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EPPKA2-KA



**University-
Business Alliance
in Modern
Biotechnology
Approaches for
Climate Change
Mitigation
Solutions
BIO-Save**



Co-funded by the
Erasmus+ Programme
of the European Union



<https://www.bio-save.eu/>

...BIO-SAVE PROJECT SUPPORTS SOLUTIONS

FOR:

bridging the gap between teaching in the academic institutions and the need for educated professionals in the biotech business.

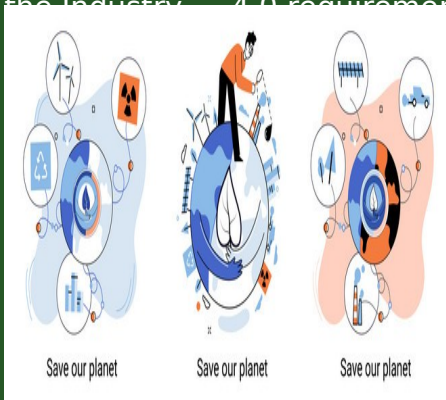
promoting the best practices in modern biotechnology research

boosting innovation in the biotech education and business through establishing an innovative programme in "Modern biotechnology approaches for climate change mitigation".

implementing advanced knowledge and skills to stimulate the shift of the EU education towards smart and green competences.

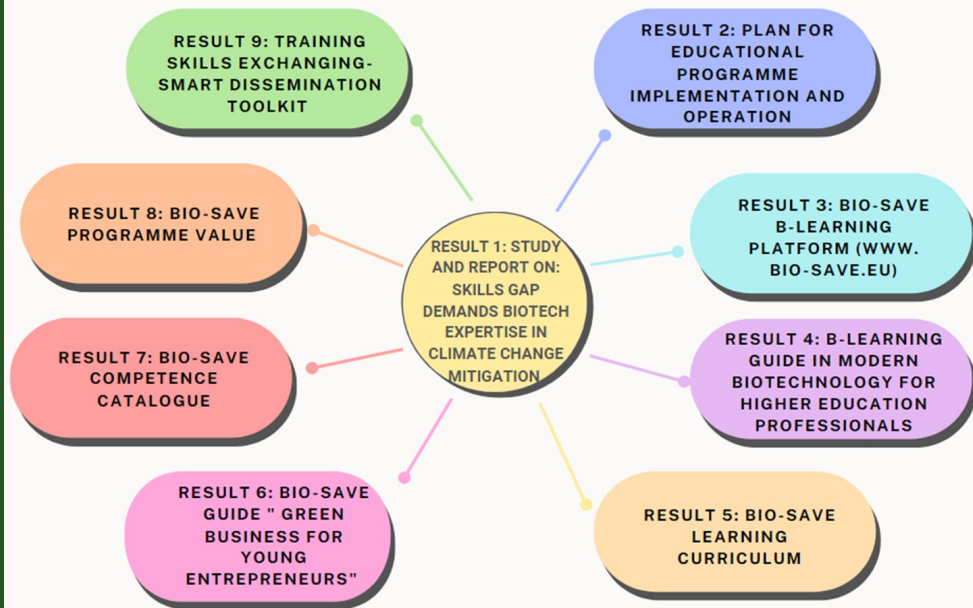
improving the quality of education for students, teachers and practitioners with up-to date knowledge in climate protective biotechnology approaches through ICT-based flexible, transferable, Learning Outcomes and Learning Pathways with the ultimate aim to build a competence-based learning system.

contributing to the (re)training of the workforce to answer the Industry 4.0 requirements



BIO-Save Results Spotlights

BIO-SAVE RESULTS MAP



.....BY DEVELOPING INNOVATIVE PROJECT RESULTS AIMED AT :

- defining the applications of modern biotechnology approaches in climate change mitigation for improving quality of life.
- outlining the educational needs/gaps in the biotech sector for climate change mitigation in the partners` countries
- creating an open-source cloud-based b-learning platform providing educational content and learning opportunities tailored to the target groups needs.
- providing an education programme, structured as Learning Outcomes and organized in personalized Blended Learning Pathways, designed for BIO-Save target groups.
- presenting up-to date learning and teaching methods and the use of ICT in HE.
- applying the European Instruments EQF/HE/ECST and the principles of HE to provide the needed competence and skills to the BIO-Save targets.
- defining career profiles in modern biotechnology designed for graduates at different NQF/EQF/HE reference levels.



Result 1

Study and Report on: “Skills Gap Demands Biotech Expertise in Climate Change Mitigation” (EN)

In short.....

The consequences of human-induced adverse climate changes will be multiple and already affect the globe. Fast measures and new technologies must be applied to tackle climate change targets. Modern biotechnologies have enormous potential to play a role in climate change mitigation via climate-friendly technologies' promotion and development. Their growing application in the industry leads to changes in the job requirements, which pose challenges Higher Education sector as a principal



The BIO-Save Consortium aims to address the skills gap in the first of its partner countries with the goal of upgrading and providing s



initiatives challenges, partners` (and Turkey) need to find a way to relation to

that, BIO-Save Consortium prepared a Report “Skills gap demands biotech expertise in climate change mitigation” reviewing the existing educational needs in Modern biotechnology in all partners` countries (Result 1). It is prepared on the basis of an analytical approach and summarized and assessed data collected through a literature survey and discussions with BIO-Save relevant economic sectors. The Report contributes to broad public awareness about the training necessity in the project subject area and the need for systemic growth of the biotech sector. The purpose of Result 1 is to:

- present the state-of-the-art practice in modern biotechnology approaches for climate change mitigation in Bulgaria, Greece, Italy, Slovenia, and Turkey.
- outline the status of contemporary biotech practices and national peculiarities in identifying new skills and competencies and their actual uptake by various industrial sectors.
- analyse/assess the existing national policies and employment prospects in BIO-Save relevant economic sectors.
- present how the factors for a clean environment are integrated into the economy.
- describe the existing education curricula integrating modern biotechnology tools/educational needs in the project subject area in the partners` countries.
- identify skills gaps in academic, practical, and employability skills required for biotech expertise in climate change mitigation.

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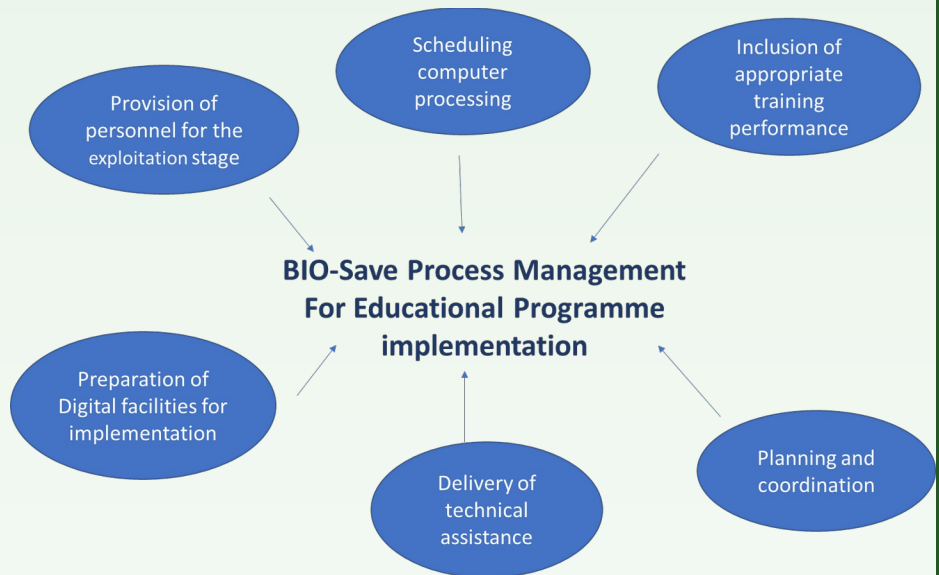
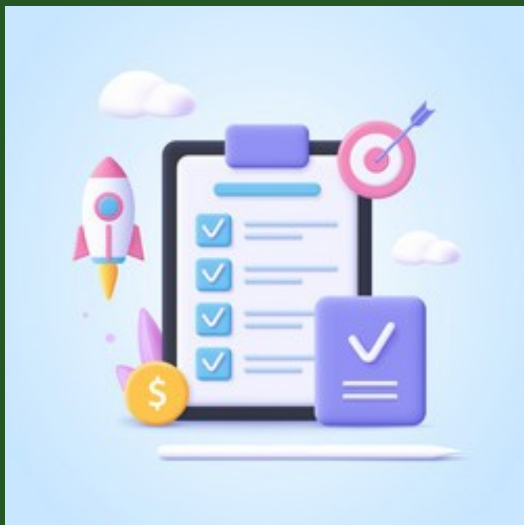
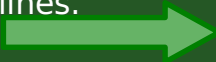
Result 2

Plan for Educational Programme Implementation and Operation

Guideline (EN)

In short.....

Effective project management requires a definition of key issues for guiding project progress, planning the activities, and identifying tasks, resources, and timelines.



Result 2 “Plan for Educational Programme Implementation and Operation” represents a guideline that describes the essence and importance of the BIO-Save Training, the objectives of the BIO-Save Programme, and the strategies for its effective implementation for upgrading the HE programmes in Modern biotechnology. The guideline provides an overview of the processes of how the BIO-Save educational programme will be supported after the project expiration.

The main steps in implementing BIO-Save training focus on

- Identifying sectors or clusters
- Identifying training providers
- Role of the training providers
- Capacity building for training providers
- Guidelines for training adaptation

In line with the purpose of the BIO-Save project to link HE teaching to the continuous professional development in the biotech sector respecting climate change, the “Plan for Educational Programme Implementation and Operation” presents a strategy for BIO-Save training marketing and dissemination to Universities and SMEs. The way in which the implemented BIO-Save Educational Programme will influence project target groups, end users` community, and relevant stakeholders in the long term is also described.



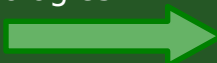
Result 3

BIO-Save b-Learning Platform (www.bio-save.eu)

Open on/off -line courses (EN, BG, GR, TR, IT)

In short.....

HE organizations are looking for biotech knowledge approaches and skills in many advanced areas, and all these demands have created a gap in the marketplace. Business and industry green economic growth require well-educated, skilled professionals in modern climate-saving biotechnologies.



The BIO-Save project aims to boost innovations in higher biotechnology education and biotech business by establishing an innovative programme in “Modern biotechnology approaches for climate change mitigation”. It will implement advanced knowledge and skills promoting the shift of EU education towards smart and green competencies.

The BIO-Save project elaborates on an open-source, multilingual cloud-based platform with convenient operational functionality. The platform provides flexible learning opportunities beyond the classroom by applying an innovative blended learning system. The BIO-Save b-learning platform (Result 3) encourages the knowledge, skills, and competencies upgrade, corresponding to the Education 4.0 multi-dimensional approach for Industry 4.0 workforce needs satisfaction by e-learning technology, assessment tests, and offline materials.

The b-learning platform comprises the following innovative elements:

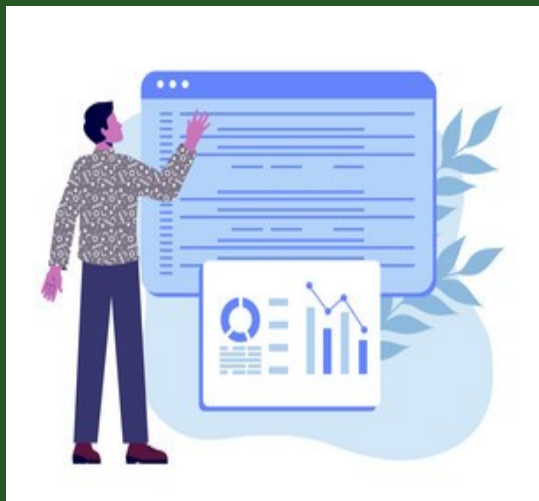
BIO-Save Presentation - introduces the modern biotechnology approaches for climate change mitigation and the BIO-Save opportunities and partners.

BIO-Save b-Learning - provides target groups with learning opportunities tailored to their needs:

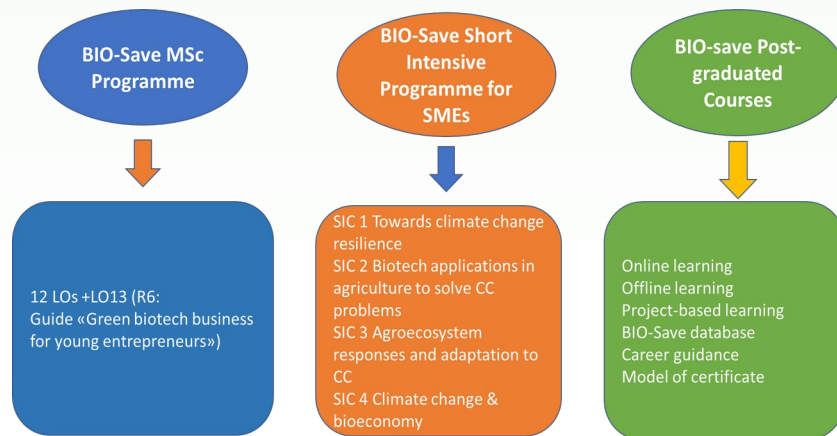
- BIO-Save Blended Learning Model
- BIO-Save Training Modules
- BIO-Save 3D learning experience
- BIO-Save Competence Catalogue

The BIO-Save project database - hosts EU and national data about research and education in the project research area.

The BIO-Save dissemination and exploitation - serve as a tool for the transferability of the BIO-Save results and their sustainable impact



BIO-Save b-learning portal structuring





Result 4

b-Learning Guide in Modern Biotechnology for Higher Education Professionals

Methodology/ Guidelines

(EN, BG, GR, TR, IT)

It is essential to understand the learning process to improve the quality of students' learning. High-quality learning depends not just on pass or completion rates but on the nature of the knowledge, skills, and conceptual understanding that students have acquired during their education. Effective learning helps students to develop a broad range of innovative skills that will be valuable for them not just for work in a specific profession but also will effectively prepare students



In order to help BIO-Save educational providers and professionals from the biotech sector to deliver/acquire the innovative project blended model, BIO-Save Consortium elaborates an online user guide titled “b-Learning Guide in Modern Biotechnology for Higher Education Professionals” (Result 4). This easy-to-read digital learning guide shares the most effective modern teaching, learning, and assessment methods. It focuses on the necessity for ICT tools and technologies application in the HE sector. The Guide is divided into three parts and provides opportunities for the quality of teaching in Modern biotechnology improvement and update of educational and ICT skills and competencies of the target groups for effective use of the project's innovative b-learning program. Part I and III comprise H5P interactive presentations with integrated video files that make the Guide more attractive and user-friendly.

b-Learning Guide in Modern Biotechnology for Higher Education Professionals

Part 1: New learning and teaching methods in HE programmes



- Learning environment
- Education 4.0 aligning teaching and processes with technological advancements: the main trends
- Innovative key skill sets and shifts in learning experiences
- New learning delivery methods
- Assessment approaches

Part 2: BIO-Save Project learning



- Learning Outcomes based training structure platform
- Online and offline possibilities of interactive environment
- BIO-Save project learning goals and objectives
- BIO-Save Cloud - based learning opportunities

Part 3: The Use of ICT in HE



- Essential digital skills for work and life
- Digital skills needed to use modern ICTs in HE
- How ICTs is embedded in the process of HE
- How ICTs evolved the Higher education
- ICT strategies and tools for technology-enhanced learning



ve RESULT 5

BIO-Save Learning Curriculum

Learning/Training Material (EN, BG, GR, TR, IT) In short.....

Modern Biotechnology is of great essence for climate change mitigation and the sustainable growth of the green economy. EU Universities promote education in biotechnology, which can reduce the harmful effects on the ecosystems and the environment. Novel biotechnology approaches and technologies are among the reasonable options that could contribute to solving the climate change problems. The biotechnology current challenges and future perspective for climate change adaptation and

In this respect, the challenges of the BIO-Save Project are grounded on the design of an innovative multilingual multidisciplinary educational programme dedicated to modern biotechnology approaches for creating solutions to mitigate climate change at an international scale. It will strongly impact job growth, raising awareness about the potential of modern technologies to improve the quality of life and support global environmental problems solutions. The BIO-Save Learning Curriculum (Result 5) provides various e-learning opportunities such as offline/online availability of the principal training content, self(assessment) part, project-based learning approach, and additional training resources (cloud computing, QR codes, videos, 3D digital images).

The BIO-Save Learning Curriculum, created for students, professors and practitioners, comprises the following topics:
Module 1: Biotechnology for climate change mitigation

- LO1. Reduction GHGs emission
- LO2. Use of energy efficient farming
- LO3. Carbon sequestration
- LO4. Reduced use of synthetic fertilizer
- LO5. Adaptation to abiotic stresses and evaluation of adaptation measures

Module 2: Biotechnologies for climate change adaptation in agriculture

- LO6. Biotechnology approach to solve agricultural and natural resources problems and restore degraded ecosystems
- LO7. Enhancing adaptive capacity of crops: Innovation in plant breeding to develop more resilient to climate change crop varieties for agriculture
- LO8. Agro-ecosystem responses to combination of elevated CO2, ozone, salt and heat changes resulting from global climate change
- LO9. Crop diversification and opportunity for climate change resilience
- LO10. Use of new technologies and practices
- LO11. Conservation and exchange of plant genetic resources
- LO12. Addressing climate changes with ISO standards
- LO13 Guide «Green biotech business for young entrepreneurs»

The development of BIO-Save Learning Programme includes:

Integration of **digital tools**: videos, H5P presentations, cloud computing, QR codes, videos, 3D digital images
Definition of **learning outcomes** covering knowledge, skills, responsibility and autonomy that can be achieved after the completion of the learning content.

Formulation of **Blended Learning Pathways (BLPs)** foreseen for different sets of target groups and EQF/NQF and HE levels and translated to all partners` languages - EN, BG, GR, IT, and TR.

Granting of **ECTS points** for the Blended Learning Pathways and qualification in a numerical form to indicate the relative weight of a unit in relation to the traditional full qualification.

Translation of all training materials in **five languages**: English, Bulgarian, Greek, French, and Italian.





ive RESULT 6

Guide “Green biotech business for young entrepreneurs”

(EN, BG, GR, TR, IT)

In short.....

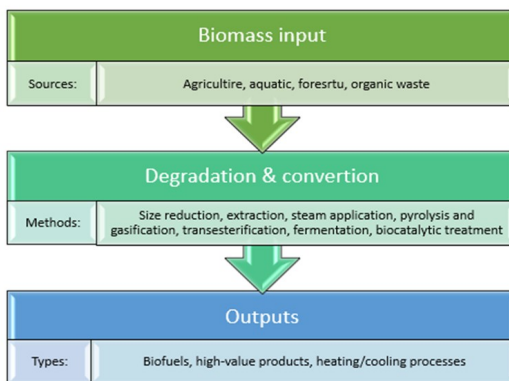
The transition to a carbon-neutral EU by 2050 under the Green Deal is related to changes in the entire products` life cycle and stimulating sustainable consumption and the circular economy. People`s awareness of green business opportunities development should be raised as a solution for adverse climate changes. Modern biotechnology approaches can help in business decisions assessing, valuing and managing, and achieving compliance with environmental standards and certification schemes.

The BIO-Save project answers these challenges by elaborating a Guide “Green Biotech Business for Young Entrepreneurs” (Result 6), that promotes a better understanding of environmental risks and describes exemplary applications of modern biotechnology approaches for climate change mitigation. It is a handbook for young biotech professionals and entrepreneurs willing to make biotech business included in the Blended Learning Pathways (LO13). The Guide is also intended for the broader audience interested in green products and processes and their practical application for climate change mitigation.

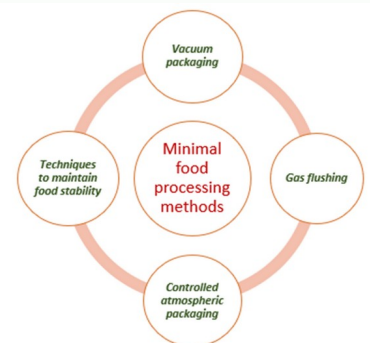
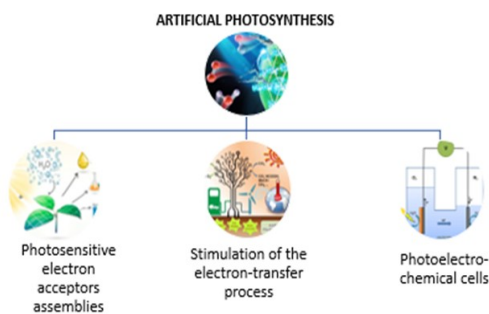
The “Green biotech business for young entrepreneurs” Guide comprises two parts. The first, titled “Green Products and Bioprocesses Overview” provides knowledge on new bioprocesses and bioproducts introduction in various industrial sectors and focuses on the need for the bio-based (circular) economy development.

The Guide`s second part (Smart Practicals in Green Products Development and Business) aims to enrich young entrepreneurs` knowledge of how companies in different sectors apply the already developed green products and technologies to combat climate change.

The Guide strengthens the vision for biotechnology innovations and their implementation toward a sustainable bioeconomy.



Circular Economy





Result 7

BIO-Save Competence Catalogue

Guideline

(EN, BG, GR, TR, IT)

In short.....

Knowledge-based economies require people with higher and more relevant skills. Real-world experience, through problem-based learning and enterprise links, should be embedded across all disciplines and tailored to all levels of education. Biotech organizations need professionals with innovative green qualification characteristics adapted to the challenges in the biotech sector.

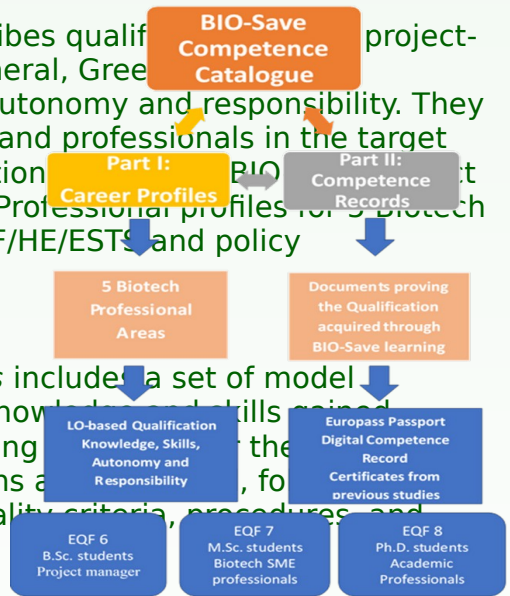
The BIO-Save project aims to boost innovations in higher biotechnology education and biotech business by establishing an innovative Learning Outcome-based modular educational programme for EQF/HE qualification levels 6, 7, and 8 and using ECTS to evaluate the units of Learning Outcomes (LOs). The programme implements advanced knowledge and skills and promotes the shift of EU education towards smart and green competencies.

For better recognition of the skills and competencies of the graduates, who are seeking business careers, BIO-Save Consortium elaborates a Competence Catalogue (Result 7), which exploitation enables the end-users to transform their specific learning and help them remain competitive, i.e., to change and introduce innovation. The Competence Catalogue provides a detailed view of competencies, knowledge, and skills required for HE specialists and biotech practitioners in the project-subject area. This project's result covers all aspects of qualifications regarding the EQF/HE levels, including the particular skills and knowledge required with respect to the necessary safety, communication, and attitude aspects.

The BIO-Save Competence Catalogue comprises two parts.

Part I: *Career Profiles*, describes qualifications in the project-subject area in terms of General, Green Knowledge and Skills, and Autonomy and responsibility. They are designed for specialists and professionals in the target area based on the presentation of the project. The project partnership prepares these Professional profiles for 5 biotech career areas in line with EQF/HE/ESTS and policy requirements.

Part II: *Competence Records* include a set of model documents that prove the knowledge and skills gained through the BIO-Save Learning programme. The qualifications are established EQF/NQF/HE quality criteria, procedures and standards.





ive RESULT 8

BIO-Save Programme Value

Guideline (EN)

In short.....

The need for green competencies creation of the workforce in the Modern Biotechnology sector fosters knowledge transfer and innovation through educational programmes and resource introduction using opportunities of the HE system



In this context, the elaborated Result 8 “BIO-Save Programme Value” main aim is to reflect the BIO-Save project results in final impact in terms of:

Provision of sustainability through innovative b-learning approach: the focus will be on developing an updated EQF/NQF/HE-based b-learning programme for professionals in Modern Biotechnology, created following the partners` specific country needs for more skills and education in the sectors.

Provision of sustainability through the modern e-training environment: how the application of the created BIO-Save project cloud-based 3D learning platform will impact acquiring new biotechnological and digital skills needed by both employers and society and for targets career development.

Provision of sustainability through the training subject: how the BIO-Save b-learning programme in Modern Biotechnology will contribute to stimulating small and medium businesses and enhance employability in this sector.

Provision of sustainability through targets' selection: embedding BIO-Save training in real-life cases will further promote the subject among interested parties in the sector. This promotion will impact not only the HE providers' awareness but also the quality of life. The focus will be to gain a clearer understanding of the applicability of the proposed HE on the adoption of green and digital skills by young people in the Modern Biotechnology sector and the promotion of entrepreneurship.

Provision of sustainability through dissemination and exploitation actions: how the workshops and promoting events performed will benefit sharing and dissemination of project deliverables, which will ensure their





Final RESULT 9

Training Skills Exchanging - Smart Dissemination Toolkit

Guideline (EN)

In short.....

Dissemination is the tool to present the work that has been done by sharing the results, experience, and findings achieved within the frame of a project to the broad community to benefit from the job done.



BIO-Save Project Consortium elaborates a Guide “Training Skills Exchanging – Smart Dissemination Toolkit” (Result 9), that provides the entire conceptual basis and the contractual framework within which project dissemination and exploitation strategy are formulated.

The Guide includes essential practical tips and guidelines for a successful Dissemination and Exploitation strategy development and implementation. The Guide also outlines the key characteristics of an effective Dissemination Plan. The BIO-Save project uses several dissemination methods and frameworks to reach its target group, promoting the project’s work and fostering communication with the target audiences to maximize the use of the BIO-Save results.

The Guide also provides information on the templates and examples of ways to communicate and disseminate project results and findings to diverse audiences in novel ways. All BIO-Save dissemination products (project logo, templates for reports and presentations, posters, fact sheets, flyers, brochures, and newsletters) are elaborated to follow the project’s visual identity and communicate the information on the project and its results.

The Partners in the BIO-Save project (BG: Sofia University “St. Intellect Foundation, Eco-Knowledge GT 3R: The University of Thessaly, Biognosis; *udiorum*-University of Bologna; SI: Initut /ersity and PlanArt Ltd.) will continue to e a project results after the project’s end



CLOUD SHARING

Performance of local actions and generation of successor services and initiatives as a result of the project to sustain its objectives.

Further increase of project partnership through alignment of associate players from biotech and related sectors.

Inviting sponsors (private and/or public), regional/national/EU to keep operating the feasible BIO-Save training programme.

Establishing links with local/regional HE providers and encouraging them to use BIO-Save training resources free of charge.

Launching joint activities with other EU programmes.

Maintaining and upgrading the BIO-Save database.

Launching/distribution of information/materials about project outputs.

Wide-spreading of information about project achievements and keeping active and feasible the LOs-based model for training.



BIO-Save Partnership

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