proGIreg

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Deliverable D6.17

MOOC 2nd run

A first version of the MOOC „Nature-based Urban Regeneration“ on the global e-learning platform edX

Work package: 6

Task 6.3 MOOCs

Dissemination level: public

Lead partners: RWTH

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Document revision history

Ver-sion	Date	Modification reason	Modified by
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2			
3			

Partner organisations

No.	Name	Short name	Country
1	Rheinisch-Westfälische Technische Hochschule Aachen	RWTH	Germany
2	Fachhochschule Süd-Westfalen	SWUAS	Germany
3	Fondazione della Comunita die Mirafiori Onlus	MIRAFIORI	Italy
4	Politecnico di Torino	POLITO	Italy
5	Stadt Dortmund	DORTMUND	Germany
6	Die Urbanisten EV	URBA	Germany
7	Comune di Torino	COTO	Italy
8	Orti Generali		Italy
9	Associazione Orti Alti	OA	Italy
10	Ningbo Municipal Center for Forestry Science & Technology Services	IUE-CAS	China
11	ICLEI European Secretariat GmbH	ICLEI	Germany
12	Europäische Föderation Bauwerksbegrünungsverband	EFB	Germany
13	Grad Zagreb	Zagreb	Croatia
14	Udruga Zelene I Plave Sesvete	Zips	Croatia
15	Parco Scientifico Technologico per Lambiente Environment Park Torino Spa	Envipark	Italy
16	Starlab Barcelona SL	SL	Spain
17	Fundacion Privada Instituto de Salud Global Barcelona	ISGlobal	Spain

18	Consiglio Nazionale delle Ricerche	CNR	Italy
19	Universita delgi Studi di Bari Aldo Moro	Uniba	Italy

Abbreviations

edX:	global e-learning platform
FRC:	Front-Runner Cities
LL:	Living Lab
MOOC:	Massive Open Online Course
NBS:	nature-based solutions
proGIreg:	productive Green Infrastructure for post-industrial urban regeneration
verified track:	MOOC learners choosing to obtain a course certificate at a fee of 49$
GoGreenRoutes:	GO GREEN: Resilient Optimal Urban natural, Technological and Environmental Solutions'

Executive summary

This report provides an overview of the 2nd run of the Massive Open Online Course (MOOC) ***"Nature based Urban Regeneration"*** on the leading global e-learning platform edX as part of WP6, Task 6.3: EdX MOOC training module with global outreach. Led by RWTH Aachen University, a number of proGIreg experts from universities, research institutions, municipalities, NGOs, industry and practitioners have contributed to the MOOC.

The MOOC summarizes the findings of exploring and implementing innovative nature-based solutions (NBS) in proGIreg's Front-Runner Cities (FRC) in Europe and China in their need to transform cities and neighbourhoods into more sustainable and liveable environments for enhancing quality of life. NBS have been tested to evaluate its viability and to develop replicable methodologies and approaches in proGIreg Living Labs (LL). The MOOC showcases how cities are harnessing NBS for green transformation processes, together with local communities. The MOOC provides theoretical and practical knowledge on how to set up a nature-based urban regeneration strategy, evaluate the impacts of NBS and develop sustainable business models. The addition of a 6th module by the EU H2020 project GoGreenRoutes complements and expands on NBS benefit assessment content of the impact of NBS on health and wellbeing, introducing different approaches and NBS implementations.

The MOOC was successfully communicated through various EU, proGIreg and institutional channels, social media and edX, attracting in total 900 enrolments from 100 countries. The geographical reach spans continents, but European enrolees dominate with 52%. 62% of enrolees are female. Predominately professionals and students from environmental planning and engineering, architecture, urban and regional planning, urban design and landscape architecture disciplines took the course. 75% of learners are familiar with the concept of NBS, seeking to expand their knowledge in the field of NBS practice.

Online surveys conducted on edX at the start and end of the course showed high overall course satisfaction ratings, more than 90% of learners finding the MOOC very useful to useful, mostly matching expectations. Almost 80% rate the quality, usefulness and inspiration of the videos good. Benchmarking against the 1st run of the MOOC, learners pass rate and course completion rate dropped from 34% to 15%. Reasons are not clear but could be down to the level difficulty and effort necessary for the final assignment. Content difficulty and the requirements to obtain a certificate were rated adequate, however, learners perceive the workload as relatively high. This could also be down to the addition of one more assignment given the MOOC ran over six rather than 5 weeks. Comprehensibility of the mostly multiple-choice recap questions is typically a key area where learners may struggle.

Overall manageability of the workload will be improved by handing over the final MOOC as a self-paced course at project end, accommodating learners' preference for self-paced courses.

Explore the course on **edX** and watch the **trailer**.

1. Introduction

1.1. Introduction to the proGIreg project

Productive Green Infrastructure for post-industrial urban regeneration (proGIreg) is developing and testing nature-based solutions (NBS) co-creatively with public authorities, civil society, researchers and businesses. Eight NBS, which will support the regeneration of urban areas affected by deindustrialisation, have been implemented or are going to be deployed in four front-runner cities: Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China). The follower cities of Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) in the meantime receive support in developing their strategies for improving nature-based solutions at local level through co-design processes. The NBS to be tested are:

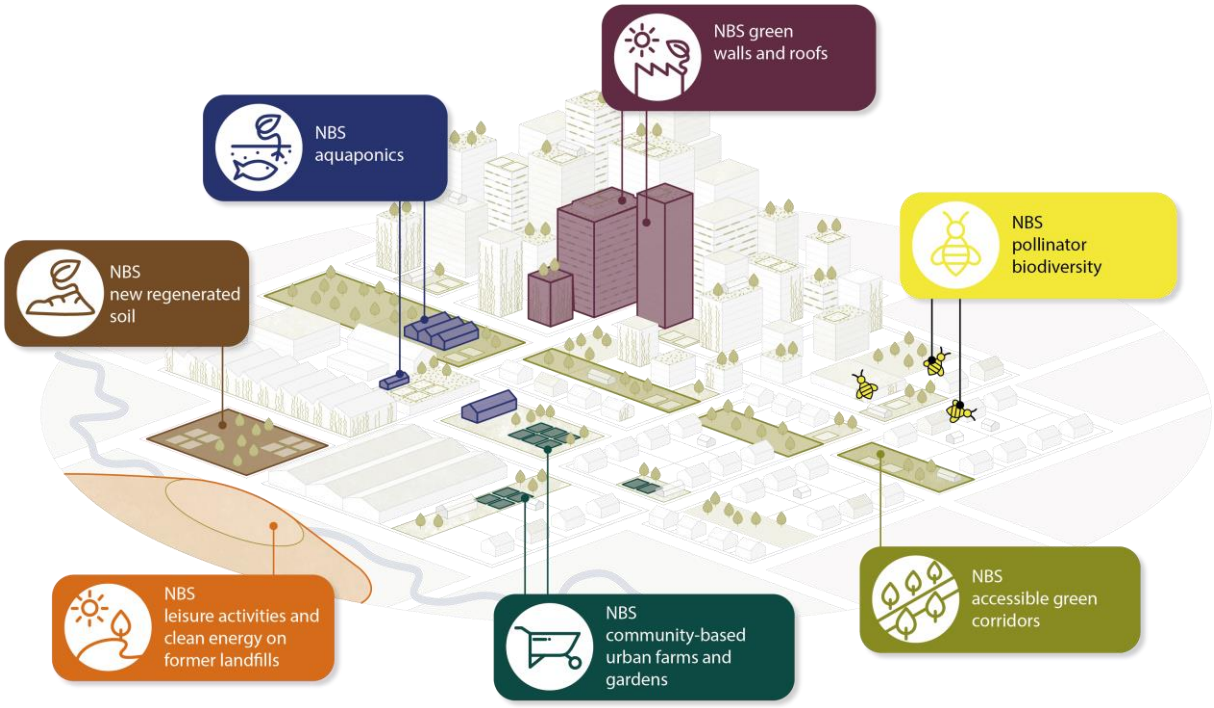

Figure 1 Spatial representation of proGIreg NBS (RWTH)

- NBS 1: Renaturing landfill sites for leisure use and energy production
- NBS 2: New regenerated soil thanks to biotic compounds for urban forestry and urban farming
- NBS 3: Community-based urban farms and gardens
- NBS 4: Aquaponics
- NBS 5: Capillary GI on walls and roofs
- NBS 6: Making post-industrial sites and renatured river corridors accessible for local residents
- NBS 7: Establishing protocols and procedures for environmental compensation at local level

1.2. Task 6.3 EdX MOOC training module with global outreach

Led by RWTH, the objective of Task 6.3 (M18-M60) is to develop and produce a Massive Open Online Course (MOOC) covering the topic of “Nature-based urban regeneration” with global outreach. The MOOC aims at distributing methods developed and results of the proGIreg project as a long-term open-source content training offer via the global platform edX and knowledge transfer outside of the project.

2. ProGIreg MOOC “Nature Based Urban Regeneration”

The MOOC summarizes the findings of exploring and implementing innovative nature-based solutions (NBS) in proGIreg’s Front-Runner Cities (FRC) in Europe and China in their need to transform cities and neighbourhoods into more sustainable and liveable environments for enhancing quality of life. NBS have been tested to evaluate its viability and to develop replicable methodologies and approaches in proGIreg LLs. The six-week MOOC showcases how cities are harnessing NBS for green transformation processes, together with local communities. The MOOC provides theoretical and practical knowledge on how to set up a nature-based urban regeneration strategy, evaluate the impacts of NBS and develop sustainable business models. The addition of a 6th module by the EU H2020 project GoGreenRoutes complements and expands on NBS benefit assessment content of the impact of NBS on health and well-being, introducing different approaches and NBS implementations.

2.1. Updated MOOC content

Table 1 gives an overview of the weekly schedule and topics covered in the MOOC’s 2nd run “Nature Based Urban Regeneration” by modules, units, containing the additional module 6.

Table 1 Overview of MOOC 2nd run structure and content

Module	Units
Module 1 **The challenges of urban regeneration and the potential of NBS**	Unit 1: Post-industrial cities in transformation Unit 2: When industries leave: The cases of Dortmund and Turin Unit 3: Transformation and growth: Zagreb and Ningbo Unit 4: What are NBS? definitions, principles, benefits Unit 5: Integrating NBS in wider regeneration approaches
Module 2 **The city as a Living Lab for co-creating NBS**	Unit 1: Living Labs as transdisciplinary innovation formats Unit 2: Contextualising Living Labs to prepare co-creation Unit 3. Co-creation: Engaging local communities Unit 4. Co-creation in cities: proGIreg Living Lab Turin Unit 5: Co-creation in cities: proGIreg Living Labs Dortmund and Zagreb
Module 3 **Productive solutions using nature for renewal**	Unit 1: The most important principles in nature-based urban regeneration Unit 2: New urban soils Unit 3: Urban Agriculture Unit 4: Aquaponics Unit 5: Green roofs and walls
Module 4 **NBS benefits and how to assess them**	Unit 1: Introduction to NBS benefit assessment Unit 2: "assessment domain – Environmental and ecological benefits" Unit 3: "assessment domain – Social benefits" Unit 4: "assessment domain – Human health and well being" Unit 5: "assessment domain – Economic and labor market benefits"
Module 5 **5a) Sustaining NBS: overcoming barriers and creating business models** **5b) Upscaling NBS**	Unit 1: Overview of potential technological and non-technological barriers Unit 2: Overcoming barriers Unit 3: Integrating NBS into self-sustained business models Unit 4: Examples of business models Unit 5: Upscaling strategies for regional and city-to-city level knowledge transfer
Module 6 **Promoting Health and Well-being in cities through NBS interventions**	Unit 1: NBS for Health and Well-Being Unit 2: Increasing Green Space will improve Urban Health Unit 3: Green Space: Physical health benefits and how to assess them Unit 4: The Human Element of Nature Unit 5: Co-creating Seedbed Interventions: Preparing for NBS

Table 2 shows changes made for the MOOC's 2nd run to update and improve the learner experience:

Table 2 Changes for the 2nd run of the MOOC by module and unit

Content changes and additions by module and unit		
Module 1	Unit 4	Updating slides with new data
Module 2	Unit 1	Updating slides with new data
	Unit 3	New recording with updated information
	Unit 5	Adding new footage of the Living Labs

Module 5	Unit 1	New recording with updated data
NEW!!! Module 6	*Unit 1-5*	*New content*

2.2. Addition of Module 6 by GoGreenRoutes project

The EU H2020 funded research project 'GO GREEN: Resilient Optimal Urban natural, Technological and Environmental Solutions' (called GoGreenRoutes) developed an additional module “Promoting Health and Well-being in cities through NBS” with five units that was integrated into the 2nd run of the MOOC “Nature-based Urban Regeneration” in October 2022.

GoGreenRoutes (more information about the project available **here**) is a transdisciplinary consortium of 40 partners, enabling to draw on a broad range of expertise on the topic of NBS that focuses on rethinking nature-based solutions (NBS). In six so-called “Cultivating Cities” in Europe (Lahti, Umea, Versailles, Burgas, Tallinn and Limerick) various studies are currently being conducted and the first temporary interventions (Seedbed Interventions) were implemented during the summer 2022. The initial aim is to improve the relationship between citizens and their urban environment. Through different intervention formats, the understanding of benefits of nature will be promoted and analysed. Based on these findings, permanent NBS interventions will then be implemented in these six cities from spring 2023 onwards.

Module 6 focuses on health and well-being and how holistic and co-creative approaches can be used in transferring knowledge and implementing innovative interventions in urban space to help city dwellers experience green space in a new and better way. The five units address different research questions (see also table 4). Unit 5 focuses on co-creation and introduces the concept of Seedbed Interventions, which aim to prepare future permanent NBS interventions in GoGreenRoutes. Table 4 outlines the module’s content structure:

Table 2 Content structure of module 6 by unit

Module 6 - GoGreenRoutes Promoting Health and Well-being in cities through NBS interventions		**Questions answered by each unit**
Unit 1	NBS for Health and Well-Being	*What is urban health and how can we understand urban well-being?*
Unit 2	Increasing Green Space will improve Urban Health	*How can greenspaces contribute*

Unit 3	Green Space: Physical and Mental Health and How to Assess Them	*to measurable urban health benefits?*
Unit 4	The Human Element of Nature	*What are the connections between human being and nature?*
Unit 5	Co-creating Seedbed Interventions: Preparing for NBS	*What are seedbed interventions and how can they be co-created together with citizens?*

The module's videos are conceptualized as lecture videos. This classic MOOC video format has the advantage that the various consortium partners were able to produce the lectures quite independently of location and workstation equipment, as there will be no recording meetings or visualisation programs needed to edit the content. This process was guided by a detailed introduction and preparation of the topic by the GoGreenRoutes task leader RWTH.

To offer short and concise lecture content, excerpts of animated videos produced by students of RWTH University during the winter semester 2021/22 as part of the seminar *"Co-Films: räumliche Transformationen animieren"* were included. The seminar guided students in producing videos aimed at contributing to the MOOC module visualising and animating health and health-related topics and innovative NBS.

2.3. MOOC syllabus

The following pages present the MOOC syllabus for the 2nd run containing key course information for learners as communicated via the course about page on the edX platform and all other communication channels. It provides a structured overview of relevant course info, to ics covered, learning outcomes, target groups, type of exams/assignments, grading etc

Interested in learning about using nature to improve life in our cities? You want to learn how to co-create nature-based solutions with local communities, how to make environmental, economic and social benefits of NBS measurable and translate these into sustainable business models? This course will equip you with the knowledge to set up your own nature-based regeneration strategy!

proGIreg

www.proGIreg.eu
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COURSE CONTENT

Cities around the world are seeking new, greener ways to transform former industrial districts. These areas suffer from social and economic inequalities, lack of green spaces and are significantly more vulnerable to climate change effects and natural hazards. Nature-based solutions (NBS) can contribute to improving environmental quality, social life and local economies in urban areas.

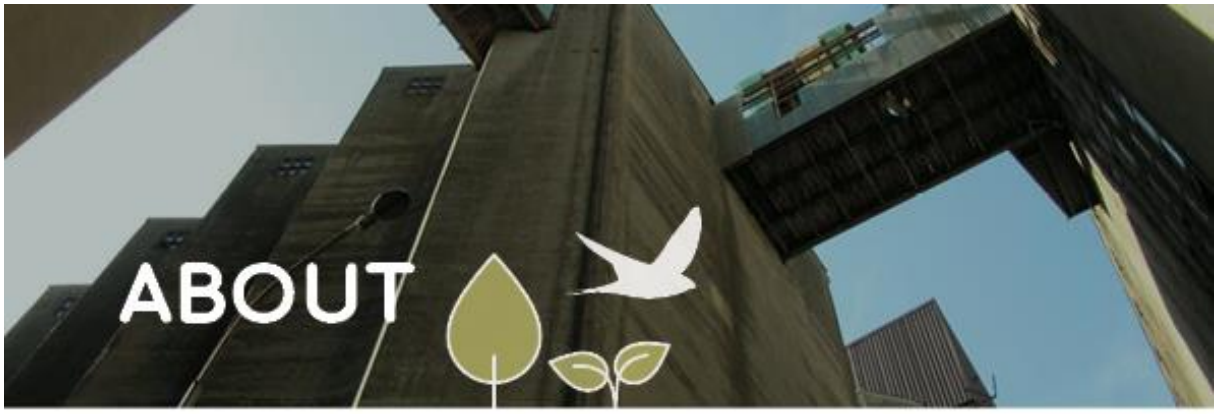
This course will show you how co-creating NBS can transform post-industrial deprived, neglected and abandoned areas into liveable and productive green urban environments, with empowered local communities and thriving local economies.

You will learn about different types of NBS and how they can be implemented in varied local contexts. The course delves into citizen engagement, alongside municipalities, private sector companies, NGOs and academia, as this supports long-term sustainability of NBS. Engagement strategies place emphasis on the inclusion of marginalised and vulnerable groups. The NBS explored in the course showcase the co-benefits to circular economy, urban food production and climate change adaption. You will learn how to measure the effects of NBS on environmental quality, human health and well-being, socio-cultural inclusiveness, local economy and labour market, and how to apply scientific methods to monitor and assess them. Having measurable NBS benefits helps developing successful business models for NBS implementation and management, and supports sound decision- and policy making.

The course draws on research results from Living Labs in European cities where innovative nature-based solutions have been developed and tested under the umbrella of the EU Horizon 2020 funded project proGIreg (productive Green Infrastructure for post-industrial urban regeneration) and GoGreenRoutes.

The course will guide you in setting up a nature-based regeneration project suited to your local context. The methods you will learn entail NBS co-design, co-implementation, benefit assessment and sustainable business models.

Join us as you start on your journey towards inclusive urban regeneration by using nature for renewal!



THIS COURSE PROVIDES

1. Knowledge for designing NBS in post-industrial urban regeneration and NBS benefit assessment and monitoring methodology in four domains.
2. Journeys to 'Living Labs' – proGIreg test sites in cities across Europe - to explore the dynamics of co-creation of NBS in action!
3. Applications of how to assess and overcome technological and non-technological barriers in integrating NBS, how to develop and upscale self-sustained business models to achieve sustainable and productive green infrastructure.

We have developed an attractive and challenging course for you. We hope by the time you finish the course you will be inspired to embrace an inter- and transdisciplinary nature-based urban regeneration approach to achieve liveable and productive spaces. NBS have great potential to transform underused spaces into productive and co-owned public places, delivering economic benefits and services to strengthen local communities.

WHAT YOU'LL LEARN

Theory and practice of nature-based urban regeneration:

→ defining the potential of nature-based solutions for urban regeneration

→ leading co-creation processes for developing multi-scale and context-specific green infrastructure with citizens and other local stakeholders

→ applying methods to monitor and assess NBS benefits

→ identifying technical and non-technical barriers to NBS implementation and learning how to over-come them

→ developing sustainable business models for NBS in urban regeneration

→ building your own nature-based urban regeneration project

WEEK 1: The challenges of urban regeneration and the potential of NBS
Scheduled: October 3rd, 2022

The first module introduces you to the challenges of urban regeneration and the potential of NBS in transforming post-industrial cities, including the integration of NBS into wider re-generation approaches

→ Assignment 1 (Due date: 23 October 2022)

WEEK 2: The City as a Living Lab for co-creating NBS
Scheduled: October 10th, 2022

Module 2 provides methods and examples of context-specific analysis and locally adaptable trans-disciplinary innovation formats to engage local communities in developing liveable urban environments

→ Assignment 2 (Due date: 23 October 2022)

WEEK 3: Productive solutions using nature for renewal
Scheduled: October 17th, 2022

This module presents applications of different types of productive nature-based solutions in detail incl. NBS urban agriculture, aquaponics and green roofs and walls

→ Assignment 3 (Due date: 23 October 2022)

WEEK 4: NBS benefits and how to assess them
Scheduled: October 24th, 2022

The fourth module introduces you to methods of monitoring and assessing a range of NBS benefits for society, economy and the environment

→ Assignment 4 (Due date: 13 November 2022)

WEEK 5: Sustaining NBS: overcoming barriers, creating business models and upscaling NBS
Scheduled: October 31st, 2022

This module shows how to overcome barriers in NBS implementation and to create business models for productive green infrastructure to allow NBS upscaling to city level.

→ Assignment 5 (Due date: 13 November 2022)

WEEK 6: Health and well-being impact of NBS
Scheduled: November 7th, 2022

Module 6 shows in-depth how NBS impact urban health by using different assessment, risk + modelling methods and approaches to strengthen human-nature relationships.

Final Assignment (Due date: 27 November 2022)

Deadline to upgrade to the verified track: 24 October 2022.

TIME COMMITMENT

This course runs over 6 weeks. You will spend approximately 5-6 hours per week incl.:

→ watching lecture videos
→ exploring literature and website recommendations, toolboxes etc.
→ completing recap questions (quiz)
→ completing assignments
→ participating in the discussion forum

Please keep all deadlines for the verified track in mind towards the end of the course so you hand in everything on time to receive your certificate.

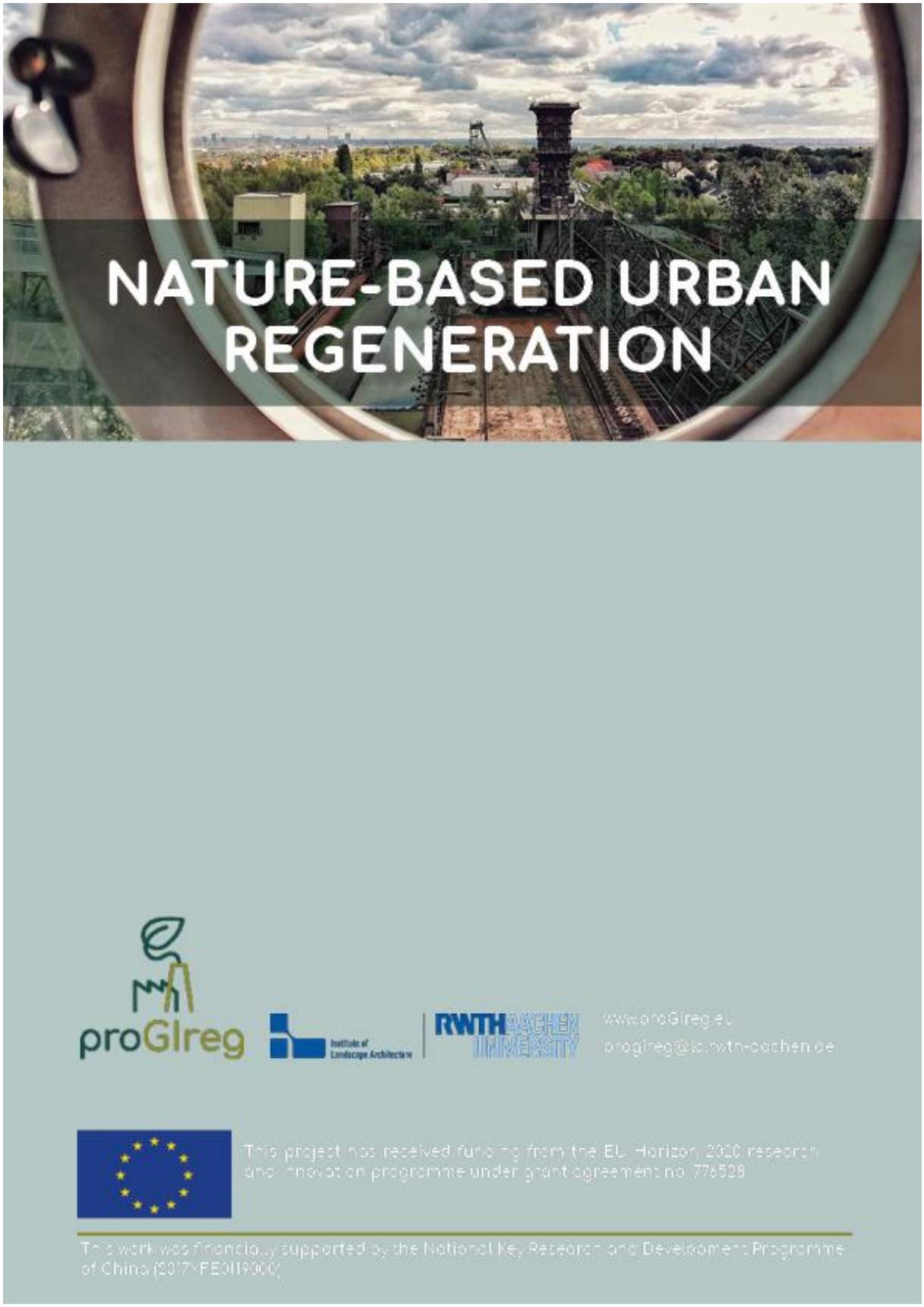
GET READY FOR THE QUIZ AND ASSIGNMENTS

Quiz questions
After watching each unit's lecture video, please answer a series of questions revising what you've learned.

Assignments
Learners who want to receive a certificate for this edX course have to complete recap questions, the last four module assignments and a final assignment. Each module concludes with an assignment, the final assignment starts at the end of module 6.

Final assignment

Your assignments over the course of six modules provide the building blocks and bringing them together for writing your project proposal of a nature-based urban regeneration strategy.


NATURE-BASED URBAN REGENERATION
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This project has received funding from the EU Horizon 2020 research and innovation programme under grant agreement no 776528
This work was financially supported by the National Key Research and Development Programme of China (2017YFE0119000)

2.4. MOOC video material by module/unit and YouTube links

Each unit is accessible to watch via the You Tube links provided in Table 5. To view videos, please **copy the YouTube link and insert on www.youtube.com**

Table 3 MOOC modules and units incl. YouTube links

RWTH proGIreg MOOC sub-titled videos	
module / unit	**YouTube Link**
Module 1 - The challenges of urban regeneration and the potential of nature-based solutions	
Unit 1: Post-industrial cities in transformation	***https://www.youtube.com/watch?v=AfEXvf2EnUc***
Unit 2: When industries leave: The cases of Dortmund and Turin	***https://www.youtube.com/watch?v=nGabBV4x0nY***
Unit 3: Transformation and growth: Zagreb and Ningbo	***https://www.youtube.com/watch?v=X7CVdTZHciA***
Unit 4: What are NBS? definitions, principles, benefits	***https://youtu.be/_FxAhDUofV4***
Unit 5: Integrating NBS in wider regeneration approaches	***https://www.youtube.com/watch?v=0ZeFMUlTZfo***
Module 2 - The city as a Living Lab for co-creating NBS	
Unit 1: Living Labs as trans-disciplinary innovation formats	***https://youtu.be/knOuPnuQ5ek***
Unit 2. Contextualising Living Labs	***https://www.youtube.com/watch?v=TY_i7VcGeqw***
Unit 3: Co-creation: Engaging local communities	***https://youtu.be/Ziu_CosGwz8***
Unit 4: Co-creation in cities: proGIreg Living Labs Dortmund and Zagreb	***https://youtu.be/iMFFOjd_qtI***
Unit 5: Co-creation in cities: proGIreg Living Lab Turin	***https://www.youtube.com/watch?v=iMFFOjd_qtI***
Module 3 - Productive solutions using nature for renewal	
Unit 1: Applied nature-based urban regeneration	***https://www.youtube.com/watch?v=F2XmhqP0sh4***
Unit 2: New urban soils	***https://www.youtube.com/watch?v=u1Nv2mfjAA8***
Unit 3: Urban Agriculture	***https://www.youtube.com/watch?v=rPm6rP-TXWs***
Unit 4: Aquaponics	***https://www.youtube.com/watch?v=j6DkX3z198Y***
Unit 5: Green roofs and walls	***https://www.youtube.com/watch?v=aSexf8RKcho***
Module 4 NBS benefits and how to assess them	
Unit 1: Introduction to NBS benefit assessment	***https://www.youtube.com/watch?v=vDCZIH0lTaQ***
Unit 2: Assessment domain – Environmental and ecological benefits	***https://www.youtube.com/watch?v=U3PgOO3qy-U***
Unit 3: Assessment domain - social benefits	***https://www.youtube.com/watch?v=DwchnYFLfZk***
Unit 4: Assessment domain - Human health and well being	***https://www.youtube.com/watch?v=NjNAtkZ-ffI***
Unit 5: “assessment domain – Economic and labor market benefits”	***https://www.youtube.com/watch?v=pcYx-Rma798***
Module 5: Sustaining NBS	

Unit 1: Overview of potential technological and non-technological barriers	**https://www.youtube.com/watch?v=okTwSBM6L-s**
Unit 2: Overcoming barriers	***https://www.youtube.com/watch?v=BpSjHzKitlw***
5a) Creating Business models	
Unit 3: Integrating NBS into self-sustained business models	**https://www.youtube.com/watch?v=gV0lhKNcZ-Y**
Unit 4: Examples of Business models	***https://www.youtube.com/watch?v=buNoS5cAv_w***
5b) Upscaling NBS	
Unit 5: Upscaling strategies for regional and city-to-city level knowledge transfer	***https://www.youtube.com/watch?v=8b4zSNTpup4***
Module 6 Promoting Health and Well-being in cities through NBS interventions	
Unit 1: NBS for Health and Well-Being	***https://youtu.be/ZUAhdPFhnds***
Unit 2: Increasing Green Space will improve Urban Health	***https://youtu.be/Mhv53UZpq8***
Unit 3: Green Space: Physical and Mental Health and How to Assess Them	***https://youtu.be/bOUGPUGxZ24***
Unit 4: The Human Element of Nature	***https://youtu.be/PVgc1hr7vqg***
Unit 5: Co-creating Seedbed Interventions: Preparing for NBS	***https://youtu.be/YGPzG4nV_HQ***

3. Evaluation MOOC 2nd run

3.1. Methods

Following the instructor-paced runs of the MOOC "Nature-based Urban Regeneration" during the proGIreg project, the course is being reviewed and analysed with quantitative and qualitative methods. Performance indicators established before the start of the training course allow determining whether the course was successful or not and to understand required improvements for the MOOC's 2nd run. Data analysis is mainly based on two quant data sources and qualitative analysis as follows:

I. **edX analytics via edX insights** – **large sample size (based on total no. of enrolees)**

II. **Online surveys** among learner base (voluntary participation) **– limited sample size**:

   a. Part 1: conducted at course start (n=63)

   b. Part 2: after the last module before the final assignment (n=12)

   The two online surveys conducted at different times during the course provide comparisons on how expectations were met. However, sample sizes are generally smaller, vary significantly between the surveys depending on course progress, thus limiting the representativeness of the survey results.

III. **RWTH MOOCs average** for benchmarking the performance of the MOOC "Nature-based Urban Regeneration". *Please note that some of the data may be slightly skewed given the RWTH is traditionally a technical university with a MINT-biased offering.*

3.2. Course analysis

The following chapter provides statistics on:[1]

→ general parameters of the learner base
→ learner interaction with the course
→ levels of satisfaction with course content, assignments and grading

[1] *Please note: rounding errors may occur in the following data analysis*

3.2.1. Breakdown of the learner base by enrolment, geography, demographics, professional background

This sub-chapter provides an overview of the learner base extracted from the edX analytics/insights and data collected via Part I of the online survey on the edX platform.

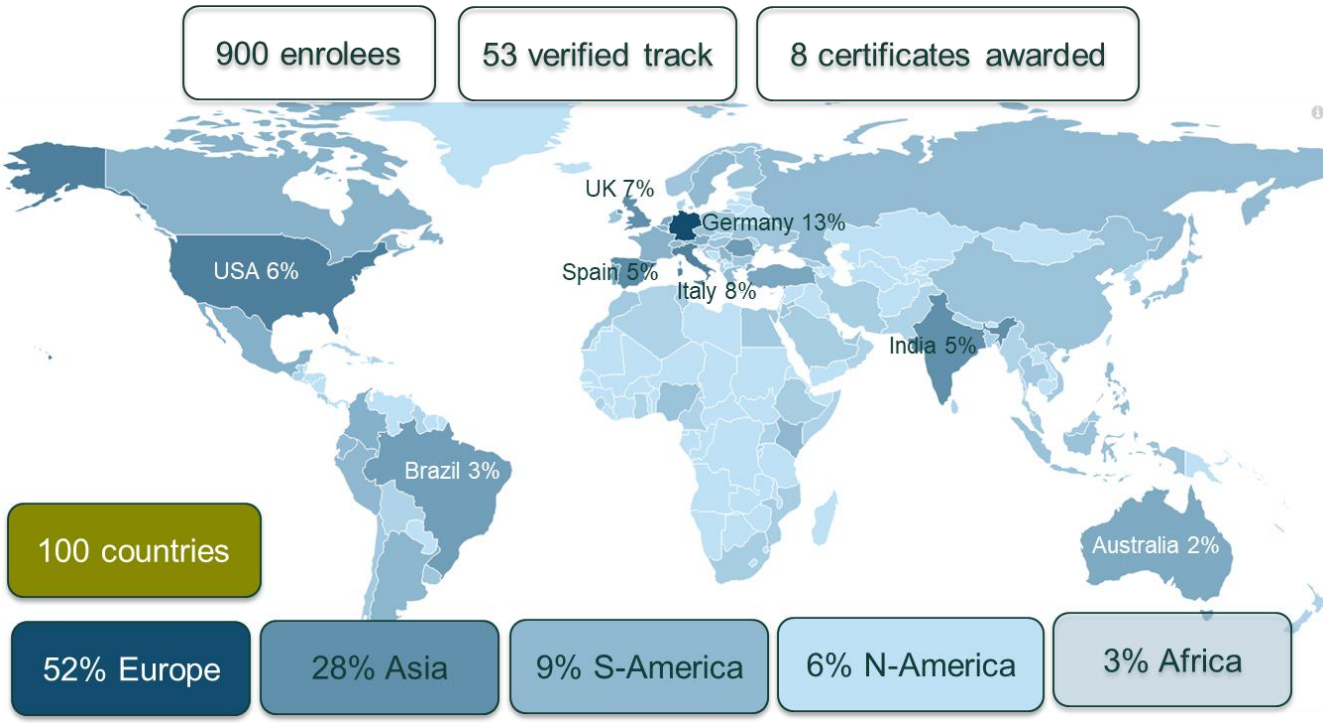

Figure 2 Geographical breakdown of the learner base and breakdown of learner base (n=900) Source: edX insights

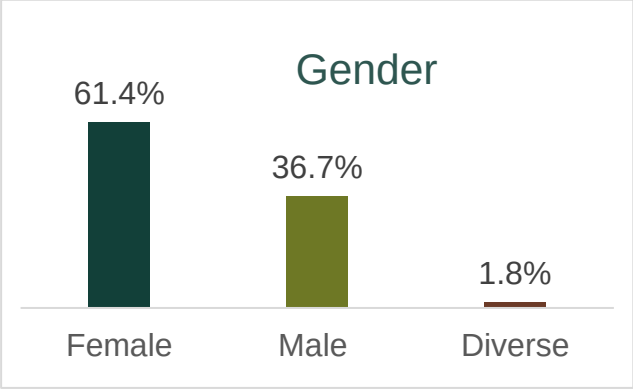

Figure 3 Learner base by gender, edX insights (n=661)

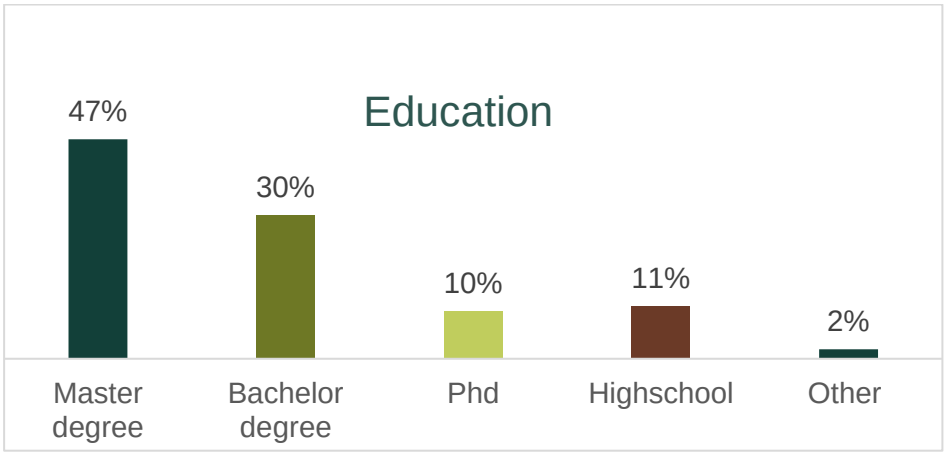

Figure 4 Learner breakdown by level of education, edX insights (n=900)

Looking at the educational background of the learner base, environmental planning and engineering, architecture, urban-regional planning and urban design are the dominant disciplines (fig. 14).

Figure 5 Key disciplines of the learner base. Source: Online survey Part 1

46% of the learners are students in related or unrelated disciplines. Self-employed professionals or employees of larger companies make up about a third while the rest works in academia, government organisations and local authorities.

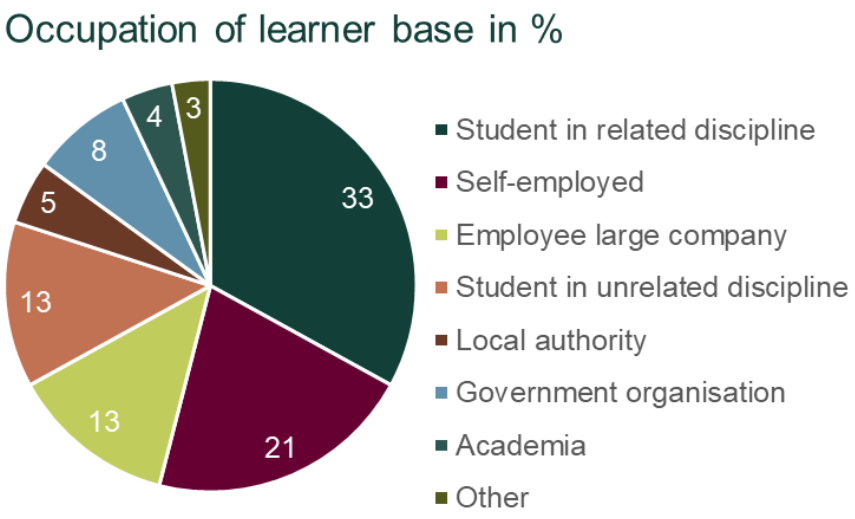

Figure 6 Occupation of learner base. Source: Online survey Part 1 (n=62)

3.2.2. Course interaction of learners

The following data analysis provides an overview of user motivation, user activity and changes over time during the instructor-paced course and beyond. The time learners needed to invest in the course is based on Part I and II of the online survey conducted among the learner base, at the start of the course and after completion respectively.

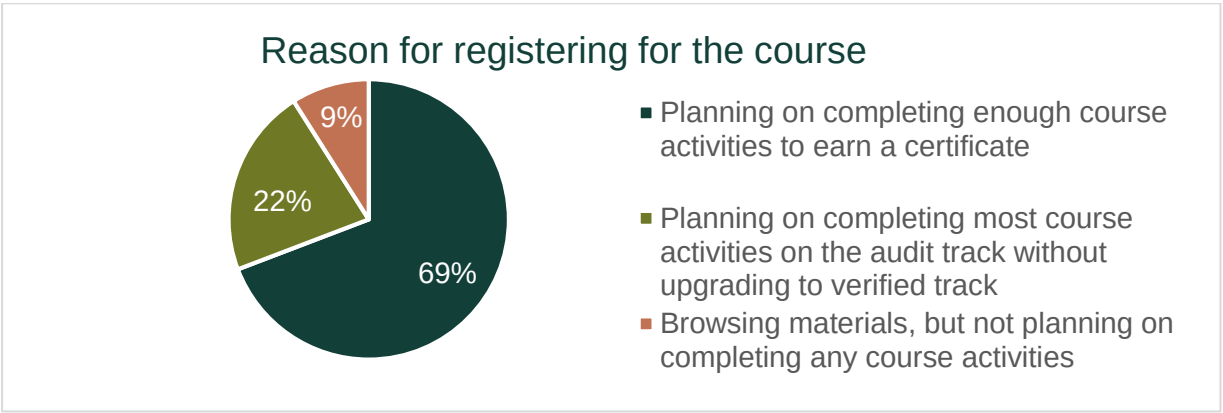

Figure 7 Online survey Part 1 (n=63)

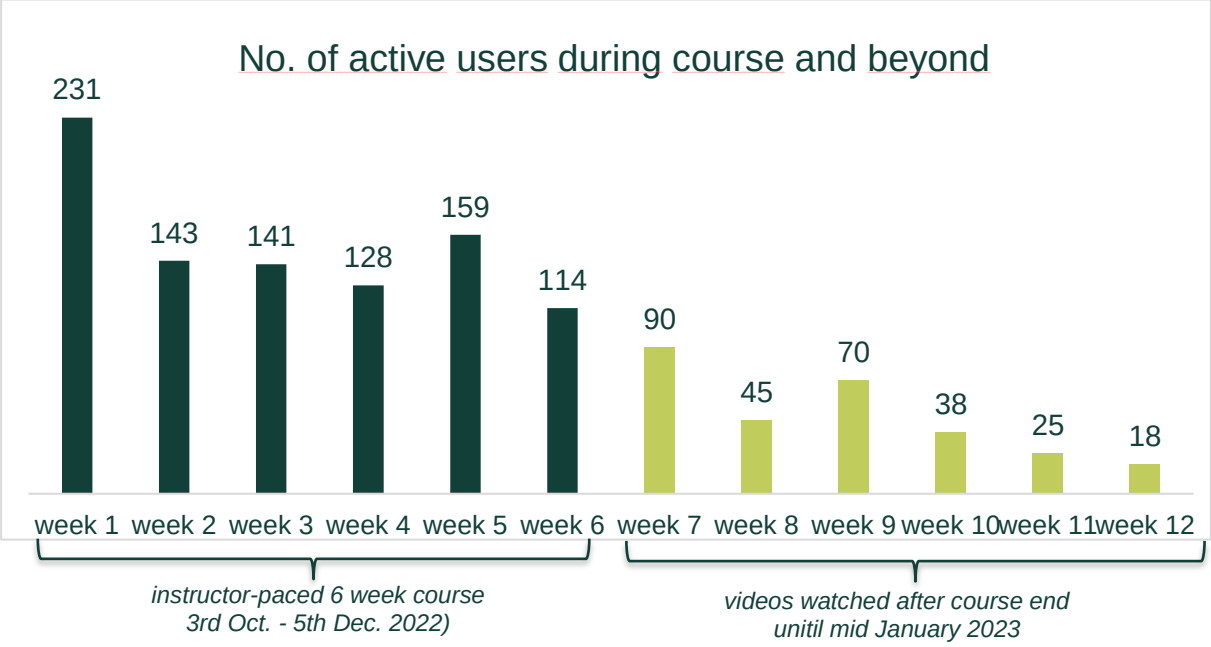

Figure 8 Total no. of active users during and beyond course, edX insights

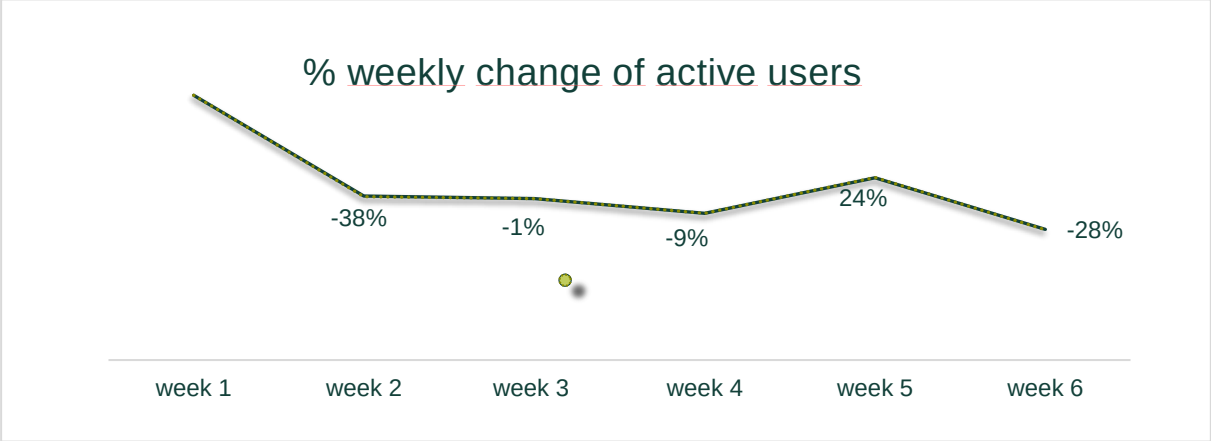

Figure 9 Weekly change in percent of active users during the six-week MOOC

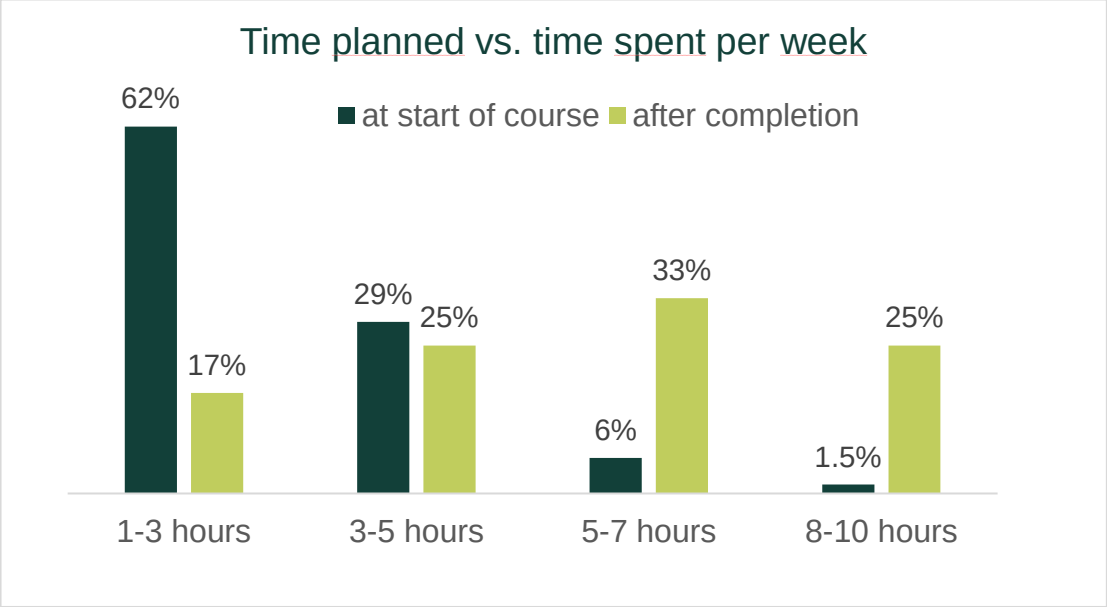

Figure 10 Online course survey (Part 1 at course start: n=63; Part 2 after completion: n=12)

3.2.3. Course satisfaction

This sub-chapter shows data analysis on overall course experience, quality and satisfaction with content, videos as well as recap questions, assignments, perceived workload and pace of the course. The data is based on the online survey Part 2 conducted on edX after course completion, which is predominantly completed by verified track learners with a small sample size. This limits the representativeness of the survey results to some extent compared to the total learner base.

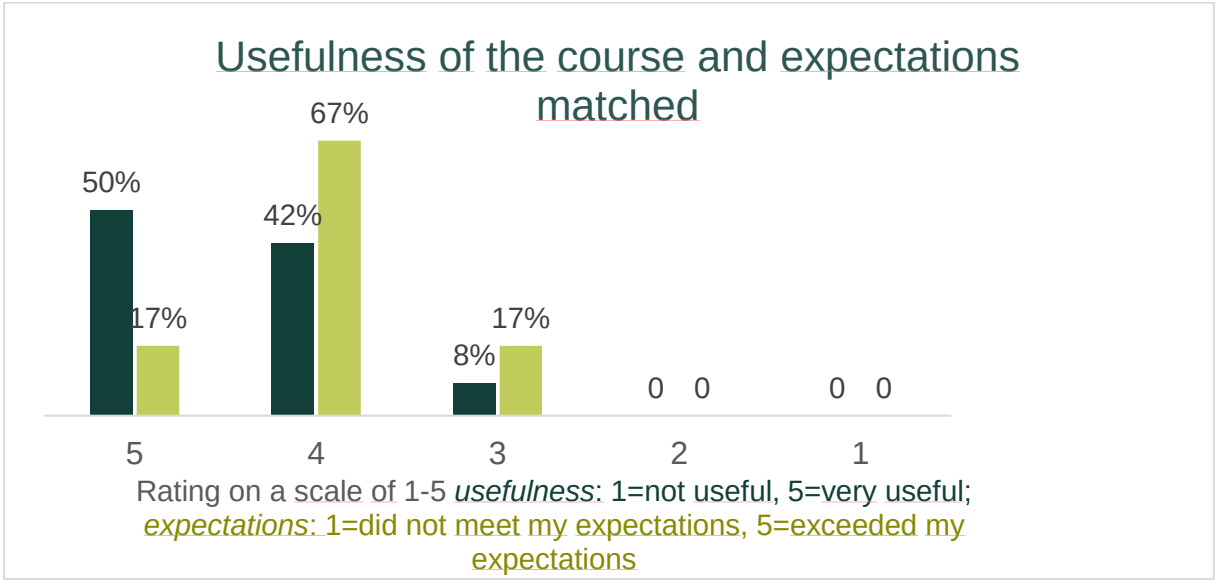

Figure 11 Online survey results Part 2. Ratings on usefulness of the course compared to expectation met (n=12)

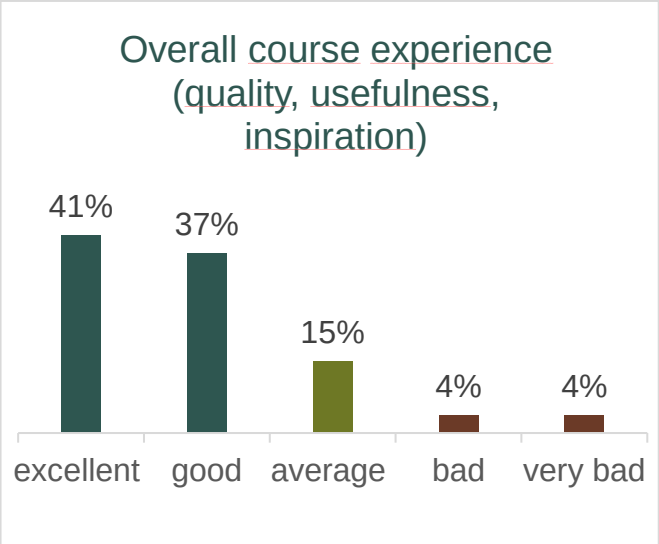

Figure 12 Online course survey Part 2 (n=12)

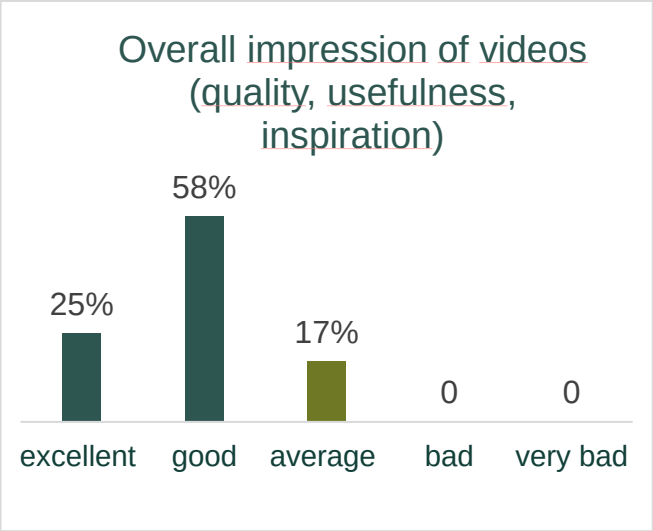

Figure 13 Online course survey Part 2 (n=12)

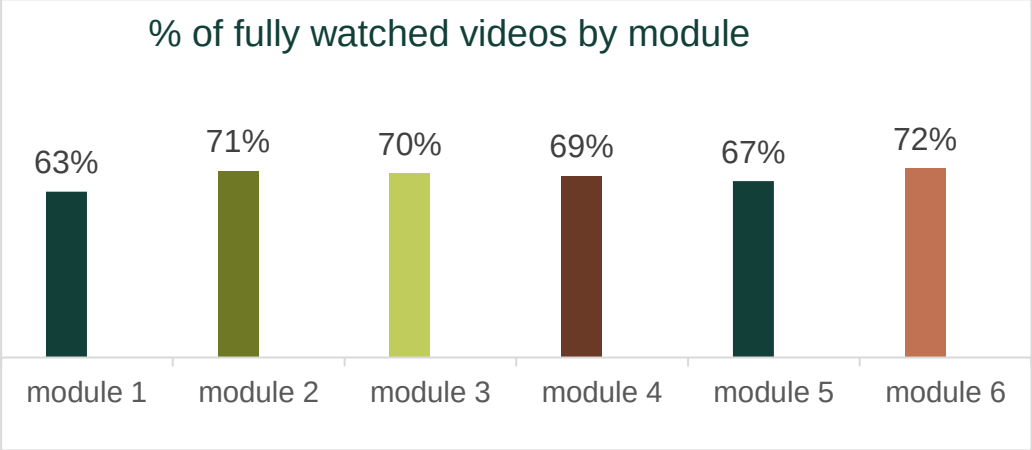

Figure 16 Percentage of learners who watched the videos to the end by module, edX insights, RWTH

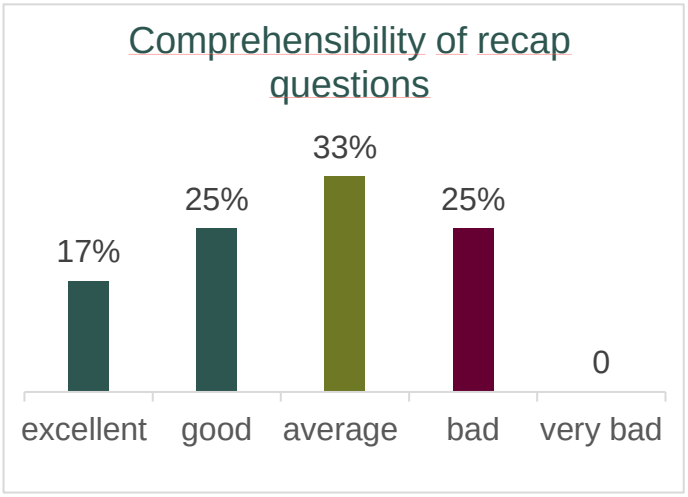

Figure 14 Online course survey Part 2 (n=12)

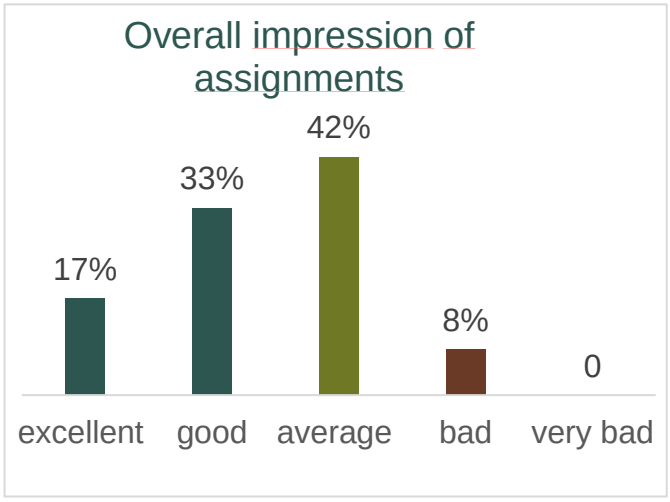

Figure 15 Online course survey Part 2 (n=12)

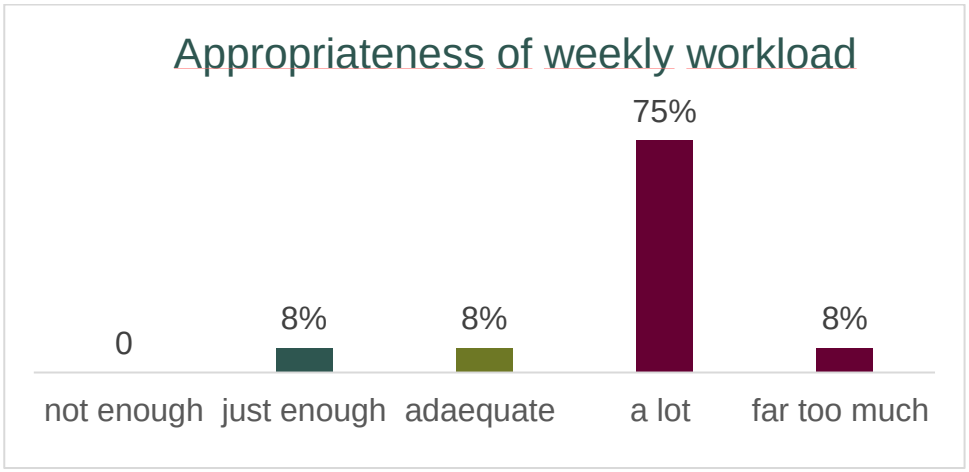

Figure 17 Online course survey results Part 2 (n=12)

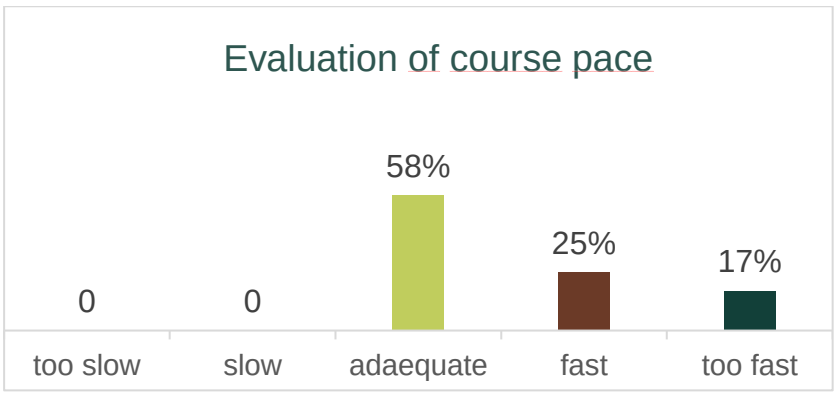

Figure 18 Online course survey (n=12)

3.3. Benchmarking the MOOC "Nature-based Urban Regeneration" with RWTH MOOCs

This chapter benchmarks the MOOC "Nature based Urban Regeneration" against comparable instructor-paced English language RWTH MOOCs on edX of the last five years on key performance indicators of MOOC such as:

- No. of enrolees
- Gender
- Level of education
- Geographical coverage
- Verified track rate and learner pass rate

To ensure consistency and comparability, it is to be noted that sample sizes of the RWTH MOOCs vary by type. Most of the data is based on a sample of 20 MOOCs, the smallest sample consists of six courses due to data collection changes over time (indicated accordingly). Some data relates to the total number of enrolees or to verified track learner data only.

Given the RWTH is a technical university, more than half of the selected courses teach basic knowledge in engineering disciplines and economics that generally attract high number of students. This may also explain the male gender bias. In contrast, topics such as NBS and nature-based urban regeneration are much more niche.

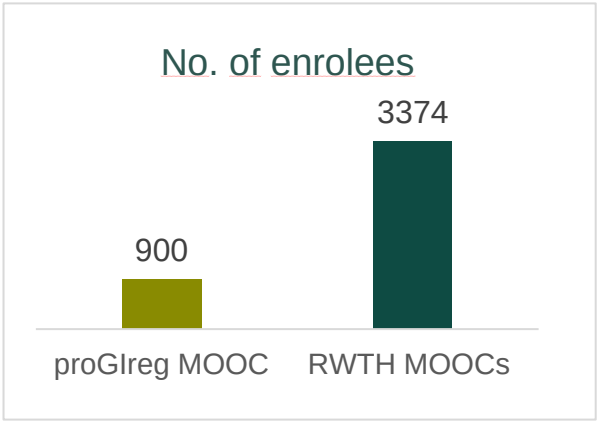

Figure 19 Comparison of enrolees of proGIreg MOOC vs. RWTH MOOCs average (n=20)

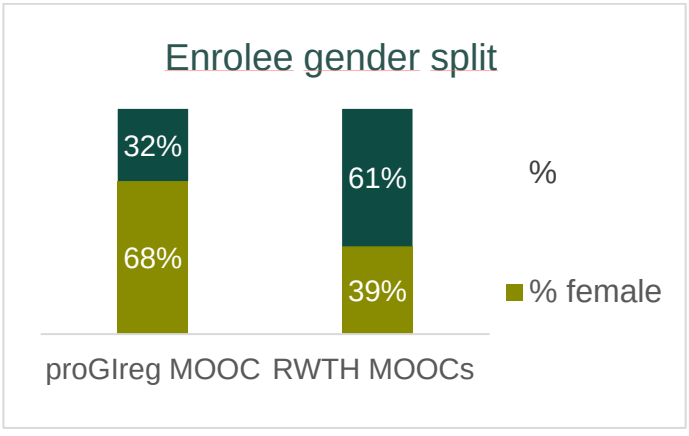

Figure 20 Gender split proGIreg MOOC (n=668) vs. RWTH MOOCs (n=20)

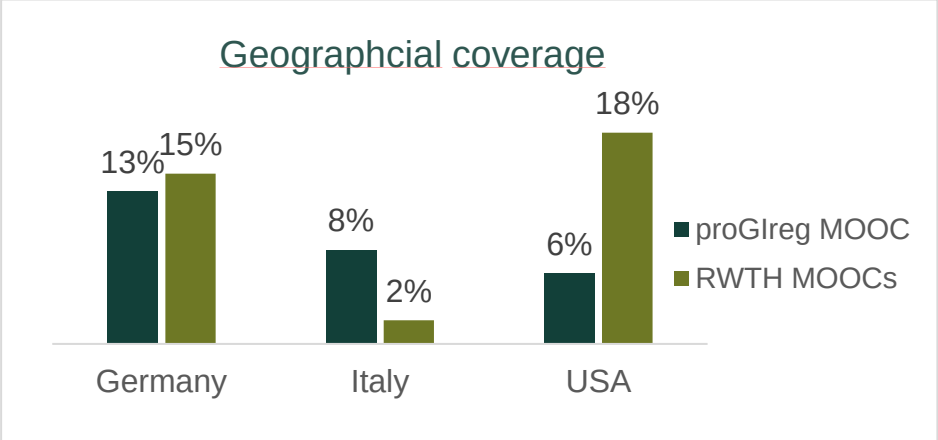

Figure 21 Geographical coverage proGIreg MOOC (edX insights) vs. RWTH MOOCs

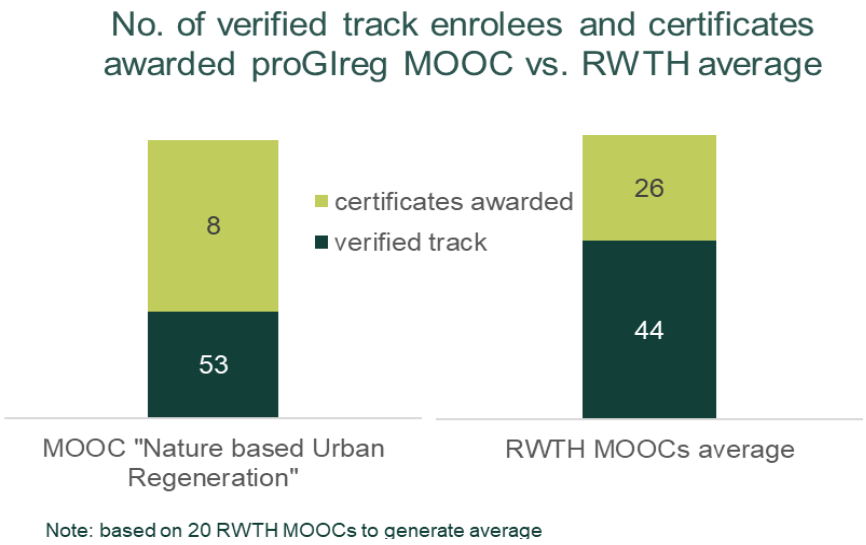

Figure 22 Verified track enrolees and track rate proGIreg MOOC vs. RWTH MOOCs (n=20)

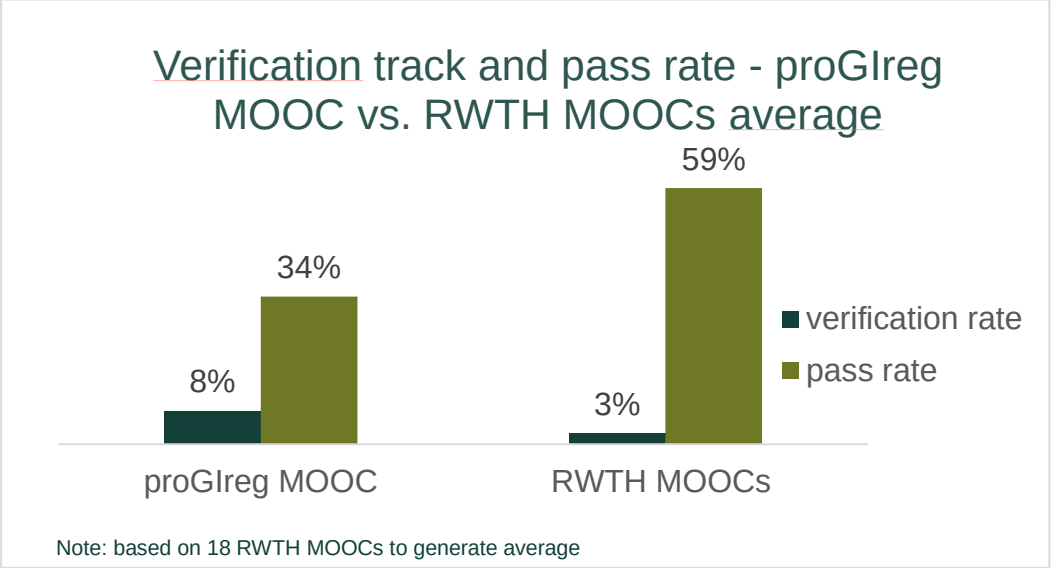

Figure 23 Benchmark on key MOOC parameter (n=20 apart from course completion rate (n=18)

4. Conclusions and Outlook

The 2nd run of the MOOC performed well on overall participation and course satisfaction. The workload of the instructor-paced six-week course comprising four graded assignments appears to have stretched the verified track learner base. Most learners are professionals, requiring a tight time management to finish all tasks within a given time frame. This is likely to improve with the hand-over as a self-paced format of the final course beyond the project end.

Finalising the MOOC includes changes for the final run regarding expanding existing video contents with final project results (see also fig. 25) such as: NBS benefit assessment (module 4 / WP4), barriers and business model catalogue (module 5 / WP5).

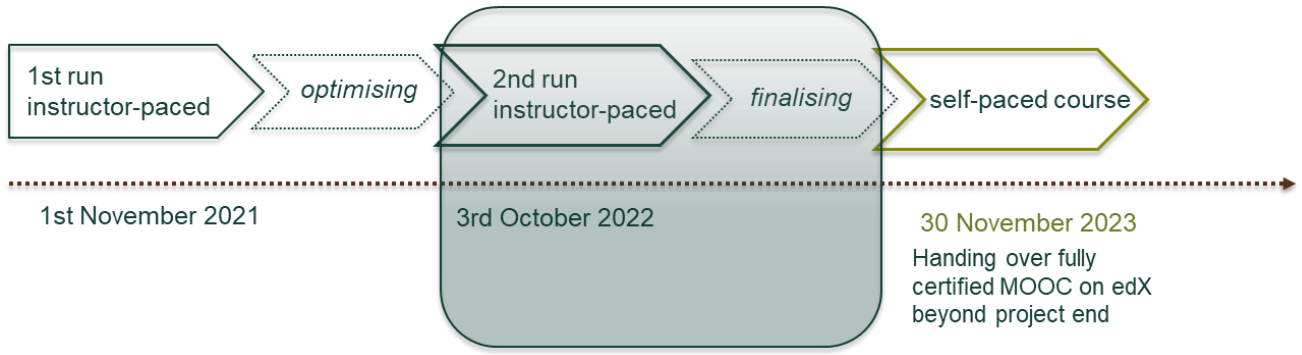

Figure 24 MOOC Nature based Urban Regeneration timeline