LIFT

Low-Input Farming and Territories – Integrating knowledge for improving ecosystem based farming

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Course module on the adoption, performance and sustainability of ecological farming
The LIFT MOOC

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About the LIFT research project

Ecological approaches to farming practices are gaining interest across Europe. As this interest grows there is a pressing need to assess the potential contributions these practices may make, the contexts in which they function and their attractiveness to farmers as potential adopters. In particular, ecological agriculture must be assessed against the aim of promoting the improved performance and sustainability of farms, rural environment, rural societies and economies, together.

The overall goal of LIFT is to identify the potential benefits of the adoption of ecological farming in the European Union (EU) and to understand how socio-economic and policy factors impact the adoption, performance and sustainability of ecological farming at various scales, from the level of the single farm to that of a territory.

To meet this goal, LIFT will assess the determinants of adoption of ecological approaches, and evaluate the performance and overall sustainability of these approaches in comparison to more conventional agriculture across a range of farm systems and geographic scales. LIFT will also develop new private arrangements and policy instruments that could improve the adoption and subsequent performance and sustainability of the rural nexus. For this, LIFT will suggest an innovative framework for multi-scale sustainability assessment aimed at identifying critical paths toward the adoption of ecological approaches to enhance public goods and ecosystem services delivery. This will be achieved through the integration of transdisciplinary scientific knowledge and stakeholder expertise to co-develop innovative decision-support tools.

The project will inform and support EU priorities relating to agriculture and the environment in order to promote the performance and sustainability of the combined rural system. At least 30 case studies will be performed in order to reflect the enormous variety in the socio-economic and bio-physical conditions for agriculture across the EU.

Project consortium

No.	Participant organisation name	Country
1	**INRAE - Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement**	**FR**
2	VetAgro Sup – Institut d'enseignement supérieur et de recherche en alimentation, santé animale, sciences agronomiques et de l'environnement	FR
3	SRUC – Scotland's Rural College	UK
4	Teagasc – Agriculture and Food Development Authority	IE
5	KU Leuven – Katholieke Universiteit Leuven	BE
6	SLU – Sveriges Lantbruksuniversitet	SE
7	UNIBO – Alma Mater Studiorum – Universita di Bologna	IT
8	BOKU – Universitaet fuer Bodenkultur Wien	AT
9	UBO – Rheinische Friedrich-Wilhelms – Universitat Bonn	DE
10	JRC – Joint Research Centre – European Commission	BE
11	IAE-AR – Institute of Agricultural Economics	RO
12	KRTK – Közgazdaság – és Regionális Tudományi Kutatóközpont	HU
13	IRWiR PAN – Instytut Rozwoju Wsi i Rolnictwa Polskiej Akademii Nauk	PL
14	DEMETER – Hellinikos Georgikos Organismos – DIMITRA	GR
15	UNIKENT – University of Kent	UK
16	IT – INRAE Transfert S.A.	FR
17	ECOZEPT Deutschland	DE

Table of contents

Table of figures

Table of tables

List of acronyms and abbreviations

AES: Agri-Environmental Schemes

DoA: Description of Action

EU: European Union

ENRD: European Network for Rural Development

EIP-AGRI: European Innovation Partnership on Agricultural Sustainability and Productivity

MOOC: Massive Online Open Course

PPS: PowerPoint Slide Show

RRI: Responsible Research and Innovation

1. Summary

This Deliverable D7.8 is the description of the development of a Massive Online Open Course (MOOC) dedicated to the adoption, performance, and sustainability of ecological farming based on research carried out in the LIFT project. The course has a full and free access and is notably aimed at students, educators, farm advisors and policy makers, with the aim to provide knowledge on the main findings of LIFT.

Innovative learning methodologies are provided in the MOOC: short videos, serious games, multiple-choice questionnaires, slideshows, quizzes to self-assess knowledge, testimonies, key figures, and simulators. The MOOC contains nine modules grouped into four major topics: the LIFT typology; drivers of adoption of ecological practices; farm performance; policies supporting the development of ecological approaches in agriculture. In addition, a forum module allows users to discuss and ask questions with an English translation, and a webinar series module allows to further investigate specific case studies. The course can provide open badges, which are validated indicators of accomplishment, skill, quality, or interest that can be obtained and added to an open badge portfolio or digital CV and web-based profiles.

2. Introduction

As indicated in the LIFT Description of Action (DoA), a Massive Online Open Course (MOOC) was planned in the LIFT project aiming at disseminating the results of the project to students, farmers, farm advisors and policy makers (Table 1). The objective was to increase knowledge and skills regarding the drivers behind the adoption of ecological approaches and behind performance and sustainability, and which could be used by stakeholders when they design targeted advice and policies.

Table 1: Dissemination plan of the LIFT MOOC as indicated in the LIFT DoA

Main result	Potential users	Dissemination strategy	Potential use
Course module (MOOC) on the adoption, performance and sustainability of ecological farming	Students Educators Farm advisory services Policy makers Agronomists	Scientific communication at congresses, direct communication to agricultural universities, newsletters, LIFT's partners' website, public website	Skill building of students, farmers and workers in farmers' professional organisations

3. The LIFT Massive Online Open Course (MOOC)

This section presents the context and objectives of the LIFT MOOC (3.1.) before detailing the process we implemented (3.2.) to produce the content of the MOOC, which is then presented (3.3.).

3.1. Context and objectives

3.1.1. Context and challenges

Changes in digital technologies and the globalisation of higher education and research are converging on the rapid development of the global digital training offer. The dissemination of scientific knowledge is changing. Digital technologies enable faster transfer of knowledge to students, facilitators, extension agents, and educators.

Moreover, the LIFT project has put into practice the proposed concept of Responsible Research and Innovation (RRI) by linking a diversity of actors, depending on their knowledge, expertise and role in the society. That included networking and mutual communication among the scientific community, and stakeholders, media, and the general public, and allowed to:

- ensure the most efficient exploitation of the project's results;
- coordinate and facilitate networking of stakeholders coming from the 13 countries in LIFT;
- reach the highest potential audience, keeping them up to date and foster dialogue with them;
- maximise impact by co-creation of the results;
- increase awareness about the advantages of ecological approaches on farming;
- popularise the knowledge about the socio-economic benefits from the LIFT project in Europe and more globally;
- enhance positive trends in public perception of European Union (EU) research activities.

In practice, RRI actions in LIFT were promoted via "science education" which includes modern ways of learning – a MOOC.

3.1.2. Objectives

LIFT MOOC is aimed at disseminating the results of the project to students, teachers, farm advisors, and policy makers. This contributes to increasing knowledge and skills regarding the drivers behind the adoption of ecological approaches and behind performance and sustainability, and could help stakeholders when they design targeted advice and policies. The LIFT MOOC is dedicated to the adoption, performance, and sustainability of ecological farming. Upon registration, the course is open freely to any person, and notably targets students, educators, farm advisors, and policy makers, with the aim to provide them free-of-charge knowledge on the main findings of LIFT.

Another objective of the MOOC is to be interactive and attractive for learners. For this reason, the MOOC provides various resources based on innovative learning such as short videos, serious (yet simple) games, multiple-choice questionnaires, simulators, slideshows, etc. There are also case studies with a tutorial, which could be used during class courses.

3.1.3. Criteria of success

Criteria have been identified to monitor that the MOOC contributes to the achievements of the expected impacts of LIFT (Table 2).

Table 2: Expected impacts and their indicators as planned in the LIFT DoA

Expected impacts	Indicators to monitor that the measures achieve the expected impacts
"Improved integrated capacity and method to assess the sustainability of different agro-ecological approaches"	Number of different user categories using the MOOC Number of users of the 'typology tool' Number of users of the 'adoption tool'
"Increases in productivity, delivery of public goods and job creation through improved agro-ecological approaches and market and policy incentives"	Number of users of the MOOC
"Strengthened transdisciplinary research and integrated scientific support for relevant EU policies and priorities (Common Agricultural Policy, Water Framework Directive, climate change objectives, jobs, etc.)."	Number of policy-making/administration staff using the MOOC
Strengthened competitiveness of the EU agricultural sector in terms of exports	Number of downstream market actors using the MOOC

3.1.4. MOOC construction process

The construction of the MOOC was led by VetAgro Sup, a partner bringing multidisciplinary expertise and experience in agricultural research and education, in particular in dissemination and training activities through the development of other MOOCs.

First ideas of the MOOC were discussed in small group in May 2020. Then, during summer 2020, a survey was launched to all LIFT members to ask for advice on the MOOC content, to imagine a first architecture for the LIFT e-learning project, and to identify potential contributors.

The instrumental question was: "What should ideally be included in a LIFT module? (ideally does not mean technically feasible)". And sub-questions included: which issue? which result? for which audience? in which language? in which format?

It was then decided that the MOOC would be hosted on Moodle[1], which is a free and open-source learning management system with an international reputation. In particular, the Agreenium[2] platform was chosen to host the LIFT MOOC. Agreenium is a permanent French academic platform already containing several MOOC modules in agriculture, life sciences, food process in French and in English for e-learning programmes. Integrating the LIFT MOOC on Agreenium ensures continuous access to contributors and other users, and e-learning resources and assistance are provided for free because VetAgro Sup and INRAE are founders and members of the Agreenium platform.

[1] https://moodle.org/?lang=en

[2] Agreenium is a cooperation public institute created in 2015 gathering 18 French public higher education and research institutions in agricultural and veterinary sciences, including INRAE, VetAgro Sup, Institut Agro, AgroSup Dijon (https://en.agreenium.fr/page/alliance).

The architecture of the e-learning project was finalised in April 2021. The period from September 2021 to April 2022 was dedicated to feed the MOOC with resources and to organise a Beta test (

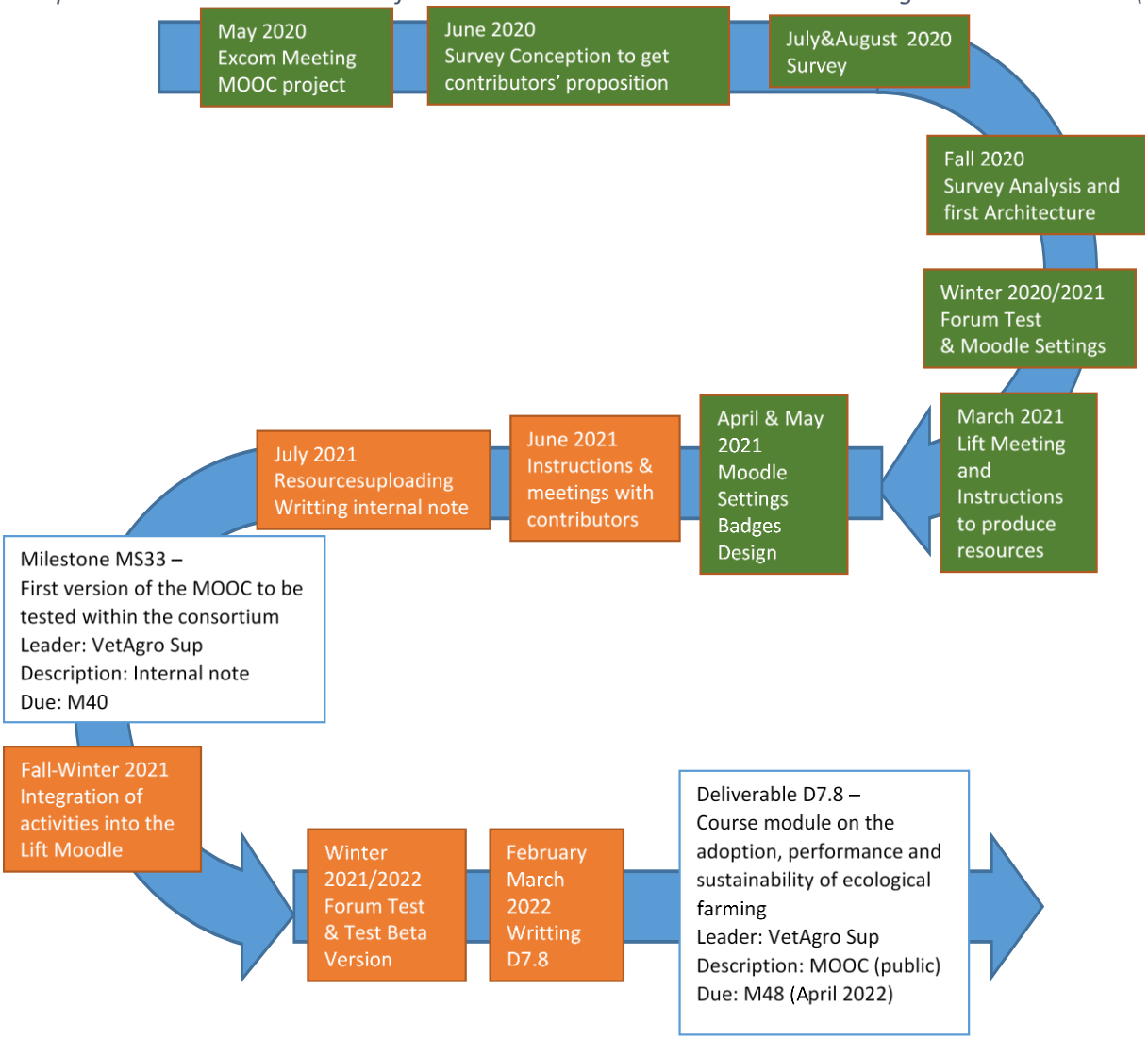

Figure 1). Finally, the MOOC was launched at April 2022.

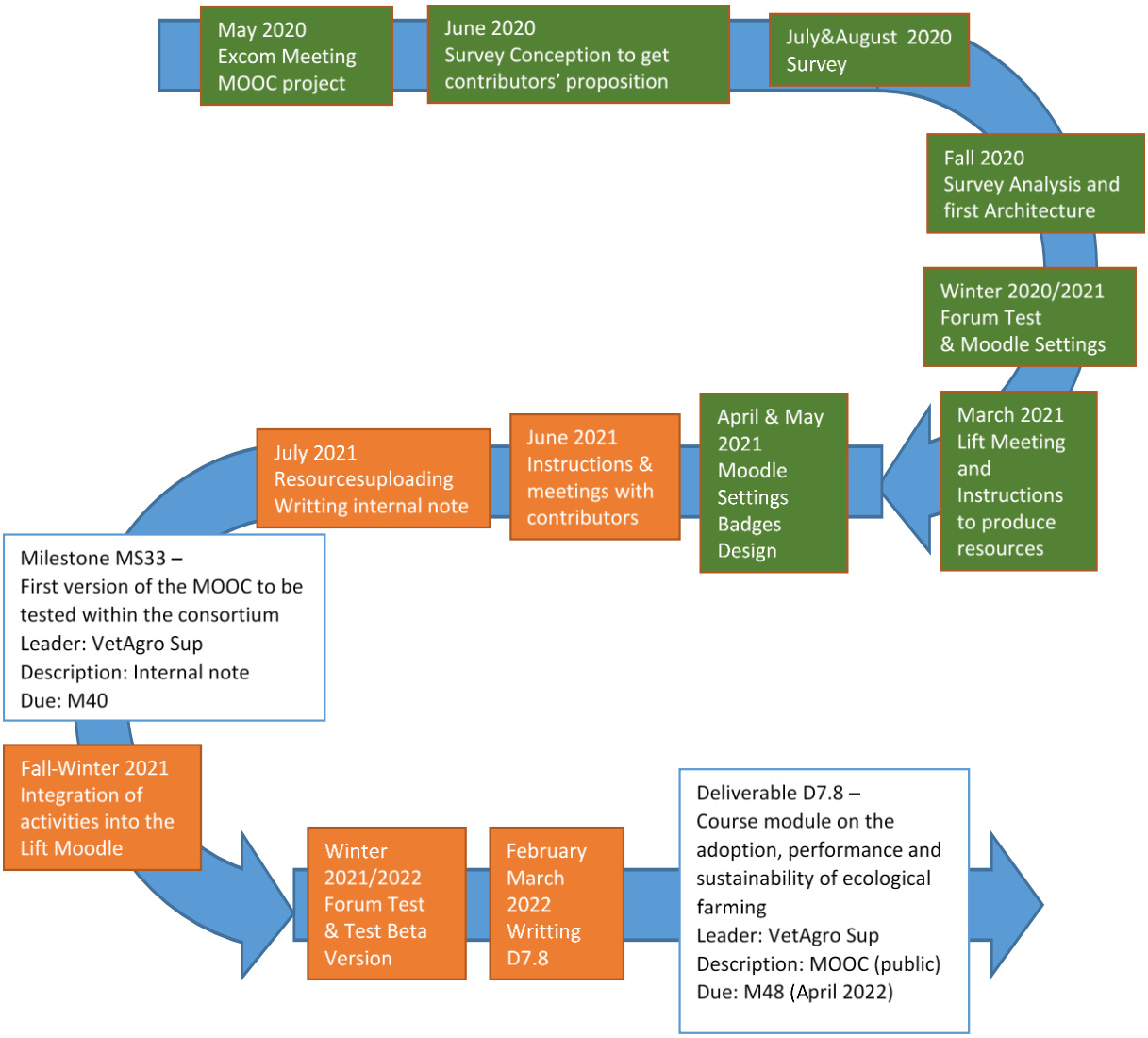

Figure 1: Detailed schedule from May 2020 to April 2022

The LIFT module covers four major topics:

- the LIFT typology;
- drivers of adoption of ecological practices in agriculture;
- performance of farms using ecological practices;
- policies supporting the development of ecological approaches in agriculture.

Each of the four topics consist of lectures, quizzes, simulators, serious games, video tutorials, etc. A course offers a variety of short activities, such as videos, Powerpoint presentations with voiceover, training exercises, serious games, etc. The lectures have been carefully designed, depending on the main target audience: students, educators, extension agents, policy makers, farmers, other stakeholders in the value chain.

The development of serious games in the LIFT MOOC was inspired from the existing serious game developed by VetAgro Sup which deals with the prisoners' dilemma. This corresponds to a situation where, in a shared-resource system, individual users, acting independently according to their own

interest, behave against the well-being of all users by depleting or spoiling the shared resource through their action. This game introduces such notions as information asymmetry, free-riding, opportunism, solidarity in time and space, spatial scale mismatch, threshold effect, externality, etc.

Webinars are integrated in the LIFT MOOC, as a new tool to share knowledge. A webinar (web + seminar) is an online event where a speaker, or small group of speakers, deliver a presentation to a large audience who participate by asking questions, responding to polls, and using other available interactive tools. The difference in LIFT is that it is not be possible to have a moderator, but only courses to follow online.

Instructions that were given to contributors of the MOOC modules content can be found in the **Appendix 1** and **Appendix 2**.

3.2. LIFT MOOC audience and contents

3.2.1. Targeted audience

The MOOC aims at transferring knowledge on the drivers facilitating the development of ecological approaches on farms and the improvement of performance and sustainability of such farms. Although open freely to any person, the main target of the LIFT MOOC is students, lifelong learning advisory staff, educators, and policy stakeholders, with specific key messages for each target group (Table 3).

Table 3: Key messages by target group as planned in the LIFT DoA

Target group	Key messages
Governments, policy makers	Role of policies in providing better conditions for ecological farming practices
Educators, students, farm advisors	Spread the main results of the project Popularise the knowledge about the socio-economic benefits from the LIFT project
Stakeholders from EU countries not covered by the LIFT consortium	Popularise the knowledge about the socio-economic benefits from the LIFT project in Europe

3.2.2. Platform and access

As indicate above, The MOOC is hosted by Agreenium. This platform enables tracking users and can count the number of users in predefined categories: number of MOOC users; number of policy makers/administration staff; number of downstream market actors. This functionality is useful to set up indicators that measure the achievement of the expected impacts.

In the Agreenium platform a user can be rewarded if he or she reaches an expected level. Then, it is possible to assign an “open badge”, which is a validated indicator that an individual has a particular skill or accomplishment. To do so, the opening and following of the course is monitored and if users have followed the courses and passed the tests, they can get an open badge. Each trainee is registered and has access to the resources and his/her dashboard to monitor his/her courses.The open badges

can be shared and displayed in a digital form. The Agreenium platform can provide details on what the badge was for and can set expiry dates where appropriate. Users can display their badges on digital CVs and web-based profiles.

The Agreenium platform hosts the LIFT e-learning module as a specific course and has an English portal. All modules of the LIFT MOOC are in English. Some specific conferences or discussions were translated for a particular audience. This is the case for enabling users from different countries to discuss topics in a LIFT Forum or LIFT Chat. An application (Google translation) for simultaneous translation is provided.

Unlike regular MOOCs, which are only accessible for a limited period, the LIFT modules are planned to be accessible all the time. The Agreenium platform offers this possibility without constraint.

The LIFT modules are accessible free-of-charge after registering to obtain a login and password. Any person can request and obtain the login details.

LIFT modules have no moderator, they only include courses to be taken online. This means that the courses are designed in such a way that users are as autonomous as possible. However, it should be underlined that teachers can use these courses (all courses or only some) and moderate student interactions as a support of the learning process.

The LIFT MOOC benefits from the technical support of the Agreenium team to register new users, make announcements, assign badges, and solve technical problems. It also benefits from Agreenium's communication capacities, which allow to promote the results of LIFT via the MOOC.

The platform accessible after registration is shown on Figure 2.

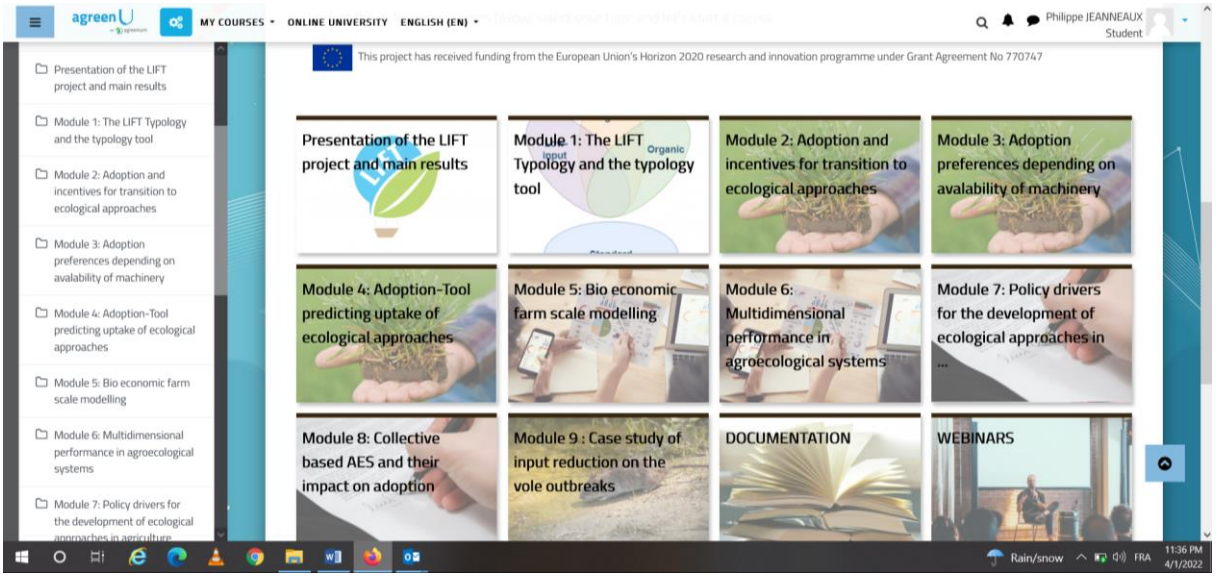

Figure 2: LIFT MOOC interface on the Agreenium platform

3.2.3. Modules

The achitecture of the LIFT MOOC is based on the following modules:

- ✓ Module 0 “Introduction” is an **Introduction** to briefly present the LIFT project and the main achievements of the project
- ✓ Module 1 is dedicated to the presentation of the **LIFT Typology and the typology-tool**
- ✓ Module 2 is dedicated to **Adoption and incentives for transition to ecological approaches**
- ✓ Module 3 is dedicated to **Adoption preferences depending on availability of machinery**
- ✓ Module 4 is dedicated to the **LIFT Adoption-tool** predicting uptake of ecological approaches
- ✓ Module 5 is dedicated to **Bio-economic farm-scale modelling**
- ✓ Module 6 is dedicated to **Multidimensional performance in ecological systems**
- ✓ Module 7 is dedicated to **Policy drivers for the development of ecological approaches**
- ✓ Module 8 is dedicated to **Collective based agri-environmental schemes (AES) and their impact on adoption**
- ✓ Module 9 is dedicated to a **Practical case study of input reduction.**
- ✓ A **Forum for stakeholders** is provided to encourage stakeholders from different countries to discuss LIFT topics. Stakeholders have the opportunity to discuss in their native language thanks to a Google translator application that simultaneously translates every post.
- ✓ **A webinar-series** is designed to allow the dissemination of new and updated knowledge in the continuity of the LIFT project. In particular, a webinar organised on April 1, 2022 by Teagasc-RDS entitled *Growing Organics* is hosted on the LIFT MOOC Platform.
- ✓ **A ressource section** is dedicated to add complementary documents, websites and other resources to allow users to go deeper into the subject of each module.

4. Conclusion

The LIFT project has created a MOOC aimed at disseminating the results of the project, which is available and operational from April 2022. This can contribute to increasing knowledge and skills regarding the drivers behind the adoption of ecological approaches and behind performance and sustainability, and can help stakeholders willing to offer targeted advice and policies.

Although open freely to any person, the set of on-line courses is targeted to students, educators, farm advisors, and policy makers, with the aim to provide knowledge on the main LIFT findings.

Innovative learning methodologies are provided: short videos, serious games, multiple-choice questionnaires, slideshows and case studies, quizzes to self-assess knowledge, testimonies, key figures, simulators, etc.

Nine modules, a forum and a webinar series are provided.

A full and free access to the LIFT MOOC courses is offered. The LIFT MOOC is accessible at https://lms.agreenium.fr/course/index.php?categoryid=56&lang=en

Acknowledgements

The authors acknowledge all MOOC contributors for their participation and efforts, in particular the Olivier Aznar, Larissa Billaudet and Agnès Roussel (all VetAgro Sup), and Sabine Duvaleix (INRAE) for their commitment in the creation of the MOOC. They thank the other LIFT members who provided advice to improve the MOOC and this deliverable.

Appendices

Appendix 1: Learning content instructions for contributors

To be sure that contributors were able to provide courses as expected, 6 key learning content rules were given to them:

Rule 1: Authors must define their objective and sub-objectives;

Rule 2: Authors must define their learning strategy by defining all the learning activities needed to achieve the objective;

Rule 3: Authors must define how their objective and sub-objectives will be evaluated;

Rule 4: Authors must state the following information for their learning sequence: title, author, short description, keywords, date of creation, audience, educational objectives, expected learning time, requested background;

Rule 5: Authors must comply with copyrights and verify that they have the right to use resources;

Rule 6: To be successful, authors must accurately write the script for their learning sequence, detailing the content of each activity.

Appendix 2: Technical instructions for contributors

To be sure that contributors were able to provide courses as expected, the folloing technical instructions were provided to contributors.

A contributor producing a PPS (PowerPoint Slide Show, files which are created using Microsoft PowerPoint for Slide Show purpose) or a video, should comply with the following instructions:

- Use the LIFT presentation template in format 16.9 with the LIFT and EU logos.
- Write the narrative and turn it into a PDF file. Sometimes learners may be hard of hearing and therefore interested in the PDF.
- When recording a PPS or a video, be careful with the sound. Avoid recording video or PPS outdoor.
- All videos are hosted on the LIFT YouTube Channel. The status of the video is “private”. It is not possible to find it directly on YouTube. Users must have the link to access the video. However, if necessary, it is possible to select an option to release the video on YouTube with a public status.
- If contributors use music, images, etc. the best is to use royalty-free pictures and music.

For instance, royalty-free pictures may be found on Pexels: https://www.pexels.com/fr-fr/chercher/farm/. Similarly, royalty-free music may be found on Freemusicarchive: https://freemusicarchive.org/search