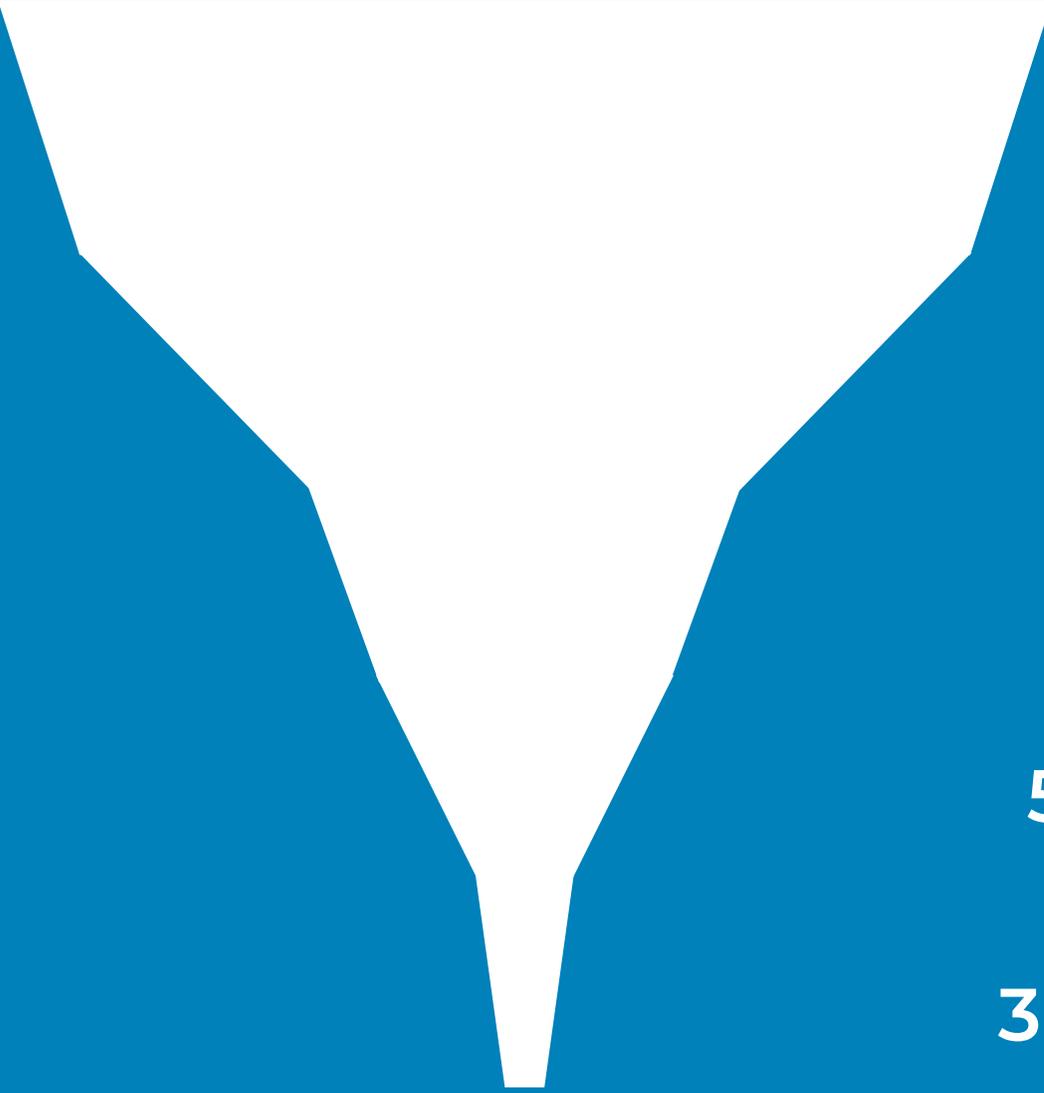
« Improve our sourcing and marketing towards new clients and employees »

« An LCA is a key sales argument for our biopolymer »

Only 3 studies?

Many SMEs were made aware of LCA
coupons opportunity through
newsletters, workshops, webinars,
innovation biocamps...

...but few finally did benefit from the
service



> 200 SMEs heard about the service

close discussion with 12

7 service offers emitted

5 applications for coupon (all granted)

3 purchase orders / completed studies

Yet ease of communicating about environmental benefits of biobased products frequently reported as a significant barrier by target SMEs...

Survey

Interreg 
EUROPEAN UNION
North-West Europe
BioBase4SME
European Regional Development Fund



Thematic priority: innovation

Needs and challenges of companies in the
bioeconomy in NW Europe

Full report available on project's website

50 bio-SMEs from 6 NWE countries interviewed in
2018 about main barriers for their development

Comparison with results of similar 2013 survey

Survey

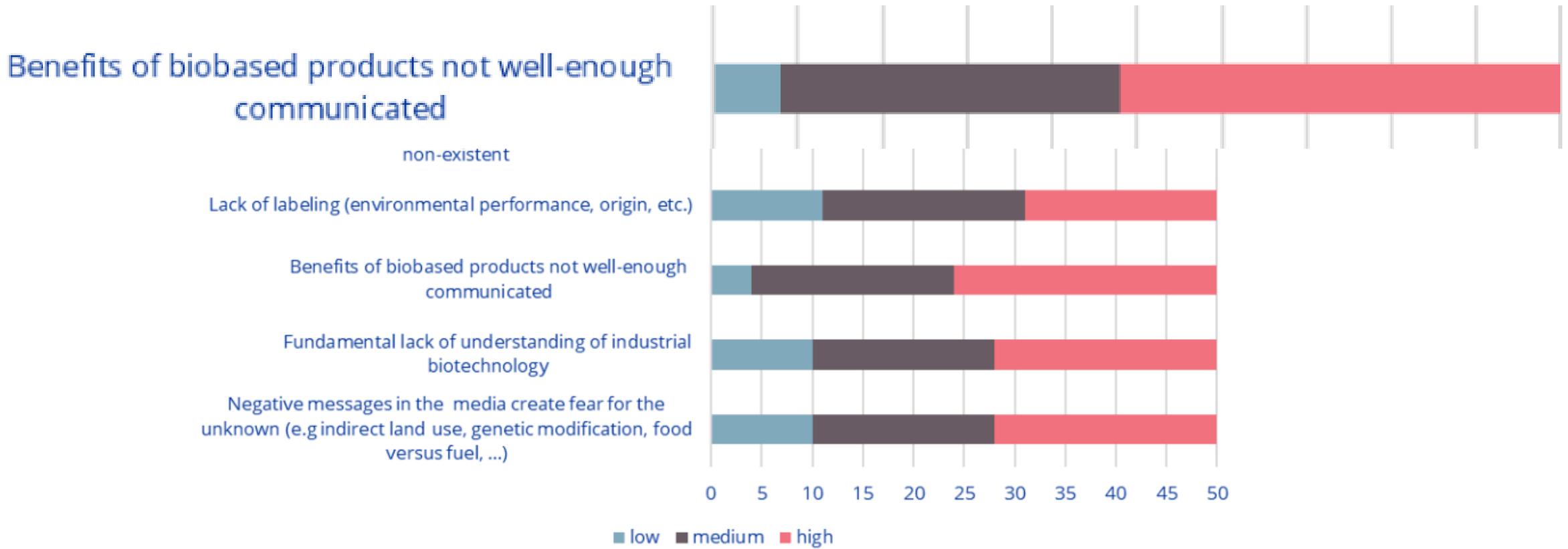
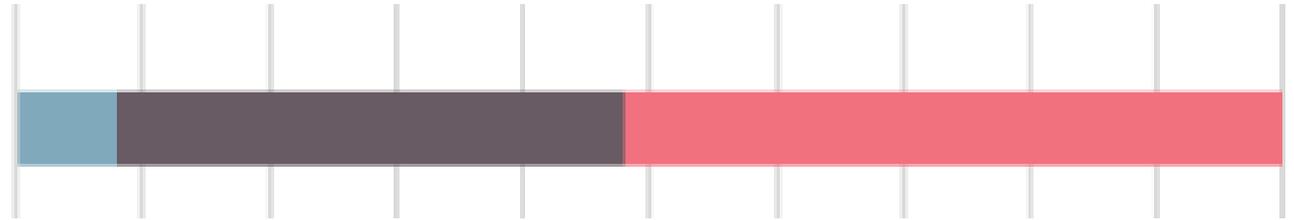


Figure 4: Suggested barriers in the category of stakeholder perception barriers with the number of SMEs that scored the barriers as low, medium or high.

Survey

Benefits of biobased products not well-enough communicated



« consumers don't know the difference between biobased and biodegradable »

« we feel suitable sustainability assessment tools do exist »

« greenwashing from large companies has damaged the whole green industry »

So why 3?



Answers from the survey

« LCA is too complicated »

« comparisons are unfair »

« some certificates are meaningless »

« we are not yet selling products »

« details on sustainability are not relevant for our products »

« no demand for LCA since we are selling B2B »



Feedbacks from SMEs who did benefit from other services

Questionnaire sent
within 3 months after
completion of service

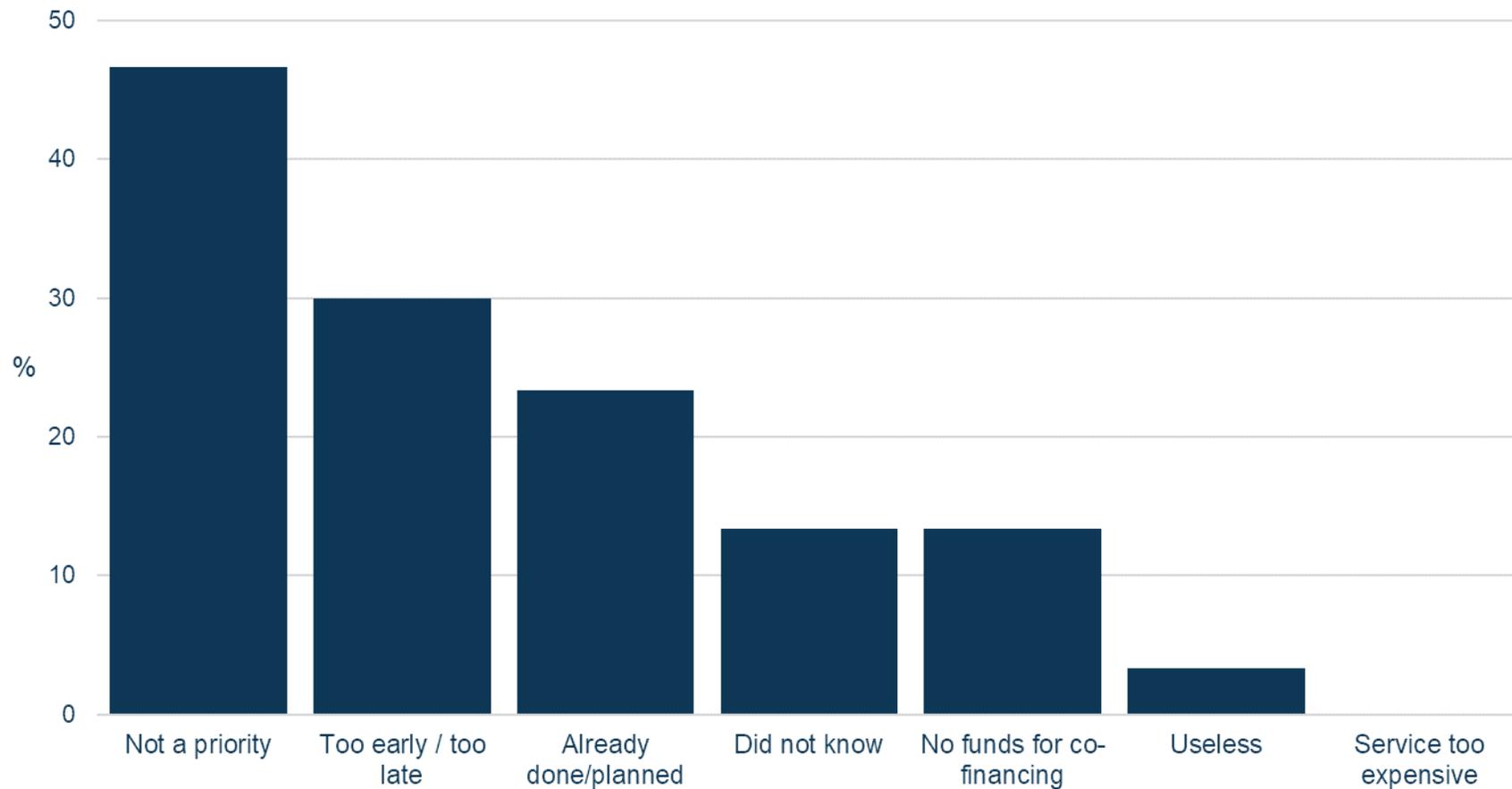
30 answers received for
this question

4. The BioBase4SME project is also offering financial support for services such as **Life Cycle Assessment (LCA)** and/or **Social Acceptance**. Could you please tell us why you did not yet consider either of these specific services?
 - a. I did not consider an LCA study within the BioBase4SME innovation coupon scheme because (please, indicate one or more of the reasons below):
 - I didn't know this service was offered
 - The service is too expensive
 - I do not have funds to co-finance an LCA study
 - LCA is not a priority for the further development of my technology at this stage
 - My technology is not in the right development stage (too early for LCA, too late for LCA)
 - I believe such studies are not of any help
 - I already had it done (or planned) within another framework
 - Other reasons:

.....

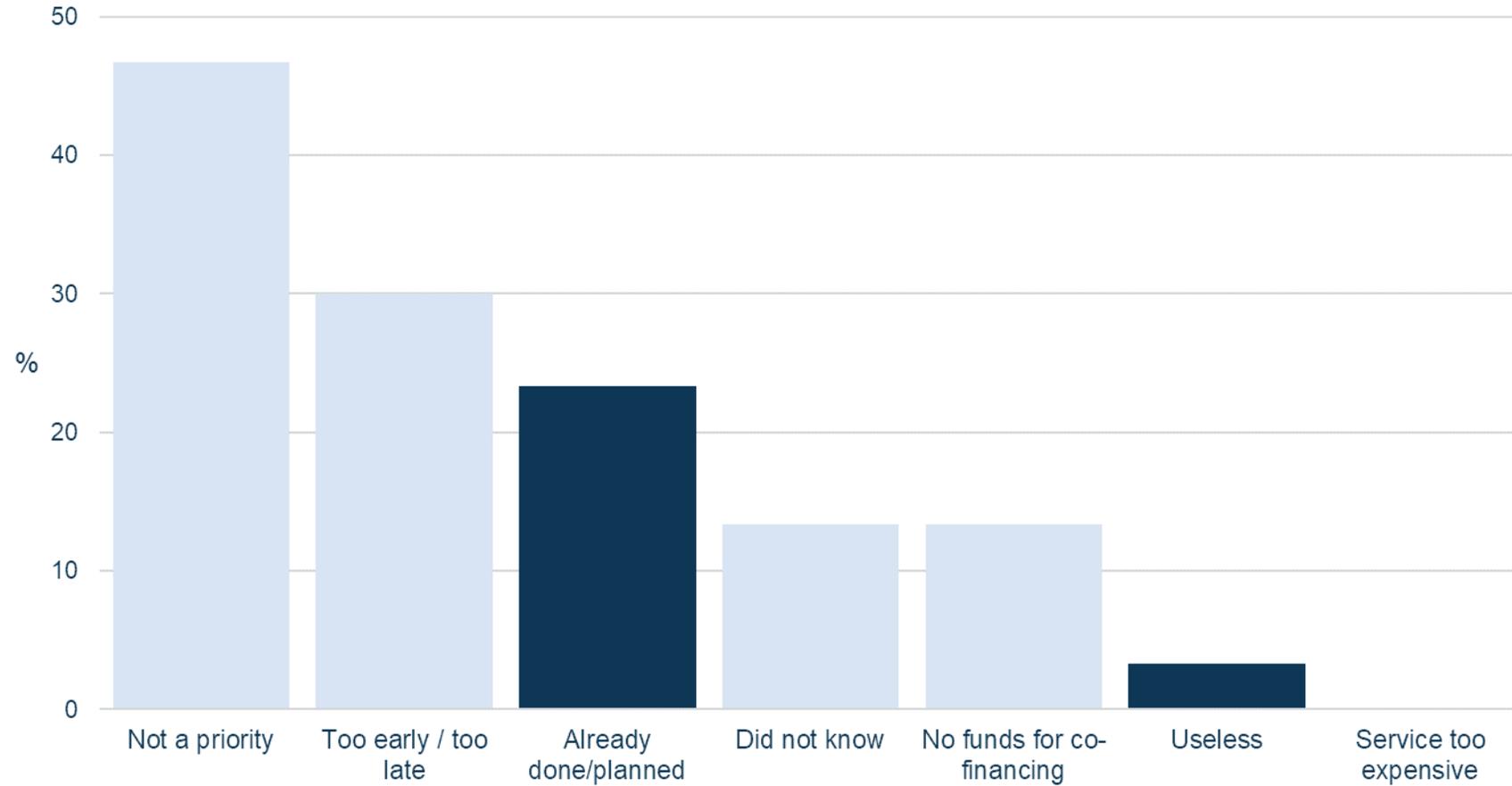


Answers



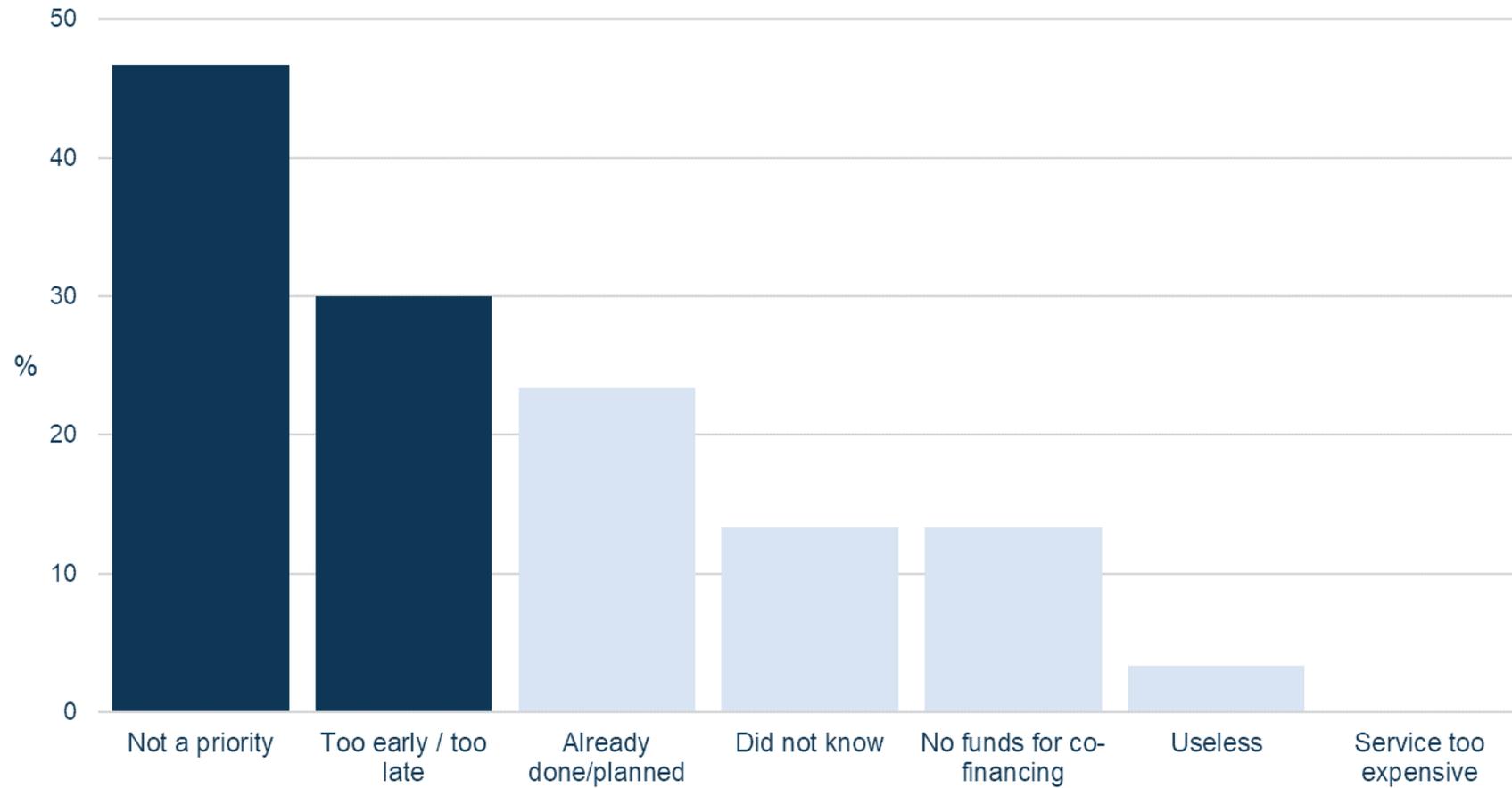


Good news...





...but...





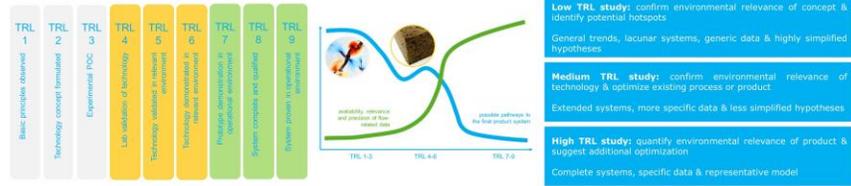
There is still work to be done to convince that anytime is a right time for thinking LCA & ecodesign

USE OF LCA FOR ACCOMPANYING INNOVATION PROCESSES ALL ALONG THE TRL SCALE

Tangi Sénéchal, Olivier Talon
e-mail: tangi.senechal@materianova.be
Materia Nova, avenue Copernic 1, 7000 Mons, Belgium

LCA can be used as a tool within R&D projects and innovation processes in order to evaluate the potential environmental benefits of the expected outcomes of the process. However, innovation projects are by nature undefined objects, whereas LCA is more designed to assess well-defined systems. This contribution explores how the LCA tools and methodologies can be used, with graduated efforts and different expectations, as a decision-helping tool in innovation processes, from their inception up to high Technology Readiness Levels (TRLs). Two projects where LCA was used at different stages are presented, one for low TRL and one for medium TRL, with a special focus on how the LCA results were used as a decision-helping tool in order to pilot the projects so that the aimed innovations could be optimized from the point of view of environmental impacts.

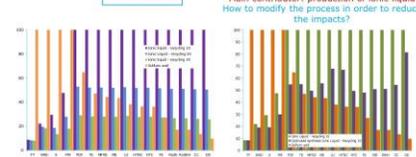
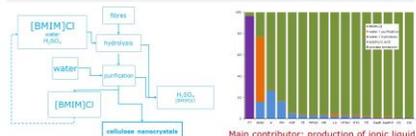
TRLs and innovation process



LOW TRL CASE STUDY

USE OF IONIC LIQUIDS FOR CELLULOSE NANOCRYSTALS EXTRACTION

- Start at the beginning of the project
- Evaluate if the new process could be "green"
- Inventory model based on scientific literature, background datasets and first lab-scale experiments



What if ionic liquid was more recycled? Identification of a threshold for potential environmental benefit

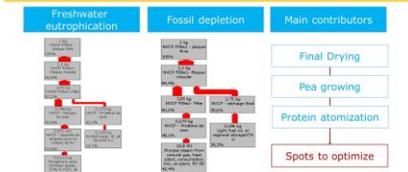
What if ionic liquid synthesis was optimized? Anticipation of potential upstream improvement

Benefits of LCA study
Identification of a significant hotspot neglected at the inception of the project, leading to the decision to add a new work package dedicated to recycling of ionic liquid

MEDIUM TRL CASE STUDY

RIGID INSULATION PANELS FROM FLAX BY-PRODUCTS

- Already available lab-scale prototype with competitive properties
- Evaluate environmental competitiveness of the prototype
- Process flow, functional unit and primary data available



How to decrease the impacts of the hotspots identified for the initial process?
Avoid atomization step by using an intermediate product
Modify foaming step to reduce density & reference flows

Benefits of LCA study
Two hotspots identified at the inception of the project, leading to the decision to add a new work package dedicated to recycling of ionic liquid

EVOLUTIVE USE OF LCA TOOLS IN THE DEVELOPMENT OF BIOMATERIALS



BENJAMINE BELLO



Benefits of LCA study at low TRL

Identification of a significant hotspot neglected at the inception of the project, leading to the decision to add a new work package dedicated to recycling of ionic liquid



medium TRL

are modified, prototype with reduced impacts, 1 benchmark

high TRL

cess and/or al benefits vironmental



Thanks for your attention

olivier.talon@materianova.be