



**BioCannDo**  
**Bioeconomy Awareness and Discourse Project**

**Work package 6**  
**Educational Community**

**Deliverable N° 6.1:**  
**Mapping report on educational actors, materials and programmes**

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## Technical References

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## Publishable summary

The Bioeconomy Awareness and Discourse Project (BioCannDo, Project No. 720732) is a Coordination and Support Action funded by the Bio Based Industries Joint Undertaking (BBI JU). This public deliverable describes the approach and findings of the first stage of Work Package 6: Educational Community. During this stage, in four countries (NL, GER, BE, FI) a mapping has been performed of educational actors on all educational levels, educational materials (that are online available) and educational programmes with a minimum weight of 15 ECTS (European Credit Transfer System).

In total 456 unique records have been taken up in the final overview of results. Of these, 116 are (related to) online educational materials, 275 are educational programmes and the remaining records represent actors or platforms that enable Bio-based Education.

The findings in this mapping stage show that there is a large variation in university programmes in the countries considered. Varieties are observed in both the length of the programmes (15 ECTS/10 weeks to 240 ECTS/4 years) and their main topics (stretching from Agriculture to Business Modelling). Of the four countries represented in the mapping results, Finland offers the most university programmes related to bioeconomy topics. The national approach to bioeconomy is reflected in the character of the programmes offered.

With respect to educational materials even more variation is observed. The list shows lesson modules for various education levels, posters, brochures, workshops and online games. The Community of Practice web portal resulting from the European EBBEY project lists numerous materials aimed at Vocational Education and Training (VET). Other web sites offering collections of materials are the Finnish Mappa and the website of German BioCannDo project participant FNR. Materials for primary education are few, but easy to find.

Educational actors vary from universities to ministries, from web portals to platforms of decision-makers. They have in common that they influence the way bioeconomy is taken up in curricula and educational programmes.

The results of the mapping can be considered outdated at the moment of their publication. This is however a positive sign: new programmes are developed and new materials are published each month. The results of the mapping exercise therefore have to be considered as just a (rich) starting point for the Community of Practice in bio-based education.

## 1 Introduction

Enhancing the awareness of the broad public is key to the success of every innovation. To achieve this awareness and subsequent public acceptance however, and to forge change in everyday purchasing behaviour, questions concerning societal and economic issues need to be addressed in a transparent, scientifically solid and understandable way.

The BioCannDo project aims to boost the bioeconomy, thereby making Europe's economy more sustainable, boosting growth and creating new jobs, while offering an alternative to the dependency on fossil materials. Tackling this challenge is more than a technological undertaking, but requires crucial efforts to raise consumer awareness of bio-based products and its various applications.

With transparent communication on the benefits of bio-based products, formulated in layman language, BioCannDo ensures that the information and knowledge about bio-based products, their functionalities and applications, trickles down beyond scientific and industrial communities.

While the general public is the projects' main target group, BioCannDo also acknowledges that the pupils and students of today are the decision-makers, innovators and consumers of tomorrow. Therefore, the project also aims at enhancing education on bioeconomy topics (from here on called 'bio-based education') at all levels. A Community of Practice will be established in order to map, assess, share and develop educational materials on bio-based education.

The first step in the direction of the Community of Practice consists of generating an overview of what is already existing and (freely) available when it comes to bio-based education. A mapping exercise has therefore been performed in four European countries: the Netherlands, Belgium, Finland and Germany. Through online research, telephone interviews and tapping into the network of project partners, educational actors have been identified at all educational levels (stretching from primary education to universities), university programmes have been listed and materials have been discovered. This document is the result of that exercise.

This document serves the following purposes:

- Explaining the approach and the choices made
- Describing the results of the mapping exercise
- Presenting preliminary conclusions at an overview level

The document itself does NOT contain all individual records gathered, these will be presented on the BioCannDo portal AllThings.bio. Appendices A, B and C contain an overview of results. Appendices D and E contain the questionnaires developed for the mapping.

## 2 Approach

The mapping was conducted during a three-month period in the spring of 2017. Firstly, an initial research plan was agreed upon, consisting of the scope of the mapping and the choices made as well as the method used to perform the mapping. Each of these will be described in this chapter, followed by a paragraph describing the results in numbers and percentages.

### 2.1 Objectives and planned results

The objectives and approach described in the project proposal were further specified as follows:

*Gaining insight in key educational actors offering educational materials and/or university programmes in four frontrunner countries in bio-based education, AND in educational materials freely available online, AND in university programmes currently offered.*

The planned results were also formulated:

*Overview of key educational actors and online educational materials in four frontrunner countries, fed into the InfoHub and presented in an Excel file and summarizing Powerpoint presentation and a final report.*

### 2.2 Scope and initial choices

The thus specified objectives immediately led to an important choice to make: which countries to perform the mapping for. These had to be countries that were frontrunning in bio-based education or at least in bio-based economy. Therefore, the member state participation in in BBI-JU 2015.2 call for proposals<sup>1</sup> was considered as well as the existence of a dedicated bioeconomy strategy<sup>2</sup>. Additionally, expert advice<sup>3</sup> was taken into account regarding countries where bio-based education is beyond the stage of pioneering. These resulted in the following selection: the Netherlands, Belgium, Germany and Finland<sup>4</sup>.

Furthermore, also other terms in the objectives were further specified:

- **Key educational actors:** includes actors that develop teaching and other educational materials and/or offer university programmes dedicated fully or partially to bioeconomy
- **Online educational materials:** includes lesson programmes and MOOC's (Massive open Online Courses) that are freely available on the internet concerning one or more of the following topics: bioeconomy, bio-based products and materials.
- **University programmes:** bachelor, master or minor programmes concerning one or more of the following topics: bioeconomy, bio-based products and materials. Furthermore, only programmes with a minimum length of 15 ECTS are considered.

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<sup>1</sup> BBI JU: Thematic Seminar KEP-Bio-economy 29-4-2016

<sup>2</sup> Web site German Bio-economic council: <http://biooekonomierat.de/en/international0/> (23-6-2017)

<sup>3</sup> Among others from professionals involved with the EBBEY-project 2013-2015 (further explained in paragraph 3.2)

<sup>4</sup> It is acknowledged that in this selection, no southern European countries are represented; these will be taken into account when establishing the Community of Practice at a later stage.

- **Including primary, secondary, vocational and university education:** includes educational actors and materials (aimed) at all educational levels

Following these, some limitations were also stated, following the specifications above:

- **Key educational actors:** does not include actors that define subjects and curricula and are not involved in developing materials or offering educational programmes, and actors that offer educational programmes without developing materials themselves
- **Online educational materials:** does not include materials that require an institution account or membership which prevents availability to a broader public, and materials that are not concerning one or more of the following topics: bioeconomy, Bio-based products and materials.

### 2.3 Stepwise approach

A stepwise approach was chosen, meaning that the mapping was first performed for one country (the Netherlands), and fine-tuned before the mapping for the other three countries was conducted. The steps were formulated as follows:

1. Selection of four front-runner countries based on the criteria specified;
2. Developing two phone questionnaires, one for the primary informants, and one for the key educational actors<sup>5</sup>;
3. Identification of primary informants for each country by consulting existing network partners and/or desk research and scanning EU projects and applications for potential informants;
4. Consulting the primary informant, asking for a list of key educational actors in their country, preferably with contact details and/or a contact person;
5. Approach each educational actor (preferably by e-mail, announcing that we will try to contact them by phone), asking for an overview of their online educational materials and at the same time asking them to name other educational actors;
6. Repeat step 4 with newly added actors;
7. Create a resulting overview of key actors and materials per country, asking the primary informant for feedback;
8. Combine the overviews of the four countries in a final report and feeding them into the Infohub;

It has to be stated that on several occasions, the reality of the mapping activities forced a slightly different approach (for instance, when there was not one but several primary informants, or when contact by phone was delayed or not possible). In such cases, the objectives and planned results were leading in the way information was gathered. For example, for the German mapping websites offering a database of university programmes in Germany were consulted.

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<sup>5</sup> Both questionnaires are taken up in Appendix D and E respectively



### 3 Results

The approach described above resulted in a diverse collection of records. Separate lists were formed with:

1. university programmes
2. (Online) educational materials
3. An additional list of educational actors that play a role in the field of bio-based education in each country. This list contains some of the organizations offering the programmes and materials in list 1 and 2, but also others, e.g. web portals, centres of expertise and national platforms of decision makers.

During the mapping activities, obviously some the programmes, materials and actors were not considered relevant at that moment. These were not recorded in the results lists but were instead taken up on 'blacklists'.

Table 1 shows an overview of unique records in the lists. It was expected that performing the mapping for Belgium (both the Flanders and Wallony were included) would result in a comparable number of results as the other countries, but this was not the case.

**Table 1 Overview of mapping results**

	<i>NL</i>	<i>GER</i>	<i>BE</i>	<i>FI</i>	<i>TOTAL</i>
<i>University programmes</i>	45	62	27	141	275
<i>Educational materials</i>	31	50	-	35	116
<i>Educational actors</i>	25	16	5	19	65

The paragraphs below will describe each of the lists in more detail.

#### 3.1 University programmes

Programmes were taken up on the list if they offer a study load of at least 15 ECTS equalling 10 full-time weeks. Programmes in the Netherlands varied from this 15 ECTS (10 weeks, usually a minor programme) to 4-year bachelor programmes followed by 2-year Master programmes. Germany showed the same result, with the exception of the shorter programmes (the minimum is one semester, equalling 30 ECTS). The shortest Belgian programme in the list has a duration of one year, the majority of Belgian programmes offer either three years (bachelor programme) or two years (master programme).

There is also a variation in the naming of programmes, indicating often the main priorities: from a Belgian Master in Agricultural bioengineering to a Dutch Minor in Circular Economy and Business Modelling (translated from *Minor Circulaire Economie en business modellen*).

The large number of Finnish university programmes is furthermore striking. At first glance it seems not all programmes listed are relevant with respect to bio-based education. But, when taking a closer look, many of these programmes (often in the field of Forestry, Agriculture or Horticulture) do contain various modules on bio-based topics. It's worth mentioning that the mapping exercise took a broad perspective

on bio-based education, meaning that a programme containing a few modules (and as a result a few ECTS) on bio-based topics was taken up in the results list.

### 3.2 Educational materials

The list of educational materials shows even more variation. It contains lesson modules to be used in primary, secondary or vocational schools, Massive Open Online Courses (MOOC's), available for a broad audience, posters, brochures, even online games, and online platforms offering a collection of these materials.

Explicitly worth mentioning is the Community of Practice (in the form of a web portal) resulting from the EBBEY project: <https://ebbeycop.wordpress.com/>. EBBEY (acronym for Entering the Bio-based Economy) started in 2013 with support from the European Commission through the Leonardo da Vinci - Long Life Learning Programme. The project was concluded in 2015 and focused on supporting vocational education on topic of Bio-based Economy subjects. The web portal offers materials collected in seven European countries in their own language.

Another example of a web portal disclosing materials for the educational field is the Finnish initiative Mappa: <https://mappa.fi/fi/etusivu>. It contains (in Finnish) numerous links to materials for Environmental and sustainable education (ESD) in all levels of education.

In Germany a collection of materials can be found at a FNR educational website: <https://www.fnr.de/service/bildung-schule/lehmaterialien-fuer-den-schulunterricht/> or at the Kompetenzzentrum Hessen Rohstoffe (HeRo): <https://www.llh.hessen.de/umwelt/biorohstoffnutzung/umweltbildung/bildungsmaterialien/>

### 3.3 Educational actors

Of each organization offering an educational programme or disclosing educational materials online, contact information was collected. Additionally, organisations that are not themselves offering programmes nor materials, but that are important in sculpting bio-based education in their country were listed. The search for these actors was not a structured and guided one, but more based on coincidental encounters during the search for programmes and materials.

The list in Appendix C contains Centres of Expertise associated with universities and universities of applied science, governmental platforms, science and research centres.

## 4 Considerations

The complete lists of university programmes, educational resources and educational actors have been taken up as Appendices A, B and C respectively. When looking at the results of the mapping from a distance, some remarks can be made.

It is not hard to find materials and programmes at a university level. Many universities and universities of applied sciences have incorporated bio-based economy topics in their existing offer of programmes. It is noticeable how the angles chosen for these programmes fit the character of the institution or even the national approach to bio-based economy. An example: Dutch programmes often are related to chemistry topics and sustainability, where Finnish programmes often have a relation to forestry and agricultural topics. The German results show many programmes that show a relation to (renewable) energy questions and biotechnology. Agricultural and also biotechnological topics are key to a lot of Belgian programmes.

This is even stronger visible in materials (programmes are not available for lower levels of education) aimed at vocational and secondary education. The list of German materials offers numerous posters and brochures about energy topics for example.

As easy as it is to find materials for university and vocational education, this is not the case for primary and secondary education. It can even be stated that there are more places to find the materials that are available, than that there are materials themselves. This in itself does not have to be a problem, and it can even be stated that it is preferable to have some qualitative good materials widely available than a scatter of materials of questionable quality. Especially since the materials aimed for primary (and secondary) education are often broad in the variety of topics they consider, offering an introduction to sustainability, renewable (and regrowable) energy and examples of bio-based materials like bioplastics.

With respect to the Finnish results, an explanation for the abundance of university programmes that bare a relation to bio-based economical topics may lie in the fact that the bioeconomy is included in the strategic focus areas for education in Finland. Moreover, bioeconomy education is in this mapping interpreted broadly and as a result includes agrarian, horticultural and forestry education (and even equestrian education).

## 5 Conclusion

The first stage of the execution of Work Package 6 has been successful. A total of 456 records have been collected, many of them accompanied by contact data of bio-based educators. One of the aims of BioCannDo is to establish a Community of Practice of these educators who together strengthen bio-based education in Europe, and this mapping is a good place to start from.

The mapping results are taken up in Appendices A, B and C. It must be stated however that these lists are already outdated at the moment of publication. And that is a good thing: it means that new materials are constantly added, new programmes are developed and new materials are disclosed. The results of the mapping must therefore be considered as a current snapshot of bio-based education in Europe. The real value of this stage lies in the Community of Practice that is to be formed, and that will assess and strengthen the total offer of programmes, materials and probably also educators.

The results will be taken up on AllThings.Bio; the manner of presentation is currently being discussed. It is important to disclose the collected information, in a way that bio-based educators can consult, assess and expand it.

### 5.1 Looking ahead

The finishing of the mapping is the first stage of Work Package 6. The next step will be to gather the Community of Practice and assess the collected results together to find opportunities to work together. During this process, it is evitable that new educational actors will turn up, new materials will be found and new programmes added to the list. The mapping results will therefore be extended continuously.

# Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
BE	Master of Bioscience engineering	One year/60 ECTS	Students	KU Leuven	<a href="https://onderwijsaanbod.kuleuven.be/opleidingen/e/CQ_51234070.htm#activetab=diploma_omschrijving">https://onderwijsaanbod.kuleuven.be/opleidingen/e/CQ_51234070.htm#activetab=diploma_omschrijving</a>	English
BE	Bachelor Chemistry - Chemical process technology	Three years/180 ECTS	Students	Artesis Plantijn Hogeschool Antwerpen	<a href="https://www.ap.be/wetenschap-entehniek/afstudeerrichting-chemische-procestechnologie/315">https://www.ap.be/wetenschap-entehniek/afstudeerrichting-chemische-procestechnologie/315</a>	Dutch
BE	Bachelor Energy management	Three years/180 ECTS	Students	Artesis Plantijn Hogeschool Antwerpen	<a href="https://www.ap.be/wetenschap-entehniek/opleidingen/energiemanagement">https://www.ap.be/wetenschap-entehniek/opleidingen/energiemanagement</a>	Dutch
BE	Bachelor Agronomy	Three years/180 ECTS	Students	Haute Ecole de la Province de Namur	<a href="http://www.hepn.be/?q=agronomie">http://www.hepn.be/?q=agronomie</a>	French
BE	Bachelor Agro- and bio technology	Three years/180 ECTS	Students	Hogeschool Gent	<a href="https://expertise.hogent.be/nl/organisations/opleiding-bachelor-in-de-agro-en-biotechnologie(478ea10e-63f5-4b13-9a28-b32ed4307a36).html">https://expertise.hogent.be/nl/organisations/opleiding-bachelor-in-de-agro-en-biotechnologie(478ea10e-63f5-4b13-9a28-b32ed4307a36).html</a>	Dutch
BE	Bachelor Chemistry	Three years/180 ECTS	Students	Hogeschool Gent	<a href="https://www.hogent.be/toekomstigestudent/opleidingen/bachelors/chemie/biochemie/">https://www.hogent.be/toekomstigestudent/opleidingen/bachelors/chemie/biochemie/</a>	Dutch
BE	Bachelor Agro- and Biotechnology - Biotechnology	Three years/180 ECTS	Students	Hogeschool VIVES Zuid	<a href="https://www.vives.be/opleidingen/biotechniek/biotechnologie">https://www.vives.be/opleidingen/biotechniek/biotechnologie</a>	Dutch
BE	Bachelor Chemistry - major Chemistry and Process technology	Three years/180 ECTS	Students	Karel de Grote Hogeschool	<a href="https://www.kdg.be/bachelor-chemie">https://www.kdg.be/bachelor-chemie</a>	Dutch
BE	Bachelor Agro- and Biotechnology - Biotechnology	Three years/180 ECTS	Students	Thomas More	<a href="http://www.thomasmore.be/ons-aanbod/agro-biotechnologie/biotechnologie">http://www.thomasmore.be/ons-aanbod/agro-biotechnologie/biotechnologie</a>	Dutch
BE	Bachelor Chemistry	Three years/180 ECTS	Students	Thomas More	<a href="http://www.thomasmore.be/ons-aanbod/chemie">http://www.thomasmore.be/ons-aanbod/chemie</a>	Dutch
BE	Bachelor Chemistry - Process technology	Three years/180 ECTS	Students	Thomas More	<a href="http://www.thomasmore.be/ons-aanbod/chemie/procestechnologie">http://www.thomasmore.be/ons-aanbod/chemie/procestechnologie</a>	Dutch
BE	Bachelor Chemistry - major Chemistry and process technology	Three years/180 ECTS	Students	UC Leuven - Limburg	<a href="http://onderwijsaanbod.leuven.ucll.be/2016/opleidingen/n/CQ_52334647.htm#activetab=doelstellingen">http://onderwijsaanbod.leuven.ucll.be/2016/opleidingen/n/CQ_52334647.htm#activetab=doelstellingen</a>	Dutch
BE	Bachelor in Bioengineering	Three years/180 ECTS	Students	Université catholique de Louvain	<a href="https://uclouvain.be/en-prog-2016-bir1ba">https://uclouvain.be/en-prog-2016-bir1ba</a>	French
BE	Bachelor Chemistry	Three years/180 ECTS	Students	Université de Mons	<a href="http://portail.umons.ac.be/en2/universite/facultes/fs/enseignement/chimie/bachelier/pages/default.aspx">http://portail.umons.ac.be/en2/universite/facultes/fs/enseignement/chimie/bachelier/pages/default.aspx</a>	French/English
BE	Bachelor in Bioengineering	Three years/180 ECTS	Students	University of Liege - Gembloux - Agro-Bio Tech	<a href="http://progscours.ulg.ac.be/cocoon/en/programmes/R11NGE01_C.html#BIOL2019-1">http://progscours.ulg.ac.be/cocoon/en/programmes/R11NGE01_C.html#BIOL2019-1</a>	French
BE	Bachelor of Science in Bioengineering sciences	Three years/180 ECTS	Students	Vrije Universiteit Brussel	<a href="http://www.vub.ac.be/opleiding/bioingenieurswetenschappen/programma">http://www.vub.ac.be/opleiding/bioingenieurswetenschappen/programma</a>	Dutch
BE	Master Engineer technology	Two years/120 ECTS	Students	KU Leuven	<a href="https://iiv.kuleuven.be/opleidingen/ma/chemie">https://iiv.kuleuven.be/opleidingen/ma/chemie</a>	Dutch
BE	Master in Industrial sciences - Chemistry	Two years/120 ECTS	Students	Uhasselt/KU Leuven	<a href="http://www.uhasselt.be/PUB/Masteropleiding-industriele-wetenschappen#tabs3">http://www.uhasselt.be/PUB/Masteropleiding-industriele-wetenschappen#tabs3</a>	Dutch
BE	Master in Agricultural bioengineering	Two years/120 ECTS	Students	Université catholique de Louvain	<a href="https://uclouvain.be/prog-2016-bira2m">https://uclouvain.be/prog-2016-bira2m</a>	English
BE	Master in Agriculture and bio-industries	Two years/120 ECTS	Students	Université catholique de Louvain	<a href="https://uclouvain.be/prog-2016-saiv2m">https://uclouvain.be/prog-2016-saiv2m</a>	English

# Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
BE	Master in Chemistry and bioindustries	Two years/120 ECTS	Students	Université catholique de Louvain	<a href="https://uclouvain.be/prog-2016-birc2m">https://uclouvain.be/prog-2016-birc2m</a>	English
BE	Master in Environmental bioengineering	Two years/120 ECTS	Students	Université catholique de Louvain	<a href="https://uclouvain.be/prog-2016-bire2m">https://uclouvain.be/prog-2016-bire2m</a>	English
BE	Master Chemistry	Two years/120 ECTS	Students	Université de Mons	<a href="http://portail.umons.ac.be/EN2/UNIVERSITE/FACULTES/FS/ENSEIGNEMENT/CHIMIE/MASTER/Pages/default.aspx">http://portail.umons.ac.be/EN2/UNIVERSITE/FACULTES/FS/ENSEIGNEMENT/CHIMIE/MASTER/Pages/default.aspx</a>	French/English
BE	Master of Science in Biochemistry and Biotechnology	Two years/120 ECTS	Students	Universiteit Gent	<a href="https://studiekiezer.ugent.be/en/afstudeerrichting/CMBCBT">https://studiekiezer.ugent.be/en/afstudeerrichting/CMBCBT</a>	English
BE	Master of Science in Bioengineering sciences: chemistry and bioprocess technology	Two years/120 ECTS	Students	Universiteit Gent	<a href="https://studiekiezer.ugent.be/nl/afstudeerrichting/IMCHEM">https://studiekiezer.ugent.be/nl/afstudeerrichting/IMCHEM</a>	Dutch
BE	Master of Science in Sustainable Materials Engineering	Two years/120 ECTS	Students	Universiteit Gent	<a href="https://studiekiezer.ugent.be/en/afstudeerrichting/EMMAEN">https://studiekiezer.ugent.be/en/afstudeerrichting/EMMAEN</a>	English/Dutch
BE	Master in Agriculture and bio-industries	Two years/120 ECTS	Students	University of Liege - Gembloux - Agro-Bio Tech	<a href="http://progcours.ulg.ac.be/cocoon/en/cours/CHIM0683-2.html">http://progcours.ulg.ac.be/cocoon/en/cours/CHIM0683-2.html</a>	French
BE	Master in Bioengineering : chemistry and bio-industries	Two years/120 ECTS	Students	University of Liege - Gembloux - Agro-Bio Tech	<a href="http://progcours.ulg.ac.be/cocoon/en/cours/CHIM9254-1.html">http://progcours.ulg.ac.be/cocoon/en/cours/CHIM9254-1.html</a>	French
BE	Master of Science in Bioengineering sciences: chemistry and bioprocess technology	Two years/120 ECTS	Students	Vrije Universiteit Brussel	<a href="http://www.vub.ac.be/opleiding/bio-ingenieurswetenschappen/programma/master-of-science-in-de-bio-ingenieurswetenschappen-chemie-en-bioproccestechnologie">http://www.vub.ac.be/opleiding/bio-ingenieurswetenschappen/programma/master-of-science-in-de-bio-ingenieurswetenschappen-chemie-en-bioproccestechnologie</a>	Dutch
FIN	MSc International Forestry	1,5/60 ETCS	HE students	TAMPERE UAS, TAMK	<a href="http://www.tamk.fi">www.tamk.fi</a>	
FIN	MSc Agrologist	1,5-2,5y/60-90 ETCS	HE students	SEINAJOKI UAS	<a href="http://www.seamk.fi">www.seamk.fi</a>	
FIN	MSc Food chain development	1,5-2,5y/60-90 ETCS	HE students	SEINAJOKI UAS	<a href="http://www.seamk.fi">www.seamk.fi</a>	
FIN	MSc Forestry	1,5-2y/60 ECTS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	<a href="http://www.xamk.fi">www.xamk.fi</a>	
FIN	MSc Smart Industry	1,5y/60 ECTS	HE students	LAMK UAS	<a href="http://www.lamk.fi">www.lamk.fi</a>	
FIN	MSc Urban sustainability	1,5y/60 ECTS	HE students	LAMK UAS	<a href="http://www.lamk.fi">www.lamk.fi</a>	
FIN	MSc Environmental Technology	1,5y/60 ECTS	HE students	TURKU UAS	<a href="http://www.turkuamk.fi">www.turkuamk.fi</a>	
FIN	MSc Marine Technology	1,5y/60 ECTS	HE students	TURKU UAS	<a href="http://www.turkuamk.fi">www.turkuamk.fi</a>	
FIN	MSc Bio- and Chemical technology	1,5y/60 ECTS	HE students	TURKU UAS	<a href="http://www.turkuamk.fi">www.turkuamk.fi</a>	
FIN	MSc Renewable Energy	1-1,5 y/60 ETCS	HE students	Karelia UAS	<a href="http://www.karelia.fi">www.karelia.fi</a>	
FIN	MSc Agrologist	1-2y/60 ETCS	HE students	OULU UAS	<a href="http://www.oamk.fi">www.oamk.fi</a>	
FIN	MSc Environmental Technology (energy)	1-2y/60 ETCS	HE students	OULU UAS	<a href="http://www.oamk.fi">www.oamk.fi</a>	
FIN	MSc Agrologist	1-2y/60 ETCS	HE students	SAVONIA UAS	<a href="http://www.savonia.fi">www.savonia.fi</a>	
FIN	Creative Sustainability minor	15-25 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Bioeconomy; Agrologist	1y/60 ETCS	HE students	JYVASKYLA UAS	<a href="http://www.jamk.fi">www.jamk.fi</a>	
FIN	MSc Biomass refining	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Fiber and polymer engineering	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Biotechnology	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Chemical Engineering	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Chemistry	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Functional Materials	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Sustainable materials processing	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Lifesciences (master 120 ECTS)	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Advanced Materials for Innovation and Sustainability	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Sustainable Energy Systems and Markets	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Industrial Energy Processes and Sustainability (CHEM)	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Sustainable Energy Conversion Processes (ENG)	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	

# Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
FIN	MSc Sustainable Energy in Buildings and Built Environment (ENG)	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Creative Sustainability (CS)	2 y/120 ECTS	UNI Students	Aalto University	<a href="http://www.aalto.fi/en/">http://www.aalto.fi/en/</a>	
FIN	MSc Chemistry	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Process Technology (Processkemi)	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Energy and environmental Engineering ( Energi- och miljöteknik )	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Chemical Engineering (Materialteknik )	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	Chemical Engineering (English)	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Environmental and Marine Biology	2 y/120 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Chemical Engineering	2 y/120 ECTS	UNI Students	Lappeenranta University of Technology	<a href="http://www.lut.fi">www.lut.fi</a>	
FIN	MSc Sustainability Science and Solutions ( Chem Engineering)	2 y/120 ECTS	UNI Students	Lappeenranta University of Technology	<a href="http://www.lut.fi">www.lut.fi</a>	
FIN	MSc Sustainable Production in Mechanical Engineering (Mech. Engineering)	2 y/120 ECTS	UNI Students	Lappeenranta University of Technology	<a href="http://www.lut.fi">www.lut.fi</a>	
FIN	MSc Strategy, Innovation and Sustainability (Economics study)	2 y/120 ECTS	UNI Students	Lappeenranta University of Technology	<a href="http://www.lut.fi">www.lut.fi</a>	
FIN	MSc Bio and environmental technology	2 y/120 ECTS	UNI Students	Tampere University of Technology. TUT	<a href="http://www.tut.fi">www.tut.fi</a>	
FIN	MSc Materials Science and Engineering	2 y/120 ECTS	UNI Students	Tampere University of Technology. TUT	<a href="http://www.tut.fi">www.tut.fi</a>	
FIN	MSc in European Forestry	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	MSc in Finnish-Russian Cross-Border University (CBU)	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	MSc in Environmental Policy	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	The Master's Degree Programme in Green Biotechnology and Food Security (GBFS)	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	MSc in Tourism Marketing and Management	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	MSc Wood Materials Science (WMS)	2 y/120 ECTS	UNI Students	University of Eastern Finland, UEF	<a href="http://www.uef.fi">www.uef.fi</a>	
FIN	MSc Agricultural Economics	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Environmental and Resource Economics	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Environmental change and global sustainability	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Materials Research	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Agricultural Sciences	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Food Sciences	2 y/120 ECTS	UNI Students	University of Helsinki	<a href="http://www.helsinki.fi">www.helsinki.fi</a>	
FIN	MSc Chemistry	2 y/120 ECTS	UNI Students	University of Jyväskylä	<a href="http://www.jyu.fi">www.jyu.fi</a>	
FIN	Sustainable production, Kestävä tuotanto,	25 ECTS minor	UNI Students	Tampere University of Technology. TUT	<a href="http://www.tut.fi">www.tut.fi</a>	
FIN	Minor Sustainability – studiehelhet i hållbar utveckling.	25 to 60 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	Major Natural Materials technology	25 to 60 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	MSc Chemistry	2y/120 ECTS	UNI Students	University of Oulu	<a href="http://www.oulu.fi">www.oulu.fi</a>	
FIN	MSc Environmental Engineering	2y/120 ECTS	UNI Students	University of Oulu	<a href="http://www.oulu.fi">www.oulu.fi</a>	
FIN	MSc Materials Science	2y/120 ECTS	UNI Students	University of Turku	<a href="http://www.utu.fi">www.utu.fi</a>	
FIN	BSc Natural Resource Management	2y/240 ECTS	HE students	NOVIA UAS	<a href="http://www.novia.fi">www.novia.fi</a>	
FIN	MSc Natural Resource Management	2y/60 ECTS	HE students	NOVIA UAS	<a href="http://www.novia.fi">www.novia.fi</a>	
FIN	MSc Environmental Engineering	2y/60 ECTS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	<a href="http://www.xamk.fi">www.xamk.fi</a>	
FIN	MSc Horticulture	2y/60 or 90 ETCS	HE students	HAMK UAS	<a href="http://www.hamk.fi">www.hamk.fi</a>	
FIN	MSc Landscaping	2y/60 or 90 ETCS	HE students	HAMK UAS	<a href="http://www.hamk.fi">www.hamk.fi</a>	
FIN	MSc Forestry	2y/90 ETCS	HE students	HAMK UAS	<a href="http://www.hamk.fi">www.hamk.fi</a>	
FIN	BSc Environmental and Marine Biology	3 y/180 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	BSC Chemistry	3 y/180 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	
FIN	BSc Chemical Engineering	3 y/180 ECTS	UNI Students	Åbo Akademi University	<a href="http://www.abo.fi">www.abo.fi</a>	

# Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
FIN	BSc Environmental technology	3 y/180 ECTS	UNI Students	Lappeenranta University of Technology	www.lut.fi	
FIN	BSc Chemical Technology	3 y/180 ECTS	UNI Students	Lappeenranta University of Technology	www.lut.fi	
FIN	BSc Energy Technology	3 y/180 ECTS	UNI Students	Lappeenranta University of Technology	www.lut.fi	
FIN	BSc Material Chemistry (Materiaali kemia)	3 y/180 ECTS	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	BSc Bio and environmental technology	3 y/180 ECTS	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	BSc Environmental Law	3 y/180 ECTS	UNI Students	University of Eastern Finland, UEF	www.uef.fi	
FIN	BSc Forest sciences	3 y/180 ECTS	UNI Students	University of Eastern Finland, UEF	www.uef.fi	
FIN	BSc Agricultural Economics	3 y/180 ECTS	UNI Students	University of Helsinki	www.helsinki.fi	
FIN	BSc Environmental and Resource Economics	3 y/180 ECTS	UNI Students	University of Helsinki	www.helsinki.fi	
FIN	BSc Environmental change and global sustainability	3 y/180 ECTS	UNI Students	University of Helsinki	www.helsinki.fi	
FIN	BSc Agricultural Sciences	3 y/180 ECTS	UNI Students	University of Helsinki	www.helsinki.fi	
FIN	BSc Food Sciences	3 y/180 ECTS	UNI Students	University of Helsinki	www.helsinki.fi	
FIN	BSc Process Engineering and Environmental Engineering	3 y/180 ECTS	UNI Students	University of Oulu	www.oulu.fi	
FIN	Biomaterials	30 ECTS minor	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	Bioengineering	30 ECTS minor	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	Materials Technology	30 ECTS minor	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	Energy and bioraffinage technology	30 ECTS minor	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	BSc Chemistry, bio- and material Sciences	3y/180 ECTS	UNI Students	Aalto University	http://www.aalto.fi/en/	
FIN	BSc Energy and Environmental	3y/180 ECTS	UNI Students	Aalto University	http://www.aalto.fi/en/	
FIN	BSc Chemistry	3y/180 ECTS	Uni Students	University of Oulu	www.oulu.fi	
FIN	BSc Chemistry	3y/180 ECTS		University of Turku	www.utu.fi	
FIN	BSc Energy and Environmental Engineering	4y/240 ETCS	HE students	Arcada UAS	www.arcada.fi	
FIN	BSc Materials Processing Technology	4y/240 ETCS	HE students	Arcada UAS	www.arcada.fi	
FIN	BSc Materials Processing Technology	4y/240 ETCS	HE students	Arcada UAS	www.arcada.fi	
FIN	BSc Bio - and foodtechnology ( Bio- ja elintarviketekniikka)	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Bioeconomy	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Sustainable development (Kestava kehitys)	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Forestry	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Horticulture	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	MSc Agrologist	4y/240 ETCS	HE students	HAMK UAS	www.hamk.fi	
FIN	BSc Bio- and Chemical Technology	4y/240 ETCS	HE students	Metropolia UAS	www.metropolia.fi	
FIN	BSc Energy and environmental Technology	4y/240 ETCS	HE students	Metropolia UAS	www.metropolia.fi	
FIN	BSc Energy and Environmental technology	4y/240 ETCS	HE students	JYVASKYLA UAS	www.jamk.fi	
FIN	BSc Bioeconomy and logistics	4y/240 ETCS	HE students	JYVASKYLA UAS	www.jamk.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	JYVASKYLA UAS	www.jamk.fi	
FIN	BSc Forestry	4y/240 ETCS	HE students	Karelia UAS	www.karelia.fi	
FIN	BSc Energy and Environmental technology	4y/240 ETCS	HE students	Karelia UAS	www.karelia.fi	
FIN	BSc Energy and Environmental technology	4y/240 ETCS	HE students	LAMK UAS	www.lamk.fi	
FIN	BSc Process- and material technology	4y/240 ETCS	HE students	LAMK UAS	www.lamk.fi	
FIN	BSc Forestry	4y/240 ETCS	HE students	LAPLAND UAS	www.lapinamk.fi	
FIN	BSc Horticulture	4y/240 ETCS	HE students	LAPLAND UAS	www.lapinamk.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	NOVIA UAS	www.novia.fi	



# Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
FIN	BSc Forestry	4y/240 ETCS	HE students	NOVIA UAS	www.novia.fi	
FIN	BSc Natural Resources, Sustainable Coastal Management	4y/240 ETCS	HE students	NOVIA UAS	www.novia.fi	
FIN	BSc Engineering, Energy Technology	4y/240 ETCS	HE students	NOVIA UAS	www.novia.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	OULU UAS	www.oamk.fi	
FIN	BSc Energy and Environmental technology	4y/240 ETCS	HE students	OULU UAS	www.oamk.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	SAVONIA UAS	www.savonia.fi	
FIN	BSc Energy Technology	4y/240 ETCS	HE students	SAVONIA UAS	www.savonia.fi	
FIN	BSc Environmental technology	4y/240 ETCS	HE students	SAVONIA UAS	www.savonia.fi	
FIN	BSc Agrologist	4y/240 ETCS	HE students	SEINAJOKI UAS	www.seamk.fi	
FIN	BSc Food Processing and Biotechnology	4y/240 ETCS	HE students	SEINAJOKI UAS	www.seamk.fi	
FIN	BSc Energy and Environmental technology	4y/240 ETCS	HE students	SATAKUNTA UAS; SAMK	www.samk.fi	
FIN	BSc Bioproduct and Process Engineering	4y/240 ETCS	HE students	TAMPERE UAS, TAMK	www.tamk.fi	
FIN	BSc Bioproducts and Polymers	4y/240 ETCS	HE students	TAMPERE UAS, TAMK	www.tamk.fi	
FIN	BSc Forestry	4y/240 ETCS	HE students	TAMPERE UAS, TAMK	www.tamk.fi	
FIN	BSc Energy and Environmental Engineering	4y/240 ETCS	HE students	TAMPERE UAS, TAMK	www.tamk.fi	
FIN	BSc Process and material technology	4y/240 ETCS	HE students	TURKU UAS	www.turkuamk.fi	
FIN	BSc Energy and Environmental Technology	4y/240 ETCS	HE students	TURKU UAS	www.turkuamk.fi	
FIN	BSc Fisheries and Environment	4y/240 ETCS	HE students	TURKU UAS	www.turkuamk.fi	
FIN	BSc Sustainable Development	4y/240 ETCS	HE students	TURKU UAS	www.turkuamk.fi	
FIN	BSc Energy technology	4y/240 ETCS	HE students	VAASA UAS, VAMK	http://www.puv.fi	
FIN	BSc Environmental technology	4y/240 ETCS	HE students	VAASA UAS, VAMK	http://www.puv.fi	
FIN	BSc Energy and Environmental Technology	4y/240 ETCS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	www.xamk.fi	
FIN	BSc Energy Technology	4y/240 ETCS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	www.xamk.fi	
FIN	BSc Forestry	4y/240 ETCS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	www.xamk.fi	
FIN	BSc Biomaterial technology	4y/240 ETCS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	www.xamk.fi	
FIN	BSc Environmental Engineering	4y/240 ETCS	HE students	SOUTH-EASTERN FINLAND UAS, XAMK	www.xamk.fi	
FIN	Energy and bioraffinage technology	50 ETCS	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	Life-Cycle Management and Engineering, Advanced	50 ETCS	UNI Students	Tampere University of Technology. TUT	www.tut.fi	
FIN	Studium Generale	na	Students/public	University of Eastern Finland, UEF	www.uef.fi	
FIN	Finnish University Network for Tourism Studies (FUNTS)		UNI Students	University of Eastern Finland, UEF	www.uef.fi	
FIN	DSc in Forests and Bioresources (FORES)		UNI Students	University of Eastern Finland, UEF	www.uef.fi	
FIN	DSc in Social and Cultural Encounters (SCE)		UNI Students	University of Eastern Finland, UEF	www.uef.fi	
GER	Study Semester Renewable Resources	1 Semester/ 30 ECTS	Students	Technische Hochschule Bingen	https://www.th-bingen.de/studium/study-at-bingen/internationale-studienbewerber/study-semester/	English
GER	MSc Nachhaltige Bioprozesstechnik	3 or 4 Semester/ 90/120 ECTS	Students	Hochschule Furtwangen, Campus Schwenningen	http://www.hs-furtwangen.de/studiengaenge/fakultaet/medical-and-life-sciences/nachhaltige-bioprozesstechnik.html	German

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
GER	MSc Biotechnologie und angewandte Ökologie	3 or 4 Semester/ 90/120 ECTS	Students	Hochschule Zittau - Görlitz	<a href="http://www.hszg.de/studium/unsere-studiengaenge/master/biotechnologie-angewandte-oekologie.html">http://www.hszg.de/studium/unsere-studiengaenge/master/biotechnologie-angewandte-oekologie.html</a>	German
GER	M.Eng. Umwelttechnologie	3 Semester	Students	Hochschule Amberg-Weiden	<a href="http://www.haw-aw.de/studium/masterstudiengaenge/umwelttechnologie/">http://www.haw-aw.de/studium/masterstudiengaenge/umwelttechnologie/</a>	German
GER	MSc Regenerative Energien und Energieeffizienz	3 Semester	Students	Universität Kassel	<a href="http://www.uni-kassel.de/uni/studium/studienangebot/studiengangsseiten/weiterfuehren-de-studiengaenge/m-ree.html">http://www.uni-kassel.de/uni/studium/studienangebot/studiengangsseiten/weiterfuehren-de-studiengaenge/m-ree.html</a>	German
GER	MSc Biotechnology	3 Semester	Students	Hochschule Mannheim	<a href="https://www.hs-mannheim.de/studieninteressierte/studienangebot/masterstudiengaenge/biotechnology.html">https://www.hs-mannheim.de/studieninteressierte/studienangebot/masterstudiengaenge/biotechnology.html</a>	English
GER	MSc Life Cycle & Sustainability	3 Semester	Students	Hochschule Pforzheim	<a href="https://businesspf.hs-pforzheim.de/studium/studierende/master/master_life_cycle_sustainability_msc/studiengang_im_ueberblick/">https://businesspf.hs-pforzheim.de/studium/studierende/master/master_life_cycle_sustainability_msc/studiengang_im_ueberblick/</a>	German
GER	MSc Chemie- und Biotechnologie	3 Semester	Students	Hochschule Darmstadt	<a href="https://fbc.h-da.de/studium/studiengaenge/master-chemie-und-biotechnologie/">https://fbc.h-da.de/studium/studiengaenge/master-chemie-und-biotechnologie/</a>	German
GER	MSc Bioverfahrenstechnik	3 Semester/ 90 ECTS	Students	Technische Universität Kaiserslautern	<a href="https://www.uni-kl.de/studiengang/sgdb/Bioverfahrenstechnik_Master_of_Science/22815/?subjects=52">https://www.uni-kl.de/studiengang/sgdb/Bioverfahrenstechnik_Master_of_Science/22815/?subjects=52</a>	German
GER	MSc Biotechnology and Process Engineering	3 Semester/ 90ECTS	Students	Fachhochschule Flensburg	<a href="https://hs-flensburg.de/studium/master/btpe">https://hs-flensburg.de/studium/master/btpe</a>	English
GER	MSc Industrielle Biotechnologie	4 Semester	Students	Hochschule Biberach	<a href="http://www.hochschule-biberach.de/web/industrielle-biotechnologie/master">http://www.hochschule-biberach.de/web/industrielle-biotechnologie/master</a>	German
GER	MSc Nachwachsende Rohstoffe und Erneuerbare Energien	4 Semester	Students	Brandenburgische Technische Universität Cottbus - Senftenberg	<a href="https://www.b-tu.de/nachwachsende-rohstoffe-erneuerbare-energien-ms/steckbrief">https://www.b-tu.de/nachwachsende-rohstoffe-erneuerbare-energien-ms/steckbrief</a>	German
GER	MSc Ressourceneffizientes Bauen	4 Semester	Students	Hochschule für Forstwirtschaft Rottenburg	<a href="https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/msc-ressourceneffizientes-bauen/">https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/msc-ressourceneffizientes-bauen/</a>	German
GER	MSc SENCE (Sustainable Energy Competence)	4 Semester	Students	Hochschule für Forstwirtschaft Rottenburg (in cooperation with Hochschule Stuttgart, Hochschule Ulm)	<a href="https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/msc-sence-sustainable-energy-competence/">https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/msc-sence-sustainable-energy-competence/</a>	German
GER	MSc Nachwachsende Rohstoffe	4 Semester	Students	Technische Universität München/Hochschule Weihenstephan-Triesdorf Standort: Wissenschaftszentrum Straubing	<a href="http://www.wz-straubing.de/default.asp?Menue=776&amp;MandantID=1">http://www.wz-straubing.de/default.asp?Menue=776&amp;MandantID=1</a>	German
GER	MSc Holzbiologie und Holztechnologie	4 Semester	Students	Georg-August-Universität Göttingen	<a href="http://www.uni-goettingen.de/de/73433.html">http://www.uni-goettingen.de/de/73433.html</a>	German
GER	MSc Nachwachsende Rohstoffe und Erneuerbare Energien	4 Semester	Students	HAWK Hildesheim, Holzminden, Göttingen	<a href="https://www.hawk-hhg.de/ressourcen/173591.php">https://www.hawk-hhg.de/ressourcen/173591.php</a>	German
GER	MSc Bioingenieurwesen	4 Semester	Students	Karlsruher Institut für Technologie	<a href="http://www.ciw.kit.edu/1268.php">http://www.ciw.kit.edu/1268.php</a>	German

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
GER	MSc Bio- und Prozess-Verfahrenstechnik	4 Semester	Students	Hochschule Trier	<a href="https://www.umwelt-campus.de/ucb/index.php?id=m-verfahrenstechnik">https://www.umwelt-campus.de/ucb/index.php?id=m-verfahrenstechnik</a>	German
GER	MSc Biotechnologie und chemische Verfahrenstechnik	4 Semester	Students	Universität Bayreuth	<a href="http://www.ing.uni-bayreuth.de/de/studierende/master/Biotechnologie_und_chemische_Verfahrenstechnik/index.html">http://www.ing.uni-bayreuth.de/de/studierende/master/Biotechnologie_und_chemische_Verfahrenstechnik/index.html</a>	German
GER	MSc Materials Science and Sustainability Methods	4 Semester	Students	Hochschule Bonn-Rhein-Sieg	<a href="https://www.h-brs.de/de/anna/materials-science-and-sustainability-methods-msc">https://www.h-brs.de/de/anna/materials-science-and-sustainability-methods-msc</a>	German
GER	MSc Advanced Materials and Processes	4 Semester	Students	Friedrich-Alexander Universität Erlangen-Nürnberg	<a href="http://www.elite-map.tf.uni-erlangen.de/">http://www.elite-map.tf.uni-erlangen.de/</a>	English
GER	MSc Nachwachsende Rohstoffe und Bioenergie	4 Semester/ 120 ECTS	Students	Universität Hohenheim	<a href="https://www.uni-hohenheim.de/nachwachsende-rohstoffe-und-bioenergie-master-studium.html">https://www.uni-hohenheim.de/nachwachsende-rohstoffe-und-bioenergie-master-studium.html</a>	German
GER	MSc Bioeconomy	4 Semester/ 120 ECTS	Students	Universität Hohenheim	<a href="https://www.uni-hohenheim.de/bioeconomy-master-studium">https://www.uni-hohenheim.de/bioeconomy-master-studium</a>	English
GER	MSc Nutzpflanzenwissenschaften	4 Semester/ 120 ECTS	Students	Universität Halle-Wittenberg	<a href="http://www.landw.uni-halle.de/stud/nutzpflanzenwissenschaften/">http://www.landw.uni-halle.de/stud/nutzpflanzenwissenschaften/</a>	German
GER	MSc Pharmaceutical and Industrial Biotechnology	4 Semester/ 120 ECTS	Students	Universität Halle-Wittenberg	<a href="http://downstream.pharmazie.uni-halle.de/pharma_industrial_biotech_msc/">http://downstream.pharmazie.uni-halle.de/pharma_industrial_biotech_msc/</a>	English
GER	MSc Joint International Master in Sustainable Development	4 Semester/ 120 ECTS	Students	Universität Leipzig (in cooperation with Utrecht, Graz, Venedig, Basel und Hiroshima University)	<a href="http://www.jointdegree.eu/de/sustainable-development/">http://www.jointdegree.eu/de/sustainable-development/</a>	English
GER	MSc Advanced Materials	4 Semester/ 120 ECTS	Students	Universität Ulm	<a href="http://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/advanced-materials/">http://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/advanced-materials/</a>	English
GER	MSc Industrielle Biotechnologie	4 Semester/ 120 ECTS	Students	Universität Ulm	<a href="http://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/industrielle-biotechnologie/">http://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/industrielle-biotechnologie/</a>	German
GER	MSc Industrielle Biotechnologie	4 Semester/ 120 ECTS	Students	Munich School of Engineering (MSE)	<a href="https://www.mse.tum.de/studieninteressierte/msc-industrielle-biotechnologie/">https://www.mse.tum.de/studieninteressierte/msc-industrielle-biotechnologie/</a>	German
GER	MSc Sustainable Materials – Polymer Sciences	4 Semester/ 120 ECTS	Students	Albert-Ludwigs-Universität Freiburg	<a href="http://www.cup.uni-freiburg.de/chemie/studium/master-of-science-sustainable-materials">http://www.cup.uni-freiburg.de/chemie/studium/master-of-science-sustainable-materials</a>	English and German
GER	MSc Sustainable Materials - Functional Materials	4 Semester/ 120 ECTS	Students	Albert-Ludwigs-Universität Freiburg	<a href="http://www.cup.uni-freiburg.de/chemie/studium/MScSustainable-Functional">http://www.cup.uni-freiburg.de/chemie/studium/MScSustainable-Functional</a>	English and German
GER	MSc Energieeffizientes und nachhaltiges Bauen	4 Semester/120 ECTS	Students	Technische Universität München	<a href="http://www.ar.tum.de/studiengaenge/master/msc-energieeffizientes-und-nachhaltiges-bauen/">http://www.ar.tum.de/studiengaenge/master/msc-energieeffizientes-und-nachhaltiges-bauen/</a>	German
GER	MSc Erneuerbare Energien (berufsbegleitend)	4,5 Semester/ 90 ECTS	Professionals, Students	Akademie für Erneuerbare Energien	<a href="http://www.akademie-ee.de/ueberblick-masterstudium/masterstudium-erneuerbare-energien/">http://www.akademie-ee.de/ueberblick-masterstudium/masterstudium-erneuerbare-energien/</a>	German

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
GER	M.Eng. Bioprozesstechnik (berufsbegleitend)	5 Semester/ 90 ECTS	Professionals	Hochschule Esslingen	<a href="http://www.hs-esslingen.de/de/hochschule/fakultaeten/angewandte-naturwissenschaften/studiengaenge/master/bioprozesstechnik-btm.html">http://www.hs-esslingen.de/de/hochschule/fakultaeten/angewandte-naturwissenschaften/studiengaenge/master/bioprozesstechnik-btm.html</a>	German
GER	BSc Technologien Biogener Rohstoffe	6 Semester	Students	Brandenburgische Technische Universität Cottbus - Senftenberg	<a href="https://www.b-tu.de/biogene-rohstoffe-bs/steckbrief">https://www.b-tu.de/biogene-rohstoffe-bs/steckbrief</a>	German
GER	BSc Bioingenieurwesen	6 Semester	Students	Karlsruher Institut für Technologie	<a href="http://www.ciw.kit.edu/1268.php">http://www.ciw.kit.edu/1268.php</a>	German
GER	BSc Bio-, Umwelt- und Prozess-Verfahrenstechnik	6 Semester	Students	Hochschule Trier	<a href="https://www.umwelt-campus.de/ucb/index.php?id=verfahrenstechnik">https://www.umwelt-campus.de/ucb/index.php?id=verfahrenstechnik</a>	German
GER	BSc Bio- und Nanotechnologien	6 Semester	Students	Fachhochschule Südwestfalen	<a href="https://www4.fh-swf.de/de/home/studieninteressierte/studienangebote/stg_is/bionano/index.php">https://www4.fh-swf.de/de/home/studieninteressierte/studienangebote/stg_is/bionano/index.php</a>	German
GER	BSc Apparative Biotechnologie	6 Semester	Students	Fachhochschule Bielefeld	<a href="https://www.fh-bielefeld.de/studiengaenge/apparative-biotechnologie-bachelor">https://www.fh-bielefeld.de/studiengaenge/apparative-biotechnologie-bachelor</a>	German
GER	Nebenfach Holz und Bioenergie (Minor)	6 Semester	Students	Universität Freiburg	<a href="http://www.unr.uni-freiburg.de/studium-lehre/bachelor/Nebenfacher/HolzundBio">http://www.unr.uni-freiburg.de/studium-lehre/bachelor/Nebenfacher/HolzundBio</a>	German
GER	BSc Nachwachsende Rohstoffe und Bioenergie	6 Semester/ 180 ECTS	Students	Universität Hohenheim	<a href="https://www.uni-hohenheim.de/nachwachsende-rohstoffe-und-bioenergie-bachelor-studium.html#jfmulticontent_c280475-3">https://www.uni-hohenheim.de/nachwachsende-rohstoffe-und-bioenergie-bachelor-studium.html#jfmulticontent_c280475-3</a>	German
GER	BSc Nachwachsende Rohstoffe	6 Semester/ 180 ECTS	Students	Technische Universität München/Hochschule Weihenstephan-Triesdorf Standort: Wissenschaftszentrum Straubing	<a href="http://www.wz-straubing.de/default.asp?Menue=777&amp;MandantID=1">http://www.wz-straubing.de/default.asp?Menue=777&amp;MandantID=1</a>	German
GER	BSc Agrarwissenschaften	6 Semester/ 180 ECTS	Students	Universität Halle-Wittenberg	<a href="http://www.landw.uni-halle.de/stud/bachelor-agrar/">http://www.landw.uni-halle.de/stud/bachelor-agrar/</a>	German
GER	BSc Management natürlicher Ressourcen	6 Semester/ 180 ECTS	Students	Universität Halle-Wittenberg	<a href="http://www.ressourcenmanagement.uni-halle.de/">http://www.ressourcenmanagement.uni-halle.de/</a>	German
GER	BSc Industrielle Biotechnologie	7 Semester	Students	Hochschule Biberach	<a href="http://www.hochschule-biberach.de/web/industrielle-biotechnologie/bachelor">http://www.hochschule-biberach.de/web/industrielle-biotechnologie/bachelor</a>	German
GER	B.Eng. Technologie nachwachsender Rohstoffe	7 Semester	Students	Hochschule Hannover	<a href="http://f2.hs-hannover.de/studium/bachelor-studiengaenge/technologie-nachwachsender-rohstoffe/index.html">http://f2.hs-hannover.de/studium/bachelor-studiengaenge/technologie-nachwachsender-rohstoffe/index.html</a>	German
GER	BSc Bio- und Prozesstechnologie	7 Semester	Students	Hochschule Furtwangen, Campus Schwenningen	<a href="http://www.hs-furtwangen.de/studierende/fakultaeten/medical-and-life-sciences/bio-und-prozesstechnologie-bsc.html?L=1&amp;sword_list%5b%5d=bnt&amp;no_cache=1">http://www.hs-furtwangen.de/studierende/fakultaeten/medical-and-life-sciences/bio-und-prozesstechnologie-bsc.html?L=1&amp;sword_list%5b%5d=bnt&amp;no_cache=1</a>	German
GER	BSc Erneuerbare Energien	7 Semester	Students	Hochschule für Forstwirtschaft Rottenburg	<a href="https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/bsc-erneuerbare-energien/">https://www.hs-rottenburg.net/zielgruppen/studieninteressierte/studienangebote/bsc-erneuerbare-energien/</a>	German

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
GER	B.Eng. Erneuerbare Energien	7 Semester	Students	Hochschule Amberg-Weiden	<a href="http://www.haw-aw.de/studium/bachelorstudiengaenge/erneuerbare_energien/">http://www.haw-aw.de/studium/bachelorstudiengaenge/erneuerbare_energien/</a>	German
GER	B.Eng. Technologie Erneuerbarer Energien	7 Semester	Students	Hochschule Weihenstephan-Triesdorf	<a href="https://www.hswt.de/studium/studiengaenge/te.html">https://www.hswt.de/studium/studiengaenge/te.html</a>	German
GER	BSc Management erneuerbarer Energien	7 Semester	Students	Hochschule Weihenstephan-Triesdorf	<a href="https://www.hswt.de/studium/studiengaenge/me.html">https://www.hswt.de/studium/studiengaenge/me.html</a>	German
GER	B.Eng. Energietechnik und Erneuerbare Energien	7 Semester	Students	Hochschule Ingolstadt	<a href="https://www.thi.de/maschinenbau/studiengaenge/energietechnik-und-erneuerbare-energien-beng/">https://www.thi.de/maschinenbau/studiengaenge/energietechnik-und-erneuerbare-energien-beng/</a>	German
GER	BSc Biotechnologie	7 Semester	Students	Hochschule Esslingen	<a href="http://www.hs-esslingen.de/de/hochschule/fakultaeten/angewandte-naturwissenschaften/studiengaenge/bachelor/biotechnologie.html">http://www.hs-esslingen.de/de/hochschule/fakultaeten/angewandte-naturwissenschaften/studiengaenge/bachelor/biotechnologie.html</a>	German
GER	BSc Biotechnologie	7 Semester	Students	Hochschule Mannheim	<a href="https://www.hs-mannheim.de/studieninteressierte/studienangebot/bachelorstudiengaenge/biotechnologie.html">https://www.hs-mannheim.de/studieninteressierte/studienangebot/bachelorstudiengaenge/biotechnologie.html</a>	German
GER	B.Eng. Bioverfahrenstechnik	7 Semester	Students	Frankfurt University of Applied Science	<a href="https://www.frankfurt-university.de/index.php?id=4002">https://www.frankfurt-university.de/index.php?id=4002</a>	German
GER	BSc Biomaterials Science	7 Semester	Students	Hochschule Rhein-Waal	<a href="https://www.hochschule-rhein-waal.de/de/fakultaeten/technologie-und-bionik/studienangebot/biomaterials-science-bsc">https://www.hochschule-rhein-waal.de/de/fakultaeten/technologie-und-bionik/studienangebot/biomaterials-science-bsc</a>	English
GER	BSc Bioengineering	7 Semester	Students	Hochschule Rhein-Waal	<a href="https://www.hochschule-rhein-waal.de/de/fakultaeten/life-sciences/studienangebot/bioengineering-b-sc">https://www.hochschule-rhein-waal.de/de/fakultaeten/life-sciences/studienangebot/bioengineering-b-sc</a>	German
GER	BSc Biotechnologie	7 Semester	Students	Hochschule Darmstadt	<a href="https://fbc.h-da.de/studium/studiengaenge/biotechnologie/">https://fbc.h-da.de/studium/studiengaenge/biotechnologie/</a>	German
GER	BSc Verfahrens- und Umwelttechnik	7 Semester/ 210 ECTS	Students	Hochschule Heilbronn	<a href="https://www.hs-heilbronn.de/vu">https://www.hs-heilbronn.de/vu</a>	German
GER	BSc Biotechnologie-Verfahrenstechnik	7 Semester/210 ECTS	Students	Fachhochschule Flensburg	<a href="https://hs-flensburg.de/studium/bachelor/bvtv">https://hs-flensburg.de/studium/bachelor/bvtv</a>	German
GER	B.Eng. Green Building		Students	HAWK Hildesheim, Holzminden, Göttingen	<a href="https://www.hawk-hhg.de/holzminden/179303.php">https://www.hawk-hhg.de/holzminden/179303.php</a>	German
GER	M.Eng. Berufsbegleitender Masterstudiengang Holzbau und Energieeffizienz		Students, Professionals, Architects, Engineer	Hochschule Rosenheim	<a href="http://www.fh-rosenheim.de/weiterbildung/weiterbildende-masterstudiengaenge/holzbau-und-energieeffizienz-meng/">http://www.fh-rosenheim.de/weiterbildung/weiterbildende-masterstudiengaenge/holzbau-und-energieeffizienz-meng/</a>	English
NL	Minor Biobased Economy in the Agrifood sector	10 weeks/ 15 ECTS	Students	HAS University of Applied Sciences	<a href="https://www.hasinternational.nl/minors/minor-biobased-economy-agrifood-sector">https://www.hasinternational.nl/minors/minor-biobased-economy-agrifood-sector</a>	English
NL	Minor International Business and Development	10 weeks/ 15 ECTS	Students	HAS University of Applied Sciences	<a href="https://www.hasinternational.nl/minors/minor-international-business-development">https://www.hasinternational.nl/minors/minor-international-business-development</a>	English
NL	Minor Ecosystems services and their value to society	10 weeks/ 15 ECTS	Students	HAS University of Applied Sciences	<a href="https://www.hashogeschool.nl/minors/minor-ecosystem-services-and-their-value-society">https://www.hashogeschool.nl/minors/minor-ecosystem-services-and-their-value-society</a>	English
NL	Minor Biobased Construction	10 weeks/ 15 ECTS	Students	HZ University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/hzee/-/137921/">https://www.kiesopmaat.nl/modules/hzee/-/137921/</a>	English

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
NL	Minor Marine Biobased Products	10 weeks/ 15 ECTS	Students	HZ University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/hzee/-/137928/">https://www.kiesopmaat.nl/modules/hzee/-/137928/</a>	English
NL	Minor Circular Economy	10 weeks/ 15 ECTS	Students	HZ University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/hzee/-/137841/">https://www.kiesopmaat.nl/modules/hzee/-/137841/</a>	English
NL	Minor Sustainability	11 weeks/ 15 ECTS	Students	Zuyd University of Applied Sciences	<a href="https://international.zuyd.nl/studying/study-programmes/short-programmes/minor-sustainability-in-business-and-technology">https://international.zuyd.nl/studying/study-programmes/short-programmes/minor-sustainability-in-business-and-technology</a>	English
NL	MSc Sustainable Energy Technology	2 years/ 120 ECTS	Students	University of Twente	<a href="https://www.utwente.nl/en/education/master/programmes/sustainable-energy-technology/">https://www.utwente.nl/en/education/master/programmes/sustainable-energy-technology/</a>	English
NL	MSc Sustainable Energy Technology	2 years/ 120 ECTS	Students	Delft University of Technology	<a href="http://tudelft.nl/?id=6619&amp;L=1">http://tudelft.nl/?id=6619&amp;L=1</a>	English
NL	MSc Chemistry Track 'Science for Energy and Sustainability'	2 years/ 120 ECTS	Students	VU University Amsterdam	<a href="http://gss.uva.nl/future-msc-students/exact-sciences/content13/chemistry-science-for-energy-and-sustainability.html">http://gss.uva.nl/future-msc-students/exact-sciences/content13/chemistry-science-for-energy-and-sustainability.html</a>	English
NL	MSc Sustainable Energy Technology	2 years/ 120 ECTS	Students	Eindhoven University of Technology	<a href="https://www.tue.nl/universiteit/faculteit/werktuigbouwkunde/studeren/masteropleidingen/interfacultaire-masteropleidingen/sustainable-energy-technology/">https://www.tue.nl/universiteit/faculteit/werktuigbouwkunde/studeren/masteropleidingen/interfacultaire-masteropleidingen/sustainable-energy-technology/</a>	English
NL	MSc Chemistry Track 'Science for Energy and Sustainability'	2 years/ 120 ECTS	Students	University of Amsterdam	<a href="http://gss.uva.nl/future-msc-students/exact-sciences/content13/chemistry-science-for-energy-and-sustainability.html">http://gss.uva.nl/future-msc-students/exact-sciences/content13/chemistry-science-for-energy-and-sustainability.html</a>	English
NL	MSc Energy and Environmental Sciences	2 years/ 120 ECTS	Students	University of Groningen	<a href="http://www.rug.nl/masters/energy-and-environmental-sciences/">http://www.rug.nl/masters/energy-and-environmental-sciences/</a>	English
NL	MSc Sustainable Business and Innovation	2 years/ 120 ECTS	Students	Utrecht University	<a href="http://www.uu.nl/masters/en/sustainable-development">http://www.uu.nl/masters/en/sustainable-development</a>	English
NL	Msc Environmental Sciences: Track 'Energy and Materials'	2 years/ 120 ECTS	Students	Utrecht University	<a href="http://www.uu.nl/masters/en/sustainable-development">http://www.uu.nl/masters/en/sustainable-development</a>	English
NL	Msc Chemical Engineering: Track 'Bio-Based Products'	2 years/ 120 ECTS	Students	University of Groningen	<a href="http://www.rug.nl/masters/chemical-engineering/">http://www.rug.nl/masters/chemical-engineering/</a>	English
NL	Msc Biobased Materials	2 years/ 120 ECTS	Students	Maastricht University	<a href="https://www.maastrichtuniversity.nl/education/master/master-biobased-materials">https://www.maastrichtuniversity.nl/education/master/master-biobased-materials</a>	English
NL	MSc Sustainable Business and Innovation	2 years/ 120 ECTS	Students	Utrecht University	<a href="http://www.uu.nl/masters/en/sustainable-business-and-innovation">http://www.uu.nl/masters/en/sustainable-business-and-innovation</a>	English
NL	Milieu en Ruimte	Four years	Students	MBO Life Sciences	<a href="https://www.mbolifesciences.nl/">https://www.mbolifesciences.nl/</a>	Dutch
NL	Major Biobased Tech	Four years/ 240 ECTS	Students	Avans University of Applied Sciences	<a href="http://www.avans.nl/opleidingen/opleidingzoeker/chemie-breda-voltijd-bachelor/opbouw?tab=specialisaties">http://www.avans.nl/opleidingen/opleidingzoeker/chemie-breda-voltijd-bachelor/opbouw?tab=specialisaties</a>	English
NL	Minor Duurzame Energie en Groene Grondstoffen	One semester/ 15 ECTS	Students	Aeres University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/vilentum/TPO/136061/">https://www.kiesopmaat.nl/modules/vilentum/TPO/136061/</a>	Dutch
NL	Minor Circulaire Economie en business modellen	One semester/ 15 ECTS	Students	Aeres University of Applied Sciences	n.a.	Dutch
NL	Minor Biorefinery Technology	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="https://www.coebbe.nl/onderwijs/minoren/biorefinery-technology">https://www.coebbe.nl/onderwijs/minoren/biorefinery-technology</a>	English
NL	Minor Biobased Technology and Business Development	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="http://www.avans.nl/international/programs/programfinder/biobased-technology-and-business-development/programme-structure">http://www.avans.nl/international/programs/programfinder/biobased-technology-and-business-development/programme-structure</a>	English

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Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
NL	Minor Biopolymers	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="https://www.coebbe.nl/onderwijs/minoren/specialisatie-biopolymeren">https://www.coebbe.nl/onderwijs/minoren/specialisatie-biopolymeren</a>	English
NL	Minor Environmental Consultancy	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="http://www.avans.nl/international/programs/programfinder/environmental-consultancy/introduction">http://www.avans.nl/international/programs/programfinder/environmental-consultancy/introduction</a>	English
NL	Minor Sustainable Entrepreneurship	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="http://www.avans.nl/international/programs/programfinder/sustainable-entrepreneurship/introduction">http://www.avans.nl/international/programs/programfinder/sustainable-entrepreneurship/introduction</a>	English
NL	Minor Biobased Chemistry	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="https://www.coebbe.nl/onderwijs/minoren/biobased-chemistry">https://www.coebbe.nl/onderwijs/minoren/biobased-chemistry</a>	Dutch
NL	Minor Environmental Geography	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="http://www.avans.nl/international/programs/programfinder/environmental-geography/introduction">http://www.avans.nl/international/programs/programfinder/environmental-geography/introduction</a>	English
NL	Minor Art & Nature	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="https://minorartsnature.wordpress.com/">https://minorartsnature.wordpress.com/</a>	English
NL	Minor Organische Chemie en Polymeerchemie	One semester/ 30 ECTS	Students	Avans University of Applied Sciences	<a href="https://www.coebbe.nl/onderwijs/minoren/organische-chemie-en-polymeerchemie">https://www.coebbe.nl/onderwijs/minoren/organische-chemie-en-polymeerchemie</a>	Dutch
NL	Minor Procestechnologie en energietransitie	One semester/ 30 ECTS	Students	Rotterdam University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/hro/RMU/138276/">https://www.kiesopmaat.nl/modules/hro/RMU/138276/</a>	Dutch
NL	Minor Challenge Sustainability	One semester/ 30 ECTS	Students	HAS University of Applied Sciences	<a href="https://www.hasinternational.nl/exchange-programmes/sustainability-challenge">https://www.hasinternational.nl/exchange-programmes/sustainability-challenge</a>	English
NL	Minor Applied Plant Research	One semester/ 30 ECTS	Students	HAS University of Applied Sciences	<a href="https://www.hasinternational.nl/Exchange-Programmes/applied-plant-research">https://www.hasinternational.nl/Exchange-Programmes/applied-plant-research</a>	English
NL	Minor Sustainable Polymers	One semester/ 30 ECTS	Students	Stenden University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/stenden/-/138096/">https://www.kiesopmaat.nl/modules/stenden/-/138096/</a>	English
NL	Minor Green Logistics	One semester/ 30 ECTS	Students	Stenden University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/stenden/-/138208/">https://www.kiesopmaat.nl/modules/stenden/-/138208/</a>	English
NL	Minor Biorefinery	One semester/ 30 ECTS	Students	HAN University of Applied Sciences	<a href="https://www.han.nl/opleidingen/exchange-courses/biorefinery/">https://www.han.nl/opleidingen/exchange-courses/biorefinery/</a>	English
NL	Minor Proces Development in the Chemical Industry	One semester/ 30 ECTS	Students	University of Applied Sciences Utrecht	<a href="https://www.kiesopmaat.nl/modules/hu/FNT/135792/">https://www.kiesopmaat.nl/modules/hu/FNT/135792/</a>	Dutch
NL	Minor Food and Pharma	One semester/ 30 ECTS	Students	University of Applied Sciences Utrecht	<a href="https://www.kiesopmaat.nl/modules/hu/FNT/135430/">https://www.kiesopmaat.nl/modules/hu/FNT/135430/</a>	Dutch
NL	Minor Specialist Certificate Programme Innovations for Sustainability	One year/ 60 ECTS	Students	VHL University of Applied Sciences	<a href="http://www.vhluniversity.com/vhl-studies/minor/specialist-certificate-programme-innovations-for-sustainability.aspx">http://www.vhluniversity.com/vhl-studies/minor/specialist-certificate-programme-innovations-for-sustainability.aspx</a>	English
NL	MSc European Master in Renewable Energy	One year/ 60 ECTS	Students	Hanze University of Applied Sciences	<a href="https://www.hanze.nl/eng/education/engineering/school-of-engineering/programmes/master/european-master-in-renewable-energy">https://www.hanze.nl/eng/education/engineering/school-of-engineering/programmes/master/european-master-in-renewable-energy</a>	English
NL	MSc Sustainability Science & Policy	One year/ 60 ECTS	Students	Maastricht University	<a href="https://www.maastrichtuniversity.nl/education/master/master-science-sustainability-science-policy">https://www.maastrichtuniversity.nl/education/master/master-science-sustainability-science-policy</a>	English
NL	MSc Environmental and Energy Management	One year/ 65 ECTS	Students	University of Twente	<a href="https://www.utwente.nl/en/education/master/programmes/environmental-energy-management/programme/">https://www.utwente.nl/en/education/master/programmes/environmental-energy-management/programme/</a>	English

## Appendix A: List of university programmes

Country	Type of programme	Duration (ECTS)	Target audience	Organization	Website	Language(s)
NL	Biobased Technieken	Three years	Students	Helicon	<a href="http://www.helicon.nl/mbo/Opleidingen/Opleidingenoverzicht/lk_wil_iets_met_Land_en_tuinbouw/Biobased_technieken">http://www.helicon.nl/mbo/Opleidingen/Opleidingenoverzicht/lk_wil_iets_met_Land_en_tuinbouw/Biobased_technieken</a>	Dutch
NL	Dual Master Polymer Engineering	Two year/ 75 ECTS	Students	Windesheim University of Applied Sciences/ Stenden University of Applied Sciences	<a href="https://www.kiesopmaat.nl/modules/chw/TECH/136649/">https://www.kiesopmaat.nl/modules/chw/TECH/136649/</a>	English



# Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
FIN	links to educational sources	<a href="http://www.edu.fi/luovasti_luonnonvaroista/opettajalle/linkkeja_ja_lahteita">http://www.edu.fi/luovasti_luonnonvaroista/opettajalle/linkkeja_ja_lahteita</a>									
FIN	Finnish bioeconomy strategy (English subtitles)	<a href="https://www.youtube.com/watch?v=OQIMKH8p98I">https://www.youtube.com/watch?v=OQIMKH8p98I</a>									Biotalous.fi
FIN	Biotalous.fi: Bioeconomy ; New Era	<a href="https://www.youtube.com/watch?v=rlp4_TeqzKE&amp;feature=youtu.be">https://www.youtube.com/watch?v=rlp4_TeqzKE&amp;feature=youtu.be</a>									Biofalous.Fi:
FIN	you tube video	<a href="https://www.youtube.com/watch?v=w8JaCLECuM4">https://www.youtube.com/watch?v=w8JaCLECuM4</a>			<a href="http://tapio.fi/etusivu/briefly-in-english/">http://tapio.fi/etusivu/briefly-in-english/</a>		Yes				Tapio
FIN	you tube video	<a href="https://www.youtube.com/watch?v=OQIMKH8p98I">https://www.youtube.com/watch?v=OQIMKH8p98I</a>									
FIN	VTT_ Bioeconomy Finland	<a href="https://www.youtube.com/watch?v=rUCnwd1_JPc">https://www.youtube.com/watch?v=rUCnwd1_JPc</a>									
FIN	website	<a href="http://makingoftomorrow.com/">http://makingoftomorrow.com/</a>									
FIN	ettetci solvents/Fibic	<a href="https://www.slideshare.net/FIBIC">https://www.slideshare.net/FIBIC</a> (eutetic solvents - slideshare)									
FIN	lesson material/green chemistry	<a href="http://www.e-oppi.fi/sarja/kemia/">http://www.e-oppi.fi/sarja/kemia/</a>									
FIN	educational materials	<a href="https://www.opetin.fi/materiaalit/">https://www.opetin.fi/materiaalit/</a>									
FIN	educational materials	<a href="https://otavanopisto.muikkuverkko.fi/">https://otavanopisto.muikkuverkko.fi/</a>									
FIN	educational materials	<a href="https://mappa.fi/fi/etusivu">https://mappa.fi/fi/etusivu</a>									Mappa; Suomen luonto- ja ympäristökoulujen liitto ry
FIN	educational materials	<a href="https://mappa.fi/haku.php?filter%5B%5D=target_grp_7&amp;q=vihre%C3%A4+talous&amp;offset=20&amp;order=title_asc">https://mappa.fi/haku.php?filter%5B%5D=target_grp_7&amp;q=vihre%C3%A4+talous&amp;offset=20&amp;order=title_asc</a>									Mappa; Suomen luonto- ja ympäristökoulujen liitto ry
FIN	educational materials	<a href="http://www.helsinki.fi/pinkka/koulu/index.htm">http://www.helsinki.fi/pinkka/koulu/index.htm</a>									
FIN	educational materials	<a href="http://www.helsinki.fi/pinkka/english/index.htm">http://www.helsinki.fi/pinkka/english/index.htm</a>									
FIN	global sustainability/lesson materials	<a href="http://www.maailmankoulu.fi/node/66">http://www.maailmankoulu.fi/node/66</a>									
FIN	Peda.net several bioeconomy films youtube	<a href="https://www.youtube.com/playlist?list=PLaYtuSKwyEfNeLKc0fQx8vx3Sx2iChkY">https://www.youtube.com/playlist?list=PLaYtuSKwyEfNeLKc0fQx8vx3Sx2iChkY</a>									
FIN	Films	<a href="http://areena.yle.fi/1-3936894">http://areena.yle.fi/1-3936894</a>									
FIN	Finnish Future science videos										<a href="https://suomentulevaisuus.com">https://suomentulevaisuus.com</a>
FIN	educational materials	<a href="https://www.smy.fi/opeta-opi/opetusmateriaaleja/">https://www.smy.fi/opeta-opi/opetusmateriaaleja/</a>									Finnish Forest Association
FIN	educational materials	<a href="http://www.smy.fi/en/teach-learn/material-for-schools">http://www.smy.fi/en/teach-learn/material-for-schools</a>									Finnish Forest Association
FIN	internet based educational game	<a href="http://nordicedu.com/blogiopetusmateriaali_havina">http://nordicedu.com/blogiopetusmateriaali_havina</a>									Finnish Forest Association
FIN	list of the information sources	<a href="https://www.smy.fi/en/kategoria/forest-fi-en/">https://www.smy.fi/en/kategoria/forest-fi-en/</a>									
FIN	educational material /climate change	<a href="http://ilmasto.org/">http://ilmasto.org/</a>									Youth Academy Ilmari-project
FIN	video	<a href="https://www.youtube.com/watch?v=XEddadKolz8">https://www.youtube.com/watch?v=XEddadKolz8</a>									
FIN	video	<a href="https://www.youtube.com/watch?v=5ji53corH8E">https://www.youtube.com/watch?v=5ji53corH8E</a>									

## Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
FIN	educational materials	<a href="https://ilmasto-opas.fi/fi/ilmastonmuutos/videot-ja-visualisoinnit/-/artikkeli/ed313bc9-e4c1-4677-a508-223253832ec8/oppimistehtavat.html">https://ilmasto-opas.fi/fi/ilmastonmuutos/videot-ja-visualisoinnit/-/artikkeli/ed313bc9-e4c1-4677-a508-223253832ec8/oppimistehtavat.html</a>									Network organisation
FIN	educational materials	<a href="https://ilmasto-opas.fi/en/kunnat/opetus-ja-kulttuuri">https://ilmasto-opas.fi/en/kunnat/opetus-ja-kulttuuri</a>									Syke, Finnish Meteorological Inst and Aalto Uni
FIN	information	<a href="https://wwf.fi/vaikuta-kanssamme/vihrea-talous/">https://wwf.fi/vaikuta-kanssamme/vihrea-talous/</a>									
FIN	video	video : <a href="https://wwf.fi/lihaopas/">https://wwf.fi/lihaopas/</a>									
FIN	information sources	<a href="https://www.jamk.fi/en/Services/library/Guides/">https://www.jamk.fi/en/Services/library/Guides/</a>									
FIN	website	<a href="https://ouluma.fi/koululaisvierailut/">https://ouluma.fi/koululaisvierailut/</a>									
FIN	<a href="http://blogs2.abo.fi/skolresurs/kurser/">http://blogs2.abo.fi/skolresurs/kurser/</a>	<a href="https://www.youtube.com/user/skolresurs1/videos">https://www.youtube.com/user/skolresurs1/videos</a>									
FIN	website	<a href="https://www.hsy.fi/fi/opettajalle/Sivut/default.aspx">https://www.hsy.fi/fi/opettajalle/Sivut/default.aspx</a>									
FIN	website	<a href="http://www.plastics.fi/opetusmateriaalit/">http://www.plastics.fi/opetusmateriaalit/</a>									
FIN	website	Opetin.fi									
FIN	informatin	<a href="https://www.forestindustries.fi/publications/">https://www.forestindustries.fi/publications/</a>									
FIN	forest information/bioeconomy	<a href="http://www.metsagroup.com/en/media/videos/Pages/default.aspx">http://www.metsagroup.com/en/media/videos/Pages/default.aspx</a>									
FIN	case stories	<a href="http://www.metsagroup.com/en/media/case-stories/Pages/default.aspx">http://www.metsagroup.com/en/media/case-stories/Pages/default.aspx</a>									
FIN	show cases	<a href="http://www.cleantechfinland.com/showcases">http://www.cleantechfinland.com/showcases</a>									
GER	Lesson module "Unterrichtseinheit Nachwachsende Rohstoffe"	<a href="https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Examensarbeit.pdf">https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Examensarbeit.pdf</a> ; <a href="https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Stunden_bersicht.pdf">https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Stunden_bersicht.pdf</a> ; <a href="https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Experimentieranleitung.pdf">https://www.fnr.de/fileadmin/allgemein/literatur/Schulmaterial/Experimentieranleitung.pdf</a>	Primary schools	German	excerpt from master Thesis, lesson units about BB products with focus on starch, oil plants, including instructions for experiments (i.e. making glue, cream)	Yes	No	No	No	No	FNR
GER	website	<a href="http://www.bauerhubert.de/">http://www.bauerhubert.de/</a>	Primary schools	German	short stories about BB products and energy based on "Bauer Hubert" (Farmer Hubert), online games, Comics, Music, Radio play	Yes	No	No	No	No	FNR
GER	Lesson modules "Unterrichtspaket Nachwachsende Rohstoffe"	<a href="https://www.fnr.de/service/bildung-schule/lehrrmaterialien-fuer-den-schulunterricht/">https://www.fnr.de/service/bildung-schule/lehrrmaterialien-fuer-den-schulunterricht/</a> ; <a href="https://www.fnr.de/service/bildung-schule/lehrrmaterialien-fuer-den-schulunterricht/lehrerheft/">https://www.fnr.de/service/bildung-schule/lehrrmaterialien-fuer-den-schulunterricht/lehrerheft/</a>	Secondary schools	German	4 lesson modules, Module 1: class 5-6, Module 2: class 6-8, Module 3: class 8-10, Module 4: class 9-12, teaching material can also be ordered with DVD	No	Yes	No	No	No	FNR
GER	Brochure "Bioenergie"	<a href="https://mediathek.fnr.de/broschuren/bioenergie/zeitbild-wissen-bioenergie.html">https://mediathek.fnr.de/broschuren/bioenergie/zeitbild-wissen-bioenergie.html</a>	Secondary schools	German	facts and figures, best-practice and critical aspects on BB energy, suitable for social studies.	No	Yes	No	No	No	Zeitbild Verlag und Agentur für Kommunikation GmbH
GER	Mini brochure Bioenergie kompakt"	<a href="https://mediathek.fnr.de/broschuren/bioenergie/zeitbild-wissen-bioenergie-kompakt.html">https://mediathek.fnr.de/broschuren/bioenergie/zeitbild-wissen-bioenergie-kompakt.html</a>	Secondary schools	German	Compact version of Brochure "Bio-based Energy"	No	Yes	No	No	No	Zeitbild Verlag und Agentur für Kommunikation GmbH

# Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
GER	Lesson module "Biobasierte Wirtschaft: Neue Produkte aus Natur gemacht"	<a href="https://www.lehrer-online.de/artikel/fa/biobasierte-wirtschaft-neue-produkte-aus-natur-gemacht/">https://www.lehrer-online.de/artikel/fa/biobasierte-wirtschaft-neue-produkte-aus-natur-gemacht/</a>	Secondary schools	German	interdisciplinary lesson series (5 lessons) for class 9-12 with brochure and explanation movie	No	Yes	No	No	No	Bundesministerium für Ernährung und Landwirtschaft (Hrsg)
GER	Lesson module "Energiepflanzen: Vielfältige Power, die nachwächst"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-03">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-03</a>	Secondary Schools	German	module energy plants, ("Lehrermagazin lebens.mittel.punkt" 03/2012)	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Lesson module "Organische Chemie für grüne Power: Energiegewinnung aus Pflanzen"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-04">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-04</a>	Secondary Schools	German	"Lehrermagazin lebens.mittel.punkt" 04/2012 module BB energy, follow-up 03/2012	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Brochure "3 Minuten Info Energiepflanzen"	<a href="http://information-medien-agrar.de/webshop/3-Minuten-Info-Energiepflanzen">http://information-medien-agrar.de/webshop/3-Minuten-Info-Energiepflanzen</a>	Teacher, Students, Primary and Secondary Schools	German	two-pager "3 Minute Info on energy plants"	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Poster "Energiepflanzen"	<a href="http://information-medien-agrar.de/webshop/poster-energiepflanzen">http://information-medien-agrar.de/webshop/poster-energiepflanzen</a>	Secondary Schools	German	Poster and worksheets on energy plants and biobased energy	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Brochure "Sachinformation Nachwachsende Rohstoffe"	<a href="http://information-medien-agrar.de/webshop/Sachinformation-Nachwachsende-Rohstoffe">http://information-medien-agrar.de/webshop/Sachinformation-Nachwachsende-Rohstoffe</a>	Secondary Schools	German	Introduction to Renewable Resources	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Lesson Module "Vom Acker für die Fabrik. Nachwachsende Industrierohstoffe"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2010-03">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2010-03</a>	Primary and Secondary Schools	German	Lesson module industrial crops/ renewable resources (Lehrermagazin lebens.mittel.punkt 3/2010)	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Lesson module "Holz - heiß begehrt. Wärme und Werkstoff aus dem Wald"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2015-04">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2015-04</a>	Primary Schools	German	Lesson Module about energy and products made from wood (Lehrermagazin lebens.mittel.punkt 4/2015)	Yes	No	No	No	No	Information medien.agrar e.V.
GER	Lesson module "Biokunststoffe"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2013-03">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2013-03</a>	Secondary Schools	German	Lesson Module on bioplastics (Lehrermagazin lebens.mittel.punkt 3/2013)	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Brochure "3 Minuten Info Mais"	<a href="http://information-medien-agrar.de/webshop/3-Minuten-Info-Mais">http://information-medien-agrar.de/webshop/3-Minuten-Info-Mais</a>	Teacher, Students, Primary and Secondary Schools	German	two-pager "3 Minute Info on maize"	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Lesson module "Die Maispflanze"	<a href="http://information-medien-agrar.de/webshop/Die-Maispflanze">http://information-medien-agrar.de/webshop/Die-Maispflanze</a>	Secondary Schools	German	Brochure with Information and materials about the maize plant for Primary and secondary education	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Lesson module "Grügelbe Energie voraus! Der Energielieferant Mais"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2011-01">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2011-01</a>	Secondary Schools	German	Lesson module on maize as energy plant (Lehrermagazin lebens.mittel.punkt 1/2011)	No	Yes	No	No	No	Information medien.agrar e.V.

## Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
GER	Lesson module "Die Maispflanze - Großes Getreide mit vielerlei Nutzen"	<a href="http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-01">http://information-medien-agrar.de/webshop/Lehrermagazin-lebensmittelpunkt-2012-01</a>	Primary Schools	German	Lesson module on maize (Lehrermagazin lebens.mittel.punkt 1/2012)	Yes	No	No	Yes	No	Information medien.agrar e.V.
GER	Brochure "3 Minuten Info Raps"	<a href="http://information-medien-agrar.de/webshop/3-Minuten-Info-Raps">http://information-medien-agrar.de/webshop/3-Minuten-Info-Raps</a>	Teacher, Students, Primary and Secondary Schools	German	two-pager "3 Minute Info on rapeseed"	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Poster "Raps"	<a href="http://information-medien-agrar.de/webshop/Poster-Raps">http://information-medien-agrar.de/webshop/Poster-Raps</a>	Secondary Schools	German	Poster rapeseed	No	Yes	No	No	No	Information medien.agrar e.V.
GER	Brochure "3 Minuten Info Sonnenblume"	<a href="http://information-medien-agrar.de/webshop/3-Minuten-Info-Sonnenblumen">http://information-medien-agrar.de/webshop/3-Minuten-Info-Sonnenblumen</a>	Teacher, Students, Primary and Secondary Schools	German	two-pager "3 Minute Info on sunflowers"	Yes	Yes	No	No	No	Information medien.agrar e.V.
GER	Brochure "Holz steckt voller Energie - Grundschule"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Primary Schools	German	subject: Wood with Focus on energy	Yes	No	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Brochure "Aus Natur gemacht NawaRo - Grundschule"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Primary Schools	German	General introduction to use of renewable resources	Yes	No	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Brochure "Biokunststoffe - Die biobasierte Alternative - Sekundarstufe 1+2"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	subject: Plastics, bio-based Plastics, Recycling,	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Brochure "Energie aus Biogas - Sekundarstufe 1+2"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	subject: biogas	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Biokunststoffe"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	Bio-based plastics	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "CO2 Kreisläufe Energieträger"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	CO2-Cycle	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Energie aus Biogas"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	Energy from biogas	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Energiepflanzen 1"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	energy plants 1	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Energiepflanzen 2"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	energy plants 2	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Holz steckt voller Energie"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	Wood and energy	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Nawaro Kreis"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	Renewable Resources	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Nachwachsende Rohstoffe - Vielfalt entdecken"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildungsbildungsmaterialien/</a>	Secondary Schools	German	Diversity of Renewable Resources	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen

# Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
GER	Poster "Ölpflanzen - Die Ölfelder der Zukunft wachsen oben"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildung/bildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildung/bildungsmaterialien/</a>	Secondary Schools	German	oil plants	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Poster "Pflanzen im Rohstoffgarten"	<a href="https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildung/bildungsmaterialien/">https://www.lh.hessen.de/umwelt/biorohstoffnutzung/umweltbildung/bildungsmaterialien/</a>	Secondary Schools	German	resources in the garden	No	Yes	No	No	No	Landesbetrieb Landwirtschaft Hessen
GER	Lesson Module "Raps – eine Kulturpflanze mit Perspektive"	<a href="http://www.ufop.de/medien/downloads/biodiesel-and-co/unterrichtsmaterial/">http://www.ufop.de/medien/downloads/biodiesel-and-co/unterrichtsmaterial/</a>	Secondary Schools	German	subject: rapeseed for classes 9/10	No	Yes	No	No	No	Union zur Förderung von Öl- und Proteinpflanzen e.V.
GER	Book "Nachwachsende Rohstoffe"	<a href="https://www.vci.de/vci/downloads-vci/textheft-farbig.pdf">https://www.vci.de/vci/downloads-vci/textheft-farbig.pdf</a> ;	Secondary Schools	German	text book with working Sheets with focus on use of renewable resources in chemical sector	No	Yes	No	No	No	Verband der chemischen Industrie e.V.
GER	Worksheet "Nachwachsende Rohstoffe"	<a href="https://www.vci.de/vci/downloads-vci/arbeitsblaetter-farbig.pdf">https://www.vci.de/vci/downloads-vci/arbeitsblaetter-farbig.pdf</a>	Secondary Schools	German	Worksheets Renewable Resources	No	Yes	No	No	No	Verband der chemischen Industrie e.V.
GER	Poster set	<a href="https://mediathek.fnr.de/posterreihe.html">https://mediathek.fnr.de/posterreihe.html</a> ; <a href="https://mediathek.fnr.de/grafiken/poster.html">https://mediathek.fnr.de/grafiken/poster.html</a>	Secondary Schools	German	Brochure with Posters, subjects: bioenergy, Biogas, construction, lubricants, plastics	No	Yes	No	No	No	FNR
GER	Lesson Modules "Bioökonomie und nachwachsende Rohstoffe - Informationsmaterialien für berufsbildende Schulen"	<a href="http://www.zeitbild.de/2016/12/20/nachwachsende-rohstoffe-und-biooekonomie/">http://www.zeitbild.de/2016/12/20/nachwachsende-rohstoffe-und-biooekonomie/</a>	Vocational Schools	German	Three Lesson modules for Vocational education with Focus on construction, 1. introduction to bioeconomy, 2. construction and construction materials, 3. insulation	No	No	Yes	No	No	Zeitbild Verlag und Agentur für Kommunikation GmbH
GER	Lesson Modules "Nachwachsende Rohstoffe"	<a href="http://www.oebz.de/default.asp?Menue=85">http://www.oebz.de/default.asp?Menue=85</a>	Primary Schools	German	Lesson modules for classes 3 - 6, fibre/ starch/energy/ dying crops,	Yes	No	No	No	No	Ökologisches Bildungszentrum München
GER	Brochure "Kunststoffe aus nachwachsenden Rohstoffen"	<a href="https://www.bio-pro.de/de/angebot/publikationen/">https://www.bio-pro.de/de/angebot/publikationen/</a>	Secondary Schools	German	Brochure with focus on bioplastics in Baden-Württemberg	No	Yes	No	No	No	BIOPRO Baden-Württemberg GmbH
GER	short Video Clip "Neue Produkte: Aus Natur gemacht – Aus Pflanzen wird Plastik"	<a href="http://www.bmel.de/DE/Landwirtschaft/Nachwachsende-Rohstoffe/NachwachsendeRohstoffe-Stoffliche-Nutzung/Interaktiv/bbw-erklairfilm2_node.html;jsessionid=EE6382A8C10BE2FE001EE28522BBFA7B_1_cid358">http://www.bmel.de/DE/Landwirtschaft/Nachwachsende-Rohstoffe/NachwachsendeRohstoffe-Stoffliche-Nutzung/Interaktiv/bbw-erklairfilm2_node.html;jsessionid=EE6382A8C10BE2FE001EE28522BBFA7B_1_cid358</a>	Secondary Schools	German	Short video clip with general introduction to biobased products	No	Yes	No	No	No	Bundesministerium für Ernährung und Landwirtschaft
GER	short Video Clip "Nachgefragt: Kann man Kunststoffe aus nachwachsenden Rohstoffen herstellen?"	<a href="http://www.bmel.de/SharedDocs/Videos/2_Landwirtschaft/BiobasierteWirtschaft/Biobasierte_Wirtschaft_Erklairfilm_2_Interview_Video.html">http://www.bmel.de/SharedDocs/Videos/2_Landwirtschaft/BiobasierteWirtschaft/Biobasierte_Wirtschaft_Erklairfilm_2_Interview_Video.html</a>	Secondary Schools	German	short Video Clip FAQ about bioplastics answered by Dr. André Lehmann (Fraunhofer-Institut für Angewandte Polymerforschung in Potsdam)	No	Yes	No	No	No	Bundesministerium für Ernährung und Landwirtschaft
GER	Website "Endlich Wachstum"	<a href="https://www.endlich-wachstum.de/">https://www.endlich-wachstum.de/</a>	Primary and Secondary Schools	German (partly in English)	Portal with educational materials about sustainability and economics - relevant?	Yes	Yes	No	No	No	FairBindung e.V./ Konzeptwerk Neue Ökonomie
GER	MOOC "eLecture bioenergy und Biogas"	<a href="http://offene.uni-rostock.de/electure-biogas/">http://offene.uni-rostock.de/electure-biogas/</a>		Englisch	three online-lectures à 9-12 minutes - Lecture 1: Biogas production, Lecture 2: Biogas upgrading, Lecture 3: Biogas in the energy system – today and tomorrow	Yes	Yes	No	No	No	Universität Rostock

## Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
GER	MOOC "Bioenergie"	<a href="http://offene.uni-rostock.de/offener-onlinekurs-bioenergie/">http://offene.uni-rostock.de/offener-onlinekurs-bioenergie/</a>		German	8 modules inter alia renewable resources in Germany, Basics in Biogas production, legal aspects, Impacts on Biogas production, energetic and industrial use of renewable resources	Yes	Yes	No	No	No	Universität Rostock
GER	Presentation/ Introduction "Biobasierte Produkte - Nachwachsende Rohstoffe als Ersatz fürs Erdöl? Die Natur als chemische Fabrik"	<a href="https://grundschule.bildung-rp.de/fileadmin/user_upload/grundschule.bildung-rp.de/Downloads/Naturwissenschaftliches_Lernen/nachwachsende_Rohstoffe.pdf">https://grundschule.bildung-rp.de/fileadmin/user_upload/grundschule.bildung-rp.de/Downloads/Naturwissenschaftliches_Lernen/nachwachsende_Rohstoffe.pdf</a>	Primary and Secondary Schools	German	Presentation with broad overview about renewable resources and their usage for bio-based products	Yes	Yes	No	No	No	Fraunhofer Institut für chemische Technologie/ Bildungsserver Rheinland-Pfalz
GER	Brochure Neue Produkte aus Natur gemacht. Nachwachsende Rohstoffe im Alltag	<a href="http://www.bmel.de/SharedDocs/Downloads/Broschueren/NeueProdukteNaWaRoImAlltag.pdf?__blob=publicationFile">http://www.bmel.de/SharedDocs/Downloads/Broschueren/NeueProdukteNaWaRoImAlltag.pdf?__blob=publicationFile</a>		German	Brochure with General introduction to renewable resources and bio/based products and examples						Bundesministerium für Ernährung und Landwirtschaft
GER	Biogas / Was ist das eigentlich	<a href="https://www.biogas.org/edcom/webfvb.nsf/id/DE-Grundschulen?open&amp;ccm=010040010">https://www.biogas.org/edcom/webfvb.nsf/id/DE-Grundschulen?open&amp;ccm=010040010</a>	Primary Schools	German	lesson module on biogas	Yes	No	No	No	No	Fachverband Biogas e.V.
GER	Workshop/ Brochure "Mission Bioenergie"	<a href="http://www.leea-mv.de/index.php/bioenergie-workshop">http://www.leea-mv.de/index.php/bioenergie-workshop</a>	Primary and Secondary Schools	German	Leea offers workshops on bioenergy in Schools. Brochure for teachers with Background Information is available online.	Yes	Yes	No	No	No	Landeszentrum für erneuerbare Energien Mecklenburg-Vorpommern GmbH
NL	Lesson Set (Lespakket)	<a href="https://www.coebbe.nl/content/lesmateriaal-basisonderwijs">https://www.coebbe.nl/content/lesmateriaal-basisonderwijs</a>	Primary Schools	Dutch	Lesson series (4 lessons) for primary schools, online available; Subjects: BB Plastics, BB Fibers, BB Value, BB Energy	Yes	No	No	No		Centre of Expertise Biobased Economy (CoEBBE)
NL	Knowledge Clips (Kennis Clips)	<a href="https://www.coebbe.nl/kennisclips">https://www.coebbe.nl/kennisclips</a>	Secondary schools	Dutch (some English)	Short Video Clips on several Biobased subjects and CoEBBE	No	Yes	Yes			Centre of Expertise Biobased Economy (CoEBBE)
NL	Lesson modules Sustainability	<a href="http://www.c-test.eu/nederlands">http://www.c-test.eu/nederlands</a>		Dutch (English and several other EU languages also available)	Lesson modules developed in EU-funded project C-TEST	No	Yes	Yes			C-TEST (Clean Tech Employees & Students)
NL	GreenIsland (GroenEiland)	<a href="http://www.groeneiland.nl/">http://www.groeneiland.nl/</a>	VMBO-schools (secondary education, preparing for VET)	Dutch	Online 3D game about sustainability	No	Yes	No	No		Delft University of Technology
NL	Experiment/presentation: make bioplastic	<a href="http://www.expeditionchemistry.nl/spreekbeurt-bioplactic/">http://www.expeditionchemistry.nl/spreekbeurt-bioplactic/</a>	Primary school students	Dutch	Web page offering inspiration for a primary school presentation on bioplastics	Yes	No	No	No		Stichting C3

## Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
NL	MOOC: Op naar een Biobased samenleving	<a href="http://www.wur.nl/nl/Onderwijs-Opleidingen/Studiekeizers-bachelor/Op-naar-een-Biobased-samenleving-1.htm">http://www.wur.nl/nl/Onderwijs-Opleidingen/Studiekeizers-bachelor/Op-naar-een-Biobased-samenleving-1.htm</a>	Secondary school students	Dutch	Online lesson series for students	No	Yes	No	No		Wageningen University & Research
NL	Leerarrangement: Introduction to Biobased Economy	<a href="https://maken.wikiwijs.nl/51426/Introduction_to_the_Biobased_Economy#!page-1004934">https://maken.wikiwijs.nl/51426/Introduction_to_the_Biobased_Economy#!page-1004934</a>	Bachelor students	English	Lesson modules 'Introduction to the Biobased Economy'	No	No	No	Yes		Centre of Biobased Economy (CBBE)
NL	Book	<a href="http://hr.surfsharekit.nl:8080/get/smpid:54018/DS1">http://hr.surfsharekit.nl:8080/get/smpid:54018/DS1</a>	Bachelor students/professionals	English	Publication 'Biomass as Feedstock for the Industry - Road to Perdition or the Promised Land?' which describes some of the hurdles and challenges that the transition to the bio-based economy faces.	No	No	No	Yes	Yes	Rotterdam University of Applied Sciences
NL	Model	<a href="https://energytransitionmodel.com/?locale=nl">https://energytransitionmodel.com/?locale=nl</a>	Everyone interested	Dutch	Het energietransitiemodel biedt iedereen de mogelijkheid om op basis van betrouwbare gegevens toekomstscenario's door te rekenen voor de energievoorziening in Nederland in de periode van heden tot 2050	Yes	Yes	Yes	Yes	Yes	Quintel Intelligence
NL	Lesson Modules Energy	<a href="https://ontdekkasteel.nl/wp-content/uploads/2012/11/WT-EPZ-Inleiding.pdf">https://ontdekkasteel.nl/wp-content/uploads/2012/11/WT-EPZ-Inleiding.pdf</a>	Primary school students	Dutch	Deze energielessen zijn bedoeld voor de groepen 6, 7 en 8 van het basisonderwijs om kennis te maken met het thema energie.	Yes	No	No	No	No	Ontdekkasteel
NL	Education platform	<a href="https://www.ellenmacarthurfoundation.org/">https://www.ellenmacarthurfoundation.org/</a>	Everyone interested	English	Insights and content to support circular economy education	No	No	No	Yes	Yes	Ellen MacArthur Foundation
NL	MOOC: Micromaster Program Biobased Sciences for Sustainability (6 MOOCs)	<a href="https://www.edx.org/micromasters/wageningenx-biobased-sciences-sustainability">https://www.edx.org/micromasters/wageningenx-biobased-sciences-sustainability</a>	Bachelor students/professionals	English	A program (6 MOOCs) that enables students/professionals to discover new resources and help companies make the switch from fossil to renewable, biobased resources	No	No	No	Yes	Yes	Wageningen University & Research
NL	Renewable Energy and Biodiesel Curriculum	<a href="http://web.cals.uidaho.edu/biodiesel/4-h-curriculum-for-ages-8-12/">http://web.cals.uidaho.edu/biodiesel/4-h-curriculum-for-ages-8-12/</a>	Primary schools	English	Lesson series (4 lessons) for ages 8-12	Yes	No	No	No	No	University of Idaho
NL	MOOC: industrial Biotechnology	<a href="https://online-learning.tudelft.nl/courses/industrial-biotechnology/">https://online-learning.tudelft.nl/courses/industrial-biotechnology/</a>	Bachelor students/professionals	English	Online lesson series for students	No	No	No	Yes	Yes	Delft University of Technology, BE-Basic consortium and University of Campinas
NL	MOOC: Introduction to the Biobased	<a href="https://www.canvas.net/browse/centreofexpertise/courses/biobased-economy-3">https://www.canvas.net/browse/centreofexpertise/courses/biobased-economy-3</a>	Bachelor students/professionals	English	Online lesson series for students	No	No	No	Yes	Yes	Centre of Expertise Biobased Economy (CoEBBE)
NL	Keuzedeel introductie BBE: CIV tuinbouw en uitgangsmaterialen (pfd)	<a href="http://www.civtu.nl/nl/civtu/modules/module-biobased.htm">http://www.civtu.nl/nl/civtu/modules/module-biobased.htm</a>									
NL	Lesmateriaal	<a href="http://www.natuurlijkduurzaam.nl/nl/lesmateriaal.php">http://www.natuurlijkduurzaam.nl/nl/lesmateriaal.php</a>	primary schools	Dutch	Playful online education material on 4 levels	yes	no	no	no	no	Natuurlijk Duurzaam (Shell and EXED Internet)

## Appendix B: List of educational materials

Country	Type of Material	Online availability	Target audience	Language(s)	Description	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other	Organisation
NL	Lesson Module: Algen voor het leven	<a href="http://www.wur.nl/nl/Onderwijs-Opleidingen/Docenten-vwo/Vakken/Biologie/Algen-voor-het-leven.htm">http://www.wur.nl/nl/Onderwijs-Opleidingen/Docenten-vwo/Vakken/Biologie/Algen-voor-het-leven.htm</a>	secondary academic students	Dutch	Lesmodule incl praktijk en schriftelijke toetsing	no	yes	no	no	no	Wageningen University & Research
NL	Lesson series Biomass Conversion	<a href="http://www.biomassaconversie.nl/">http://www.biomassaconversie.nl/</a>	Secondary school students	Dutch	Korte lessenserie voor gebruik binnen scheikundepracticum	no	yes	no	no	no	Utrecht University
NL	Short lesson series: from fossil to biomass	<a href="https://www.nemosciencemuseum.nl/media/filer_public/ac/ce/acc545d-b857-4155-9a03-538784370883/bwm_biogrondstoffen_leerling.pdf">https://www.nemosciencemuseum.nl/media/filer_public/ac/ce/acc545d-b857-4155-9a03-538784370883/bwm_biogrondstoffen_leerling.pdf</a>	secondary and vocational students	Dutch	Serie van 2/3 lessen over biogrondstoffen en duurzaamheid	no	yes	yes	no	no	NEMO
NL	Community of practise	<a href="https://ebbeycop.wordpress.com/">https://ebbeycop.wordpress.com/</a>	Vocational students	Dutch, English, Dansk, Deutsch, Slovenský, Suomi, Magyar	Learning and support materials on wide BBE topics	no	no	yes	no	no	Project Ebbey Community of Practise
NL	Webinars and cohesive modules	<a href="http://agenergyia.org/">http://agenergyia.org/</a>	Bachelor student / university students	English	Learning/teaching modules and webinars	no	no	yes	yes	yes	Agriculture Energy Curriculum
NL	Study manual Biobased Economy course	<a href="http://edepot.wur.nl/295341">http://edepot.wur.nl/295341</a>	Bachelor student / university students	English	Study manual to use as a course on BBE	no	no	no	Yes	Yes	HAS Den Bosch
NL	MOOC: Advanced Bio Conversion	<a href="http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Advanced-Biobased-Conversion.htm">http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Advanced-Biobased-Conversion.htm</a>	academic students	English	Online Course focused solely on biobased conversion	no	no	yes	yes	yes	Wageningen University & Research
NL	MOOC: Advanced Bio Refinery	<a href="http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Advanced-Biorefinery.htm">http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Advanced-Biorefinery.htm</a>	academic students	English	Oline Course to design an effective bio refinery	no	no	yes	yes	yes	Wageningen University & Research
NL	MOOC: Biobased principles&opportunities	<a href="http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Biobased-Principles-Opportunities.htm">http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Biobased-Principles-Opportunities.htm</a>	academic students	English	Online Course about BBE in general and using it for a sustainable future with biomass resources	no	no	yes	yes	yes	Wageningen University & Research
NL	MOOC: Biobased processes and implementation	<a href="http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Biobased-Processes-Implementation.htm">http://www.wur.nl/en/Education-Programmes/Online-Education/MOOC/Biobased-Processes-Implementation.htm</a>	academic students	English	Online course how to create BB products and how to market and sell them	no	no	yes	yes	yes	Wageningen University & Research
NL	MOOC: Circular economy	<a href="http://www.wur.nl/nl/Onderwijs-Opleidingen/Online-onderwijs/MOOC.htm">http://www.wur.nl/nl/Onderwijs-Opleidingen/Online-onderwijs/MOOC.htm</a>	academic students	English	Online course to learn to make good structures of a BB supply chain	no	no	yes	yes	yes	Wageningen University & Research
NL	Kennisclips Biobased/CIV module Biobased	<a href="http://www.civtu.nl/nl/civtu/modules/module-biobased.htm">http://www.civtu.nl/nl/civtu/modules/module-biobased.htm</a>	vocational students	English	Clip and other material about biobased	no	no	yes	yes	no	Centrum voor innovatief vakmanschap TU
NL	Introductiemodule Green chemistry	<a href="http://www.beyondbenign.org/K12education/highschool.html">http://www.beyondbenign.org/K12education/highschool.html</a>	secondary school	English	Lessons for teachers to both do/practice and teach	no	yes	no	no	yes	Beyond Benign
NL	Study material biomass conversion	<a href="http://www.pyroknown.eu/">http://www.pyroknown.eu/</a>	Everyone interested	English	Study material for learning about biomass conversion	no	yes	yes	yes	yes	Pyroknown



# Appendix C: List of educational actors

Country	Organisation	Website	Type	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other
BE	ACTA	<a href="http://www.acta-vzw.be/nl/cursus/aanmaken-biodiesel.arcx">http://www.acta-vzw.be/nl/cursus/aanmaken-biodiesel.arcx</a>	National	Yes				
BE	Biogas-E	<a href="http://www.biogas-e.be/">http://www.biogas-e.be/</a>	National					Yes
BE	Ekoli vzw	<a href="http://www.ekoli.be/">http://www.ekoli.be/</a>	National	Yes				
BE	Hogeschool Gent	<a href="https://www.hogent.be/externe-partners/secundair-onderwijs/workshops/synthese-en-analyse-van-biodiesel/">https://www.hogent.be/externe-partners/secundair-onderwijs/workshops/synthese-en-analyse-van-biodiesel/</a>	National	Yes				
BE	Magma Nova	<a href="http://www.magmanova.com">http://www.magmanova.com</a>	National	Yes				
BE	ReaGent	<a href="http://www.reagent.org">http://www.reagent.org</a>	National	Yes				
BE	Technopolis	<a href="https://www.technopolis.be/nl/fiche/scholen-aanbod/lab-scholen/algemeen/lab-2e-graad-so/">https://www.technopolis.be/nl/fiche/scholen-aanbod/lab-scholen/algemeen/lab-2e-graad-so/</a>	National	Yes				
BE	UHasselt	<a href="http://www.uhasselt.be/UH/Leerlingenpractica/Leerlingenworkshops-industriële-ingenieurswetenschappen.html">http://www.uhasselt.be/UH/Leerlingenpractica/Leerlingenworkshops-industriële-ingenieurswetenschappen.html</a>	National	Yes				
BE	Vlaams Instituut voor Biotechnologie	<a href="http://www.vib.be">http://www.vib.be</a>	National					Yes
FIN	Ministry of Education	<a href="http://minedu.fi/en/frontpage">http://minedu.fi/en/frontpage</a>	national	Yes	Yes	Yes	Yes	Yes
FIN	Finnish National Agency for Education	<a href="http://www.oph.fi/english">http://www.oph.fi/english</a>	national	Yes	Yes	Yes	Yes	Yes
FIN	Finnish National Agency for Education	<a href="http://www.oph.fi/english">http://www.oph.fi/english</a>	national	Yes	Yes	Yes	Yes	Yes
FIN	Peda.net school network; Finnish Institute for Educational Research	<a href="http://peda.net">peda.net</a>	national	No	No	No	No	No
FIN	Biotalous	<a href="http://www.biotalous.fi/">http://www.biotalous.fi/</a>	national	No	No	No	No	No
FIN	VTT Technical Research Centre of Finland	<a href="http://makingoftomorrow.com/">http://makingoftomorrow.com/</a>	international	Yes	Yes	Yes	Yes/No	Yes
FIN	Finnish Bioeconomy Cluster ,FIBIC			No	No	No	No	No
FIN	Clic Innovation	<a href="http://clicinnovation.fi/">http://clicinnovation.fi/</a>	national	No	No	No	No	No
FIN				No	No	No	No	No
FIN	Natural Resources Institute Finland (LUKE))	<a href="http://www.luke.fi">www.luke.fi</a>						
FIN	Metsäliitto Group	<a href="http://www.metsagroup.com">www.metsagroup.com</a>	international	No	No	No	No	No
FIN	Metsä Fibre Oy	<a href="http://www.metsafibre.com">www.metsafibre.com</a>	international	No	No	No	No	No
FIN	Finnish Environment Institute (SYKE)	<a href="http://www.syke.fi">www.syke.fi</a>	national	No	No	No	No	No
FIN	Cleantech	<a href="http://www.cleantechfinland.com">www.cleantechfinland.com</a>	international	No	No	No	No	No
FIN	Sykli Environmental School of Finland	<a href="http://www.sykli.fi">www.sykli.fi</a>	national	No	No	Yes	No	Yes/No
FIN	Metsäteollisuus ry, Forestindustries	<a href="http://www.metsateollisuus.fi">www.metsateollisuus.fi</a>	nat/int	No	No	No	No	Yes/No
FIN	Suomen metsäkeskus	<a href="http://www.metsakeskus.fi">www.metsakeskus.fi</a>	national					
FIN	Pohjoisen Keski-Suomen koulutuskuntayhtymä; Poke	<a href="http://www.poke.fi">www.poke.fi</a>	national			Yes		
FIN	The Jyväskylä Educational Consortium (JEC)	<a href="http://www.jao.fi">www.jao.fi</a>	national			Yes		
FIN	The Jyväskylä Educational Consortium (JEC), Jamsa	<a href="http://www.jao.fi">www.jao.fi</a>	national			Yes		
GER	Landesbetrieb Landwirtschaft Hessen	<a href="https://www.llh.hessen.de/">https://www.llh.hessen.de/</a>	Regional	Yes	Yes	No	No	
GER	Zeitbild Verlag und Agentur für Kommunikation GmbH	<a href="http://www.zeitbild.de/">http://www.zeitbild.de/</a>	National	No	Yes	No	No	
GER	Information medien.agrar e.V.	<a href="http://www.ima-agrar.de/">http://www.ima-agrar.de/</a>	National	No	Yes	No	No	
GER	Fachagentur Nachwachsende Rohstoffe	<a href="http://www.fnr.de">www.fnr.de</a>	National	Yes	Yes	Yes	No	Yes
GER	Bundesministerium für Ernährung und Landwirtschaft	<a href="http://www.bmel.de/DE/Startseite/startseite_node.html">http://www.bmel.de/DE/Startseite/startseite_node.html</a>	National	No	Yes	No	No	
GER	Union zur Förderung von Öl- und Proteinpflanzen e.V.	<a href="http://www.ufop.de/">http://www.ufop.de/</a>	National	No	Yes	No	No	
GER	Verband der chemischen Industrie e.V.	<a href="https://www.vci.de/startseite.jsp">https://www.vci.de/startseite.jsp</a>	National	No	Yes	No	No	
GER	Ökologisches Bildungszentrum München	<a href="http://www.oebz.de/">http://www.oebz.de/</a>	Regional	Yes	No	No	No	
GER	BIOPRO Baden-Württemberg GmbH	<a href="https://www.bio-pro.de/de/">https://www.bio-pro.de/de/</a>	Regional	No	Yes	No	No	
GER	Universität Rostock	<a href="https://www.uni-rostock.de/">https://www.uni-rostock.de/</a>	Regional	No	No	No	Yes	
GER	Institut für Energie- und Umweltforschung Heidelberg	<a href="https://www.ifeu.de/index.php?bereich=bil&amp;seite=startseite">https://www.ifeu.de/index.php?bereich=bil&amp;seite=startseite</a>	National	No	No	No	No	

# Appendix C: List of educational actors

Country	Organisation	Website	Type	Primary Education	Secondary Education	Vocational Education & Training	University Education	Other
GER	Wissenschaftszentrum Straubing	<a href="http://www.wz-straubing.de/default.asp?Menue=886&amp;MandantID=1">http://www.wz-straubing.de/default.asp?Menue=886&amp;MandantID=1</a>	Regional					
GER	Bioeconomy Science Center	<a href="https://www.biosc.de/start">https://www.biosc.de/start</a>	Regional					
GER	Universität Vechta ISPA Kompetenzzentrum Regionales Lernen	<a href="https://www.uni-vechta.de/einrichtungen-von-a-z/ispa/forschung/lernen-in-laendlichen-raeumen/">https://www.uni-vechta.de/einrichtungen-von-a-z/ispa/forschung/lernen-in-laendlichen-raeumen/</a>	Regional					
GER	Hessischer Bildungsserver	<a href="http://lernarchiv.bildung.hessen.de/globlern/">http://lernarchiv.bildung.hessen.de/globlern/</a>	Regional					
GER	Landesgeschäftsstelle Forschungsprogramm Bioökonomie Baden-Württemberg	<a href="http://www.bioeconomy-research-bw.de">www.bioeconomy-research-bw.de</a>	Regional					
GER	Landeszentrum für erneuerbare Energien Mecklenburg-Vorpommern GmbH	<a href="http://www.leea-mv.de/index.php/bioenergie-workshop">http://www.leea-mv.de/index.php/bioenergie-workshop</a>	Regional	Yes	Yes			
GER	WissenschaftsCampus Halle	<a href="http://www.sciencecampus-halle.de/index.php/homepage.html">http://www.sciencecampus-halle.de/index.php/homepage.html</a>	Regional					
NL	Centre of Biobased Economy (CBBE)	<a href="http://www.cbbe.nl/nl/cbbe.htm">http://www.cbbe.nl/nl/cbbe.htm</a>	National					
NL	Wageningen UR Food and Biobased Research	<a href="http://www.wur.nl/en/Expertise-Services/Research-Institutes/food-biobased-research.htm">http://www.wur.nl/en/Expertise-Services/Research-Institutes/food-biobased-research.htm</a>	National					
NL	BE-Basic Foundation (Biotechnology based Ecologically Balanced Sustainable Industrial Consortium)	<a href="http://www.be-basic.org/education/educational-programme.html">http://www.be-basic.org/education/educational-programme.html</a>	National	Yes	Yes	Yes	Yes	
NL	Centre of Expertise Biobased Economy (CoE BBE)	<a href="https://www.coebbe.nl/">https://www.coebbe.nl/</a>	National	Yes	Yes		Yes	
NL	Wetsus: European centre of excellence for sustainable water technology	<a href="https://www.wetus.nl/">https://www.wetus.nl/</a>	Regional					
NL	Centre of Expertise GreenPaC	<a href="http://www.greenpac.eu/nl/">http://www.greenpac.eu/nl/</a>	Regional					
NL	Centre of Expertise in Biotechnology and Analysis: HAN Biocentre	<a href="http://specials.han.nl/sites/biocentre/">http://specials.han.nl/sites/biocentre/</a>	Regional					
NL	Kenniscentrum Biobased Economy	<a href="https://www.hanze.nl/nld/onderzoek/kenniscentra/kenniscentrum-biobased-economy">https://www.hanze.nl/nld/onderzoek/kenniscentra/kenniscentrum-biobased-economy</a>	Regional	No	Yes	Yes	Yes	
NL	Centre of Expertise GreenPaC	<a href="http://www.greenpac.eu/nl/">http://www.greenpac.eu/nl/</a>	Regional					
NL	Centre of Expertise Water Technology	<a href="http://www.cew-leeuwarden.nl/home">http://www.cew-leeuwarden.nl/home</a>	Regional					
NL	Centre of Expertise for the Delta Technology: Delta Academy	<a href="https://www.deltaplatform.nl/nl">https://www.deltaplatform.nl/nl</a>	Regional					
NL	Chemelot Innovation and Learning Labs (CHILL)	<a href="http://chillabs.com/">http://chillabs.com/</a>	Regional					
NL	Biobase Europe Training Centre	<a href="http://www.bbetc.org/">http://www.bbetc.org/</a>	Regional					
NL	Centrum voor Innovatief Vakmanschap: Biobased	<a href="http://www.civbiobased.nl/">http://www.civbiobased.nl/</a>	Regional					
NL	Centrum voor Innovatief Vakmanschap: Water	<a href="http://www.civwater.nl/">http://www.civwater.nl/</a>	Regional					
NL	Centrum voor Innovatief Vakmanschap: Polymeren, Coating, Composieten	<a href="http://www.deltion.nl/civ">http://www.deltion.nl/civ</a>	Regional					
NL	Centrum voor Innovatief Vakmanschap: Duurzame Chemische Technologie (CIV DC Tech)	<a href="https://www.drenthecollege.nl/dctech">https://www.drenthecollege.nl/dctech</a>	Regional					
NL	Centrum voor Innovatief Vakmanschap: Tuinbouw en uitgangsmaterialen							
NL	PPS Biobased Economy Friesland	<a href="https://www.nordwincollege.nl/">https://www.nordwincollege.nl/</a>	Regional					
NL	Stichting C3	<a href="http://www.c3.nl">www.c3.nl</a>	National	Yes	Yes	No	No	
NL	Stichting Technasium	<a href="https://www.technasium.nl/content/stichting-technasium">https://www.technasium.nl/content/stichting-technasium</a>	National					
NL	Kennisnet Biobased Economy (web site)	<a href="http://www.kennisnetbiobased.nl/nl/biobasedeconomy/onderwijs">www.kennisnetbiobased.nl/nl/biobasedeconomy/onderwijs</a>	National	Yes	Yes	Yes	Yes	
NL	Groen Kennisnet (web site)	<a href="http://www.groenkennisnet.nl/nl/groenkennisnet/portalen.htm">http://www.groenkennisnet.nl/nl/groenkennisnet/portalen.htm</a>	National	Yes	Yes	Yes	Yes	
NL	Onderwijsdatabank	<a href="https://www.onderwijsdatabank.nl/">https://www.onderwijsdatabank.nl/</a>	National					
NL	Techfinder	<a href="http://techfinder.nl/hoer-werkt-techfinder">http://techfinder.nl/hoer-werkt-techfinder</a>	National					
NL	Techniekpact	<a href="http://www.techniekpact.nl/">http://www.techniekpact.nl/</a>	National					

# Appendix D: Questionnaire for primary informants

## T6.1: Mapping educational actors, teaching materials and university programs

Marian Kat-de Jong – 7 March 2017

### Introduction

Consulting primary informants is step 4 in task 6.1 (*mapping educational actors, teaching materials and university programs*). Consultation will be performed by phone interviews, after initial contact is established via e-mail. This questionnaire will be used to gather information on key educational actors in Biobased education: this includes actors that develop teaching and other educational materials and/or offer university programs dedicated fully or partially to BBE.

The interviews will be semi-structured: the interviewer will pose the questions in the interview guide in their own words, and be able to stray from the path the questionnaire offers in order to ask in-depth questions that lead to the information required. The interviewee is encouraged to take initiative and explain as much as possible. The whole interview will take up no more than 1 hour (the interviewer will keep track of time).

The conversation will not be transcribed. It will be recorded only with the consent of the interviewee for the sole purpose of listening back and enhancing the quality of the notes taken. Recordings will be deleted after the final report on this task is submitted.

### Interview guide

#### 1. Introduce the project (in own words):

The BioCannDo project aims to increase awareness of bio-based products – products partly or wholly made of biomass. In order to achieve this, communication and educational materials about the bioeconomy and bio-based products will be developed and distributed. Part of the process is mapping which key actors play a role in Biobased education, and which materials and programs are available. In a later stage, actors will be invited to take part in an educational Community of Practice.

#### 2. What kind of organization is [primary informant]?

- a. Which objectives?
- b. Relationship to education
- c. Relationship to Biobased Economy/other biobased topics
- d. Private/public/education...
- e. National/local/...
- f. Large organization/small/...

#### 3. In your country, which organizations are mainly involved in developing online educational content related to Biobased Economy, Biobased products or other Biobased topics?

(NOTE: the content must be freely available) *Examples are MOOC's, lesson sets, web sites or educational games etc.*

- a. In primary education
- b. In secondary education
- c. In vocational education
- d. In university education
- e. Other



4. In your country, which organizations/universities are mainly involved in offering programs (vocational, bachelor, master, minor etc) on Biobased Economy, Biobased products or other Biobased topics?  
(NOTE: the programs do NOT have to be free or freely available)
  - a. What kind of programs?
  - b. For which audiences?
  - c. Structural/incidental?
  - d. Main topics (primarily focused on BBE or just partially)?
  
5. In your opinion, which actors are most vocal or influential in Biobased education and why?
  
6. In your opinion, which actors are most productive in Biobased education and why?
  
7. Do you have specific suggestions for contact persons within these organizations? Are you willing to supply us with contact details?
  
8. Final questions:
  - a. Are you willing to review our overview of results from your country and provide us with feedback? This will probably be around the end of April.
  - b. Are you interested in being kept informed about the BioCannDo project?
  - c. Are you interested in taking part in the educational Community of Practice we will establish?

# Appendix E: Questionnaire for educational actors

## T6.1: Mapping educational actors, teaching materials and university programs

Marian Kat-de Jong – 7 March 2017

### Introduction

Consulting primary informants is step 4 in task 6.1 (*mapping educational actors, teaching materials and university programs*). Consultation will be performed by phone interviews, after initial contact is established via e-mail. This questionnaire will be used to gather information on key educational actors in Biobased education: this includes actors that develop teaching and other educational materials and/or offer university programs dedicated fully or partially to BBE.

The interviews will be semi-structured: the interviewer will pose the questions in the interview guide in their own words, and be able to stray from the path the questionnaire offers in order to ask in-depth questions that lead to the information required. The interviewee is encouraged to take initiative and explain as much as possible. The whole interview will take up no more than 1 hour (the interviewer will keep track of time).

The conversation will not be transcribed. It will be recorded only with the consent of the interviewee for the sole purpose of listening back and enhancing the quality of the notes taken. Recordings will be deleted after the final report on this task is submitted.

### Interview guide

#### 1. Introduce the project (in own words):

The BioCannDo project aims to increase awareness of bio-based products – products partly or wholly made of biomass. In order to achieve this, communication and educational materials about the bioeconomy and bio-based products will be developed and distributed. Part of the process is mapping which key actors play a role in Biobased education, and which materials and programs are available. In a later stage, actors will be invited to take part in an educational Community of Practice.

Your organization was mentioned by [primary informant] as a (key) educational actor in Biobased education in your country. In this interview, we would like to elaborate on this subject some more.

#### 2. What kind of organization is [educational actor]?

- a. Which objectives?
- b. Relationship to education
- c. Relationship to Biobased Economy/other biobased topics
- d. Private/public/education...
- e. National/local/...
- f. Large organization/small/...

#### 3. Does your organization develop online educational content/materials related to Biobased Economy, Biobased products or other Biobased topics? If yes:

(NOTE: the content must be freely available) *Examples are MOOC's, lesson sets, web sites or educational games etc.*

- a. In primary education
- b. In secondary education
- c. In vocational education

- d. In university education
- e. Other

4. Which materials are available?
  - a. What topic(s) do they cover?
  - b. What target audience(s) do they have?
  - c. Could you describe (sets of) the materials in a few sentences?
  - d. Where can the materials be found? (*links to web sites, downloads etc*)
  - e.
  
5. Does your organization offer educational programs (vocational, bachelor, master, minor etc) on Biobased Economy, Biobased products or other Biobased topics?  
(NOTE: the programs do NOT have to be free or freely available)
  - a. What kind of programs?
  - b. For which audiences?
  - c. Structural/incidental?
  - d. Scale (yearly number of participants)?
  - e. Main topics (primarily focused on BBE or just partially)?
  - f. ...
  
6. In your opinion, which actors are most vocal or influential in Biobased education and why?
  
7. In your opinion, which actors are most productive in Biobased education and why?
  
8. Do you have specific suggestions for contact persons within these organizations? Are you willing to supply us with contact details?
  
9. Final questions:
  - a. Are you interested in being kept informed about the BioCannDo project?
  - b. Are you interested in taking part in the educational Community of Practice we will establish?