D1.1 GenB Resources Library

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0.1	15/06/2023	Joao Gaspar	General review

Table of Abbreviations and Acronyms

Abbreviation	Meaning
SEO	Search Engine Optimisation

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1 Executive Summary

This report provides the description on the one hand on the adopted methodologies and the results of Task 1.1 - Collection of bioeconomy awareness, information and education contents, on the other, objectives and structure of the online GenB Resources Library developed in Task 1.2 GenB resources Library.

The resulting activities implemented show the contents and materials available in the Library for the awareness-raising, communication, and education activities, addressing early childhood (4–8 years of age), middle childhood (9–13 years of age), adolescence (14–19 years of age), parents, formal and non-formal educators (i.e. museums, science communicators, youth organizations, community groups, theatres, festivals, fairs, amusement parks, journalists, media, NGOs), and policy makers.

The collected tools can be exploited and maximised through other tasks of WP1 and WP2. The Library gathers and makes available the tools to the aforementioned audiences, and certain tools will be utilized to supplement the educational resources created for the project, or to fuel other activities associated with it.

2 Introduction

The Bioeconomy is driven primarily by the younger generations. For this reason, it is essential to educate today's youth for their role in the future circular and sustainable bioeconomy.

GenB contributes to the implementation of the updated 2018 EU Bioeconomy Strategy and the European Green Deal priorities, and the achievement of a climate-neutral Europe by 2050 and the Sustainable Development Goals, involving: the most relevant awareness and education EU funded projects and initiatives (Transition2Bio, BIObec , AllThings.Biopro , WaysTUP! , BIOSWITCH , BLOOM , BIOVOICES , BIOWAYS , LIFT , Biobridges , Be-Rural , BioCannDo, EuBioNet), wide European and International school networks and experts in socio-economic science and humanities. The overall objective is to raise the Generation Bioeconomy (GenB), aware, sensitive and interested on environmental issues, sustainability and circularity.

Among the strategic objectives of the project, the GenB project aims to co-create innovative approaches, formats, materials and tools, through the cooperation between children, young adults, parents, teachers and other formal and non-formal education professionals, to provide educational and informational toolkits on bioeconomy in general and bio-based sectors (SO1). This is also the general objective of the WP1 for the creation of the educational toolkits.

Through Task 1.1, GenB collects and analyses at least 100 different available materials on awareness, information and education contents (i.e. approaches, formats, toolkits, training materials, presentations, publications, case studies, good practices, factsheets, infographics, databases and platforms, games, quizzes and videos) about the bioeconomy at large including bio-based sector, from: (a) EU funded projects in bioeconomy awareness and communication (Transition2BIO, BLOOM, BIOVOICES, Biobridges, BIOWAYS, AllThings.Biopro, LIFT, Be-Rural, BioCannDo, BIObec, etc.) in different programmes (H2020, Interreg, Erasmus+, etc.). (b) EC initiatives and platforms (e.g., Knowledge Centre for Bioeconomy (JRC), European Circular Economy Stakeholder Platform, European Bioeconomy University, European Rural Development Network, FIT4FOOD2030, etc.), as well as other renown sources (TEDx Talks, MacArthur Foundation, FAO, etc.)

Through Task 1.2, GenB makes the collected materials available a searchable in an online searchable database consisting in GenB Resources Library.

The collected tools can be exploited and maximised through the other tasks of WP1 and WP2, i.e., Task 1.4 Toolkits for young people, teachers and other multipliers, Task 2.2 Inspire and inform students in bioeconomy careers, Task 2.3 Educate young people to promote the bio-transition, Task 2.5 Inform and educate other multipliers to promote the bioeconomy. The Library will gather and make available the tools to the aforementioned audiences, and certain tools will be utilized to supplement the

educational resources created for the project, or to fuel other activities associated with it.

3 Methodology

Employing the consortium's prior knowledge and experiences, the project planned to select sources for the collection of materials from the following categories of EU-funded projects and initiatives:

- EU funded projects in bioeconomy education, awareness and communication (e.g., Transition2BIO, BLOOM, BIOVOICES, Biobridges, BIOWAYS, AllThings.BioPro, LIFT, Be-Rural, BioCannDo, BIObec, etc.) in different programmes (H2020, Interreg, Erasmus+, etc.).
- Other relevant EU-funded projects dealing with the Bioeconomy at large in different programmes (H2020, Interreg, Erasmus+, etc.).
- European Commission (EC)'s initiatives and platforms (e.g., Knowledge Centre for Bioeconomy (JRC), European Circular Economy Stakeholder Platform, European Bioeconomy University, European Rural Development Network, FIT4FOOD2030, etc.).
- Other relevant resources (e.g., TEDx Talks, MacArthur Foundation, FAO, etc.)

To assure the achievement of the target of more than 100 contents from at least 50 sources in several languages, the project's risk-mitigation measures suggested that the GenB analysis should have used the Transition2Bio Library as a starting point. In addition, initiatives such as the European Bioeconomy Network (EuBioNet) and the European Bioeconomy University (EBU) were evaluated. The available tools from each source were identified and compiled in a database shared with the project's consortium.

The development of five criteria was the result of data analysis. In particular, the selection of awareness, information, and educational resources should be (a) curriculum-appropriate; (b) engaging; (c) balancing target groups' interests and other factors when facing conflicts; (d) student-appropriate; and (e) flexible. Excluded from the compilation were materials unrelated to awareness-raising, communication, and education activities in the field of Bioeconomy. Materials that were inaccessible and unavailable were also excluded. Alternatively, web-based tools that required free registration were investigated.

The following requirements have been considered to determine whether a material, tool or resource meets the specifications and can be included to the Library:

- Materials, tools or resources that will enrich and support the curriculum, taking into consideration the diversity of interests and perspectives, the variety of abilities, learning styles and maturity levels of the learners served.
- Materials, tools or resources that will stimulate growth in factual knowledge, literary appreciation, aesthetic values, and knowledge of societal standards.
- Materials, tools or resources that positively and accurately reflect diverse perspectives of controversial issues ensuring that learners have an opportunity

to develop, under guidance, the practice of critical analysis and to make informed judgements in their daily lives.

- Materials, tools or resources that are appropriate for the subject area and for the age, emotional development, ability level, learning styles and social development of the students for whom the materials are selected.
- Materials, tools or resources that have aesthetic, literary, and/or social value.
- Materials, tools or resources whose tangible format and appearance are suitable for their intended use.
- Materials, tools or resources that portray the roles of either sexe in a non-stereotypical manner.
- Materials, tools or resources that enhance students' understanding of a multicultural and diverse society.
- Materials, tools or resources that are designed to motivate target groups to examine their attitudes and behaviors and to comprehend their duties, responsibilities, rights and privileges as participating citizens in our society.

The following categories, included in the Library as filters, were established for the materials, tools or resources that fulfilled the aforementioned criteria:

- Title of the tool
- Content type
- Language(s)
- Target group
- Approach
- Source
- Short description
- Link to the tool
- Hashtags

3.1 Content type

The following categories and their respective explanations have been included in the Library and are defined for the **content type** of materials, tools or resources:

- **Case studies**: A case study is an in-depth analysis of an individual, a specific group or a set of people and how they evolved over time in order to draw broader conclusions)
- **Databases and platforms**: A database searches different sources and types of information. A platform is any hardware or software used to host an application or service)
- **Factsheets**: A factsheet is a short document that contains the most relevant information about a particular subject in the least amount of space. The goal is to provide facts and key points about a topic in a clear, concise, and easy-to-understand way.

- **Games**: Games designed to teach individuals about a specific subject or a specific skill. Designed for use in and out of the classroom, they are appropriate for learners of all ages.
- **Infographics**: An infographic (information graphic) is a graphical depiction of information that is intended to make the material easily understandable at a glance. To express messages quickly, infographics examples include a range of elements such as images, icons, text, charts, and diagrams.
- **Slide presentations**: A presentation conveys information from a speaker to an audience. Presentations are typically demonstrations, introduction, lecture, or speech meant to inform, persuade, inspire, motivate, build goodwill, or present a new idea.
- **Teaching resources**: A teaching resource is a material that is designed to help facilitate learning and knowledge acquisition. When comparing teaching approaches and activities, the former refers to the more general strategies used to guide students toward the desired learning objectives, while the latter refers to the various means through which these strategies might be put into practice.
- **Training materials**: Any collection of material designed to achieve specific learning objectives. Training materials can come in a variety of forms, presentations to streamline the training process, handouts in the form of hardcopies of summarized training, activities/exercises through hands-on training, course outlines delivered online or in hardcopy, and self-assessments that allow the learner to measure his or her progress, as well as workbooks and manuals that the learner can take with them after the training is over.
- **Publications**: Types of publications could include articles, books, journals, archives, conference papers, European Union information and publications, etc.
- **Quizzes**: A quiz refers to a short test of knowledge, typically around 10 questions in length, with question formats often including multiple choice, fill in the blanks, true or false and short answer.
- **Toolkits**: A collection of resources that enables individuals to learn about the issue and identify approaches for addressing them. Toolkits can help translate theory into practice, and typically target one issue or one audience. For example, a toolkit might contain the instructions and tools related to a particular scientific experiment, or it might be a compilation of research papers related to that scientific experiment.
- **Videos**: Any video that helps educate, inform, or raise awareness about the bioeconomy.

3.2 Language

All materials, tools or resources written in one of the EU's 24 official **languages** were considered. As a result, the following filters are included in the Library:

- Bulgarian

- Croatian
- Czech
- Danish
- Dutch
- English
- Estonian
- Finnish
- French
- German
- Greek
- Hungarian
- Irish
- Italian
- Latvian
- Lithuanian
- Maltese
- Polish
- Portuguese
- Romanian
- Slovak
- Slovenian
- Spanish
- Swedish

3.3 Target groups

According to the project's objectives, it is important to involve multipliers such as teachers (formal education), as well as other multipliers providing non-formal education such as museums, science communicators, youth organizations, community groups, theatres, festivals, fairs, amusement parks, journalists, media, NGOs, etc. to effectively reach the target audience of young people. For this reason, the following **target groups**, have been identified and are included in GenB Resources Library's filters:

- Early childhood (4–8 years of age)
- Middle childhood (9–13 years of age)
- Adolescence (14–19 years of age)
- Parents
- Formal educators
- Non-formal educators
- Policy makers

Tools that fall into one or more of the target group categories are primarily directed at and designed for those who fall into those categories. **This indicates that the primary user of the tool is the target group, who can then utilize it to address secondary users.**

3.4 Approach

In terms of the **approach**, materials, tools or resources can be categorized as:

- **Learning**: Resources that are designed to be used without further instruction, such as a book on bioeconomy that a student can study on his or her own.
- **Educating**: Resources whose purpose is to equip a teacher or other educator with the tools necessary to deliver a lesson on bioeconomy or develop an awareness-raising activity.
- **Good Practices**: Resources that provide an explanation of what the bioeconomy is, why it is necessary, and (perhaps) how to put into action actions that have a scope that is pertinent.

The three above-mentioned approaches comprise three respective sections of Library, with the objective of facilitating access and preview of materials for three key target groups of the project: Students; Teachers and Policy Makers.

3.5 Short description

A **short description** introduces and describes all the materials, tools or resources by providing answers (if available) to the following questions:

- Under what conditions can the materials, tools or resources be utilized?
- How can the materials, tools or resources be used in formal / non-formal education?
- Who can provide, or where can I get, further information on the materials, tools or resources?

3.6 Hashtags

Hashtags are an effective tool for increasing interaction with the audience and drawing more attention to the topic at hand. The primary concepts of each material, tool or resource and the potential classroom environment were presented via hashtags as well. This makes it much simpler for the target audience to determine which features of the tool will be most useful to them. In addition, hashtags also increase the visibility of the content of each tool in terms of Search Engine Optimisation (SEO) and are added to each topic as meta tags.

4 GenB Resources Library

GenB Resources Library was launched on the 30th of June 2023 (month 8) at the URL: library.genb-project.eu.

The Library was developed using JavaScript, CSS, Visualforce Pages and Visualforce Components and Apex and is presented in a responsive model suitable for all devices, including mobiles.

GenB Resources Library is monitored with Salesforce Wave Analytics and relevant monitored statistics include:

- Downloads by section
- Downloads by language
- Downloads by target group
- Downloads by source
- Downloads by content type

In the previous chapter all filters available in the Library have been provided, as well the methodology adopted for their selection.

In chapter 4, objectives and interfaces of the Library are presented.

4.1   Objectives of the Library

The objectives of GenB Resources Library are:

- Make available in a transparent, readily available, user-friendly and visual-attractive way all the contents, materials and tools identified and collected in Task 1.1 - Collection of bioeconomy awareness, information and education contents
- Cluster the collected materials according to three approaches explained in Chapter 3 (Learning, Educating, Good practices) and make them accessible through a selection of filters previously explained
- Provide GenB project with a valuable asset to increase the online visibility of the project, attracting users with a set of easily accessible bioeconomy-related materials
- Provide support to WP1, WP2, WP3 and WP4 events and activities to be organised, by offering the above-mentioned access to clustered bioeconomy-related materials

4.2   Structure of GenB Resources Library

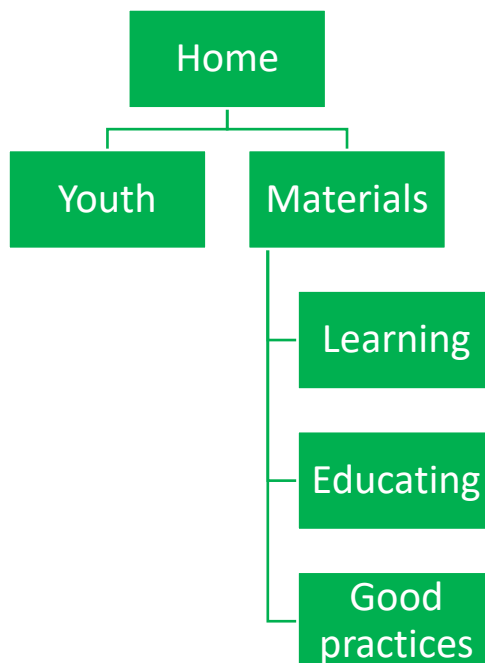GenB Resources Library is structured as showed in Figure 1:

Figure 1 - Structure of GenB Resources Library

The online Library is displayed in GenB website's main menu and provided with a section called "Youth" entirely dedicated to a younger audience (6-10 years old). The resulting landing page provides an attention grabber in the form of the question:

Are you a…

1. *Kid – 6-10 years old*
2. *Student, teacher, policy maker*

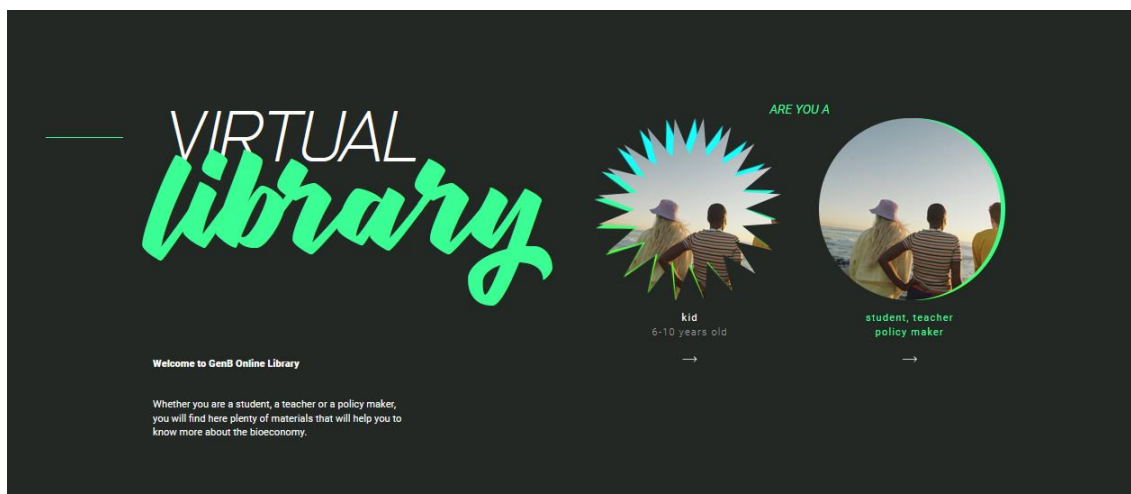Users, by clicking on one of the two categories are redirected to the respective section.

Figure 2 - Landing page of GenB Resource Library

4.3   Interfaces of GenB Resources Library

The "Materials" sub-section (in Figure 3,4 and 5 it is provided the example of the "Good practices" sub-section, whose features are the same as "Educating" and "Learning" sub-sections) of the Library provides:

- A top menu with the three sub-sections "Good practices"; "Educating"; Learning" and widget to switch from "Materials" to "Youth" sections and vice versa
- A brief description of the sub-section
- A search box with search filters explained in chapter 3
- A carrousel with lates entries related to the specific sub-section
- Three widgets redirecting to the three sub-sections
- A footer with a widget to subscribe to GenB newsletter. project contacts, social media, EU emblem and disclaimer
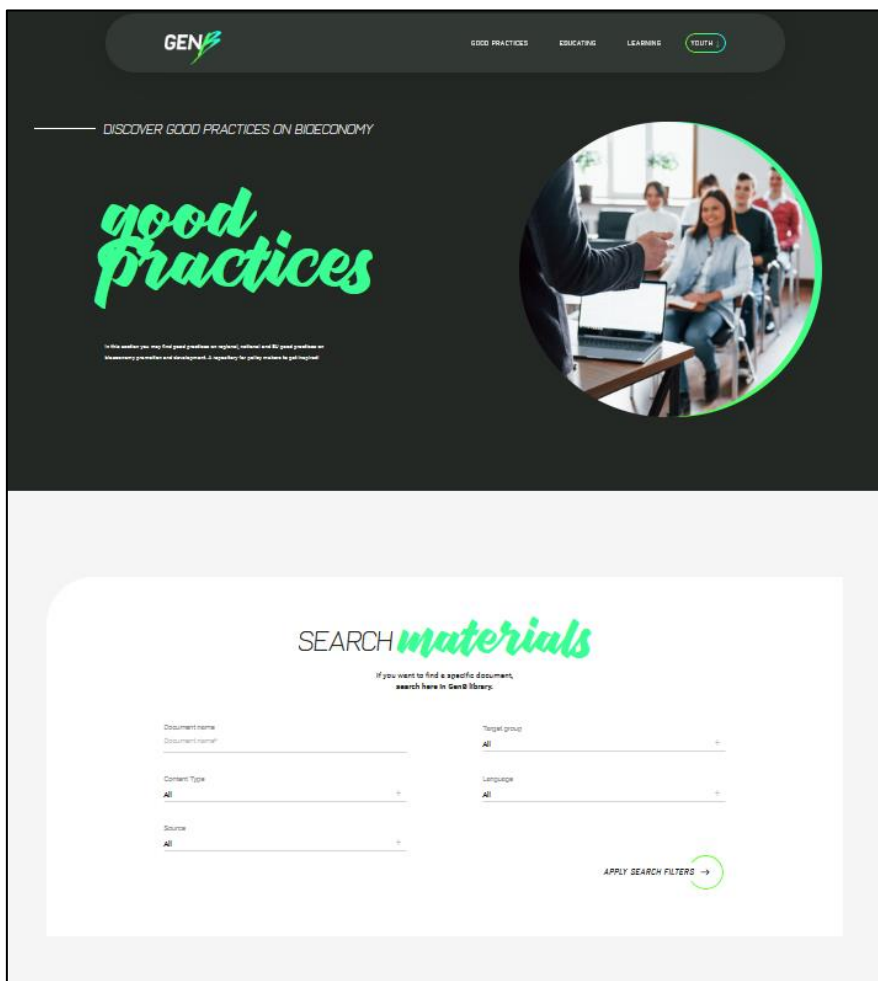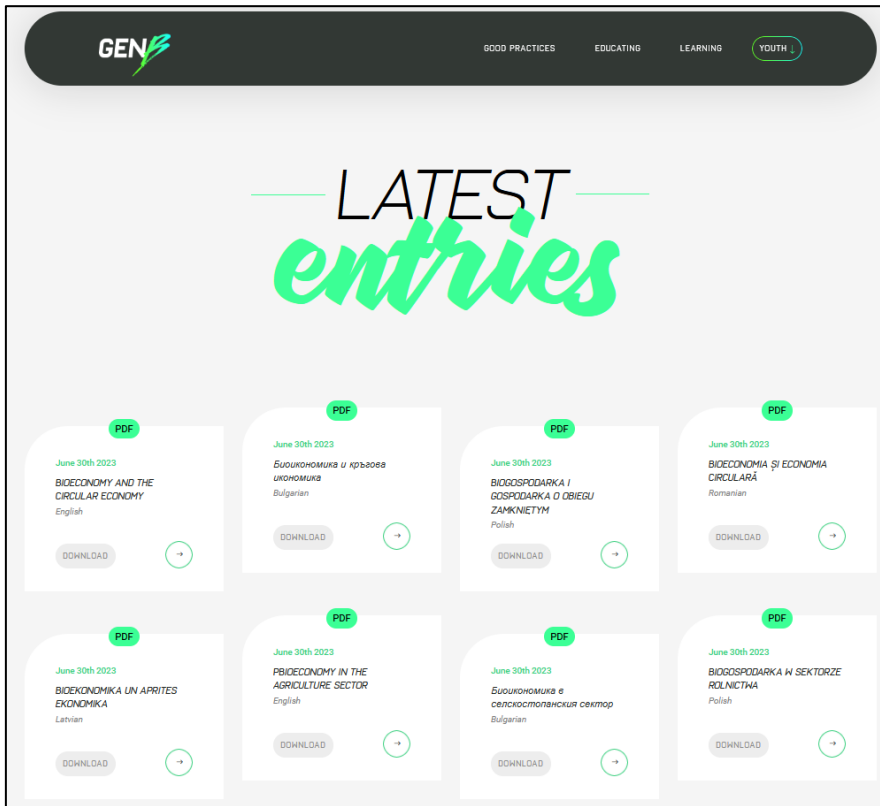

Figure 3 - Good practices sub-section (1)

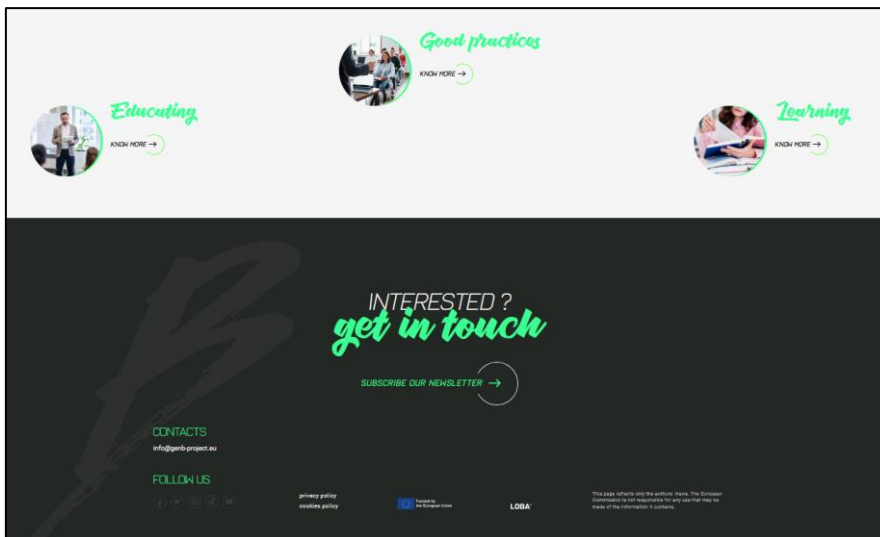*Figure 4 - Good practices sub-section (2)*

Figure 5 - Good practices sub-section (3)

Search results

Users can search for materials by applying filters or by using the open search bar.

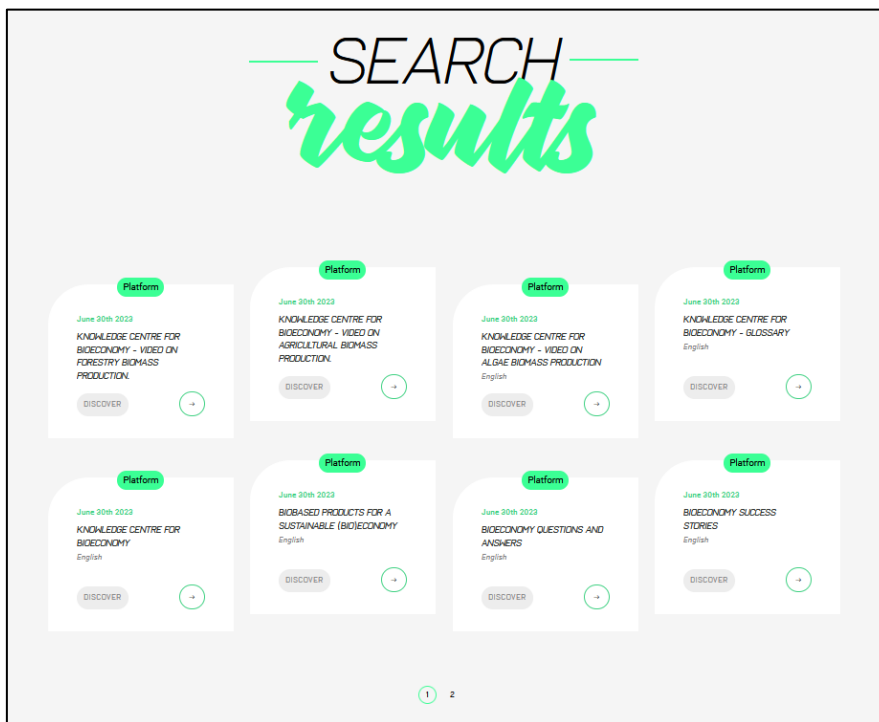The search results are displayed in clickable cards are showed in Figure 6.

Figure 6 - Search results

Downloadable material: detail page

After clicking on the cards, a new tab is opened redirecting users to the detail page of the material, which features:

- Title of the material
- Image, where applicable
- Brief description of the document
- Filters associated to the material (e.g., Slide presentations; English; Formal educators)
- Widget to download or access the material
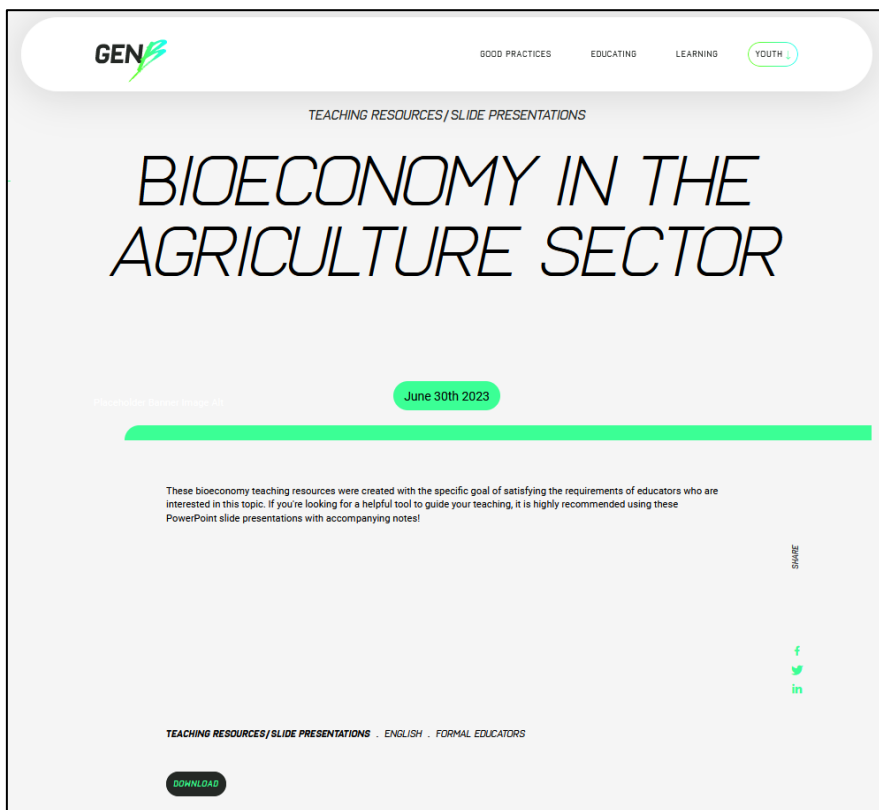- Social media share buttons

Figure 7 - Detail page

Youth section

As explained in Figure 1, GenB Resources Library is divided into two main sections: "Youth" and "Materials", respectively dedicated to a young audience of 6-10 years old and students, teachers and policy makers.

The Youth section provides a simpler interface with three sub-sections and associated three typologies of materials: Videos; Quiz and Serious Games as showed in Figure 8.

The overall objective of the section is to provide young audience and families with materials which are immediately accessible (search bar or search functionalities are not provided) and whose format (e.g., videos; serious games) may be more suitable and appreciable for children from 6 to 10 years of age.

Users are able to immediately access the detail page of the material directly from the home page of the section.

The detail page of the materials, as showed in Figure 9, is provided with:

Figure 8 - Youth section

Figure 9 - Detail page - Youth section

5 Conclusions

GenB Resources Library is expected to play an important role across different Work Packages by providing Consortium partners and target groups a database of bioeconomy related informative or educational materials easily accessible and searchable.

The activities that are expected to benefit from GenB Resources Library are, namely:

- Organisation of Focus Groups (Task 1.3) to identify young people' preferences and motivations and considering gender, social class, culture, etc.
- Organisation of Living Labs (Task 1.3) involving teachers, parents and youth, to co-create new approaches of cooperation in real life between teachers, parents and youth to drive collaboratively the bioeconomy transition
- Development of Educational Toolkits for young people, teachers and multipliers (Task 1.4) which will aggregate and make available existing resources identified in Task 1.1, and included in Library, from previous projects and produce new materials based on Task 1.3 activities
- Organisation of "Hands-on labs" with bioeconomy experiments; "Bioeconomy Village" format promoting bioeconomy in the context of large scale events; "Inside the bioeconomy" format consisting in experiential exhibition in existing public spaces; "BioArt Gallery" displaying bio-based products and related feedstocks (Task 2.1)
- Development of "Role-play game" on bioeconomy jobs at school; Organisation of "Bioeconomy careers infodays" and the organisation of "School project" to grow future bioeconomy entrepreneurs (Task 2.2)
- Educational activities for young people and teachers (Task 2.3 and Task 2.4)
- Empower, inspire and raise awareness of future GenB Ambassadors (Task 3.1, Task 3.2 and Task 3.3)
- Support the promotion of GenB project as valuable exploitable asset (Task 5.1)
- Include similar initiatives and projects' materials in the Library facilitating synergies with similar initiatives and projects (Task 5.2)

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