

Deliverable 2.5

Report on awareness and engagement of young people

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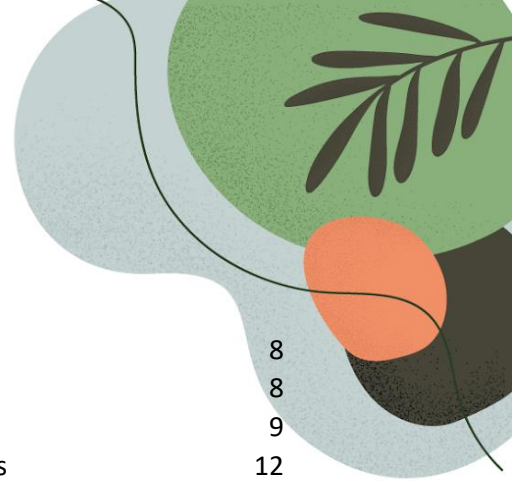
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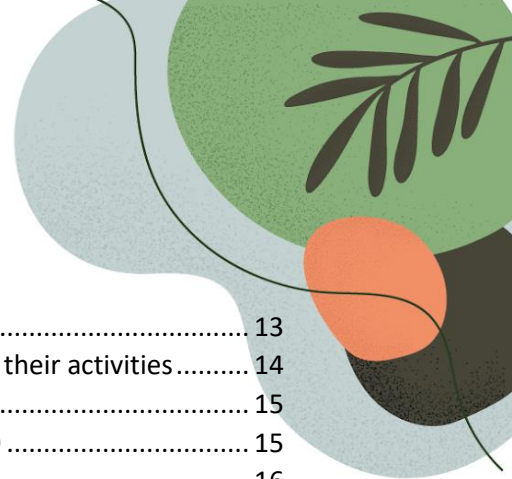
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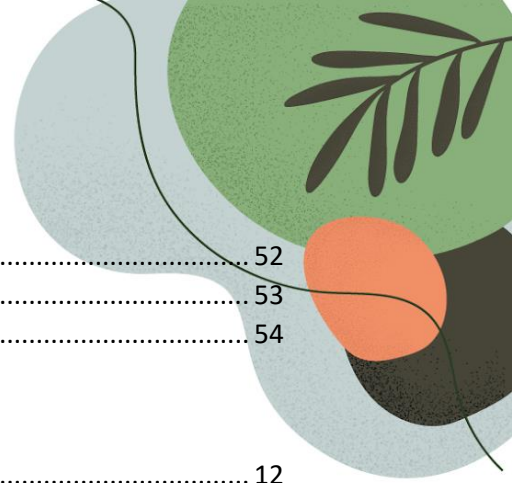
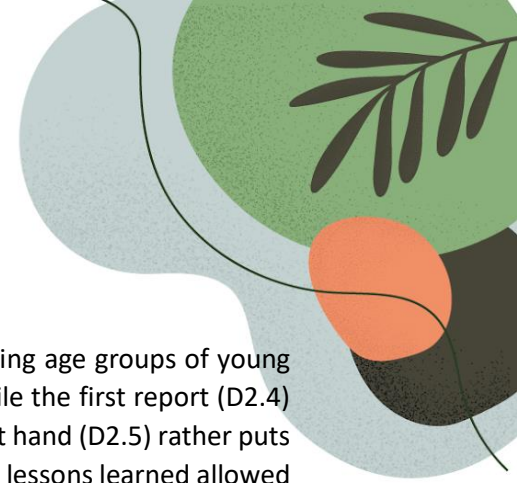


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1 Executive Summary

Deliverable 2.5 summarises the engagement activities of WP 2, targeting age groups of young people (and their teachers) during the second year of the project. While the first report (D2.4) very much focused on the detailed planning of each event, the report at hand (D2.5) rather puts a highlight on the lessons learned. The approach to focus on and assess lessons learned allowed continuous adaptation and improvement of engagement activities for the specific target group during the last year of the project, but also the results continue to feed into other cross-project exchange activities. Most importantly, it will ease the transfer of insights and learnings to other, upcoming activities of other initiatives and projects.

Summarising the results, we can claim that our efforts with regard to engagement and awareness of young people have been very successful and exceeded our own set goals and ambitions. In total, **16 hands-on sessions, 12 trainings, 7 competitions and 6 info-educational games.**

The reasons for these successful activities can only be assumed. Certainly, a high flexibility of the partners that organised the events were beneficial, especially in the first year of the project which was still strongly affected by COVID-19 restrictions. In addition, the very vivid and open exchange of successes and failures amongst the partners allowed an early learning and helped to increase the success of subsequent activities. Reaching out to a high number of participations, the fostering of opportunities and chances for collaborations with (also with non-bioeconomy) initiatives, partners and projects facilitated these highly successful activities.

2 Introduction

The wider public and especially children are often unaware of bioeconomy, their related terminologies, bio-based applications in everyday life and the technologies behind the innovations. As Peter Wehrheim (European Commission, Head of Unit DG RTD, Bioeconomy & Food Systems Unit) said *“raising awareness and engaging stakeholders is of utmost importance for the future development of Bioeconomy”*. Especially children play an important role in this engagement, since they are the next generation to act responsibly and even ‘live’ bioeconomy. The young generation shows interest and involvement in today's challenges: *“As we can see today, young people are increasingly involved and engaged in the future of societies. They care about peace, international cooperation, wellbeing, and the environment. In addition, reaching out to kids allows the outreach to the second level of outreach target groups like parents and teachers, grandparents, siblings and friends.”* (Mariya Gabriel, Commissioner for Innovation, Research, Culture, Education and Youth; Press release Eurobarometer on the European Year of Youth: Young Europeans are increasingly engaged Brussels, 6 May 2022)

Still, the challenge of reaching out to kids seems to be obvious: knowledge and adaption of bio-based solutions and products need to be presented in an easy and comprehensive way. Also raising awareness of sustainable production, consumption and lifestyles through educational activities should be delivered in a for kids adapted manner, taking into consideration the age, a respective language, the adaptation to their living environment as well as an attractive visual design. All these aspects have been described in detail in the first report (D2.4). The deliverable

at hand continues this reporting by summarising the events and activities for young children the Transition2BIO project organised in the second year (from M12 until M24). While the first report placed greater emphasis on the entire set up of the processes and activities, this report rather highlights the findings and lessons-learned during and after implementation.

Thus, **Section 3** provides a summary of the insights and lessons learned, since we consider this as the most valuable part for the reader. The following **Section 4** provides a general overview of the activities for children, **Section 5** elaborates on the online info-educational games and the different materials that have been used, while **Section 6** summarises the hands-on sessions for children. **Section 7** presents a resume of the Transition2BIO teacher training, followed by **section 8**, where the competitions are explained in detail. **Section 9** finally concludes and gives an outlook for the future activities.

3 Insights and lessons learnt in a Nutshell

Transition2bio successfully implemented various awareness raising and engagement activities, reaching a high number of young people of different ages through experimental hands-on labs events, info-educational games, school competitions, and activities that aimed at building the capacities of teachers to teach bioeconomy. Partners were experimenting with these activities, testing them in various combinations or within different contexts (e.g. large-scale events) to use their full potential and to find new ways to increase the knowledge of kids and youth about bioeconomy.

Hands-on labs proved to be a powerful **format, which can be used as a main driver** to introduce the main topics related to the bioeconomy and deliver bio-based products explanations. **Allowing a combination of a scientific approach with experiments** (conducting simple experiments letting kids touch, feel and smell bioeconomy) **and theory** (knowledge about bioeconomy can be delivered in a playful way). The format is very flexible and can be implemented **in various contexts and settings** (e.g. at large scale events, as standalone events or in combination with other activities) and oftentimes enriched by other successful formats (such as Bioeconomy village, BioART gallery, various games and quizzes), **meeting various objectives:**

- The large scale events usually aimed to raise awareness or promote bioeconomy in general. Due to the large number of visitors at the booth at the same time, it was challenging to organise structured activities. The added value of the labs in large scale events lies in their interactive nature, which attracted many participants to the booths.
- Labs organised as standalone events were a great opportunity to dive deeper into a specific topic allowing to better target the material to the age of the children. If the labs were presented to teachers (e.g., during teacher trainings) and/or organised in the classroom setting, they were a very efficient way to build knowledge.

An unanticipated, but positive result of the COVID-19 pandemic was the **successful transfer of the hands-on labs format into a virtual format**. Even when implementing **hands-on labs online**, kids participating from schools were enthusiastic about the possibility of being actively engaged with the experiments.

One of the success factors of the **hands-on labs** were the attractive and **high quality materials and formats** produced by previous EU funded projects (e.g., the Bioeconomy village or BioART gallery, videos, games), as well as new ones (e.g. Book for kids “What's bioeconomy, games and quizzes or Students2Students format). In addition to that, the continuous efforts of partners to **design events** (both, physical and virtual) **attractive to youth**, but also efficient in raising awareness in bioeconomy needs to be highlighted.

One of the challenges identified during the hands-on labs events were related to the nature of the events (e.g. limited duration). While kids displayed a high sensitivity for environmental issues and seemed to be familiar with some topics (such as the plastic waste), they showed evident gaps regarding other related topics, such as sustainability or climate change. The challenges on how to increase kids' and young people's' knowledge about bioeconomy in a sustainable way remained. This concerns for instance how to **ensure a deeper understanding** of the bioeconomy, its link to other topics, such as sustainability, climate change or circular economy and how to **guarantee long-lasting knowledge** kids and young people will be able to apply in for example practical exercises or contests.

In this regard, the limitation of the labs in large scale events or as standalone events, is their short duration, usually without a follow-up activity, which allows only a selected part or topic to be covered. To build lasting and more profound knowledge about bioeconomy, it is important to include education in longer activities or a programme, in which bioeconomy can be set in a wider context. Ideally, exercises or contests, in which pupils and students can apply the knowledge they have acquired should be included and proved fruitful.

As mentioned before, **info-educational games** were mostly combined with other activities, significantly contributing to the attractiveness of various events, increasing the level of interactivity and engagement, and bringing the entertaining elements to the awareness raising, communication or educational activities. As such, the games and quizzes are an integral part of a package for teachers or other multipliers.

School competitions are a specific type of activity that allows consolidating knowledge about the bioeconomy, enabling students to check and/or demonstrate the acquired knowledge, deepening it or even promoting creativity or innovation. However, while some of the competitions organised within the project attracted several numbers of participants submitting high quality assignments, competitions achieve these objectives only if they are combined with a previous training or educational activity. Transition2BIO organised one international competition, which presented significant challenges due to linguistic barriers. All the information was later translated into local languages to stimulate the different schools in Europe to participate.

The **teacher trainings** stimulated the teachers interest in the topic of bioeconomy. However, the complexity of the topic proved to be a challenge, and this is why the training concept was expanded during the project to ensure that teachers really feel empowered include bioeconomy into their teaching. As learnt from an international training organised in English, the language of the training appeared to be a major decisive factor to attend the training, this seemed particularly be the case for primary school level teachers. Trainings in native languages were better accepted. Vice versa, holding the seminar in English seemed to reduce the number of participants and was particularly perceived as obstacle for primary school teachers. In addition, a clear connection to the curriculum plan of teachers eases the integration of the topic.

When it comes to the **teacher trainings**, it is advisable to couple bioeconomy with more general concepts and topics to be sure they are well trained in all the dimensions and also have a stronger background. To **educate, and also empower teachers**, providing a **capacity building and a toolbox** with modules, contents, and tools in their language is instrumental. Also in this case it is advisable to partner with a recognised institution and include a programme on bioeconomy in the certification system.

Summarised, we want to stress that one of our most important learning was the relevance of **language**, in which the activities were conducted. To attract participants and achieve the objectives, it was crucial to use the language of the target audience. In addition to that, **partnering with recognized institutions** can be key in expanding the reach, as well as impact of the activities.

Recommendations for awareness raising activities:

When organising awareness-raising events, it is strongly recommended to:

- Clearly define the objectives of the activity depending on the context (e.g., promoting bioeconomy in case a hands-on lab is organised within a large scale event, while labs organised within a longer-term educational activity can aim to build knowledge).
- Choose **topics** that are interesting and kids or youth can relate to (e.g. showing different applications of bioeconomy in everyday life).
- Use **engaging and interactive formats** (e.g. a combination of presentation with experiments, samples of biomaterials and biobased products, games and quizzes, the book for kids “What’s bioeconomy?”, etc.,). Showing **surprising or funny facts or materials** proved to be an efficient way to raise interest in kids and youth (e.g. using pop paper to explain more complicated topics, see section 6). Select experiments according to the topic, target group, but also equipment available. To attract the interest of kids it is not necessary to choose complicated experiments, but we rather recommended to use experiments supporting key messages to be communicated.
- In case it is planned, provide **gadgets or prizes in line with the aim to promote bioeconomy but that are also attractive for kids or youth**
- Involve **inspiring individuals** (such as researchers or young ambassadors) or young people as tutors (e.g., the Students2Students format).
- **Including the topic of the bioeconomy in a broader context** seems crucial for raising awareness and educating young people.



4 Overview of awareness and engagement of young people activities

	Hands-on lab		Educational info games		Teacher training		Competition	
Numb. reach. M0-M12	938 plus >400 kids	6 events plus 20 small scale events	Book4kids (>1146) Gamified exper. (<100) Memory game (n.a)	3 games	160 plus >250 kids	6 trainings	3	894 schools 38.699 kids 1.321 teachers
Numb. reach. M13-M24	207 plus >300 kids	10 + 21 small scale events	Book4kids (>1600) Memory game (n.a) Quiz comp. (80) Environ. Quiz (54 teens)	3 tools/ games	318 plus 400 kids	6 trainings	4	149 competit.; 110 schools; 35.030 students
Total	1.166 plus >700	16 plus 41 small scale events	2.984 plus memory game players	6	478	12	7	Schools >1.004 Students >73.700
KPI	300 kids	7 Labs	> 1.500 game plays	4 games & mini-games	200 teachers	3 work-shops	2 compe-titions	500 schools 20.000 students

Table 1: Summary of total numbers reached in Transition2BIO incl. KPI



5 Materials and info-educational games for teaching sustainable bioeconomy

5.1 The Bioeconomy Book for Kids “What’s bioeconomy?”

This paragraph provides an overview of how the bioeconomy book for kids “What’s bioeconomy”, produced in the last period of the EU funded project BIOVOICES and distributed under Transition2BIO was used to inspire, inform and engage students, teachers and families.

The combination of the training for teachers and the distribution of the book in more than 225 schools were strategic to introduce the bioeconomy topic in primary schools curricula. Thus was the occasion to reach a high number of both teachers, students and of course families.

5.1.1 Impact of the book during Transition2BIO

- 25.000 copies printed
- 12 languages (also translated into French)

After the first release of 3700 books during the first months of Transition2BIO, the partners explored ways to reprint the book to respond to the great demand of books from several stakeholders. This activity led to two collaborations, the first one with ENI, a primary energy production company in Italy, and the second with the Campus des Métiers et des Qualifications.

This collaboration led to the production of the French version of the book and additional copies in French printed under the Campus expenses.



Figure 1: The announcement of the French version of the book

11.000 copies were printed and distributed under Transition2BIO budget.

The main channels for distributing the books were:

- Large scale events
- Direct request from schools and other stakeholders



- Direct request from local policy makers
- Teachers following training activities
- As price at the international competition
- European Commission channels
- Partners' channels

1.1.1 Experiences of the book adopted and exploited by 3rd parties and other achievements

Experiences of the book adopted and exploited by 3rd parties in their activities, increasing the impact of the Transition2Bio activities.

- [Campus des Métiers et des Qualifications d'excellence - Bioeco Academy Grand Est](#) adopted the book for several education activities in France. They also made the French translation of the book: APRE lead this activity after the first contact with Mrs. Claire Pierrot (project manager at the Campus des Métiers et des Qualifications d'Excellence Bioeco Academy), providing her all the material and the technical support needed for the translation of the book.
- Science communicators (like Open Mind and [G.Eco](#), [cooperativa Climax](#), [Frascati Scienza](#)) used the books during laboratories dedicated to environmental friendly activities involving kids.

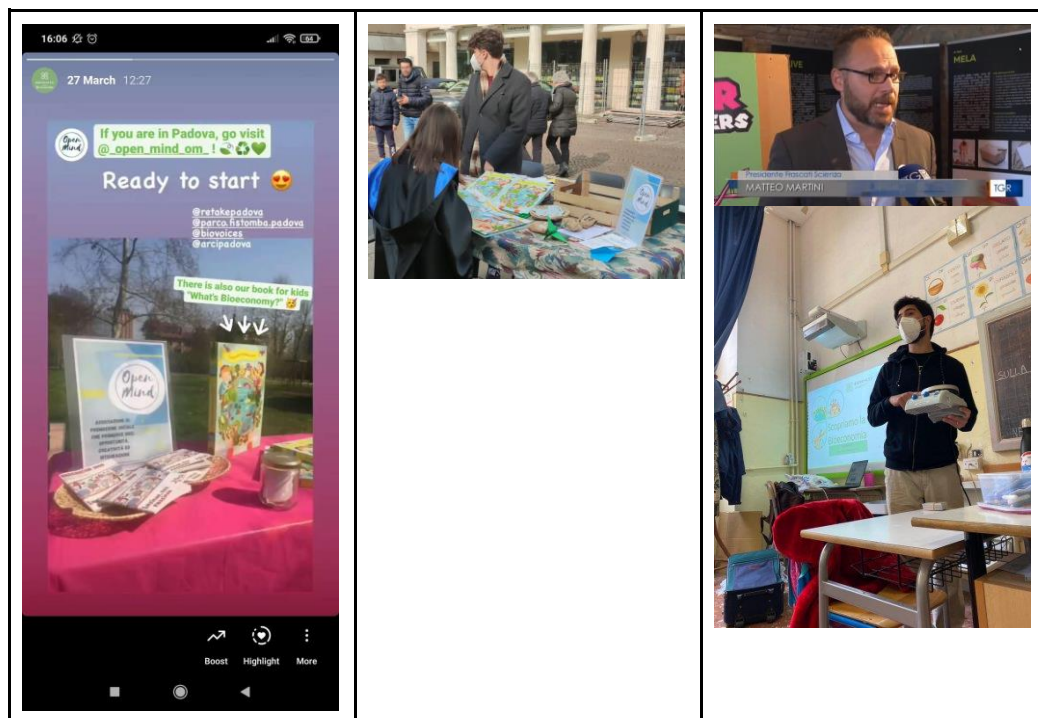


Figure 2: Several examples of science communicators using the book in their activities

- Girovagarte and Poesia Virale associations in Italy organised an event using the book for kids, including a poetry lecture with poems inspired by the book. During the event the kids were participating to poetry laboratory "Bioeconomy in rhyme verses".



- The association [Bioladies](#) network involved the Scouts in UK in several activities with the book



Figure 3: Little scouts reading the book for kids

- the [Circular Bioeconomy Research Group \(CIRCBIO\)](#) joined forces with the [#GoalMine2022](#) team in the roll out of a fun filled summer education camp focused on [#unsdgs](#) aimed at 8-12 year old children hosted by [Munster Technological University Kerry Campus](#), using the book for kids



Figure 4: Pictures of the summer education camp organised by CIRCBIO

- The [Irish Bioeconomy foundation](#) used the books (100 copies provided by APRE) for kids to promote the bioeconomy in an accessible and engaging way to children in schools and libraries during Bioeconomy Ireland Week (BIW) 17-23 October 2022.

1.1.2 Other achievements of the book

- **Eminent testimonials** spoke about the book, among them Roberta Metsola, Nobel Prize for Physics; Giorgio Parisi, the “father” of the Bioeconomy; Christian Patermann and the European Commission’s ‘Healthy Planet’; Director John Bell, Peter Wehrheim - Head of Unit for Food Systems and Bioeconomy of the European Commission, DG Research & Innovation, the Italian Ministry of Education; Patrizio Bianchi; Italian undersecretary for Education and Ecologic transition Barbara Florida, Francesco d’Uva, commissioner of

the Chamber of Deputies, professor Fabio Fava, National Coordination Group for Bioeconomy”, CNBBSV, Presidency of the Italian Council of Ministers and the Major of Rome Roberto Gualtieri.



Figure 5: Some eminent testimonials that like the book

- The book was **presented in several contexts to international stakeholders** interested in replicating the experience in their countries and practices. Among these presentations: EC Bioeconomy conference “The Bioeconomy – Enabling the European Green Deal in Challenging Times”, The presentation of the Italian Ministry of education project “RiGenerazione scuola”, The Italian National Coordination Group about Bioeconomy, the Italian Committee for Biosecurity and Life Science under the presidency of the Council of Ministers, the Italian Chamber of Deputies, FAO (Food and Agriculture Organisation of the United Nation).

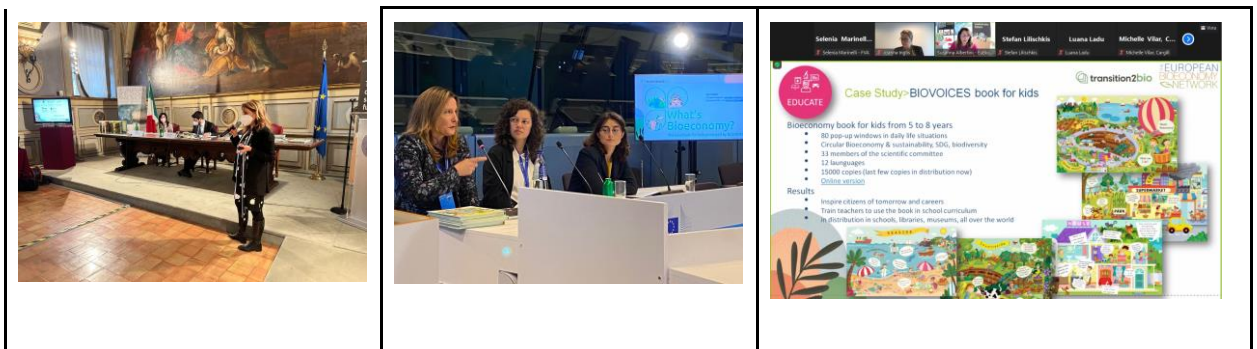


Figure 6: Pictures of international events where the book was presented

- The book was **requested by the European Commission to be displayed in a dedicated corner during the high level conference “The Bioeconomy – Enabling the European Green Deal in Challenging Times”** 6th and 7th of October 2022. Around 1000 books have been distributed by APRE during the conference and after, through the EC representatives. The Bioeconomy Young Ambassadors received the books to be used in their promotional activities.



Figure 7: The books were distributed during the European Bioeconomy Conference in 12 languages

- It was used and distributed by other EU funded projects (BIOEAST, BlueMed initiative, CIRCBio, BIOGOAL, etc.)
- Copies have been requested from the **US government** (Bioeconomy department) and **stakeholders from Africa, Orient and South America**
- The book was adopted as part of the **Rigenerazione Scuola initiative**, promoted by the **Ministry of Education and the Ministry of Ecologic Transition**, involving the most relevant education providers promoting green education in Italy. The case was developed in collaboration with Transition2Bio and presented in the Forum of Member States and Regions.
- The **European Commission's Representation in Italy** wanted to distribute the book during the book fair "Più libri più liberi", dedicated to small and medium sized publishers which took place in Rome from the 7th to the 11th of December 2022. APRE participated to the event and on that occasion 650 books were distributed in three different languages (Italian, English and French) among different targets that included young and adults, editors and teachers.



Figure 8: The book is one of the good practices selected by “RigenerazioneScuola” initiative

- **Two Publications** have been made about the book as an effective tool to educate the young generations: Proceedings of INTED2022 16th International Technology, Education and Development Conference INTED [“Teaching sustainable and circular bioeconomy in primary schools: the book for kids "what's bioeconomy?"](#) (C. Pocaterra, S. Albertini, 2022) and a chapter in the book "Communication and Participation in New Economies" ([Zukünfte nachhaltiger Bioökonomie - Kommunikation und Partizipation in neuen Wirtschaftsformen](#)), Transcript Independent Academic Publisher.
- Three External parties (a company, a project and an education center) decided to **cover the cost for reprinting** additional 5000 copies. As part of the agreement, around 30% of the books were distributed through their channels. The rest was made available for Transition2Bio activities.
- The book will be adopted by the **recently funded project GenB** that will exploit it in several tasks.
- The **format will be replicated** to educate kids on the value of seas in the context of the **recently funded BlueMissionMed Lighthouse** CSA, funded under the Mission “Restore our Ocean and Waters by 2030”

5.1.2 Lessons learnt related to the book

- The book was a great success, both in terms of appreciation from the users (students, teachers, multipliers, families) and numbers (in total almost 25.000 copies were distributed)

- The book remained very up-to-date, after nearly 2 years from the production. The contents are considered suitable for kids, but also for teen-agers and adults (e.g. the parents)
- An unexpected result was the wide adoption and usage by third parties independently from our support to support their activities with young people
- The combination of book plus hands-on and large scale events, as well as the training for teachers and students increased the impact and effectiveness.
- Teachers are using the book in combination with activities in the classrooms, like drawings, essays, experiments, etc. These activities have been designed by the teachers themselves.
- Linguistic versions are very effective in reaching kids from several countries. During Transition2Bio French translation was produced in collaboration with 3rd parties.
- The online version complemented the printed version, reaching more than 2.750 additional users.
- The formats of combination of book and activities have been fine-tuned during Transition2Bio and now they are ready for exploitation in new projects (like GenB)
- Problem of increased printing costs (more than double compared with 2021) reduced the number of copies that were possible to produce and distribute
- Delivery costs are quite high. Distributing the book through large scale events was very effective to limit these costs.

5.2 Info-educational games (subtask 2.2.2)

This chapter updates on the info-educational games, designed, produced and deployed by Transition2bio to involve kids and teenagers in a playful way. It includes the gamified online version of the Book for kids that is described in the previous paragraph.

5.2.1 Online version of the book for kids

To increase the impact of the book for kids and to achieve a wider distribution to the book – in parallel to the printed version, the consortium has agreed to design and develop an online version which could mirror as much as possible the printed version. The online version (<https://bb4k.fvaweb.eu>) was designed and developed by the partner FVA and a more extensive report on its concept and structure is provided in D2.4.

In the last months of the projects, the landing page of the online version of the book for kids was implemented with an additional linguistic version (see figure 9), stemming from the newly printed copies of the book in French. The online version is now available in 12 languages (Italian, Portuguese, Spanish, Greek, Dutch, German, Romanian, Slovak, Estonian, Hungarian and French).

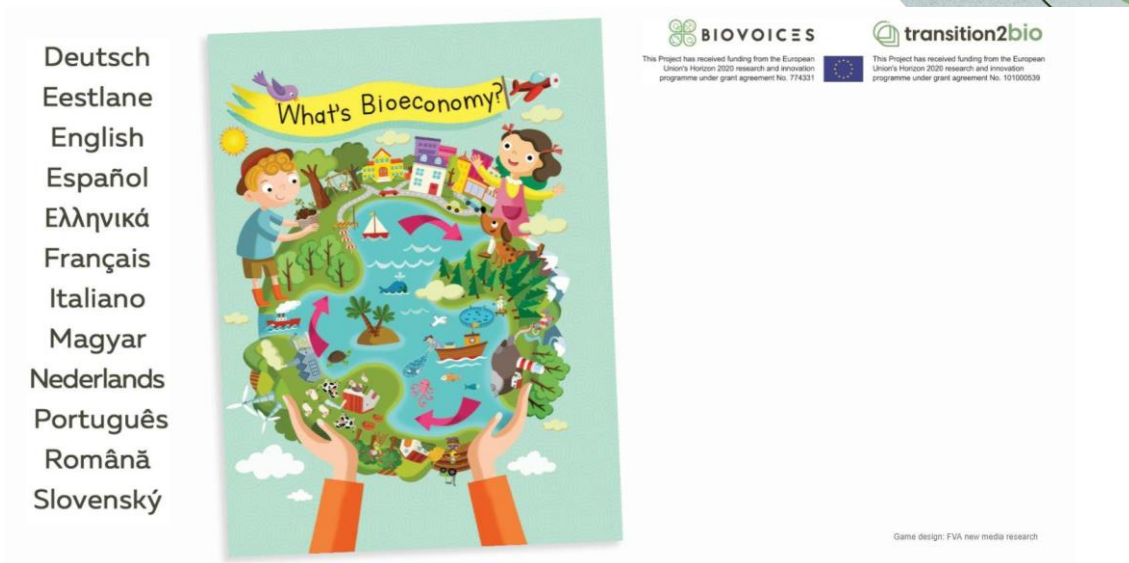


Figure 9: The landing page with the language selection

The online version of the book was supported by several social media campaigns.

In Italy, the online version of the book for kids was promoted in the Transition2BIO booth in the context of the EU Researchers' Night and Maker Faire. A poster with QR code was produced for this purpose, to enable the participants to directly access the book from their mobile phones (see figure 10).

In Austria, the book was promoted through an article on bioeconomy for children in connection to the competition (pl. see section 8.1, Figure 29: Article on bioeconomy for kids in the 4U magazine) by publishing the QR Code in the U4 magazine. In September 2022, the magazine was distributed in print to 29.000 children (and households) between 3-12 in Austria. It is also online available.

In Slovakia, the book was promoted via the EWOBBOX platform; the mission of which is to collect and share information in the field of environmental education, education and awareness through a web portal - box. This space is open to all those who create, implement, need or simply live environmental education. The platform is operated by the Slovak Environment Agency, a professional organization of the Ministry of the Environment of the Slovak Republic with nationwide scope, focused on environmental care, development of environmentalism, awareness, environmental education and training, etc. Currently, there are 2774 individuals, 480 organisations registered.



Figure 10: The screenshot of the article promoting the book on EWOBBOX

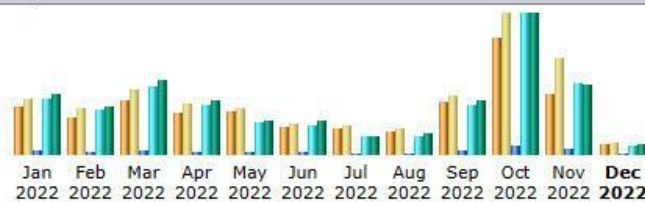
Vuoi scoprire la bioeconomia?

Gioca online con Transition2BIO <https://bb4k.fvawebeu>



Figure 11: The poster with the QR code, also displayed in the booth during the Maker Faire Rome, 8-10 October 2022

Monthly history



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2022	139	162	464	7,683	1.12 GB
Feb 2022	109	134	380	6,151	911.18 MB
Mar 2022	158	189	567	9,531	1.37 GB
Apr 2022	122	148	383	6,848	1.02 GB
May 2022	123	133	287	4,530	633.73 MB
Jun 2022	78	89	244	4,003	640.90 MB
Jul 2022	76	84	190	2,525	350.66 MB
Aug 2022	66	76	156	2,483	389.53 MB
Sep 2022	150	169	447	6,762	1020.77 MB
Oct 2022	338	409	1,303	19,625	2.63 GB
Nov 2022	177	281	671	10,011	1.31 GB
Dec 2022	30	33	82	1,266	191.81 MB
Total	1,566	1,907	5,174	81,418	11.49 GB

Table 2: Statistic of user access to the online version of the book for kids – retrieved 5 December 2022

As you can see in table 2, from January 2022 to November 2022, the unique visitors – which are the most relevant data – achieve a total amount of 1.566¹. The graphic shows a high increase of the visits on October, thanks to the intense promotion of the online version of the book in the context of the EU Researchers' Night, the Maker Faire in Italy and the promotion in the print of the 4U magazine (see Table 2). The total numbers of unique players of the online version (2021 and 2022) is more than 2750.

¹ Numbers have been updated on 15/12/2022

5.2.2 Quiz competition on bioeconomy performed at the Startupper School Academy

In the context of the Startupper School Academy competition, a quiz using the interactive online platform Mentimeter was developed and used as an ice breaker game to engage teenagers during the training activity performed with high school students and teachers competing to the competition launched by Lazio Region (see figure 12).

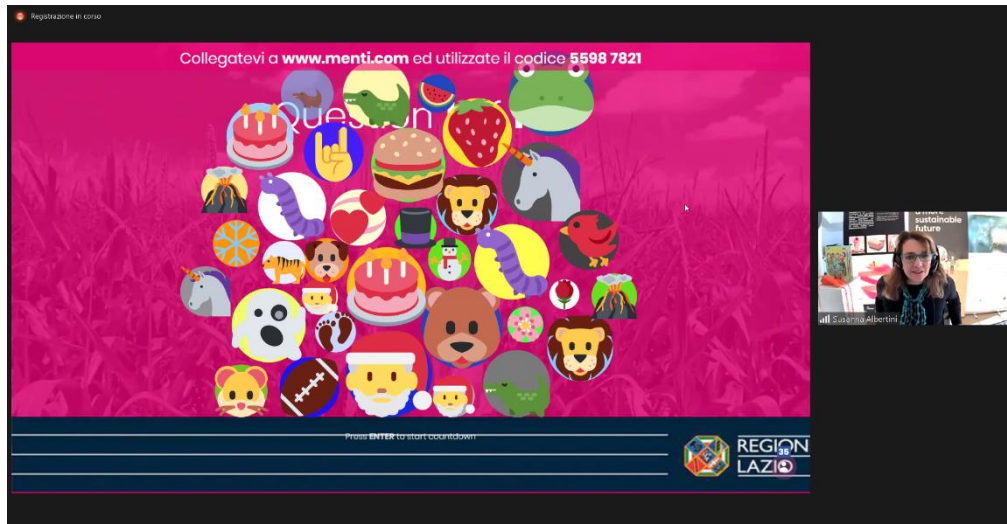


Figure 12: Screenshot from the Mentimeter showing the participants to the quiz

The game was accessed with the personal devices of the participants to the webinar and the facilitator shared the screen via Zoom in order to show real time the questions related to the bioeconomy and the leader board with the ranking of the players and the correct answer (see figure 13).

Examples of questions used include the following:

- What kind of feedstock is used in the bioeconomy?
- How many people work in the bioeconomy sectors in Europe?
- Which one of these elements represents a type of biomass?
- How much microplastics do we eat during our life?
- What is biofuel?



Figure 13: Screenshot from the Mentimeter, showing one of the questions

Around 80 students participated in the online game.

5.2.3 “Environmental Quizzes” performed at Maker Faire Rome

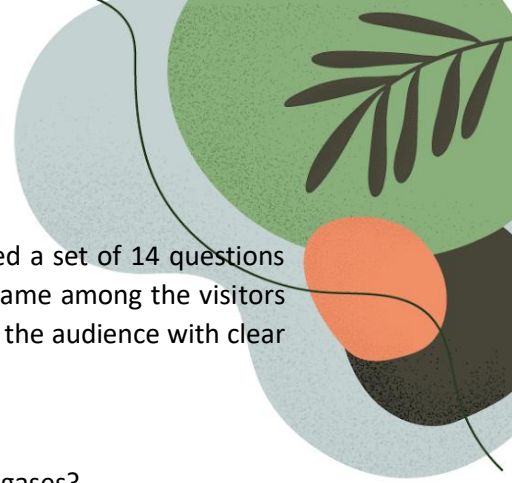
The “Environmental Quizzes” were designed to engage teenagers to compete on questions related to environmental topics in the context of Maker Faire Rome (held from 8th to 10th of October 2022), one of the most important European events about technological innovations, with a strong focus also on green solutions.

The quiz was developed together with the young [EU Climate Pact Ambassadors](#), which were hosted in the Transition2BIO booth, using the interactive online platform Mentimeter, and it helped animating the booth and attracting visitors.

The game was accessed with the personal devices and the facilitators used a video screen to show real time the questions and the leader board with the ranking of the players. It was used to attract visitors to the booth and engage the audience with triggering questions on key concepts on sustainability, climate change, bioeconomy, etc., before introducing them to the bio-based products showcased in the Bioeconomy Village (see figure 14).



Figure 14: Teenagers engaged with “Environmental Quizzes” at the Transition2BIO booth, Maker Faire Rome, 8-10 October 2022



The Transition2BIO and EU Climate Pact Ambassadors teams structured a set of 14 questions with different level of difficulty, in order to have a more challenging game among the visitors and introduce in a playful way pressing environmental issues providing the audience with clear data on the impacts.

Examples of questions used include the following:

- Which Country currently emits the highest level of greenhouse gases?
- How much water in the world is available for human use?
- What is the most common waste that pollutes our oceans?
- What is the main cause of global warming?
- How long does it take for carbon dioxide (CO₂) in the atmosphere to disperse?

The quiz reached 54 teenagers in total and was played in 22 sessions during two days of Maker Faire.

6 Hands-on activities (subtask 2.2.1)

6.1 Bioeconomy and Wood (AT)

Topic	Bioeconomy and Wood
Aim	<ul style="list-style-type: none"> • Strengthening kids understanding of environment • Importance of thoughtful use of resources • fostering the understanding of reusing material by using wood
Number of students/teachers	92 students, 1 director, 6 primary school teachers, 3 kindergarten teachers
Date and Place	21 October 2022, Michaelerberg Pruggern, Austria
Cooperations:	<ul style="list-style-type: none"> • KLAR! (Natalie Prügler) • Municipality Michaelerberg Pruggern • Waldgenossenschaft Sattental • Forstgarten Weissenbach • Volunteer Fire Brigade Pruggern

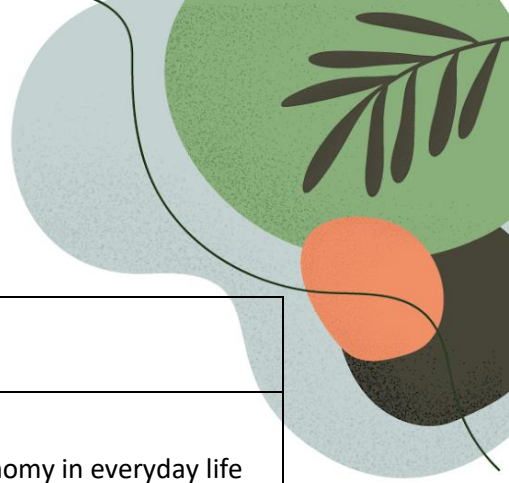


Figure 15: Hands-on session Michaelerberg-Pruggern

This hand-on lab was organised in a primary school and kindergarten in Michaelerberg Pruggern, Austria. We introduced 92 students and kindergarten children to the growing of wood in general and the connection to bioeconomy. We showed them seven different tree plants and discussed differences and environmental implications and benefits of wood. After that the children were allowed to pick cards with leaves/needles in order to guess which cards belong to which trees. We did a brainstorming with the kids of possible products out of wood and explained other products (Lyocell fibres) that is made out of wood and let them guess why this production by wood is more beneficial for our environment than usual T-Shirts. In addition, we discussed with them the production of paper, emphasising the importance of recycling. In the following, we showed them the elephant paper, explaining that we can save trees by producing paper from elephant poo or other herbivores. In addition, we showed them toothbrushes, bags (cork) from sustainable materials, that they were allowed to take home with them. Further all the kids received a book with the hint that there are many more examples on bioeconomy.



Figure 16: Hands-on session Michaelerberg-Pruggern



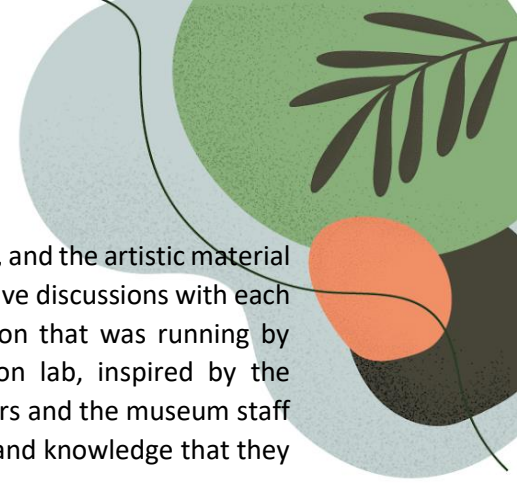
6.2 Getting to know the bioeconomy (GR)

Topic	Getting to know the bioeconomy
Aim	<ul style="list-style-type: none"> • Introducing children to the bioeconomy • Showing different applications of bioeconomy in everyday life • Inspiring a change of lifestyle
Number of students	36 students
Date and Place	22 February, 2022 & 25 February 2022 at the Children’s Museum of Thessaloniki
Cooperation:	Children’s Museum of Thessaloniki

Q-PLAN organised in Greece an experiential event to raise awareness and facilitate the understanding of the bioeconomy, informing and educating children and their teachers about the various bioeconomy areas and their applications in everyday life. To maximise its impact, the event was jointly organised with the Children’s Museum that hosted the Hands-on Labs for Kids in cooperation with the 27th primary school of Thessaloniki on the 22nd and 25th of February 2022.



Figure 17: Kids presenting bioeconomy drawings in Greece



Intrigued by the experiments, the book for kinds, the games, the videos, and the artistic material presented, the students asked many questions and engaged in interactive discussions with each other. The students also were informed about the school competition that was running by Transition2BIO and they started their creations during the hands-on lab, inspired by the storytelling and information they received on bioeconomy. The teachers and the museum staff also had the opportunity to enrich their portfolio with some activities and knowledge that they acquired throughout the lab sessions.

Both the students and the teachers felt excited about the lab experience and expressed their interest to become again part of that initiative in the future. They also felt motivated to adopt some of the good practices presented in their class, but also at home, together with their families. All in all, the feedback of the participants was very positive, and they seemed to really appreciate the printed copy of the book that they received in the end.



Figure 18: Hands-on sessions in Greece

6.3 Discover bio-based products (PT)

Topic	Discover bio-based products
Aim	<ul style="list-style-type: none"> Introducing children to the bioeconomy Showing different applications of bioeconomy in everyday life
Number of students	29
Date and Place	24-25/10/2022 in Lisbon, Parque Eduardo VII – Pavilhão Carlos Lopes.
Cooperations:	Planetiers World Gathering and European Climate Pact

The hands-on lab “Discover bio-based products” was organised across 2 days in the context of the major event Planetiers World Gathering, in collaboration with ambassadors from the EU initiative European Climate Pact.

The lab involved kids from 5 to 11 years’ age, their families or teachers across two stations:

1. Station 1: Exposition of bio-based products. The first station was meant to attract visitors with an exposition of more than 60 bio-based products. The objective was to make kids discover how nowadays it is possible to find bio-based alternatives to fossil-based counterparts.

The examples provided (among all, the most interesting for kids were textiles from wood fibres, paper from elephant dung and bio-plastics from coffee grounds or corn starch) effectively intrigued kids who were subsequently invited to join Station 2.

2. Station 2: Sustainable labs. The second station was meant to provide kids with answers stemming from the previous station through practical activities. The main activities were organised in collaboration with European Climate Pact Ambassadors, namely “Sustainable personal and home hygiene”, consisting in showcasing examples of sustainable cleaning materials such as home-made soaps and “Artivism”, consisting in the co-creation of artistic panels with natural colours.

Both teachers and families that were accompanying kids were provided with Transition2BIO Book for kids “What’s Bioeconomy?” (either in Portuguese or English version) to further raise awareness on Bioeconomy and bio-based products.

The overall response of participants was incredibly enthusiastic about a “new green world that was just discovered”. Kids were eager to go teach their parents and friends about new sustainable practices and bio-based products just discovered.

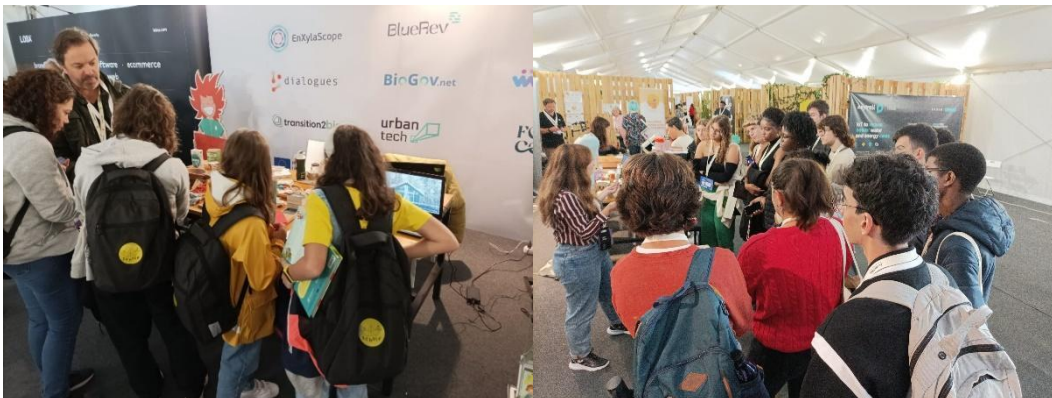


Figure 19: Hands-on Lab Portugal, Station 1



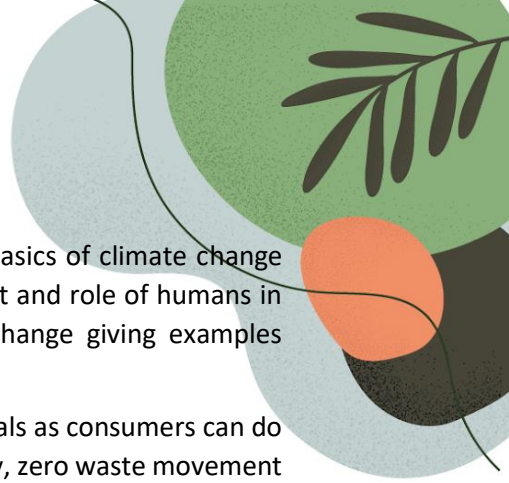
Figure 20: Hands-on Lab Portugal, Station 2

6.4 Different forms of BIO - how the bioeconomy is helping to fight the climate change (SK)

Topic	How the bioeconomy is helping to fight the climate change
Aim	<p>Introduction to the topics of</p> <ul style="list-style-type: none"> • climate change • bioeconomy <p>Various actions (at the individual, but also community or society level) that can be done about climate change</p>
Number of students	50
Date and Place	8 July 2022, Slovak Republic
Cooperations:	Children's Economic University organised by the University of Economics in Bratislava

The main idea of the “hands on lab” organised as one of the sessions of the 2-weeks summer school, was to educate young people participating in the programme about climate change and bioeconomy as one of the climate change solutions.

The aim of the first session was to introduce the young participants to the topic of climate change and thus create a common knowledge base for further discussion on the bioeconomy. The main focus was to start with what the participants already know (referring for example to



movement started by Greta Thunberg) and step by step explain the basics of climate change (what it is, what is causing it, incl. explanation of the greenhouse effect and role of humans in increasing production of greenhouse gases, the impact of climate change giving examples related to our region).

In the next part, the workshop’s objective was to explain what individuals as consumers can do to help. The main focus was on the introduction of the circular economy, zero waste movement and circular bioeconomy and give specific examples of actions that can be done about climate change. The topic of greenwashing and how to recognize it was touched upon.

To engage the young people, the presentation was conducted in an interactive way (asking questions to start discussions, using videos, showing examples of biomaterials and biobased products), conducting experiments (participants could choose from 2 options), and a quiz on bioeconomy.



Figure 21: Hands-on lab within the Children's Economic University

6.5 Let’s discover bioeconomy - classroom meetings: second round of hands-on labs at Istituto Comprensivo Baccarini (IT)

Topic	Discover bioeconomy and how some bio-based products can be made through experiments and presentations
Aim	<ul style="list-style-type: none"> • Strengthening kids understanding of bioeconomy and bio-based products • Reach teachers to let them more able to talk about bioeconomy in their classes • Raise awareness upon the issue of microplastics spread in our environment
Number of students	400 students and 30 teachers of primary school

Date and Place	From March to May 2022 (21 meetings in total) in classrooms of Istituto Comprensivo Baccharini (Rome)
Cooperations:	Filippo Fratini, scientific communicator Istituto Comprensivo Baccharini, Rome, Italy

Following the interest of students and teachers, a second round of hands-on labs in some classes of the primary school “Istituto Comprensivo Baccharini” based in Rome were organized. After the success of the 20 meeting held in Autumn 2021 (please see D2.4, pages 34-36), another 21 meetings were organized by APRE with the collaboration of Mr. Filippo Fratini, a science communicator.



Figure 22 Hands-on lab session in Rome, spring 2022

The classroom activities combined a presentation of theoretical information provided by Mr. Fratini thanks to the contents of the book “What’s bioeconomy?” and two experiments linked to bio-based products. In the first experiment, kids were able to extract a natural glue from algae, while in the second they created a bioplastic starting from milk.

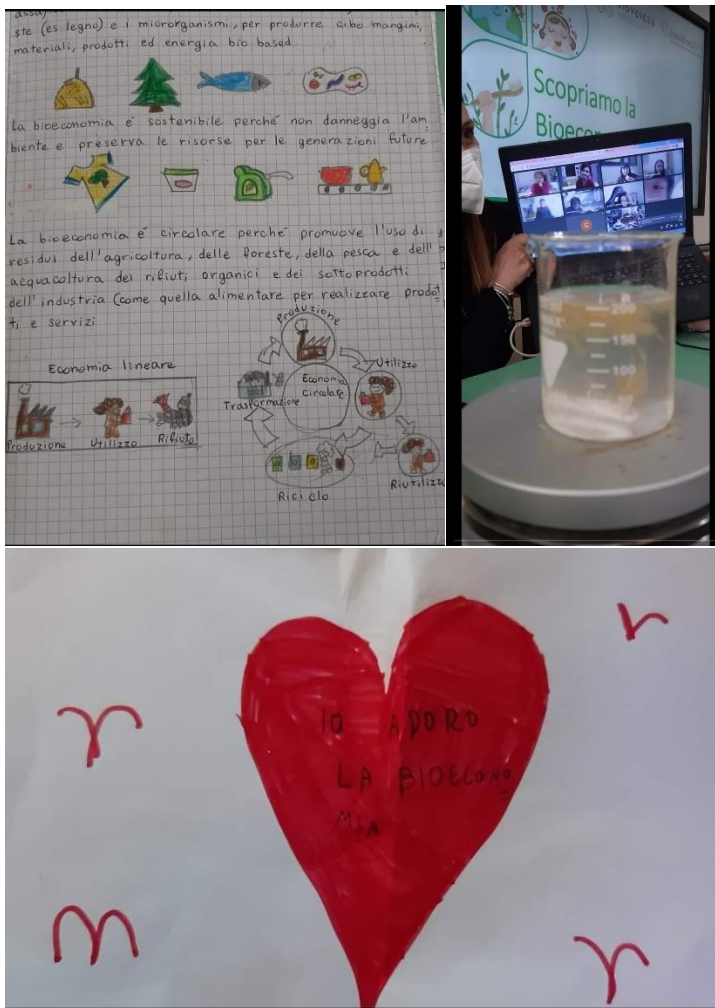


Figure 23 Some activities made by the students. Inside the heart there is writing “I LOVE BIOECONOMY”

7 Teacher training (subtask 2.2.3)

7.1 Training in the framework of the Startupper School Academy

Topic	Capacity building for teachers “What is the circular bioeconomy and what are bio-based products? Ideas and fields of application to design solutions responding to the thematic prize in bioeconomy”, in the context of the Startupper School Academy 2021/2022
Aim	Empower teachers of high schools in Lazio Region competing for the “Bioeconomy Prize” in the Startupper School Academy contest with insightful contents, educational materials and inspirational case studies on the bioeconomy and bio-based products. The training activity also involved the students.

Number participants	of	20 teachers + 400 students
Date and Place	27/01/2022, online	
Cooperation:	The activity was organised with BIObec project, in partnership with Lazio Innova, Novamont, Re Soil Foundation and Cluster Spring	

Transition2BIO partner FVA was the main responsible and organiser of the training activities for teachers in the context of the Startupper School Academy competition (see chapter 8.3) and the EU Researchers' Night initiative. The following paragraphs report on the two activities performed.

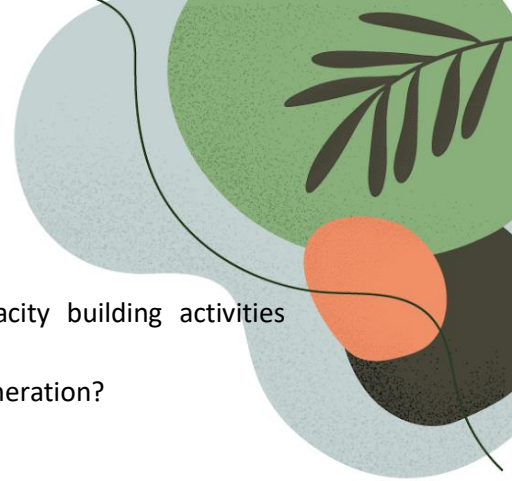
The training activity *"What is the circular bioeconomy and what are bio-based products? Ideas and fields of application to design solutions responding to the thematic prize in bioeconomy"* was delivered in the context of the school competition Startupper School Academy, in partnership with Lazio Innova.

A specific Bioeconomy Prize is established within the competition and the capacity building activity, targeting students and teachers, was organised by Transition2BIO (Partners FVA with the support of APRE) in collaboration with high-level partners (also involved in the competition) like Novamont, Cluster SPRING and ReSoil Foundation.

During the training activity the partners involved offered their expertise to highlight different perspectives of the bioeconomy domain and also to raise awareness among students on the importance of strengthen their entrepreneurial skills, with a special attention to eco-design and the end of life of the products.



Figure 24: Online training activity, Startupper School Academy, 27 January 2022



The topics addressed were:

- Introduction to the Bioeconomy Prize (objectives, prizes, capacity building activities planned)
- What is bioeconomy and what is its contribution to territorial regeneration?
- What are bio-based products through practical examples
- The role of soil in climate change mitigation
- How to create a business in bioeconomy sector
- Evaluation criteria to take into consideration to compete for the bioeconomy prize (eco-design, end of life)
- Inspirational examples – presentation of case studies from students of the last years
- The importance of introducing the bioeconomy in school pathways to raise awareness and attract young generations to future careers in the sector

7.2 Training for teachers in the context of the EU Researchers' Night

Topic	Capacity building for teachers " <i>Teaching the circular bioeconomy</i> ", in the context of the EU Researchers' Night 2022
Aim	Empower teachers of primary schools with insightful contents, educational materials and inspirational case studies on the bioeconomy and bio-based products.
Number of teachers	90 unique visitors in the Zoom meeting; around 47 participants constantly present
Date and Place	27/09/2022, online
Cooperations:	The activity was organised in partnership with Frascati Scienza

In the context of "European Researchers' night" 2022 held in Frascati, FVA organised an online event engaging primary school teachers in a training activity. In collaboration with APRE and the JRC Knowledge Center for Bioeconomy, the webinar aimed at increasing the teachers' knowledge about the bioeconomy and bio-based products. During the workshop the materials developed by Transition2BIO were presented and shared among the teachers participating to the webinar, in particular the specific toolkit the Italian partners designed for the teachers, collecting many contents stemming from various EU funded projects and ready to be used in school.

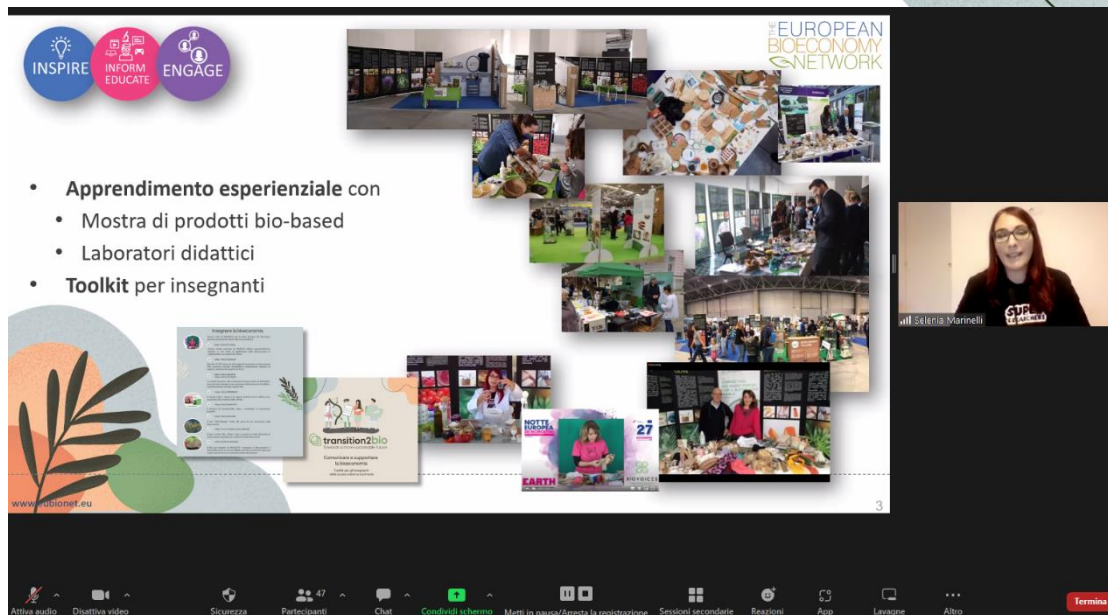


Figure 25: Training activity, showing the different education material provided, including the toolkit for teacher, 29 September 2022

The webinar was very successful, reaching in total 90 teachers participating (90 unique visitors in the Zoom meeting; around 47 participants constantly present) and interested in deploying the material in their classes. The participating teachers compiled a Google form in order to receive 2 copies of the Italian version of the book for kids “What’s Bioeconomy?”.

During the webinar, the need to have more extensive training courses in the topic emerged, in order for the teachers to be empowered and feel confident in conveying the key messages about the bioeconomy during their lessons. For this reason, they were all invited to participate in the training course Transition2BIO and GenB organised in November 2022 (see paragraph 7.3).

7.3 Training for teachers in the context of the Bioeconomy4YOU competition

Topic	Capacity building for teachers in the context of the Bioeconomy4YOU competition
Aim	Empower teachers of primary and secondary schools with insightful contents, educational materials and inspirational case studies on the bioeconomy and bio-based products.
Number of teachers	33
Date and Place	2/03/2022, online
Cooperation:	The activity was organised in partnership with Fondazione Raul Gardini, Novamont, Re Soil Foundation and Cluster Spring



Some trainings for teachers were jointly organised by APRE and FVA partners in Italy. The following paragraphs report specifically on the activities performed in the context of the Bioeconomy4YOU competition and the training activity for primary school teachers co-organised with the support of ENI Scuola.

The school competition “Bioeconomy4YOU” (see chapter 8.2) organised by Re Soil Foundation and involving Transition2BIO (APRE and FVA), Fondazione Raul Gardini, Novamont and Cluster Spring among the partners, supported the schools applying to the contest with a webinar introducing the participating teachers to the importance of the considering the various dimensions of bioeconomy in the proposals, with a special focus on the entire life cycle of the product.

The Transition2BIO partners specifically delivered presentations on the what is the sustainable and circular bioeconomy, providing practical examples of bio-based products in different applications.

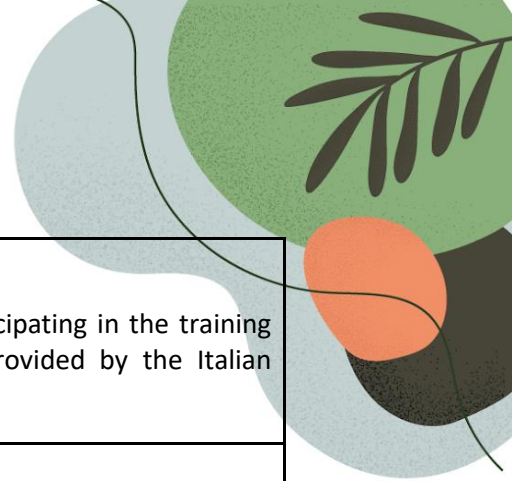
Among the educational materials made available for the participants of the “Bioeconomy4YOU” competition, FVA and APRE provided the Transition2BIO toolkit designed for the Italian teachers, collecting contents stemming from various EU funded projects, ready to be used in school. The variety of resources in the toolkit covered different levels of maturity and education, thus helping to support both teachers and students from primary and secondary schools.



Figure 26: Training activity, 2 March 2022

7.4 Training for teachers in the context of the course for primary school teachers co-organised with the support of ENI Scuola (APRE and FVA)

Topic	Capacity building for teachers “Teaching the circular bioeconomy to kids”, in the context of the course for primary school teachers co-organised with the support of ENI Scuola
Aim	Empower teachers of primary with insightful contents, educational materials and inspirational case studies on the bioeconomy and bio-



	<p>based products.</p> <p>Deliver professional credits to teachers participating in the training course through the platform “S.O.F.I.A.”, provided by the Italian Ministry of Education.</p>
Number of teachers	45 (over 90 subscribers)
Date and Place	9-16-23/11/2022, online
Cooperation:	The activity was organised in cooperation with GenB project, in partnership with ENI Scuola

The training course organised by Transition2BIO and GenB in November 2022 consisted in 6 hours of training activities divided in three modules (delivered once a week, 2 hours each).

The **first module** focused on providing theoretic knowledge about the bioeconomy, covering a wide range of topics such as:

- challenges to face and European policies: the ecological transition, how the bioeconomy can respond to these challenges
- application sectors of the bioeconomy
- jobs in the bioeconomy
- examples of bio-based products in different applications

In the first modules some sessions were provided (recorded, in Italian) by external experts, like JRC Knowledge Centre for the Bioeconomy, UNIBO and CBE JU.

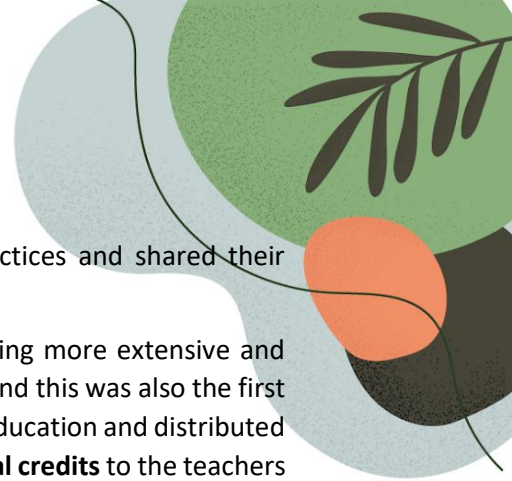
The **second module** aimed at presenting tools and replicable formats on how to teach the bioeconomy in class, specifically:

- the “What’s Bioeconomy?” book for kids
- hands-on labs to replicate in classroom
- toolkit for teachers and available resources for teaching

During the final interactive session, we explored how the teachers will implement these contents in their schools, which section of the toolkit (examples of bio-based products in everyday life; learning bioeconomy; teaching bioeconomy) they think is more useful to be implemented, which tool among the ones presented they think could be more effective for kids.

The **third module** in the opening part presented the key words in the bioeconomy (e.g. biodegradable, bio-based, compostable, etc.), going deeper also on the controversial questions (e.g. impacts, sustainability, etc.).

The second part was more focused on engaging the teachers with interactive sessions in order to collect inputs from the participants on the barriers they could encounter in the implementation of these topics in schools and to finally provide take home messages. The module was also enriched with the participation of a teacher and a dean from schools which already implemented in their programs the Transition2BIO educational material after one of the



capacity buildings delivered by the project. They provided good practices and shared their experience to inspire the participants.

This training course was the first one delivered by Transition2BIO giving more extensive and specific explanations of the different topics and educational materials and this was also the first time that the training course was recognized by the Italian Ministry of Education and distributed inside the official platform “S.O.F.I.A.”. This activity is worth **professional credits** to the teachers participating. In addition, the training is officially included in the ENI Scuola programme for teachers.

Finally, the teachers successfully completing the training will receive a provision of 30 copies of the book for kids “What’s Bioeconomy?” to distribute them to their students and practise what they learned.

7.5 Educational seminar “We learn together about the bioeconomy”

Topic	Educational seminar “We learn together about the bioeconomy”
Aim	Training for primary school and kindergarten teachers with the aim to help them teach the bioeconomy in their classes, providing them the knowledge, the confidence, the formats and the tools.
Number of teachers	126 participants in the online seminar
Date and Place	10/03/2022, Greece
Cooperation:	Not applicable

On March 10th, 2022, Q-PLAN organised an online educational seminar for primary teachers, titled “We learn together about the bioeconomy” aiming to help the primary teachers to teach the bioeconomy in their classes, providing them with the knowledge, the confidence, the formats and the necessary tools to spark and maintain the interest of kids ground the bioeconomy.

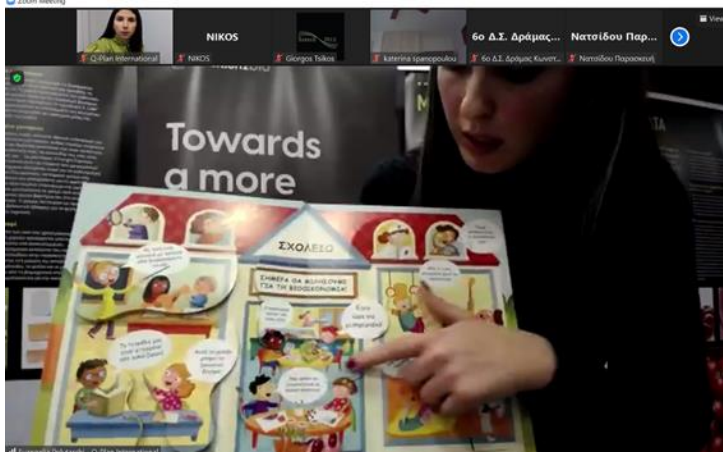
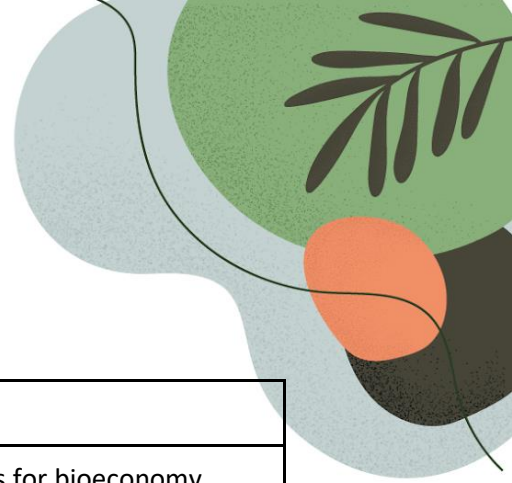


Figure 27: Demonstrating bioeconomy book in Greek teacher training

The seminar was delivered in Greek and all the material that were presented and provided to the teachers were also translated in Greek in order to facilitate their future use in the classrooms (the tools were made accessible to the teachers through an online sharepoint). The seminar was divided in 3 sections in order to smoothly accomplish the learning objectives of the seminar. During the first part the teachers learned about the bioeconomy through storytelling complemented by scientific facts. In the 2nd part the teachers were presented with the different formats and tools developed during the project in an interactive way (live performance of experiments and reading of the book, playing memory game, showing videos, etc.) and they were trained on how to use them in the classroom settings. In the final part, Q-PLAN presented the Transition2BIO toolkit for teachers, the school competition and the form created to collect the feedback. Overall, the feedback was very positive, and the teachers mentioned that they hardly ever take such interactive seminars and that they can directly use the knowledge gained in the class.



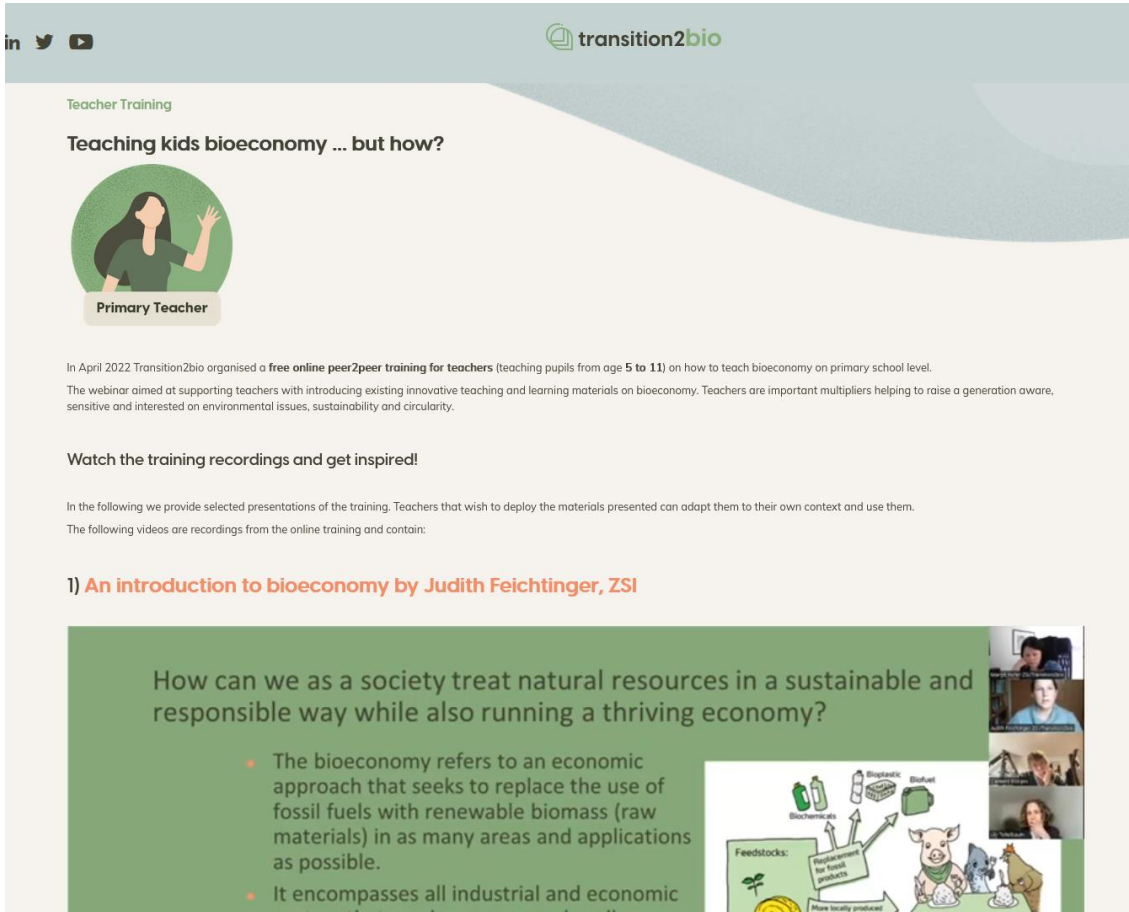
Figure 28: Teacher training in Greece



7.6 International training (ZSI, BIOCOM)

Topic	Training on bioeconomy
Aim	Establishment of sustainable training materials for bioeconomy
Number of teachers	21 registered teachers; 4 active teachers/multipliers, 5 researchers
Date and Place	online (total views: approx. 300)
Cooperation:	Semih Esendemir, BLOOM awarded teacher

The online training for teachers was designed as an expert consultation rather than a classical training. Background of this decision was that we aimed to create recordings for further publication and dissemination purposes. Thus all participants gave their permission to record the consultation so that interested teachers can watch the input presentations afterwards. Thus we limited the registration to 21 teachers, however we have not anticipated a very high drop-out rate (at the end, only 4 teachers took part in the expert consultation).



The screenshot shows a webpage for 'Teacher Training' with the title 'Teaching kids bioeconomy ... but how?'. It features a circular icon of a woman labeled 'Primary Teacher'. The text describes a free online peer2peer training for teachers on how to teach bioeconomy to primary school pupils. It includes a call to action to watch training recordings and a list of video recordings. A diagram titled 'How can we as a society treat natural resources in a sustainable and responsible way while also running a thriving economy?' explains the bioeconomy approach, showing a cycle from feedstocks to biochemicals, bioplastic, and biofuel, with a note on replacing fossil products with more locally produced ones.

Figure 29: Teacher training resources online

The training compiled four important elements:

1. An **introduction** to Bioeconomy (What is bioeconomy?)
2. Existing **teaching materials** (Where to find resources for bioeconomy for school lessons?)
3. **Practical tips** for teaching bioeconomy (What are the lessons learned? What issues/barriers/challenges have to be considered?)
4. **Practical example** on teaching bioeconomy in schools (Practice example: Bioeconomy for a sustainable future by Semih Esendemir, BLOOM awarded teacher)

Each video points out core elements presented by ZSI, BIOCUM and one invited BLOOM teacher within 10 to 12 minutes. The video material is stored within YouTube and is linked with the website of Transition2BIO to make the input available for anyone interested at any time.



8 Competition for kids (subtask 2.2.4)

8.1 Competition for children between 3-12 (ZSI, PEDAL)

Topic	Competition for children between 3-12
Aim	awareness raising for bioeconomy and sustainability
Number of students	Print: 28.000 households in Austria (approx. 35.000 young students), 150 submissions for competition; online version from PEDAL under EWOBOX platform
Date and Place	printed media (October 2022) and online
Cooperations:	Alpenvereinsjugend Austria (4U Magazin) (https://www.alpenverein.at/jugend_wAssets/docs/Mediathek/Publikationen/4U-Magazin/2022/4U-Magazin-der-Alpenvereinsjugend-2022-03.pdf)



Figure 30: 4U magazine front page - 2022/03

Engage4BIO followed the usual principle of the magazine, thus we created an article on the topic of bioeconomy targeting young children. The article was printed as a double page right in the middle of the magazine. We used elements (graphics, design) from the Bioeconomy book for kids and also included the QR code of the book to further promote the usage of the book.

In cooperation with the *Alpenvereinsjugend* Austria, ZSI launched a competition within the well-known magazine 4U. This magazine is a very popular magazine for young children and a printed version is sent to over 29.000 households in Austria four times a year. The magazine is for free if the family is a member of the *Alpenverein*. The *Alpenverein Austria* is an association focusing on the preservation of the Alps, hiking and walking in the Alps and has a major focus on environment, sustainability and protection of nature.

The 4U magazine is specifically targeted towards children between 3-12 and publishes articles on nature and biology in general, environmental protection, sustainability and ecology.



Figure 31: Article for kids in 4U magazine on bioeconomy

At the very last page of the magazine, kids always find a quiz for competition. With regard to our article and Transition2BIO, we provided also for the quiz three bioeconomy questions, making sure that they could be answered if a kid has read the article in the magazine before.



Figure 32: Quiz for kids

After completion of the quiz, the kids were asked to take a picture of their answers and send it to the magazine. In total, the magazine received 150 entries for the competition.

The winners of the quiz have been selected by the 4U magazine and received (among other prizes) three bioplastic lunch boxes from the Transition2BIO project.

In Slovakia, the competition was published as a call in the ewobox platform, established by the Slovak Environment Agency, a professional organization of the Ministry of the Environment of the Slovak Republic with nationwide scope, focused among others also on information, environmental education and training. EWOBX collects and shares information in the field of environmental education, education and awareness. This platform is open to organisations working in the field of environmental education, schools, etc. Currently, there are 2774 individuals, 480 organisations registered.

The competition is open until December 19, 2022.

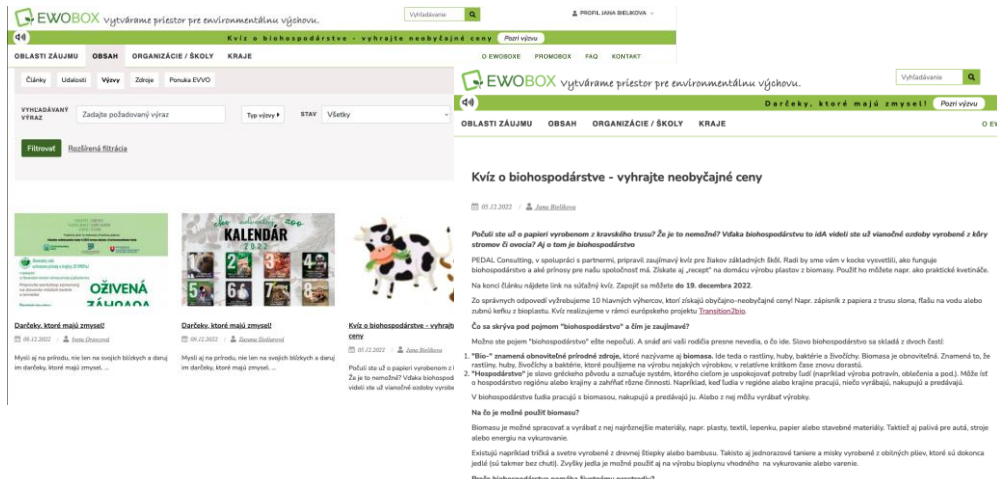


Figure 33: Screenshots of the article promoting the competition on EWOBX

8.2 Competition for secondary schools, second grade: Bioeconomy4YOU

Topic	Competition for: primary schools, secondary schools, high schools and teachers.
Aim	To raise awareness, inform and educate young generations on bioeconomy topics, collecting and awarding the most creative ideas on how they imagine their future in the circular bioeconomy.
Number of students	41 applications were submitted (34 teachers, 54 classes - at least 650 students)
Date and Place	From 07/02/2022 to 09/05/2022, awarding ceremony on the 26 th of May
Cooperation:	The activity was organised in partnership with Fondazione Raul Gardini, Novamont, Re Soil Foundation and Cluster Spring

Bioeconomy4YOU school competition was organised by Re Soil Foundation in collaboration with Cluster SPRING, Raul Gardini Foundation, Novamont and Transition2BIO (APRE e FVA). Aim of the contest was to raise awareness, inform and educate young generations on these topics,

collecting and awarding the most creative ideas on how they imagine their future in the circular bioeconomy. The contest divided the participants in four different categories:

1. Primary schools: *What is the bioeconomy for you? Tell us about the bioeconomy in your daily life!* Both classes and single students were invited to present their ideas through many ways and formats (videos, articles, drawings, representations, artistic works, etc.), telling their idea of bioeconomy in a simple, clear, effective and innovative way.
2. Secondary schools: *Become an ambassador of change.* Lower secondary school classes and students were invited to submit projects to explain to classmates and families what circular bioeconomy means and what bio-based products are, through practical examples that can stimulate behaviour, purchasing choices, changes in daily habits, lifestyles in line with the principles of the circular bioeconomy capable of reducing man's impact on the environment and efforts to combat climate change. Many formats were admitted, e.g. videos, articles, drawings, representations, art works.
3. Secondary schools: sub-categories secondary schools “bioproduct” and “Our bio-future” project
 - a. Bioproduct: creation of a bio-product that responds to a particular environmental problem, considering the entire life cycle of the product itself, from the use of raw materials of biological origin (vegetable or animal, with particular attention to raw materials currently considered waste), to production in a sustainable key, which ends with an end of life capable of recovering the material in a circular way. The project can be documented through different tools and ways (power point presentation, Prezi/video production).
 - b. Our bio-future (project-group): students presented videos, interviews or other multimedia material, which highlights different aspects of the bioeconomy in the present and future life of young people (as citizens, as students and as future workers or entrepreneurs), showing how bioeconomy represents an opportunity for them and for their future.
4. Teachers: *Develop educational content for students.* Creation of an educational activity on the bioeconomy, using active and/or laboratory teaching methodologies, in order to facilitate the introduction of knowledge and skills on the subject of circular bioeconomy in school curricula of all levels.



Figure 34: Students at the Bioeconomy Day 2022. Ravenna, May, 25th 2022

The awarding ceremony took place during the second day of the Bioeconomy Day 2022, which took place in Ravenna (Italy) hosted by Alighieri Theatre, on the 25th and 26th of May. The initiative was launched by the Cluster SPRING (the Italian Cluster of Circular Bioeconomy), in collaboration with Assobiotec-Federchimica, Raul Gardini Foundation, APRE and FVA representing the European funded project Transition2BIO, Novamont and Re Soil Foundation and the European Bioeconomy Network.



Figure 35: Bioeconomy4YOU awarding ceremony. Ravenna, May, 26th 2022



Figure 36: Bioeconomy4YOU awarding ceremony. Ravenna, May, 26th 2022

41 applications were submitted to the competition, divided in the four different categories.

The jury selected the best ideas, taking into account the originality and creativity of the proposal, the correct identification of an environmental problem, the quality and clarity of presentation and the consideration of the entire life cycle of the product. Winning students and teachers were awarded with money prizes, educational materials, bio-based gadgets, books and magazines.

8.3 Competition for higher education - Startupper School Academy 2021/2022

Topic	Competition for high school students in Lazio Region (Italy)
Aim	<ul style="list-style-type: none"> • promote awareness and education about bioeconomy, its sectors, impacts and benefits to drive the transition towards more sustainable behaviour of young people • inform on opportunities and inspire study and work careers in the domain
Number of students	108 schools, 5,380 students and 253 teachers participated to the whole competition in 2021/2022
Date and Place	The competition run from December 2021 with a final event on June 2022
Cooperation:	The activity was organised with BIObec project, in partnership with Lazio Innova, Novamont, Re Soil Foundation and Cluster Spring

Transition2BIO promoted the Bioeconomy prize in the context of the Startupper School Academy also for the 2021/2022 edition. In November and December 2021 several meetings took place with Lazio Innova and the other Bioeconomy prize partners to define the contents and action plan for the edition. The official launch of the Startupper School Academy bioeconomy prize took place on December 15.

To participate in the competition, small teams of high school students (up to 5) should present a business idea for a product or service dealing with the bioeconomy of bio-based products. The Startupper School Academy has different phases in which the students receive different types of mentoring and training, to transform their initial idea into a concrete business plan, to be presented in the form of pitch to the jury.

Compared to the 2020/2021 edition, the 2021/2022 edition was characterised by some issues related to the pandemic and a turnover of dedicated personnel to the activity (in the main competition, not specifically in the bioeconomy), which forced to cancel a training activity planned and to reduce the capacity building package to one single webinar targeting both teachers and students competing to the Bioeconomy prize (see 7.2.1). This unfortunately was not sufficient to equip all the participants with the necessary knowledge on the bioeconomy. As a consequence, we faced a decrease in the final number of participants selecting the Bioeconomy prize (14 projects against more than 30 in the previous edition), with a lower quality of the projects presented, which showed a lack of understanding of the bioeconomy related challenges, like eco-design, End-of-Life, Circularity, Sustainability of Feedstocks, Cascade use of the feedstock, etc.

After this experience the Bioeconomy prize partners decided to redesign and improve the format of the capacity building activities, in light of the next edition of the Startupper School Academy competition.



Figure 37: Winners of the Bioeconomy Prize

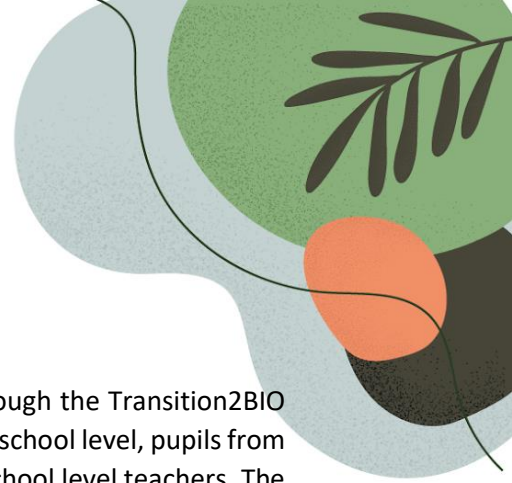
The awarding ceremony for the Startupper School Academy competition took place on the 1st June 2022 and was organised in presence but also live streamed on the Lazio Region social media channels, reaching 400 people in presence and 2.9k views.

The BioArt Gallery was also exhibited in the main room where the ceremony took place (see figure 36).

The Startupper School Academy 2021-2022 finally involved 108 schools, 5,380 students and 253 teachers during this last edition, for a total of 141 business ideas and 20 prototypes realised.

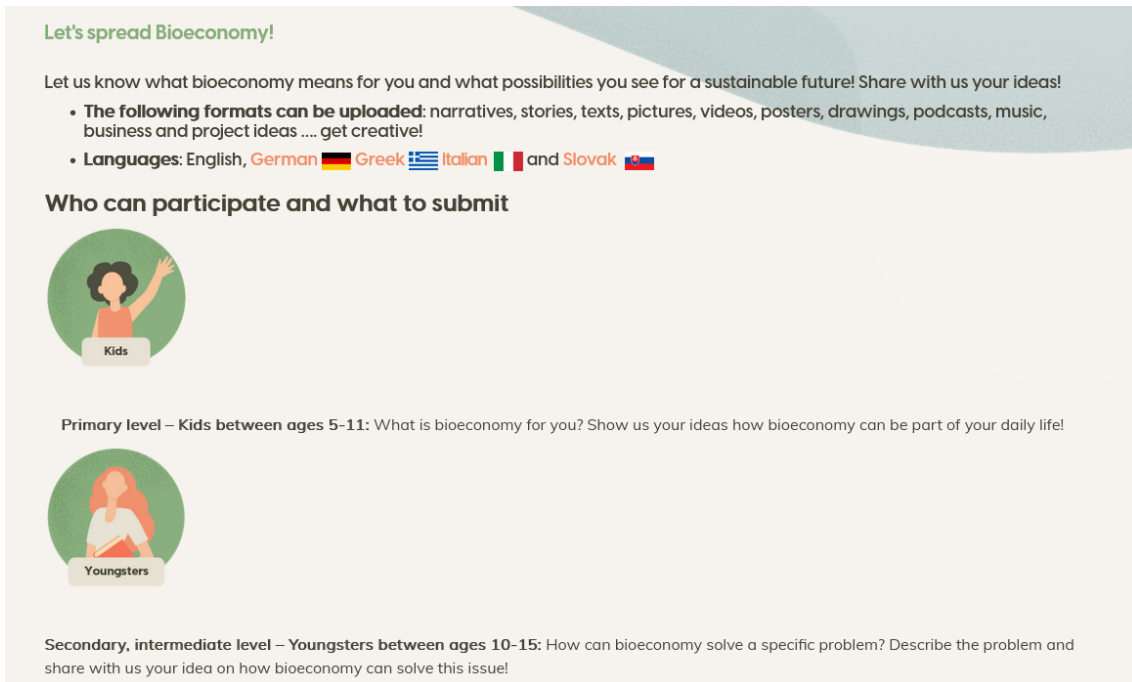


Figure 38: Awarding ceremony with the BioArt Gallery








8.4 International school competition (ZSI, FVA, Q-PLAN, PEDAL)

The international school competition was launched and organised through the Transition2BIO webpage. It targeted four different groups, namely pupils from primary school level, pupils from secondary school level, primary school level teachers, and secondary school level teachers. The screenshots below show the entrance page for the competition.




Let's spread Bioeconomy!


Let us know what bioeconomy means for you and what possibilities you see for a sustainable future! Share with us your ideas!

- **The following formats can be uploaded:** narratives, stories, texts, pictures, videos, posters, drawings, podcasts, music, business and project ideas get creative!
- **Languages:** English,  German,  Greek,  Italian,  and Slovak, 

Who can participate and what to submit



Kids

Primary level – Kids between ages 5-11: What is bioeconomy for you? Show us your ideas how bioeconomy can be part of your daily life!


Youngsters


Secondary, intermediate level – Youngsters between ages 10-15: How can bioeconomy solve a specific problem? Describe the problem and share with us your idea on how bioeconomy can solve this issue!

Figure 39: Webpage international competition - 1



Primary Teacher

Primary level – Teachers from primary level teaching pupils from age 5-11: Create teaching/learning material that can easily be used from other teachers



Secondary Teacher

Secondary, intermediate level – Teachers teaching pupils from age 10-15: Create teaching/learning material that can easily be used from other teachers

You can enter the competition either as single pupil, a group, a teacher or as an entire class.

Deadline

The competition is open until the 15th of June 2022!

What is the prize?

The main prizes include vouchers worth up to €200 for teaching materials and books. Additionally, books, and bio-based products such as pens, mugs, and grow-your-own mycelium kits can be won!

A jury of experts will decide on the best submissions in each category.

Submit your ideas and solutions here!

For ideas, you can also search the Transition2Bio toolkits for teachers or the hands-on ideas for kids [here!](#)

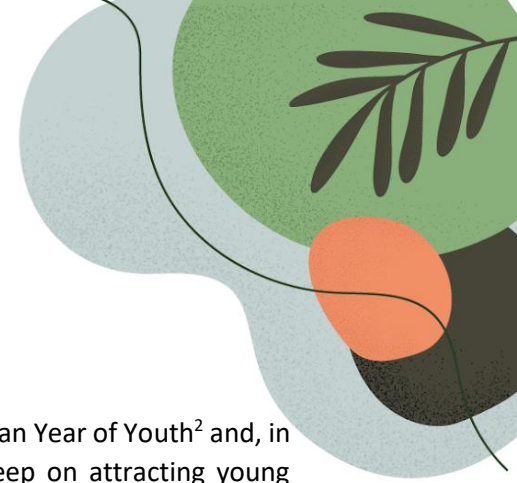
Figure 40: Webpage international competition -

With the international competition the KPI's could not be reached. Altogether only four teachers entered the competition (one from GR, AT, IT, SK). The consortium monitored the competition closely and discussed possible adaptations and implemented respective changes. The consortium added translations into several languages (German, Greek, Italian, Slovak) and in the end initiated instead national competitions in AT, SK and IT.

The consortium gained some important insights:

- In order to win participants for the competition it was very important to integrate the competition into the teacher training or promote and explain the competition in other engagement activities. Promotion in SM without further explanations was not sufficient.
- The task for the teachers' competition, to develop teaching material, was perceived as too complex and needed too effort-intensive and an already existing basis of knowledge on bioeconomy.
- Teachers also reported that time constraints were a reason for not entering the competition.
- It was hard to motivate teachers in online formats.

After the competition closed and as there were only four submissions, the consortium/ZSI rewarded the four competitors and decided to focus and launch another, national competition in AT and Slovakia. The national competition in Austria and Slovakia is described in section 8.1.



9 Other additional activities

9.1 Implementing format “From Students2Students”

The year 2022 has been declared by the European Union as the European Year of Youth² and, in this context, it was in the scope of the Transition2BIO project to keep on attracting young generations towards educational, research and working careers in the bioeconomy, therefore contributing to raise the future generation of workforce informed and interested in this domain. One of the most relevant lessons learnt stemming from the first year of Transition2BIO was that young people are eager to take their role in the transition towards a more sustainable lifestyle.

To support this process, young generations need to be engaged and empowered with information, capacities (including transversal skills) and opportunities. In light of these considerations, Transition2BIO explored the format “From Students2Students” which supports students (of any age, including the little ones) in taking their role and promoting the transition to their peers or to their families.

After a first exploration, the format was implemented during large-scale events and exhibitions (e.g. EU Researchers’ Night, see picture 39) and it proved to be effective to attract the younger audience and facilitate the emergence of questions.



Figure 41: From high school students to primary school students.

Another example of a successful implementation of the “From Students2Students” format took place in the “Giovanni XXIII” Primary School (Gioia Tauro, Italy) where the pupils delivered a lesson about bioeconomy to the kids of the kindergarden (see figure 40).

² For more info: https://youth.europa.eu/year-of-youth_en

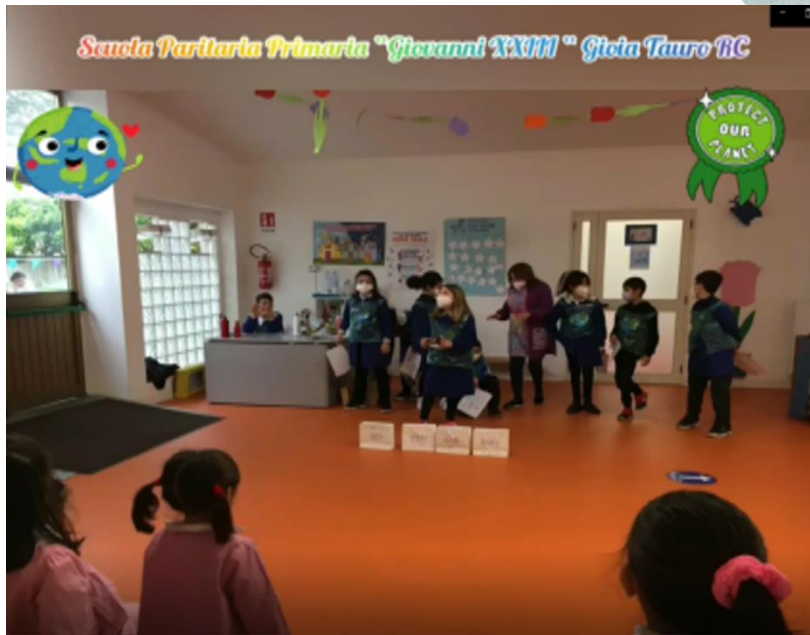


Figure 42: From primary school students to pre-school kids

After they were equipped with the Transition2BIO educational materials, the primary school class was in fact able to learn more about the bioeconomy and to be empowered enough to take a role and share their knowledge with the little ones.

Finally, inspired by the Transition2BIO hands-on labs collected in the toolkit, they were also able to replicate some experiments in a video tutorial to be shared with their peers and families (see figure 41).



Figure 41: Video tutorial from a primary school student



9.2 Two pilot schools in Italy

Two pilots were implemented in Italy to understand what should be done to support the teachers and schools in introducing the bioeconomy in the classes. Specifically, two primary schools have been involved, a bigger school ([Scuola Primaria Bonghi](#)) in Rome, and a small school, with 2 classes in a village close to Turin ([scuola primaria Bruno Ciari](#)), in the north of Italy. The two completely different contexts were selected to better understand the conditions that are suitable for future replication of the format.

Both schools received the bioeconomy books for all the classes, a kit with more than 50 bio-based products to showcase bioeconomy to the kids and dedicated training activities to the teachers.

The teachers involved in the pilot actively contributed in the adaptation of the contents for their students, by proposing to the kids several activities connected to the bioeconomy, to facilitate the learning and consolidate the knowledge.



Figure 43: Some activities made in the pilot schools

The experience of these schools have been promoted in the context of several dissemination activities, like the workshop “Bioeconomy in the RiGenerazione Scuola” at the Italian Chamber of Deputies, during the capacity building for teachers organised under the Ministry of Education platform in collaboration with Eni. During these events, the director of the Bonghi school and some teachers have been sharing their experience with the participants, expressing their enthusiasm and satisfaction.

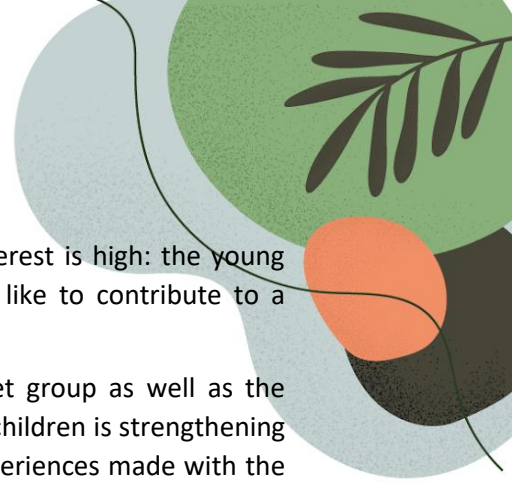
10 Outlook

Civil society in general and the young generation in particular have scarce or no knowledge on what “bioeconomy” is. At the same time, the young generation is very aware of climate change problems and proves to be open to buy bio-based products, to reduce pollution and to support the achievement of environmental sustainability goals. This favourable attitude in combination with knowledge on bioeconomy can spark behavioural and socio-economic changes; a more sustainable consumption and lifestyle, and a future generation of decision-makers and workforce informed and interested in bioeconomy.

The transition from a linear to a circular economy calls for expansion also on an educational level and unlocking the potential of the young generation requires working together across disciplines

and sectors. Experience in the last two years has shown that the interest is high: the young generation is very aware of the great environmental challenge and like to contribute to a sustainable nature, thus they are open minded for bioeconomy too.

Delivering materials and activities adapted for this very young target group as well as the innovative teaching methodologies like hands-on activities or labs for children is strengthening the future of bioeconomy. The gained learning and insights of the experiences made with the different activities adapted to children are a valuable source for further activities and projects. An effective delivery of this knowledge and insights are passed on already to successor EU projects like GenB, Engage4BIO, RuralBioUp and Bioloc and are openly available on the website. Different other exploitation measures will make sure that these results including the respective material of Transition2BIO will be further used, adapted and improved.



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