

Engagement with the Community and Partnerships for Sustainable Food Production and Consumption in Portuguese Higher Education Institutions

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Abstract. The Sustainable Food Production and Consumption Working Group of the Sustainable Campus Network (RCS) participated, in 2020/21, in a survey of Higher Education Institutions (HEIs) in Portugal. One of the sections of this survey aimed to better understand what is happening in HEIs in terms of the food service sustainability.

Food Production and Consumption is a critical theme for sustainability and has a very high importance within the scope of actions and interventions of HEIs in the society. Training, research, internal practices, and partnerships are easily identified as ways for HEIs to impact society. The work presented here focuses on the results obtained from the survey in terms of existing partnerships and connections within the community.

The survey was answered by 30 HEIs, comprehending Public and Private Universities, Polytechnic Institutes and Non-Integrated Schools. In the set of responses, 24 HEIs (80%) responded positively to the question: “Does the HEI have initiatives for the promotion of sustainable food consumption?”. One of the survey goals was to analyse the HEIs “connection to the Community”.

The results show us that there are few references to the relationship regarding the supply chain, namely, on producers and HEI’s. However, references to the traditional HEIs’ partnerships are frequent namely functional research and teaching partners amongst other scientific areas, active networks, internships, and conferences. A good practice is the brand-new network regarding partnerships focused on the reduction of food waste and evolving academic community.

The results suggest that mainly all the HEIs lack a systemic strategy of building bridges with the community, as a two-way avenue to achieve sustainability.

Keywords: Sustainable Food Production; Sustainable Food Consumption, Higher Education Institutions, survey, partnerships

1 Introduction

It is widely recognized that food production and consumption is one of the domains responsible for the largest share of environmental impact, such as Greenhouse Gases (GHG) emissions, water pollution and loss of biodiversity that will increase the global population crisis [1]. Thus, the importance that the food system has in the society, makes it a very critical issue and an opportunity to achieve sustainability, in all of four dimensions, human, social, environment and economic.

The challenge of ensuring the satisfaction of the human needs for food in conditions of sustainability on Earth cannot fail to be a topic at the higher education institutions. Each HEI can inspire its academic community and society in general, with its knowledge and new solutions achieved through training, research, and partnerships. HEIs can undoubtedly evolve themselves because it is their mission to train, research and innovate, but also because they ensure the provision of a wide number of meals to the extent academic community. To the purpose of supplying the food services HEIs establish relationships with the internal and external community but also partnerships. The present study aims to understand if the relationship with the community and partnerships by Portuguese HEIs are sustainability oriented.

In 2020/21, the Sustainable Campus Network (*Rede Campus Sustentável - RCS*), led a survey on Sustainability in the Higher Education in Portugal. The questionnaire was sent to all HEIs inquiring on several aspects regarding the sustainability implementation at each Institution. One of the topics covered was the “Food Production and Consumption”. The questions were designed by the Sustainable Food Production and Consumption Working Group (GT-PCAS) from the RCS. The aim of this survey was, in addition to carry out a first diagnosis of the HEIs, the gathering of initiatives, best practices, instruments used, obstacles encountered and facilitating elements, which may inspire the path towards sustainability specifically concerning the food area [2]. The data presented in this paper specifically refer to the relationship with communities and partnerships, or in other words “linkages to the community”.

2 Literature review

2.1 Food: The Portuguese reality

Portugal is a country characterised by a Mediterranean Diet, but it is shifting towards an "occidentalised" diet, where large quantities of animal-based proteins are consumed [3]. National studies show that the Portuguese are consuming more than three times the amount of meat, seafood and eggs recommended in the National Food Wheel and 33 % more dairy, whereas fruits and vegetables are well below the recommended values [4]. Environmental problems such as the Global Warming Potential of the food chain shows that Portugal has the largest contribution value - 1460 kg CO₂ eq./cap.year, whereas

the average EU diet shows to contribute with 1070 kg CO₂ eq./cap.year) [5]. Food waste is also a severe issue in Portugal, representing 17% of the total food produced for human consumption in the country [6]. Portugal's ecological footprint is almost three times higher than its biocapacity (3.69 gha/cap vs. 1.28 gha/cap) and food consumption has a contribution of 30 % to the ecological footprint [7]. In overall, a lot needs to be done to promote national sustainable food consumption practices and HEIs can play a leading role.

Nowadays, Portuguese dietary habits are also one of the main causes of health problems. Since 2017, the Portuguese Nutrition Association (APN) has been developing the "Food Sustainability Program" which aims to increase food literacy, particularly among school-age young people, while raising awareness of the relationship between food and sustainability [8]. But, in general, food literacy is presented as a mainly informative and health-oriented concept. The dissemination of the Mediterranean Diet assisted on providing the support for the raise of the awareness on healthy and more sustainable food consumption patterns [8]. The importance of the use of the Mediterranean Diet for the menu planning in school meals, is also recognised in The Guidelines on School Menus and Canteens [9].

2.2 HEIs and Food Chain sustainability

It is well known the contribution of food to "good" health. Less frequently looked at is the relationship between food choices and the sustainability in all its dimensions. This happens even though research studies have been showing that this association should not be neglected. The large environmental impacts of the food chain, relies strongly on the industrialised agriculture. Some aspects contributing to the environmental burden are the intensive farming industry with the use of antibiotics, abuse of chemicals and agricultural traditional practices that lead to soil erosion, intensive production of fish and cattle with high methane and other emissions, food distribution based on long circuits, disconnection to local ecological cycles as the seasonality of food and high levels of waste. Simultaneously, the market is led by powerful economic groups that don't internalise the socio-ecological externalities and the distribution of income is often unfair.

The challenge to promote the transformation towards more sustainable practices in the agri-food chain system, requires action by the whole society and its institutions. It is proposed by The Eat-Lancet Commission's report "Food in the Anthropocene" [10] specific measures for the public sector, including schools and universities:

- Government leads the way and promotes what is meant to be "right type of food".
- Empowering schools agents (professors, staff and students) to develop a curricula that can lead to societal and cultural change relationship with food.

HEIs have been addressing issues of sustainability for some decades. Several HEIs sustainable development initiatives, related at the 14th European Roundtable on Sustainable Production and Consumption (ERSCP) & 6th Environmental Management for Sustainable Universities (EMSU) [11], have brought to light some issues on this topic.

One of the suggested initiatives were collaboration with other universities and stakeholders, such as the public, governments, non-governmental organisations (NGOs) and businesses, to seek collaboration, engagement, and outreach [11].

HEIs have the means to lead a path to establish a sustainable food chain system. This can be done by cooperating among university in a multidisciplinary approach, creating partnerships in various areas of knowledge and induce a strong relationship with the community. Such actions may constitute the basis to provide the means to change the agri-food system towards a more sustainable path. HEIs can, for instance, suggest policies and models, indicators, new solutions, innovations, and platforms. HEIs can lead by example because are also responsible for feeding millions of people daily. The food service provision also results in a lot of food and packaging waste. Some authors mention that HEIs may act as “sustainability laboratories” and became leaderships to the urgent need of changes [12].

2.3 The HEIs role and the importance for partnerships

Universities, industry, and policy makers can strive together to incentivize these systemic processes, through shared value and common purpose to ensure the persistence of human and planetary health [13]. Some institutions are already taking the lead. There are different HEIs’ action roles concerning the strategy to networking and the engaging of the community, as an essential key factor. There are a quite number of examples worldwide.

A recent attempt to link environmental impact and food nutrient quality was conducted by a larger research project with the participation of various university departments in Sweden [14].

In United States, according to the work of Ringling & Marquart [13] concerning the creation of a program for Sustainable Food Systems to develop diets that nurture human health required multiple disciplinary actors. The University of Minnesota is well-positioned to play a key role in developing models and frameworks supporting. This integrative, systematic process can improve the efficacy of nutrition research by intimately engaging across the supply chain, thus effectively translating research into practical application [13].

2.4 Experiences about Sustainable practices of Food Provisions in Schools

In this new paradigm, it is necessary to rethink how to involve the new partners and new actors from the food chain system. Some examples integrating the network are the producers/farmers, the retailers, the distributors, the marketing, the final consumers, the food waste management agents from the HEIs’ canteens and existing bars. The published experiences of new chains mainly refer to school canteens from non-higher education institutions. The published experiences [15-17] analysed the supply to school canteens and concluded that the main point of attention has been the acquisition of healthy foods, by considering their nutritional value. Delgado [18] reports the pilot experience of supplying local organic food to the canteens of an elementary schools in the

Municipality of Torres Vedras and identifies the problem of insufficient supply of products due to lack of availability of land to produce local and organic food. The project reveals the importance of cooperation between schools and municipal departments and between these and the local actors.

This experience follows the example of the project Urbact_BioCanteens in the French city of Mouans Sartoux. The three city school canteens (about 1,400 meals a day) are supplied with 100% organic products, most of which are produced locally. In 2012, were produced 15 tons that covered 50% of the supply and in 2015 it amounted to 85% of the needs. In 2016, these players guaranteed 100% of the vegetables and fruit products consumed in school canteens [19]. Similar examples can be found in public school's canteens in Portugal [20].

In Portugal, the HEIs and Research Centers establish partnerships and collaborate with each other essentially for research projects and publications [21]. Partnerships with the community are less frequently reported, due to that it is important to know how the HEIs are facing this challenge, what are the new experiences, new practices, new relationships with the internal and external community and new partnerships are being established and conducted.

3 Methodology

The survey carried out to all Portuguese HEIs, aimed to better understand what is happening in HEIs in the food sector, to list good and inspiring practices and facilitating actors to implement them. The survey was organized in complementary types of initiatives, namely: i) Education, ii) Research, iii) Management, iv) Partnership and v) Others. The present study is focused just on the answers integrated in the "partnership" thematic. The survey questions were therefore designed to allow open answers describing initiatives, with their own examples, as it is transcribed in the table 1.

Table 1. Questions from the Survey on Sustainability in Higher Education in Portugal 2020, section "Food Production and Consumption" related to Partnership & Community engagement.

<p>Question: <i>Does the HEI promote initiatives to promote sustainable food consumption?</i></p> <p>Answers: a) No</p> <p style="padding-left: 40px;">b) Yes, through the relation with the community (social actions for the community, inside and outside the campus)</p> <p><i>The HEIs were asked to mention the main initiatives developed, the most relevant initiative, the main results, and the facilitating institutions that were involved in initiatives to promote sustainable food consumption.</i></p> <p><i>Finally, the HEIs were asked to specify the main obstacles founded in promoting sustainable food consumption.</i></p>
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First, the results were clustered by a review analysis of the answers that in general were endogenous and unique actions to each HEI. The clusters were organised by related thematic and sub-thematic areas and divided in 2 categories: i) External and ii) Internal community and partnerships engagement.

It was considered as “external community and partnerships” all the actors and agents involved in the food system, namely, production and sustainable food consumption, from: local producers, local government, social and non-governmental organizations, education institutions and research project funding agencies. A similar definition was applied to the “internal community and partnerships”, in this case, inter and intra-campus research between organizational units, social welfare and other entities that provide services that plays an important role in promoting networks that design and implement different actions.

All answers were classified in the respective theme and sub-theme and then, counting the total number of responses per theme, whenever possible. There is a subjective component on this step because classification of statements into sub-themes was based on content analysis, with semi-quantitative accounting, so the numerical values should only be read as indicative values. The confidentiality was guaranteed by coding, although some of the HEI reference their name in the answers. The websites and links provided in the answers weren't considered in the transcriptions.

4 Results

The survey was answered by 30 HEIs, Public and Private Universities, Polytechnic Institutes and Non-Integrated Schools. In the set of responses, 24 HEIs (80%) responded positively to “do you promote initiatives to promote sustainable food consumption?”. Each of 24 HEI indicated the type in which it developed the initiatives, and the “Partnership & Community engagement” obtained around 68% of affirmative answers.

In the partnership type of initiatives, 48 were considered external and 43 were considered internal partnerships and community engagement.

4.1 External community and partnerships

Table 2 shows the 48 listed statements where the repeated ones were only counted in the total number of statements, organized by sub-themes. The results show that external partnerships occur between health, governmental, social, and environmental entities. Enterprises also appear with commercial projects and products. There are new partnerships dealing with food waste and bio-waste management. Mainly this links happens due to students' internships places. The local food production is one of the less frequencies' answers.

Table 2. 48 listed statements about external partnerships for sustainable food consumption organised by sub-thematic and respective percentage.

Sub-thematic	Statements	%
Health, research, local and national government entities, and organizations supporting children and the elderly	<p>Health entities: DGS General Health Directorate; ARS Regional Health Administration; Local Health Units</p> <ul style="list-style-type: none"> . Municipalities: CMLeiria, CM Funchal and CM Porto and another not described. Parish Council of Paranhos. Municipal companies: Novo Verde, Porto Ambiente, Lipor. . DGAV - General Directorate of Food and Veterinary Medicine, . Secretary of State for Food and Agri-Food Research. . National Institute of Agricultural and Veterinary Research . Public Education Establishment and Private Kindergarten Association, . Elderly homes 	37,5
Business Entities	<ul style="list-style-type: none"> • Food industry, distribution and retail companies: Nestlé, Continente, El Corte Inglés; Nigél, GoNatural, Sustainmeals; Calé, Receituárioim, Algaplus, Nautilus, Emanha, Frubaça; Cup; APCER; 2Go Out Consulting • Entities hosting interns, campaign development, food product innovation and quality management - implementation of the HACCP system 	35,4
Associations: Public and Private	<p>Non-Governmental Organizations: Doca Pescas; Lemon People Cooperative; ReFood; Caregivers Portugal; FAO Portugal; AGAVI; Dariacordar Association; Food Bank Against Hunger; Blue Flag Association of Europe – ABAE</p>	18,8
Local producers	Organic local producers and short supply chains	4,2
Project Financing Agencies	FCT, H2020, ADI, PRIMA, ERA-Net ARIMNet2	4,1

4.2 Internal community and partnerships

Table 3 shows the list of the 43 statements where the repeated ones were only counted in the total number of statements, organized by sub-themes. The results shows that internal partnerships occur mainly through research projects, with Social Action Services (SAS) and between different academic curricular courses. The less frequent answers are those that evolve students, or HEI community. There are activities for the academic community, but few are organized with the academic community.

Table 3 - List of 43 statements about internal partnerships for sustainable food consumption organised by sub-thematic and respective percentage.

Sub-thematic	Statements	%
Research Projects, Inter-institutional, national, and international co-operation	Network of Higher Education Institutions to Safeguard the Mediterranean Diet; College F3 – Food, Farming & Forestry; AGRO Network - Interdisciplinary Thematic Network for Agro-Food and Forestry; 5 a Day Program - Integrates the Alianza Internacional de Asociaciones Y Movimientos “5 al Día” (AIAM5); Healthy Campus; National Observatory of Organic Production; Colab4Food; COTHN; CCPAM; MAFDR; GROW CROPS; INOVIMIL; MobFood; Zero Waste Project; Right Dose Project; city loops	39,5
Between SAS-Social action services, with schools and faculties, with research centers, with nutrition courses	Partnership with schools, collaborative networks; interdisciplinary research institute, with schools and faculties, library; students, nursing professionals; 3rd year students of the Tourism and Hotel Management course. Application for the Food Excellence Seal (DGS) and implementation of operational measures Development of initiatives to encourage the reduction of food waste, calling for adequate consumption, monitoring of waste and promoting measures to optimize processes and resources. Awareness campaigns through messages in the canteen, in the media and on social networks.	25,6
Interdisciplinary	Degree, schools and faculties of Nutrition Sciences, other scientific areas and courses, other schools and faculties, schools of health, tourism, agriculture, science. Involvement with curricular units for the development of food icons.	20,9
Project for the community	Intra-campus: Workshops, practical training, community empowerment; Promotion of the habit of eating breakfast; Seal of Excellence for Sustainable Food, Food waste, organic waste, and recycling campaigns Intra and extra campus: events: the community is invited to participate, attend, or also promote their products; Health and Wellness Office and nutrition consultation	9,3
Student Projects	Old Fashioned Fruit; donation of clean leftover food	4,7

5 Conclusions

The results show that:

- There were slightly more external partnerships and community engagement type of initiatives than internal, regarding the number.
- there are few references to the relationships within the supply chain, namely to producers, but no reference to traditional relationships nor to new partnerships. It appears that the canteens food suppliers are not considered to be potential partnerships with influence towards more sustainability practices.
- The main and traditional HEI’s partnerships are research and teaching partners among other scientific areas, networks, internships, and scientific events. A

brand-new network of partnerships is focused on the reduction and/or management of food waste.

- The internal academic community actions that evolve all, are scarce and are top-down oriented.
- There were few initiatives with the students' as stakeholders
- We also assume the need to connect local production with the food supply school canteens needs is not yet explored.

We are led to conclude that the adoption of a new food cycle chains that could catalyse sustainability food production and consumption action in HEIs appears to be incipient.

This study is embraced by the GT_PCAS to be further developed in ongoing and future actions. These results should be seen as a first analysis, as we know that it is still possible to “widen” (there are more HEIs working on the topic) and “deepen” (the HEIs that responded did not map everything they do).

Despite the recognized relevance, the legislation, and the official national strategies to promote sustainable food production and consumption, this topic is not a daily reality practice, at HEIs. This restriction is highlighted by some HEIs, who claim that implementing sustainable food production and consumption is a difficult challenge due to the complexity of the actual and installed food system (production and distribution), food costs, social culture, habits, traditions, available resources and the limitations to HEIs actions posed by public procurement rules and laws. It is crucial to pursuit the goals, through action-research to achieve cooperative solutions of the main causes of HEIs food sustainability production and consumption claim.

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