EUt+

EUROPEAN UNIVERSITY OF TECHNOLOGY

Deliverable 103

D8.2 Policy recommendations

Del. Rel. D8.4

WP 8

Description: Report, and Policy recommendations on impact analysis

Comments: The versions in the other languages of the alliance are available on request.

Dissemination level: **PU**-Public

https://www.univ-tech.eu/phase-1-results

Foreword to deliverable 103

This deliverable covers the measurement of economic and societal impacts on education, research and transfer activities of EUt+ as developed in task 8.2. It includes an analysis of existing methods for the measurement of social and cultural value (e.g., Harvard's Mark Moore, social return of investment, etc.). Quantitative and qualitative methods are used to capture effectively the social and cultural impacts of a Higher Education Institution (HEI). A set of indicators is developed as to be usable as a basis for a framework intended to capture the information relating to social and cultural effects.

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Introduction

Higher education institutions (HEIs) play an important role for the development of sustainable societies, shaping the future leaders in academia, business, and politics. The assessment of HEI impacts is a complex endeavour because impacts materialize along complex pathways, particularly in the area of research and education (Koehn & Uitto, 2014). There is no universally agreed definition of "impact" in literature and practice. However, available studies agree on a number of characteristics central to the term. Impact generally refers to the effects caused by an organization or an intervention (policy, program, project, product, technology or measure) that occur outside the organization in society or the natural environment. Several definitions of "impact" have been advanced for the HEI context. The UK's Research Excellence Framework (REF) describes research impact as "an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia". The impacts of sustainability initiatives of HEIs are also described as "real-world changes in ecological sustainability, policies, and people's well-being" (Koehn & Uitto, 2014). HEIs are often separated in time and space from such impacts and affected stakeholder groups, and thus they rely on sound instruments that support their assessment approaches. Impacts are generally understood to comprise direct and indirect effects that an HEI has outside of its organizational boundaries on society, the natural environment, and the economy (Lebeau & Cochrane, 2015). They arise from the variety of activities inside the HEIs' core elements, notably education, research, campus operations, outreach, and campus experiences (Findler F. , Schönherr, Lozano, Reider, & Martinuzzi, 2019) (Gupta & Singhal, 2017). An initial conceptual work on framing the multiple impacts of an HEI has been proposed (Findler F. , Schönherr, Lozano, Reider, & Martinuzzi, 2019), but further exploration for detailing seems to be required.

Accordingly, impacts can be understood for the works described herein as the effects that an HEI has outside of its organizational or academic boundaries – on its stakeholders, the natural environment, the economy and society. This includes the impacts of the HEI as an organization, and the impacts caused by activities in the core elements education, research, campus operations, outreach, campus experiences, institutional framework and assessment and reporting (Lozano, Lukman, Lozano, & Huisingh, 2013). Outreach activities (e.g. community teaching) are not regarded as impacts because they take place within the sphere and under the direct control of the HEI and should not be confused with their potential effects (e.g. contribution to school and career achievements).

This deliverable covers the measurement of economic and societal impacts of education, research and transfer activities of EUt+. The social and cultural impacts of higher education that are rarely captured effectively and it is aimed here at bridging this gap, with both quantitative and qualitative methods. A clear assessment of impact is essential for our model of sustainability based on efficiency and to-the-point investment.

1 Analysis and evaluation of existing methods for the measurement of social and cultural value

Performed during the project duration, a study aimed to review and organize possible indicators for measurement of societal impact of the future European University of Technology was conducted. A wide review of existing research studies was performed for gathering information, analyse them and develop a set of indicators. It was seen that a large number of publications on the impacts of HEIs
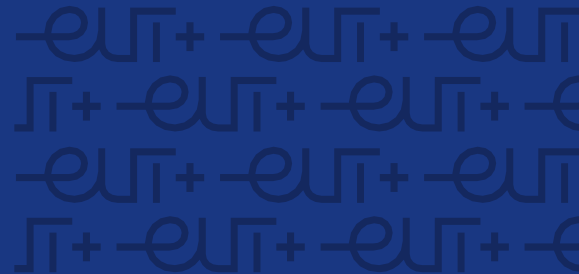
illustrates the importance in practice and academia (Bonaccorsi, Daraio, & Geuna, 2010), (Wals, 2014). Most of the reviewed case studies are largely focused on specific HEIs and their impacts on society (Anstadt, 2009), (Escobar-Tello & Bharma, 2013), the economy (Alves, et al., 2015) or the natural environment (Chen, Tucker, Badami, & Ramankutty , 2016), (Thurston & Eckelman, 2011). These studies provide rich narratives on individual HEIs in the context of societal impacts and sustainable development (SD). Across the reviewed literature, there is an apparent focus on specific impacts.
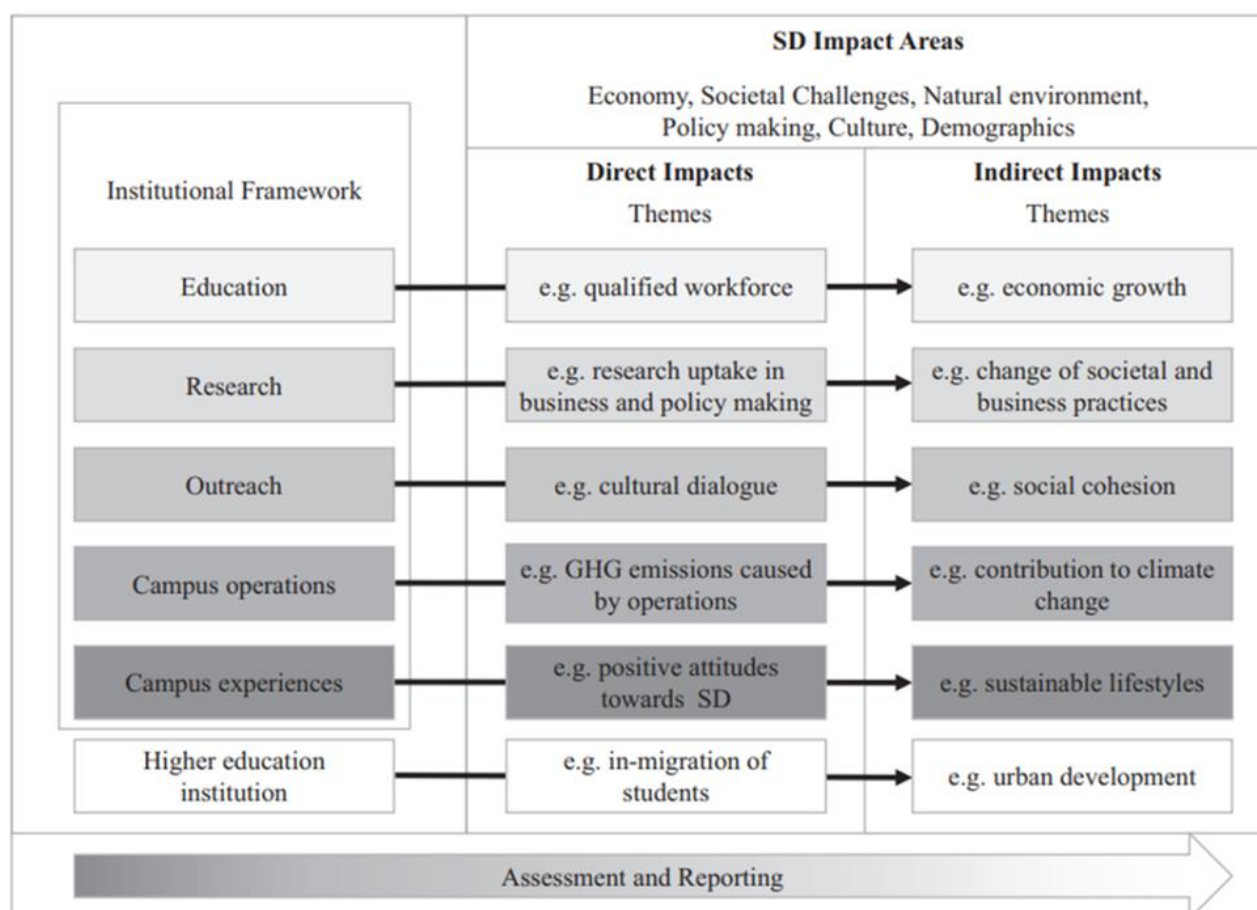

Figure 1 The impact framework of HEIs (Findler F. , Schönherr, Lozano, Reider, & Martinuzzi, 2019)

The difficulty of systematically accounting for the impacts of HEIs is exacerbated by many impacts occurring with significant time lags and cannot always be directly attributed to specific core elements. Such indirect impacts pose significant assessment challenges. In contrast, direct, short-term impacts can be much more easily observed, described and quantified. The societal impacts of HEIs could be examined in two fundamental dimensions. Firstly, impacts can be conceptualized depending on the extent to which they are specific to a core element or integrative in nature. Secondly, impacts can be considered whether they are directly (short term effects) or indirectly (long-term effects) attributable to HEIs' activities.

Some research studies propose a framework conceptualizing the impacts of HEIs on SD under consideration of these two dimensions, as illustrated in Fig. 1. This framework refers to predefined core elements in which different organizational and individual activities may cause a variety of influences on impact areas such as economy, societal, challenges, natural environment, policies, culture, and demographics. Systematic and reliable assessment of the impacts of HEIs is a crucial premise for managing and improving the contribution of HEIs to SD. The framework not only highlights the assessment and reporting as a cross-cutting requirement but also identifies it as one of the fundamental challenges to more systematic consideration of impacts. This is because many assessment approaches focus on sustainable development performance within HEIs (Yarime & Tanaka, 2012), but appear to not have been designed to assess impacts from the perspective of a whole institution approach, particularly regarding indirect impacts. (Findler F. , Schönherr, Lozano, Reider, & Martinuzzi, 2019).

1.1 Existing categorization of indicators

Further work is focused in two ways: existing indicators grouping, according to the EUt+ project description and its work packages, and most relevant frameworks, described in the literature.

1.2 Groups of indicators as stated in project proposal

The project description as included in the proposal contains a set of indicators for the measurement of project results and impact. Generally, these indicators can be categorized into groups as shown in Fig. 2:

✚ Higher education: number of students participating in the learning centre, accreditation of training courses by ENAEE members, addressing all aspects of the Bologna process, qualitative description of learning outcomes, etc.;

✚ Research: for example, implementation of the EURAXESS charter, …;

✚ Funding: participation and success rates in European calls for projects, …;

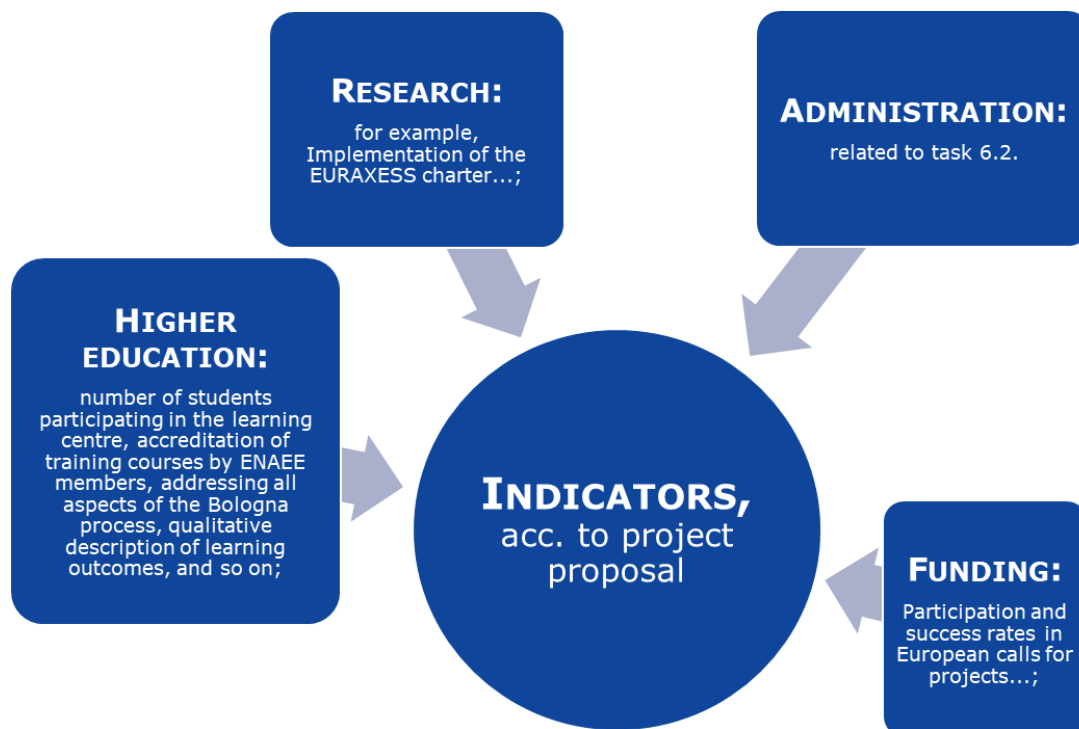✚ Administration: related to task 6.2.

Figure 2 Indicators categorization by project description

These indicators are further examined in combination with indicators defined in other research and case studies, found in the literature.

1.3   Groups of indicators as stated in other sources

Several available sources are examined, including (Kelly & McNicoll, 2011), (Kotosz, Lukovics, Molnár, & Zuti, 2016), (Silva & Almeida, 2019), (Findler F. , Schönherr, Lozano, Reider, & Martinuzzi, 2019), (Findler F. , Schönherr, Lozano, & Stacherl, 2019), (Rodrigues, Cerdeira, Patrocínio, Cabrito, & Mucharreira, 2021), (de Matos Pedro, Leitão, & Alves, 2021), etc. Other studies are shown also in Fig. 3, according to (Findler F. , Schönherr, Lozano, & Stacherl, 2019).

Author(s)	Tools Analyzed	Methodology	Main Findings
Shriberg (2002) [13]	n = 11 AISHE, Campus Ecology, Environmental EMS Self-Assessment, Environmental Workbook and Report, Greening Campuses, Grey Pinstripes with Green Ties, Higher Education 21's Sustainability Indicators, Indicators Snapshot Guide, Performance Survey, SAQ, State of the Campus Environment	A content analysis with a focus on strengths and weaknesses of tools was conducted.	The tools vary greatly in their purpose, function, scope, and state of development.
Yarime & Tanaka (2012) [16]	n = 16 AISHE, Campus Ecology, Campus Sustainability Selected Indicators Snapshot, College Sustainability Report Card, CSAF, CSAF core, CSARP, EMS Self-Assessment, Environmental Workbook and Report, GASU, Good Company's Sustainable Pathways Toolkit, HEPS, Penn State Indicator Report, SAQ, STARS, State of the Campus Environment	A mixed-method approach with a quantitative and a qualitative part was applied: (1) comparative analysis of criteria and (2) content analysis of individual indicators.	The main focus of the tools is on campus operations and governance issues. Education, research, and outreach are not well addressed.
Sayed et al. (2013) [37]	n = 4 SAQ, CSAF, CSRC, STARS	Each tool was rated based on 27 questions related to five areas of campus life of a specific university.	STARS was identified to be the most effective SAT. SAQ and CSAF have limitations in assessing SD in campus operations.
Fischer et al. (2015) [15]	n = 12 AISHE, Alternative Universal Appraisal, Conference of Rectors of Spanish Universities, CSAF, German Commission for UNESCO, Graz Model of Integrative Development, Green Plan, Innovación y Educación Ambiental en Iberoamérica, People & Planet, Red de Ciencia, Tecnología, SAQ, STARS, UI GreenMetric	A mixed-method approach with a quantitative and a qualitative part was applied: (1) comparative analysis of criteria and (2) introductory passages in supporting documents.	Indicators and criteria are biased towards the field of operations.
Bullock & Wilder (2016) [10]	n = 9 ACUPCC, College Sustainability Report Card, Grey Pinstripes with Green Ties, Pacific Sustainability Index (PSI), Princeton Review's Green Ratings, Sierra Club's Cool Schools, STARS, The Guardian's Green League, UI GreenMetric	Sustainability assessment frameworks and SATs based on the GRI-HE framework were evaluated.	The evaluated sustainability assessments and SATs are not comprehensive and lack coverage of the economic and social dimension of sustainability.
Alghamdi et al. (2017) [33]	n = 12 Adaptable Model for Assessing Sustainability in Higher Education, AISHE, Alternative University Appraisal, GASU, Green Plan, SAQ, STARS, Sustainable Campus Assessment System, Sustainable University Model, UI GreenMetric, Unit-based Sustainability Assessment Tool, University Environmental Management System	A desk study approach with quantitative and qualitative elements was applied including a review of research articles, academic books, network platforms, graduate theses, and websites.	The tools share similar characteristics in terms of their criteria and indicators, which can be grouped into: management, academia, environment, engagement, and innovation. Environmental indicators have the highest share among the tools.
Berzosa et al. (2017) [14]	n = 4 AISHE, SAQ, Sustain Tool, USAT	A descriptive analysis of SATs based on single case studies was performed.	The SATs positively influence creating specific plans in education, research, outreach, and campus operations. They have a strong focus on the environmental dimension and delivered similar outcomes.

Figure 3 Existing major studies of sustainability assessment tools in higher education.

Indicators groups are formed in a variety of studies. A key classification is defined in (Kelly & McNicoll, 2011), where five major groups are given:

+ Teaching,
+ Research,
+ Consultancy/advisory work,
+ Cultural Outreach,
+ Community Outreach,
+ Other,

Another classification (Silva & Almeida, 2019) forms different groups of indicators:

+ Administrative Staff,

+ Research,

+ Operations and Services,

+ Teaching,

+ Research,

+ Community Extension.

1.4 Intermediate conclusion

The review performed of the different studies and the indicators as given by the project leads to the next major conclusions:

+ Methods and tools for HEI assessment were analysed,

+ General review of indicators' groups shows five typical groups: Administration, Research, Education, Academic Community and Cultural Outreach, Economic aspects,

+ These groups could be used further to establish a series of quantitative and qualitative indicators, divided in economic and societal impacts,

+ The Project description includes a preliminary set of KPIs for each WP,

+ Major groups, related to project activities are preliminarily defined as Research, Education and Transfer (Academic and Cultural Outreach),

+ These indicators measure the project itself, but could be also used further to measure EUt+'s impact,

+ An analysis of the EUt+ KPIs applicability for measurement of economic and societal impacts is to be performed (T8.2.2).

2 Analysis of economic and societal impacts of education, research and transfer activities of EUt+

The EUt+ specifics as well as the indicators presented above are in the following analysed in detail and classified in the three major groups education, research and transfer. This is done mainly to frame in all already defined indicators and to assess whether they are applicable to the future EUt+ development. The result of this analysis is shown in Table 1. The classification is performed by work packages and each group is defined in two types of indicators – economical (E) and societal (S). This pre-characterisation is useful for further decisions and data analysis.

Table 1 ***Classification*** *of project indicators*

	Type	Education	Research	Transfer
	E		• Augmented network	

WP2 — Europe for everyone: inclusiveness and embeddedness	S	• Multilingualism • Mobility Friendly Plan • Equity, Diversity and • Inclusivity Team and Plans	• Core network	• Multiculturalism • Mobility Friendly Plan
WP3 — Common curricula spanning Europe	E			
	S	• Europeanization of apprenticeship and lifelong learning • Summer schools • Pedagogical datacenter interconnection	• TELANTO Platform	• Summer schools • Virtual mobility tool
WP4 — Research and Research Training	E	• Graduate schools	• Pan-European Sustainability laboratory • Energy laboratory • Common IP Bureau	
	S	• Graduate schools	• Pan-European Sustainability laboratory • Energy laboratory	• Mobility laboratory • Workshop series on Pan-

			• ECT Lab+ counseling group and annual conference	European societal challenges
WP5 — Beyond mobility: feeling at home in every campus	E			
	S	• Online pedagogical portfolio • Online tools		• Common ERASMUS Office • International Study abroad Fair and Erasmus+ Days
WP6 — Integrating infrastructure	E	• AIES implementations	• AIES implementations	• ESC associated services
	S	• Optimal workflows • Best practices in technology-enhanced learning and its implementation	• Optimal workflows • Best practices in technology-enhanced learning and its implementation	• ESC services
WP7 — A single identity for global outreach	E	• Global gateways and mirror-campuses	• Global gateways and mirror-campuses	
	S	• Structure for communication activities • Team of ambassadors	• Structure for communication activities • Team of ambassadors	

		• EUt+ international networks	• EUt+ international networks	
WP8 — Sustainability and dissemination	E	• Policy recommendations	• Policy recommendations • Open Science Agenda	
	S	• Policy recommendations	• Policy recommendations • Open Science Agenda	

This classification contains all EUt+ indicators and could be examined as an initial set of indicators. This is a good reference point for further EUt+ set of indicators development.

3. Development of set of indicators

The next step is to define the EUt+ set of indicators. It is important to note that the defined indicators are not directly transferable to EUt+ indicators. A new set of indicators, based on the initial set, should be defined as to be used for further EUt+ impact assessment. In other words, the initial set of indicators should be transferred to the new groups, as defined in chapter 2. This is shown graphically in Figure 4.
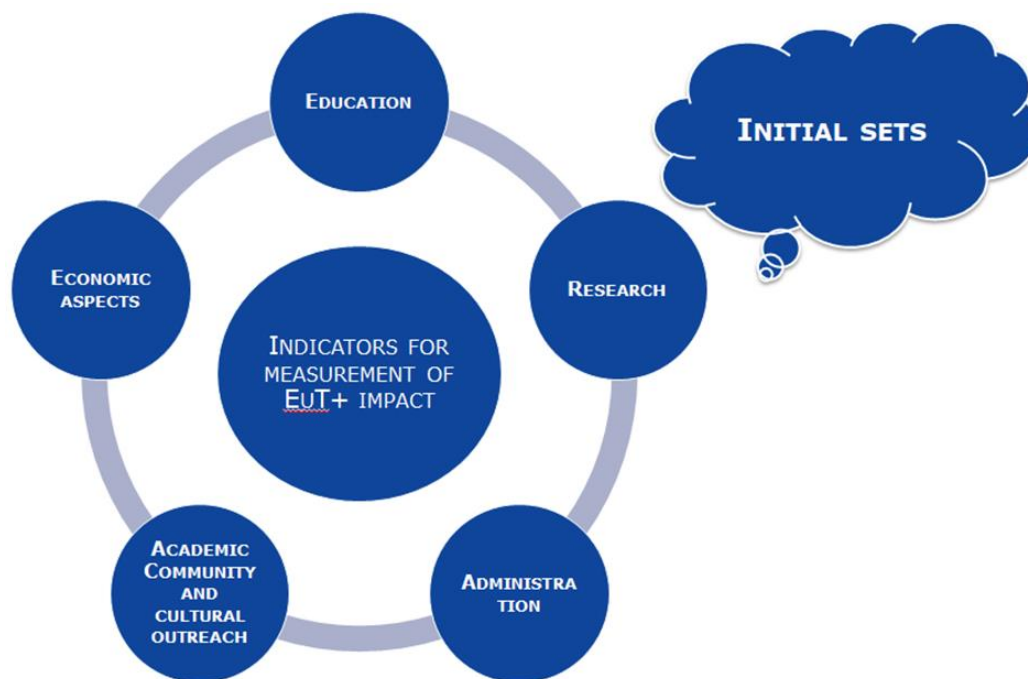
Figure 4 Reorganization of initial set of indicators (project proposal) to EUt+ set of indicators.

Also, it is important to note that this set of indicators should be easier to measure, tracked down and to be indicative for a sustainable development. Thus, this new set of indicators should be a finite (few) number of indicators and they should be defined at this stage of the project. It is also important to note that this set of indicators should be further presented to and discussed with the governing board as well.

A total number of 11 indicators is determined, and some of them are complex as they consist of subdivisions. As a major point, used for indicators definition, a thought is to apply maximum three indicators per group, preferably two. Their definitions and relevance to each of the defined groups is shown in Figure 5.
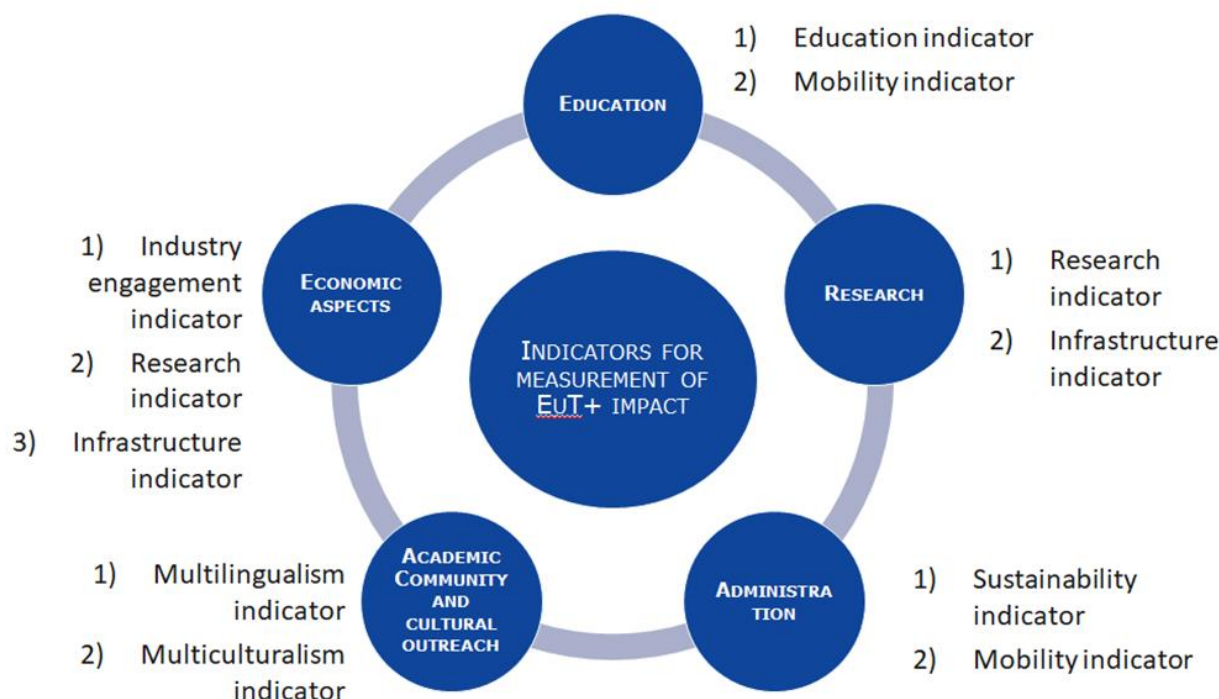
Figure 5 EUt+ set of indicators.

It is important to note that some of the defined indicators are complex and each of them consists of sub-indicators. These indicators are listed below, including their forming components:

✚ **Multilingualism indicator**: Overall percentage of students that have a certified B2 level in one foreign language,

✚ **Multiculturalism indicator**: Share of EUt+ students who will have spent at least one semester at one of the EUt+ campuses,

✚ **Industry engagement indicator**: to be composed of:
  o Number of new business start-ups based on a European business model,
  o Number of networks created,
  o Number of projects with industrial partners involved in,

- **Education indicator**: to be composed of:
  - o Number of programmes created,
  - o Number of students in those programmes,
  - o Evaluation of student and staff satisfaction,
  - o Number of workshops,

- **Research indicator:** to be composed of:
  - o Number of research projects initiated,
  - o Number of mutual, collaborative projects,
  - o Number of published research studies in collaboration,

- **Mobility indicator: to be composed of:**
  - o Number of student mobility,
  - o Number of staff mobility,

- **Infrastructure indicator**: to be composed of:
  - o Number of shared infrastructure units,
  - o Number of shared strategies, directives, guidelines,
  - o Number of deployed services,

- **Sustainability indicator**: to be composed of:
  - o Assessment of achieved progress of EUt++ development as future European University,
  - o Assessment of the political and policy awareness of the EUt+ initiative,
  - o Assessment of international recognition and support for the EUt+ model,
  - o Number of common fundraising schemes and projects.

Conclusion

An analysis and evaluation of existing methods for the measurement of social and cultural value of EUt+ is performed and documented here. It includes a wide range of existing research studies and reviews, focused on the impacts of HEIs that illustrate the importance in practice and academia. Indicators classifications and groups are examined in detail as well as review and analysis of EUt+ specific indicators. The review and analysis performed show five typical groups: Administration, Research, Education, Academic Community and Cultural Outreach, Economic aspects. A preliminary identification of major groups, related to project activities, is preliminary defined and subsequent groups are defined as Research, Education and Transfer (Academic and Cultural Outreach).

Further, an analysis of economic and societal impacts of education, research and transfer activities of EUt+ is performed. Initially, the EUt+ specific predefined indicators are grouped in the three groups. This classification contains all project indicators and could be drawn on as an initial set of indicators. This is a good reference point for a further EUt+ set of indicators development.

The new set of indicators is defined, grouped in five groups, as defined above. This new set contains a finite (few) number of indicators that are composite. Total number of defined indicators is eleven. The indicators defined are a good basis for EUt+ policy improvement towards societal and economic impact. Next steps should be focused on implementation of these indicators, their adjustment and further development.

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