



First educational event for high school students

Overview	
Date	15.03.2021
Venue	ZOOM platform
Aim of the event	Introduction of the educational materials related to circular economy and sustainable development through presentation, videos and quiz in order to bring closer the opportunities, challenges and solutions of the bioeconomy to the high school students.

Short resume

The Strumica region is part of the BE-Rural project funded by the "Horizon 2020" program of the European Union. The project aims to bring the concept of bioeconomy closer to the stakeholders in the region, to map the opportunities and potentials of the region, as well as to develop roadmaps and strategies for bioeconomy development.

To initiate the educational events planned for the Strumica region for pupils and students in elementary and secondary education, the first educational event was held for students from the high school "Jane Sandanski" – municipality of Strumica on 15.03.2021 starting at 8 am via ZOOM platform. The educational event was attended by 94 participants, including students from second and third year, class teachers, as well as representatives of SDEWES-Skopje. The topic of the event was: The Role of Bioeconomy: Opportunities, Challenges and Solutions.

The initial part of the educational event was about the concept and ideas of BE-Rural which were explained in order to introduce the students with the goals of the project. The focus of the presentation was the synergies of various aspects of bioeconomy. The students were introduced to concepts such as biodiversity and bioeconomy. The linkages of bioeconomy, climate change and ecologic limits were also highlighted. The following part of the presentation was more focused on bioeconomy resources, i.e. different types and how they can be utilized. Sustainability is closely related to bioeconomy, so the concept of sustainable resource utilization was elaborated in detail through the sustainability diagram. Examples of strong and weak sustainability were explained for a more pictorial view. It was of great benefit to emphasize the importance of the sustainable development goals by highlighting the most important ones for the bioeconomy. The Strumica region is dominated by the agricultural and forestry sector, so examples of small pelleting and mobile wood chips technologies and bio-based products from such waste were presented. Some examples of bio-products such as healthy drink from coniferous trees, eco hairbrush from wild boar hair and wood, mycelium and agricultural residues pots and biofuel were interesting for the students. At the end of the class, students actively participated in several quiz questions using the Zoom Poll option. The bioeconomy concept was shown with a video that in

an interesting way summarize the main aspects of the lesson and will help the students to remember the key points.

Having in mind the current situation with the pandemic, the educational events are organized virtually, with the possibility of replication in physical events when suitable situation occur. The feedback from the students and teachers is more than satisfactory with an eagerness for these events to continue in the future.

Participants				
No	Name	Surname	Organization	Stakeholder category
1	Natasha	Markovska	SDEWES-Skopje	member
2	Emilija	Mihajloska	SDEWES-Skopje	member
3	Vladimir	Gjorgievski	SDEWES-Skopje	member
4	Ljupcho	Dimov	SDEWES-Skopje	member
5	Vasilka	Hadzi-Kotareva	High school – municipality of Strumica	professor
6	Gordana	Vasileva Vukashinovikj	High school – municipality of Strumica	professor
7	Antonija	Angelova	High school – municipality of Strumica	Student/II-2
8	Gjorgji	Begalinoski	High school – municipality of Strumica	Student/II-2
10	Martin	Burgov	High school – municipality of Strumica	Student/II-2
11	Eva	Galabovska	High school – municipality of Strumica	Student/II-2
12	Vasko	Dimitrov	High school – municipality of Strumica	Student/II-2
13	Pavlinka	Eftimova	High school – municipality of Strumica	Student/II-2
14	Zora	Janakieva	High school – municipality of Strumica	Student/II-2
15	Stojanche	Manchev	High school – municipality of Strumica	Student/II-2
16	Riste	Manchev	High school – municipality of Strumica	Student/II-2
17	Ema	Milanovikj	High school – municipality of Strumica	Student/II-2
18	Angela	Nikolova	High school – municipality of Strumica	Student/II-2
19	Kiril	Odzakov	High school – municipality of Strumica	Student/II-2
20	Marija	Paketova	High school – municipality of Strumica	Student/II-2



21	Mimi	Petrova	High school – municipality of Strumica	Student/II-2
22	Dimitar	Spasov	High school – municipality of Strumica	Student/II-2
23	Simova	Stavrova	High school – municipality of Strumica	Student/II-2
24	Jovan	Stojkov	High school – municipality of Strumica	Student/II-2
25	Ivana	Treblichlieva	High school – municipality of Strumica	Student/II-2
26	Gjorgji	Cvetanov	High school – municipality of Strumica	Student/II-2
27	Blagoja	Dzorlev	High school – municipality of Strumica	Student/II-2
28	Makedonka	Goshevska	High school – municipality of Strumica	Student/II-6
29	Blagica	Jugovska	High school – municipality of Strumica	Student/II-6
30	Matej	Madzanov	High school – municipality of Strumica	Student/II-6
31	Spase	Mitrev	High school – municipality of Strumica	Student/II-6
32	Vanja	Nikolova	High school – municipality of Strumica	Student/II-6
33	Ana Marija	Ruskova	High school – municipality of Strumica	Student/II-6
34	Anastasija	Sokolova	High school – municipality of Strumica	Student/II-6
35	Aleksandra	Stoilova	High school – municipality of Strumica	Student/II-6
36	Verica	Todorova	High school – municipality of Strumica	Student/II-6
37	Elena	Hristova	High school – municipality of Strumica	Student/II-6
38	Marija	Angelova	High school – municipality of Strumica	Student/II-11
39	Melani	Andonova	High school – municipality of Strumica	Student/II-11
40	Bojan	Atanasovski	High school – municipality of Strumica	Student/II-11
41	Filip	Gjorgjiev	High school – municipality of Strumica	Student/II-11
42	Ana	Zdravkova	High school – municipality of Strumica	Student/II-11
43	Ivana	Zeman	High school – municipality of Strumica	Student/II-11
44	Ines	Ibishka	High school – municipality of Strumica	Student/II-11
45	Aleksandra	Ilieva	High school – municipality of Strumica	Student/II-11



46	Kristijan	Ilijev	High school – municipality of Strumica	Student/II-11
47	Ance	Ilijeva	High school – municipality of Strumica	Student/II-11
48	Marija	Janeva	High school – municipality of Strumica	Student/II-11
49	Daniela	Kacurova	High school – municipality of Strumica	Student/II-11
50	Sofija	Lazovska	High school – municipality of Strumica	Student/II-11
51	Hristijan	Madzarov	High school – municipality of Strumica	Student/II-11
52	Bojan	Mitev	High school – municipality of Strumica	Student/II-11
53	Anita	Mitevaska	High school – municipality of Strumica	Student/II-11
54	Ivana	Nanova	High school – municipality of Strumica	Student/II-11
55	Sofija	Nedeva	High school – municipality of Strumica	Student/II-11
56	Andrej	Nikolovska	High school – municipality of Strumica	Student/II-11
57	Violeta	Popova	High school – municipality of Strumica	Student/II-11
58	Tea	Popcheva	High school – municipality of Strumica	Student/II-11
59	Melanija	Ristova	High school – municipality of Strumica	Student/II-11
60	Jovan	Spasov	High school – municipality of Strumica	Student/II-11
61	Magdalena	Taseva	High school – municipality of Strumica	Student/II-11
62	Elena	Todorova	High school – municipality of Strumica	Student/II-11
63	Mersat	Kjazimi	High school – municipality of Strumica	Student/II-11
64	Tomi	Shumarov	High school – municipality of Strumica	Student/II-11
65	Dimitar	Ahtarov	High school – municipality of Strumica	Student/III-3
66	Branko	Vampendziev	High school – municipality of Strumica	Student/III-3
67	Atanas	Vitanov	High school – municipality of Strumica	Student/III-3
68	Ana	Geogieva	High school – municipality of Strumica	Student/III-3
69	Martin	Geogiev	High school – municipality of Strumica	Student/III-3
70	Verica	Georgievska	High school – municipality of Strumica	Student/III-3



71	Leona	Gligoroska	High school – municipality of Strumica	Student/III-3
72	Adam	Zimbakov	High school – municipality of Strumica	Student/III-3
73	Vencislav	Karkalashev	High school – municipality of Strumica	Student/III-3
74	Kostadin	Kitanovski	High school – municipality of Strumica	Student/III-3
75	Anastasija	Kostova	High school – municipality of Strumica	Student/III-3
76	Angela	Kostova	High school – municipality of Strumica	Student/III-3
77	Angela	Krstevska	High school – municipality of Strumica	Student/III-3
78	Olgica	Mancheva	High school – municipality of Strumica	Student/III-3
79	Jana	Miceva	High school – municipality of Strumica	Student/III-3
80	Nadica	Nikolova	High school – municipality of Strumica	Student/III-3
81	Rade	Perovanovikj	High school – municipality of Strumica	Student/III-3
82	Trajche	Prodanov	High school – municipality of Strumica	Student/III-3
83	Martin	Ristov	High school – municipality of Strumica	Student/III-3
84	Veronika	Stambolieva	High school – municipality of Strumica	Student/III-3
85	Mia	Stevkova	High school – municipality of Strumica	Student/III-3
86	Vasil	Tasev	High school – municipality of Strumica	Student/III-3
87	Aleksandra	Tosheva	High school – municipality of Strumica	Student/III-3
88	Marija	Hristova	High school – municipality of Strumica	Student/III-3
89	Aleksandra	Shekjerdzieva	High school – municipality of Strumica	Student/III-3

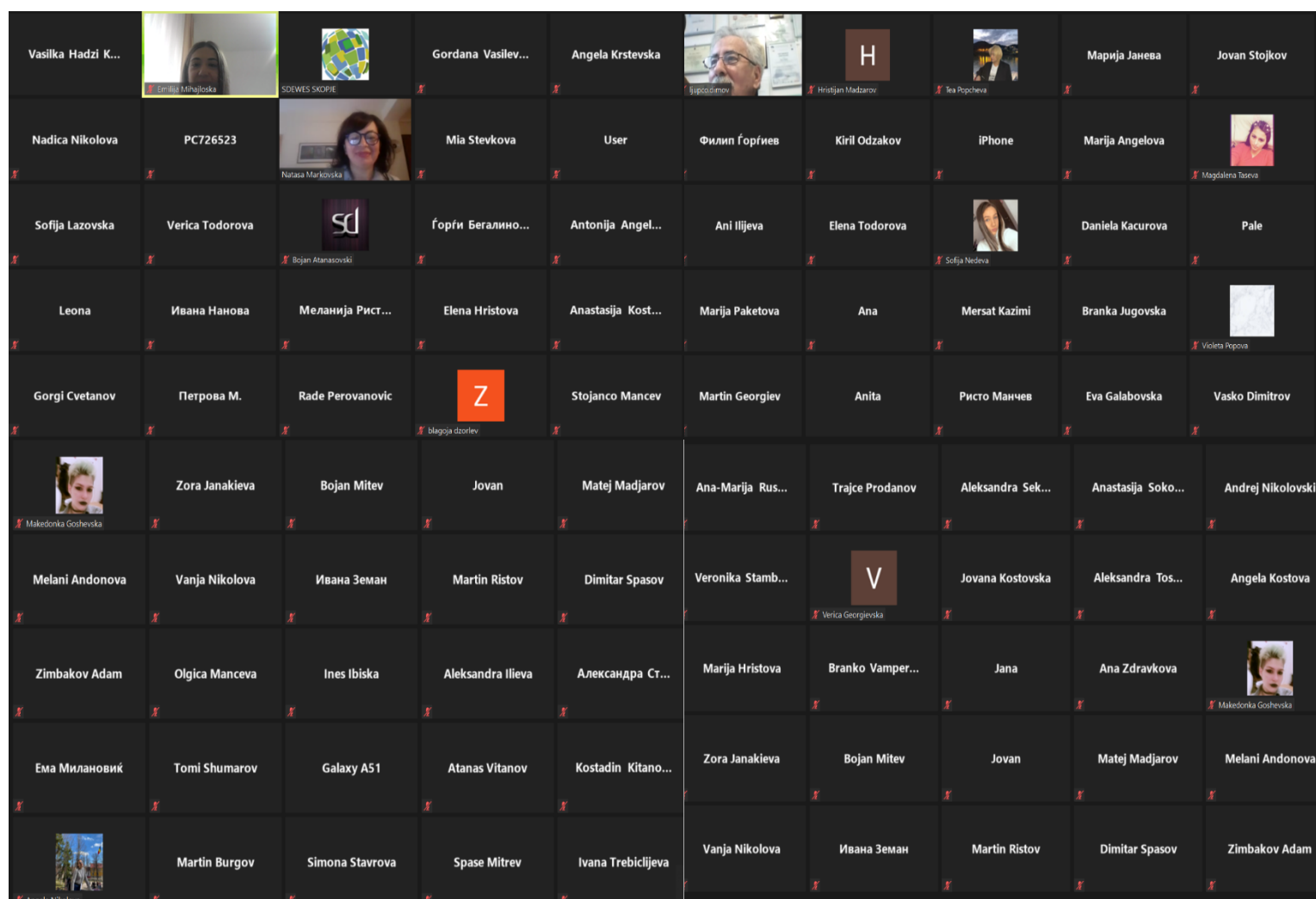
Agenda	
08:00 – 08:05	Welcome and introduction <ul style="list-style-type: none"> • Technical setup and explanation of the technical tools • Consent forms • Feedback form



This project is funded by the Research and Innovation Program of the European Union "Horizon 2020", with Grant agreement no. 818478.

08:05 – 08:35	Presentation on the topic: Opportunities, challenges and solutions of bioeconomy <ul style="list-style-type: none"> • Focus on bioeconomy, biodiversity, sustainability, ecological limits, sustainable development goals, technological solutions for the agricultural and forestry sector, bio-based products • Quiz • Video
08:35 – 08:40	Discussion and conclusions


Photographs



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Emilija Mihajloska


Vasilka Hadzi K...




Nadica Nikolova

PC726523

Angela Krstevska



Recording...



Биодиверзитет

Participants (86)

Q Find a participant

ZJ Zora Janakieva

ГГГГ Гори Бегалински

ИИ Ивана Нанова

KK Кристијан Илијев

MM Марија Јанева

MM Меланија Ристова

ПП Петар Милановиќ

ПП Петрова М.

РР Ристо Манчев

ФФ Филип Ѓорѓиев

АА Aleksandra Ilieva

АА Anita

ВМ Bojan Mitev

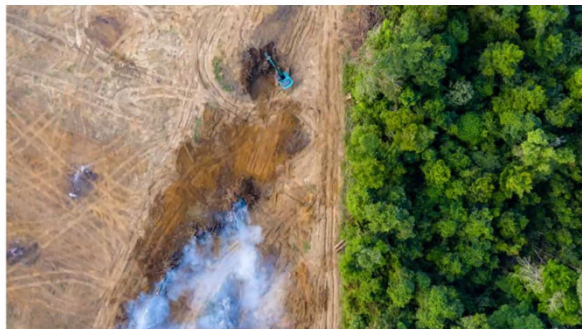
КР Kiril Popovski

KK Kostadin Kitanovski

МН Marija Hristova


Invite

Unmute Me



Emilija Mihajloska


Vasilka Hadzi K...




Nadica Nikolova

PC726523

Angela Krstevska



Recording...



Шумарска технологија:

Participants (93)

Q Find a participant

EM Emilija Mihajloska (Me)

SDEWES SKOPJE (Host)

VH Vasilka Hadzi Kotarova

АА Aleksandra Ilieva

AS Aleksandra Sekerdzieva

AT Aleksandra Tosheva

АА Ana

AZ Ana Zdravkova

AR Ana-Marija Ruskova

AK Anastasija Kostova

AS Anastasija Sokolova

AN Andrej Nikolovski

AK Angela Kostova

AK Angela Krstevska

АА Angela Nikolova


АА Ani Ilieva

Invite

Unmute Me

Биоматеријали од остатоци од агро-шумарство и мицелиум- Spawnfoam


- 100% биоразградлив, биокompatibilen материјал направен од габи, органски адитиви и биомаса од локалната агроиндустрија и шумарството
- Мицелиумот служи како врзливо средство за да ги соедини честичките на биомасата
- Биокompatibilniот материјал може да се пресува и обликува во различни форми (пр. саксии, амбалажен материјал, градежен материјал)
- Биокompatibilniот се ефикасни и ефективни колку и производите добиени од фосили, но се безбедни и корисни за природната средина



Извор: Colmorgen and Khawaja (2019.)

Подвижни уреди за ситнење на дрва - Ерпек Ind SRL

- Подвижниот уред за ситнење дрво е многу флексибилен бидејќи се монтира на шасија на приколка и може да работи без надворешен извор на енергија
- За Уредот за ситнење е потребна мала инвестиција (околу 17 000 евра) и може да се исплати по 900 часа работа
- Едноставната технологија и големиот потенцијал за репликација значи добар опсег за нови приливи на приходи
- Дрвениот чипс има разноврсна потенцијална употреба (пр. цврсто гориво, производство на дрвена пулпа, мулчирање)



Подвижен уред за ситнење дрво (Ерпек Ind 2019)
Извор: Colmorgen and Khawaja (2019)

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Emilija Mihajloska

Vasilka Hadzi K...

SDEWES SKOPJE

Nadica Nikolova

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Angela Krstevska

Recording...

Колкави количества отпад од храна се проценет...

за отпад

1. Колкави количества отпад од храна се проценети годишно на глобално ниво?

☐ 1.3 милијарди тони (една третина од произведената храна)
 ☐ 2 милијарди тони (половина од произведената храна)
 ☐ 2.6 милијарди тони (две третини од произведената храна)

Submit

Participants (94)

Q Find a participant

Tea Popcheva

TS Tomi Shumarov

TP Trajce Prodanov

U User

VN Vanja Nikolova

VH Vasilka Hadzi Kotarova

VD Vasko Dimitrov

V Vencislav

V Verica Georgievska

VT Verica Todorova

VS Veronika Stambolieva

Violeta Popova

ZA Zimbakov Adam

ZJ Zora Janakieva

A Александра Стоилова

B Васил Тасев

Invite

Unmute Me

Emilija Mihajloska

Vasilka Hadzi K...

SDEWES SKOPJE

Natasa Marko...

Ивана Нанова

Angela Krstevska

Recording...

BIO-BASED PRODUCTS

Participants (90)

Q Find a participant

ZA Zimbakov Adam

ZJ Zora Janakieva

A Александра Стоилова

B Васил Тасев

f Горги Бегалиноски

E Ема Милановиќ

И Ивана Земан

И Ивана Нанова

M Марија Јанева

M Меланија Ристова

П Петрова M.

P Ристо Манчев

Ф Филип Горѓиев

A Anita

GA Galaxy A51

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