



Planetary Health Report Card (Medicine): *University of Crete - School of Medicine*



2022-2023 Contributing Team

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Summary of Findings

Overall	D
<u>Curriculum</u>	D
<ul style="list-style-type: none"> • Our Medical School does not include planetary health in its core curriculum in neither compulsory or elective courses, with the exception of few brief optional covers in some courses. • Recommendations: Specific courses about planetary health should be integrated as well as supplement the existing ones (especially the main aspects that cause disease, such as air pollution). 	
<u>Interdisciplinary Research</u>	D-
<ul style="list-style-type: none"> • Our institution, through the affiliated University Hospital, the interdisciplinary Research Center unit (UCRC) and the Foundation for Research & Technology - Hellas (FORTH), do engage in various research activities related to planetary health / sustainable healthcare, such as: relevant labs and studies (including ongoing european-granted projects about climate change effects and microbiological hygiene of water and food), and the hosting of several conferences and webinars in the context of global environmental-collaboration networks. However, there is still lack of sufficient interdisciplinary-approach applications, systematic engagement and externalisation. • Recommendations: Deeper focus needs to be given in gradually conducting planetary-health and sustainable-healthcare research as a separate field by: analysing past progress and future prospects, creating realistic plans, reinforcing interdisciplinary approach, projects and collaborations nationally and worldwide. 	
<u>Community Outreach and Advocacy</u>	D-
<ul style="list-style-type: none"> • University of Crete has little community outreach relating to planetary health and climate change. Little effort is put in raising awareness about the health risks of climate change. They seem to support but not sufficiently promote community organisations that address these issues, neither they share updates about the current affairs of climate change. • Recommendations: More effort needs to be put in systematic impact recording, information providing, and the promotion of opportunities seeking for inclusive involvement among the students, the academic community and the general public. 	
<u>Support for Student-Led Initiatives</u>	D
<ul style="list-style-type: none"> • There doesn't seem to be any formal pathway for encouraging students to express their interest or apply to University' environmental activities. Only students' special interests and initiatives would lead them to seek for such opportunities and maybe end up partaking, such as the student voluntary "Green Team" engaging in environmental voluntary activities incl. the cleaning of the campus. Such actions are promoted through the University's monthly newsletter. • Recommendations: We recommend that the University put more effort in systematically encouraging and promoting student-led initiatives, as well as taking their input into better consideration. 	
<u>Campus Sustainability</u>	D
<ul style="list-style-type: none"> • Our institution has made good steps to increase sustainability of its campus but there's still room for improvement. There are plans and policies for SDGs, recycling and renewable energy usage, but they are not sufficiently supervised. Also relevant research activities take place about alternative energy sources, solar fuel production, environmental remediation etc. • Recommendations: We recommend trying to update the campus' buildings so as to be more environmentally-friendly, and better monitor the application of relevant policies. 	

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance describes planetary health as “a solutions-oriented, transdisciplinary field and social movement focused on analyzing and addressing the impacts of human disruptions to Earth’s natural systems on human health and all life on Earth.” This definition is intentionally broad, intended to encompass the multitude of ways that the environment can affect health, including water scarcity, changing food systems, urbanization, biodiversity shifts, natural disasters, climate change, changing land use and land cover, global pollution, and changing biogeochemical flows. The health of humanity is dependent on our environment, and our environment is changing rapidly and in disastrous ways. Although the World Health Organization has called climate change “the greatest threat to global health in the 21st century,” many medical school’s institutional priorities do not reflect the urgency of this danger to human health.

As future health professionals, we must be prepared to address the impacts of human-caused environmental changes on our patients’ health. This preparation is in the hands of the institutions providing our medical training. It is imperative that we hold our institutions accountable for educating medical students about the health impacts of climate change and other anthropogenic environmental changes, generating research to better understand health impacts and solutions, supporting related student initiatives, embracing sustainable practices as much as possible, and engaging with surrounding communities that are most affected by environmental threats. Because climate change and environmental threats disproportionately affect vulnerable populations (for example, communities of color, older adults sensitive to health threats, and individuals in low-resource settings), these issues are inherently ones of equity and justice.

With the purpose of increasing planetary health awareness and accountability among medical schools, we have created a Planetary Health Report Card that medical students internationally can use to grade and compare their home institutions on an annual basis. This medical-student-driven initiative aims to compare medical schools nationally and internationally on the basis of discrete metrics in five main category areas: 1) planetary health curriculum, 2) interdisciplinary research in health and environment, 3) university support for student planetary health initiatives, and 4) community outreach centered on environmental health impacts 5) medical school campus sustainability.

Definitions & Other Considerations

Definitions:

- **Planetary Health:** is described by the Planetary Health Alliance as “the health of human civilisation and the state of the natural systems on which it depends.” For example, topics such as climate change, declining biodiversity, shortages of arable land and freshwater, and pollution would all fall under the realm of planetary health. Both planetary health and traditional ‘environmental health’ examine the relationship between human health and the external environment, including extreme temperatures, chemicals, vector-borne diseases, etc. Planetary health explicitly concerns itself with the potential health harms associated with human-caused perturbations of natural systems. Therefore, the human health focus of planetary health makes the field well-adapted for the context of medical school education. Throughout this report card, we use the term planetary health to refer to this broad swath of topics, but resources do not need to explicitly include the term “planetary health” to satisfy the metric.
- **Sustainable Healthcare:** As defined by the Academy of Royal Colleges, sustainable healthcare involves ensuring the ability to provide good quality care for future generations by balancing the economic, environmental, and social constraints and demands within health care settings. A sustainable healthcare system maintains population health, reduces disease burden and minimises use of healthcare services.
- **Education for Sustainable Healthcare (ESH):** is defined as the process of equipping current and future health professionals with the knowledge, attitudes, skills and capacity to provide environmentally sustainable services through health professional education, thus working to decrease the enormous environmental impact of the healthcare industry. Planetary Health Education is an integral part of this education rather than an end in itself. This is because knowledge on Planetary Health is required to be able to fully understand the necessity of sustainable healthcare as well as being part of the broader knowledge needed to fully protect and promote health. In summary, ESH is covered by the three Priority Learning Outcomes of the Centre of Sustainable Healthcare below, and Planetary Health Education is embraced in the first learning objective and is a fundamental requirement to achieve learning outcomes 2 and 3:
 1. Describe how the environment and human health interact at different levels.
 2. Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems.
 3. Discuss how the duty of a doctor to protect and promote health is shaped by the dependence of human health on the local and global environment.
- **Medical School vs. Institution:** When “medical school” is specified in the report card, this only refers to curriculum and resources offered by the School of Medicine and does not include offerings from other parts of the university (e.g. undergraduate departments (USA), other related departments (e.g. Public Health, Population Health departments). In contrast, when “institution” is specified in the report card, we are referring to the university more

broadly. Any resource reasonably accessible by medical students, no matter where in the institution the resource comes from or if it is specifically targeted for medical students, can meet this metric.

- **Environmental history (Metric #19 in Curriculum Section):** This is a series of questions providers are taught to ask during medical encounters that elicits patients' exposures and environmental risk factors. Historically, this has included consideration of exposures like pesticides, asbestos, and lead, though in the modern era shaped by climate change, it can be expanded to include things like wildfire smoke exposure, air pollution and mold after flooding. Key components include place of residence over the lifecourse, occupational history, food and water sources (e.g. meat from industrial feeding operations, regular fishing in contaminated water, access to clean drinking water), and exposure to air pollution.
- **Elective:** The word "elective" refers to an optional course or lecture series that a medical student can opt to take part in but is not a requirement in the core curriculum. Generally, these elective courses take place in the preclinical curriculum but vary by school.
- **Clerkship:** This is a term used in the USA to refer to placements that medical students go on e.g. Pediatrics, General medicine, Psychiatry. In the UK these are referred to as rotations or placements.

Other considerations:

- If there are more than one "tracks" at your medical school with two different curricula (for example, Harvard Medical School has a Pathways and HST curriculum track), you can choose to fill out a report card for each track, or fill out just one report card and average the scores received by each track in cases where the scores are different (see the 2021 Harvard or Oxford report cards as examples).

Added to our resources last year, the Planetary Health Report Card [Literature Review by Metric](#) collates the evidence behind each of the metrics in the Planetary Health Report Card. It serves as a collection of references for further learning and a resource for those advocating for increased planetary health engagement at their institutions.

Planetary Health Curriculum

Section Overview: This section evaluates the integration of relevant planetary health topics into the medical school curriculum. Today's medical students will be on the frontlines of tackling the health effects of climate and other environmental changes. Therefore, it is critical that medical students are trained to understand the health effects of these changes, as well as planetary health issues and principles more broadly. Topics like the changing geography of vector-borne diseases, the health consequences of air pollution, environmental health inequities, and disaster response principles must be part of every medical school's core curriculum.

Curriculum: General

1. Did your <u>medical school</u> offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
3	Yes, the medical school has offered more than one elective whose primary focus is ESH/planetary health in the past year.
2	Yes, the medical school has offered one elective whose primary focus is ESH/planetary health in the past year.
1	The medical school does not have any electives whose primary focus is ESH/planetary health, but there are one or more electives that include a lecture on planetary health.
0	No, the medical school has not offered any electives on planetary health or electives that include ESH/planetary health topics in the past year.
<p><i>Score explanation:</i> University of Crete offers a mandatory course in the first semester called “Introduction to Public Health”, in which things that we can do about climate change in order to protect the future generations in the context of sustainable health, were mentioned. More specifically, we can reduce pollution and CO2 emissions into the atmosphere and have a healthy diet and a more sustainable food system. There are no related elective courses though.</p>	

Curriculum: Health Effects of Climate Change

2. Does your <u>medical school</u> curriculum address the relationship between extreme heat, health risks, and climate change?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: This topic was not covered in the curriculum.

3. Does your medical school curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: This topic was briefly covered during the public health course. It was mentioned that extreme weather events such as floods, sea-level rise and water shortage may cause long term consequences.

4. Does your medical school curriculum address the impact of climate change on the changing patterns of infectious diseases?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: This topic was not covered in the curriculum.

5. Does your medical school curriculum address the respiratory health effects of climate change and air pollution?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UoC's curriculum included a lecture at the course called 'Public Health' in which we discussed air pollution. More specifically, air pollution is divided into outdoor and indoor pollution and is caused by transport, dust, agricultural practices, waste management and household energy. In the context of this lecture, it was also mentioned the fact that suspended atmospheric particles are a great health risk since long-term exposure causes diseases of the respiratory system. Moreover, during the lesson we discussed that climate change and air pollution are threats to global health.

6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: UoC's curriculum addresses briefly the cardiovascular health effects of climate change, given that during a lecture, it was reported that long-term exposure to particulate matter reinforces its causal link with cardiovascular problems as the daily increase in deaths from cardiac or respiratory causes shows a daily increase of 0.6-0.8% because of environmental degradation and climate change.

7. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: University's curriculum addresses briefly during the course called Public Health the fact that complex and long-term exposure to environmental degradation because of natural chemical and biological agents cause not only diseases but also psychological problems.

8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation: University's curriculum includes a lecture in the public health course titled 'One Health' in which dietary habits are mentioned as a risk factor, which means that there is either more or less danger to health according to the person's diet so here comes the need for interventions. According to T. McKeown the quality of nutrition reduces mortality. We also mentioned the term 'One Health' which recognizes the connection of human health with the ecosystem around it. We also talked about the impact that food and water security have as far as public health is concerned.

9. Does your medical school curriculum address the outsized impact of climate change on marginalized populations such as those with low SES, women, communities of color, Indigenous communities, children, homeless populations, and older adults?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation:

University's curriculum addresses briefly during the course called "Introduction to Public Health", how environmental impacts on health are uneven across the globe and mostly affect the poor and marginalized people.

10. Does your medical school curriculum address the unequal regional health impacts of climate change globally?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation:

During the public health course, it was briefly mentioned the fact that low and middle income countries bear the greatest share of environmental disease.

Curriculum: Environmental Health & the Effects of Anthropogenic Toxins on Human Health

11. Does your medical school curriculum address the reproductive health effects of industry-related environmental toxins (e.g. air pollution, pesticides)?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation:

No it is not included in the curriculum. Neither as an individual subject nor as a particular lesson.

12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation:

No it is not included in the curriculum. Neither as an individual subject nor as a particular lesson.

13. To what extent does your medical school emphasize the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?

3	Indigenous knowledge and value systems are integrated throughout the medical school's planetary health education
2	Indigenous knowledge and value systems as essential components of planetary health solutions are included briefly in the core curriculum.
1	Indigenous knowledge and value systems as essential components of planetary health solutions are included in elective coursework.
0	This topic was not covered.

Score explanation: The curriculum does not have a particular subject or lesson that planetary health solutions are discussed.

14. Does your medical school curriculum address the outsized impact of anthropogenic environmental toxins on marginalized populations such as those with low SES, women, communities of color, children, homeless populations, Indigenous populations, and older adults?

3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.

Score explanation:

The outsized impact of anthropogenic environmental toxins on marginalised populations is shortly addressed as a part of a lesson about One Health within the subject "public health". There is a simple reference about the unfair impact of toxins and climate change-linked disasters on disadvantaged populations such as the populations in Africa.

Curriculum: Sustainability

15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?	
3	This topic was explored in depth by the core curriculum.
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>Score explanation:</i> No it is not included in the curriculum. Neither as an individual subject nor as a particular lesson.	

16. Does your <u>medical school</u> curriculum address the carbon footprint of healthcare systems?	
3	This topic was explored in depth by the core curriculum
2	This topic was briefly covered in the core curriculum.
1	This topic was covered in elective coursework.
0	This topic was not covered.
<i>Score explanation:</i> No it is not included in the curriculum. Neither as an individual subject nor as a particular lesson.	

17. Does your <u>medical school</u> curriculum cover these components of sustainable clinical practice in the <u>core</u> curriculum? (points for each)	
2	The health and environmental co-benefits of avoiding over-medicalisation, over-investigation and/or over-treatment
2	The environmental impact of pharmaceuticals and over-prescribing as a cause of climate health harm. Alternatively teaching on deprescribing where possible and its environmental and health co-benefits would fulfill this metric.
1	The health and environmental co-benefits of non-pharmaceutical management of conditions where appropriate such as exercise or yoga classes for type 2 diabetes; social group activities such as gardening for mental health conditions; active transport such as bicycle schemes. This is commonly known as social prescribing in the UK.
1	Environmental impact of surgical healthcare on planetary health and the climate crisis, and how can it be mitigated

1	The impact of anaesthetic gases on the healthcare carbon footprint and ways to reduce anaesthesia environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions
1	The impact of inhalers on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers.
1	Waste production within healthcare clinics and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting)
	<i>The core curriculum involves a coursework called "Toxicology", in which the health and environmental risks of using certain gases in medicine are stated. Avoiding over-medicalisation and over-treatment are often mentioned in the course curriculum, especially in Pathology and Pharmacology.</i>

Curriculum: Clinical Applications

18. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies to have conversations with patients about the health effects of climate change?	
2	Yes, there are strategies introduced for having conversations with patients about climate change in the core curriculum.
1	Yes, there are strategies introduced for having conversations with patients about climate change in elective coursework.
0	No, there are not strategies introduced for having conversations with patients about climate change
<i>Score explanation: No it is not included in the curriculum. Neither as an individual subject nor as a particular lesson.</i>	

19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies for taking an environmental history or exposure history?	
2	Yes, the core curriculum includes strategies for taking an environmental history.
1	Only elective coursework includes strategies for taking an environmental history.
0	No, the curriculum does not include strategies for taking an environmental history.
<i>There is an elective course in the curriculum available for fifth year medical students called "Tropical Medicine". This course also mentions the importance of asking about environmental exposure when taking history, especially through travel.</i>	

Curriculum: Administrative Support for Planetary Health

20. Is your <u>medical school</u> currently in the process of implementing or improving Education for	
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Sustainable Healthcare (ESH)/planetary health education?	
4	Yes, the medical school is currently in the process of making major improvements to ESH/planetary health education.
2	Yes, the medical school is currently in the process of making minor improvements to ESH/planetary health education.
0	No, there are no improvements to planetary health education in progress.
<p><i>Score explanation:</i></p> <p>Our Medical Curriculum has recently been renewed. We are not aware of any prospect of improving incorporation of planetary health / sustainable healthcare topics for future plans. The competent Committee's discussions are not transparent and easily accessible to the students anymore, as they used to. So we cannot be certain of any discussions in progress.</p>	

21. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the <u>core</u> curriculum?	
6	Planetary health/ESH topics are well integrated into the core medical school curriculum.
4	Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum.
2	Planetary health/ESH is not integrated and is primarily addressed in (a) standalone lecture(s) .
0	There is minimal/no education for sustainable healthcare.
<p><i>Score explanation:</i></p> <p>In some relative subjects such as "Introduction to Public Health" and "Microbiology", the concept of one health and generally the practical connection between the environment and human health have been presented and analysed during standalone lectures and slides through theory, examples and cases, but without distinctly being included in the core curriculum as learning outcomes or required obtained knowledge to pass the exams.</p> <p>[anatheorimeno-pps_perigrammata-mathimaton-2022-2023.pdf (uoc.gr)]</p>	

22. Does your <u>medical school</u> employ a member of faculty to specifically oversee and take responsibility for the incorporation of planetary health and sustainable healthcare as a theme throughout the course?	
1	Yes , the medical school has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare
0	No , the medical school does not have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare.
<p><i>Score explanation:</i></p>	

Our Committee of Undergraduate Studies is subdivided into subcommittees for Student Issues, Curriculum and International Studies Program. No further roles that we are aware of do apparently exist, so there doesn't seem to be any competent member assigned for overseeing the incorporation of such topics in the curriculum, regardless of the fact that, in the context of its role in achieving the SDGs worldwide, the University of Crete is committed to integrating sustainability into its quality objectives for research, education, development and modernization.

Section Total (20 out of 72)

28%

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Are there additional curriculum resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Interdisciplinary Research

Section Overview: *This section evaluates the quality and quantity of interdisciplinary planetary health research at the medical school and broader institution. Interactions between health and the environment are complex and multifactorial. While climate change has been extensively studied from an environmental science perspective, planetary health is an emerging field. As leading health institutions with talented researchers and research resources, medical schools should fund research studying the health effects of climate change and anthropogenic environmental toxins. This obligation is particularly strong because the public and policymakers are more attentive to climate change when its implications for human health are emphasized.*

1. Are there researchers engaged in planetary health research and healthcare sustainability research at your medical school ?	
3	Yes, there are faculty members at the medical school who have a primary research focus in planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the medical school who are conducting research related to planetary health or healthcare sustainability, but it is not their primary research focus.
1	There are planetary health and/or healthcare sustainability researchers at the institution , but none associated with the medical school.
0	No, there are no planetary health and/or healthcare sustainability researchers at the institution or medical school at this time.

Score explanation:

The [Institute of Molecular Biology and Biotechnology of the Foundation for Research and Technology Hellas \(IMBB-FORTH\)](#) is one of the most prominent life science research institutions in Greece, located at Heraklion, Crete, near the University of Crete’s Campus of Voutes where the medical school is located. It has an outstanding record of scientific achievements, state of the art infrastructure and a broad range of research, innovation and educational activities. IMBB’s main mission is to pursue cutting-edge research and promote scientific excellence.

The wide-range of research activities of the Institute aim at understanding the basic principles of the biological processes operating in living organisms. IMBB also hosts interdisciplinary research programs at the interface of biology with informatics, chemistry, physics or medicine and is heavily involved in providing post-graduate students high-level education through joint graduate programs with the University of Crete. An additional standing mandate of IMBB is the exploitation and translation of acquired knowledge to tangible societal benefits, including the development of new technologies, innovative products and services.

IMBB-FORTH has developed strategic partnerships with the Department of Biology, the Medical School of the University of Crete and EU-LIFE.

- Among the research fields in which the institute is involved, “Plant-Microbe Biology” and “Vector-Borne Diseases” are those which somehow connect human health with the environment. A few professors of our Medical School working in the institute as researchers have active labs and projects of these fields, but without these really constituting their primary research focus.

Regarding the research taking place in our Medical School from labs and staff members, there are a few ongoing projects that we know of, which have to do with this topic:

- Participation in the EU LIFE+ Program: “MEDEA: Mitigating the effects of desert dust storms exposure - reduction approaches”
- Participation in the EU Horizon program: “TRIGGER: Solutions for mitigating climate induced health threats” (Preventing the Harmful Effects of Climate Change on Health) [Since September 2022, Division of Mother & Child Health]
- Microbiological Hygiene of Water & Food (Anna Psaroulaki, Associate Professor of Zoonoses)

Sources: [Announcement \(uoc.gr\)](#) ; [E.Λ.Κ.Ε. | Πανεπιστήμιο Κρήτης \(uoc.gr\)](#)

In addition, Few of the staff members of our [Medical School](#) and Biomedical Research Institute ([Institute of Molecular Biology & Biotechnology - Foundation for Research and Technology - Hellas](#)) have been involved in some environmental research publications in the past.

Concerning related labs of the institute for the concept of climate change monitoring, the University of Crete with the Laboratory of Environmental Chemical Processes ([ECPL](#)) of the Department of Chemistry. It conducts Research on issues related to Environment and particularly to:

- atmospheric chemistry
- ecotoxicology
- environmental geochemistry
- chemical oceanography
- climate change
- aquatic chemistry

The ECPL has been operating on a continuous basis since 1993 the research station in [Finokalia](#) in the prefecture of Lasithi from which information on the composition of the atmosphere is recorded. The location and the continuous operation of the station for such a long period of time make it now unique in its kind. Ozone, a phytotoxic and greenhouse gas, has been recorded in Finokalia since 1997, while since 2002 the concentrations of the main greenhouse gases, carbon dioxide (CO₂) and methane (CH₄), have been measured, thus creating the largest time series of data throughout the Mediterranean.

Source: [news_uoc_9.pdf](#)

The evolution of the composition of the atmosphere is monitored in real time. Measurements are carried out at the stations in Heraklion, Chania and Finokalia Lasithi and additionally through the network of microsensors ([air-quality.gr](#)), which operates within the framework of the National Research Infrastructure: PANACEA, for the study of atmospheric composition and climate change. [[news_sept_21.pdf \(uoc.gr\)](#)]

The Pan-Hellenic Infrastructure for the Study of Atmospheric Composition and Climate Change (PANAKEIA) is the only integrated Research Infrastructure (RI) for atmospheric composition and climate change, not only for Greece, but for all of Southern Europe and the Eastern Mediterranean , an area that has been identified as an extremely sensitive area for climate change.

[Panacea \(panacea-ri.gr\)](#)

Regarding the sustainability research in particular, the research team of Giorgos Froudakis (Chemistry Department Professor) is studying, as an alternative solution for hydrogen storage, the design and use of porous materials that could adsorb hydrogen in their pores, like a sponge absorbs water. At the same time, the research team of Professor Pantelis Trikalitis of the Department of Chemistry collaborates on the synthesis and testing of these materials in the laboratory.

Closing, although the [University of Crete](#) contains departments and teaches subjects that cover a wide range of sciences and could form interdisciplinary approached projects dealing with planetary health [Physical Sciences [Chemistry, Physics & Astronomy, Geology, Environmental, Earth & Marine Sciences, Mathematics & Statistics), Life Sciences (Biological Sciences), Medical & Health Sciences,

Computer Sciences], the environmental and planetary health research still seems to be limited and not as interdisciplinary as it could be, but surely fundamental prospects do exist.

2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?

3	There is at least one dedicated department or institute for interdisciplinary planetary health research.
2	There is not currently a department or institute for interdisciplinary planetary health research, but there are plans to open one in the next 3 years.
1	There is an Occupational and Environmental Health department , but no interdisciplinary department or institute for planetary health research.
0	There is no dedicated department or institute.

Score explanation:

Universities have a critical role as potential game-changers: contributing to the understanding of global challenges and to the achievement of the SDGs. In this context, the University of Crete is committed to integrating sustainability into its quality objectives for research, education, development and modernization.

The [University of Crete's Research Center \(UCRC\)](#) for the Humanities, the Social and Education Sciences is an autonomous interdisciplinary research unit supervised by the UoC Senate. It is home to Research Laboratories and Research Projects, as well as self-funded Postgraduate Studies Programmes associated with the School of Humanities, the School of Social Sciences and the School of Education Sciences. UCRC aims to advance research excellence, to promote research information on national and international funding opportunities, and to support synergies and collaborations. Its events, seminars and conferences focus both on high-priority research topics and best research practices. UCRC is committed to linking theory to practice, and science to society.

A team from the UCRC has recently released a pilot study on 'Processes and Methods of Evaluating the Social Impact of Research at the University of Crete' ([Research social impact evaluation at the University of Crete: Study on the processes and methods](#)). This study reviews the national institutional and regulatory framework of Greek public HEIs as context of research impact considerations. Using available bibliometric and funding sources, the study then makes a first attempt at mapping the social impact of research and defining the objectives which enhance its strengths and cope with its weaknesses. Emphasis is given to the interaction between research, education, local collaborations and outreach activities which enhance the capacity of research to address key societal and economic challenges. The study concludes with an integrated proposal for the formulation of a research impact strategy at the University of Crete.

These are the main domains of recent and ongoing research programmes impacting the goals where UoC is coordinator or partner, as well as selected UoC research groups:

- Health & Well-Being
- Environment
- Society
- Economy
- Cultural Heritage

Source: [University of Crete Sustainable Development Goals | Sustainability in UoC](#)

The University of Crete proceeded, in June 2021, to set up the Committee for Sustainable Development. The Committee's mission is to record and promote the actions of the University of Crete regarding the Foundation's contribution to sustainable development and to submit proposals for strengthening it.

Concluding, there yet haven't been developed any departments / institutes specifically dedicated for interdisciplinary planetary health research in the University of Crete, only in the context of UHRC's work and SDGs' contribution for their implementation.

3. Is there a process by which communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda at your medical school?

3	Yes, there is a process in which community members impacted by climate and environmental injustice have decision-making power in the climate + environmental research agenda.
2	Yes, there is a process in which community members impacted by climate and environmental injustice advise the climate + environmental research agenda.
1	No , but there are current efforts to establish a process for community members to advise or make decisions on the research agenda.
0	There is no process, and no efforts to create such a process.

Score explanation:

The University's Environmental Chemical Processes Laboratory (ECPL) is a member of the Hellenic Network for Climate Change Mitigation (CLIMPACT), a flagship initiative launched in 2018 by the Research & Innovation Department of the Ministry of Education. The targets of CLIMPACT are:

- integration, harmonization, and optimization of existing climate services and early warning systems for climate change-related natural disasters in Greece, including supportive observations from relevant national infrastructures
- creating a scientific core of research excellence to generate new knowledge on climate change;
- establishment of an interdisciplinary consortium to act as an advisory body for the State and civil society on issues of climate change and its related effects.

+ Community Outreach Seminar about the causes and challenges of climate change for our region and the world (22/06/2022) (<https://www.uoc.gr/agenda/9512.html>)

In the context of our University's outreach strategic agenda, these above seem to be the only bridge to the general public for climate change, but without apparent stable connections to research.

As far as we are concerned, such kind of formal processes involving local communities to give input on their own in the research agendas of our University doesn't seem to currently be applied and we are not sure about the possibility of such efforts to be under discussion or being investigated as future plans.

4. Does your institution have a planetary health website that centralizes ongoing and past research related to health and the environment?

3	There is an easy-to-use, adequately comprehensive website that centralizes various campus resources related to health and the environment including all of the following: upcoming events, leaders in planetary health at your institution, and relevant funding opportunities.
2	There is a website that attempts to centralize various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive.
1	The institution has an Office of Sustainability website that includes some resources related to health and the environment.
0	There is no website.

Score explanation:

There doesn't seem to exist any separate website focused on Planetary Health in particular. However, there are webpages included in our University's main website which contain research programs and activities related to environment in the context of the UN SDGs' Agenda.

Attached here: [University of Crete Sustainable Development Goals | Sustainability in UoC](#)

- Webpage with Uni's main environmental interdisciplinary projects & partnerships: [Research Impact | University of Crete Sustainable Development Goals \(uoc.gr\)](#)

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?

4	Yes, the medical school has hosted at least one conference or symposium on topics related to planetary health in the past year.
3	Yes, the institution has hosted at least one conference or symposium on topics related to planetary health in the past year.
2	Yes, the institution has hosted a conference on topics related to planetary health in the past three years.
1	The institution has not hosted any conferences directly, but they have provided financial support for a local planetary health event.
0	No, the institution has not hosted a conference on topics related to planetary health in the past three years.

Score explanation:

Our institution has hosted some conferences & symposiums related to planetary health such as:

- EURIPA Rural Health Forum (2017) ([program.pdf \(uoc.gr\)](#))
- Climate Change, Ethics & Democracy Cultural Symposium (2017)

... and various of relevant educational seminars or activities such as:

- 22nd Annual Meeting of the Post-Graduate Environmental Research (04/12/2020) [Organised by the Biology Department & [HCMR \[Book-of-Abstracts-2020.pdf\]](#)]
- 2nd Forum of CLIMPACT (25-26/06/2021) for Climate Change & Tourism (Organised by the UoC and hosted in the Cretan Aquarium). Scientific data were presented which make visible climate change in our country and in the region of Crete, which is undeniably due mainly to greenhouse gas emissions from human activities.

[\[news_uoc_10.pdf\]](#)

- The Laboratory of Environmental Chemical Processes ([ECPL](#)) of the Department of Chemistry of the University of Crete, in collaboration with the Regional Directorate, organized a training day on the topic: "Learning and Teaching about Climate Change" . Key aspects of the phenomenon of climate change and the research activities of the Research and Innovation Hub in Finokalia Lasithi were presented and how they are part of the national EDU4Clima program, in order to promote teaching climate change through modern educational practices and educational innovation. [[16_february_22.pdf \(uoc.gr\)](#)]
- On Friday, November 4, 2022, in the multimedia room of the Natural History Museum of Crete, iSea and Green Tank organized a seminar in the context of the project "Know-Participate-Protect the Environment", which is implemented under the Active citizens fund program, on the topic: " Citizen participation in environmental policy-making – Newer developments in tackling biodiversity loss'. This project seeks to equip young people – with an emphasis on students and voluntary groups – with the necessary resources to actively participate in the policy-making debate concerning the environment and climate change. It is based on three thematic pillars: climate crisis, biodiversity loss and plastic pollution. The organization was supported by the Museum of Natural History of Crete and GreenTeam University of Crete. [[24_noemvrios_22.pdf \(uoc.gr\)](#)]
- The Region of Crete and the “Association of Friends of the Natural History Museum of Crete” implemented a series of "Environmental Education and Awareness Activities to highlight the natural environment of Crete". The Museum of Natural History of Crete opened its doors free of charge to the public, on the weekend of December 17 and 18, 2022, offering fun educational activities for young and old. [[SAvvatoKyriakoMFIK_PerifereiaKritis_Draseis.pdf \(uoc.gr\)](#)]
- Research Webinar: The “One Health” approach on infectious diseases’ epidemiology and on Public Health (lecture in Greek), on 22/10/2022 by Anna Psaroulaki, Associate Professor of Zoonoses, Lab of Clinical Microbiology & Microbial Pathogenesis

However, within the time zone of the past 3 years, no relevant conference or symposium was hosted.

6. Is your medical school a member of a national or international planetary health or ESH organization?

1 Yes, the medical school is a member of a national or international planetary health **or** ESH organization

0 No, the medical school is **not** a member of such an organization

Score explanation:

Our Medical School doesn't seem to constitute a member of such an environmental health organisation of those aforementioned.

However, our University Institution does have partnerships with organisations related to planetary health and the environment in general, such as:

- European Network for Environmental Citizenship [[Home | ENEC COST Action \(enec-cost.eu\)](#)]
- Hellenic Network for Climate Change Mitigation (CLIMPACT) [[CLIMPACT](#)]
- CLIMADEMY (CLIMAtE change teachers' acaDEMY) [[CLIMADEMY | CLIMAtE change teachers' acaDEMY | News & Events | University of Crete \(uoc.gr\)](#)]
- Hellenic Centre for Marine Research ([HCMR](#))
- ACTRIS (Aerosol, Clouds and Trace Gases Research Infrastructure) [[ACTRIS](#)]

- ATHLETE (Advancing Tools for Human Early Lifecourse Exposome Research and Translation) [[Home - Athlete \(athleteproject.eu\)](http://athleteproject.eu)]
- HBM4EU European Human Biomonitoring Initiative [[HBM4EU – science and policy for a healthy future](#)]
- Centre for the Study and Sustainable Exploitation of Marine Biological Resources [[CMBR – \(hcmr.gr\)](http://CMBR-hcmr.gr)]

Furthermore, on October 5th & 6th, the 2nd Symposium on the Sustainable Development Goals was held by the University of Rouen. The University of Crete, a member of the INGENIUM European University, presented its most important features, its position in international rankings, indicative actions and research programs that promote Sustainable Development and its connection with the society of Crete. As part of its extroversion strategy, the University of Crete, true to its commitment to tackling climate change, digital transformation and green development, discussed with all INGENIUM universities the creation and further development of partnerships that will play a pivotal role in achieving the objectives of the European University.

Section Total (4 out of 17)

23.5%

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Are there additional research resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Community Outreach and Advocacy

Section Overview: This section evaluates medical school engagement in community outreach and advocacy efforts associated with planetary health. Researching and teaching planetary health is necessary but not sufficient. It is critical that institutions also directly engage with communities most affected by environmental health harms. Although climate change is a problem largely created by those with power and resources, its impacts fall disproportionately on under-resourced populations and communities of color. Institutions should partner with local communities affected by climate change and pollution to share information about environmental health threats, advocate together for change, and provide opportunities for students to be a part of this work.

1. Does your medical school partner with community organizations to promote planetary and environmental health?	
3	Yes, the medical school meaningfully partners with multiple community organizations to promote planetary and environmental health.
2	Yes, the medical school meaningfully partners with one community organization to promote planetary and environmental health.
1	The institution partners with community organizations, but the medical school is not part of that partnership.
0	No, there is no such meaningful community partnership.

'Green Team' is a volunteering team consisting of University of Crete's students, focusing on finding sustainable solutions when it comes to the structure and the buildings of the University. Its actions is promoted through the University's monthly newsletter. However, our medical school in particular does not seem to have any such partnerships.

2. Does your medical school offer community-facing courses or events regarding planetary health?	
3	The medical school offers community-facing courses or events at least once every year.
2	The medical school offers courses or events open to the community at least once per year, but they are not primarily created for a community audience.
1	The institution has offered community-facing courses or events, but the medical school was not involved in planning those courses or events.
0	The institution/medical school have not offered such community-facing courses or events.

The institution sometimes organizes events or webinars concerning the environment. The most recent [webinar](#) was called: "Environmental Ethics during the pandemic and new medical advances".

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
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2	Yes, all students regularly receive communication updates dedicated to planetary health and/or sustainable healthcare.
1	Yes, planetary health and/or sustainable healthcare topics are sometimes included in communication updates.
0	Students do not receive communications about planetary health or sustainable healthcare.
<i>Score explanation:</i> No such practice seems to exist.	

4. Does the <u>institution</u> or <u>main affiliated hospital trust</u> engage in professional education activities targeting individuals post graduation with the aim of ensuring their knowledge and skills in planetary health and sustainable healthcare remain up to date during their professional career?	
2	Yes, the institution or main affiliated hospital trust offers multiple in-person or online courses relating to planetary health and/or sustainable healthcare for post-graduate providers, including at least one with a primary focus of planetary health.
1	Yes, the institution or main affiliated hospital trust offers one course relating to planetary health and/or sustainable healthcare for post-graduate providers
0	There are no such accessible courses for post-graduate providers
<i>Score explanation:</i> Apparently there doesn't seem to be any such concern.	

5. Does your <u>medical school</u> or its <u>primary affiliated hospital</u> have accessible educational materials for patients about environmental health exposures?	
2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated medical centers have accessible educational materials for patients.
Both PAGNI hospital and Venizeleio General Hospital (2 hospitals affiliated with the medical school of University of Crete) have online resources in their websites to inform citizens about environmental health exposures and how to prevent them.	

6. Does your <u>medical school</u> or its <u>primary affiliated hospital</u> have accessible educational materials for patients about climate change and health impacts?	
2	Yes, all affiliated hospitals have accessible educational materials for patients.
1	Some affiliated hospitals have accessible educational materials for patients.
0	No affiliated hospitals have accessible educational materials for patients.

Score explanation:

No educational materials about climate change and health impacts seem to be systematically provided.

Section Total (3 out of 14)

21%

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Are there additional community engagement and advocacy resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Support for Student-Led Planetary Health Initiatives

Section Overview: This section evaluates institutional support for student-led planetary health initiatives, such as funding, fellowships, programming, and student groups. Planetary health is a young field and, as young people facing a future deeply shaped by climate change, students are often some of the first at an institution to engage with it. Institutions should provide support for students to engage in sustainability quality improvement (QI) initiatives, discover mentors in their area of interest, and receive funding for planetary health projects.

1. Does your medical school or your institution offer support for medical students interested in enacting a sustainability initiative/QI project?	
2	Yes, the medical school or institution <i>either</i> offers grants for students to enact sustainability initiatives/QI projects <i>or</i> sustainability QI projects are part of the core curriculum.
1	The medical school or institution encourages sustainability QI projects (to fulfill clerkship or longitudinal requirements) and offers resources to help students succeed in these projects, but there is no student funding available and there is no requirement to participate.
0	No, neither the medical school or the institution offer opportunities or support for sustainability initiatives or QI projects.
<p><i>Score explanation:</i> We can't answer this question because there has been no organized attempt to create a sustainability initiative of a large scale in our department. We can blame ourselves but also the lack of planetary health subjects in the curriculum that would otherwise raise the awareness on the issue. But we can advocate that related activities such as the "GreenTeam" are encouraged.</p>	

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
2	The institution has a specific research program or fellowship for students interested in doing planetary health/sustainable healthcare research.
1	There are research opportunities for students to perform research related to planetary health/sustainable healthcare, but these require student initiative to seek these out and carry them out in their spare time.
0	There are no opportunities for students to engage in planetary health/sustainable healthcare research.
<p><i>Score explanation:</i> For the aforementioned Universities' research projects related to planetary health or healthcare sustainability, there is much potential room for student engagement. However, there doesn't seem to be any formal pathway for encouraging students to express their interest or apply. Only students' special interests and initiatives would lead them to seek for such opportunities and maybe end up partaking. So far, it has been done mainly through volunteering teams, which regularly promote their actions and need for recruitment.</p>	

In the School of Medicine additionally, students are provided with the opportunity to participate in mobility programs for the following purposes:

- To conduct clinical clerkships through the Erasmus program.
- To conduct clinical clerkships in Crete, outside Crete, outside Greece and outside the Erasmus framework.
- To conduct Laboratory work in selected U.S Universities in the Boston area (Boston University, Harvard University, MIT, Tufts), for 3rd year students.
- To conduct Clinical clerkships at the Boston University Medical School, for senior medical students.

But none of those is particularly related to topics of planetary health or healthcare sustainability.

Lastly, the School of Medicine has endorsed and launched a teaching assistantship programme (teaching grants – DEPROFOIT). Selected undergraduate students are assigned the provision of auxiliary teaching work in the laboratory components of courses. The selection of an undergraduate student for the DEPROFOIT programme is considered an honorary distinction, enhancing student motivation for high academic achievement, which is a constant goal of the School for its students. However not directly connected to planetary health either.

Source: [Undergraduate Study Guide, School of Medicine | UOC Short Studies Guides](#)

Hence, students' participation in academic research has generally being supported, but not in formal ways on behalf of the competents.

3. Does the medical school have a webpage where medical students can find specific information related to planetary health and/or sustainable healthcare activities and mentors within the medical school? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.

2	The medical school has a webpage with specific information related to planetary health or sustainable healthcare that includes up-to-date information on relevant initiatives and contact information of potential mentors.
1	There is a medical school webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the medical school, but it lacks key information.
0	There is no medical-school specific webpage for locating planetary health and/or sustainable healthcare projects or mentors.

Score explanation:

As part of the University's main website, there is a webpage including activities and projects, achieved and underway, related to the environment in general, but not clearly relating it to health. [[Research Impact | University of Crete Sustainable Development Goals \(uoc.gr\)](#)]

Our [medical school website](#) though does not contain at all any separate webpage with projects and mentors dedicated to planetary health or sustainability work through the years, although there is a webpage containing the School's laboratories as well as the projects and competents of each.

4. Does your medical school have registered student groups dedicated towards fostering a culture

of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?	
2	Yes, there is a student organization with faculty support at my medical school dedicated to planetary health or sustainability in healthcare.
1	Yes, there is a student organization at my medical school dedicated to planetary health or sustainability in healthcare but it lacks faculty support .
0	No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.
<p><i>Score explanation:</i> There is actually one team focusing on planetary health engagement called “GreenTeam”. They were the team that brought Climathlon to Heraklion with the help of the municipality and the faculty. It engages in voluntary activities such as the cleaning of the campus. But there are not medical students engaged, and it is not directly supported by the medical school.</p>	

5. Is there a student liaison representing sustainability interests who serves on a <u>medical school</u> or <u>institutional</u> decision-making council to advocate for curriculum reform and/or sustainability best practices?	
1	Yes, there is a student representative that serves on a medical school or institutional decision-making council/committee.
0	No, there is no such student representative.
<p><i>Score explanation:</i> No, there is not a special liaison officer representing sustainability interests but the student’s association can but doesn’t actively advocate for a curriculum reform and/or sustainability best practices</p>	

6. In the past year, has the <u>institution</u> had one or more co-curricular planetary health programs or initiatives in the following categories? (1 point each)	
1	Projects where students are able to gain experience in organic agriculture and sustainable food systems, such as gardens, farms, community supported agriculture (CSA), fishery programs, or urban agriculture projects.
1	Panels, speaker series, or similar events related to planetary health that have students as an intended audience.
1	Events in which students learn directly from members of a local environmental justice community about the climate and environmental challenges they face, and how health professionals can partner with their community to address these exposures and impacts.
1	Cultural arts events, installations or performances related to planetary health that have students as an intended audience.

1	Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.
1	Wilderness or outdoors programs (e.g., that organize hiking, backpacking, kayaking, or other outings for students)

Score explanation:

There have been abundant panel discussions (like the promo-partnership with the 1st medical conference about Climate change), cultural events and events to learn from environmentalists in the city in general (like a cultural event that analyzed the air pollution in the city and was followed by opera singing) and there are heavily advertised in our faculty newsletter.

Section Total (4 out of 15)	27%
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Are there additional student-led initiative resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Campus Sustainability

Section Overview: *This section evaluates the support and engagement in sustainability initiatives by the medical school and/or institution. The healthcare industry is a major contributor to greenhouse gas emissions as well as pollution that harms local, regional, and global ecosystems. While healthcare is, by nature, a resource-intensive endeavor, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinizing every aspect of how our systems operate, from where we source our energy, to how we build our infrastructure, to what companies we invest in. Our medical schools, clinics, and hospitals must set the standard for sustainable practices, and show other sectors what is possible when it comes to minimizing environmental impact.*

1. Does your medical school and/or institution have an Office of Sustainability?	
3	Yes, there is an Office of Sustainability with multiple full-time staff dedicated to campus sustainability. If the Office of Sustainability serves the entire campus, there is at least one designated staff member for sustainability at the hospital and/or medical school.
2	There is an Office of Sustainability with one or more full-time staff dedicated to campus sustainability, but no specific staff member in charge of medical school and/or hospital sustainability.
1	There are no salaried sustainability staff , but there is a sustainability task force or committee
0	There are no staff members or task force responsible for overseeing campus sustainability
<p><i>Score explanation:</i> There is not exactly one office of Sustainability but there are many offices that focus on trying to make University more sustainable.</p> <p>First of all, there is “The Division of Environmental and Analytical Chemistry” of the Department of Chemistry. It has strong research activities with participation in international and national competitive programs and close international cooperation.</p> <p>Also, there is the Aerosol, Clouds and Trace Gases Research Infrastructure (ACTRIS) is a pan-European research infrastructure producing long-term atmospheric data. To date, 22 countries have shown their commitment at organizational or state level. The UoC participates in the National ACTRIS Consortium in Greece through the PANhellenic infrastructure for Atmospheric Composition and climatE chAnge (PANACEA), coordinated by the UoC Environmental and Chemical Processes Laboratory (ECPL). The University’s Environmental Chemical Processes Laboratory (ECPL) is a member of the Hellenic Network for Climate Change Mitigation (CLIMPACT), a flagship initiative launched in 2018 by the Research & Innovation Department of the Ministry of Education.</p> <p>The Environmental Chemical Processes Laboratory (ECPL) conducts scientific research on environmental issues of the atmospheric chemistry, ecotoxicology, environmental geochemistry, oceanographic chemistry, the biogeochemical cycles, climate change, and aquatic chemistry. The teaching activities of the Division of Environment and Analytical Chemistry of the Chemistry Department, cover training of undergraduate students on Environmental and Analytical Chemistry, and holistic teaching and training of graduate students on analytical chemistry, environmental chemistry (atmospheric and water), computational environmental chemistry, climate change and sustainable development. The newest member of the division, just appointed on 10/2022 as Assist. Prof. is Anastasia-Chrysovalantou Chatziioannou, who specializes in analytical chemistry, metabolomics and proteomics.</p>	

2. How ambitious is your <u>institution/medical school</u> plan to reduce its own carbon footprint?	
5	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2030
3	The institution/medical school has a written and approved plan to achieve carbon neutrality by 2040
1	The institution/medical school has a stated goal of carbon neutrality by 2040 but has not created a plan to reach that goal or the plan is inadequate
0	The institution/medical school does not meet any of the requirements listed above
	<p><i>Score explanation:</i></p> <p>The University of Crete has conducted research about using hydrogen as an alternative, green fuel. But there is no specific goal.</p> <p>Specifically, 20 years ago the University started talking about using hydrogen in cars instead of fossil fuel. In this multi-year course many things happened such as 4 doctoral theses, 3 master's papers and published of more than 50 scientific papers, while there were partnerships with large companies and holdings in many national and European programs.</p> <p>The research team of the Professor of the Department of Chemistry Giorgos Froudakis is studying, as an alternative solution for hydrogen storage, the design and use of materials that could adsorb hydrogen. At the same time, his Professor's research team Department of Chemistry Pantelis Trikalitis collaborates for the synthesis and testing of these materials in the laboratory.</p>

3. Do buildings/infrastructure used by the <u>medical school</u> for teaching (not including the hospital) utilize renewable energy?	
3	Yes medical school buildings are 100% powered by renewable energy
2	Medical school buildings source >80% of energy needs from off-site and/or on-site renewable energy.
1	Medical school buildings source >20% of energy needs from off-site and/or on-site renewable energy.
0	Medical school buildings source <20% of energy needs from off-site and/or on-site renewable energy.
	<p><i>Score explanation:</i></p> <p>There's no recording of percentage that we know about.</p> <p>Generally, actions to achieve the use of renewable energy sources of the university are:</p> <ol style="list-style-type: none"> (1) Energy upgrading of existing buildings. (2) Replacing incandescent lamps with energy saving lamps. (3) Lighting of the external areas of the Campuses with solar lamps. (4) Installing a photovoltaic power generation system on the two university campuses.

(5) Installation of motion sensors for lighting in the corridors of the offices/buildings and other internal common areas such as toilets.

Also, the University of Crete organised an open online event for the Action "Energy Saving in public University buildings with data centres" which is implemented in the framework of the Interreg V -A Cooperation Program "Greece-Cyprus 2014-2020". The aim of the project is studying and implementing methods of maximising energy efficiency and intelligent energy management with appropriate configuration of the loads created by the operation of the computing and storage systems of the data centres, as well as the study and installation of photovoltaics to produce part of the necessary electricity. The project proposes the introduction of innovative technologies with the installation of Renewable Energy Sources (RES) supporting the transition to a low carbon economy in the demanding sector of data centres for education and research needs. In the context of the project, innovative systems of active management of the distribution of computing load between different facilities with data centres were studied and implemented, resulting in a reduction of the total energy consumption and a reduction of the emitted greenhouse gases. In particular, a network of energy metres was installed on the campus, which is interconnected with an information system for visualisation of the measurements. The utilisation of these systems gives the possibility to control the energy consumption in combination with the educational and administrative procedures which will be modified appropriately to improve the energy footprint. In the long term, this effort is expected to contribute to the creation of an institutional policy and an action plan, which will aim at more efficient energy consumption. In addition, the installation of photovoltaics for energy production and its coordination through intelligent load distribution will on the one hand lead to a further reduction of the aforementioned factors and on the other hand will not increase the percentage of contribution to energy production from RES.

4. Are sustainable building practices utilised for new and old buildings on the medical school campus, with design and construction of new buildings and remodelling of old buildings conforming to a published sustainability rating system or building code/guideline?

3	Yes, sustainable building practices are utilised for new buildings on the medical school campus and the majority of old buildings have been retrofitted to be more sustainable.
2	Sustainable building practices are utilised for new buildings on the medical school campus, but most old buildings have not been retrofitted .
1	Sustainable building practices are inadequately or incompletely implemented for new buildings.
0	Sustainability is not considered in the construction of new buildings.

Score explanation: Actions to achieve this plan:

- (1) Installation of energy metres in university buildings
- (2) Energy upgrading of existing buildings.
- (3) Utilisation of rainwater for irrigation

5. Has the medical school implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?

2	Yes, the medical school has implemented strategies to encourage and provide environmentally-friendly transportation options such as safe active transport, public transport, or carpooling and these options are well-utilised by students. Alternatively, the campus location is not amenable to unsustainable forms of transportation by default.
1	The medical school has implemented some strategies to provide environmentally-friendly transportation options, but the options are unsatisfactorily accessible or advertised.
0	The medical school has not implemented strategies to encourage and provide environmentally-friendly transportation options.
<p><i>Score explanation:</i> The Student Welfare Offices UoC in the framework of the project "Supporting social welfare interventions for students of the University of Crete" provide the possibility of subsidising urban travel.</p> <p>The project is implemented within the Operational Program "Human Resource Development, Education and Lifelong Learning" priority axis 6 "Improving the quality and efficiency of the educational system" and is co-financed by the European Union (European Social Fund) and by national resources.</p> <p>Specifically, students of the University of Crete and Medical School can receive the monthly urban transport card with a subsidy of 50% of its value.</p> <p>In this way, the Medical School promotes indirectly the transportation by public transport which is an eco-friendly option.</p>	

6. Does your <u>medical school</u> have an organics recycling program (compost) and a conventional recycling program (aluminium/paper/plastic/glass)?	
2	Yes, the medical school has both compost and recycling programs accessible to students and faculty.
1	The medical school has either recycling or compost programs accessible to students and faculty, but not both.
0	There is no compost or recycling program at the medical school.
<p><i>Score explanation:</i></p> <p>There's an IT and Communications Technology Services Infrastructure Center (a know-how center and advisory body of the University of Crete). The main purpose of this center is to promote the use of environmentally friendly technologies with the aim of saving energy and ensuring the recycling of <i>disused devices</i>.</p> <p>Also:</p> <p>(a) There is collection and recycling planning with the presence of special bins for glass, paper, metal, plastic, lamps, batteries, small appliances, computers and their accessories.</p> <p>(b) Solid waste is separated into recyclable and non-recyclable.</p> <p>(c) An effort is made to maximize the use of recyclable solid waste on University Campuses (e.g. composted materials/ topsoil)</p> <p>(d) There is planning for agreements with companies to collect the recyclable materials in exchange for their products which will reduce the operating costs of University facilities (e.g. recycled paper).</p>	

(e) There is planning to install water filtration distribution coolers in all buildings to reduce the use of plastic bottles.

7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?

3	Yes, the medical school has adequate sustainability requirements for food and beverages, including meat-free days or no red-meat, and is engaged in efforts to increase food and beverage sustainability.
2	There are sustainability guidelines for food and beverages, but they are insufficient or optional . The medical school is engaged in efforts to increase food and beverage sustainability.
1	There are sustainability guidelines for food and beverages, but they are insufficient or optional . The medical school is not engaged in efforts to increase food and beverage sustainability.
0	There are no sustainability guidelines for food and beverages.

Score explanation: The University of Crete is collaborating with a food company “Gefsinus” for daily feeding its students and staff in most department buildings. Gefsinus, demonstrating respect for the principles of environmental protection and prioritizing the human factor, carries out its activities following a course of sustainable development. Fully complying with environmental legislation, it seeks the prudent and rational use of natural resources, the improvement of its environmental performance and the elimination of the negative effects of its activities on the environment. The main axes of the environmental policy are: Reducing the volume of waste, 100% recycling of packaging, 100% rational management of fats and oils and raising awareness among employees and students. In addition to its sustainable strategy, the restaurant provides a wide range of food selections per day, including meat-free days and less red meat.

8. Does the medical school or institution apply sustainability criteria when making decisions about supply procurement?

3	Yes, the medical school has adequate sustainability requirements for supply procurement and is engaged in efforts to increase sustainability of procurement.
2	There are sustainability guidelines for supply procurement, but they are insufficient or optional . The medical school is engaged in efforts to increase sustainability of procurement.
1	There are sustainability guidelines for supply procurement, but they are insufficient or optional . The medical school is not engaged in efforts to increase sustainability of procurement.
0	There are no sustainability guidelines for supply procurement.

Score explanation:
Indirectly. The University of Crete is collaborating with a food company “Gefsinus”. With the central goal of reducing and preventing food waste in the catering industry, WWF Hellas and Gefsinus, one of the largest contract catering companies in Greece, joined forces and expertise to implement a program with innovative practices, "Food Providers, Food Waste Fighters". This program aims to collect quantitative food waste data and train industry workers to change the current situation. In this context,

the company has earned an award called Bravo Sustainability Awards 2022. WWF has made some training material based on the needs of Gefsinus' employees and held training workshops with the aim of adopting good practices to reduce food waste within the company. At the same time, they created and implemented an easy-to-use system for measuring and recording food waste, carrying out three pilot interventions in the same number of selected points of the business. For one month, Gefsinus measured and documented existing food waste, while highlighting good practices for reducing it based on qualitative and quantitative findings. However, there's no info about lab supplies, chairs, paper etc.

9. Are there sustainability requirements or guidelines for events hosted at the medical school?

2	Every event hosted at the medical school must abide by sustainability criteria.
1	The medical school strongly recommends or incentivizes sustainability measures, but they are not required .
0	There are no sustainability guidelines for medical school events.

Score explanation: The most events that are hosted at the medical school are hosted with the support of food companies. These companies have their own environmental policies. In the events there is no use of plastic plates. They use just paper cups for coffee and paper towels.

10. Does your medical school have programs and initiatives to assist with making lab spaces more environmentally sustainable?

2	Yes, the medical school has programs and initiatives to assist with making lab spaces more environmentally sustainable.
1	There are guidelines on how to make lab spaces more environmentally sustainable, but not programs or initiatives.
0	There are no efforts at the medical school to make lab spaces more sustainable.

Score explanation:

Our medical school:

(a) Educates and sensitizes staff and students on the rational use of chemical and biological reagents in order not to mix harmless with dangerous waste and to minimize hazardous waste. For this purpose, security and management seminars are organized in the individual Academic Departments hazardous waste.

(b) Limit (to the extent not detrimental to student education), and improve laboratory exercises in order to minimize the production of waste.

(c) It has in its planning the supply of modernized scientific instruments, modern technology, with smaller needs for reagents and less waste production

Moreover, University of Crete has conducted research about applications in heterogeneous photocatalysis, solar fuel production and environmental remediation in the labs of the University and in the Medical School. Specifically, the researches are about Nanoporous POM-based Catalysts for Green Organic Synthesis, Mesoscopic Assemblies of Chalcogenide Nanocrystals for Photoelectrocatalytic Water Splitting.

11. Does your <u>institution's</u> endowment portfolio investments include fossil-fuel companies?	
4	The institution is entirely divested from fossil fuels and has made a commitment to reinvest divested funds into renewable energy companies or renewable energy campus initiatives.
3	The institution is entirely divested from fossil fuels.
2	The institution has partially divested from fossil fuel companies or has made a commitment to fully divest , but currently still has fossil fuel investments.
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organised advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.
<p><i>Score explanation:</i> We don't really have any information about that, so we suppose there's no such concern.</p>	

Section Total (10 out of 32)	31%
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Back to summary page [here](#)

Are there additional sustainability resources offered at your medical school or institution not yet asked about that you would like to describe? If so, please do so below.

Grading

Section Overview

This section focuses on the grading of the report card. The institution received a grade for each of the individual sections as well as an overall institutional grade. Section point totals were tallied, divided by the total points available for the section, and converted to a percentage. The overall institutional grade is a weighted average of the section grades, with curriculum receiving a higher weight owing to its larger number of metrics. Letter grades for each section and the institution overall were then assigned according to the table below.

Letter Grade*	Percentage
A	80% - 100%
B	60% - 79%
C	40% - 59%
D	20% - 39%
F	0% - 19%

**Within each grade bracket, a score in the top 5% (_5 to _9%), receives a “+”, and a score in the bottom 5% (_0- _4%) receives a “--”. For example, a percentage score of 78% would be a B+.*

[Click [HERE](#) to calculate your score]

Planetary Health Grades for the University of Crete’s School of Medicine

The following table presents the individual section grades and overall institutional grade for the University of Crete’s School of Medicine on this medical-school-specific Planetary Health Report Card.

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	$(20/72) \times 100 = 28\%$	D
Interdisciplinary Research (17.5%)	$(7/17) \times 100 = 23.5\%$	D-
Community Outreach and Advocacy (17.5%)	$(3/14) \times 100 = 21\%$	D-
Support for Student-led Planetary Health Initiatives (17.5%)	$(4/15) \times 100 = 27\%$	D
Campus Sustainability (17.5%)	$(10/32) \times 100 = 31\%$	D
Institutional Grade	$(A \times 0.3 + B \times 0.175 + C \times 0.175 +$	D

	$D_{x0.175} + E_{x0.175} = 26.3\%$	
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