

Subtask T1.3.3

Report D 1.4

OpenEU Ecological Footprint: Baseline assessment for low emissions

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Introduction. Subtask T1.3.3 - Reduce the Ecological Footprint of OpenEU

Team

Task 1.3.3 is led by Universidade Aberta. The team is coordinated by Paula Nicolau and Mahsa Mapar and includes at least one designated contact person from each partner university (Table 1).

Table 1. Team in Subtask T1.3.3

Institution	Country	Name and surname	Contact Person
Bifröst University (BU)	Iceland	Björg Jónsdóttir	Yes
		Susanne Arthur	Yes
		Guðrún Johnsen	No
Daugavpils University (DU)	Latvia	Jelena Tamane	Yes
		Jānis Kudiņš	No
FernUniversität in Hagen (FeU)	Germany	Katharina Sonnenberg	Yes
		Dietmar Günther	No
		Sebastian Lauritz	No
Hellenic Open University (HOU)	Greece	Dimitra Angelopoulou	Yes
		Vicky Katsina	No
		Achilles Kameas	No
Open University of Cyprus (OUC)	Cyprus	Christopher Christodoulides	No
		Nearchos Nearchou	No
		Savvas Zotos	Yes
Open Universiteit (OUNL)	Netherlands	Floor Schneider	Yes
		Janneke Hooijer	No
Universidade Aberta (UAb)	Portugal	Paula Nicolau	Yes
		Mahsa Mapar	Yes
		Sandra Caeiro	No
		Rute Martins	Yes
Universid Nacional de Educación a Distancia (UNED)	Spain	Nuria Oliva Alonso	Yes
		Fernando Val	No
Universitat Oberta de Catalunya (UOC)	Spain	David Aguilar	Yes
		Virgínia Sánchez Román	No
		Pol Boada Martínez	No
University of Veliko Tarnovo (UVT)	Bulgaria	Milena Simeonova	Yes
		Anna Ivanova	No

Objective

The OpenEU Alliance (OpenEU) is dedicated to advancing sustainability within the European higher education sector. Recognising the growing need to address climate change and resource exhaustion, the objectives of the OpenEU are:

- a) Establish a comprehensive baseline of its Ecological Footprint (EF) in Year 1 (2024), using the University Footprint Calculator to identify and quantify the key drivers of resource consumption and carbon emissions across partner institutions;
- b) Define and implement a series of actions (reduction programs) aimed at decreasing the overall EF by 5% by the end of Year 4 (2028);
- c) Deliver “Code of Conduct” to guide partners in choosing lower-ecological footprint alternatives, thereby promoting sustainable behaviour;
- d) Deliver the Report “OpenEU Ecological Footprint” (incorporating Footprint reduction guidelines and Code of Conduct to promote sustainability practices).

Methodological approach

Capacity Building and Methodological Alignment

The strategy to reduce the EF of OpenEU was built upon systematic measurement, data-driven planning, and collaborative action.

In Year 1, the activities included:

- **Hands-on Training Sessions:** Interactive meetings conducted with partner universities to provide guidance on data collection procedures and use of the University Footprint Calculator. These sessions served both as practical training and orientation to the project methodology.
- **Data Collection and Analysis of Ecological Footprint Results:** Each partner institution collected the necessary data (Annex) to calculate its Ecological Footprint for the Baseline Year (2023 or 2024, depending on data availability), using the University Footprint Calculator and thus identify major impact drivers of natural resource and ecosystem use.
- **Alliance-Level EF Reduction Recommendations:** EF of the Alliance was calculated (based on the individual partner’s EF results), and major drivers of resource consumption and carbon emissions were identified, aiming to develop targeted actions to address these areas.

The baseline year data used to calculate the EF of each partner institution were compiled to calculate the EF of the OpenEU Alliance, and to globally identify the major drivers of resource consumption and carbon emissions across the Alliance. The EF of the OpenEU Alliance was calculated using as input data the aggregated

sums, for each category and subcategory, of individual partners. These results constitute the basis for the development of targeted recommendations aimed at reducing both individual partners' and the OpenEU's EF in the next phase of the project.

In Year 2, the methodology focused on identifying and assessing evidence-based measures for reducing the Ecological Footprint (EF) of the OpenEU Alliance.

- **Literature review and evidence identification:** A structured literature review was conducted to identify recommendations applicable to the main EF consumption categories identified in the baseline assessment, considering recent scientific literature published between 2020 and 2025.
- **Recommendation classification:** The recommendations were subsequently classified according to three criteria, each using a three-level qualitative scale:
 - I) potential for EF reduction;
 - II) estimated implementation cost;
 - III) implementation timeframe
- **Contextualisation of recommendations and areas of responsibility:** The recommendations were then reviewed in relation to the online higher education context of the OpenEU partners and to the project objective of achieving a 5% reduction and were considered according to two distinct areas of responsibility: Direct and Indirect responsibility.

The details of the methodology of year 2 is available in section 4.

Applied Tool: University Footprint Calculator

The University Footprint Calculator (<https://www.eusteps.eu/resources/university-footprint-calculator/>; ERASMUS+ [EUSTEPS Project](#)) is an open-access digital tool that enables Higher Education Institutions to systematically monitor the consumption of natural resources and ecosystem services required to support their activities and operations, including education, research, and societal outreach. It is based on a standardized Ecological Footprint methodological framework, specifically adapted to the context and needs of Higher Education Institutions (Mancini et al., 2022).

The University Footprint Calculator considers two operational areas, distinguishing consumption actions and operations under the direct responsibility of the university from those under the indirect responsibility of the university.

The operations for which the university is directly responsible are summarised in the following categories (Figure 1):

- University buildings and recreational areas;
- Energy use;
- Food for staff and students (i.e., Food);
- Cleaning services;
- Travels;
- Water use and waste management;
- Materials and equipment.

While operations within the scope of the university's indirect responsibility include the following:

- Commuting (home to and from university);
- Energy at home and internet connectivity (i.e., Energy at home);
- Food at home.



Figure 1. Main parameters of the University Footprint Calculator (adopted from Mapar and Caeiro, 2024)

The calculation of the activities listed within the **Indirect Responsibility** section of the Calculator can be done by choosing between two calculation methods, depending on data availability:

1) **Tier 1**, when data collected through specific surveys is not available - for Energy at home, Food at home, and Commuting (home to and from university) - the choice of *Tier 1* allows for a default calculation (not requiring user input) that is based on the daily per capita Ecological Footprint, estimated by the Global Footprint Network (www.footprintnetwork.org) for each country. For these categories, data is based on the share of work or study time spent at home for staff and students, respectively.

2) **Tier 2**, when data entered in the EF calculator for commuting, energy at home, and food at home were obtained by each university through a data collection survey from a sample of students and staff.

In addition, the option **Tier 1 bis** is available for distance-teaching universities regarding commuting (home to and from university) in indirect responsibility, where

teaching and classes are conducted solely in an online mode, and students do not physically attend the University campus. In this case, staff commuting to and from the institution (not valid for students) can be calculated automatically by the calculator via national average proxy values extracted from Global Footprint Network's National Footprint Accounts.

Ecological Footprint results

The University Footprint Calculator results are reported and visualised in several formats, each offering different insights, as outlined below.

- **Total Ecological Footprint:** Quantifies the overall demand placed by a university on natural resources and ecosystem services in a given reference year. It is calculated as the sum of EF from activities under the university's direct and indirect control; it is expressed in global hectares (gha). The total Ecological Footprint is broken down into two types of activities and operational areas:
 - under direct institutional control
 - under indirect institutional control.

This breakdown provides a clearer understanding of how different operational domains contribute to overall environmental impacts and supports the design of targeted sustainability management actions.

- **Ecological Footprint by Land Type:** The University EF Calculator disaggregates the total EF across six bio-productive land types defined by the EF methodology (Moore et al., 2013); hence, it identifies the ecosystems most affected by the university's activities and operations:
 - cropland
 - grazing land
 - fishing grounds
 - forest land
 - built-up land
 - carbon uptake land.

- **Normalised Ecological Footprint Metrics:** The University Footprint Calculator uses five normalised indicators to assess universities' efficiency in using natural resources and ecosystem services for education and research. These indicators relate the total EF to key institutional attributes and allow consistent comparisons over time and between universities. The indicators are as follows:
 - EF per *student*
 - EF per *staff*
 - EF per *graduation*
 - EF per *publication*
 - EF per *€1 000 of received research funds*.

These indicators are expressed in global hectares of bio-productive land per year (gha.year⁻¹). However, for simplicity and consistency, gha is used as the unit in this report.

Data analysis and interpretation approach

Almost all partner universities selected 2024 as the baseline year. FernUniversität in Hagen (FeU) used data from 2023, based on full data availability. Bifröst University (BU) only collected general characterisation data for the EF, as it was unable to collect ecological footprint data due to the absence of established monitoring processes. Open Universiteit did not participate in data collection or EF calculation for Year 1.

In this report, all three types of EF results (total EF, EF by land type, and normalised EF metrics) were considered for the analysis. For data interpretation, a descriptive data analysis was performed using both absolute EF values and percentage EF values, aligning with standard reporting practices in the relevant EF literature (Genta et al., 2022; Perez-Lopez et al., 2021; Vaisi et al., 2021). However, the interpretation of the results presented in this report requires consideration of the following factors:

- Under Direct Responsibility, partner universities did not report the food category due to the absence of on-campus canteens, with FeU being the only exception.
- Under Indirect Responsibility, for the baseline year considered in this report (2023 or 2024), all partner universities applied the **Tier 1** approach for calculating the EF of activities of energy and food at home. However, for commuting (home to and from the university), all partner universities - classified as distance-teaching institutions - applied **Tier 1 bis** to calculate the EF of commuting under indirect responsibility. The University of Veliko Tarnovo (UVT) applied **Tier 1** to calculate the EF of commuting under indirect responsibility, given its blended learning approach.

Structure of the report

This report is presented in four sequential sections:

Section 1 - Ecological Footprint Baseline of Partner Universities: Analysis of the EF results for each partner university, describing institutional profiles of each university, data collection methodologies, and individual results with particular attention to the principal drivers of resource use and environmental impacts.

Section 2 - Analysis of Ecological Footprints of Partner Universities: Analysis of all universities' EF data to identify major drivers of resource use and land type use, common trends, differences, and key areas for EF reduction.

Section 3 - Ecological Footprint of the OpenEU Alliance: Calculation and discussion of the overall EF of the OpenEU Alliance, including the identification of major drivers of resource use and land type use at the OpenEU Alliance.

Section 4 - Ecological Footprint Reduction Recommendations: Recommendations driven from literature review for reducing EF in universities.

Section 1. Ecological Footprint of Partner Universities

This section presents the results of the Ecological Footprint (EF) calculated for each partner universities in the OpenEU Alliance. It includes: the profile of partner universities, details of data collection, and the ecological footprint for the reference baseline year.

1.1 Daugavpils University (DU) - Latvia

Profile

The DU (<https://du.lv/en/home/>) is located in Daugavpils, Latvia, in the Latgale region, which is an industrial and educational centre, as well as a significant cultural, sports, and recreational centre. In 2020, the estimated population of Daugavpils was 82,046 citizens. Daugavpils has a total area of 72.48 km², being the second largest city in Latvia, after Riga, and the largest city in the Latgale region.

The DU is one of the leading higher education institutions in Latvia and a key player in the Latgale region, recognised by international rankings in the fields of environmental sciences, psychology, agricultural and life sciences, and social sciences.

The DU focuses on education that is aligned with Latvia's economic and social needs, meets international quality standards, and promotes strategic specialisations through cooperation with employers, municipalities, and stakeholders. In 2020, the DU's investments in the national economy totalled 229 million euros.

The DU is implementing a learner-centred hybrid study model as its main study model, with a greater emphasis on face-to-face learning than online learning. It has two faculties, the Faculty of Humanities and Social Sciences and the Faculty of Life Sciences and Health Care, and aggregates two scientific institutes. Environmental and ecological issues are very relevant among the scientific topics of the University's researchers.

Studies are partially conducted remotely, as permitted by Latvian legislation. However, the DU is also working on study programs that can be implemented fully remotely. The University follows the "Green Thinking" model and focuses on waste

reduction as well as the careful use of natural resources. Sustainability issues are addressed by the Institute of Humanities and Social Sciences at the University, in which researchers, together with environmental specialists, develop joint projects.

In 2024, the University had 2 847 students, supported by 303 academic and non-academic staff members. In 2024, DU produced 456 graduates, published 232 indexed papers, and guaranteed approximately €2 115 400 in research funding.

Data Collection Process

The DU's OpenEU project Working Group, in cooperation with the Administrative Department and the Department of Science, were responsible for gathering the necessary data for the EF calculation from various systems.

The data collection process is systematic, internal, with the data being collected annually and summarised in thematic areas such as the study process, scientific processes, economic issues and financial indicators. Data is stored in the relevant systems and specialised programs.

The DU gathered data for 2024 on almost all categories under its direct responsibility, except for *food* (not entered in the calculator) and for *travel* categories (data for the travel distances paid for or reimbursed by the university were not entered due to unavailability).

Ecological Footprint Results

Total EF: In 2024, the DU had a total EF of 1 621.94 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF, accounting for 60% (978.55 gha), while the activities under its direct responsibility accounted for 40% (643.39 gha) (Table 2).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the DU, the main drivers were *staff labour* (61%), followed by *materials and equipment* (31%) (the rest of the categories making a minor contribution to the total direct EF, accounting for less than 4%).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (47%), followed by *energy at home* (33%), and *commuting* (20%, via Tier 1 bis).

EF by Land type: The ecosystems under the highest anthropogenic pressure were *carbon uptake land* and *forest land*, both under direct responsibility and indirect responsibility (Table 2).

- **Direct responsibility:** Regarding EF under the direct responsibility of DU, the land types under the highest anthropogenic pressure were *land for carbon uptake* (40%) and *forest land* (37%), followed by *cropland* (22%). Other land types were under less anthropogenic pressure, accounting for less than 15% of the EF (Table 2).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of DU, the land types under the highest anthropogenic pressure were *carbon uptake land* (32%) and *forest land* (31%), followed by *cropland* (27%). Other land types were under less anthropogenic pressure, accounting for less than 7% of the EF (Table 2).

Normalised EF indicators: Analysing the efficiency of the DU in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* and EF *per €1 000 fund* showed the highest efficiency (respectively, 0.57 gha and 0.77 gha of bio-productive land in a year), and the EF *per publication* and EF *per staff* the lowest efficiency. The remaining normalised EF results are provided in Table 2.

Table 2. Ecological Footprint results for the Daugavpils University (DU), 2024

Ecological Footprint (EF) results						Normalised EF results	
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)
Direct	Staff labour	392.57	61.0	643.39	39.7	EF <i>per</i> Student	0.57
	Materials and equipment	196.55	30.5			EF <i>per</i> Staff	5.35
	Cleaning services	21.35	3.3			EF <i>per</i> Graduation	3.56
	Energy use	19.90	3.1			EF <i>per</i> Publication	6.99
	Buildings and recreational areas	8.42	1.3				
	Travels	4.32	0.7				
	Water and waste management	0.28	<0.1				
	Food	n.a.	n.a.				
Indirect	Food at home	463.29	47.3	978.55	60.3	EF <i>per</i> €1 000 Fund	0.77
	Energy at home	321.69	32.9				
	Commuting	193.58	19.8				

DU Total EF: 1 621.94 gha

Ecological Footprint by Land Type	Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct	93.75	14.6	10.59	1.6	238.56	37.1	21.33	3.3	20.49	3.2	258.67	40.2
Indirect	261.27	26.7	25.98	2.7	307.69	31.4	60.45	6.1	10.3	1.1	312.87	32.0

Direct vs Indirect responsibility

Ecological Footprint (gha)

Legend: n.a.- data not available.

1.2. FernUniversität in Hagen (FeU) - Germany

Profile

The FeU (<https://www.fernuni-hagen.de/>) is a public distance-teaching university. Located in North Rhine-Westphalia in western Germany, the city of Hagen has a population of around 200 000 and lies on the edge of the densely populated Ruhr area, known for its industrial heritage and cultural history. When the University was founded in the 1970s, the choice of location was a political decision, as Hagen was significantly affected by structural changes in the industrial Ruhr region.

The FeU follows a blended learning model. Its flexible degree programs and continuing education offerings make higher education accessible to students in diverse life situations. The University's five faculties conduct a broad spectrum of theoretical and applied research in their respective fields: Humanities and Social Sciences, Psychology, Mathematics and Computer Science, Economics and Business Administration, and Law.

Since 2025, a Vice-Rector for Sustainability and an Energy Management Team have been supporting the integration of sustainability across all core areas of the University—research, teaching and studies, knowledge transfer, and infrastructure.

In 2023, the FeU had 69 982 students, supported by 1 134 academic and non-academic staff members. In 2023, the University produced 3 521 graduates, published 310 indexed papers and guaranteed approximately €6 777 430 in external research funding.

Data Collection Process

The EF data was compiled by the department for University Development in collaboration with the departments of Personnel, Budget and Finance, Technical Media Administration, and Building Management. Information on food supplied at the University was provided by an external service provider, while all other data originates from internal sources and databases, such as the University's data warehouse. The FeU gathered data for 2023 on all categories.

Ecological Footprint Results

Total EF: In 2023, the FeU had a total EF of 20 553.1 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF,

accounting for 74.5% (15 312.41 gha), while the activities under its direct responsibility accounted for 25.5% (5 240.66 gha) (Table 3).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the FeU, the main contributors were *materials and equipment* (54%), *staff labour* (27%) and *energy use* (12%) (FeU was the only university that reported the food in direct responsibility, and it had a minor contribution of 4%; other factors were negligible, as can be seen in Table 3).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (52%), followed by *energy at home* (47%) (commuting, via Tier 1 bis, was a minor contributor, with less than 1%).

EF and Land type: The ecosystem under the highest anthropogenic pressure was *carbon uptake land*, both under direct responsibility and indirect responsibility (Table 3).

- **Direct responsibility:** Regarding EF under the direct responsibility of FeU, the land types under the highest anthropogenic pressure were *carbon uptake land* (74%). Other land types were under less anthropogenic pressure, accounting for less than 11% of the EF (Table 3).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of FeU, the land types under the highest anthropogenic pressure were *carbon uptake land* (50%) and *cropland* (30%). Other land types were under less anthropogenic pressure, accounting for less than 11% of the EF (Table 3).

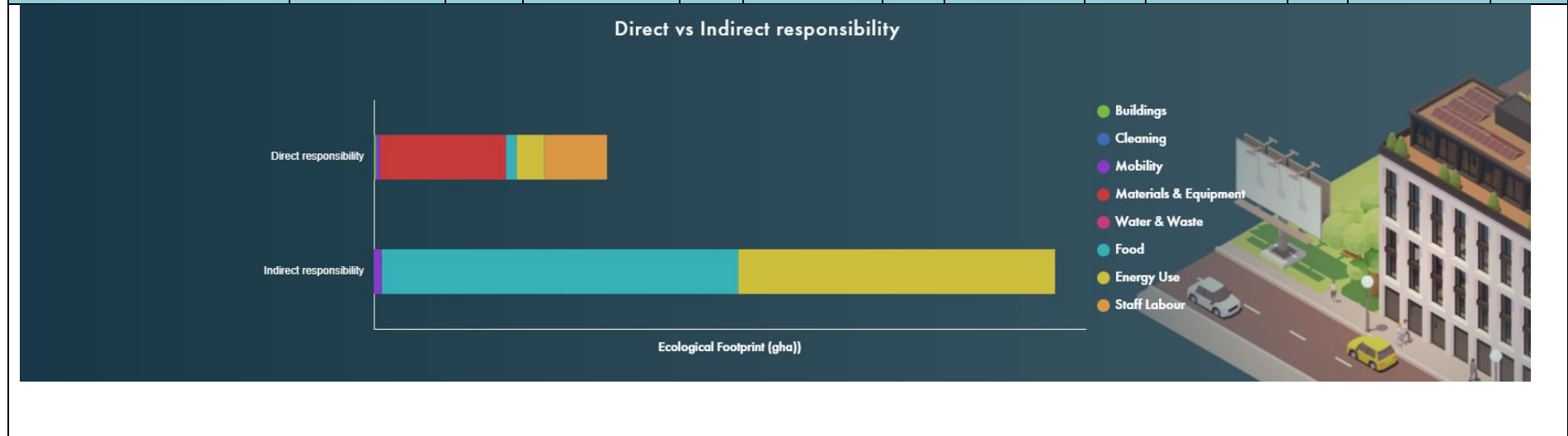
Normalised EF indicators: Analysing the efficiency of the FeU in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.29 gha), followed by the EF *per €1 000 fund* (3.03 gha), while the EF *per publication* showed the lowest efficiency (66.30 gha). The remaining normalised EF results are provided in Table 3.

Table 3. Ecological Footprint results for the FernUniversität in Hagen (FeU), 2023

Ecological Footprint (EF) results						Normalised EF results	
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)
Direct	Staff labour	1 410.30	26.9	5 240.66	25.5	EF <i>per</i> Student	0.29
	Materials and equipment	2 825.70	53.9			EF <i>per</i> Staff	18.12
	Cleaning services	21.38	0.4			EF <i>per</i> Graduation	5.84
	Energy use	626.57	12.0			EF <i>per</i> Publication	66.30
	Buildings and recreational areas	39.03	0.8				
	Travels	72.36	1.4				
	Water and waste management	12.84	0.2				
	Food	232.47	4.4				
Indirect	Food at home	8 012.14	52.3	15 312.40	74.5	EF <i>per</i> €1 000 Fund	3.03
	Energy at home	7 126.07	46.5				
	Commuting	174.20	1.2				

FeU Total EF: 20 553.06 gha

Ecological Footprint by Land Type	Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct	477.81	9.1	67.46	1.3	541.52	10.3	55.82	1.1	200.23	3.8	3 897.82	74.4
Indirect	4 620.51	30.1	484.37	3.2	1 754.99	11.5	499.23	3.3	296.05	1.9	7 657.25	50.0



1.3. Hellenic Open University (HOU) - Greece

Profile

The HOU (<https://www.eap.gr/en/>) is based in Patras, the capital of the region of Western Greece. Patras is the third largest city in the country, with a population of approximately 216 000 inhabitants in its wider metropolitan area. The University's main facilities are located within the municipality of Patras, while additional branches operate in Athens, Thessaloniki, and Komotini, enabling the HOU to maintain a nationwide presence and deliver open and distance education across Greece for all citizens, regardless of geographical location.

As the host city of the HOU, Patras plays a pivotal role in the academic and cultural development of Western Greece. As the administrative and economic core of Western Greece, Patras plays a central role in shaping a comprehensive regional system—one in which higher education, technological innovation, industry, tourism, and agriculture coexist and thrive.

The HOU offers undergraduate and postgraduate education and training through open and distance learning, integrating the principles of adult education and lifelong learning, while effectively leveraging modern technologies. The University adopts a student-centered pedagogical model grounded in the principles of adult education and lifelong learning. As a pioneer in open and distance education in Greece, the University combines independent study with systematic academic support through blended learning methodologies. These include printed and digital educational materials, online learning environments, and both synchronous and asynchronous communication between students and academic staff, fostering flexibility, autonomy, and continuous engagement in the learning process.

The academic structure of the University comprises four Schools — School of Humanities, School of Social Sciences, School of Science and Technology, and School of Applied Arts and Sustainable Design. It currently offers nine undergraduate, 68 postgraduate, and 106 lifelong learning programs through its Centre for Training and Lifelong Learning. In addition, the University provides opportunities for doctoral studies and supports post-doctoral research within its academic units.

An Environmental Unit was established in 2021 to advance the University's strategic transition towards sustainability. According to the University's Organisational Chart,

the Environmental Unit will operate under the Strategic Planning Unit and will be staffed with appropriately qualified personnel.

In 2024, the HOU had 32 444 students, supported by 3 052 academic and non-academic staff members. In 2024, the University produced 6 958 graduates, published 454 indexed papers and guaranteed approximately €7 115 750 in research funding.

Data Collection Process

Data were collected by the Internal Evaluation Unit in collaboration with the Personnel Department, the Department of Facilities and Project Execution, and the Special Account for Research Funds Department. The process follows a comprehensive internal data collection framework that encompasses all academic and administrative units of the Hellenic Open University and has been consistently implemented over the past five years. The Internal Evaluation Unit organises, coordinates and oversees this process, serving as the central data hub of HOU. In this context, it provides validated data to the Hellenic Authority for Higher Education, the Hellenic Statistical Authority, international university ranking organisations, and the University's administration and governing bodies, upon request.

The HOU gathered data for 2024 on almost all categories. However, within the *water and waste management*, the data for the annual production of waste was not input, given the lack of data availability.

Ecological Footprint Results

Total EF: In 2024, the HOU had a total EF of 8 564.48 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF, accounting for 70% (6 010.12 gha), while the activities under its direct responsibility accounted for 30% (2 554.37 gha) (Table 4).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the HOC, the main contributors were *staff labour* (52%), followed by *materials and equipment* (33%) and *energy use* (13%) (the rest of the categories making a minor contribution to the total direct EF, as can be seen in Table 4).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (65%),

followed by *energy at home* (32%) (commuting, via Tier 1 bis, was a minor contributor, with 3%).

EF and Land type: The ecosystems under the highest anthropogenic pressure were *land for carbon uptake*, both under direct and indirect responsibility, and *cropland* only under indirect responsibility (Table 4).

- **Direct responsibility:** Regarding EF under the direct responsibility of HOU, the land types under the highest anthropogenic pressure were *land for carbon uptake* (70%), followed by *cropland* (14%) and *forest land* (10%). Other land types were under less anthropogenic pressure, accounting for less than 3% of the EF (Table 4).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of HOU, the land types under the highest anthropogenic pressure were *carbon uptake land* (44%) and *cropland* (43%). Other land types were under less anthropogenic pressure, accounting for less than 5% of the EF (Table 4).

Normalised EF indicators: Analysing the efficiency of the HOC in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.26 gha), followed by the EF *per €1 000 fund* (1.20 gha) and EF *per graduation* (1.23 gha), while the EF *per publication* showed the lowest efficiency (18.86 gha). The remaining normalised EF results are provided in Table 4.

Table 4. Ecological Footprint results for the Hellenic Open University (HOU), 2024

Ecological Footprint (EF) results								Normalised EF results				
Responsibility	Category		EF (gha)	EF (%)	Total (gha)		Total (%)	Indicator	EF (gha)			
Direct	Staff labour		1 338.23	52.4	2 554.37	29.8	EF <i>per</i> Student	0.26				
	Materials and equipment		838.54	32.8								
	Cleaning services		4.09	0.2								
	Energy use		318.86	12.5								
	Buildings and recreational areas		6.96	0.3			EF <i>per</i> Graduation	1.23				
	Travels		46.09	1.7								
	Water and waste management		1.59	0.1								
	Food		n.a.	n.a.								
Indirect	Food at home		3 900.87	64.9	6 010.12	70.2	EF <i>per</i> €1 000 Fund	1.2				
	Energy at home		1 909.35	31.8								
	Commuting		199.90	3.3								
HOU Total EF: 8 564.5 gha												
Ecological Footprint by Land Type	Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct	366.14	14.3	46.25	1.8	261.36	10.2	24.24	0.9	64.46	2.6	1 792.91	70.2
Indirect	2 553.5	42.5	279.92	4.7	276.27	4.6	161.41	2.6	70.77	1.2	2 668.25	44.4

Direct vs Indirect responsibility

Direct responsibility

Indirect responsibility

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Legend: n.a.- data not available

1.4. Open University of Cyprus (OUC) - Cyprus

Profile

The OUC (<https://www.ouc.ac.cy>) is in the city of Lefkosia, within the Municipality of Latsia-Geri, which has a population of 28 293 residents, according to the 2021 census. Lefkosia is the capital city of Cyprus, situated in the centre of the island, and is the administrative, political, and financial centre of the country. It is the only divided capital city in Europe after the Turkish invasion of the Republic of Cyprus in 1974, with the Republic of Cyprus controlling the south and the Turkish-occupied area in the north of the island. The invasion led to the occupation of approximately 37% of the island's northern territory by the Turkish troops, resulting in massive population displacement, human losses, and extensive destruction of property and cultural heritage. The island has remained divided ever since. Lefkosia's central location makes it a strategic site for national-level services, education, and innovation. The city's transport, governmental services and academic networks provide strong support for institutions such as the OUC. Even though the University is located in a suburban zone of the Lefkosia metropolitan area, it is identified as being in Lefkosia in national and international registries.

The OUC is a public distance-teaching university, providing undergraduate, postgraduate, PhD and lifelong learning programmes via online mode. All the study programmes offered by the OUC are based on modern educational systems and new technological advancements.

The OUC comprises the School of Humanities and Social Sciences, the School of Pure and Applied Sciences and the School of Economics and Management. Supporting the academic work of the three schools are various administrative and service units, including departments responsible for academic affairs, student support, information technology, research and innovation, strategic management, and quality assurance.

The OUC is committed to sustainability via its membership in both the Sustainable Development Solutions Network and the Corporate Sustainability & Responsibility Cyprus network, to integrate CSR principles into its strategy, administration, and public dialogue. Moreover, the University has a dedicated research laboratory focusing on sustainability, circular economy and environmental management.

In 2024, the OUC had 3 199 students, supported by 198 academic and non-academic staff members. In 2024, the University produced 533 graduates, published 102 indexed papers, and guaranteed approximately €2 206 814 in research funding.

Data Collection Process

The Strategy Management Services collected the data in coordination with the Directorate of Administration and Finance, the Research, Innovation and Liaison Services, the Academic Affairs and Student Welfare Services, the Financial Management Services, the Human Resources Services, and the Library. The data collection process was systematic, internal, and based on an integrated data platform provided by OUC's Information Technology Services.

Ecological Footprint Results

Total EF: In 2024, the OUC had a total EF of 922.1 gha. The activities under the direct responsibility of the university were the main contributors to the total EF, accounting for 53% (492.5 gha), while the activities under its indirect responsibility accounted for 47% (429.6 gha) (Table 5).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the OUC, the main contributors were *materials and equipment* (64%) and *staff labour* (31%), *travels* had a minor contribution of 4%, and the rest of the categories made a minor contribution to the total direct EF, as can be seen in Table 5).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (61%), *followed by energy at home* (35%) and *commuting* (5%, via Tier 1 bis).

EF and Land type: The ecosystem under the highest anthropogenic pressure was *carbon uptake land*, both under direct responsibility and indirect responsibility (Table 5).

- **Direct responsibility:** Regarding EF under the direct responsibility of OUC, the land type under the highest anthropogenic pressure was *carbon uptake land* (70%), followed by *forest land* (13%) and *cropland* (10%). Other land types were under less anthropogenic pressure, accounting for less than 4% of the EF (Table 5).

- **Indirect responsibility:** Regarding EF under the indirect responsibility of OUC, the land type under the highest anthropogenic pressure was *carbon uptake land* (51%), followed by *cropland* (37%). Other land types were under less anthropogenic pressure, accounting for less than 6% of the EF (Table 5).

Normalised EF indicators: Analysing the efficiency of the OUC in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.29 gha), followed by the EF *per €1 000 fund* (0.42 gha), while the EF *per publication* showed the lowest efficiency (9.04 gha). The remaining normalised EF results are provided in Table 5.

Table 5. Ecological Footprint results for the Open University of Cyprus (OUC), 2024

Ecological Footprint (EF) results								Normalised EF results					
Responsibility	Category		EF (gha)		EF (%)		Total (gha)	Total (%)	Indicator		EF (gha)		
Direct	Staff labour		151.33		30.7		492.5	53.4	EF <i>per</i> Student		0.29		
	Materials and equipment		316.22		64.2				EF <i>per</i> Staff		4.66		
	Cleaning services		4.68		0.9				EF <i>per</i> Graduation		1.73		
	Energy use		0.37		0.1				EF <i>per</i> Publication		9.04		
	Buildings and recreational areas		0.09		0.02								
	Travels		19.56		3.9								
	Water and waste management		0.25		0.05								
	Food		n.a.		n.a.								
Indirect	Food at home		259.74		60.5		492.6	46.6	EF <i>per</i> €1 000 Fund		0.42		
	Energy at home		148.25		34.5								
	Commuting		21.60		5.0								
OUC Total EF: 922.09 gha													
Ecological Footprint by Land Type		Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
		(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct		51.4	10.4	5.7	1.2	64.1	13.0	4.2	0.1	17.7	3.6	349.4	70.1
Indirect		160.3	37.4	10.8	2.5	25.4	5.9	8.3	1.9	6.2	1.4	218.1	50.8

Direct responsibility

Indirect responsibility

Buildings

Cleaning

Mobility

Materials & Equipment

Water & Waste

Food

Energy Use

Staff Labour

Ecological Footprint (gha))

Legend: n.a.- data not available

1.5. Universidade Aberta (UAb) - Portugal

Profile

The UAb (<https://portal.uab.pt>) is the Portuguese public distance-teaching university located in Lisbon, the capital city of Portugal, a coastal city at the mouth of the Tagus River. The Lisbon Metropolitan Area covers 18 municipalities and is the largest urban area in Portugal. In 2024, the Lisbon municipality had a population of about 575 739 inhabitants, spread over an area of approximately 100 km². The Lisbon Area has a Mediterranean climate with mild, rainy winters and warm to hot, dry summers.

The UAb was founded in 1988 and has been promoting higher education and lifelong learning, concentrating exclusively on distance-learning courses, with a strong focus on fostering the Portuguese language and culture throughout the Lusophone community. In 2008, the UAb became a European Institution of reference in advanced e-learning and online learning through the recognition of its exclusive Virtual Pedagogical Model. With this framework, the UAb offers 12 undergraduate programs, 21 master's programs, 15 post-graduate programs, and 12 doctoral programs, as well as several Lifelong Learning study programs such as micro-credentials and post-graduation courses.

The UAb is structured into organisational units: four departments, Science and Technology, Social Sciences and Management, Education and Distance Learning, and Humanities. Also, UAb has a Lifelong Learning unit, 18 Local Learning Centres, and two regional delegations (Coimbra and Porto). Its headquarters, however, are in Lisbon.

In 2024, the UAb had 10 474 students, supported by 337 academic and non-academic staff members. In 2024, the UAb produced 1 319 graduates and published 216 indexed scientific articles and guaranteed approximately € 2 878 453 in research funding.

Data Collection Process

The data collection for calculating the EF is an internal process, centralized by the Sustainable Campus Working Group, which is responsible for collecting data from the different units and services (Documentation Services, Academic Services, Human Resources Department, Financial Management Division, Purchasing and Assets Division) and compiling it into a central system. The collected data is not

only used for EF calculations but also for other evaluation systems and metrics, such as the THE Impact Rating and the ECO.Ap2030 program (Portuguese Public Administration Program for Resource Efficiency and Decarbonization). UAb has been collecting EF data regularly since 2019. The UAb gathered data for 2024.

Ecological Footprint Results

Total EF: In 2024, the UAb had a total EF of 1 875.49 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF, accounting for 77% (1 449.9 gha), while the activities under its direct responsibility accounted for 23% (425.6 gha) (Table 6).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the UAb, the main contributors were *staff labour* (64%), followed by *materials and equipment* (17%) and *energy use* (11%) (the rest of the categories making a minor contribution to the total direct EF, below 5%, as can be seen in Table 6).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (74%), followed by *energy at home* (24%) (commuting, via Tier 1 bis, was a minor contributor, with 2%).

EF and Land type: The ecosystems under the highest anthropogenic pressure were *carbon uptake land*, both under direct responsibility and indirect responsibility, and *cropland* under the indirect responsibility (Table 6).

- **Direct responsibility:** Regarding EF under the direct responsibility of UAb, the land type under the highest anthropogenic pressure was *carbon uptake land* (60%), followed by *cropland* (17%) and *forest land* (14%). Other land types were under less anthropogenic pressure, accounting for less than 6% of the EF (Table 6).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of UAb, the land types under the highest anthropogenic pressure were *cropland* (36%) and *carbon uptake land* (32%), followed by *forest* (10% each). Other land types were under less anthropogenic pressure, accounting for less than 5% of the EF (Table 6).

Normalised EF indicators: Analysing the efficiency of the UAb in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.18 gha), followed by the EF *per €1 000 fund* (0.65 gha), while the EF *per publication* showed the lowest efficiency (8.68 gha). The remaining normalised EF results are provided in Table 6.

Table 6. Ecological Footprint results for the Universidade Aberta (UAb), 2024

Ecological Footprint (EF) results						Normalised EF results							
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)						
Direct	Staff labour	272.45	64.0	425.62	22.7	EF <i>per</i> Student	0.18						
	Materials and equipment	72.14	17.0			EF <i>per</i> Staff	5.57						
	Cleaning services	7.74	1.8			EF <i>per</i> Graduation	1.42						
	Energy use	46.1	10.8			EF <i>per</i> Publication	8.68						
	Buildings and recreational areas	1.30	0.3										
	Travels	19.11	4.5										
	Water and waste management	6.78	1.6										
	Food	n.a.	n.a.										
Indirect	Food at home	1 070.80	73.8	1 449.87	77.3	EF <i>per</i> €1 000 Fund	0.65						
	Energy at home	347.43	24.0										
	Commuting	31.64	2.2										
UAb Total EF: 1 875.49 gha													
Ecological Footprint by Land		Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
Type		(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct		70.62	16.6	8.94	2.1	60.02	14.1	24.70	5.8	7.74	1.8	253.6	59.6
Indirect		514.09	35.5	71.75	4.9	146.45	10.1	235.69	16.3	14.63	1.0	467.26	32.2

Direct vs Indirect responsibility

Direct responsibility

Indirect responsibility

Buildings

Cleaning

Mobility

Materials & Equipment

Water & Waste

Food

Energy Use

Staff Labour

Ecological Footprint (gha)]

Legend: n.a.- data not available

1.6. Universid Nacional de Educación a Distancia (UNED) - Spain

Profile

The UNED (<https://www.uned.es/universidad/inicio/en/>) has its headquarters in Madrid, Spain. The city has approximately 3,5 million inhabitants (6,8 million in the urban agglomeration). Madrid is the capital of Spain and the political and financial center of the country. It is also well known for its vast academic and cultural offer, with six other public universities in the Madrid region. It is a pole of attraction for the foreign population and investment.

UNED has 62 associated centers across Spain and 24 external centers abroad in Europe, America and Africa. The UNED adopts a student-centered pedagogical model emphasising flexibility, independent learning, and digital skills, with a unique mix of online and on-site resources. It has nine faculties and two higher technical schools. Sustainability issues are under the responsibility of the Technical Office for Construction and Maintenance, and more precisely of the Area of Facilities and Sustainability, which oversees the energy management of the UNED's facilities. Both the Technical Office for Construction and Maintenance and the Area of Facilities and Sustainability are part of UNED's management division.

In 2024, the UNED had 150,370 students, supported by 2 651 academic and non-academic staff members. In 2024, the UNED produced 8 196 graduates and published 1 819 indexed scientific articles and guaranteed approximately €4 114 200 in research funding.

Data Collection Process

The energy and water consumption data were collected by the Technical Office for Construction and Maintenance at the UNED. The data was obtained from the Building Management System/Building Automation and Control System and the distribution companies. In the context of ISO 52120 (Energy performance of buildings – contribution of building automation, controls and building management), it comprises all products, software and engineering services for automatic controls (including interlocks), monitoring, optimisation, for operation, human intervention, and management to achieve energy-efficient, economical, and safe operation of building services.

The process was systematic and internal, for which the data collected from the UNED's Building Management System/Building Automation and Control System

were transformed into information about energy consumption and compared with the information on the distribution companies' bills. Other data (students, staff, etc.) were obtained from the UNED Transparency Portal (<https://www.uned.es/universidad/inicio/en/portaltransparencia.html>).

The UNED gathered data for 2024 on four of the eight direct responsibility categories, namely, *staff labour*, *energy use*, *buildings*, *recreational areas*, and *water consumption*, due to the lack of data availability for the other categories.

Ecological Footprint Results

Total EF: In 2024, the UNED had a total EF of 19 664.61 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF, accounting for 85% (16 613.46 gha), while the activities under its direct responsibility accounted for 15% (3 051.15 gha) (Table 7).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the UNED, the main contributors were *staff labour* (75%), followed by *energy use* (24%) (the rest of the categories making a minor contribution to the total direct EF, as can be seen in Table 7).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (77%), followed by *energy at home* (22%) (commuting, via Tier 1 bis, was a minor contributor, with 2%).

EF and Land type: The ecosystems under the highest anthropogenic pressure were *carbon uptake land* under direct responsibility, *cropland* under indirect responsibility (Table 7).

- **Direct responsibility:** Regarding EF under the direct responsibility of UNED, the land types under the highest anthropogenic pressure were *carbon uptake land* (62%), followed by *cropland* (19%). Other land types were under less anthropogenic pressure, accounting for less than 9% of the EF (Table 7).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of UNED, the land type under the highest anthropogenic pressure was *cropland* (36%), followed by *carbon uptake land* (29%) and *fishing grounds* (22%). Other land types were under less anthropogenic pressure, accounting for less than 6% of the EF (Table 7).

Normalised EF indicators: Analysing the efficiency of the UNED in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.13 gha), followed by the EF *per graduation* (2.4 gha), while the EF *per staff* (7.42 gha) and EF *per publication* (10.81 gha) showed the lowest efficiency. The remaining normalised EF results are provided in Table 7.

Table 7. Ecological Footprint results for the Universidad Nacional de Educación a Distancia (UNED), 2024

Ecological Footprint (EF) results						Normalised EF results	
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)
Direct	Staff labour	2 295.47	75.2	3 051.15	15.5	EF per Student	0.13
	Materials and equipment	n.a.	n.a.			EF per Staff	7.42
	Cleaning services	n.a.	n.a.			EF per Graduation	2.4
	Energy use	738.17	24.2			EF per Publication	10.81
	Buildings and recreational areas	15.83	0.5				
	Travels	n.a.	n.a.				
	Water and waste management	1.68	0.1				
	Food	n.a.	n.a.				
Indirect	Food at home	12 724.79	76.6	16 613.44	84.5	EF per €1 000 Fund	4.75
	Energy at home	3 627.48	21.8				
	Commuting	261.19	1.6				

UNED Total EF: 19 664.61 gha

Ecological Footprint by Land Type	Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct	574.33	18.8	79.06	2.6	167.29	5.5	269.19	8.8	65.15	2.2	1 896.14	62.1
Indirect	6 055.07	36.4	853.60	5.1	1020.45	6.2	3 664.78	22.1	228.34	1.4	4 791.22	28.8



Legend: n.a.- data not available

1.7. Universitat Oberta de Catalunya (UOC) - Spain

Profile

The UOC (<https://www.uoc.edu/es>) has its main headquarters in the city of Barcelona, located in Catalonia, Spain. In addition to its central headquarters, the UOC has several support offices and points in other municipalities in Catalonia, other municipalities in Spain, and even at an international level. Barcelona is the capital of Catalonia and one of the most relevant autonomous communities in the country. It is characterised as a cosmopolitan, global city and a prominent economic, cultural, and tourist centre in the Mediterranean. The Catalonia region, in turn, possesses a strong cultural identity, with Catalan being its own language, co-official alongside Spanish. Regarding its demographics, the total population of Barcelona, according to recent data (2024), is approximately 1 702 547 inhabitants.

The UOC is characterised by its own educational model, based on a quality online methodology that explicitly places the student's activity at the centre of the learning process, thus promoting active learning among its students. This system guarantees flexibility, personalisation, and interactivity, as well as fostering collaborative work. All of this is made possible through the constant application of technology, intensive research in e-learning, and the work of the eLearning Innovation Center, the UOC's own innovation hub.

The UOC's teaching offer is organised into seven fields of knowledge articulated through their respective faculties: Arts and Humanities; Information and Communication Sciences; Health Sciences; Law and Political Science; Economics and Business; Computer Science, Multimedia and Telecommunication; and Psychology and Education Sciences.

In 2024, the UOC had 146 890 students, supported by 1 603 academic and non-academic staff members. In 2024, the UOC produced 10 804 graduates and published 526 indexed scientific articles and guaranteed approximately €11 648 080 in research funding.

Data Collection Process

The data collection process is carried out systematically around January–February, requesting data from the different areas of the institution. This data is collected in various formats, including PowerBI, Excel, and email, and is subsequently stored centrally in Google Drive for management. All internally collected data is provided

to an external firm, the supplier Inèdit. Currently, there is no office or system specifically dedicated to data collection and reporting; only Inèdit is responsible for presenting the footprint calculation.

The UOC gathered data for 2024 on almost all categories. However, within the water and waste management category, the data for the annual wastewater production was not input, given the lack of data availability.

Ecological Footprint Results

Total EF: In 2024, the UOC had a total EF of 22 850.1 gha. The activities under the indirect responsibility of the university were the main contributors to the total EF, accounting for 93% (21 321.15 gha), while the activities under its direct responsibility accounted for 7% (1 528.93 gha) (Table 8).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the UOC, the main contributors were *staff labour* (79%) (the rest of the categories making a minor contribution to the total direct EF, below 8%, as can be seen in Table 8).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *food at home* (77%), followed by *energy at home* (22%) (commuting, via Tier 1 bis, was a minor contributor, with 0.7%).

EF and Land type: The ecosystems under the highest anthropogenic pressure were *carbon uptake land* under direct responsibility, *cropland* under indirect responsibility (Table 8).

- **Direct responsibility:** Regarding EF under the direct responsibility of UOC, the land types under the highest anthropogenic pressure were *carbon uptake land* (59%), followed by *cropland* (20%). Other land types were under less anthropogenic pressure, accounting for less than 9% of the EF (Table 8).
- **Indirect responsibility:** Regarding EF under the indirect responsibility of UOC, the land types under the highest anthropogenic pressure were *cropland* (37%), followed by *carbon uptake land* (28%) and *fishing grounds* (22%). Other land types were under less anthropogenic pressure, accounting for less than 6% of the EF (Table 8).

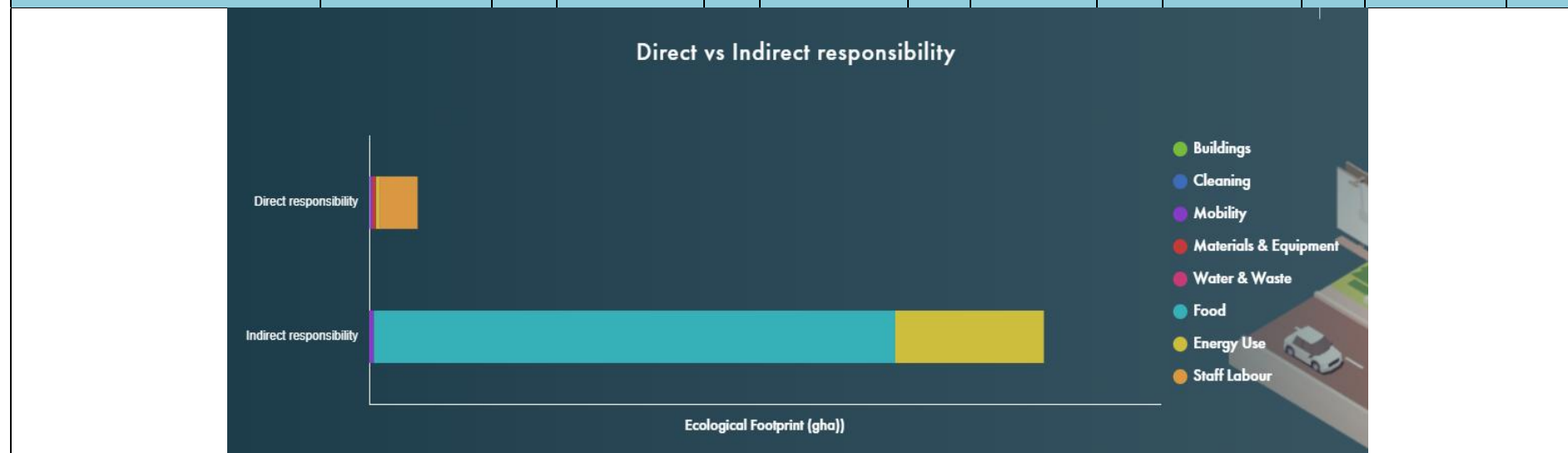
Normalised EF indicators: Analysing the efficiency of the UOC in using resources for providing education and conducting research based on normalised EF indicators, the EF *per student* showed the highest efficiency (0.16 gha), followed by the EF *per €1 000 fund* (1.96 gha), while the EF *per publication* showed the lowest efficiency. The remaining normalised EF results are provided in Table 8.

Table 8. Ecological Footprint results for the Universitat Oberta de Catalunya (UOC), 2024

Ecological Footprint (EF) results						Normalised EF results	
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)
Direct	Staff labour	1 211.5	79.2	1 529.29	6.7	EF <i>per</i> Student	0.16
	Materials and equipment	109.5	7.2			EF <i>per</i> Staff	14.25
	Cleaning services	11.9	0.8			EF <i>per</i> Graduation	2.11
	Energy use	110.1	7.2			EF <i>per</i> Publication	36.86
	Buildings and recreational areas	2.2	0.1				
	Travels	82.8	5.4				
	Water and waste management	1.4	0.1				
	Food	n.a.	n.a.				
Indirect	Food at home	16 484.2	77.3	21 321.21	93.3	EF <i>per</i> €1 000 Fund	1.96
	Energy at home	4 669.2	22.0				
	Commuting	137.8	0.7				

UOC Total EF: 22 850.5 gha

Ecological Footprint by Land Type	Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct	310.45	20.3	43.06	2.8	104.7	6.8	143.83	9.4	33.06	2.2	894.16	58.5
Indirect	7 839.49	36.8	1 104.92	5.2	1 311.86	6.1	4 746.94	22.3	292.18	1.3	6 025.82	28.3



Legend: n.a.- data not available

1.8. University of Veliko Tarnovo (UVT) - Bulgaria

Profile

St. Cyril and St. Methodius UVT (<https://www.uni-vt.bg/eng/>) is located in Veliko Tarnovo, Bulgaria. The city has approximately 70 000 inhabitants and is known as the capital of the Second Bulgarian Kingdom. It is one of Bulgaria's most historically and culturally significant cities. Veliko Tarnovo blends rich history, culture, and stunning scenery, making it one of Bulgaria's most beautiful and visited destinations. The city is built on several hills, Tsarevets, Trapezitsa, and Sveta Gora. The UVT is located on Sveta Gora Hill overlooking the Yantra River and the Tsarevets Fortress and Trapezitsa Hill, which are major historical sites. The city is a student and tourist hub, hosting festivals, theatre performances, and historical reenactments throughout the year. The region is connected by road and rail, linking Veliko Tarnovo with Sofia, Varna, and Ruse.

The UVT offers a learner-centred hybrid study model as its main study model. Bachelor's degree programmes are delivered entirely through on-campus instruction whereas Master's degree programmes combine traditional classroom teaching with an online component. Students and academics use the university's digital system to store educational resources and where students submit their final examination projects. The University has nine faculties located in three campuses in Veliko Tarnovo, the Pleven College of Education, located in the city of Pleven, the Branch Vratsa, in the city of Vratsa and Academic Units in Sveti Nikole, Republic of North Macedonia.

As a sustainability-related office, UVT relies on the Maintenance Department, which is responsible for the university's construction activities, consumption of energy, water and gas, material equipment, and other data.

In 2024, the UVT had 2 327 students, supported by 682 academic and non-academic staff members. In 2024, the UNED produced 2 786 graduates, published 58 indexed scientific articles and guaranteed approximately €434 500 (849 189 BGN) in research funding.

Data Collection Process

The UVT has no specific office for EF data collection and reporting. Thus, the data for the EF calculation was collected by the International Relations Office in coordination with the Human Resources Department, Maintenance Department,

Education Department, Accounting Department, and Projects Department. The process was systematic and internal, given each of the above-mentioned offices was requested to provide information on the issues for which it is competent, e.g. Human Resources Department – number of staff; Projects Department – number of publications and funds for research; Maintenance Department – information about the consumption of energy, water, waste, equipment, cleaning; Accounting Department – travel expenses; Education Department – number of students. The required information, written in English, had to be translated into Bulgarian due to the lack of English-speaking personnel in the respective departments.

The UVT gathered data for 2024 on almost all categories. However, within the water and waste management category, the data for the annual wastewater production was not input. Similarly, in the travel category, the distances of the travels paid or reimbursed were also not input, due to data unavailability.

Ecological Footprint Results

Total EF: In 2024, the UVT had a total EF of 1 413.51 gha. The activities under the direct responsibility of the university were the main contributors to the total EF, accounting for 67% (948.61 gha), while the activities under its indirect responsibility accounted for 33% (464.9 gha) (Table 9).

- **Direct responsibility:** Regarding the EF under the direct responsibility of the UVT, the main contributors were *staff labour* (43%) and *energy use* (36%), followed by *materials and equipment* (16%) (the rest of the categories making a minor contribution to the total direct EF, as can be seen in Table 9).
- **Indirect responsibility:** Regarding the EF under the indirect responsibility of the university (via Tier 1), the main contributors were *commuting* (44%, via Tier 1), followed by *food at home* (32%) and *energy at home* (25%).

EF and Land type: Considering the total EF of UVT, the land types under the highest anthropogenic pressure were *carbon uptake land* (72%). Other land types were under less anthropogenic pressure, as can be seen in Table 9.

The ecosystem under the highest anthropogenic pressure was *carbon uptake land*, both under direct responsibility and indirect responsibility (Table 9).

- **Direct responsibility:** Regarding EF under the direct responsibility of UVT, the land types under the highest anthropogenic pressure were *carbon*

uptake land (75%). Other land types were under less anthropogenic pressure, adding up less than 9% of the EF (Table 8).

- **Indirect responsibility:** Regarding EF under the indirect responsibility of UVT, the land types under the highest anthropogenic pressure were *carbon uptake land* (66%), followed by *cropland* (18%) and *forest* (10%). Other land types were under less anthropogenic pressure, adding up less than 4% of the EF (Table 8).

Normalised EF indicators: Analysing the efficiency of the UVT in using resources for providing education and conducting research based on normalised EF indicators, the *EF per graduation* showed the highest efficiency (0.51 gha), followed by the *EF per student* (0.61 gha), while the *EF per publication* showed the lowest efficiency (24.37 gha). The remaining normalised EF results are provided in Table 9.

Table 9. Ecological Footprint results for the University of Veliko Tarnovo (UVT), 2024

Ecological Footprint (EF) results						Normalised EF results							
Responsibility	Category	EF (gha)	EF (%)	Total (gha)	Total (%)	Indicator	EF (gha)						
Direct	Staff labour	410.31	43.3	948.38	67.1	EF <i>per</i> Student	0.61						
	Materials and equipment	153.65	16.2			EF <i>per</i> Staff	2.07						
	Cleaning services	10.25	1.1			EF <i>per</i> Graduation	0.51						
	Energy use	345.59	36.4			EF <i>per</i> Publication	24.37						
	Buildings and recreational areas	23.18	2.4			EF <i>per</i> 1 000 BGN Fund	1.66						
	Travels	0.92	0.1										
	Water and waste management	4.7	0.5										
	Food	n.a.	n.a.										
Indirect	Food at home	147.42	31.7	464.9	32.9	EF <i>per</i> 1 000 BGN Fund	1.66						
	Energy at home	114.9	24.7										
	Commuting	202.58	43.6										
UVT Total EF: 1 413.51 gha													
Ecological Footprint by Land Type		Cropland		Grazing land		Forest land		Fishing grounds		Built-up land		Carbon uptake land	
		(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)	(gha)	(%)
Direct		85.52	9.0	12.75	1.4	84.09	8.9	3.23	0.3	49.39	5.2	713.39	75.2
Indirect		82.44	17.7	13.92	3.0	44.49	9.6	2.57	0.5	14.4	3.1	307.09	66.1

Direct vs Indirect responsibility

Direct responsibility

Indirect responsibility

Buildings

Cleaning

Mobility

Materials & Equipment

Water & Waste

Food

Energy Use

Staff Labour

Ecological Footprint (gha))

Legend: n.a.- data not available

1.9. Bifröst University (BU) - Iceland

Profile

The BU (<https://www.bifrost.is>) is located in Reykjavík (administrative office) which has approximately 138,772 inhabitants and Borgarbyggð Municipality (Hvanneyri office and historical Bifröst campus location), which has approximately 4,100 inhabitants.

Historically associated with the village of Bifröst in Borgarbyggð Municipality, the university now serves students throughout Iceland and internationally through its digital learning environment. Reykjavík, Iceland's capital and largest urban area, serves as one of the university's administrative hubs, while Hvanneyri is a small educational and agricultural community in West Iceland with a long tradition of higher education and research. This distributed operating model reflects the university's emphasis on accessibility, flexibility, and digital education. The university therefore has a national reach rather than being tied to a single geographic campus location.

The BU is at the forefront of distance learning and all studies at the university are structured as distance learning. The university has three departments, namely, Business, Social Sciences and Law. The university offers courses at the undergraduate and graduate levels, as well as various study lines that do not require credits. Moreover, the BU offers a preparatory course in Háskólagátt, which provides people with the opportunity to receive intensive preparation for university studies. A preparatory course in English, University Gateway, is also available for those whose native language is not Icelandic.

In 2024, the BU had 1 806 students, supported by 69 academic and non-academic staff members. In 2024, the BU produced 198 graduates, published 22 indexed scientific articles and guaranteed approximately €968 648 in research funding.

Data Collection Process

The BU does not currently have a dedicated sustainability office or a centralized system for collecting and reporting environmental and sustainability-related

indicators. The data were collected by OpenEU Institutional Coordinator at BU, in coordination with the Human Resource Manager, the Director of Academic Services, the Project Manager within the Rector's Office, and the Research Department. Information on student enrolment, staff, graduations, publications, and research funding was gathered from institutional records, annual reports, human resource data, academic administration systems, and the Icelandic Research Information System (IRIS).

The data collection process was largely non-systematic and conducted specifically for the OpenEU reporting exercise. While institutional data on students, staff, graduations, publications, and research activity were available through internal reporting systems, the university was unable to collect any ecological footprint data due to the absence of established monitoring processes.

1.10. Open Universiteit (OUNL) - Netherlands

OUNL did not collect and report data for the baseline year 2023 or 2024.

Section 2. Analysis of Ecological Footprint of Partner Universities

2.1. Direct and Indirect Responsibilities

The analysis of Ecological Footprint of partner universities for the baseline year (2023 or 2024; Section 1), indicates that, for most institutions, the largest share of the total EF is associated with categories under the **indirect responsibility** of the university, typically exceeding 60% of the total EF. This pattern should be interpreted considering the predominance of distance-teaching universities within OpenEU, where lower resource consumption is attributable to the direct use of university facilities.

In this context, UVT (characterised by an on-campus teaching model) and OUC stand out as the two institutions for which categories under direct responsibility represent the largest contribution to their total EF (Figure 2).

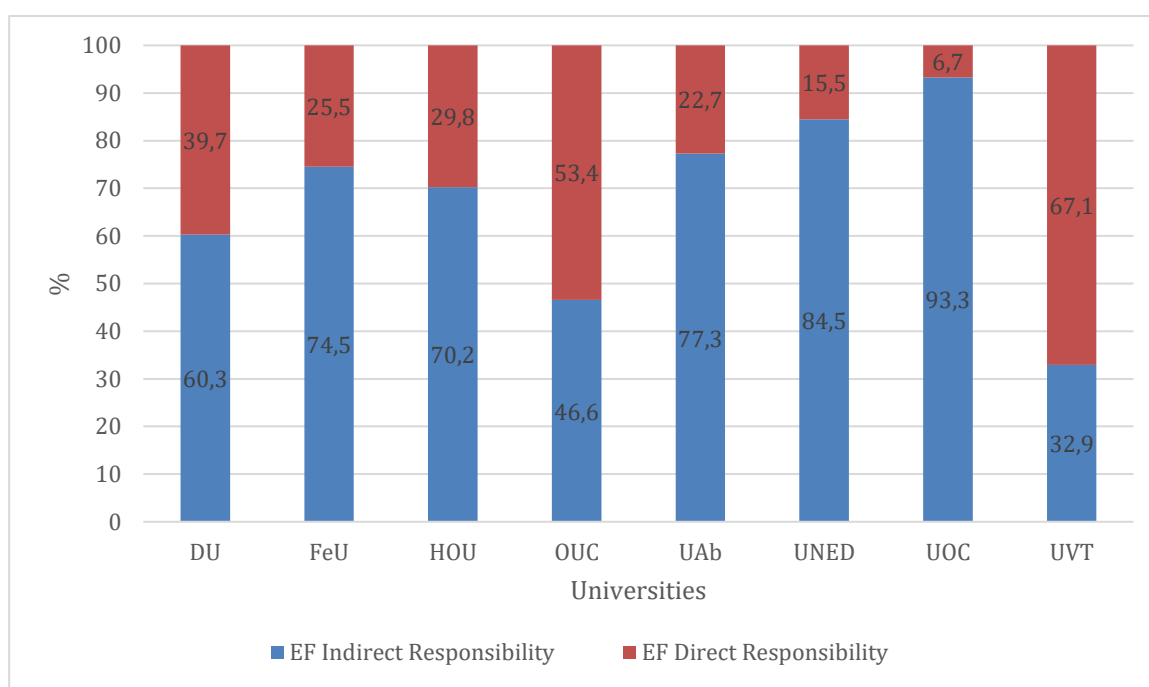


Figure 2. Ecological Footprint results for Partner Universities: Direct vs. Indirect responsibilities

Among the direct responsibility categories, *staff labour*, *energy use*, and *materials and equipment* are the main contributors to the EF of each partner university (Figure 3 and Table 10).

Table 10. Ecological Footprint results for Partner Universities: Direct responsibility

Direct Responsibility Categories	Ecological Footprint of Partner Universities (gha)							
	DU	FeU	HOU	OUC	UAb	UNED	UOC	UVT
Staff labour	392.6	1 410.3	1 338.2	151.3	272.5	2 295.5	1 211.5	410.3
Materials and equipment	196.6	2 825.7	838.5	316.2	72.1	n.a.	109.5	153.7
Energy use	19.9	626.6	318.9	0.37	46.1	738.2	110.1	345.6
Cleaning services	21.4	21.4	4.1	4.7	7.7	n.a.	11.9	10.3
Buildings and recreational areas	8.4	39.0	7.0	0.09	1.3	15.8	2.2	23.2
Travels	4.3	72.4	46.1	19.6	19.1	n.a.	82.8	0.9
Water and waste management	0.3	12.8	1.6	0.25	6.8	1.7	1.4	4.7
Food	n.a.	232.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	643.4	5 240.5	2 554.4	492.5	425.6	3 051.2	1 529.3	948.6

Legend: n.a. – data not available

Amidst these, *staff labour* stands out for being the category that had the greatest impact on the EF in most universities, particularly for UOC and UNED (more than 70% of their EF). FeU is an exception to this pattern, as the principal contributing category to their EF were *materials and equipment* (Figure 3).

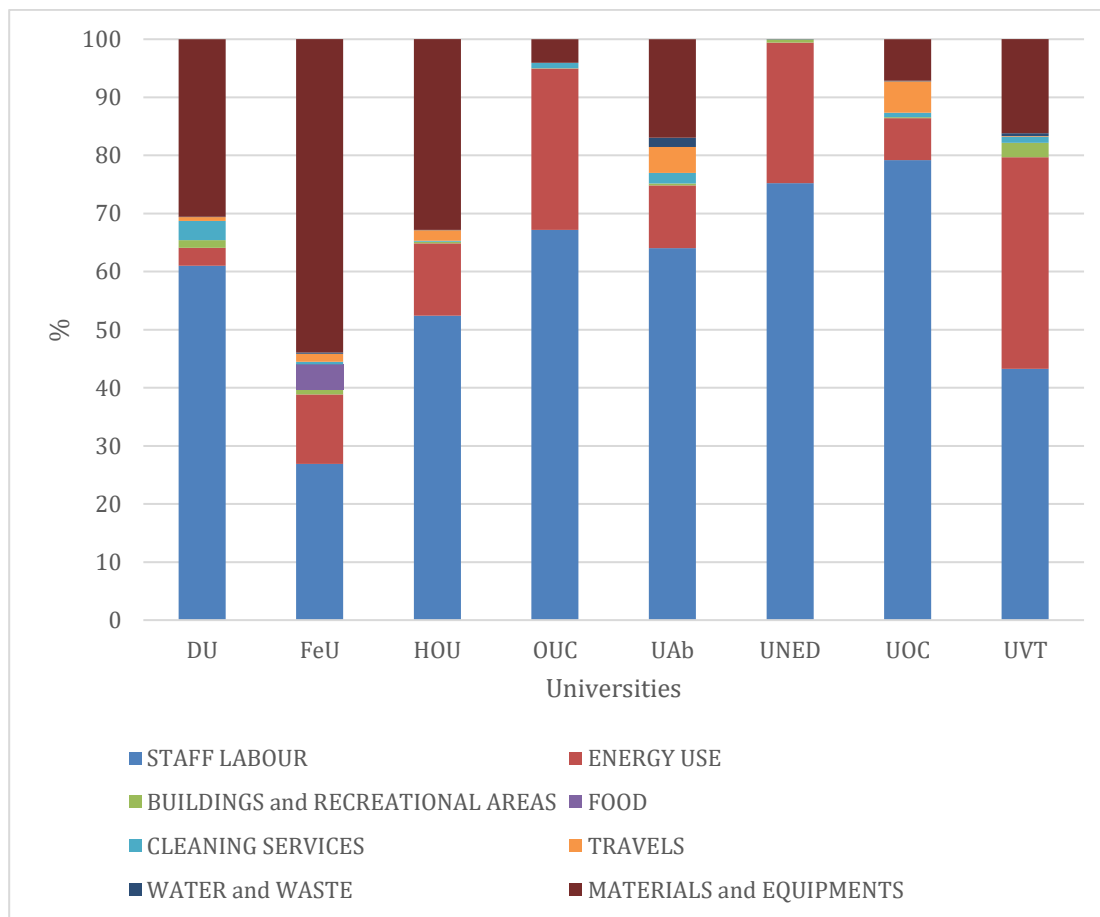


Figure 3. Ecological Footprint results for Partner Universities: Direct responsibility

The contribution of *energy use* to the EF is higher at FeU and UVT, while for *materials and equipment*, the highest values are found at HOU and FeU. Finally, UAb and UOC stand out from the other universities with the highest values for the travel category (Figure 3).

Regarding activities under the universities' indirect responsibility, *food at home* represents the largest contributor to the Ecological Footprint for most partner universities (Table 11; Figure 4).

Table 11. Ecological Footprint results for Partner Universities: Indirect responsibility

Indirect Responsibility Categories	Ecological Footprint of OpenEU Universities (gha)							
	DU	FeU	HOU	OUC	UAb	UNED	UOC	UVT
Food at home	463.3	8 012.1	3 900.0	85.3	1 070.8	12 724.8	16 484.2	147.4
Energy at home	321.7	7 126.1	1 909.4	48.7	347.4	3 627.5	4 699.2	114.9
Commuting	193.6	174.2	199.9	47.9	31.6	261.2	137.8	202.6
Total	978.6	15 312.4	6 010.1	181.8	1 449.9	16 613.5	21 321.2	464.9

An exception is observed for UVT, where *commuting (to and from the university)* remains the dominant contributor to the indirect EF. This pattern is consistent with the university's blended education model, which entails a higher frequency of on-campus presence compared to fully distance-teaching institutions.

In addition, for DU and FeU, *energy at home* exhibits values comparable to those of *food at home*, indicating a close and significant contribution to their overall indirect EF.

It is notable that the contribution of the *energy use at home* (for studying or working) at FeU is the highest among the universities (Figure 4).

Finally, for DU, OUC and UVT, the EF is well distributed among the three categories, indicating a close and significant contribution to their overall indirect EF (Table 11; Figure 4).

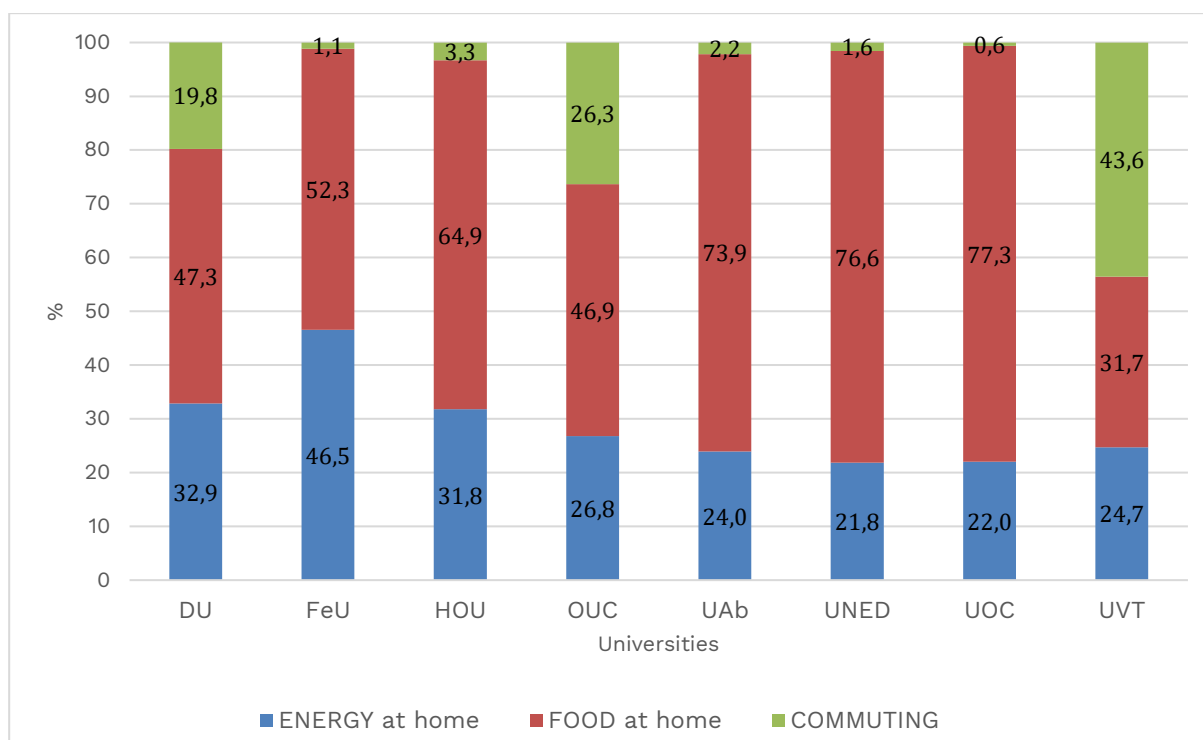


Figure 4. Ecological Footprint results for Partner Universities: Indirect responsibility

2.2. Ecological Footprint and Land Type

Under the Direct Responsibility (Table 12), regarding anthropogenic pressure on bio-productive land types, the results show that *carbon uptake land* represents the dominant contribution to the EF for all institutions. This is followed by *cropland* as the second most significant land type across most universities.

Table 12. Ecological Footprint results for Partner Universities: Land Type under Direct responsibility

Land Type	OpenEU Universities' Ecological Footprint Direct Responsibility (gha)							
	DU	FeU	HOU	OUC	UAb	UNED	UOC	UVT
Cropland	93.75	477.81	46.25	51.43	70.62	574.33	310.45	85.52
Grazing land	10.59	67.46	46.25	5.69	8.94	79.06	43.06	12.75
Forest land	238.56	541.52	261.36	64.09	60.02	167.29	104.72	84.09
Fishing grounds	21.33	55.82	23.24	4.22	24.70	269.19	143.83	3.23
Built-up land	20.49	200.23	64.46	17.67	7.74	65.15	33.06	49.39
Carbon uptake land	258.67	3 897.82	1 792.91	349.39	253.6	1 896.14	894.16	713.39
Total	643.39	5 240.66	2 554.37	492.49	425.62	3 051.15	1 529.28	948.38

However, some exceptions are observed for DU, FeU and UAb. In the case of DU, the pressure is distributed between *carbon uptake land* (40%) and *forest land* (37%), indicating a comparatively significant contribution of *forest land* to DU's total

direct EF. In the cases of FeU and UAb, *cropland* and *forest land* contribute almost equally, reflecting a balanced pressure between these two land types (Figure 5).

Universities, such as FeU (74%), HOU (70%), OUC (71%), and UVT (75%), demonstrate very high shares of *carbon uptake land*, indicating that their direct operations are heavily carbon-intensive.

Meanwhile, the contributions from *fishing grounds*, *built-up land*, and *grazing land* remain relatively minor across all universities, generally representing less than 10% of the total direct EF.

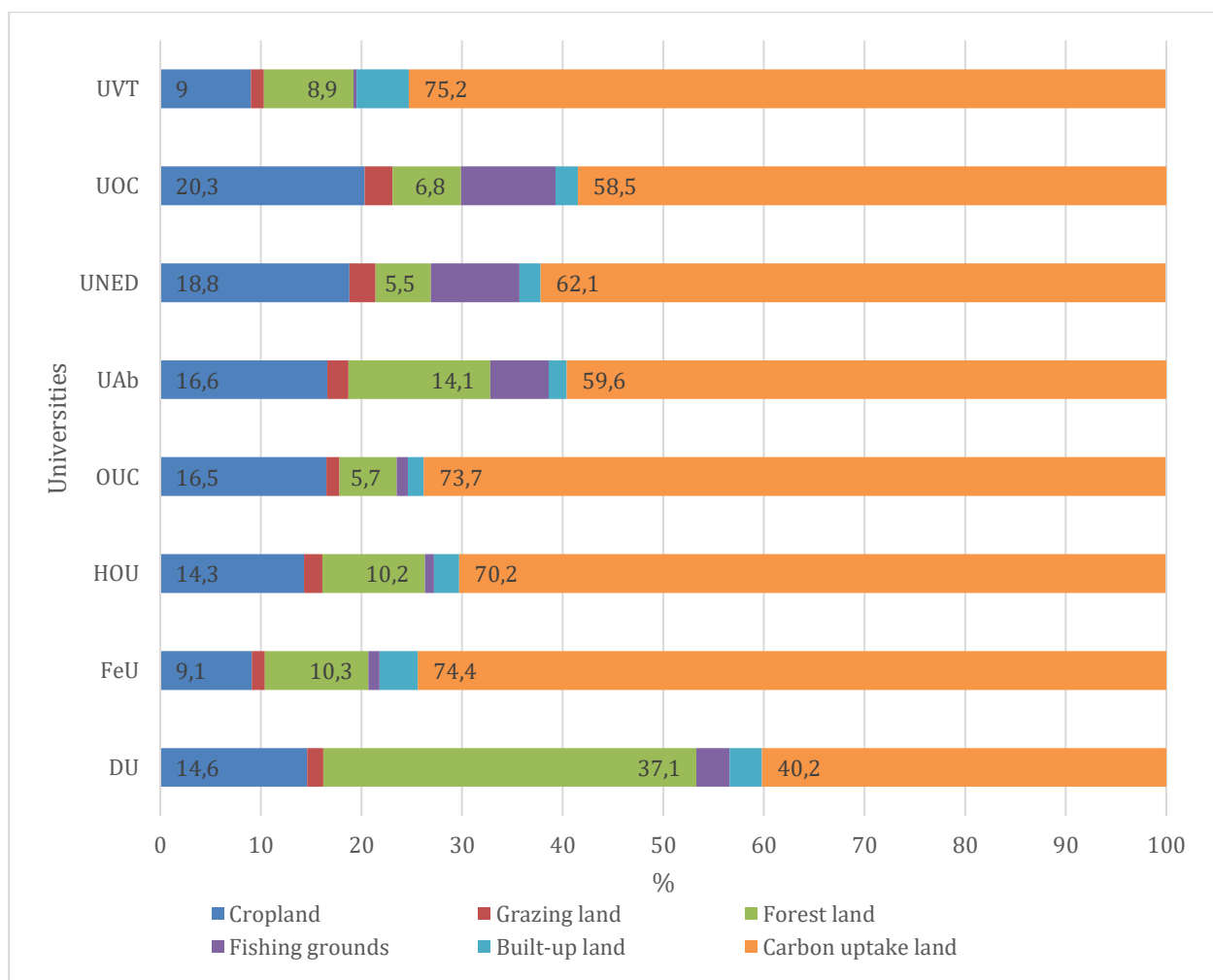


Figure 5. Ecological Footprint results for Partner Universities: Land type under Direct responsibility

The results of the land type in direct responsibility totally highlight that direct EF is primarily driven by energy and carbon-related pressures, while *cropland* and *forest land* play secondary yet institution-specific roles. The variation among universities maybe because of differences in campus infrastructure, consumption

patterns, and resource management, emphasizing the need for targeted strategies (such as energy efficiency measures, sustainable procurement, and responsible paper use) to reduce the environmental impact under direct responsibility.

Under indirect responsibility, regarding anthropogenic pressure on land types, the results show that *carbon uptake land* and *cropland* constitute the dominant components of the EF for most OpenEU partner universities (Table 13).

Table 13. Ecological Footprint results for Partner Universities: Indirect responsibility by Land Type

Land Type	OpenEU Universities' Ecological Footprint Indirect Responsibility (gha)							
	DU	FeU	HOU	OUC	UAb	UNED	UOC	UVT
Cropland	261.27	4 620.51	2 553.5	160.73	514.09	6 055.07	7 839.48	82.44
Grazing land	25.98	484.37	279.92	10.8	71.75	853.6	1 104.92	13.92
Forest land	307.69	1 754.99	276.27	25.44	146.45	1 020.45	1 311.85	44.49
Fishing grounds	60.45	499.23	161.41	8.34	235.69	3 664.78	4 746.93	2.57
Built-up land	10.3	296.05	70.77	6.16	14.63	228.34	292.18	14.4
Carbon uptake land	312.87	7 657.25	2 668.25	218.12	467.26	4 791.22	6 025.78	307.09
Total	978.55	15 312.4	6 010.12	429.	1 449.87	16 613.46	21 321.15	464.9

Carbon uptake land accounts for the highest shares in DU (32%), FeU (50%), HOU (44%), OUC (51%) and UVT (66%) highlighting the carbon-intensive nature of indirect consumption patterns.

However, for UAb, UNED and UOC, the *cropland* represents the largest land use type, exceeding the contribution of *carbon uptake land* (Figure 6). This pattern highlights the significant role of *food consumption at home* in shaping the indirect EF of these institutions. Nevertheless, *carbon uptake land* still accounts for a substantial share of the total indirect EF in these cases, indicating that carbon-related pressures remain highly relevant even where *cropland* is dominant.

Another notable exception is DU, where *forest land* contributes almost equally to *carbon uptake land*, (with forest accounting for 31% and carbon uptake for 32% of the indirect EF).

Across all universities, *fishing grounds*, *grazing land*, and *built-up land* consistently represent smaller proportions of the indirect EF. Overall, these results underline the central role of household-level consumption patterns, particularly food and energy use, in driving indirect environmental impacts, and reinforce the need for targeted strategies addressing lifestyle-related pressures within university communities.

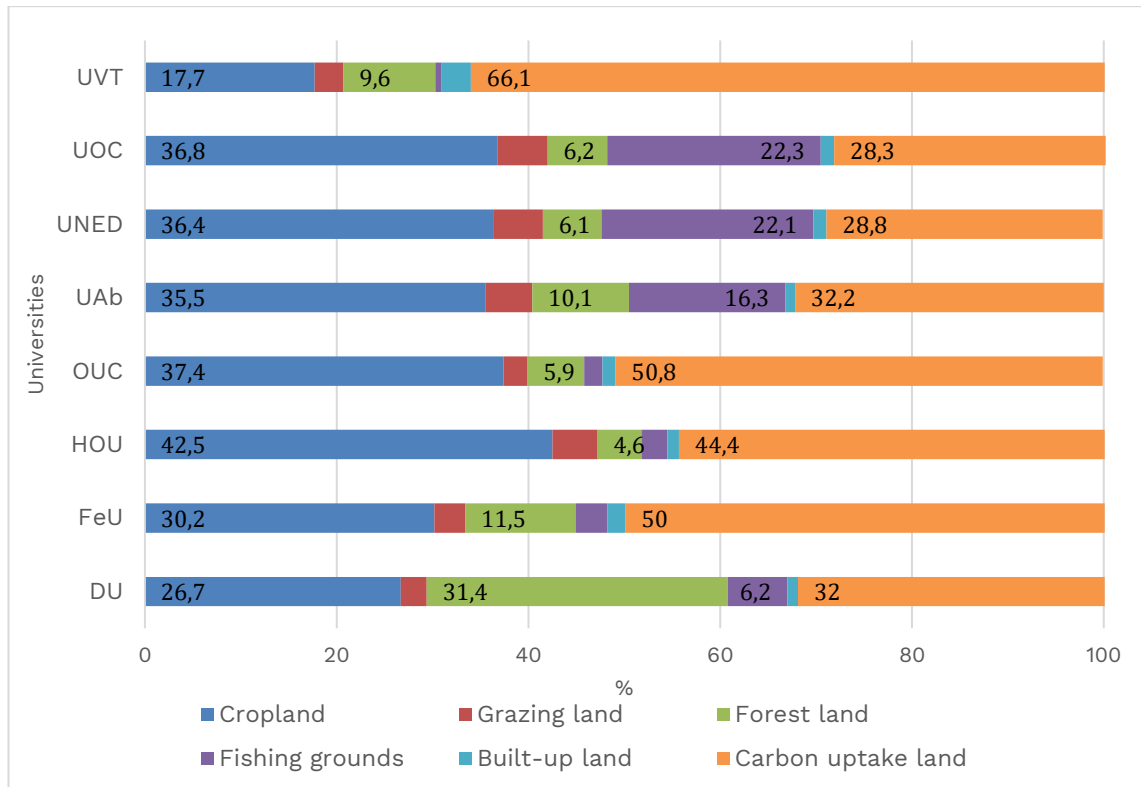


Figure 6. Ecological Footprint results for Partner Universities: Land type under Indirect responsibility

2.3. Normalised EF Indicators

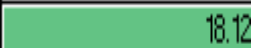
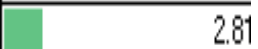
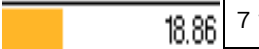
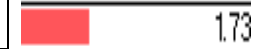
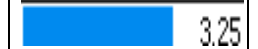
The normalised EF indicators show important differences in ecological efficiency across the OpenEU universities (See Table 12 and Figure 7):

- The **EF per student** (ranging from 0.13 to 0.61 gha) shows relatively low variability, with UVT, DU, and OUC standing with the highest values due to their smaller student populations.
- In contrast, the **EF per staff** shows much larger variability (ranging from 2.07 to 18.12 gha). Universities with the largest number of staff, such as FeU, UNED, and UOC, generally present higher normalised EF *per staff*, although HOU is an exception, having the largest staff but a comparatively low value for EF *per staff*.
- The **EF per graduation** (ranging from 0.51 to 5.84 gha), shows some differences in efficiency among the universities in producing graduates relative to their total EF. FeU shows the highest EF *per graduation*, which means that it uses more ecological resources per graduate compared to other universities, suggesting the influence of its relatively few graduations in relation to its total EF. Conversely, UAb, HOC, OUC and UVT have the

lowest EF *per graduation*, indicating that these institutions are more efficient in converting ecological resources into graduates. Other universities are located in the middle range, reflecting moderate efficiency in this regard.

- The **EF per publication** demonstrates the largest variability in the normalised EF indicators (ranging from 6.99 to 66.3 gha). FeU again has the highest EF *per publication* (96.49 gha), while the number its publications is moderate (n= 232) in comparison with other universities, indicating lower efficiency in producing research outputs relative to its total EF. UNED, while having the highest absolute number of publications (1 819), shows a moderate EF *per publication* (10.81 gha). UOC shows the second-highest EF *per publication* (36.86 gha). DU and UAb have the lowest EF *per publication* (6.99 and 8.68 gha, respectively), demonstrating high efficiency in transforming ecological resources into research outputs.
- The **EF per €1 000 fund** shows a moderate variability (ranging from 0.42 to 4.75 gha), driven largely by UNED (4.75 gha), which has the highest value. OUC and UAb have the lowest values among the remaining universities (0.42 and 0.65 gha respectively).

Table 14. Ecological Footprint of Partner Universities: General information and Normalised EF indicators

Universities	Total EF (gha)	Students (n)	EF per Students (gha)	Staff (n)	EF per Staff (gha)	Graduations (n)	EF per Graduation (gha)	Publications (n)	EF per Publication (gha)	Research funds (€)	EF per € 1 000 fund (gha)
DU	1 621.94	2 847	 0.57	303	 5.35	456	 3.56	232	 6.99	2 115 393	 0.77
FeU	22 507.43	69 982	 0.29	1,134	 18.12	3,521	 5.84	213	 66.30	6 777 426	 3.03
HOU	8 564.5	32 444	 0.26	3,052	 2.81	6,958	 1.23	454	 18.86	7 115 749	 1.20
OUC	922.09	3199	 0.29	198	 4.66	533	 1.73	102	 9.04	2 206 814	 0.42
UAb	1 875.49	10 474	 0.18	337	 5.57	1,319	 1.42	216	 8.68	2 878 453	 0.65
UNED	19 664.61	150 370	 0.13	2,651	 7.42	8,196	 2.40	1,819	 10.81	4 114 193	 4.75
UOC	22 850.5	146 890	 0.16	1,603	 14.25	10,804	 2.11	620	 36.86	11 648 075	 1.96
UVT	1 413.51	2 327	 0.61	682	 2.07	2,786	 0.51	58	 24.37	434 499*	 3.25

Legend: * - Results presented in EUROS of Research funds – 849 189 BGN; and EF per 1 000 BGN fund – 1.66.

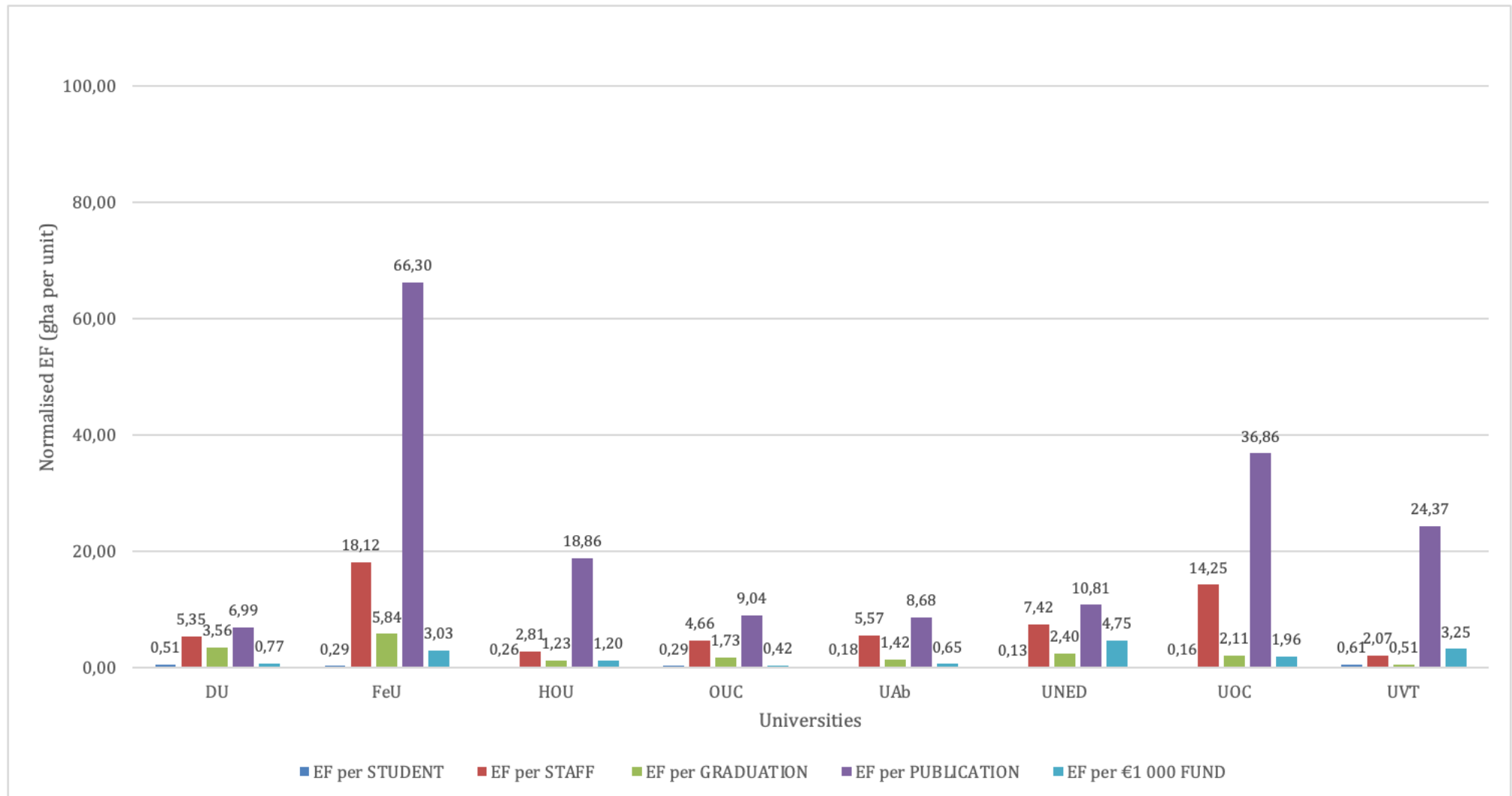


Figure 7. Ecological Footprint of Partner Universities: Normalised EF indicators

Section 3. Ecological Footprint of the OpenEU Alliance

3.1. OpenEU Alliance Profile

The OpenEU Alliance comprises 10 universities, of which nine are distance-teaching universities and one blended-teaching university.

The geographical scope of the OpenEU Alliance is within the borders of the European continent, covering its vast territory from north to south, east to west. The participating universities are based in Portugal, Spain, Greece, Cyprus, Bulgaria, Germany, the Netherlands, Latvia, and Iceland (Figure 8).

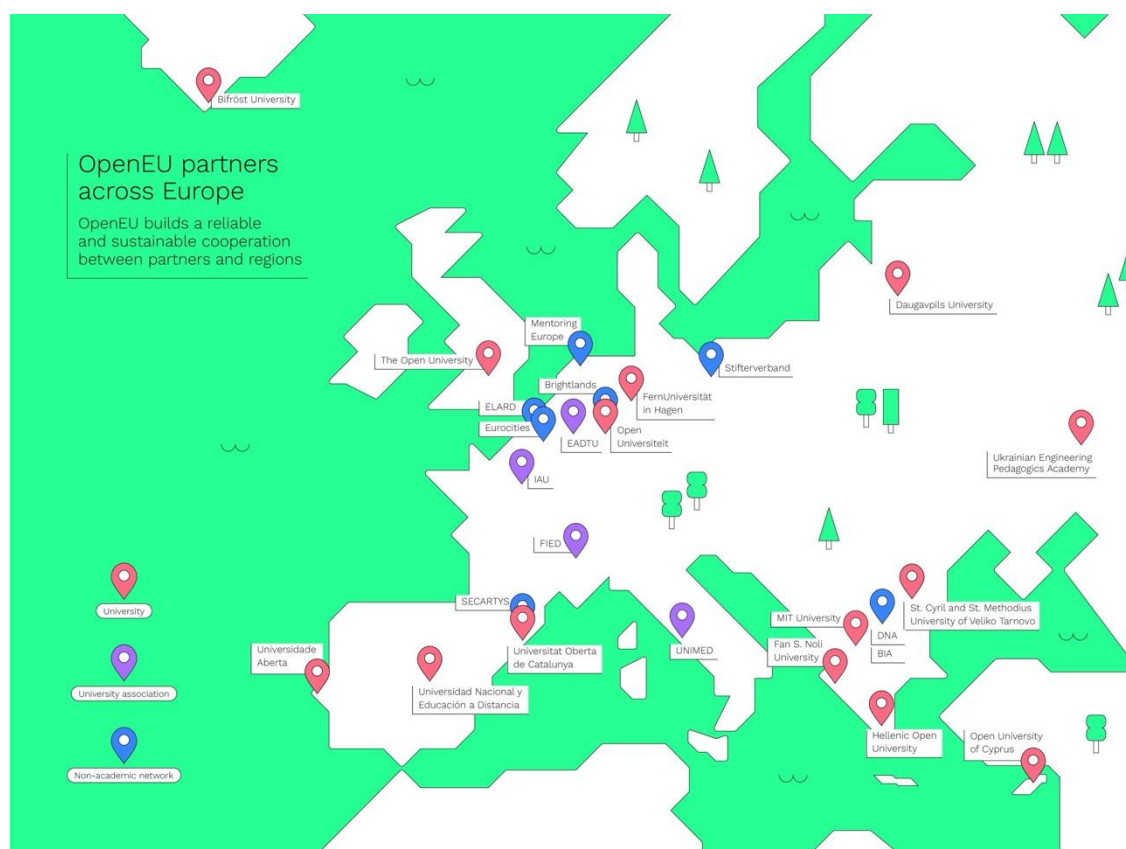


Figure 8. Geographical mapping of OpenEU Alliance partners (OpenEU, 2025)

In the year of reference for the EF baseline (2023 or 2024), the OpenEU Alliance served more than 400 000 students, supported by more than 10 000 academic and non-academic staff. The OpenEU Alliance produced 34 771 graduates and published 3 833 indexed publications, allocating approximately €38 million for research funding (Table 15).

Table 15. OpenEU Alliance general information data for Year 1

OpenEU 2023/2024	Students (n)	Staff (n)	Publications (n)	Graduations (n)	Fund for research (€)
	420 339	10 029	3 833	34 771	€38 259 250

3.2. Data Collection Process

The data collection process for the baseline year was conducted by nine of the 10 universities. Most of the universities reported the data for 2024, FeU reported the data for 2023, and BU only report general categorization data.

3.3. Ecological Footprint Results

In the baseline year, the total EF of OpenEU was estimated as 77 223.6 gha. Activities under the indirect responsibility of OpenEU were the main contributors to the total EF, accounting for 80.7% of the EF (62 332.2 gha), while the activities under its direct responsibility accounted for 19.3% (14 891.4 gha), (Figure 9).

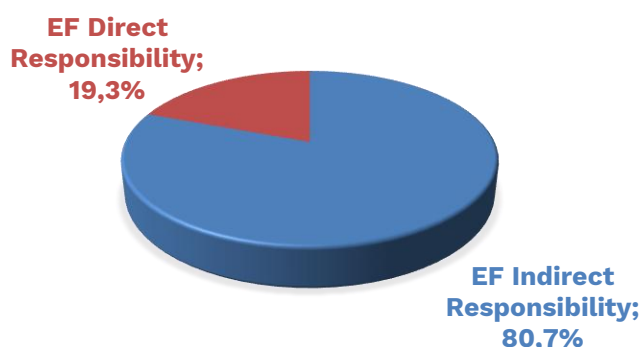


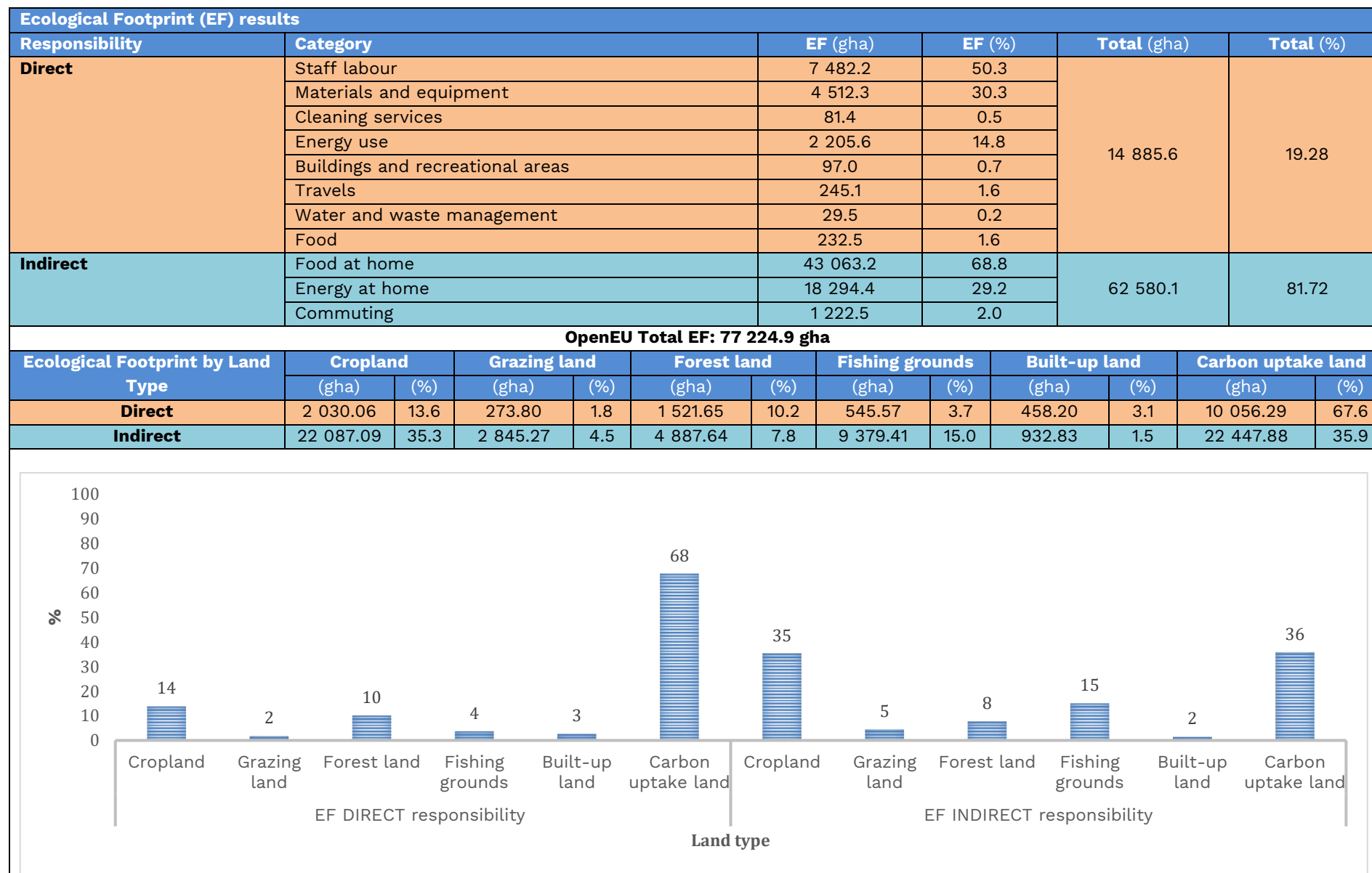
Figure 9. Total Ecological Footprint of the OpenEU Alliance (%)

Within the EF of the OpenEU Alliance under its direct responsibility, the results identified *staff labour* (50%), *materials and equipment* (30%), and *energy use* (15%) as the principal contributing categories, while other categories have only a minor contribution to the direct EF (Table 14). Regarding OpenEU Alliance's EF indirect responsibility, the results identified *food at home* (69%) as the most contributing category, followed by *energy at home* (29%), when studying or working, while *commuting* has only a minor contribution (2%).

Regarding the analysed ecosystem types, the EF of OpenEU, showed the highest levels of anthropogenic pressure on *carbon uptake land* (both under direct responsibility,

68%, and indirect responsibility, 36%) and *cropland* (for indirect responsibility, 35%) (Table 14). Specifically, under the OpenEU Alliance’s EF direct responsibility, *cropland* was the second highest affected land type (14%), while for EF indirect responsibility was *fishing grounds* (15%). The remaining land use types, namely, forest, grazing land, and built-up land, were less affected by the OpenEU EF (ranging from 2% to 5%).

Table 16. OpenEU Alliance Ecological Footprint results for Year 1



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Annex – Data Collection Layout

[UAb_University Footprint calculator-Open EU_clean Layout.pdf](#)