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Advancing Higher Education in Maldives Through E-learning Development

MNU eLearning Roadmap

[Work Package 3, Project Deliverable 3.1.]

Executive Summary

This document describes the process of the MNU e-Learning Roadmap developed within the project Work package 3: Institutional framework.

Chapter 1 describes the purpose of the e-Learning Roadmap.

Chapter 2 describes the development e-Learning Roadmap that wasbased in the project findings complied within the project Work Package 1.

Chapter 3 describes the guiding principles for developing the Roadmap. The principles were found in the MNU vision of e-learning expressed during the Needs analysis (D.1.1.), the project findings and in the e-Learning Policy Analysis conclusions which was conducted as a preparatory step for the Roadmap. From those findings and conclusions, the recommendations were drawn to guide the further development of the Roadmap.

Chapter 4 describes the strategic fields of actions which stemmed from the guiding principles and guided the formulation of the policy measures. Those were namely the need to **facilitate the access** to e-learning by building on the **previous experience** and resources, systemically build the **quality model and perceived usefulness** of e-learning, give space to **innovation**, build the case for the **critical improvement of technological infrastructure** and contribute to the **institutional and national policy.**

Chapter 5 describes the development of the e-Learning Roadmap was a two-step process that included the Policy Analysis and the e-Learning Roadmap development. This process is based on the methodology called *'theory of change'*[1][1] which models how policy activities produce a series of results that contribute to achieving the final intended strategic impacts to the advancement of the MNU, according to the University's Strategic Plan 2013 – 2017 [2][2]and 2020-25[3].

Chapter 6 describes the policy measure and policy activities in details. The policy measures are:

A. Developing e-learning resources for study programs and setting university-wide guidelines
B. Establishing legal framework for e-learning
C. Establishing university advisory services for lecturers through the centre for e-learning (CETE)

[1] The Center for Theory of Change, Inc. What is Theory of Change, https://www.theoryofchange.org/what-is-theory-of-change/

[2] Maldives National University, Priorities for Excellence: Strategic Plan 2013 – 2017 https://mnu.edu.mv/wp-content/uploads/2016/10/SP-2013-2017.pdf

[3]MNU, Strategic Plan 2020 - 2025 Priorities for Excellence, Retrieved from https://mnu.edu.mv/wp-content/uploads/2020/09/Strategic-Plan-2020-2025.pdf

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D. Implementing research projects in the area of e-learning
E. Establishing quality assurance framework for e-learning
F. Identification of the necessary infrastructure for e-learning
G. Improving student support services for e-learning

Chapter 7 provides the comprehensive list of all e-learning Policy Outcomes which are coupled to the specific Policy Outputs. The specific Policy Outputs are measurable results of the explicit policy activity, and their effectuation directly contributes to the fulfilment of the Policy Outcomes, as defined in the MNU Strategic Plan 2020 – 2025.

Chapter 8 provides an overview of the three key phases of the implementation of the e-Learning Roadmap which is a multi-phase process.

Chapter 9 draws conclusions on the importance of the e-Learning Roadmap in developing and supporting e-learning at MNU.

Chapter 10 references the articles used in the development of the Roadmap.

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1 Introduction

This document is the result of the project “AMED - Advancing higher education in the Maldives through e-Learning Development" [4], financed by the Erasmus+ programme - KA2 (Cooperation for innovation and the exchange of good practice, Capacity Building in the field of Higher Education), which started in January 2019, with the partners: University of Zagreb - Faculty of Organization and Informatics (coordinator), The Maldives National University (MNU), The Open University of Catalonia and Croatian Academic and Research Network (CARNET).

The MNU e-Learning Roadmap (eLR) is the Deliverable (D.3.1.) of the Work Package 3 of the AMED Project. The e-Learning Roadmap supports the enhancements of the institutional framework for comprehensive development of e-learning at MNU.

The basis for e-Learning Roadmap was the AMED WP1 findings, including the Report on Current State Analysis (Deliverable D.1.1.) and Needs Analysis (Deliverable D.1.3.), followed by an active dialogue with MNU management and staff, as well as project partners. The second step in developing the Roadmap was to analyse and refine or re-prioritize policy and organization-level instruments and objectives of the MNU, compiled in the comprehensive document - the MNU e-Learning Policy Analysis (Annex I).

Special effort when developing the eLR was given to identify the most effective model for supporting further development of e-learning at MNU to sustain project results and individual efforts of MNU teachers, managers and support staff in developing online study programmes at the University.

The Roadmap will provide substantial input for WP5 (Implementation and sustainability of the study programme). The e-Learning Roadmap acknowledges that its key stakeholders and beneficiaries are students, lecturers, management, administrative and members of Centre for Educational Technology and Excellence (CETE) (as stated in the D.1.3. NeedsAnalysis, p.4).

For this goal, the WP3 coordinator (CARNET) proposed a framework and tools for blueprinting, stakeholders’ consultation and eLR development. An external expert (Spinor Consulting) was subcontracted specifically for overall policy level assessment and recommendation (including necessary actions to address e-learning as an innovation). Spinor Consulting team included Hrvoje Meštrić (Research and Innovation Policy Expert) and Martina Tolić (Research and Higher Education Policy Expert), CARNET Team was led by Dragana Kupres and Zoran Birimiša, while the MNU Team was coordinated by Shimna Shakeeb and Aminath Zifna.

[4] Project AMED, https://amed-project.eu/en/about-project

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2 E-Learning at MNU: WP1 findings

Project findings about the e-learning at MNU are produced within the project WP1 The Report on Current State Analysis (Deliverable D.1.1.) and the Needs analysis (Deliverable D.1.3.) highlighted several important findings. In this chapter short synthesis of the findings will be described.

Ongoing organization of e-learning activities and support to teachers is present since 1999 in the form of Centre for Open Learning (COL) and its present successor Centre for Educational Technology and Excellence (CETE) (Current State Analysis, D.1.1., p.45). Supportive units for e-learning implementation at MNU are: (i) the Center for Educational Technology and Excellence (CETE), which bundles specific multidisciplinary e-learning expertise, (ii) Information Technology Services which provides technical infrastructure and (iii) Student Support Services. CETE provided training for the faculties such as Curriculum Intensive Workshop, Moodle basic, Moodle advance, Moodle Authoring. (Current State Analysis, D.1.1., p.47).

Positive climate towards investments in education improvements (project portfolio, besides official governments investments of a total net commitment value of $52 million) (Current State Analysis, D.1.1., p.45). MNU offers blended learning courses where students attend both face to face and online sessions. (Current State Analysis, p.47).

At the same time, **many stakeholders are aware of opportunities** brought about e-learning. For example, the Needs analysis revealed that „many students cannot afford to study on campus and online learning could bring them an opportunity“, and e-learning is believed to be useful for specific groups (e.g. workers, people in remote places, etc.) Especially the students demand more blended programs (Needs analysis, D.1.3., p.8-10).

The strategic commitment towards e-learning is present but lacks coherence and recognition;expressed needs for activities incapacity building, course models development, dissemination, infrastructure and equipment, quality assurance and research activities (Current State Analysis, p.46). According to its new Strategic Plan 2020-2025, MNU aims to improve further teaching quality with continuous development of the use of new media and ICT in teaching (MNU, Strategic Plan 2020 – 2025). Priorities for Excellence). At the national level, current status of e-learning as a component of educational policy is starting to be an emerging trend in the Maldives and it has been identified as an area of importance in both the Higher Education Bill (at the moment in the parliament under discussion) and the Education Sector Plan 2019-2023 (Maldives Education Sector Plan 2019 – 2023).[5] At the same time, some of the key stakeholders believe the strategic and policy commitment

[5] Maldives Education Sector Plan 2019 - 2023 https://www.globalpartnership.org/sites/default/files/2019-05-maldives-education-sector-plan-2019-2023.pdf

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towards e-learning is missing and are expressing concerns about the „absence of specific regulations for e-learning“ and existing standards which are „more focused on face to face learning - some of them based on European countries“. For example, they identify the policy that is based „on the number of students per class that does not distinguish face to face from blended/online learning“(Needs analysis, D.1.3., p.8-10)

Despite some successful implementations in private colleges and high demand for it,**e-learning is still not recognised as a quality policy model forHigher Education**. The Maldives Qualification Authority is yet to recognise e-learning as a quality delivery model.

The quality and usefulness of e-learning has mixed perception among lecturers, including negative perception and „resistance to online learning due to their lack of experience“in online learning and with online trainings. The stakeholders express the need for awareness raising,sensibilization and demonstration that e-learning can be of high quality. On the student side, there is a „general positive students' perception on the use of videos for learning“, however „most students have not experienced online learning yet and so they prefer face to face learning“(Needs analysis, D.1.3., p.8-10). There are also a number of committed lecturers who are interested in and are constantly pushing the use of new media in their teaching.

Technological infrastructure needs critical improvement as at this moment it is established at the level that enables basic implementation of blended learning (Current State Analysis, p.45).The key stakeholders are expressing the „lack of resources (and infrastructure) for the production of learning resources“, while „less than 30% of students do not have basic technology and internet notions and not all students have a laptop or computer at home“(Needs analysis, D.1.3., p.8-10). Central element for e-learning is Moodle called GEM as a Learning Management System (LMS), which serves as the platform for the majority of e-learning offers and students perceive it as a place for e-assessments. (Current State Analysis, D.1.1., p.47), but it requires optimization and administration improvements (as most of the courses in the system are empty and hidden from students due to large amount of “latent” data making the system work slower and require more resources to run). (Needs analysis, D.1.3., p.31). Additional challenges stated by MNU staff: “Network congestion is experienced when working on the WiFi.“ “Internet Bandwidth to all the faculties and centres in Male': 80Mbps.“ General lack of equipment and the experience in running the advanced services like recording lectures. (Needs analysis, D.1.3., p.29)

Summary of the project findings:

1. Ongoing organization of e-learning activities and support to teachers
2. Positive climate towards investments in education
3. Many stakeholders aware of opportunities brought by e-learning
4. The strategic commitment towards e-learning is present but lacks coherence and recognition

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5. E-learning not recognised as a quality policy model for HE
6. The quality and usefulness of e-learning has mixed perception
7. Technological infrastructure needs critical improvement

3 Guiding principles of the e-learning at MNU

In general, successful achievement of e-learning fields of actions has the following preconditions [6]:

- Targeted support and more time for interaction between students and teachers through digital provision of standardized information (e.g. in the form of video recordings);
- Taking into account individual learning paths and pace for each student (customizable courses);
- Unrestricted accessibility, recyclability and adaptability of teaching materials through their conception as open educational resources (OER);
- Focusing on the blended study courses, which integrate e-learning and using technology in classroom settings, including the form of blended learning that enriches classroom teaching by access to information resources and learning materials, data and media.
- Bundling and sharing of innovative concepts and experiences of individual lecturers to generate best practice examples and streamline them to the University policy.

Taking into account the general preconditions described above, the guiding principles of the eLearning at MNU are stemming from the MNU vision of the e-learning implementation, the project findings identified in the Work Package 1 and the e-Learning Policy Analysis conducted as a preparatory step in developing e-Learning Roadmap (see chapter Methodology of e-Learning Roadmap Development).

In this chapter, the MNU e-learning vision, Policy Analysis conclusions and recommendations stemming from the project findings will be described.

3.1. MNU vision of e-learning implementation

E-Learning Roadmap was mindful about the **expressed MNU vision of e-learning implementation** at MNU, reported within the WP1 preparation activities **(**Report on Current State Analysis (Deliverable D.1.1., p. 41):

[6] Quality Assessment for e-learning: a Benchmarking Approach https://e-xcellencelabel.eadtu.eu/images/E-xcellence_manual_2016_third_edition.pdf

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- TO BECOME A QUALITY TERTIARY INSTITUTION, RECOGNIZED AT REGIONAL/GLOBAL LEVEL THAT PROMOTES LIFELONG LEARNING WITH PROVISION OF NATION-WIDE FLEXIBLE AND AFFORDABLE TERTIARY EDUCATION;
- TO CREATE EDUCATIONAL OPPORTUNITIES CHARACTERIZED BY A FOCUS ON PEDAGOGICAL QUALITY AND EXCELLENCE, OPEN ACCESS TO ALL, INNOVATION AND SUPERIOR TRAINING FOR ALL USERS;
- TO CAPITALIZE IN E-LEARNING IN THE REGION;
- TO DEVELOP AND DELIVER THE BEST QUALITY STANDARDS FOR BLENDED COURSES AND FULLY ONLINE COURSES;
- TO PROMOTE LIFELONG LEARNING IN THE COUNTRY AND IN THE REGION.

3.2. e-Learning Policy Analysis conclusions.

The Policy Analysis (see Annex I) forms the first step of the e-Learning Roadmap development (see chapter 5: Methodology of the e-Learning Roadmap development).The Policy Analysis proposed several important conclusions leading to the development of the e-Learning Roadmap may be drawn.

1. There is a positive disposition among numerous lecturers at the MNU regarding the use of e-learning, and the commitment to improve e-learning continues to pose many challenges. However, at majority of faculties there are initiatives to implement e-learning, especially due to the COVID-19 situation. **Existing policies to encourage these initiatives, provide support and systematically develop guidelines and processes for e-learning should be strengthened at supported by the management. Developing the guidelines, trainings and procedures are of the highest importance and these policies are proposed to be led by CETE.**

2. Creating favourable technical and framework conditions for the use of e-learning is of high importance and they are relatively non-existing until now. So, the commitment of management **to create ICT infrastructure and legal framework is also very important policy development.**

3. **Innovation and research in e-learning has already some initiatives at the MNU but they have to be significantly strengthened.** Research and innovation in e-learning is a multidisciplinary area which would represent a solid scientific and pedagogical basis for concrete implementation scenarios of e-learning,

4. **Supporting teachers and students in use of ICT for e-learning through advising and services** should be a systematic MNU policy, supported by CETE, across all departments and faculties.

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Execution of policies for e-learning must be coordinated both on the MNU management level and on the level of teaching. Management should show strong commitment for e-Learning development. Lecturers should implement innovative didactic concepts of presenting knowledge and teach via new technology, but also they should take care of the needs of the students for learning experience in face-to-face and community.

3.3. Recommendations stemming from the vision, project findings and the e-learning policy analysis

The WP1 Report on Current State Analysis (Deliverable D.1.1.) and the Needs analysis (Deliverable D.1.3.) highlighted several important findings.

There is a positive trend and experience that the e-Learning Roadmap proposes to continue and build upon it the new knowledge, services and future actions.Firstly, there is an **ongoing organization of e-learning activities and support to teachers**(Current State Analysis, D.1.1.) and a **positive climate towards investments in education (**Current State Analysis, D.1.1.). Secondly, **many stakeholders are aware of the opportunities** the e-learning is bringing (Needs analysis, D.1.3.).

Systemically build the quality model and perceived usefulness of e-learning. E-learning is still not recognised as a quality policy model of higher education. Related to that, **the quality and usefulness of e-learning has mixed perception** among key stakeholders and their experience hugely varies, as found out in the Needs analysis (D.1.3.).

Stemming from the general preconditions it is important to support and share innovative concepts and experiences of individual lecturers to generate best practice examples and streamline them to the University policy. For it to happen it is important to **support and give space to innovation** in the area of digital technology in teaching and learning.

Finally, **build the case for the critical improvement technological infrastructure. The technological infrastructure needs critical improvement** if the e-learning is to be adopted at the whole university (Current State Analysis, D.1.1., Needs analysis, D.1.3.).

If coherently compiled and communicated as a strategic plan for e-learning, the e-learning policies can achieve stronger impact. Both Current State Analysis (D.1.1.) and Needs analysis (D.1.3.), together with the University Strategic Plan 2020-2025, show **the strategic commitment towards e-learning**, but at **present it lacks coherence and wider recognition.** The e-Learning Roadmap sees this as both the opportunity to build upon previous strategic documents and recognizes the threat of scattered policy actions.

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4 Strategic fields of actions

In this chapter, first, the guiding principles stemming from the MNU vision, general preconditions and project findings are described. Second, the guiding principles are related to the proposed strategic field of actions in the form of recommendations and proposed strategic actions.

The following table summarizes how the project findings contributed to forming the policy measures proposed in the e-Learning Roadmap. The table shows the summary of the MNU vision of e-learning (I.) and project findings (II.) stemming from WP1, which both form the guiding principles (A.) for the next step of development of e-Learning Roadmap. The guiding principles are the basis for proposing the strategic fields of action (B.), formed as recommendations (III.), from which the strategic actions for the e-Learning Roadmap are then proposed (IV.).It is important to be aware that the project findings are one stream of contribution towards proposing the policy measures. The second stream of contribution is the MNU existing Strategic plans (2020-25).

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GUIDING PRINCIPLES			A. STRATEGIC FIELDS OF ACTION	
I. MNU VISION OF E-LEARNING IMPLEMENTATION (CURRENT STATE ANALYSIS, D.1.1.)	II. PROJECT FINDINGS (CURRENT STATE ANALYSIS, D.1.1. & NEEDS ANALYSIS, D.1.3.)	E-LEARNING POLICY ANALYSIS CONCLUSIONS	III. RECOMMENDATIONS STEMMING FROM PROJECT FINDINGS	IV. PROPOSED STRATEGIC ACTIONS (E-LEARNING ROADMAP, D.3.1.)
^ To become a **quality tertiary institution**, recognized at regional/global level that promotes lifelong learning with provision of **nation-wide flexible and affordable** tertiary education; ^ To create educational opportunities characterized by a **focus on pedagogical quality and excellence, open access to all, innovation and superior training for all users**; ^ To **capitalize in e-learning** in the region; ^ To develop and deliver the **best quality standards for blended courses and fully online courses**; ^ To promote **life long learning** in the country and in the region.	1. **Ongoing** organization of e-learning activities and **support** to teachers 2. Positive climate towards investments in education 3. Many stakeholders **aware of opportunities** brought by e-learning 4. The **strategic commitment** towards e-learning is present but **lacks coherence and recognition** 5. **E-learning not recognised as a quality policy model** for HE 6. The quality and usefulness of e-learning has **mixed perception** **7.** Technological **infrastructure needs critical improvement**	Strengthen **existing policies** Develop **guidelines**, **trainings** and **procedures** Create ICT **infrastructure** Create **legal framework** Strengthen **innovation** and **research** **Support** teachers and students	**Facilitate access** to e-learning by building on the **previous experience** and resources Systemically build the **quality model and perceived usefulness** of e-learning Give space to **innovation** Build the case for the **critical improvement oftechnological infrastructure** Contribute to the **institutional and national policy**	**A. Developinge-learning resources** for study programs and setting **university-wide guidelines** **B.** Establishing **legal framework** for e-learning **C.** Establishing university **advisory services for lecturers** through the centre for e-learning (CETE) **D.** Implementing **research projects** in the area of e-learning **E.** Establishing **quality assurance framework** for e-learning **F.** Identification of the **necessary infrastructure** for e-learning **G.** Improving **student support services** for e-learning

Table: Guiding principles of project findings related to strategic fields of action for the e-Learning Roadmap

In the following chapters the relations between project findings and recommendations and policy measures are described.

4.1. Facilitate access to e-learning by building on the previous experience and resources

As the project findings show there is a more than two decades long and ongoing organization of e-learning activities and **support** to teachers, it is recommended to continue the positive trend and experience and build upon it the new knowledge, services and future actions. Additionally, it is important to **systematically build the quality model and perceived usefulness of e-learning**

In order to facilitate access to educational technologies and e-learning, it is important to optimize the general conditions for use of e-learning on several levels at the MNU.

The educational technologies in use at the MNU (especially the Learning Management System Moodle and MOOC) should be maintained and regularly updated in accordance with technological developments. This requires a long-term effort in securing the necessary human resources at CETE and IT Service and ensuring that teachers and students, if possible, can use these educational technologies without obstacles.

E-learning elements are to be added to the courses taking into account the respective specifics of the individual fields of study. Particular study courses can be organized differently according to their content, type, the number of students and can individually be enriched with e-learning to develop the blended learning study course. How this will be implemented is highly dependent on specific didactic benefits as well as digital competences of the lecturers. In order to increase the proportion of e-learning in the existing courses, it is first necessary to raise general awareness at the MNU and to develop specific guidelines.

This could be done, for example, through the joint involvement of the Faculty management and by integrating e-learning into the approval process of new courses and subjects and by the creation of exemplary e-learning courses at all Faculties.

Newly developed teaching and learning materials should be made available and used as Open Educational Resources (OER).

PROPOSED STRATEGIC ACTIONS stemming from these recommendations are to develop e-learning resources for study programs and setting university-wide guidelines (policy measure A) and establish a legal framework for e-learning (policy measure B).

4.2. Systemically build the quality model and perceived usefulness of e-learning

As the project findings show that e**-learning is not yet fully recognised as a quality policy model for** HE, and that the quality and usefulness of e-learning has **mixed perception**, i**t is recommended to** systematically build the **quality model and perceived usefulness** of e-learning. Additionally, it is important to be aware of the existing knowledge and capacity previous within the MNU and **continue the positive trend and experience and build upon it the new knowledge, services and future actions.**

With regard to organizational legislation and the relevant MNU policies, maximum legal security should be ensured for teachers and students when using e-learning. To do this, it is necessary to clarify legal uncertainties, identify and propose appropriate solutions and ultimately change legal guidelines and University policies in e-learning.

With the help of appropriate further training and support offers, the existing lecturers' resistance to use new educational technologies will be minimised, and at the same time, digital competence of the teachers will be strengthened. Positive effects of the use of e-learning should be identified and teacher positive experiences should be reported. This will result in improved knowledge sharing about the existing e-learning possibilities and wider improvements (such as the collection or life-long learning offers) at the MNU.

Additional incentives are to be created for the use of e-learning by integrating e-learning in the quality assurance processes.

In order to make the use of e-learning in courses more transparent, the use of e-learning within courses should be introduced according to the general MNU e-learning guidelines.

Parallel to the enrichment of courses with e-learning components, a corresponding quality assurance and evaluation cycle should be established in order to check their efficiency.

PROPOSED STRATEGIC ACTIONS stemming from these recommendations are, first, to establish a quality **assurance framework** for e-learning **(policy measure E). It is necessary to support both teachers and students with the support services, namely to establish a university advisory services for lecturers through the centre for e-learning (CETE) (policy measure C) and improve student support services for e-learning (policy measure G).This will all contribute to the quality model of e-learning, better understood and accepted both by teachers and students.**

4.3. Give space to innovation

Digital technology evolves continuously, and it is necessary to conduct e-learning research to introduce innovations in its use and transfer the new knowledge to teaching and learning practice in MNU classrooms. It is therefore important to give more space to innovation in the field of using digital technology in teaching and learning.

For this purpose, e-learning has to be subject of research intended to provide state of the art knowledge on the use of technology in higher education, expert advice, support and recommendation

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to teachers on how to implement e-learning in their courses, which also creates an additional network of researchers and teachers and thus forming a community of e-learning practitioners.

Scientific publications on e-learning and cooperation with other universities are essential for the acquisition of third-party funded projects. Intra- and inter-university research collaborations should therefore be strengthened.

PROPOSED STRATEGIC ACTIONS stemming from the recommendations to give more space to Build the case for the critical improvement of technological infrastructure

4.4. Build the case for the critical improvement of technological infrastructure

As the project findings show that the technological infrastructure needs critical improvement, it is recommended to build the case for the critical improvement of technological infrastructure.

Specific measures are devoted to developing the appropriate ICT infrastructure, which is a prerequisite for smooth implementation of e-learning.

PROPOSED STRATEGIC ACTIONS stemming from these recommendations are to identify the necessary infrastructure for e-learning (policy measure F).

4.5. Contribute to the institutional and national policy

As the project findings show that the **strategic commitment** towards e-learning is present but **lacks coherence and recognition**, i**t is recommended to nest the e-Learning Roadmap in the wider institutional and national strategic framework.**

Development of e-learning at the MNU can also initiate some actions directed towards official recognition of e-learning at the government level. MNU can engage in dialogue related to matters of e-learning at national policy and legislation level. MNU/CETE can engage Maldives Qualification Authority (MQA) and Ministry of Higher Education through policy dialogue events in areas related to implementing quality e-learning at tertiary level, and related to The Maldives National Qualifications Framework (MNQF), which is a “comprehensive and coherent national framework that facilitates quality

improvement, quality assurance, and private sector participation in post- secondary education"[7]. MNU/CETE can collaborate also with private higher education institutions and members of the PHEAM (Private Higher Education Association of Maldives) in discussions about challenges in E-learning policy as a quality education delivery model.

Support the coherent argumentation and communication to the key stakeholders, the public and the founders, helping e-learning policies can achieve stronger impact.

PROPOSED STRATEGIC ACTIONS stemming from this recommendation are all the proposed policy measures. Supporting the coherent argumentation and communication to the key stakeholders, the public and the founders will help the e-learning policies to achieve stronger impact.

5 Methodology of the E-Learning Roadmap Development

The development of the e-Learning Roadmap was a two-step process that included the Policy Analysis and the e-Learning Roadmap development.

The development of the Policy Analysis and the E-learning Roadmap is based on the methodology called *'theory of change'* which models how policy activities produce a series of results that contribute to achieving the final intended strategic impacts to the advancement of the MNU, according to the University's Strategic Plans 2013 - 2017. and 2020 - 2025.

The theory of change is developed at the level of the policy intervention of the University, so the objectives and activities of the MNU e-learning policy can be identified and tightly planned beforehand.

The Theory of change process consists of 5 levels, and they are shown in *Figure 1.*

[7]THE MALDIVES NATIONAL QUALIFICATIONS FRAMEWORK (MNQF), Retrieved from http://www.mqa.gov.mv/static/uploads/Maldives-National-Qualifications-Framework-V2_2-witheffectfrom01stJan2017_2018-06-26T00-49-48.pdf

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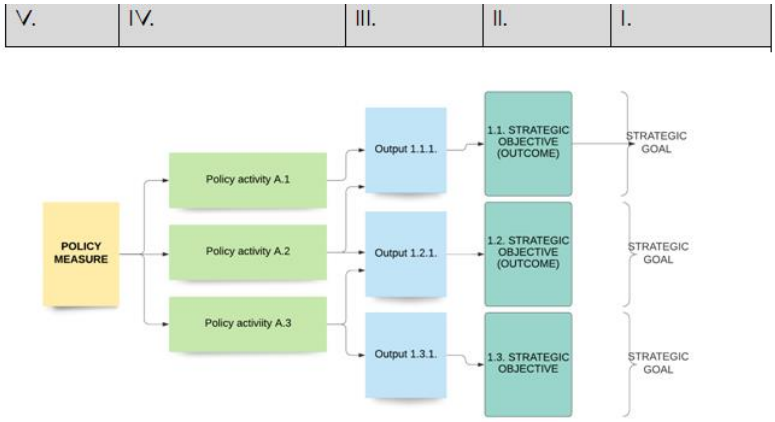

Figure 1: Schematic view of the e-Learning Policy Analysis and e-Learning Roadmap levels, shown backwards – highest level (Strategic Goal, i.e. Policy Impacts) are shown at the most left, while Policy Inputs (Measures and Activities) are shown at the right.

The process is composed in the way that it starts from the final, desired impact of the policy, and identification of long term goals - IMPACTS. The "backwards mapping" is going to be conducted to identify the preconditions, necessary to achieve that goals, i.e. OUTCOMES, which are strategic objectives which will contribute to the desired impacts[8]

Although the outcomes are desired as results of the interventions, they cannot be achieved without concrete policy OUTPUTS.

The goal of this process is to identify those policy interventions (INPUTS) which are going to create the preconditions leading to the desired outcomes. In other words, the policy analysis is completing the following Inputs-Outputs-Outcomes-Impact framework as shown schematically in Figure 2.

[8]Correa, P. et al, Public Expenditure Reviews in Science, Technology and Innovation - A Guidance Note, 2014, World Bank (https://openknowledge.worldbank.org/handle/10986/21064

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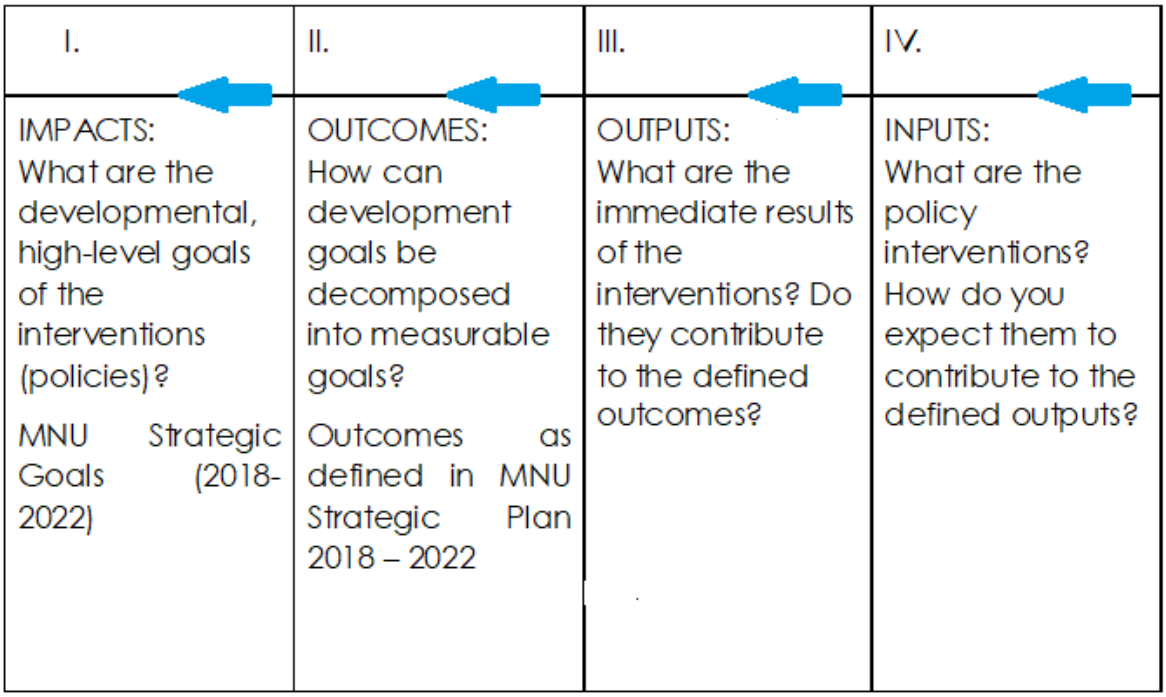

Figure 2: Scheme of the Input-Output-Outcome-Impact analysis used for identification of the necessary outputs of the e-learning policy at the MNU, in order to achieve strategic outcomes and goals.

Final level of the framework is the aggregation of policy inputs into the common areas which will lead to the e-Learning policy measures - starting point of the MNU e-Learning Roadmap.

The *Inputs-Outputs-Outcomes-Impact* framework can be summarized as follows:

I. E-LEARNING POLICY IMPACTS (Which correspond to the Strategic Goals of the University)

II. E-LEARNING POLICY OUTCOMES (Which correspond to the Strategic Objectives of the University)

III. E-LEARNING POLICY OUTPUTS (Measurable results of the implemented activities which contribute to the Policy Outcomes)

IV. E-LEARNING POLICY INPUTS (Activities undertaken by the MNU in order to induce changes and reproduce Policy Outputs)

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V. E-LEARNING POLICY MEASURES (Policy areas in which the change is initiated)

At Level I (Strategic Objectives), the analysis was done on the basis of dialogues conducted in workshops, with strong feedback from colleagues from MNU.

At the levels II. to IV., the policy analysis and development was done through contributions from the Needs analysis (WP1, D.1.3.), Current State Analysis (WP1, D.1.1.), and through consultation process with MNU staff (lecturers, administration and management) and project partners.

Proposed possible Policy Outputs, Inputs and Measures are identified on the basis of the various contributions. First the Roadmap relies on the "*Needs analysis"* document which is the result of the Work Package 1. Second, the Roadmap is based on the results of the E-learning Roadmap Workshop held on 21 November 2020 in Barcelona. The goal of the workshop was to hold the policy analysis exercise (*Input-Output-Outcome-Impact*) in which the whole project team and MNU staff and management participated. The exercise resulted in the Policy Outputs and connected them to the Strategic Goals and Outcomes. Third, some Outputs, Inputs and Measures are expert proposal of the CARNET team based on the desk analysis and dialogue with the MNU colleagues (several online meetings in the period December 2010 – August 2020).

Additional inputs to the Policy analysis and the Roadmap have been provided via semi-structured questionnaires (see ANNEX I: e-Learning Policy Analysis), responded by relevant stakeholders at the MNU. The questionnaires served as a tool for assesing the relative importance for the possible Policy Outcomes, Policy Outputs, possible Activities and Measures of the e-learning development at MNU. All questionnaires were answered by the employees of the MNU (deans, lecturers and administration) and which competently evaluated with numerical marks proposed questions at all levels of the policy analysis.

The clusters of **Policy Measures** (Level V) consisting of Policy Activities (Level IV) are reproducing the desired tangible Outputs (Level III) and thus contributing to the respective Outcomes (Level II) and Goals (Level I).

The e-learning Policy Measures should contribute directly to the Policy Outcomes, i.e. strategic objectives of the MNU Strategic Plan 2020 – 2025.[9] They are also fully aligned with the Strategic Goals

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of the MNU and contribute directly to its respective objectives as shown in the diagram above (Figure 1. Schematic view of e-Learning Roadmap policy approach to e-Learning Policy Analysis levels, shown backwards – highest level (Strategic Goals, i.e. Policy Impacts) are shown at the right, while Policy Inputs (Measures and Activities) are shown at the left.).

Through the policy analysis process, five strategic objectives relevant to the enhancing of e-learning are identified, among all strategic goals of the MNU:

- Academic Excellence (Strategic Goal 1)
- Exemplary Research and Innovation (Strategic Goal 2)
- Quality People (Strategic Goal 4)
- Conducive Working Environment (Strategic Goal 8)
- Student Empowerment and Success (Strategic Goal 9)

Within the policy analysis process, five specific Strategic Goals of the Strategic Plan were identified and assessed in a way that specific strategic objectives were identified and evaluated for their importance for e-learning at the MNU.

Consequently, through the questionnaires answered by the MNU staff and management in the scope of policy analysis, it is indicated that all proposed Strategic Objectives are important for e-learning and all of them were marked as ”Very important”, meaning that without these outcomes any development of e-learning at the MNU would not be possible.

The Policy Measures are contributing to the selected Strategic Objectives in the way shown in *Figure 2. Overview of the impact of the Policy Measures on the Strategic Objectives of the MNU.*

Some measures contribute to more than one strategic objective, according to the specific activities implemented.

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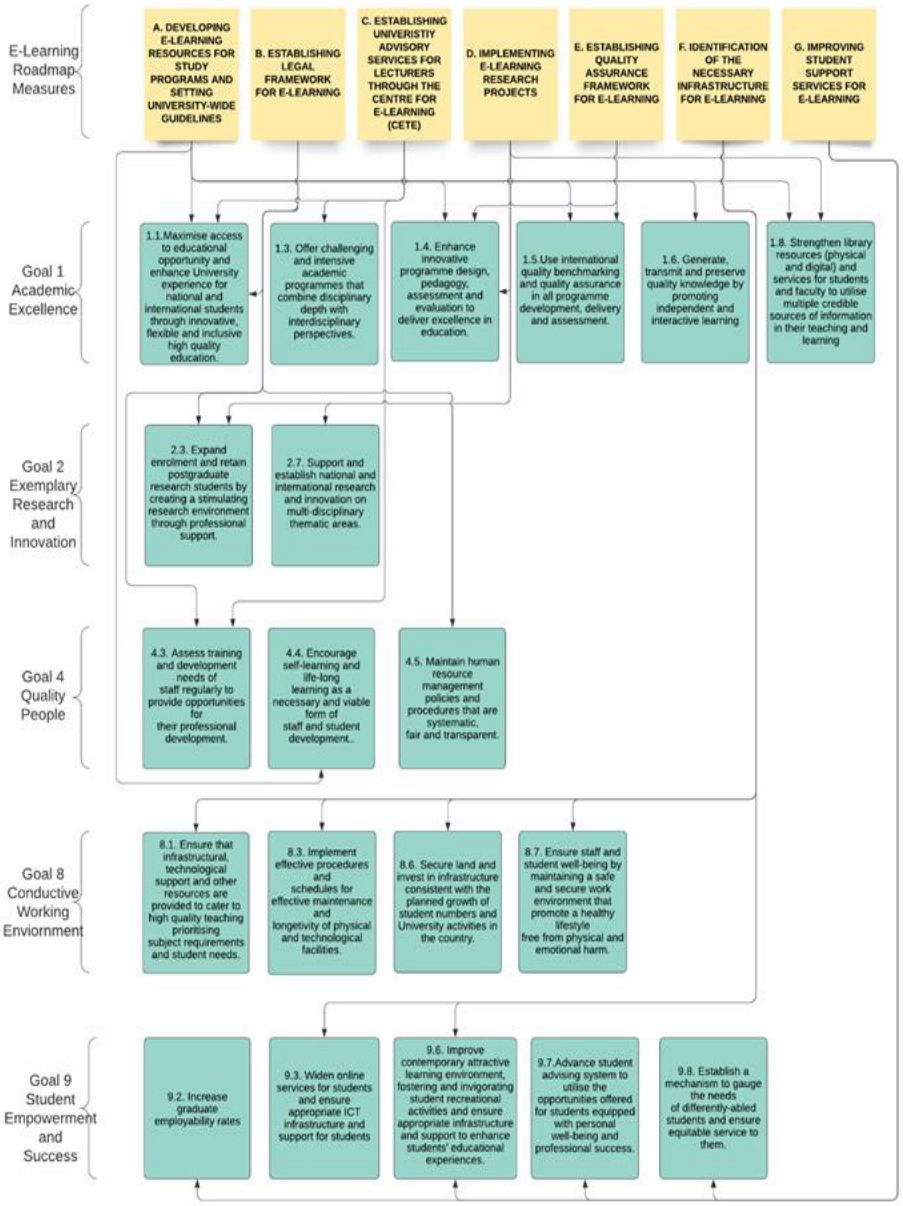

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Figure 2. Overview of the impact of the Policy Measures on the Strategic Objectives of MNU

6 E-learning Policy Measures and Policy Activities

6.1. Policy Measures

The proposed Policy Measures are as follows:

A. DEVELOPING E-LEARNING RESOURCES FOR STUDY PROGRAMS AND SETTING UNIVERSITY-WIDE GUIDELINES
B. ESTABLISHING LEGAL FRAMEWORK FOR E-LEARNING
C. ESTABLISHING UNIVERSITY ADVISORY SERVICES FOR LECTURERS THROUGH THE CENTRE FOR E-LEARNING (CETE)
D. IMPLEMENTING RESEARCH PROJECTS IN THE AREA OF E-LEARNING
E. ESTABLISHING QUALITY ASSURANCE FRAMEWORK FOR E-LEARNING
F. IDENTIFICATION OF THE NECESSARY INFRASTRUCTURE FOR E-LEARNING
G. IMPROVING STUDENT SUPPORT SERVICES FOR E-LEARNING

6.2. Policy Activities

The established Policy Measures represent origins for the possible Policy Activities for e-learning. They are tangible activities connected to the development of e-learning at MNU. Activities are selected and proposed based on the in-depth analysis of the MNU current and envisaged teaching, research and development policies. The proposed activities are evaluated with the semi-structured questionnaires answered by the MNU staff: lecturers, deans and management.

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Every undertaken Policy Activity will result in the respective Policy Output with measurable results contributing to one of the strategic objectives of MNU (cf. Figure 10 Overview of the Strategic objectives and the corresponding outputs stemming from e-learning activities).

A. DEVELOPING E-LEARNING RESOURCES FOR STUDY PROGRAMS AND SETTING UNIVERSITY-WIDE GUIDELINES (1.1.2)

A.1 Ensure systematic support to the teaching and learning by continuous digital documentation and traceability of teaching and learning materials in as many courses as possible. (1.1.1)

CETE will collect necessary technical preconditions for documenting digital and new media learning resources.

Until December 2022, by CETE.

A.2 Systematically develop and implement various e-learning modules and blended learning units for subject-specific parts of various study courses (1.1.1, 1.4.1, 1.6.1)

Faculties will commit to choosing at least one study course and making one or more of their subjects available online via new media. It will start with the development of instructions for possibilities of media use" in the “curriculum manual” and exemplary integration of e-learning into the curriculum sample.

Until December 2023, by CETE.

A.3 Develop practical guidelines and practical models (learning materials and tools) at University level for teaching and learning for the blended courses and online modules (1.4.1, 1.5.2, 1.6.1, 1.6.2. 1.8.1)

Proposition of University-wide guidelines and models will secure the necessary human resources for long-term support of the learning management system Moodle.

Until December 2022, by CETE.

A.4. Standardize the level of online resources by developing the minimum obligatory requirements (1.5.2., 1.6.2.)

Draft standardization document for educational resources will be developed. For example, standardization can be developed as: 1st Level: Students have access to course information on the web and should be able to use e-learning information as provided. 2nd: Level: Standards for e-learning

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resources and standardized access routes to them are fulfilled. 3rd Level: Didactically mature e-learning scenarios and materials that meet the high demands of e-learning.

Until December 2023, by CETE.

A.5. Create a teaching and learning digital resources repository within the library and digitalize learning resources through robotic scanning facility (1.8.1, 1.8.2.)

Ensure technical and human resources to set up online e-learning repository (e.g. MOOC platform)

Until December 2023 by CETE and Library.

A.6. Develop and propose guidelines for open-access publication of open education resources (1.8.2. 2.7.3)

Examine the framework conditions for the development of an OER policy and develop the OER policy for the University.

Until June 2023, by Library.

A.7. Develop guidelines for online professional development trainings / blended learning form (4.4.1, 4.4.2, 8.8.2)

Explore the possibilities of training and lifelong learning courses of the University for the use of new media in teaching.

Until December 2024, by CETE.

A.8. Develop practical e-learning guidelines for students (1.3.1)

CETE will compile practical instructions for students on how to use e-learning, technologies and new media in the best way to achieve learning outcomes.

Until December 2024 by CETE.

RESULT: Increased number of completely developed e-learning/blended study courses

INDICATOR A1: Total Number of Study Courses developed in the e-learning/blended mode

Baseline 2021: 5 Target 2025: 29 courses/programs

INDICATOR A2: Total Number of study course subjects available online

Baseline 2021: 0 Target 2025: 11 subjects

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INDICATOR A3: Total Number of Study Courses which have at least 1 subject online

Baseline 2021: 0 Target 2025: 29

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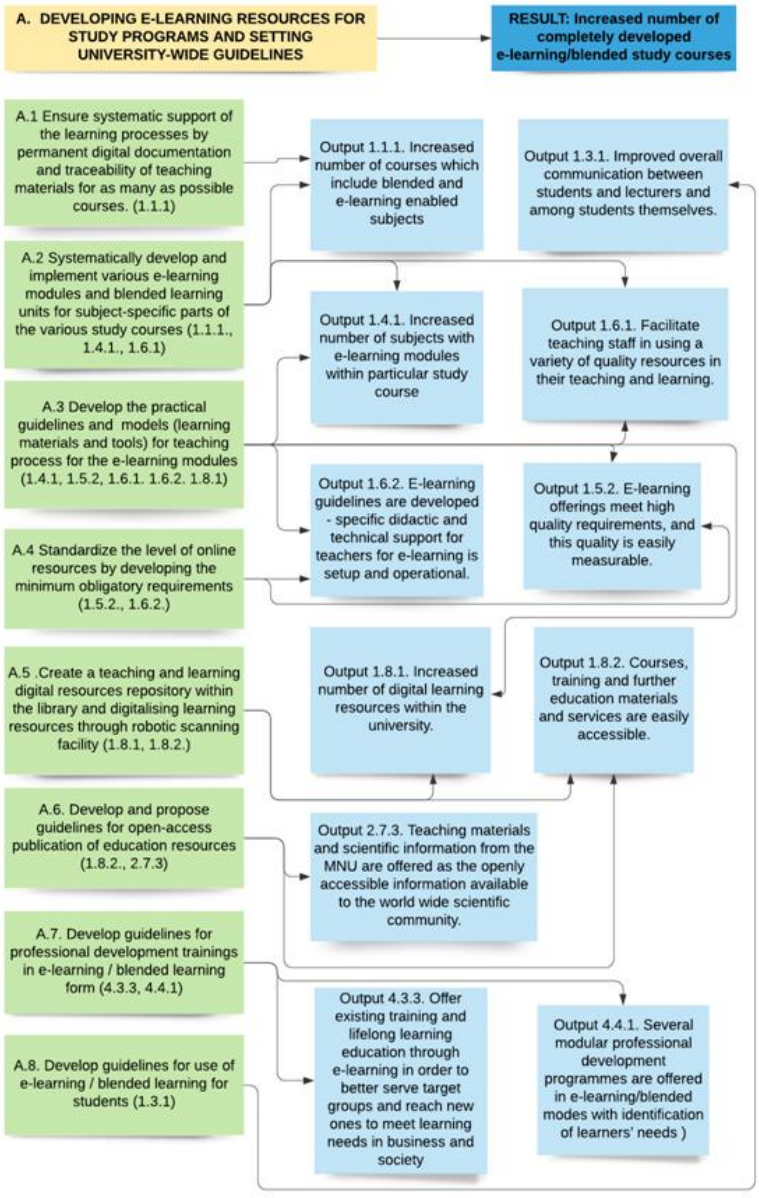

Figure 3. Activities and Outputs of the Policy Measure A

B. ESTABLISHING LEGAL FRAMEWORK FOR E-LEARNING (1.6.2)

B.1 Ensure accreditation approval for the use and recognition of e-learning modules as parts of the courses by the corresponding regulations of the University, in order to ensure a legal basis for the courses (1.1.1, 1.6.2, 1.5.2.)

The process of analyzing the policies and regulation of the University for approving study courses should start, possible obstacles for smooth e-learning processes should be removed and improvements in policies proposed to the University authorities.

Until December 2022, by CETE.

B2. Support promotion and remuneration for teaching, research and administrative staff collaborating in projects (incl. e-learning research and practice projects), e.g. Administrative Staff Promotion Policy & Guidelines, Workload Policy for Academic Staff and Policy on Academic Staff Promotions (1.8., 2.3.1)

The general policy for human resources development that would improve e-learning and also enable academic staff to attract more external project financing should be proposed to the Senate.

Until December 2025, by E-learning Advisory Committee

B.3. Newly appointed university lecturers are expected to improve their competence for e-learning as a part of university didactic training, e.g. Staff Development Policy (4.3.1, 4.3.2)

Introduce the introductory course for new lecturers, which – apart from didactic skills – also includes digital competence

Until June 2025, by CETE

B.4. The commitment and additional workload of the teachers who are involved in e-learning are reflected in the performance-related salary, e.g. Workload Policy for Academic Staff, Policy on Academic Staff Promotions, Guideline for Staff Development Funding (4.3.2, 4.5.1)

This is a long-term activity that should, as the final product, have a fair and comprehensive valuation of efforts in e-learning made by the university staff. However, the prerequisite is that all other legal, technical and didactic preconditions should be in place.

Until June 2025, by E-learning Advisory Committee

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B.5. Offer competent advice on legal issues related to e-learning materials and procedures, such as: use of copyright, foreign materials, the reuse of learning materials and the promotion of own learning materials (1.1.1., 4.3.1, 4.3.2)

Within CETE an expertise for legal issues of the e-learning should be developed and capacities for legal advisory increased.

Until December 2025, by CETE

RESULT: A comprehensive legal management framework for e-learning courses, assessment, life-long learning and other services is developed

INDICATOR B1: Total number of legal documents updated or developed in order to accommodate for e-learning development

Baseline 2021: 1 Target 2025: 26

INDICATOR B2: Total number of MNU teaching staff who finished education on e-learning

Baseline 2021: 50 Target 2025: 150

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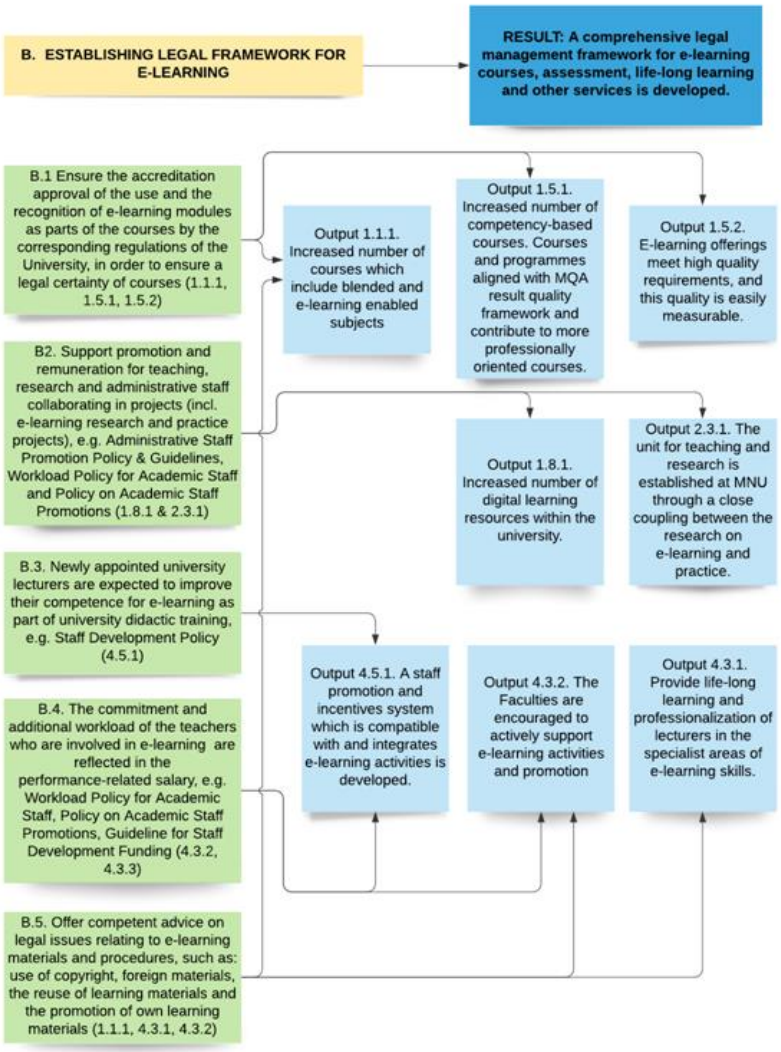

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Figure 4. Activities and outputs of the Policy Measure B

C. ESTABLISHING UNIVERSITY ADVISORY SERVICES THROUGH THE CENTRE FOR E-LEARNING

C.1 Develop communication plan and introduce the efficient way of communication on e-learning possibilities for the students (1.3.1., 4.3.2).

CETE will establish a dedicated web-site, social network groups and other promotion channels in order to bring blended and e-learning possibilities in the students' focus

Until December 2025 by CETE and Student Support Services

C.2. Establish a permanent advisory team for supporting e-learning efforts of lecturers and students (1.6.1, 4.3.2).

The advisory team should be coordinated by CETE and have representatives from the all faculties, IT department and Student Support and rely on the network of e-tutors.

Until December 2025 by CETE and Student Support Services

C.3. Prepare and conduct trainings for e-tutors, technical experts, support staff, IT support, helpdesk in the areas of e-learning support (1.6.1, 4.3.1, 9.3.1, 9.7.1)

The CETE and IT Services will develop and set up training modules.

Until December 2023 by CETE and IT Services

C.4. Develop and conduct professional development courses for online / blended learning and centralize the offer at CETE (1.7.1, 4.3.1)

CETE and IT Services will develop and set up professional development training modules for teachers and students.

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Until December 2025, by CETE and IT Services

RESULT: Organized centralized advisory service for lecturers and students at CETE

INDICATOR C1: Number of promotion channels for e-learning (websites, social media groups)

Baseline 2021: 2 Target 2025: 22

INDICATOR C2: Total number of staff and student training modules for e-learning

Baseline 2021: 4 Target 2025: 15

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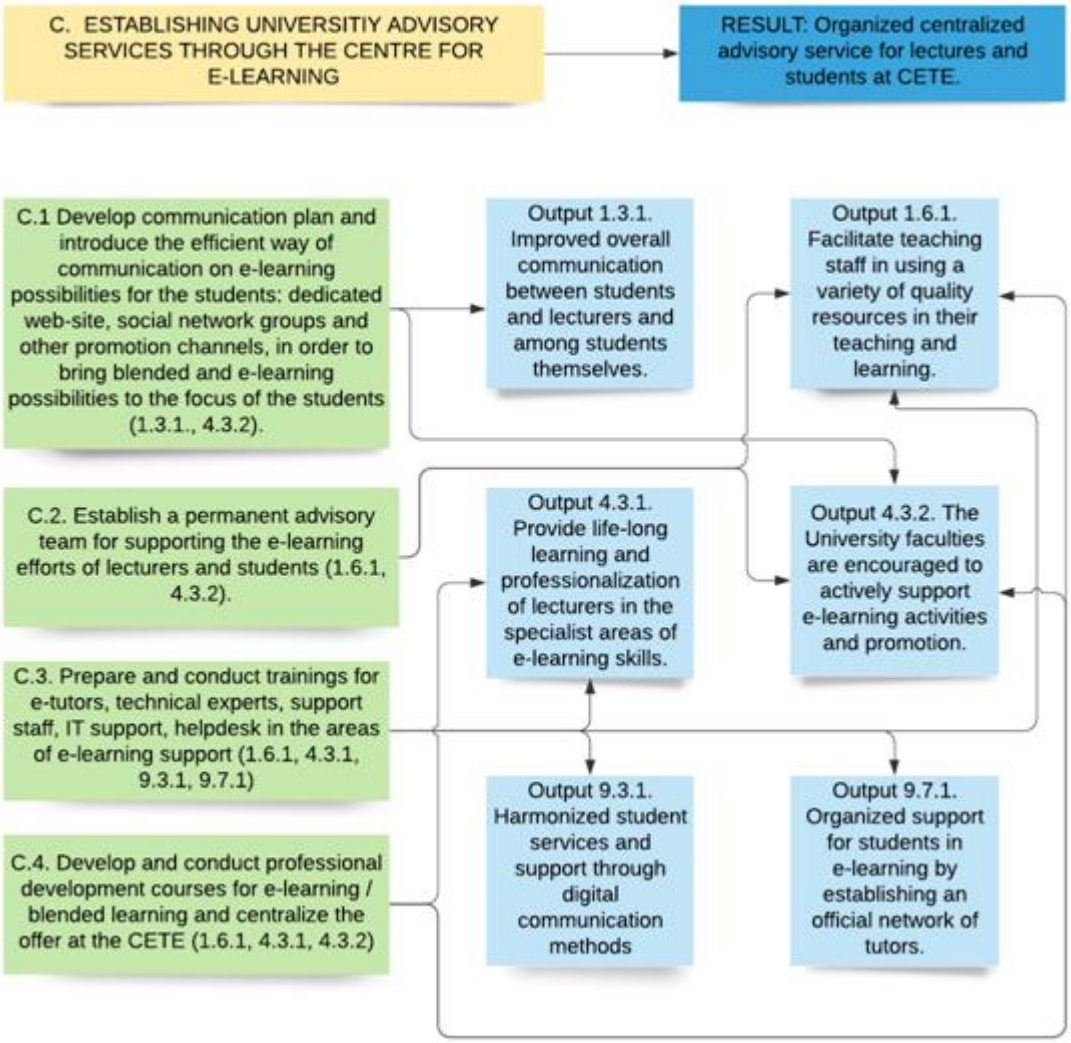

Figure 5. Activities and Outputs of the Policy Measure C

D. IMPLEMENTING E-LEARNING RESEARCH PROJECTS

D.1. Develop and adopt guidelines for the development and selection of e-learning resources, based on the pedagogical principles (1.5.2., 1.8.1).

CETE will collect contributions and best practices for the development and selection of e-learning resources and propose practical guidelines based on pedagogical principles.

Until June 2025, by CETE and the Research Development Office

D.2 Establishing e-learning research capacities and unit at CETE through close coupling of research and practice in e-learning. (2.3.1)

CETE will develop capacities among its employees for research in e-learning and develop special expertise for e-learning based on practical results.

Until December 2025 by CETE and Research Development Office

D.3 Implementation of the e-learning development international cooperation projects and projects in collaboration with the industry (2.7.1, 2.7.2)

CETE will permanently work on project applications and cooperation for international and development projects in the area of e-learning from multidisciplinary perspectives.

Until December 2025 by CETE and Research Development Office

RESULT: The unit for research in e-learning and innovative teaching established at CETE

INDICATOR D1: Number of researchers in the multidisciplinary area of e-learning employed at MNU/CETE

Baseline 2021: 7 Target 2025: 12

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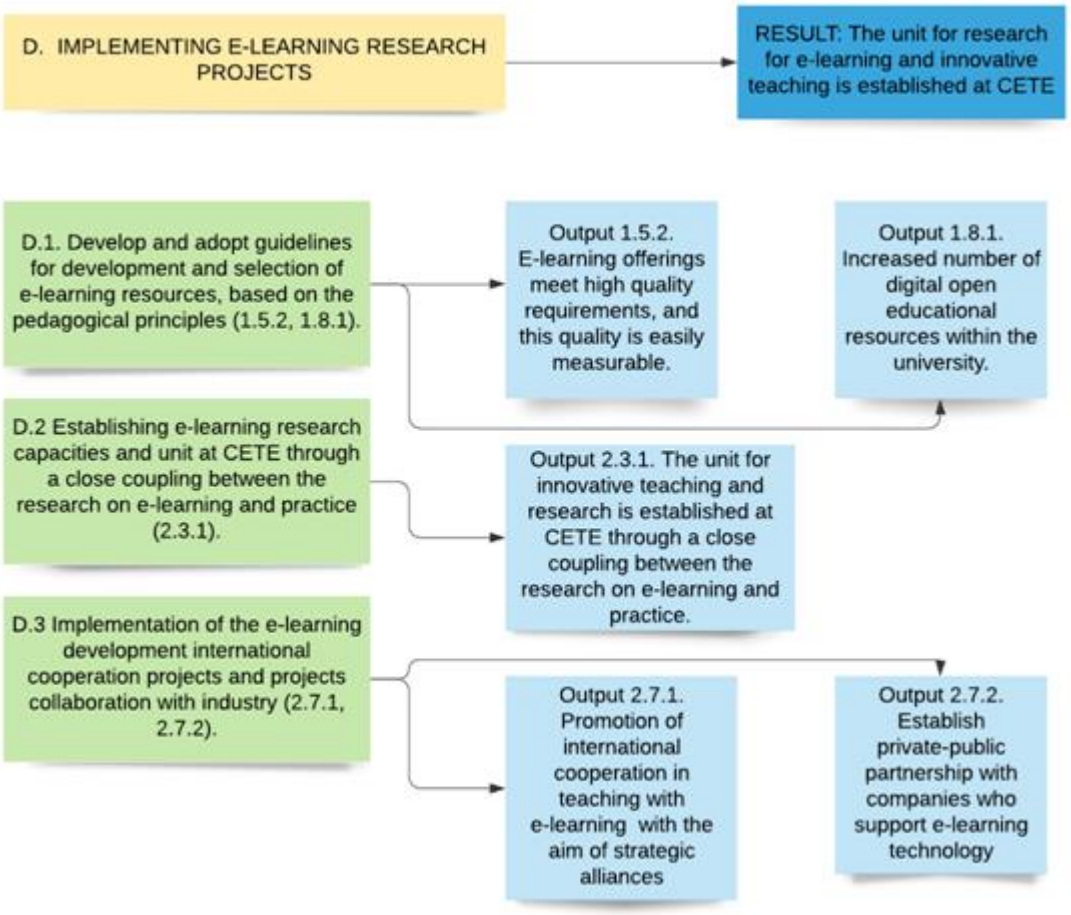

Figure 6. Activities and Outputs of the Policy Measure D

E. ESTABLISHING QUALITY ASSURANCE FRAMEWORK

E.1. Develop an educational data analytics policy and data protection policy (1.5.3).

Start the analysis of relevant data collection and analytics on learning process in general and with a particular focus on e-learning, which is necessary for proper quality assurance policy.

Until December 2022, by CETE Student Administration and Faculties/Quality Controller

E.2. Develop and adopt procedures and criteria for e-learning courses that fulfil the requirements of quality assurance of the MNU (1.5.2, 1.5.3)

When developing guidelines for e-learning, the criteria and procedures for quality assurance should be considered and integrated, and it should be ensured that the standard MNU quality assurance procedures include e-learning components.

Until December 2024,, by CETE and Teaching Programs Development Teams

E.3. Systematically develop competency-based courses and improve existing courses with digital and new media competencies (1.5.1, 9.2.1)

Start the process of developing guidelines for university courses competency framework with integrated e-learning.

Until December 2025, by CETE and Teaching Programs Development Teams

E.4. Upgrade and adopt a detailed competency framework to be used in blended course design based on the MQA competency document and international standards. (1.5.1. and 1.5.3.).

The long-term goal is to develop a detailed competency framework for designing blended learning courses according to international standards.

Until December 2025, by CETE and Teaching Programs Development Teams

RESULT: e-learning is subject to the standard quality assurance procedure of the MNU and is evaluated regularly

INDICATOR E1: Number of study courses with included e-learning modules accredited according to the quality framework

Baseline 2021: 0 Target 2025: 29

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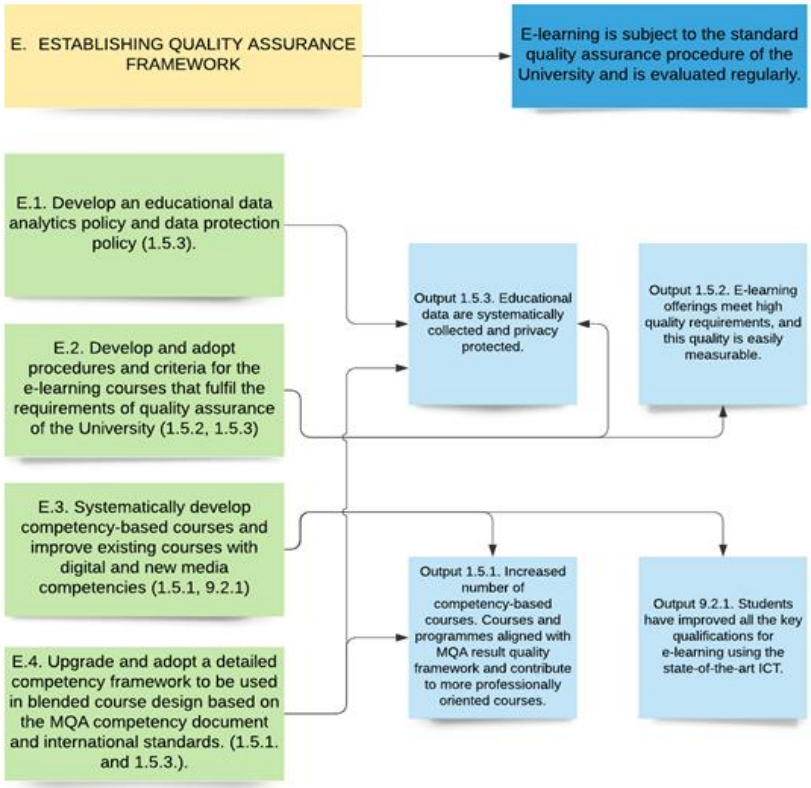

Figure 7. Activities and Outputs of the Policy Measure E

F. IDENTIFYING NECESSARY INFRASTRUCTURE FOR E-LEARNING

F.1 Develop the cost-benefit analysis for investment in the necessary IT infrastructure for the support of e-learning, incl. hardware and software (8.4.1, 8.6.1)

F.2. Develop a realistic action plan for ensuring the technical infrastructure for e-learning, in a way to make teaching / learning processes effective and efficient (8.1.3.)

F.3. Re-structure and increase capacities of IT department with required expert teams, e.g. network operation centre, system engineers, DBA… (8.1.2)

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F.4. Negotiate with providers to get cheaper internet access for teachers, staff and students (8.1.1)

F.5. Establish a high bandwidth and stable network including optimal WiFi coverage (8.6.1)

F.6 Renew, upgrade, install and implement audio and video equipment for students and teachers (8.7.1)

F.7 Secure the necessary resources for long-term support of the learning management system Moodle and the MOOC platform (9.5.1).

F.8 Setup the policy for campus infrastructure maintenance and development with regards to e-learning requirements including security and data protection policy (8.3.1)

F.9. Utilize functional MIS for studying process with included monitoring functions (9.3.1)

F.10. Establish and equip physical outreach centres for access for students without internet (9.3.1.)

RESULT: Action plan and cost-benefit analysis for IT infrastructure investment developed and approved by the management

INDICATOR F1: Action plan for IT infrastructure investment proposed

Baseline 2021: 0 Target 2022: 1

INDICATOR F2: Cost-benefit analysis for IT infrastructure investment proposed

Baseline 2021: 0 Target 2022: 1

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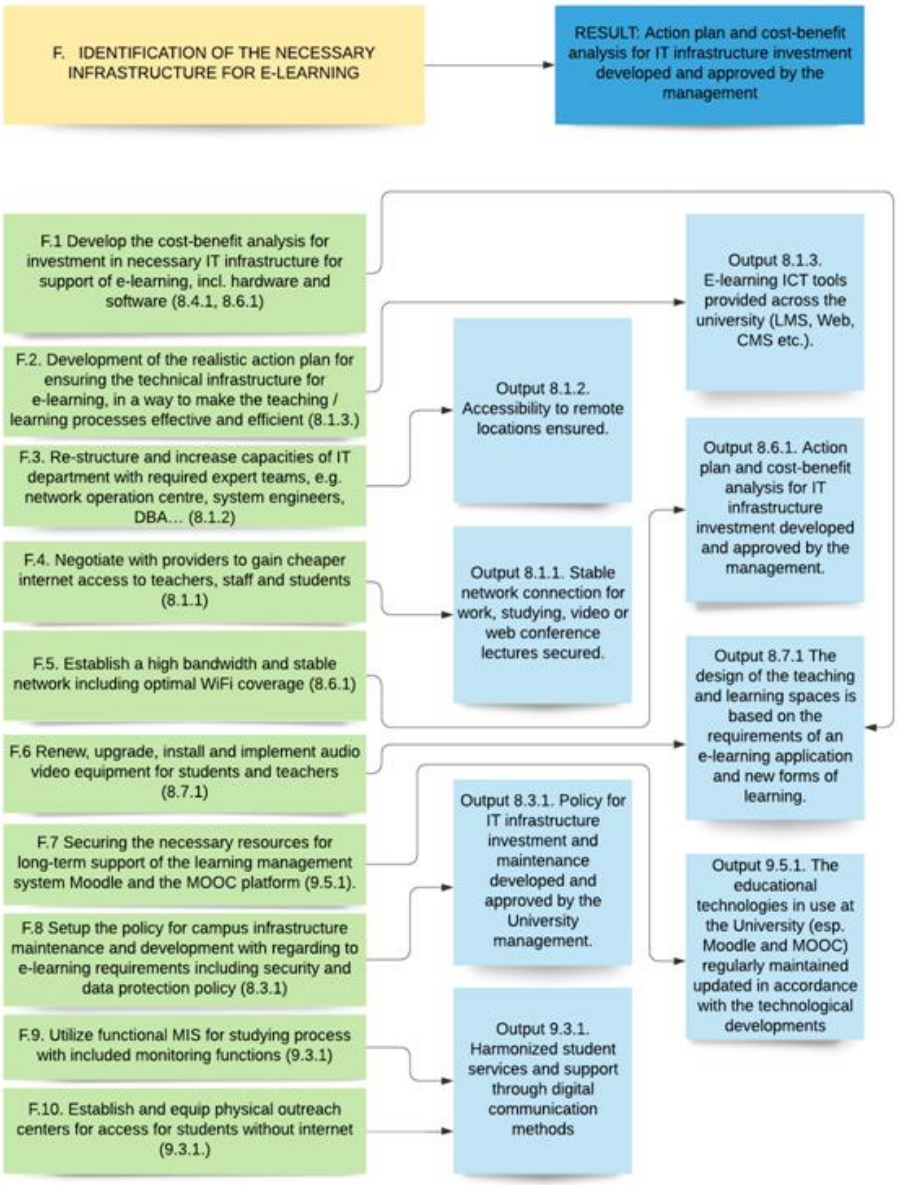

Figure 8. Activities and Outputs of the Policy Measure F

G. IMPROVING STUDENT SUPPORT SERVICES FOR E-LEARNING

G.1. Development of a concept for training of e-tutor for digital competencies (9.5.1,9.7.1)

CETE will develop a training curriculum for e-tutors in accordance with activity C.3 and help Student Service to establish a functioning network of e-tutors for the benefit of all students.

Until December 2024, by CETE and Student Support Service

G.2 Additional student information is provided through integrated web portal and as e-services (9.3.1, 9.5.1)

Student communication (such as support for professional orientation, scholarships, mobility, job opportunities, organizing events connecting university and business, internships) are provided via digital channels with ICT technology and new media.

Until December 2025 by CETE and Student Support Service

G.3.Accessibility support for students with special needs within the design of e-learning resources and facilities (9.9.1.)

Instructions on the implementation of support for the students with special needs.

Until December 2023, by Student Support Service

RESULT: Students have improved all key qualifications for e-learning using the state-of-the-art ICT.

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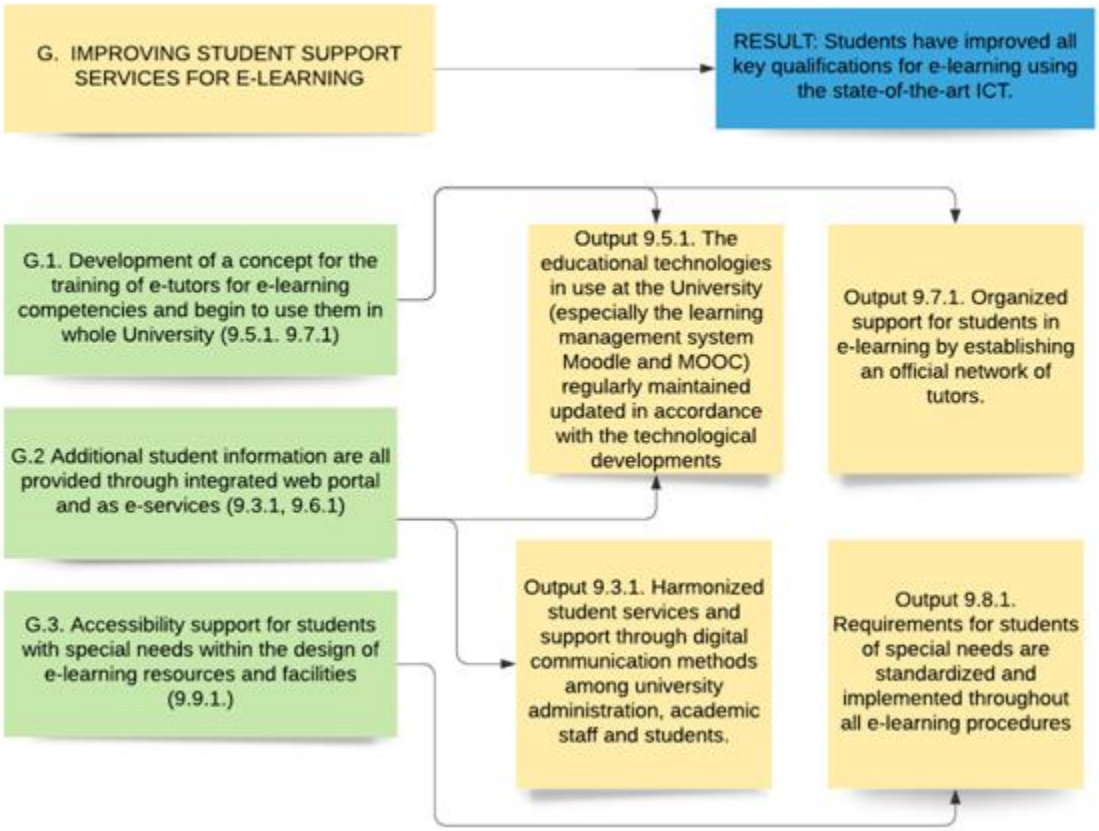

Figure 9. Activities and Outputs of the Policy Measure G

H. TABLE OF INDICATORS

NO	DESCRIPTION	BASELINE 2021	TARGET (YEAR)
A.1	TOTAL NUMBER OF STUDY COURSES DEVELOPED IN THE E-LEARNING/BLENDED MODE	5	29 courses/programmes (2025)
A.2	TOTAL NUMBER OF STUDY COURSE SUBJECTS AVAILABLE ONLINE	0	11 subjects (2025)
A.3	TOTAL NUMBER OF STUDY COURSES WHICH HAVE AT LEAST 1 SUBJECT ONLINE	0	29 courses (2025)
B.1	TOTAL NUMBER OF LEGAL DOCUMENTS UPDATED OR DEVELOPED IN ORDER TO ACCOMMODATE FOR E-LEARNING DEVELOPMENT	1	26 documents (2025)
B.2	TOTAL NUMBER OF MNU TEACHING STAFF WHO FINISHED EDUCATION ON E-LEARNING	50	150 teaching staff (2025)
C.1	NUMBER OF PROMOTION CHANNELS FOR E-LEARNING (WEBSITES, SOCIAL MEDIA GROUPS)	2	22 promotion channels (2025)
C.2	TOTAL NUMBER OF STAFF AND STUDENT TRAINING MODULES FOR E-LEARNING	4	15 Training modules (2025)
D.1	NUMBER OF RESEARCHERS IN THE MULTIDISCIPLINARY AREA OF E-LEARNING EMPLOYED AT MNU/CETE	7	12 Researchers (2025)
E.1	NUMBER OF STUDY COURSES WITH INCLUDED E-LEARNING MODULES ACCREDITED ACCORDING TO THE QUALITY FRAMEWORK	0	29 courses (2025)
F.1	ACTION PLAN FOR IT INFRASTRUCTURE INVESTMENT PROPOSED	0	1 (**2022**)
F.2	COST-BENEFIT ANALYSIS FOR IT INFRASTRUCTURE INVESTMENT PROPOSED	0	1 (**2022**)

7 OUTCOMES / OUTPUTS

This section provides the comprehensive list of all e-learning Policy Outcomes (as defined in the e-learning Policy Analysis, cf. Figure 2) which are coupled to the specific Policy Outputs. The specific Policy Outputs are measurable results of the explicit policy activity, and their effectuation directly contributes to the fulfilment of the Policy Outcomes, as defined in the MNU Strategic Plan 2020 – 2025. The justification of the selected Policy Outputs is provided through the policy analysis process (cf, eLPA [ii])

1.1. Maximize access and educational opportunity to remote and international students through innovative, flexible and high quality local and distance education.

Output 1.1.1. Increased number of courses which include blended and e-learning enabled subjects

1.3. Enhance the university experience for local and international students.

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Output 1.3.1. Improved overall communication between students and lecturers and among students themselves.

1.4. Enhance innovative program design, teaching methods, assessment and evaluation to deliver excellence in education.

Output 1.4.1. Increased number of subjects with e-learning modules within a particular study course

1.5. Use international quality benchmarking and quality assurance in all program development, delivery and assessment.

Output 1.5.1. Increased number of competency-based courses. Courses and programs aligned with MQA result in a quality framework and contribute to more professionally-oriented courses.

Output 1.5.2. E-learning courses meet high-quality requirements, and this quality can easily be measured.

Output 1.5.3. Educational data is systematically collected and privacy protected.

1.6. Generate, transmit and preserve quality knowledge by promoting independent and interactive learning

Output 1.6.1. Facilitate teaching staff in using a variety of quality resources in their teaching and learning.

Output 1.6.2. e-learning guidelines are developed - specific didactic and technical support for teachers for e-learning is set up and operational.

1.8. Strengthen library resources (physical and digital) and services for students and faculty to utilize multiple credible sources of information in their teaching and learning.

Output 1.8.1. Increased number of digital open educational resources within the University.

Output 1.8.2. Courses, trainings and further education materials and services are easily accessible.

2.3. Expand enrolment and retain postgraduate research students by creating a stimulating research environment through professional support.

Output 2.3.1. The unit for innovative teaching and research is established at CETE through close coupling of the research on e-learning and practice.

2.7. Establish links with industry, government departments and overseas universities to encourage joint research and secure a sustainable source of funding for research activities.

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Output 2.7.1. Promotion of international cooperation in teaching with e-learning with the aim of strategic alliances

Output 2.7.2. Establish private-public partnership with companies which support e-learning technology

Output 2.7.3. Teaching materials and scientific information from MNU are offered as open-access information available to the worldwide scientific community.

4.3. Assess training and development needs of staff regularly to provide opportunities for their professional development.

Output 4.3.1. Provide life-long learning and professionalization of lecturers in the specialist areas of e-learning skills.

Output 4.3.2. University faculties are encouraged to actively support e-learning activities and promotion.

Output 4.3.3. Offer existing training and lifelong learning education through e-learning in order to better serve target groups and reach new ones to meet learning needs in business and society

4.4. Encourage self-learning and life-long learning as a necessary and viable form of staff and student development.

Output 4.4.1. Several modular professional development programs are offered in e-learning/blended modes with identification of learners' needs

4.5. Maintain human resource management policies and procedures that are systematic, fair and transparent.

Output 4.5.1. A staff promotion and incentives system which is compatible with and integrates e-learning activities is developed.

8.1. Ensure that infrastructural and technological support is provided to cater to high-quality teaching with particular attention to subject requirements and student needs.

Output 8.1.1. Stable network connection for work, studying, video or web conference lectures secured.

Output 8.1.2. Accessibility to remote locations ensured.

Output 8.1.3. E-learning ICT tools provided across the university (LMS, Web, CMS etc.).

8.3. Implement effective procedures and schedules for effective maintenance and sustainability of physical and technological facilities

Output 8.3.1. Policy for IT infrastructure investment and maintenance developed and approved by the MNU management.

8.6. Secure land and invest in infrastructure consistent with the planned growth of student numbers and University activities in the country.

Output 8.6.1. Action plan and cost-benefit analysis for IT infrastructure investment developed and approved by the management**.**

8.7. Ensure staff and student well-being by maintaining a safe and secure work environment that promotes a healthy lifestyle free from physical and emotional harm.

Output 8.3.1 The design of teaching and learning spaces is based on the requirements of an e-learning application and new forms of learning.

9.2. Increase graduate employability rates

Output 9.2.1. Students have improved all the key qualifications for e-learning using the state-of-the-art ICT.

9.3. Widen online services for students and ensure appropriate ICT infrastructure and support for students

Output 9.3.1. Harmonized student services and support through digital communication methods among university administration, academic staff and students.

9.5. Provide quality student support and a contemporary and attractive learning environment that enhances students' educational experiences.

Output 9.5.1. The educational technologies in use at the University (especially the learning management system Moodle and MOOC) regularly maintained updated in accordance with the technological developments

9.7. Establish an integrated student advising system that would enable every student to utilize the full potential of opportunities offered by MNU.

Output 9.7.1. Organized support for students in e-learning by establishing an official network of tutors.

Output 9.7.2. Developed opportunity for students who have special conditions to mitigate their disadvantages by allowing participation to a limited extent and by encouraging self-study

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9.9. Establish a mechanism to gauge the needs of differently-abled students and ensure equitable service to them.

Output 9.9.1. Requirements for students with special needs are standardized and implemented throughout all e-learning procedures.

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Figure 10.1. Overview of the Strategic objectives and the corresponding outputs stemming from e-learning activities

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Figure 10.2. Overview of the Strategic objectives and the corresponding outputs stemming from e-learning activities

8 The Implementation Phases

Implementation of e-Learning Roadmap (eLR) is a multi-phase process in which modifications of the defined activities are possible and welcome, if these are:

- Founded on relevant discussions, knowledge sharing and decisions from the previous LR development phases, or
- Directly linked to relevant changes of the contextual conditions (e.g. global pandemic issues).

The multidisciplinary expertise, extensive experience and strong competence base of the CETE employees is strong evidence in support of the CETE to be the main coordinator of the eLR implementation process, in close coordination with the Chancellor's office, the e-learning Advisory Board and the Faculties of the MNU.

The integral parts of the eLR are the Performance Indicators which should define the extent to which the activities and measures have contributed to the Outcomes.

However, within the Policy Measures there are both immediate and long-term activities, so not all activities within each group can start simultaneously. The activities under respective Policy Measure should therefore be marked according to the phases in which they should start.

The implementation of e-Learning Roadmap should take place in three phases:

- **1st Phase should cover the period until the end of 2021** and includes the first preparatory steps for the implementation of the eLR. When selecting activities in the 1st Phase, it has to be taken into account that no additional resources are available for e-learning in this period. Measurable indicators in this phase are related to AMED project and dissemination of its results
- **2nd Phase lasts until the end of 2022** and the measures listed here should be appropriately approved by the MNU management and the budget allocated for the years 2021/22. Therefore, it is necessary for these measures to make resource estimates by the end of 2021 at the latest (and thus to make cost calculations) and propose them to the MNU Council.
  Measurable indicators expected from 2nd phase are
  - proposed Action plan for IT infrastructure investment,
  - proposed Cost-benefit analysis for IT infrastructure investment.
- **3rd Phase starts in 2023** and for this period it is difficult to elaborate specific activities in detail due to rapid technical developments, and not easily predictable overall conditions and resources. However, the development of the eLR should be taken by continuously evaluating progress (especially by obtaining permanent feedback from teachers and students). Based on

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this feedback and the input from experts, coordinated by the CETE, further measures are to be collected, documented and evaluated for their feasibility.
Expected measurable indicators by 2025 are:

- 29 study courses developed in the e-learning/blended mode
- 11 study course subjects available online
- 29 courses which have at least 1 subject online
- 26 legal documents updated or developed in order to accommodate for e-learning development
- 150 MNU teaching staff who finished education on e-learning
- 22 promotion channels for e-learning developed (websites, social media groups)
- 15 Staff and student training modules for e-learning developed
- 12 researchers in the multidisciplinary area of e-learning employed at MNU/CETE
- 29 study courses with included e-learning modules accredited according to the quality framework

9 CONCLUSION

For e-learning to strive at MNU it is important to harvest all the valuable effort invested in developing and supporting e-learning at MNU, including the ongoing organization of e-learning activities and **support** to teachers**, p**ositive climate towards investments in education **and awareness of** many stakeholders **of the opportunities** brought by e-learning

In the same time, it is important to be aware of the obstacles to e-learning adoption, namely **strategic commitment** towards e-learning, lack of recognition of e-learning **as a quality policy model** for HE, **mixed perception of** the quality and usefulness of e-learning and critical state of technological **infrastructure for e-learning.**

Additionally, with COVID-19 experiences during 2020, MNU became aware of the importance of e-learning and how essential it is to regulate and monitor the quality of ICT use in education.

MNU, as a key stakeholder in national HE policy, has an opportunity to play a role in recognition of e-learning at government level. However, it is important to note that MNU also has a culture of mixed

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belief regarding e-learning. Therefore, in order for MNU to become a driver of e- learning as a national HE agenda, existing policies supporting e-learning should be strengthened and new policies that support the further development of e-learning created to lead to forming a strong e-learning culture at the MNU.

10 REFERENCES

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