Project #586060-EPP-1-2017-1-RO-EPPKA2- CBHE-JP

Sustainability plan

WP5

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Abstract	Sustainability plan defines exploitation strategy, tools, target audience, description of events and overall exploitation calendar.

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v.01	20/11/2019	First draft version	BMSTU (Natalia Vatolkina)
v.02	12/12/2019	Second draft version	BMSTU (Natalia Vatolkina) based on the Moscow meeting contribution of the PC universities teams

1. Introduction

The purpose of this document is to define strategy for sustainability of the EXTEND Centers, tools, target groups to be addressed with all the list of key results that could be exploited and multiplied after the project. Sustainability plan complements the Dissemination and Exploitation Plan in terms of the relevant tools and practices of EXTEND Centers support after the end of the project.

Sustainability is given the following definition in Erasmus+ projects guidelines:

"Sustainability is the capacity of the project to continue and use its results beyond the end of the funding period. The project results can then be used and exploited in the longer-term, perhaps via commercialisation, accreditation or mainstreaming. Not all parts of the project or results may be sustainable and it is important to view dissemination and exploitation as a progression that extends beyond the duration of the project, and into the future" (Erasmus+ Programme Capacity-Building projects in the field of Higher Education (E+CBHE) Guidelines for the Use of the Grant, 2015).

All exploitation and sustainability activities of the project should be in line with Erasmus+ Programme Capacity-Building projects in the field of Higher Education (E+CBHE) Guidelines for the Use of the Grant (https://ec.europa.eu/programmes/erasmus-plus/programme-guide/annexes/annex-ii).

For sustainability of results, project consortium recognized the need to elaborate plan that should cover the main questions: which project results could be exploited after project lifetime, which sources of funding could be used to support EXTEND Centers, which project results could be commercialized, how to promote project results and EXTEND centers activities after the project.

All the partners are actively involved in the fulfilment of agreed objectives defined in this document throughout activities defined in work package 5 "Dissemination and exploitation".

Sustainability plan covers the period after lifetime of the project – from December 2020.

2.Project outcomes to be sustained after the project lifetime

2.1 Centres of Excellence in Engineering Education and Teacher Training (EXTEND centres)

Description of the outcome

By the end of the project each partner country university hosts EXTEND Center which offer following services for the home university:

– training for the teachers and PhD students in the field of modern teaching and learning tools, pedagogical methodology, research-based and project-based learning, assessment techniques, English for special purposes and other related fields;

– development of training programs in the field of modern teaching and learning tools, pedagogical methodology, research-based and project-based learning, assessment techniques, English for special purposes and other related fields;

– monitoring of the quality of teaching of engineering disciplines, assessment of the tools and approaches employed by teachers, student and teacher's level of satisfaction with the quality of education results, process, environment and administration;

– research in the field of modern education technologies for the engineering education;

– organization of networking and discussion activities like conferences and round-tables in the field of new technologies, learning and teaching tools for the engineering education;

– organization of project-based learning activities in partnership with industry and service sector;

– support of the EXTEND on-line platform;

– teacher and PhD students consultations and support in implementation of new technologies, learning and teaching tools for the engineering education;

– organization of shared use of facilities for the inter- and intra-institutional (offering equipment for rent).

Table 1 - Sustainability matrix for EXTEND Center

What need to be sustained	Risks for sustainability	Sustainability Tools
EXTEND center existence as a university department	Risk of acquisition or merger with other department with abolition of the Center.	Special Decree for the Center Establishment should be issued before the end of the project with the relevant subordinate position. EXTEND Center Statement should be issued including the clear rules of the Center

		abolition.
EXTEND Center Staff	Risk of lack of funding to pay salaries Risk of lack of highly-qualified staff	Implementation of one or several business models Network based approach – partners can substitute teachers for each other's Cooperation with EU partners for consultations and teacher exchange also through KA1 funding Teacher training and certification
EXTEND Center Equipment and Room Maintenance	Risk of lack of funding to pay salaries, maintain equipment and rooms	Implementation of one or several business models EXTEND Centers Dissemination and Promotion
EXTEND Center development	Risk of lack of commitment or qualified staff or administration support	Integration of EXTEND Center plan in the University strategy, EXTEND Centers staff training, networking with other centers and EU partners
EXTEND Center equipment effective use	Risk of non-effective use of equipment when it will be morally outdated before physical wear	Organization of shared use of facilities for the inter- and intra-institutional (offering equipment for rent). Application of national and international infrastructural funding.

EXTEND Centers will play the central role in the sustainability strategy because they will implement and sustain other project outcomes.
Each PC university develops business canvas model to plan the business model of the EXTEND Center (Annex1)
PC universities will establish Network of EXTEND Centers for cooperation and joint exploitation of resources including OERs, on-line platform and other project outcomes.

2.2 EXTEND On-line platform designed to support EXTEND centres (outcome 5.1).

Description of the outcome

On-line platform include the following information: project team, work packages and progress reports, project and related news, MOOCs and learning area, projects deliverables and outcomes, library of teaching tools and best practices, standards and research in the related field, teaching materials and on-line support for training programs, forum, gallery. Almost every result that will be developed within the project, most of reports, deliverables, manuals, procedures, promo materials, good

practices, etc., will be visible and published on the EXTEND project on-line platform and thus accessible to HEIs staff, researchers and students. In this way target groups will benefit from EXTEND project results even after the project ends.

Once they have been developed, the teaching materials, course books and MOOCs will continue to be used regardless of the project implementation scope.

Table 2 - Sustainability matrix

What need to be sustained	Risks for sustainability	Sustainability Tools
Visibility of on-line platform	Difficulties in finding on-line platform for the possible user's/customers	Implementation of tools for the engine search optimization to improve search results in most popular search engines (google.com, yandex.ru).
Relevant and accurate contents of the platform	News and information will be outdated	Each PC university takes responsibility in the agreement and appoints EXTEND Center staff member to update information on the platform and administer OERs. *BMSTU* offers supports hosting for the on-line platform, appoints and finance one staff member to populate and administer on-line platform.
On-line platform equipment and software maintenance	Risk of lack of funding to pay salaries, maintain equipment and software	Implementation of one or several business models.

2.3 Training program in modern teaching technologies for PhD students majoring in engineering disciplines (outcome 3.1) and Training program in modern teaching technologies for university teachers of engineering disciplines (outcome 3.2)

Description of the outcome

By the end of the project the modular program consisting of 8 following modules will be created and piloted:

It will include curriculum, course descriptions, syllabuses, teaching materials, presentations, assessment tools and pedagogical methodology of training. The full program worth 8 ECTS and it can be divided in parts according to modular principles. It can be either integrated in regular curriculum of PhD program according to national standards of PC universities or offered as optional program on self-paid basis also in the form of Summer school.

The program will be created as both on-line and off-line product. OER will be available through EXTEND on-line platform and operate under open license.

Table 3- Sustainability matrix

What need to be sustained	Risks for sustainability	Sustainability Tools

Courses that have been developed and new courses	Expiration of the learning materials (findings in science), changes in personnel	Choosing relevant teachers, integration in the regular study programme Mainstreaming
Flow of students / teachers	Lack of interest about courses	EXTEND Centers Dissemination and Promotion Courses accreditation to give added value for the teachers and PhD students Involvement of EU partner teachers also through KA1 mobility programs

3. Target Groups

The primary goal of EXTEND project is to research excellence cases in engineering education through teacher training and new pedagogic approaches implementation in Russian and Tajikistan universities. The EXTEND Project Sustainability Plan is aimed at following stakeholders: teachers and PhD students, university administration, universities, research institutes, accreditation agencies, local community, industry and service sector partners.

Successful sustainability means that partners should identify the target groups which could benefit from the project outcomes and maybe interested to use it's results.

Stakeholders will be reached through initiatives such as the Network of EXTEND centres formed at each PC university which will liaise with different university interest groups and all faculties/departments so as to ensure that Academic Departments and staff receive quality support for engineering teacher training and streamlining of new teaching methods in educational process, and to ensure that engineering teacher training is relevant, accessible and as inclusive as possible.

Each EXTEND centre will offer flexible training for engineering teachers on two levels: modules for PhD programs and modules for re-training of experienced teachers who has extensive teaching experience but have not sufficient theoretical and methodological background and lack skills in implementing modern teaching tools, student-centered approach and project-based methods. It will reach other stakeholders in the PC regions through involving them as much as possible in the operation of the project and training in a much demanded area.

The creation of the Action Group at each PC institution will ensure Strategic Planning and democratization and equal access for training for internal, local and regional stakeholders including staff and PhD students with special needs and disabilities. The training for PhD students as well as experienced teachers in engineering disciplines will be accredited and kept on a self-financing basis – open to Academic Staff and students from other institutions.

The Target groups will benefit at local, regional and national levels through acquiring modern teaching approaches, improved technology and resources, better awareness of critical problems such as student-centered approach, teaching ethics, project management, effective academic communication and oral and written skills, ICT tools.

After project lifetime the Target Groups will continue to be reached is through the Online Platform and EXTEND Centres at each Partner Country institution and its continuous development, enrichment and updating by Partner Country institutions. The list of target groups is placed below.

3.1 Higher education and research institutions in Russia and Tajikistan

HEIs will benefit primarily from improvement of teaching skills of teachers in the field of engineering which will affect quality of education, student satisfaction and decrease in student drop-out rate. Improvement of teaching skill will result also in enhancement in teachers satisfaction and their attitude to the innovation in education process. Teachers directly involved in the project will act as change agents who will disseminate project results and create demand among their colleagues in wider academic departments of PC Universities. Through EXTEND Centers teacher training will facilitate introduction of innovative teaching methods and Bologna tools in technical universities in Russia and Tajikistan.

3.2 University staff (managers, administrators, professors and researchers)

Staff will benefit from opportunity to enhance teaching skills and improve career expectations. EXTEND centers will provide for them training and consultation support in implementation of teaching and learning tools, education quality issues. Staff will affect the project by engagement in methodological work during training course development filling the gap between student demand and university offer, multiplying project effects through participation in academic events on national and international level within and after lifetime of the project.

3.3 PhD Students

PhD students will benefit from opportunity to acquire modern teaching skills and improve career expectations. EXTEND centers will provide for them training and consultation support in implementation of teaching and learning tools, education quality issues. Within 8 EXTEND Centres and through Online project platform, PhD students will develop techniques of innovative teaching. Apart from workshops in EXTEND Centres, they will be involved in volunteering activities to improve skills necessary for career development and improving employability.

3.4 Bachelor and master students

Students will benefit from improvement of teaching and learning tools which will affect quality of education and student’s satisfaction and result in better employability.

3.4 Enterprises, SMEs and service sector

Higher relevance of student’s skills will bring benefit to future employers – mostly enterprises and SME’s in demand of engineers.

High standards of instruction delivered through use of new teaching tools and methods will attract more students to engineering programs, foster internationalising education the Partner Countries too. These indicators of sustainability will benefit all partner and EU countries education systems in the short-term (see Table 1) and long-term perspectives (see Table 2).

Table 4 – The indicators of sustainability will benefit all partner and EU countries education systems in the short-term perspectives

Short term impact	**Target groups/potential beneficiaries**	**Quantitative indicators**	**Qualitative indicators**
1) Improvement of teaching skills of university teachers of engineering disciplines	Academic staff of the partner countries universities.	24 teacher involved in the project, 320 teacher of PC universities, 120 teachers from non-project universities through distance learning	Teacher satisfaction level grows, student academic results increase, drop-out rates for students decrease
2) Development of teaching skills for PhD students majoring in engineering	PhD students majoring in engineering	320 PhD students of PC universities, 120 PhD students from non-project universities through distance learning	PhD students satisfaction level, improvement of their academic results and motivation for teaching career
3) Establishment of network of EXTEND centres	-PhD students; -master students majoring in engineering; - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises	8 EXTEND centres established at PC universities On-line platform set-up and running with monthly information updating	Establishment of network interaction centers with high-level financial and logistical support for organizing and conducting webinars, on-line courses and Internet conferences Managing network interaction between the university and partner organizations in the field of engineer training at Russian and EU universities
4) Development of training courses in Engineering pedagogy for PhD students and academic staff	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization,	16 courses for different engineering disciplines are developed	-Training program curriculum, courses syllabus, teaching and assessment material are developed, printed (published)

	accreditation bodies, city, regional, national and EU industrial enterprises -		PhD courses integrated in 16 PhD programs curriculum, 8 training programs are open for admission for academic staff and information is available on-line -Changes made to learning outcomes in at least 16 PhD programs in engineering
5) Development of MOOC in Engineering pedagogy	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises -	2 MOOCs for different engineering disciplines are developed	On-line course is set-up and open for enrolment, assessment and teaching materials developed
6) Modernization of teaching materials for engineering pedagogy in line with EU experience	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises	2 course books published with 500 items each (1 book in RU and 1 book in TJK) and distributed for project and non-project universities, major libraries in PC countries Course books are used for training PhD students of at least 40 PhD programs in engineering and for 8 re-training programs	Satisfaction level of students and staff who uses the book, wider public awareness about new teaching methodologies in line with EU practices
7) Wider academic and general public awareness about new teaching approaches and methodologies in teaching engineering disciplines in line with EU practices	PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies,	- during lifetime of the project presentation of project outcomes at 6 international academic events, 16 national conferences and 24 regional/local academic events, at	Increase in academic and public awareness about new teaching methodologies in line with EU practices

	city, regional, national and EU industrial enterprises -general public	least 32 articles published -Project conference proceedings book is published in paper and electronically and indexed at leading Russian e-library system www.e-library.ru	

Table 2 - The indicators of sustainability will benefit all partner and EU countries education systems in the long-term perspectives

Long term impact	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
1) Improvement of teaching skills of university teachers of engineering disciplines	Academic staff of the university.	400 teachers of PC's universities, at least 1200 teachers from non-project universities (at least 100 universities) through distance learning Drop-out rates for bachelor and master students in engineering decrease by 5% annually	Teacher satisfaction and motivation level grows, student academic results and motivation for studies improve
2) Development of teaching skills for PhD students majoring in engineering	PhD students majoring in engineering	320 PhD students of the PC universities annually, 160 PhD students from non-project universities annually through distance learning Number of PhD students choosing teaching career grows by 2%	PhD student's satisfaction level, improvement of their academic results and motivation for teaching career
3) Improvement of quality of education and employment rate of bachelor and master students majoring in engineering	-bachelor and master students majoring in engineering - academic staff of the university; - employers, professional organizations-	Employment rate grows by 5% Academic results grow by 10%	Motivation of students grows, learning outcomes accomplished in more efficient way, employer satisfaction grows

4) Modernization of system of pedagogic training of PhD students	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises -	Changes made to at least 24 national educational standards for PhD programs in cooperation with PC Ministries of Education and Science	-Changes to curriculum of PhD programs made on national level -The content of the engineering education improvement concept was defined by means of pedagogical competences forming among the participants of the educational process (learners and teachers).
5) Development of MOOC in Engineering pedagogy	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises -	At least 32 MOOCs for different engineering disciplines are developed	On-line course is set-up and open for enrolment, assessment and teaching materials developed
6) Modernization of teaching materials for engineering pedagogy in line with EU experience	-PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial enterprises	2 course books re-published with 500 items each annually (1 book in RU and 1 book in TJK) and distributed for project and non-project universities, major libraries in PC countries Course books are used for training PhD students of at least 100 PC universities	Satisfaction level of students and staff who uses the book, wider public awareness about new teaching methodologies in line with EU practices
7) Wider academic and general public awareness about new teaching approaches and methodologies in teaching engineering disciplines in line with EU practices	PhD students; -master students majoring in engineering - academic staff of the university; - professional organization, accreditation bodies, city, regional, national and EU industrial	After lifetime of the project presentation of project outcomes at 32 national and international academic events, at least 32 articles published -Project conference proceedings book is published in paper and electronically and	Increase in academic and public awareness about new teaching methodologies in line with EU practices

	enterprises -general public	indexed at leading Russian e-library system www.e-library.ru	

4. Business models for the project sustainability

Business Models	Brief Description
Community-based	In-kind contribution of content or support of activities by community members; the community of practice maintains and extends the project outcomes (this model often depends on a few highly committed core people)
Institutional	University assumes responsibility for maintaining the EXTEND Centers, on-line platform and courses in-kind, aligned with their overall mission; university can incorporate the OER as a free element of their otherwise paid or sponsored course offering
Governmental/NGO	Subsidies or grants by a governmental agency or larger NGO; such funding can be significant but is often unstable due to shifting policy priorities
Philanthropic	Subsidies or grants by foundations, smaller donations by individuals (e.g. crowdfunding)
Endowment	Financial contributions by one or several parties to a fund, interest earned on the fund finances the EXTEND Centers, on-line platform and courses support and development
Membership	Annual contribution to a membership organization (financial or an agreed amount of support work or service provision); the organization manages the maintenance, extension and quality assurance of a shared collection of EXTEND Centers resources
Partnerships	Exchange of complementary resources and knowledge among a group of partners (less formal than a membership organization)
Corporate Sponsorship	Acknowledged support of the EXTEND Centers, on-line platform and courses by a company (financial support, costfree use of services or other)
Advertisers	Paid advertising of third parties is placed on OER content; suitable advertisers must be well chosen (issue of exposing students to advertising)
Consultancy, Training and Other Support	Support of third parties for using the OER, on-line platform and training courses in their programs

Course and/or Certificate Fees	Students (or sponsors) pay for the educational program and other services of EXTEND Centers; in some cases the students can learn on their own but pay for the assessment and certificate
Value Added Products or Services	Users do not pay for the OER but added value, for example enriched formats, special tools or services; called freemium or conversion model if the provider actively uses the OER to convert users to customers of the value added products or services
Licensing Value Added Content	Producers who add significant value to openly available OER can try to license the enhanced content to education/training providers

References

1.Ebner M., Ebner M. How to Foster Technology Enhanced Learning in Higher Education? // Chapter, July 2019. https://www.researchgate.net/publication/334285531

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Annex 1

Business canvas draft of EXTEND Centers of Partner Country University

Business Modal Canvas of EXTEND Center				
Key partners	Key activities	Value Proposition	Customer relationships	Customers segments
	Key resources		Channels	
Cost structure			Revenue Stream	

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