

Empowering Deans for Sustainability Transformations at Academic Departments: Obstacles, Strategies and Roadmaps



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1 Introduction

The higher education sector is recognised as one of the major players in advancing sustainability and achieving the sustainable development goals (SDGs; see United Nations, 2015) through its primary (research, education and societal engagement) and support (operations, governance) missions (Caeiro et al., 2013; Cortese, 2003; Lozano, 2006; Porter, 2011; Veidemane, 2022). This is demonstrated by a vast and growing literature in the field (Cheeseman et al., 2019; Findler et al., 2019; Kordestani et al., 2015; Rivera & Savage, 2020; Sonetti et al., 2020). Often financed by governments, higher education institutions (HEIs) can create or apply knowledge for the greater good – working on devising and implementing solutions for the SDGs and building capacities of future workers and leaders. Doing so supports their legitimacy for public funding and their standing with the general public.

Yet, to embrace SDGs and ensure that sustainability is more than an add-on to existing academic work, HEIs need to undertake fundamental transformations and employ innovative strategies and business models (Giovannelli et al., 2021). This chapter takes the position that, in this transformation process, deans can play an important facilitating role. Deans serve as the heads of a university's constituent colleges and departments, managing their academic unit's education, research and operations. Incorporating sustainability concerns throughout their department has increasingly become part of a dean's job, and for that, they need tools, strategies and

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approaches to support this transformation process and build a roadmap towards sustainability. As stated by one of the leading authors on sustainability in higher education, there is a paucity of research focusing on sustainability leadership in universities (Leal Filho et al., 2020). The DECODE project,¹ on which this chapter is based, is addressing this gap. After having identified the drivers, obstacles and tools for embedding sustainability in academic departments through a desk study as well as surveys and interviews, the DECODE project in particular set out to provide practical tools for deans, supporting them in embedding sustainability in their department.²

The purpose of this chapter is threefold:

1. Understanding the nature of change when integrating sustainability in academic departments. That is: to better understand the transformational character of the change process
2. Identifying the obstacles encountered on this sustainability pathway and suggesting facilitators and supporting mechanisms for becoming a more sustainability-oriented department and
3. Deconstructing the pathways and roadmaps taken by departments in their journey to arrive at a more sustainability-oriented department. That is: identifying the distinctive steps taken on the path towards achieving sustainability impact

This chapter addresses these objectives, and, as a result, hopes to contribute insights on mainstreaming sustainability in academia. These three objectives lead to the following two research questions:

1. What obstacles do deans confront when embedding sustainability in their academic department?
2. What strategies and tools can deans employ to embed sustainability in their departments?

In the following sections, the nature and need for change are discussed first (Sect. 2). Section 3 explores the empirical and theoretical base of this chapter, touching on several elements, such as policy levers, obstacles and facilitating mechanisms. Section 4 introduces the pathways and roadmaps for realising sustainability goals. Section 5 suggests a number of strategies that deans can employ for embedding sustainability in their departments. Finally, Sect. 6 (Conclusions) summarises the findings and reflects on the practical and theoretical relevance of the work presented in this chapter.

¹DECODE stands for: European DEans COuncil for DEsigning Sustainability Impact Roadmaps.

²The DECODE Sustainability project is funded by the European Commission's Erasmus+ programme. It is carried out by a consortium of five university-based teams from Latvia, Spain, Italy, Germany and the Netherlands. See: <https://decode-council.org/>

2 The Nature of Change

2.1 *The Changing Landscape of Higher Education*

Embedding sustainability in academia requires organisational change. In essence, organisational change can be defined as the observation of difference over time in one or more dimensions of an entity (Van de Ven & Poole, 1995). Kezar (2011) distinguished between six types of change – evolutionary, life-cycle, social cognition, political, cultural, and teleological – each with unique drivers, processes and expected outcomes. Many change theories, such as the ADKAR (awareness, desire, knowledge, ability and reinforcement) model (Hiatt, 2006), Kotter’s 8-step change model (1995), and Lewin’s change model (Lewin, 1951), were originally utilised in the private sector and later on adopted to public sector organisations. Higher education institutions (HEIs) have distinct features, including multiple power and authority structures; they are loosely coupled systems and have strong academic values (Kezar, 2011) – which set them apart from private sector organisations and influence the context of change.

HEIs are under growing pressure to demonstrate their approaches to addressing the sustainability challenges that societies, industries and economies face. HEIs are expected to contribute to a wide range of sustainability dimensions, from environmental to social, from core missions to support functions. Their SDG performance is also recognised in various sustainability rankings (Veidemane, 2022). This presents a challenging task for deans and academics alike. This implies that HEIs need to consider how and what they teach, how they encourage students to become entrepreneurial and engaged citizens and what research their academic staff carry out around economic, social and environmental sustainability. Implementing these changes requires a new vision for the academic unit: organisational restructuring, new ways of working and new reporting mechanisms. More fundamentally, this requires stressing new values for the department – a new sense of purpose (Purcell et al., 2019). HEIs are expected to reassess their education and research practices, encouraging their staff and students to collaborate with external stakeholders.

Sustainability is a relevant component in all three main missions of HEIs: education, research and engagement. The *education* offered by HEIs is indispensable to encourage sustainability-oriented mindsets in students (Cheeseman et al., 2019). Recent data from the Sustainability Skills Survey 2021–2022 show that 88% ($n = 6750$) of students agree that ‘sustainable development is something that universities and colleges should actively incorporate and promote’ (2022). Therefore, HEIs will need to take initiatives to prepare their students to become change agents who have the mindsets and skills to create local solutions to global issues. To teach sustainability, transformational pedagogies are required. *Education for Sustainable Development* (UNESCO, 2020) and *challenge-based learning* (Gallagher & Savage, 2020; Leijon et al., 2022) can help emphasise sustainability challenges. These

approaches should help students become reflexive practitioners (Howlett et al., 2016; Alam, 2022), with the ability to critically reflect on the potential implications of their actions in society and the skills to recognise and integrate different perspectives and forms of knowledge when developing solutions. Training such practitioners means that fundamental changes – i.e. transformations – will be needed in the education portfolio, the curricula, the research agenda and the research and teaching methods employed by HEIs. Transformative learning goes beyond the acquisition of skills and knowledge, to support learners in critiquing how knowledge is acquired and communicated (QAA, 2021).

Academic *research* on sustainability-related issues can address global challenges in the local context (Salvia et al., 2019). The HEIs' sustainability- and challenge-oriented research agenda will require that staff, instead of their traditional methodologies and perspectives, employ innovative multidisciplinary approaches and methodologies to carry out challenge-oriented research projects. Again, this calls for changes to be made in the academic department's policies around collaboration, capacity building and structural facilities. It could require dismantling rigid academic boundaries, so that researchers from varying disciplines could work together collaboratively – through an 'undisciplinary' approach (Freiband et al., 2022). HEIs are in a position to mobilise stakeholders and networks through their societal *engagement* activities, thereby pulling together knowledge and resources to address the SDGs and the underlying challenges (Sonetti et al., 2020). In short, 'SDGs need HEIs and HEIs need SDGs' (SDSN, 2020).

All of this implies transformational change, as it involves a redefinition of goals, new ways of working, with more room for experimenting, new perspectives and new performance measures. In other words, it requires a revised organising logic – akin to a new *business model* (Rotondo et al., 2023) – with redefined purposes and new understandings of what is the value that is created by the HEI. Implementing such organisational change processes requires leadership and a pathway that goes through a series of phases that, in combination, usually require a considerable length of time. In the following sections of this chapter, we discuss the tools – the policy levers – that may be used by academic deans in such transformational change processes.

3 Empirical and Theoretical Background

3.1 *Future Expectations*

In 2021, as part of the DECODE project, a survey was conducted among European deans to investigate their engagement in sustainability initiatives within their academic department (school, faculty, department). Out of more than 500 deans from

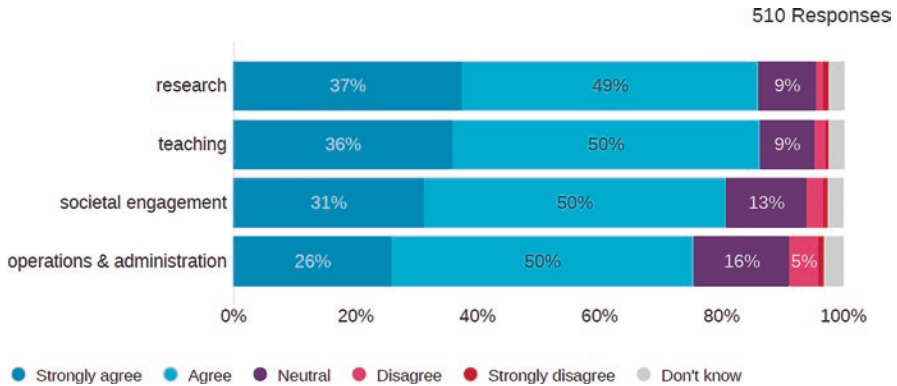


Fig. 1 Future expectations around SDGs. ‘Attention to sustainability or SDGs is likely to increase in the next 5 years in our academic unit’s...’. (Source: DECODE Deans survey)

almost 30 European countries surveyed,³ more than three-quarters (76–86%) believed that attention to sustainability in their academic units will increase across all functions in the near future (see Fig. 1).

3.2 Success Factors

Deans were surveyed about the critical success factors for their academic unit’s sustainability initiatives (Fig. 3). Respondents picked their top three factors. The most crucial factor was the institution’s central leadership commitment (52%), followed by the entire academic unit’s involvement (45%). Equally significant were the department’s academic leadership commitment (39%) and multidisciplinary research teams (39%). The results emphasise the need for institution-wide commitment from top and bottom – having ‘all hands on deck’ – for successful sustainability transformations. Several mentioned factors were also found in Rotondo et al.’s

³Two surveys were carried out: one among deans and another among academics in Europe (Jongbloed et al., 2021a, b). The sampling scheme was purposive, based on the membership in the database of the Accreditation Council for Entrepreneurial and Engaged Universities (ACEEU). ACEEU is a globally operating quality assurance body with a focus on acknowledging engagement and entrepreneurship in higher education. The *deans survey* was sent out to 7027 European deans. The *academics survey* was completed by more than 300 academics that received a survey through the dean of their department. The deans survey consisted of a mandatory section (28 questions) and a supplementary part (voluntary, 11 questions). The mandatory part was completed by more than 500 deans from 30 European countries, including representatives from all EU member states (response rate: 7.2%, completion rate: 80.2%, partial responses included in analysis). The supplementary part of the survey was completed by more than 250 respondents (response rate: 3.6%, completion rate: 98%, partial responses included in the analysis).

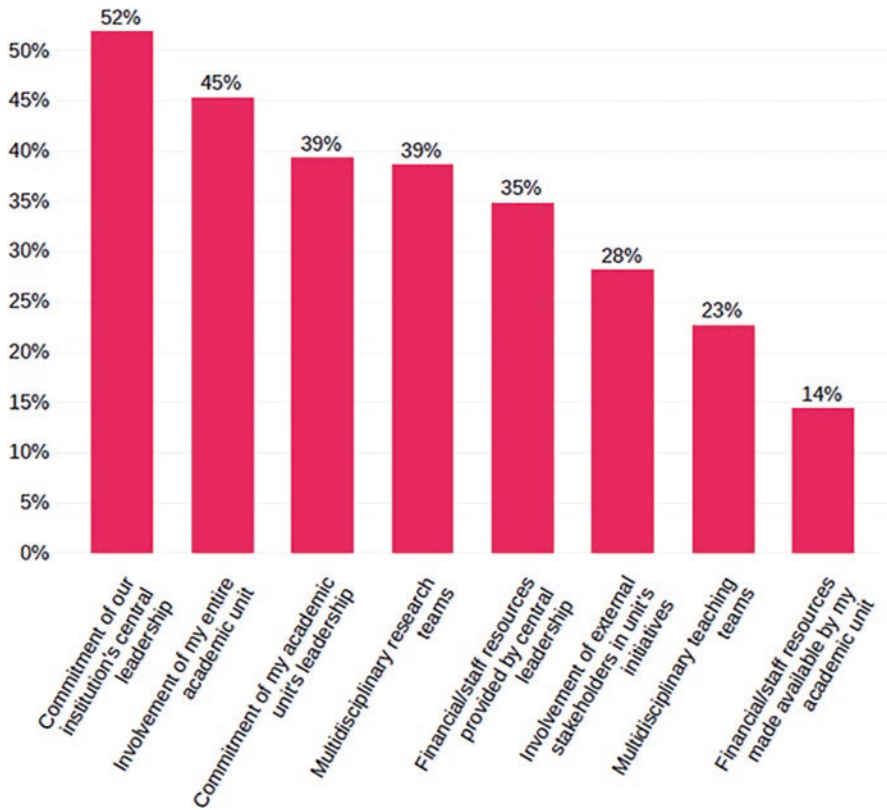


Fig. 2 Critical success factors for undertaking sustainability initiatives. Survey question: What are the critical success factors that enable your academic unit to undertake sustainability initiatives? Select up to 3 answers (181 responses) (The number of responses is much smaller compared to Fig. 1 because this survey question was part of the non-mandatory section of the DECODE Deans survey). (Source: DECODE Deans survey)

(2023) literature review on sustainability-focused business models in higher education.

Cheeseman et al. (2019) identified lack of leadership support as one of the challenges, while stakeholder involvement was seen as one of the drivers, resembling the first two critical success factors shown in Fig. 2.

3.3 Support Needs

Deans highlighted a need for support in responding to growing sustainability demands. The survey prompted deans to identify the support needed to advance their department's sustainability agenda (Fig. 3). Deans particularly valued five

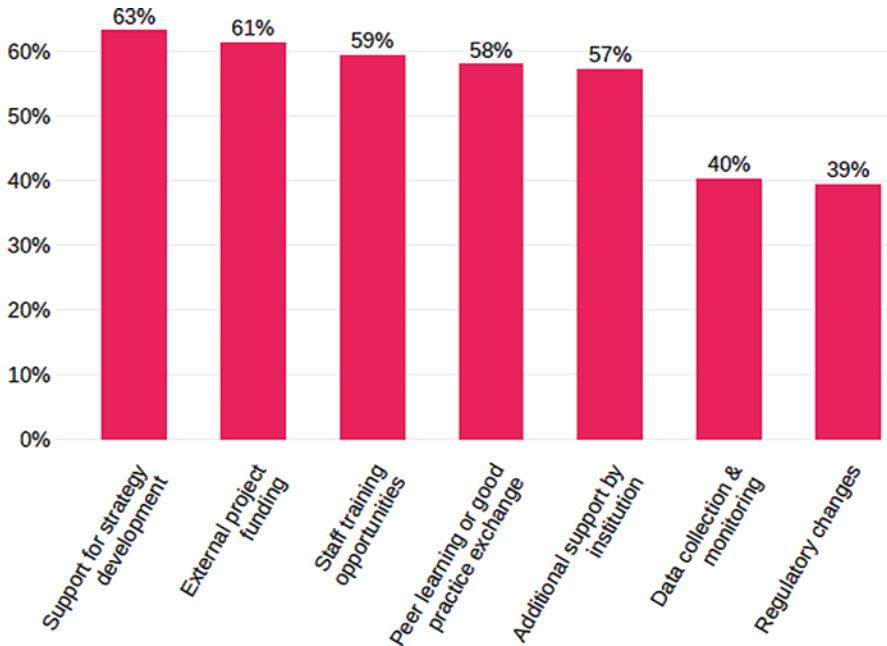


Fig. 3 Support needed for making progress on the sustainability agenda. Survey question: What type of support would be necessary to make progress on the sustainability agenda at your academic unit? Select all applicable. (532 responses) (Source: DECODE Deans survey)

types of support: (1) help to develop their academic department's sustainability strategy, (2) external project funding, (3) staff training opportunities, (4) peer learning and good practice exchange and (5) support (including funding) from their institution. These findings are very much in line with a survey on greening in European higher education institutions by the European University Association (EUA, 2021). The clear demand for support with strategy development prompted the DECODE project to focus on practical tools to support deans in constructing sustainability strategies and roadmaps.

3.4 Identifying Obstacles in Academic Departments

In order to develop helpful strategies, it is important to understand what obstacles academic departments are facing. While some research on obstacles to sustainability transformations in HEIs exists (Aleixo et al., 2018; Cheeseman et al., 2019; Leal Filho et al., 2020; Lozano, 2006), the distinct focus of this chapter is on obstacles at the middle-tier level – departments, schools, faculties. Transformations at this level are likely to have unique characteristics and require sufficient attention to obstacles at this level. Hence, the first research question: *What obstacles do deans confront*

when embedding sustainability in their academic units? This section addresses this question.

The DECODE deans survey revealed obstacles to embracing sustainability (Fig. 4). The main challenges include limited time due to heavy workloads (79%), insufficient funding for sustainability education (60%) and research (59%) and a lack of knowledge about sustainability-related subjects.

Academic staff seemed to experience competing demands in terms of their research, teaching, administrative and societal engagement obligations. Similar

FOR OUR ACADEMIC UNIT, THE KEY OBSTACLES INCLUDE THE LACK OF...

541 Responses

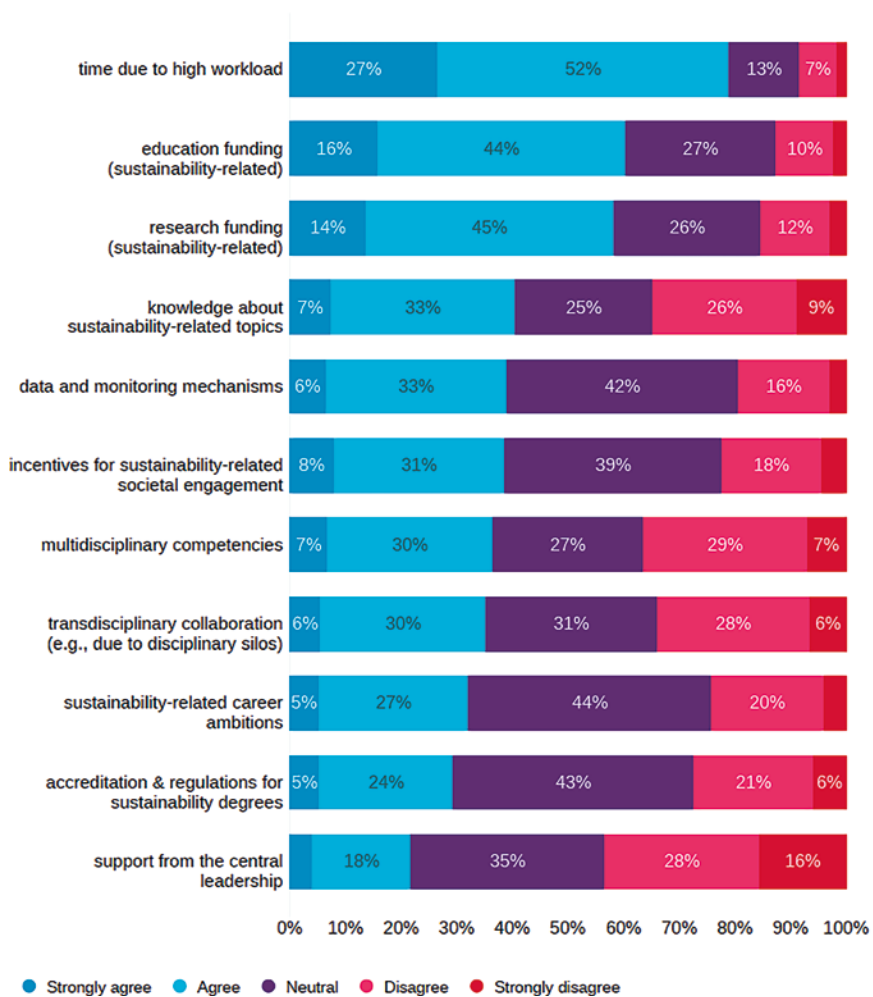


Fig. 4 Obstacles for undertaking sustainability initiatives in the academic unit. (Source: DECODE Deans survey)

outcomes were reported in a survey by the European University Association (Stöber et al., 2021). Funding restrictions were also identified as a major obstacle to driving sustainability initiatives in higher education (Aleixo et al., 2018; Di Carlo et al., 2019; Leal Filho et al., 2018, 2020).

In the interviews carried out as part of the DECODE project, it was mentioned that discipline-restricted organisational structures can create academic disciplinary silos that prevent staff and students from connecting with colleagues from different disciplinary backgrounds. To address SDGs, *transdisciplinary collaborations* would be needed, given that sustainability has economic, social and technological dimensions. In the survey, the absence of transdisciplinary collaboration was mentioned by 40% of the respondents. Cheeseman et al. (2019) also identified the difficulty to implement inter/transdisciplinary practice as one of the obstacles while evaluating barriers at the higher education policy level. Identifying the obstacles is important when developing sustainability strategies. The practical tools and roadmaps developed as part of the DECODE project in particular address the very first obstacle – lack of time – through identifying and offering clear pathways and peer to peer learning opportunities for deans. The next subsection presents the policy levers that can be used as part of a sustainability strategy for the academic department.

3.5 Policy Levers

When developing roadmaps and sustainability strategies, tools and policies are required. This subsection therefore addresses the second research question on the policy levers that deans may employ for embedding sustainability in their departments.

A literature review⁴ (Jongbloed et al., 2021a, b) on the general issue of organisational change pointed to the types of policies that may be utilised in transformation processes. In particular, *policy theory* (Schneider & Ingram, 1990) provided a useful categorisation of policy levers. The tools for supporting deans in the organisational transformation towards embracing sustainability can be grouped into the following five categories:

1. Strategy and awareness building
2. Mapping and monitoring
3. Capacity building
4. Incentives
5. Structures and regulations

⁴The literature review formed the basis of the above-mentioned survey, as well as for a number of interviews conducted with deans from across Europe. Initially, 30 interviews with deans from across Europe were held. Later on in the project, another seven were added, including with American deans.

- *Strategy and awareness* building is about using symbolic and encouragement signals to influence perceptions or values. Below, this policy lever will be elaborated further.
- *Mapping and monitoring* are meant to increase understanding of an issue or reduce uncertainty about how to address it and thus contribute to organisational learning.
- *Capacity building* is about providing information, training, skills and resources to enable individuals or groups, to allow them to make decisions or carry out activities.
- By using *incentives*, i.e. tangible payoffs, positive or negative, compliance with goals is induced, and people in the organisation are encouraged to do things that they might not have done otherwise.
- Finally, *structures and regulations* are about providing room (e.g. infrastructural facilities, action space). It involves the use of authority, and – on the other extreme – giving freedom (e.g. for voluntary actions) and permissions to encourage the wished-for conduct and activities.

Before turning to the issue of developing dedicated pathways and roadmaps to embed sustainability, Table 1 provides a few examples of each of the five tools that can be used for this transformation process.

The above policy levers can be combined, and a literature review on tools for organisational change towards sustainability in higher education was added, to provide a wide variety of tools that deans can use for embedding sustainability in their academic departments.

Table 1 Policy levers

| Lever | Examples | Specific example |
|-----------------------------|--|--|
| 1. Strategy & awareness | Agenda-setting; meetings, events | Mission statements explicitly mentioning sustainability ^a |
| 2. Mapping and monitoring | Inventory making; reporting | University Sustainability Report ^b |
| 3. Capacity building | Training, support, learning resources, networks; conferences | Education for Sustainable Development ^c |
| 4. Incentives | Funding, recognition, awards, reputational incentives | Seed money and nudges to encourage sustainability initiatives ^d |
| 5. Structures & regulations | Organisational units, guidelines, regulations, allowing voluntary actions, accreditation | Green Office ^e |

Source: DECODE literature review

^aSee Jongbloed (2023) that presents examples from three HEIs: Cork, Gothenburg and Aalborg

^bExamples are the [sustainability report of Wageningen University](#) (2020) in the Netherlands, and the [SDG report by the University of Bologna](#) (2021) in Italy

^cDidactical/pedagogical skills-building about Education for Sustainable Development (see: UNESCO, 2020)

^dSee: The [Little Book of Green Nudges](#) (United Nations Environment Programme, 2020)

^eSee: [Green Office Movement](#) (2020)

However, where and when to use which tool is a challenge for deans. Therefore, one of the objectives of the DECODE project was to translate ('decode') the complex task of sustainability integration into a manageable process. Having identified the tools – say, building blocks – for sustainability pathways, the tools can then be assembled to construct a roadmap that is appropriate – customised – for the academic department. The building of a sustainability roadmap thus becomes like a construction process. The next section further decodes this process and provides additional examples of sustainability strategies.

4 Pathways and Roadmaps for Embedding Sustainability

4.1 *Impact Pathways and Impact Roadmaps*

As stated above, deans who are committed to embedding sustainability in their academic departments have a large set of policies and tools available to choose from. Embarking on their sustainability pathway and building a roadmap for their department implies the start of an organisational change process. Organisational change towards more sustainability implies a transformation that is likely to be complex and resource intensive. Sustainability transitions compete with other priorities and agendas of higher education departments. One way for deans to encourage their staff to prioritise sustainability initiatives is to utilise incentive tools such as rewards, awards, prizes and seed money (see Table 1). In addition, recognition in rankings⁵ or through prizes can act as a reputational incentive for the department. The set of tools available to choose from, however, is quite large.

Deans face the challenge of what to focus on and where to start. To support deans in their efforts to facilitate change, the DECODE project set out to deconstruct the dean's task of building a sustainability roadmap by breaking it down into smaller, 'manageable' elements. However, this does not suggest that change is a simple step-wise (or 'tick box') exercise. Steps are never clear-cut; they may overlap and sometimes even require stepping back.

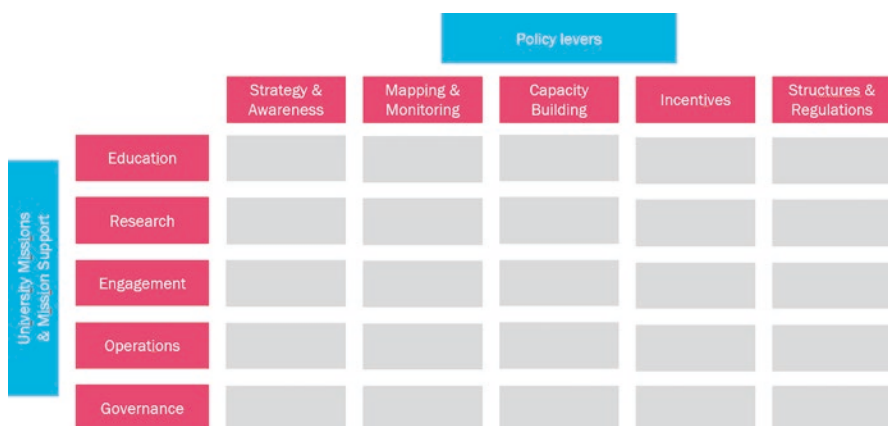
First, as indicated above, the five categories of tools (i.e. the policy levers) that deans may use as 'building blocks' for their roadmap need to be distinguished. Secondly, a distinction can be made between the three well-known missions of HEIs (i.e. education, research and engagement), to which two 'supporting missions' can be added, namely campus operations and governance. Governance may be defined as the processes, structures and decision-making mechanisms used to guide and direct the department's activities. The five mission types and the activities they consist of are shown in Table 2.

⁵A number of global rankings and benchmarking tools are available to map the universities' sustainable development initiatives. Examples are the [Times Higher Education Impact Ranking](#) (2023), the [Sustainability Tracking Assessment & Rating System \(STARS\)](#) and the [UI Green Metric](#).

Table 2 Missions and mission support

| Mission #1 | Mission #2 | Mission #3 | Mission support | Mission support |
|--|---|---|--|--|
| Education | Research | Engagement | Operations | Governance |
| Curricular courses, Extra-curricular courses Education + Training Knowledge, Skills, Mindset development [...] | Blue sky research, applied research Research methods Research funding Research indicators [...] | Collaboration Outreach Entrepreneurship Translation Valorisation [...] | Buildings IT infrastructure Marketing Finance HRM Procurement Travel Resources (energy, electricity, water, ...) [...] | Rules, practices and processes by which the HEI is directed and controlled E.g. ethics, risk management, compliance and administration [...] |

Source: DECODE project

**Fig. 5** Combining missions and policy levers. (Source: DECODE project)

Combining the above missions and the five policy levers presented in the first part of this chapter results in a matrix (Fig. 5). The matrix visualises the choice palette – the building blocks – for deans focusing on SDGs in their departments. The department’s SDG roadmap can be linked to the three main missions and the two supporting missions, tailored to the needs of academic departments at the middle-tier (‘middle-out’) level.

There are two concepts to be distinguished here: (1) *Impact Pathways* and (2) *Impact Roadmaps*. The label ‘impact’ expresses the idea that the change process intends to create impact in terms of contributing to sustainability.

- An *Impact Pathway* can be understood as a general way in which deans can promote sustainability in their academic units. It is a broad plan. A pathway focuses on one of the five missions. There are usually several pathways to choose from

when trying to achieve organisational change. Academic departments might focus on a single mission (e.g. education, or campus operations), but they can also focus on a combination of two missions (e.g. combining the engagement and research missions to support citizen science).

- An *Impact Roadmap* shows the specific steps taken along the pathway towards achieving a bigger focus on sustainability in the department. It lays out the required resources in terms of time, human and financial resources, and expertise to be committed by the department (and the HEI) to the task. It also provides detail on the expected intermediate deliverables of the activities undertaken along the pathway.

The difference between a pathway and a roadmap is that the pathway is broad. The pathway leaves it open to the leadership how the available building blocks (say, policies) are combined. In contrast, a roadmap is narrower. It is customised to a HEI or its department. The roadmap considers the policies and initiatives already in place and what has been achieved by some of the policies. It also considers the ambitions of the HEI's department. Compared to a pathway, a roadmap is more specific; it pays attention to the context in which the department functions. It is customised to the specific needs of the department while considering its available resources and contextual obstacles.

Table 3 shows five examples of pathways, together with a fictitious quote by a dean to characterise the intentions for a particular pathway.

Deciding for a particular pathway and moving on to translate this in a customised roadmap for the department will require an assessment of the status quo and a consideration of the department's priorities for the future. As each department has its own specificities, there is no unique prescription or answer available on how such a decision should be made or what its outcome might be. Choosing a pathway and building a roadmap to embed sustainability is a process that will depend on the characteristics, context and ambitions of the individual department. Therefore, to assist deans in making their decision, three questions are important:

Table 3 Characterisation of impact pathways

| Pathway | What's the ambition? (sample quotes) |
|--------------------|--|
| Education pathway | 'We are focusing on integrating sustainability step by step in the different lectures and courses offered by our department' |
| Research pathway | 'We want to direct our research more towards sustainability in order to get better ranked in THE's new Impact Ranking' |
| Engagement pathway | 'We want to introduce challenge-based learning, letting our students tackle challenges suggested by the communities in our university's neighbourhood' |
| Operations pathway | 'We started to reduce the use of plastics and paper by our department and now we want to move on to saving electricity' |
| Governance pathway | 'In our department's way of working, we want to act as an example for our university as a whole and direct all of our functions more towards sustainability' |

Source: DECODE project

1. Which of the policy levers for promoting sustainability (i.e. the five introduced above) are already present in the department?
2. Can the department's policies for each of the five missions (i.e. education, research, engagement, operations, governance) be said to be effective?
3. In terms of its missions (i.e. education, research, engagement, operations, governance), what are the department's ambitions for promoting sustainability?

4.2 Self-Assessment

To address the first two questions, deans (or academic leaders at other levels in the HEI) will have to make an inventory of their sustainability initiatives and assess their strengths and weaknesses in supporting sustainable development.⁶ For this purpose, a *self-assessment* was developed in the DECODE project. The DECODE self-assessment is a short (say, 5 min) survey aiming to shed light on the current state of development regarding the integration of sustainability in the academic unit. The third question is addressed in the Sect. 5.

The self-assessment follows the five-by-five structure of Fig. 5. It consists of a set of 25 + 5 questions that can be answered by ticking boxes. The first 25 questions are about the presence (or absence) of a particular policy lever in the department (Yes/No) for each of the missions (5 missions × 5 levers). The remaining five questions deal with the extent to which the department has been successful in promoting sustainability within each of the five missions – education, research, engagement, operations and governance.

Table 4 shows six (i.e. 5 + 1) self-assessment questions dealing with the top row of Fig. 5 (i.e. the Education mission). Using the education mission as an example, it displays questions for the five policy levers. Added to this is one overall question about the effectiveness of the efforts undertaken by the department to embed sustainability in education. For the other four missions, similar questions are included in the self-assessment. All in all, this results in 30 self-assessment questions (5 missions × 5 levers + 5 mission effectiveness questions).

As part of DECODE, a quantitative score for the self-assessment outcomes was developed in order to move from a generic impact pathway towards developing an impact *roadmap*. The self-assessment helps to assess the current strengths and weaknesses (or: missed opportunities) of the academic department. For this, the answers to questions like the one shown in Table 4 are aggregated using a simple algorithm (Table 5), based on the number of boxes ticked in the upper part of the table, and multiplied by the effectiveness score (the lower part, expressed on a 7-point scale). The score for a department (between 0 and 100), therefore, considers the percentage of policy levers that a department has in place. Having all the

⁶A task like this can also be delegated to a dedicated working group (e.g. a sustainability working group).

Table 4 Example questions from the DECODE self-assessment

When it comes to your department's *education mission*, is sustainability (say, the SDGs) addressed in the following areas? (please select all options that apply)

- The department's overall education strategy [*Policy lever – Awareness & Strategy*]
- The mapping and monitoring of information on the department's efforts and achievements related to sustainability education (i.e. courses and programs paying attention to SDGs/the sustainability theme) [*Policy lever – Mapping & Monitoring*]
- Providing development & training/peer learning opportunities for the department's lecturers to learn about sustainability topics or teaching methods for ESD (Education for Sustainable Development) and CBL (Challenge-based learning) [*Policy lever – Capacity Building*]
- Providing financial resources or additional staff time to the department's academic staff, allowing them to further develop sustainability education [*Policy lever – Incentives*]
- Regulations in the department that guide (say, restrict, encourage, permit) the department's curriculum and the students' educational portfolio in terms of attention for sustainability themes [*Policy lever – Structures & Regulations*]

On a scale of 1-7, and considering all your academic department's efforts, how would you rate the overall effectiveness of your department in embedding sustainability in your education mission?

- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
-

Source: DECODE project

elements in place and doing extremely well in terms of effectiveness results in a maximum score of 100% (see the first example in Table 5). Having *some* elements in place (3 out of 5) and having relatively good effectiveness (5 out of 7) results in a total score of 57%. Lastly, having no levers in place (0 out of 5), but still having a very high effectiveness score (7 out of 7) results in a score of 50%. This may occur when a department does not undertake systematic efforts (e.g. strategy development, monitoring, capacity building), but still might be enthusiastically involved in local policy-making related to climate change or is leading an international flagship programme on sustainability.

Table 5 Scoring the answers in the self-assessment: three examples

| Policy levers in education (<i>example 1</i>) | Points achieved | Total points possible | Score | Clarification (a) Points achieved/total points possible PLUS 1 (b) Points achieved/total points possible (c) (a)*(b)/2*100 |
|---|-----------------|-----------------------|-------|---|
| Elements in place | 5 | 5 | 2.0 | |
| Effectiveness | 7 | 7 | 1.0 | |
| Overall score | | | 100% | |
| Policy levers in education (<i>example 2</i>) | Points achieved | Total points possible | Total | |
| Elements in place | 3 | 5 | 1.6 | |
| Effectiveness | 5 | 7 | 0.7 | |
| Overall score | | | 57% | |
| Policy levers in education (<i>example 3</i>) | Points achieved | Total points possible | Total | |
| Elements in place | 0 | 5 | 1.0 | |
| Effectiveness | 7 | 7 | 1.0 | |
| Overall score | | | 50% | |

Source: DECODE project

The score that is calculated (right hand side of Table 5) results from a simple algorithm that multiplies the extent to which elements are in place and the effectiveness score. The algorithm ensures that academic departments that do not undertake the listed policy levers but are actively engaged in sustainability activities for that specific mission, do not score 0 on the self-assessment. This calculation is used as a proxy to help deans in quantitatively expressing the strengths of their department. It cannot be used to compare performances across departments, as the purpose of this formula is simply to promote discussion on preferred pathways. Various self-assessment and self-reflection tools have been developed in the European context over the previous years in the field of higher education, each with its own strengths and weaknesses. Such tools include HEInnovate for entrepreneurship in higher education (www.heinnovate.eu) and TEFCE for community engagement (O'Brien et al., 2022). As suggested by O'Brien et al. (2022), such tools are likely to evolve over time as they are tested in different contexts, eventually becoming more robust. Also, this DECODE self-assessment is proposed as the first proxy.

The self-assessment results can be shown for each of the five missions. An example is shown below (Fig. 6), together with an interpretation of the scores identifying strengths and weaknesses (absence of policy levers and low levels of effectiveness) in their sustainability profile. The scores can help deans reflect on potential strategies going forward and start designing their *Impact Roadmaps*. The next section discusses how deans can move from a self-assessment to a roadmap by way of identifying their preferred strategies.

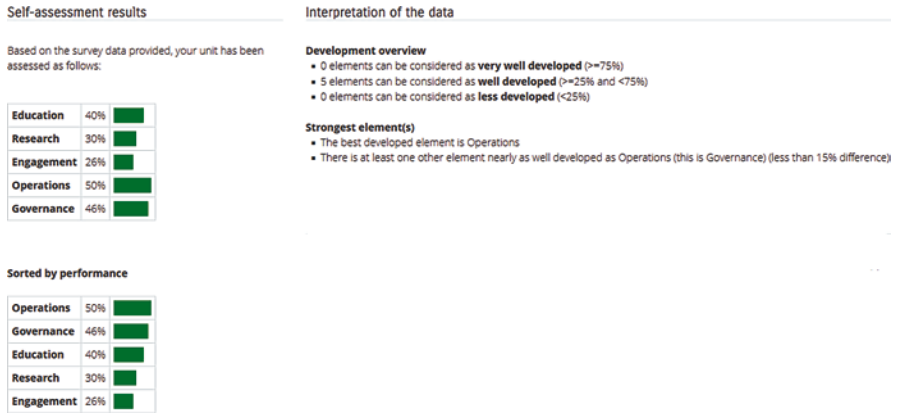


Fig. 6 Example of an outcome of the DECODE self-assessment. (Source: DECODE project)

5 Developing Strategies for Embedding Sustainability

The self-assessment described in section four can help deans identify the existing strengths and weaknesses of their departments. This analysis focuses on the internal environment, following the strengths, weaknesses, opportunities and threats (SWOT) analysis framework. As a next step, deans are encouraged to reflect on the external environment, identifying opportunities and threats. Opportunities might include external funding at a national or regional level; threats, for example, might include reduced student numbers if the department is able to offer education that addresses sustainability challenges (Students Organising for Sustainability United Kingdom, 2022). Based on the assessment of strengths, weaknesses, opportunities and threats (SWOT), suggestions for the building blocks of a roadmap (Fig. 5) can be proposed. This is the step from self-assessment to roadmap development, and addresses the third question proposed in Sect. 4: *In terms of its missions (i.e. education, research, engagement, operations, governance), what are the department’s ambitions for promoting sustainability?*

As illustrated by the self-assessment (see previous section), every academic department will have a different starting point when it comes to embedding sustainability in their day-to-day operations. The factors may include disparate capacities to promote sustainability, varied degrees of autonomy, that is, freedom to make their own choices with respect to human resources, financial resources and academic activities. Furthermore, the enabling environment of academic departments is determined by the strategies and policies of the HEI they are part of, as well as the opportunities in their regional, national and international environment, including their regulatory environment, socio-economic context and the funding opportunities for their departments (and HEIs).

Strategy and leadership are key drivers of sustainability in HEIs (Leal Filho et al., 2019) and their business model (Rotondo et al., 2023). The strategy and vision expressed by the HEI's leadership precede the policies and structures an HEI is implementing to integrate sustainability throughout the institution. In its strategy, the HEI may express that it is placing a high value on sustainability, and this will then have to be supported by institution-wide policies and how they create value for their stakeholders. The priority attached to sustainability will often be expressed in the institution's mission statement (Jongbloed, 2023) or *value proposition* (Rotondo et al., 2023). At the level of the academic department – that is: the decentral level – a department's strategy might be aligned (or aligned further) with the HEI's overall strategy promoted by the HEI's central leadership. Often, within this overall HEI strategy, academic departments will have some autonomy to set their own priorities and define their own strategies. A department could choose to align closely with its institution's strategy, which in turn could be in line with the (national or supranational) government's strategy on sustainability promotion. The strategies of departments thus are exhibiting elements of alignment and commitment to external strategies.

When building their specific sustainability (or impact) roadmap, deans will need to consider what so far they have been doing, what effect this has had and what still can be done in light of the overall strategy and ambition of their department and HEI. For this, they can make use of a self-assessment as presented above. This self-evaluation may indicate whether the department should be prioritising SDGs in the education, the research or the engagement missions of their department or whether it should focus on realising ambitions in the operational and governance dimensions of their unit.

From the more than 30 interviews with deans and university sustainability officers in Europe that were conducted as part of the DECODE project, the following five broad categories of strategies were identified:

1. Continue with what the department is especially good at (*excellence strategy*)
2. Select the biggest potential for development (*opportunity strategy*)
3. Broaden the basis (and create synergies) (*diversification strategy*)
4. Fulfil a moral or government obligation (*commitment strategy*)
5. Follow the university's (or academic unit's) strategic priorities (*alignment strategy*)

The five strategies are partly overlapping, and other ways of labelling strategies are also possible. However, the categories are closely associated with the general literature on competition, positioning and strategies in higher education (e.g. Chaffee, 1985; Goldman et al., 2004; Pucciarelli & Kaplan, 2016). Among other themes, that literature concerns issues and trends such as legitimacy (Deegan, 2002), stakeholder relations (Freeman et al., 2010), signalling (Boulding & Kirmani, 1993) and reacting to external pressures (DiMaggio & Powell, 1983). Linking the strategies to the various theories that exist on each of these themes (e.g. organisational change and institutional theory) would fall beyond the scope of this chapter. Just like the self-assessment, the above strategies are primarily shown to deans to

help them think about organisational change and develop pathways and roadmaps towards sustainable development. This approach is not meant to test theories, but primarily to provide tools to support a department's ability to embrace sustainability.

- With respect to the first two of the five above-mentioned strategies, a department's self-assessment (as described in the section above), in particular, shows what the department is good (or less good) at. It is up to the department's leadership then to decide whether it should focus its policies on continuing already well-functioning areas (the *excellence strategy*) or on using (new) policies for areas of underperformance (*opportunity strategy*).
- Also, a department can try and create synergies between missions – for instance, between education and research, between education and engagement, between research and engagement or between other (multiple) combinations of missions and mission support. This *diversification strategy* may be done for several reasons (e.g. for reasons of promoting innovation, profiling or competitive advantage).
- The commitment and alignment strategies can be associated with a department's external and internal environment that signals stakeholder (e.g. government, community) expectations and acts as a source of compliance and legitimacy pressures.

In a workshop that was carried out as part of the DECODE project, around 20 deans from about six countries were invited to work with the DECODE tools and building blocks. They were asked to develop their own departmental impact roadmap, using the DECODE toolbox consisting of policy levers, mission-oriented pathways, self-assessment questions and strategies/roadmaps for promoting sustainability. In the workshop, deans received a copy of the canvas shown in Fig. 7, providing them with a way to concentrate on the task before them.

In the workshop, deans were also provided with examples of policy tools, strategies and best practices as used by other HEIs. These practices and tools are part of an online database of more than 100 such examples collected by the DECODE project team and made available online.⁷ The tools and examples served as suggestions for the deans to build their own sustainability impact roadmaps, starting from a self-assessment and their department's ambitions and challenges. In the workshop, deans shared their challenges and opinions on the tools, strategies and other building blocks for their roadmaps towards sustainability. The workshop allowed participants to learn from each other and exchange practices on building roadmaps towards sustainability. This provided additional insights into the challenges of transformational change in HEIs.

⁷ See: <https://connect.decode-council.org/> (Only available for members of the DECODE Council, that is: deans and their representatives).

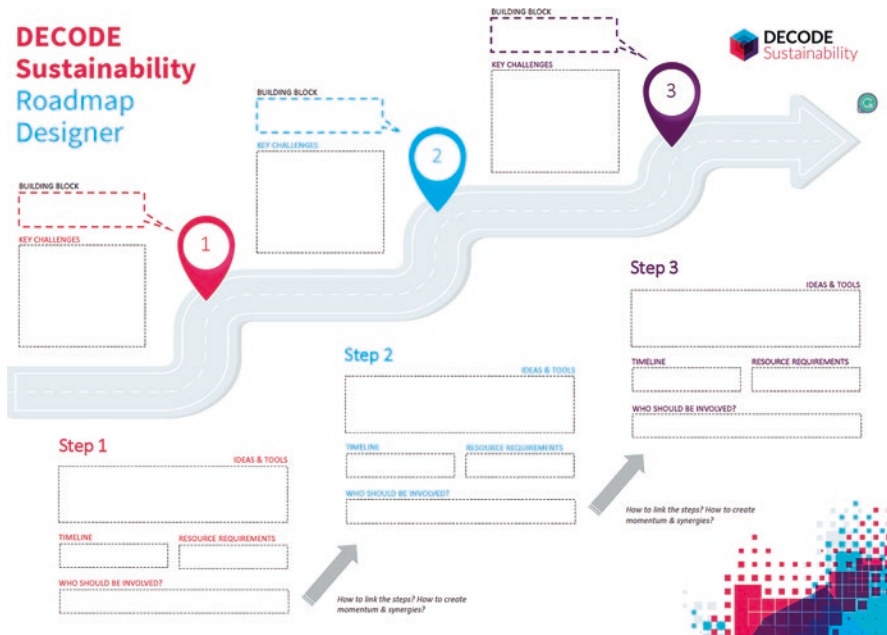


Fig. 7 The DECODE roadmap design canvas. (Source: DECODE project)

To embed sustainability in the mission and the activity portfolio of the academic department, an approach that emerged from the design workshop included the following five steps:

1. Build awareness of SDGs
2. Identify priorities, opportunities and gaps related to sustainability challenges
3. Map what you are already doing in Education and Research
4. Build capacity and ownership for sustainability
5. Integrate, implement and embed the SDGs
6. Monitor, evaluate and communicate

Apart from this approach, other approaches to embedding sustainability in academia have been suggested by other organisations (SDSN, 2020; Alliance for Sustainability Leadership in Education, 2020; EUA, 2023).

6 Conclusions

This chapter started by highlighting the important role of deans as change leaders in contributing to sustainable development in higher education and – ultimately contributing more broadly to SDGs in other places and parts of society. The question was, how this role can be strengthened by a further investigation and exploration of

the tools that deans could make use of. As stated by Rotondo et al. (2023), there is a ‘design-implementation gap’ in terms of the dynamics and tools that could support the HEIs’ ability to embrace sustainability. Based on the interviews and the surveys undertaken as part of the DECODE project, the critical success factors for encouraging sustainability, the drivers, barriers and tools for promoting sustainability were identified.

The first research question for this chapter addressed the obstacles that deans face when embedding sustainability in their academic units. Overwhelmingly, a lack of time was reported as the main obstacle, followed by a lack of financial resources and absence of knowledge on sustainability topics. To mitigate the obstacles, strategies, roadmaps and practical tools can be provided. The second research question for this chapter aimed to identify the strategies and tools that deans can employ to embed sustainability in their academic unit. A framework was proposed for constructing and diagnosing the integration of sustainability in the various missions of HEIs and their academic departments, identifying five categories of policy levers for the three core missions of HEIs (i.e. education, research, engagement) and their ‘support missions’ (i.e. campus operations and governance). Transformation pathways and impact roadmaps to embed sustainability can be developed, based on a SWOT analysis and the ambitions of an academic department. A self-evaluation is part of such a SWOT analysis and can point deans to the potential strategies for integrating sustainability across the missions.

For departmental leaders such as deans, embedding sustainability throughout the education and research activities is a challenging undertaking, especially given the many competing demands already placed on departments. The first part of this chapter argued that a successful integration of sustainability would imply more than just incremental change but rather transformational change and a new paradigm for the two classic missions of the HEI, i.e. education and research. Education for Sustainable Development (UNESCO, 2020) and transdisciplinary, challenge-based education and research would be part of such a paradigm.

The approach to embedding sustainability presented here was explorative in nature, and the tools developed for supporting deans in implementing changes were based on a combination of empirical insights and a review of the existing literature on the topic. Sustainability-oriented leadership thus was explored from a theoretical and a practical perspective. This led to an approach that can be regarded as a kind of proof of concept. Based on this proof of concept, more work can be done to refine the DECODE methodology and test its use and usefulness to support organisational change towards sustainability.

Transformational change towards sustainability is very much a wicked problem and cannot be solved by a simple step-by-step approach. However, the interaction with deans in the DECODE project showed that deans appreciated our approach of breaking down the change process into manageable elements. Deans felt this approach was more likely to deliver quick wins than a less structured one, while still accepting the idea that the smaller parts always must be interpreted and integrated in a bigger whole and *holistic* approaches are called for (Findler et al., 2019).

The surveys, interviews, workshops and literature reviews carried out as part of the DECODE project suggested a real need among deans for tools, resources and expertise in building sustainability roadmaps. The deans participating in the project confirmed that a more structured approach along with a set of tools and practical examples provides a useful addition to the available resources on sustainability leadership. It can support the role that deans can play as change agents in pursuing and achieving institutional objectives toward more sustainable practices.

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