

TOWARDS A SUSTAINABLE UNIVERSITY: A CASE STUDY OF THE UNIVERSITY OF THE WEST OF ENGLAND, BRISTOL

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ABSTRACT

The paper will explore the progress of the University of the West of England (UWE), Bristol's in embedding sustainable development into the whole institution mission. The university is committed to ensuring that all its students, irrespective of their programme of study, are introduced to the ideas of sustainable development during their undergraduate or postgraduate degree programme. The university recognises that a typical graduate will have some 50–60 years of life post-graduation in which the pro sustainability knowledge, skills and attributes developed at university can play out positively in both their professional and private lives. Hence, UWE considers it a key part of its mission to provide an opportunity for all students to consider sustainability within their degree programme. In the most recent year of analysis the university has confirmed that each UG and PG taught programme within the portfolio provides this opportunity for disciplinary consideration of sustainability. The University's award-winning Sustainability Plan sets out our policy commitments and strategy to support sustainable development and describes their implementation these into the business of the University both in our educational role and in the management of our estate. Progress with the aims of the Plan are reported publicly and enhancement actions are identified and prioritised by the use of an accredited environmental management system, certified to the international standard BS: EN ISO14001, covering the entirety of the institution's endeavours. In 2016 the university became the first in the UK to have its Education for Sustainable Development (ESD) work accredited under the full NUS Responsible Futures certification scheme. This paper provides a range of examples to illustrate the university's commitment to ensuring that current and future student are able to develop the knowledge, skills and attributes that will enable them to be responsible 21st century citizens contributing to the development of a sustainable future.

Keywords: sustainable development, UWE Bristol, students, higher education, education for sustainable development.

1 INTRODUCTION

Much of the literature on higher education and sustainability has focussed on either the sustainable management of the university estate and its operations [1], [2] or on education for sustainable development, with an emphasis on the case for, progress in and methodologies for integrating sustainability into learning and teaching [3]–[6]. Other work has considered how universities have sought to integrate their approach to sustainability into all facets of their operations, [see for example [7]–[9].

Recently Avila et al. [10] considered the barriers to sustainability in higher education noting the importance of senior management leadership to universities becoming more sustainable entities. In the UK, the Higher Education Academy and the Quality Assurance Agency have produced guidance on Education for Sustainable Development which includes definitions of sustainability terms as they apply to higher education and the specification of graduate attributes relating to sustainability competencies [11].

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The approach taken by UWE, Bristol to develop an integrated approach to sustainability across the University is considered within this paper. Actions commencing with environmental policies initiated in the early 1990s and culminating in 2013/14 academic year in the new Sustainability Plan [12] are discussed. The Sustainability Plan mandates the curricula to provide exposure and opportunity for all students to engage in and understand the meaning of sustainable development within the context of their discipline of study [13]. As part of the comprehensive approach, a range of co-curricular activities providing ESD opportunity are available to all UWE students and particular emphasis is placed upon the sustainable development of the campus locations to provide ESD opportunities.

UWE is a modern, growing university with over 28,600 students, 3,692 staff and an income of £258 million in 2015/16 [14]. Students come to UWE from all parts of the UK and from over 140 countries worldwide [14]. UWE is a multi-site university with three campuses in and around Bristol encompassing fourteen departments covering a wide range of disciplines and expertise. The university has an Ethical Investment Policy [15] which guides its actions, and this is regularly reviewed by the university's Sustainability Board. The university's Financial Report and Accounts [14] also considers the institutions sustainability activities as part of its transparent approach to reporting.

The university has set out its mission, vision and strategy in a single document Strategy 2020, which sets the purpose of the University as advancing knowledge, inspiring people and transforming futures [16]. UWE recognises that universities have an obligation to society to play their role in the journey towards sustainable development; this is exercised through the generation and wise use of knowledge and through our public engagement and knowledge exchange activities. UWE accepts the responsibility for supporting the achievement of a sustainable future. Table 1 sets out the strategy context in which sustainability at UWE is located.

1.1 The challenge

A graduate leaving university today may have as much as 60 years of life after university [17]. In that lifetime, much will change and the future will be very different from the past. Profound sustainability and environmental challenges will confront a graduate both in their work and private life across those 60 years. Graduates need to be prepared through their higher educational experiences for the challenges and opportunities they will encounter in their professional and private lives in the rest of the 21st century [12], [13]. Orr [3] said *“Many things on which your future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, the beauty of the natural*

Table 1: Strategy 2020 [16].

Strategy 2020 Approach	Actions
Outcomes	Advancing knowledge Inspiring people Transforming futures
Four Key Priorities	Ready and Able Graduates Outstanding Learning Research with Impact Strategic Partnerships, Connections and Networks
Two Key Enablers	People: Performance and Development Place: Resources, Estate and Infrastructure



world, and biological diversity". Orr also said "It is worth noting that this is not the work of ignorant people. It is, rather, largely the result of work by people with BAs, BScs, LLBs, MBAs, and PhDs". So, if education is partly the cause of our environmental misfortune might it be also a partial solution?" Einstein [18] said that "the significant problems we face today cannot be solved at the same level of thinking we were at when we created them" and that doing the same thing repeatedly and expecting different results is insanity. Voltaire said "No problem can withstand the assault of sustained thinking" [19]. One thing universities are good at is thinking.

2 UWE'S COMMITMENT

The university is engaged because the purpose of the University is the generation, analysis, understanding and transmission of knowledge [16]. Education is our purpose and the university recognises that society has a collective purpose to achieve a sustainable level of development. Universities have an obligation to society to play their part through the generation and use of knowledge and the education of citizens. UWE Bristol has steadily increased its engagement with sustainability over many years to the point where it is now an embedded part of our institutional objectives and operations. Each aspect of university business now considers the sustainability implications as part of the business decision making process [12], [13].

The university has addressed the sustainable management of the multiple campus location and debated the place of sustainability within the curricula. The ideas and arguments of sustainability are infusing into the curricula and ensuring sustainable management of our current and future estates. The institution has developed policy, plans and strategy to support sustainable development and implemented these into the business processes of the university both in the educational role and in the management of the estate. This is supported by a commitment to training and staff development. All new staff undergo sustainability training and for academic staff this is reinforced in the mandatory PG Certificate in Higher Education programme.

Embedding sustainability is a change management process and above all a process of winning hearts and minds. The university has been addressing this since the early 1990s. Actions were formerly expressed in our Environmental Strategy, followed by the Sustainability Strategy 2007–2012 and most recently in the Sustainability Plan 2013–2020 [12]. In 2016/17 the Sustainability Plan was updated, and the refreshed plan was approved by the Vice Chancellor's Directorate, Academic Board, the Board of Governors and the Students' Union. Recognition of ownership, responsibility and accountability by the senior leaders of the university is critical to the success of the approach that UWE has taken.

Governance of the sustainability agenda is delegated to the university's Sustainability Board. This meets 5 times a year and it takes its authority from, and reports to, the Vice Chancellor's Directorate, Academic Board and the Board of Governors. Elected officers of the Students' Union sit on this Board and also report on outcomes through the governance arrangements of the Union. The AVC for Environment and Sustainability chairs the Board and is charged with promoting the integration and enhancing the impact of all of UWE's sustainability teaching, research, knowledge exchange and community engagement activities. The terms of reference of the university's Sustainability Board are as follows:

- Advise the university on issues, concerns and opportunities,
- Review progress with the themes of the Sustainability Plan,
- Undertake regular reviews of policies including the Environmental Sustainability Policy and the Ethical Investment Policy,



- Approve action plans arising from the Sustainability Plan,
- Review progress with the commitment to adopt the Principles of Responsible Management Education (PRME) across the institution,
- Provide the governance of the whole institution ISO 14001 accreditation process and the Responsible Futures accreditation,
- Respond to emergent issues.

The Green Team is part of the Students' Union and a full time SU employee co-ordinates the organisation and delivery of Green Team initiatives. The SU has an elected Sustainability Officer who sits on the Sustainability Board alongside the President and a Vice President. Students are powerful and articulate advocates for change. UWE expects the Green Team to challenge the university to be ambitious and transparent in setting aims and objectives and reporting on progress and outcomes. The Green Team has over 1500 members making it the largest group in the Students' Union [20].

3 UWE'S SUSTAINABILITY PLAN

The university's Sustainability Plan [12] sets out our ambition and the Vice Chancellor, with the Chair of the Board of Governors and the President of the Students' Union take collective responsibility to ensure that the aims and ambitions of the plan are secured. Progress with the plan is overseen by the Sustainability Board and action devolved to Services and Faculties to embed sustainable development into their business decision making. The plan outlines the University's sustainability aims for the period 2013–2020 and defines the mechanisms by which sustainability is embedded within the University's day to day operation and effective decision making. The Plan takes its authority from Strategy 2020 and contributes to the key objectives laid down in Strategy 2020 as set out in Table 1.

The Sustainability Plan contains thirteen themes that together provide a suite of interdependent actions driving progress forward on a broad front. Each theme is underpinned by an action or implementation plan. Progress with meeting the aims and objectives set out in the Plan is reviewed at each meeting of the Board. Increasingly the EMS is used to examine the direction and rate of progress. These Themes are set out in Table 2. In 2016 UWE's Sustainability Plan won both the UK and Ireland and the International Green Gown Award for Continuous Improvement.

Table 2: Themes in UWE's Sustainability Plan [12].

Theme	Action
Health and Wellbeing	UWE Bristol aims to provide a positive and enjoyable student, staff and visitor experience. It aims to enhance every ones' health and wellbeing by creating and promoting healthier working, learning and social environments.
Engagement in the Sustainability Journey	Supporting active citizenship and providing the opportunity to engage in sustainability issues for staff and students. <u>Challenging routine habits and practices.</u>
Education for Sustainable Development	Ensuring a sustainability culture permeates our curriculum, research and the knowledge base of our staff and students.
Sustainable Procurement and Ethical Investment	To maximise the opportunity provided by procurement to improve the sustainability of the UWE Bristol supply chain and purchasing decisions.



Table 2: Continued.

Theme	Action
Campus Development	Sustainability will be included from the outset in all construction, refurbishment and landscaping projects utilising smart design, innovation and procurement to address all relevant aspects of sustainability and in particular human and social impacts, climate change mitigation and adaptation.
Green IT	Continually improve the sustainability of the IT infrastructure whilst maximising the wider social and environmental benefits enabled by IT.
Carbon Management	Continual reduction in the carbon footprint of the University in line with the Carbon Management Plan
Waste, Emissions and Discharges	To reduce the amount and hazardousness of waste, emissions and discharges.
Water	Reduce the use of supplied water.
Smarter Travel	To reduce single occupancy car journeys to the University, reduce carbon emissions associated with travel and increase the use of sustainable travel options.
Biodiversity	Deliver positive gains for biodiversity including measures to create, enhance and manage habitats, with improved access to campus green spaces.
Sustainable Food	To reduce food waste, increase the sales of Fairtrade products, increase the provision of seasonal fruit and vegetables, increase locally sourced food in restaurants and outlets, reduce meat consumption and use only free-range eggs. A new Theme added as part of the mid-point review of the plan.
Climate Adaptation	Preparing the university for the climate uncertainty of tomorrow A new Theme added as part of the mid-point review of the plan.

4 EXTERNAL CERTIFICATION

4.1 Environmental management standard ISO14001

From 2014 onwards UWE, Bristol has had an institution-wide certification to the Environmental Management Standard BS: EN ISO14001:2004 accreditation [21]. In 2017 UWE successfully transitioned to the ISO14001:2015 standard. Perhaps uniquely this certification covers the operations of the university and the teaching and learning activities relating to education for sustainable development. Increasingly the EMS is used to support judgments about the rate and direction of UWE's sustainability ambitions and to build on, embed, and assure continuous improvement in managing the University's sustainability impacts. This requires UWE to take a systemic approach to identify those operations and activities which have significant impact on the environment and the relevant compliance obligations to improve our performance on a year by year basis.



4.2 NUS Responsible Futures

In 2016 the university and the Students' Union at UWE, working in partnership, became the first, post pilot phase, institution in the country to be accredited by the NUS to the new Responsible Futures mark [22]. This accreditation recognises the partnership working to embed ESD in the curricula, to help students to understand the sustainability challenge facing society and preparing them to contribute to the green and low-carbon economy. This accreditation represents external recognition of the difficulty and impact of the work being undertaken to help every UWE Bristol student become a globally responsible and future-facing graduate. As part of the Responsible Futures accreditation process UWE was able to confirm, and then have external verification of the claim that all UG and PGT programmes of study provide ESD [23].

5 TEACHING AND RESEARCH

The teaching and research mission of the university provide substantial opportunities to engage with the ideas of sustainability and to develop knowledge, skills and attributes in the student body. The University seeks to provide all students with the opportunity to explore sustainable development in the context of their discipline of study [12], [13], [23]. UWE's Graduate Attribute Framework [24] defines a UWE graduate as self-reliant and connected, ready and able, enterprising, globally responsible and future-facing and together these describe a sustainability literate graduate.

The university through its Sustainability Plan [12] and the annual Education for Sustainable Development Action Plan [23] have set the ambition that all students will have the opportunity to experience ESD in their discipline. In order to achieve this aim the Plan sets out the following expectations:

- All academic Departments will ensure ESD is embedded at the programme level;
- All disciplines must engage in a consideration of the place of ESD in the curriculum;
- ESD is located within the context of the academic discipline of study;
- The University will ensure that its staff are trained and developed in their understanding of the underpinning concepts.

In framing its expectation in this manner, the university recognises that the extent of academic engagement with ESD can and will differ but importantly it sets the clear expectation that all disciplines will consider the opportunity and means to engage their students in education for and about sustainability. Consequently, each discipline will assist their students to work towards the university's Graduate Attributes. These define the skills UWE graduates develop to be work-ready. Whilst the individual attributes do not specify sustainability it is important to note that the attributes taken together provide a good definition of the skills and attributes a graduate will need to demonstrate to be a sustainability literate citizen. Having set out these expectations it is important that the institution has robust mechanisms to monitor the progress of its sustainability aims and objectives.

Quality management at UWE is used to assure the approval, enhancement, review and monitoring of the University's provision in order to develop relevant, sustainable and robust curricula; maintain and enhance the standards of UWE provision, and ensure the quality of the learning opportunities available to students [25]. In an approach that seeks to embed sustainability into institutional business practices it is important that the university adapts its own organisational processes and procedures to incorporate sustainability considerations. In this way consideration of sustainability becomes a part of the organisation's culture not an



additional component to be considered after a decision has been reached. In this instance, the quality management framework has incorporated a range of questions designed to provide assurance that ESD is present in the curricula in the way the university's policy statements intend. Through the QMEF new programmes, changes to existing programmes, approval of new modules, changes to modules, annual monitoring of all taught provision and the internal periodic review of the curriculum are invited to consider how they engage with the ESD ambitions of the university. Advice and guidance is provided to support staff developing or reporting on provision and this includes the Sustainability Plan, the annual ESD Action Plan, the QAA-HEA Guidance [11] and the Hefce Sustainable Development Framework [26] and a specific guidance note for staff explaining the expectations and how they will be considered during the approval steps in the QMEF [25]. A guidance document for curriculum developers helps them to understand the principles and potential applications of ESD and the university's commitment. Specific guidance helps approval committees understand their responsibilities in reaching decisions to approve new curricula. Specific staff development sessions explain processes and explore how to meet the university's expectations of ESD in curriculum development and review. It is routine business not an exceptional activity. Together these provide the context in which the QMEF is used to evidence ESD content and to enhance its visibility.

5.1 Achieving the primary ESD goal

In Academic Year 2014/15, and every year since, all UWE's UG and PGT programmes of study provided the opportunity for students to engage with the idea of sustainability in the context of their discipline [23]. This is a major achievement and UWE may well be the only university in the United Kingdom in which this claim can be verified. UWE's annual Quality Management and Enhancement Framework, and annual progress meetings with Academic Departments provide the mechanisms through which the university has audited and tracked progress with ESD in the curricula [23], [25]. The triangulation of data from module and programme specifications with HoD interview data has confirmed that the target of all UG and PGT provision providing an ESD experience continues to be met in relation to ESD knowledge. Thus, in academic year 2014/15 100% of graduates had the opportunity to engage with sustainability issues within their programme of study. This remained the case in 2015/16 and is again verified for 2016/17 [23]. New programmes articulate the ways in which they contribute to the institution's ESD commitments and ambitions and approval panels ensure that this requirement has been met. Hence, UWE can confirm that all programmes offer students the opportunity to learn about sustainable development in the context of their discipline [23]. Some programmes consider this from an integrated perspective whilst others focus on social, economic, environmental or cultural components of sustainable development.

In 2017/18 the university piloted a new Enhancement Framework to replace the QMEF. This again will require ESD to be considered as part of the quality management processes. ESD is embedded in the continuous improvement cycle of the new Enhancement Framework. New curriculum development proposals and Programme Enhancement Reviews will consider ESD in the context of the discipline [23]. New guidance documents for curriculum developers will make explicit the university's expectations and support the developer in interpreting and considering the place of ESD in the curriculum. The outcomes of the ESD specific reporting in the Enhancement Framework will feed into compliance reporting for certification to ISO 14001 and accreditation to the NUS Responsible Futures mark. This will continue to be monitored by the Sustainability Board.



Table 3: ESD Enhancement Actions in the New Enhancement Framework.

Enhancement Action	Comments
Review teams should consider their existing content and approaches to teaching and learning which align to ESD.	The key reference points are the QAA-HEA ESD Guidance, UWE Bristol Sustainability Plan 2013-2020 and the Annual Education for Sustainable Development report and action plan.
A Review Team should consider the following questions.	<p>Where and how does the programme offer students the opportunity to learn about issues aligned to sustainable development such as the UN Sustainable Development Goals (SDGs) and their associated targets? Is consideration given to the ways in which these issues are relevant to the specific discipline and its associated professions?</p> <p>How are students prepared for becoming future-facing and globally responsible during the programme?</p> <p>How are students enabled to consider what the concept of environmental stewardship and issues of social justice, ethics and wellbeing mean in the context of their own discipline and in their future professional and personal lives?</p> <p>How are approaches to teaching and learning which align to ESD incorporated into the programme (see QAA-HEA ESD Guidance)?</p>
A Review Team also may wish to map the contribution of the new curriculum against the 17 UN Sustainable Development Goals.	A mapping grid will be provided for this task.

Incorporating ESD considerations into the institutional quality management procedures is a further step towards embedding ESD into the routine business management processes of UWE. This is a necessary but not sufficient step towards the goal of sustainability permeating all that the university does, an integral consideration not an additional one. One risk of the embedded approach is that the questions are treated as a tick-box exercise. Training and development of both Quality Management staff and academic staff mitigates against this potential risk. The university wide Knowledge Exchange for Sustainability Education (KESE) group continues to be an important vehicle for internal communication with, and support for, staff about ESD principally delivered through the monthly meetings of the group. KESE Departmental Representatives are important communicators between the university and departments on ESD matters [23].

5.2 Research and knowledge exchange

UWE's research and knowledge exchange activities support the goal of sustainable development. As part of its research endeavours the university produces new knowledge, develops new applications of existing knowledge and provides novel syntheses of existing



knowledge to further public understanding of and engagement in the broad domain of sustainability. Researchers and scholars from the four faculties (Arts, Creative Industries and Education, Business and Law, Environment and Technology and Health and Applied Sciences) are active in promoting the development of sustainability research and the university has particular expertise in the fields of public health, community development, carbon management, climate adaptation, environmental technology, air quality management, flood risk management and water security to name just a few. A range of impact case studies have been produced to illustrate the university's research capabilities and competencies and many of these addresses profound challenges in the journey towards a more sustainable future [27].

5.3 Building the sustainable campus

As part of Strategy 2020 [16] the university is investing £300m on major projects as part of the UWE New Campus Masterplan. Specific large-scale developments include [28]

- a new Faculty of Business and Law building,
- a new Students' Union building,
- redevelopment of the Bower Ashton Campus,
- acquisition of Bush House and creation of the City Campus,
- new student accommodation on Frenchay Campus,
- development of the University Enterprise Zone,
- a new Engineering building.

These developments enhance the learning opportunities for students and provide new opportunities for demonstrating the sustainability of campus operations.

5.4 Energy security and carbon reduction

The university has taken a significant step in its efforts to improve energy security and meet carbon emission reductions through a commitment to installing a gas fired CHP (combined heat and power) engine on the main Frenchay campus. This will supply 45% of the main Frenchay campus heat demand and is expected to save some 1,000 t CO₂ y⁻¹. This is approximately a sixth of the total University 2020 Carbon Reduction Target. In 2016 UWE installed a 450kWp photo voltaic array on the new University Enterprise Zone building. This array, at the time of installation was the largest single roof-mounted array in the UK HE sector and will lead to carbon savings of over 200t CO₂ y⁻¹ [29]. All electricity supplied to the University of the West of England from October 2016 is from a guaranteed 100% green electricity tariff with EDF under a new supply framework from The Energy Consortia [30]. The renewable energy status of the supply is verified by Renewable Energy Guarantees of Origin (REGO) certificates. Energy efficiency improvement is more than new energy supply initiatives. It is equally about smaller scale projects cumulatively improving overall efficiency of use. Specific energy efficiency projects include lighting upgrades to LED and improved lighting controls, draught-proofing, BMS Controls, insulation and heating system upgrades [12]. New cutting-edge awareness projects are being initiated such as using gamification of energy data for on-campus accommodation, and individual faculty carbon budgeting to stimulate behaviour change. These investments and initiatives will increase our future energy security and become visible commitments to our sustainability ambitions. In order to underpin this ambition and to provide external verification of the energy progress



that the institution is making UWE is committed to achieving certification to the energy accreditation standard ISO 50001 in 2018.

Travel accounts for approximately half of the overall carbon emissions at UWE Bristol [12]. Management actions are directed at enabling staff, students and visitors to make sustainable travel choices to get to UWE Bristol by walking, cycling, public transport and car sharing [12]. Improving cycling facilities through improved route information, bike parks, showers lockers and a cycle loan scheme are key components of our cycling initiatives. The university is committed to electrification of its vehicle fleet. Electric and hybrid pool cars available for Frenchay Campus staff with 12 free electric charging points on the Frenchay Campus. The Frenchay Campus is served by electric hybrid buses and these are served by a charging plate on campus. From 2018 the Metro Bus will connect the Frenchay Campus with the city centre.

5.5 Behaviour change initiatives and campaigns

UWE was to be one of the first organisations in the UK to receive the 'Go Ultra Low Company' status [31]. This new initiative recognises businesses that are embracing electric vehicles (EVs). As part of the Go Ultra Low (West) city project UWE will be the venue of a showcase rapid car charging facility [32]. The scheme will be evaluated by UWE's Centre for Transport and Society who are also evaluating the public acceptability of the Venturer autonomous vehicle [33].

Engagement and culture change activities are a key part of UWE's approach to integrating sustainability into the process and procedures of the university. Engagement activities are directed at awareness raising and sharing of opportunities as well as more directly seeking a culture change outcome. The university's engagement with Bristol's European Green Capital is an example of a strategic engagement initiative of the university which provided a wide range of opportunities for thousands of staff and students to engage in, learn from and enjoy the year [34]. The university collaborated with its sister university in Bristol in undertaking a wide-ranging engagement project, Green Capital Student Capital [35], to enable students to work with community groups, NGOs and SMEs amongst others to deliver sustainability benefits for the organisations and the city. Now the university is working closely with the Bristol Green Capital Partnership CIC to ensure that the sustainability advances made in the Green Capital year continue [36].

6 CONCLUSIONS

UWE will continue its journey, working in partnership with the Students' Union and external partners, to ensure that graduates have the skills, knowledge and attributes that they need to thrive in the 21st century. The institution's approach to ESD will increasingly build upon the strong relationship of ESD with the UN Principles of Responsible Management Education (PRME) and will integrate PRME considerations into policy, planning and implementation across the institution. [37], [38] The university will seek to use the UN Sustainable Development Goals as a framework for directing and assessing progress with its sustainability journey [39]. The university will continue to create new knowledge, apply existing knowledge in new contexts and provide syntheses of existing knowledge to support attainment of a sustainable future. The institution will strive to manage the current and future estate in the most sustainable manner to act as an exemplar to our current and future students and to work with local partners to help achieve a sustainable Bristol city region [12]. The university commissioned an independent economic analysis of its regional impact [40] and this will provide considerable opportunity for the university to work in partnership with



regional bodies such as the Local Economic Partnership and the West of England Combined Authority to ensure that the economic impact of the university is delivering social and environmental gains for the region and thereby fulfilling our sustainability mission [12], [14], [16].

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