Planetary Health Report Card:

King's College London

2020-2021 Contributing Team:
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Summary of Findings

Curriculum	C

- Guy's, King's and St Thomas' (GKT) are leading the way by incorporating sustainability in healthcare in the core curriculum via QIPs, and should strive to update the rest of the curriculum to match this progress.
- Planetary health (PH) is solely covered in stand-alone lectures or optional modules, with a large proportion of points for this section coming from a student-led lecture delivered in final year. Fundamentally, introducing PH into the core curriculum should be faculty driven.
- We suggest that GKT commission an individual to specifically integrate PH into the curriculum. Further to this, PH topics should be introduced at an earlier stage and integrated into contextualised lectures and workshops.

Interdisciplinary Research	C

- King's College London (KCL) has an abundance of interdisciplinary health research centres and associated researchers highlighting PH issues, but there are no direct affiliations with GKT.
- We suggest incorporating projects from these centres within our Student Selected Components (SSCs) and Scholarly Projects.
- There is a robust BSc Global Health programme from which we could integrate teaching fellows to deliver lectures with GKT educators, and there are various conferences and symposiums which could be promoted to supplement the learning of medical students.

Community Outreach and Advocacy	C+

- KCL and GKT collaborate with community organisations and offer community-facing courses and events. Some of GKT's affiliated hospital trusts also offer limited PH information to patients. Although KCL provides news coverage on PH, medical students have scarce exposure to PH and sustainable healthcare issues.
- GKT can further improve by integrating PH community outreach into the medical school curriculum, increasing partnerships with local organisations, and encouraging affiliated hospital trusts to include more PH information to improve awareness in the community.

Support for Student-Led Initiatives	C

- GKT offers opportunities for students to be involved in sustainability projects as part of the curriculum through QIPs and Scholarly Projects. However, there are no other opportunities for students to be involved further with initiatives, no funded opportunities or organised activities such as talks or expeditions.
- GKT should build relations with external organisations, including student organisations who run such activities in order to collaborate and support them.

Sustainability	B–

- KCL has made great progress with campus sustainability and has dedicated policies in place to ensure improvements continue. Particular areas that require improvement include environmentally-friendly transportation, on-campus recycling and compost, supply procurement and sustainability requirements for events.
- Whilst this section scores well, the engagement from GKT has been minimal, with most sustainable initiatives run centrally by KCL. GKT could set up their own sustainability team to specifically advocate for sustainable practices on Guy's campus and to make health-related education less resource intensive.

Statement of Purpose

Planetary health is human health.

The Planetary Health Alliance defines planetary health as "a field focused on characterizing the human health impacts of human-caused disruptions of Earth's natural systems." 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 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.

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 change. Therefore, it is critical that medical students are trained to understand the health effects of climate change, as well as planetary health 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 medical school offer elective courses 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.

- GKT school of medicine offers three faculty-organised electives related to Education for Sustainable Healthcare/planetary health. 1. “Leadership in delivering a more sustainable healthcare system”, led by Stuart d’Arch Smith, 2. “Carbon Footprinting - can medical students and health professionals reduce their emissions?”, and 3. “The Sustainable Development Goals - the potential roles and responsibilities of medical curricula and medics” both led by Dr Ann Wylie.
- Of note, these projects are student selected and have limits on the number of students who can be supervised. This runs the risk of these courses only being undertaken by students with a prior interest in the subject, with others being left out due to limits on numbers. This could be overcome by commissioning more supervisors to enable more students to access these elective courses, or summarising the content of these courses in an open-access lecture series. Supervisors could facilitate presentation of student findings to their cohort in order to share and disseminate work fostered through the course.
- No ESH/planetary health topics were included in the Doctor as Teachers module, highlighting the importance of earlier inclusion of content.

Curriculum: Health Effects of Climate Change

2. Does your medical school curriculum address the relationship between extreme temperature health risks and climate change, as well as the socioeconomic/racial disparities in extreme heat

exposure?	
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.

- A student-led lecture on "Planetary Health and Sustainable Healthcare" was included in the final year Global Health and Elective module of the core MBBS curriculum.
- In its background section, it discussed the interaction between climate change and human health, with specific examples illustrating the effects of extreme heat, severe weather and environmental degradation. It went on to briefly highlight the link between climate change and health inequalities, but did not explore this in detail e.g. a graph showing ecological footprint by continent accompanied by an explanation that those contributing the least are disproportionately impacted by higher temperatures, soil degradation and crop failure, as well as how weather conditions may drive migration.
- This material could be more explicit in discussing the relationship between climate change and socioeconomic/racial disparities in exposure to extreme climates.
- Overall, contextualized content could be incorporated into the curriculum in a cross-cutting manner and earlier on. There is room in pre-clinical lectures especially to discuss the relationship between the climate crisis and public health.

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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" contained two narrated slides giving specific examples of extreme weather events, such as floods, forest fires and desertification, and their relationship with human health, including injuries/death, disrupted food supplies, poorer water sanitation, civil conflict and forced migration. It touched upon mental health issues experienced among affected communities, as well as eco-anxiety occurring indirectly from these events.
- The lecture mentioned the link with healthcare systems in the context of healthcare systems in safer countries needing to prepare to accommodate larger populations, as environmental degradation drives forced migration. The impact of extreme weather events on healthcare systems could have been made clearer with more examples included.

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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" covered this in two contexts. The first was the impact of extreme weather events on water sanitation and the spread of waterborne infectious diseases. The second was the emerging patterns of infectious diseases in non-endemic countries, driven by vectors surviving in areas where climate previously did not allow. This was illustrated with the example of mosquitoes and malaria, the geographic distribution of which is largely determined by climate.
- The slides on this topic made clear the connection between worsening natural disasters, changing climate, and the spread of infectious diseases.

5. Does your medical school curriculum address the cardiorespiratory health effects of climate change, including 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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" briefly summarised how rising air pollution and increasing allergens can worsen asthma and other respiratory diseases, as part of the section on climate change and human health.
- The cardiorespiratory health effects of climate change are far-reaching and well-researched. We suggest that it warrants a dedicated teaching session, as well as integration into preclinical themes, and respiratory and cardiovascular lectures in clinical years. This is especially pertinent for a medical school based in a city where, in a groundbreaking case, coroners concluded that air pollution from road traffic made a significant contribution to the death of a 9 year old girl with asthma. https://www.bmj.com/content/371/bmj.m4902.full

6. 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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" included a slide on the rising prevalence of eco-anxiety, and ways to cope with and manage feelings of eco-anxiety. It did not go into great depth.
- The mental health and neuropsychological effects of the climate crisis could be better integrated into mental health teaching for pre-clinical and clinical students. With it only being quite recently recognised as a formal diagnosis, students should be taught to include it in differentials, just as they would other subtypes of mental health conditions.

7. 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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" discussed the increasing precariousness of food and water security, linking this directly to climate change and the rise of extreme weather events. It then described some of the downstream consequences of this, including spread of infections (cholera, leptospirosis), malnutrition and diarrhoeal disease, mental health problems, and forced migrations.
- More case studies could be embedded in earlier teaching and the Global Health module of the curriculum.

8. 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, 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.**

- Content on the disproportionate impact of climate change on vulnerable populations in London/globally could be added to population health teaching.

9. Does your medical school curriculum address the unequal 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.
● The student-led lecture on "Planetary Health and Sustainable Healthcare" briefly discussed the unequal health impacts of climate change globally. It included a slide which illustrated the concept of an ecological footprint by continent, showing that continents with the lowest ecological footprint were the same regions disproportionately impacted by its effects, leading to higher temperatures, loss of water sources, and increased flooding. ● This could be expanded upon in a dedicated workshop/lecture series as part of the Global Health teaching in the curriculum.	

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

10. 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.**
● No, this topic is not currently covered in either the core curriculum or elective coursework.	

11. 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.

- As part of the fourth-year mandatory Quality Improvement Project (QIP), students are required to incorporate and measure outcomes related to sustainability in healthcare. This is an assessed learning outcome and therefore encourages students to consider some of the environmental threats caused by clinical practice in particular, which are relevant to their immediate surrounding community.
- However, this is only a subsection of a single module and relies on students engaging with the content sufficiently in a self-directed way. More could be done in the core curriculum to highlight worked examples from the local community, which would be an interesting and personal way for medical students to learn about sustainable healthcare, starting at home.
- No work is done by the medical school on the impact of air pollution caused by traffic in London, the main human-caused threat to the community that our university and hospital trusts are situated in. GSTT has a 'Healthy Air Programme', which aims to improve local air quality for the health benefits of patients, staff and community. This could be replicated on campus.

12. Does your medical school curriculum address the unique climate and environmental health challenges that have impacted and are impacting Indigenous communities?	
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.**

- An important part of global progress in planetary health is learning about and from Indigenous communities. Indigenous communities are central to understanding how we need to adapt to becoming more sustainable. This is therefore an important metric to highlight our responsibility to the global community.

13. 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, 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.**

- This should be explored in detail, for example, in the context of social/environmental determinants of health.

14. Does your medical school 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.**

- The student-led lecture on "Planetary Health and Sustainable Healthcare" included a concluding section on actionable steps that medical students can take. For example, projects, sustainable electives, activism and advocacy, and personal choices.
- A plant-based diet was not highlighted in the section on personal choices, but could be in future.
- In our earliest years, when learning about counselling patients on modifiable risk factors such as smoking, alcohol, food and exercise, students could also be taught about the environmental and health co-benefits of a plant based diet.

15. Does your medical school curriculum highlight the waste generated by the healthcare system and identify ways to advocate for and implement sustainable best practices in health care?	
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.

- The student-led lecture on "Planetary Health and Sustainable Healthcare" includes several slides describing the principles of sustainable healthcare. It highlights that the NHS is the most significant public sector contributing to climate change in the UK. An accompanying graph illustrates the breakdown of its carbon footprint, which largely comes from procured goods, such as pharmaceuticals and equipment.
- An embedded link plays a video from a hospital in Brisbane on the 'War on Waste' in hospitals. This highlighted the importance of cutting down on single-use devices where appropriate and safe; financial incentives for trusts to recycle accurately; and the use of organic waste to cultivate community gardens. It was clear how these incremental changes could be transferable to the trusts that we are on placement in.
- In hospital induction sessions, students could be made aware of the supply chain, production and disposal process of personal protective equipment (PPE). This may incentivise students to use PPE in a way that ensures they are always adequately protected, but not inappropriately so as to create unnecessary excess waste.
- The compulsory QIP undertaken by all fourth year medical students includes a section focussing on sustainability in quality improvement. The online student portal for this module features links to several relevant external resources, including a PDF of the document: 'Protecting Resources and Promoting Value: A Doctor's Guide to Cutting Waste in Clinical

Care' - "report into how the NHS can achieve better value in care and cost through ensuring that resources in clinical care are used appropriately and unnecessary interventions which do not add value for patients are avoided".

- A short narrated lecture for this module discusses the environmental costs of healthcare systems - the power needed to run a hospital, the daily waste generated, and the carbon footprint of prescribing practices e.g. asthma pumps. It went on to discuss strategies for mitigation - reducing activity vs reducing carbon intensity of practice, and updating guidelines to account for sustainable practice.
- Though this was an informative lecture, it was short and easy to miss. Principles could be taught as part of early Practice of Medicine/public health lectures, with more engaging and real-world examples incorporated.

Curriculum: Clinical Applications

16. In training for patient encounters, does your medical school's 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**

- This could be included in the GKT history-taking framework, under social history/ occupational/environmental exposures, and taught in clinical communication workshops such as 'explaining/exploring' stations for OSCEs. For example, holistic counselling of a patient with asthma - e.g. the circumstances in which it would be useful to check the weather forecast for air pollution levels.
- Other institutions have approached this with workshops led by climate change communication specialists, using specific strategies to emphasise the links between climate change and disease when communicating with patients. These didactic sessions are followed by a role-play exercise, providing immediate application, practice, and feedback in a low-stakes environment. In the same way that we are taught communication strategies such as motivational interviewing, these communication workshops could be integrated into our early clinical teaching.

17. In training for patient encounters, does your medical school's 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.

- At GKT, students are trained to take a full social history, which includes asking patients about exposures to environmental and occupational hazards e.g. asbestos/pets/industrial environments.
- As a medical school based in London where exposure to environmental factors such as air pollution are widespread, students need to be equipped to ask more specifically about environmental history.
- This could be taught in communication/clinical skills workshops. Making environmental histories a mandatory scoring point in OSCEs would drive learning and uptake, increasing the likelihood that students/future doctors include these routinely as part of taking a full social history.

Curriculum: Administrative Support for Planetary Health

18. Is your medical school currently in the process of improving Education for 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.

- The medical school at GKT has consistently been receptive to external efforts to improve Education for Sustainable Healthcare. As a result of collaboration with the Centre for Sustainable Healthcare, it has become a core component of the QIP module in our clinical years. Furthermore, faculty were keen to support student initiatives, such as the student-led narrated lecture that was implemented in the Global Health and Elective module.
- The medical school is not yet in the process of making 'major' improvements - a lot of change has been student driven, or initiated by individual faculty members. There is no dedicated committee tasked with curriculum development. King's Climate Action Network (CAN) has a subcommittee dedicated to embedding climate education into formal and informal teaching at KCL. A newly formed committee at GKT could readily learn from King's CAN strategies.
- To achieve major improvements, commitment to making PH and ESH a cross-cutting component of the medical curriculum is needed. We have made several suggestions on how to incorporate content earlier, and in a contextualised way throughout preclinical/clinical teaching.

19. How well are the aforementioned planetary health/Education for Sustainable Healthcare topics integrated longitudinally into the core 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.

- Sustainable healthcare is well-integrated into the fourth year QIP module. It is featured as a stand alone lecture in the Elective and Global Health Module.
- Moving forwards, it is important to achieve integration of ESH/planetary health into the curriculum longitudinally, as a cross-cutting theme throughout our medical education. This might involve scenario-based/systems-based learning undertaken in pre-clinical teaching integrating planetary health themes into case-based discussions. For example, the effects of climate change on mental health, infectious diseases, heat-related illness, and on cardiorespiratory health.
- *"Given the diverse organ systems impacted by the environment and the emotional toll of listening to a lecture concentrating all of the doom and gloom of climate change, a more effective approach is to integrate these topics throughout the medical school curriculum."*

20. Bonus: Does your medical school have a program that offers incentives for faculty/departments to develop new planetary health/ESH courses and/or incorporate planetary health/ESH into existing courses?	
1*	Yes, the medical school has an incentive program.
0	**No, the medical school does not have an incentive program.**

- Incentives to integrate ESH/PH concepts into lectures/courses would be simple to implement and publicise.
- For example, certificates, or small financial prizes which could be used to help design teaching material, are well received in other areas of medicine and could be used to cultivate interest in teaching these topics as well as generating curriculum content.

Section Total (31 out of 58)	**31**

Additional curriculum resources offered:

- From 2021, all students in their final year will have to calculate the carbon footprint of their global health elective placement, whether undertaken internationally or in the UK. They are also required to reflect on ways they can reduce their carbon footprint (e.g. by travelling via less carbon intensive modes of transport) or ways that they can offset their carbon footprint. This is a welcome change that will bring the environmental burden of our placement choices to the forefront of students' minds when planning our electives.

- “Curriculum plans at GKT are evolving, what’s already there will be sustained and maintained. At this stage, it’s about shared ideas about how to create a more formal curriculum development group that will take on this theme and integrate it into both curriculum and assessment.” - Dr Ann Wylie

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?	
4	Yes, there are faculty members at the School of Medicine who have a primary research focus in planetary health and healthcare sustainability.
3	Yes, there are faculty members at the School of Medicine who have a primary research focus in a planetary health or healthcare sustainability.
2	Yes, there are individual faculty members at the School of Medicine 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.

- Some research output has reached The Lancet Planetary Health journal (https://kclpure.kcl.ac.uk/portal/en/journals/lancet-planetary-health(772f4513-b09e-4e4d-8cfe-2bee577cb195)/publications.html) including 'COVID-19 as a global challenge: towards an inclusive and sustainable future' (2020; contributions from Mark Pelling), 'Associations between daily air quality and hospitalisations for acute exacerbation of chronic obstructive pulmonary disease in Beijing, 2013–17: an ecological analysis' (2019; contributions from Benjamin Barratt), and 'The *Lancet* Countdown on health benefits from the UK Climate Change Act: a modelling study for Great Britain' (2018; contributions from Martin L Williams, Heather Walton, and Sean D Beevers).
- These individuals, however, are not from the GKT School of Medical Education. This could be targeted via collaborations with the MRC-PHE Centre for Environment and Health (its associated Environmental Research Group) and NIHR Health Protection Research Unit as described below.

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.

- This isn't specific to the GKT School of Medical Education however there is a sub-committee of the King's Climate Action Network dedicated to Zero Carbon Research discussing how KCL can have a positive impact on the climate through its research. Unfortunately, the results are not currently available online.
- Additionally, there is an MRC-PHE Centre for Environment and Health (https://environment-health.ac.uk/) at King's - in partnership with Imperial College London and the air pollution epidemiology group at St. George's - which is led by Professor Frank J Kelly. The Centre largely analyses - using various techniques such as geographical information systems - individual-level, small-area, and large population cohort data covering environmental exposures and health to identify areas within those fields that we need to tackle. The Environmental Research Group is encompassed under this centre and previous projects (https://kclpure.kcl.ac.uk/portal/en/organisations/environmental-research-group(d6651b13-6375-4c1e-bc9e-ee3a453aa85c).html) comprise of: 'Evidence for the presence of air pollution nanoparticles in placental tissue cells' (2021; contributions from Benjamin Barratt) and 'Long-term low-level ambient air pollution exposure and risk of lung cancer – A pooled analysis of 7 European cohorts' (2021; contributions from Francesco Forastiere and Klea Katsouyanni), and 'Using low-cost sensor technologies and advanced computational methods to improve dose estimations in health panel studies: results of the AIRLESS project' (2020; contributions from Yiqun Han, Li Yan, and Frank J Kelly).
- There is also an NIHR Health Protection Research Unit (https://crth.hpru.nihr.ac.uk/) - done in collaboration with Public Health England, Imperial College London, and the MRC Toxicology Unit at the University of Cambridge - which investigates the health impacts of exposure to environmental chemicals and other pollutants.
- As mentioned above, there isn't a direct link between these centres and GKT although e.g. Klea Katsouyanni is part of the King's Health Partners Medicine Clinical Academic Group. Consequently, one recommendation would be to include Student Selected Component or Scholarly Project options from both centres to increase awareness amongst the medical student body. This would also target the interdisciplinary component of this metric.

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.**

- The GKT School of Medical Education does not currently have a process whereby communities disproportionately impacted by climate change and environmental injustice give input or make decisions about the research agenda. The high research throughput in this area, together with our access to the MRC-PHE Centre for Environment and Health and NIHR Health Protection Research Unit and strong community links through e.g. the King's Civic Challenge does mean that we could link these individual units to create a team that makes such a process possible.

4. Does your institution have a planetary health website, or a website centralizing various campus resources 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.

- Our institution has an internal 'Office of Sustainability' website (https://internal.kcl.ac.uk/about/ps/estates/Sustainability/index) that includes some resources related to health and the environment. Regarding further improvements, we suggest creating a sub-section covering more of the specifics on planetary health (PH) in the context of medicine. This link could also be disseminated to medical students via our weekly updates to encourage them to engage with the content.
- There is also a 'Sustainable Research in Labs' segment on the external King's sustainability website (https://www.kcl.ac.uk/aboutkings/strategy/sustainability/index) which recognises labs for undertaking actions such as using waterless condensers, utilising Savawatt devices for enhanced energy efficiency, and introducing timers to reduce devices being turned on for unnecessarily long durations. This King's Sustainable Lab programme can accumulate to a 'King's Sustainable Labs Award' which was first hosted in 2016.
- Moreover, there is a KCL Sustainability Blog (https://blogs.kcl.ac.uk/sustainability/) which helpfully rounds up the highlights of our yearly Sustainability Month alongside general health and environment resources. Some specific initiatives of note during the February 2021 Sustainability Month include the 'Lunch & Learn: Global Health and the Climate Crisis' and the 'London Student Sustainability Conference (LSCC)' which is further expanded on in the

question below. To augment and further centralise the health-specific resources that are available, it would be good to have a 'Health' category in the right-hand side toolbar.

5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
4	**Yes, the institution has hosted more than one conference or symposium on topics related to planetary health in the past year, including at least one on climate change.**
3	Yes, the institution has hosted 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.

- In honour of KCL's annual Sustainability Month, the 'London Student Sustainability Conference (LSCC)' (https://www.kcl.ac.uk/news/london-student-sustainability-conference-2021) was co-hosted by our institution alongside City, University of London. The event was done virtually on 24th February 2021 and had 12 sessions inspired by the 17 UN Sustainable Development Goals. A King's College London student project specifically covering the 'Good Health and Well-being' goal includes 'Investigating Contextual Patho-aetiologies of Adverse Maternal Outcomes as Modified by Air Pollution Across Contrasting Sub-Saharan African geographies: Evidence from Mozambique, Kenya, and the Gambia' by Liberty Makacha.
- As part of the King's Expert Series, a symposium titled 'Climate change and COVID-19: What have we learned?' (https://www.kcl.ac.uk/events/climate-change-and-covid-19-what-have-we-learned) was hosted virtually on 22nd July 2020. The event brought together speakers from various disciplines and specifically covered: "What lessons can we learn from the pandemic when it comes to climate change and the environment? Will coming out of lockdown undo the progress already made? What are some of the parallels that can be drawn between the impact of the pandemic and climate change?"
- Additionally, the Department of Global Health & Social Medicine at King's has been very active in providing seminars such as 'From global health to planetary health: what is the future governance of the health of people and the planet' (https://www.kcl.ac.uk/events/from-global-health-to-planetary-health-what-is-the-future-governance-of-the-health-of-people-and-the-planet). This conference was held on 13th November 2019 by Dr. Renzo Guinto (Institute of Tropical Medicine) and Professor Kenji Shibuya (King's College London) at the Anatomy Museum. To integrate and collaborate on more initiatives like this in the future, it would be very useful to circulate them within our internal (departmental) newsletters and to incorporate planetary health into our Interprofessional Education (IPE) projects. These IPEs allow for students from e.g. mental health nursing,

midwifery, physiotherapy, and medicine to interact with one another so it would be great to include peers from the Global Health courses to work towards a PH project in the context of medicine alongside our other tasks.

- Another recommendation to supplement this collaboration would be bringing in lecturers and teaching fellows from the department (such as Dr. Geoff Whitman) to deliver PH-based lectures alongside GKT educators. Some examples from Dr. Whitman - that have been covered in the (i)BSc 'Global Health' course - include 'Climate Change and Health', 'From Global Health to Planetary Health', 'Comparing COVID and Climate Change', and 'The Unholy Trinity: Climate Change, Migration, and Conflict'. This approach will allow for a more sustainable and longitudinal coverage of planetary health to pique the interest of students who may otherwise be unable to access these lectures unless they decide to pursue Global Health.
- Additional initiatives include the 'Sustainability in Healthcare' workshop (https://www.facebook.com/events/1252715791777906) hosted by the KCL branch of 'Students for Global Health (SfGH)' covering the practical ways in which sustainability can be practiced within our field.

6. Has your institution or medical school joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education?	
2	Yes, the medical school has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education.
1	Yes, the institution has joined the Planetary Health Alliance and/or the Global Consortium on Climate and Health Education, but the medical school specifically has not.
0	**No, the institution has not joined the Planetary Health Alliance or the Global Consortium on Climate and Health Education.**

- Both GKT and KCL are not part of the Planetary Health Alliance and the Global Consortium on Climate Health Education. However, KCL is a member of the Global Consortium for Sustainability Outcomes. A suggestion for the future would be for GKT to consider joining the Planetary Health Alliance and Global Consortium on Climate Health and Education to bolster our current partnerships.

Section Total (10 out of 19)	**10**

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.

- During the second-year longitudinal placement at General Practice (GP), students undertake a group assignment on either Clinical Humanities or Active Practice. This is part of GKT's curriculum and is a mandatory project that encourages students to interact with the local community via e.g. demographic surveys. It is also an opportunity for students to collaborate with community-based organisations as well as raise awareness of planetary health (PH) and environmental issues within the local population.
- At KCL, there is a King's Civic Challenge. This scheme connects students, staff, and local charities so that they can work together to help solve some of the challenges our communities face (https://www.kcl.ac.uk/london/kingslocal/civic-challenge).
    - Urban Growth Learning Gardens is one of the community partners that KCL has been working with during the 2020/2021 academic year. Urban Growth Learning Gardens is a "social enterprise that improves Londoners' wellbeing by collaborating with them to create and maintain beautiful, biodiverse spaces." (https://urbangrowth.london/)
- There is also the King's Climate Action Network which has a sub-committee dedicated to community and engagement. They look specifically at opportunities to amplify KCL climate action by involving local communities and communicating the importance of climate action.
- To further improve, GKT could establish more partnerships with community organisations. A possible partner is the Centre for Sustainable Healthcare (who are already involved in the fourth-year quality improvement module). They integrate sustainability and healthcare together making it more appealing to medical students and could readily be involved in a more longitudinal way throughout the curriculum (https://sustainablehealthcare.org.uk/).

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 medical school has not offered such community-facing courses or events.

- The Year 2 GP group assignment is for students to raise awareness regarding actionable issues in the local community. Therefore, it is a community-facing project which gives students an opportunity to engage with the local population about topics such as PH.
- As part of a leadership element students have to complete during their fifth-year GP placement, they could engage their practice in sustainable healthcare. For instance, a student introduced the Green Impact for Health scheme at their practice raising awareness of PH and encouraging staff to engage in more sustainable practice.
- The KCL Sustainability Team organises PH events wherein all staff and students - including medical students - can participate (https://blogs.kcl.ac.uk/sustainability/category/events/), however, these events are not community-facing. Workshops and lectures are arranged throughout the year with the most significant events being:
    - Sustainability Week/Month (https://www.kcl.ac.uk/aboutkings/strategy/sustainability/news-events/sustainability-week)
        - This is an annual event and, this year, the length was increased from a week to a month. The event was held in February with a total of 898 attendees. An activity is scheduled for each day of the month and it ranges from 'Lunch & Learn' lectures to hackathons and conferences.
        - An improvement would be to increase publicity of the event to get more people involved. This is pertinent in the case of GKT because, as far as we know, it wasn't advertised within the medical school.
        - Another suggestion is that GKT could take up a bigger role. For instance, GKT has potential to lead one of the weeks within the Sustainability Month.
    - Reduce Waste Week 2018 (https://www.kcl.ac.uk/aboutkings/strategy/sustainability/news-events/reduce-waste-week)
        - The KCL Sustainability Team used this campaign to raise awareness of the importance in reducing the amount of waste we produce.
        - An easy way to increase PH events is if GKT assists with the reintroduction of the event alongside advertising it to medical students.
- Generally, GKT offers opportunities for students to organise PH-based community-facing courses and events. The choice of topic is usually up to the students consequently, by increasing PH exposure to medical students, there will be a higher chance for more

community-facing PH projects.

- To further improve, GKT could allow medical students to give talks about climate change to the local population. This could be an independent event or part of the 'Doctor as Teacher' module where medical students are already organising teaching sessions. Another option is to include working with community organisations as choices in the Student Selected Components and Scholarly Projects.
- In addition, it is also possible to extend the events already organised by the KCL Sustainability Team to the local community.

3. Does your medical school have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
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 regularly receive communications about planetary health or sustainable healthcare.**

- Medical students do not regularly receive information about PH or sustainable healthcare.
- There is a continuously updated KCL Sustainability Blog run by the KCL Sustainability team (https://blogs.kcl.ac.uk/sustainability/about/newsletters/). They also offer free subscription to a monthly newsletter that covers novel PH matters. Unfortunately, this is not well-publicised in the GKT community.
- To improve, GKT could encourage more medical students to subscribe to the KCL Sustainability team's monthly newsletter.
- Moreover, the topic of sustainable healthcare is very rarely covered so subscription to the 'Centre for Sustainable Healthcare's' bi-monthly newsletter and monthly NHS Forest newsletter could be encouraged within the GKT community to increase coverage of these issues (https://sustainablehealthcare.org.uk/news/newsletter).
- Another possible solution is for GKT to create a PH and sustainable healthcare section in the weekly update that all medical students receive. Collaboration with the Medical Students Association (MSA) is also in the cards as they can include this initiative in their upcoming website and app.

4. Do hospitals affiliated with your medical school 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.

- The main hospital trusts affiliated with GKT are Guy's and St Thomas' NHS Foundation Trust (GSTT), King's College Hospital NHS Foundation Trust (KCH), and Lewisham and Greenwich NHS Trust (LG). We found relevant educational materials only on the GSTT and LG website.
- GSTT website (https://www.guysandstthomas.nhs.uk/about-us/part-of-the-community/environment.aspx#na)
    - **Healthy Air Program**: As GSTT is in London, air pollution is a big environmental health factor. Hence, there is a 'Reducing our Impact on the Environment' section on the GSTT website which includes the 'Healthy Air Program'. The program aims to improve local air quality for the health benefits of patients, staff, and community. There is information on what actions the hospital is taking to reduce its emissions and signposts to the Department of Environmental Food and Rural Affairs website for further information on the health effects of air pollution.
- LG website (https://www.lewishamandgreenwich.nhs.uk/energysustainability)
    - There is only a brief mention of how "air pollution is linked to killer conditions like heart disease, stroke and lung cancer, contributing to around 36,000 deaths annually."
- Overall, educational materials - covering environmental health exposures - for patients could be found in only some of GKT's affiliated hospitals. The materials uncovered also had very limited information.
- We suggest information about environmental health exposures could be integrated into patient information leaflets (https://www.kch.nhs.uk/patientsvisitors/patients/leaflets // https://www.guysandstthomas.nhs.uk/patients-and-visitors/patients/patient-leaflets/a-z-of-leaflets.aspx?AZListing_AtoZLetter=E&AZListing_List_GoToPage=2). Currently, the leaflet mentions air pollution, but not other topics such as pesticides, chemicals and toxic substances.
- Additionally, to increase the publicity of these educational materials, it can be included in the hospital news section on the Trust's websites and magazines (@King's and GiST). Other platforms to enhance publicity include the hospital's Twitter, Instagram, and YouTube channel, which are currently active and have thousands of followers. GSTT have also developed a variety of educational apps in the past so it might be possible to introduce a PH-specific one.
- Accessibility of these educational materials and easier navigation can be facilitated by having an icon on the website's homepage - which receives the most traffic - that directly links to relevant PH-specific pages.

5. Do hospitals affiliated with your medical school 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.**

- Not all trusts affiliated with GKT have information on climate change and its health impacts available to patients. The information on offer is also usually very limited.
- GSTT's website contains 'Sustainability Tips' for the public. (https://www.guysandstthomas.nhs.uk/about-us/part-of-the-community/environment.aspx#na).

This includes recommendations such as reusable water bottles, reusable coffee cups, and encouraging patients to cycle and walk to the hospitals.

- LG's website gives facts on climate change (https://www.lewishamandgreenwich.nhs.uk/energysustainability). For example, "using a refillable bottle for a year saves 64kg of CO_2 compared with single use plastic bottles."
- However, apart from stating that sustainability is important for healthcare, there is very little information available on these links regarding climate change and its health impacts. Therefore, it is important for hospitals to create more educational materials for patients on this topic. A good example is the booklet made by the Medical Society Consortium on Climate and Health which clearly outlines what is going on with climate change, how it is harming our health, and what we can do about it (https://medsocietiesforclimatehealth.org/wp-content/uploads/2017/03/medical_alert.pdf). Similar means as mentioned above (Q4) could be utilised for this booklet's optimal accessibility and publicity.

Section Total (7 out of 12)	**7**

Support for Student-Led Planetary Health Initiatives

***<u>Section Overview:</u>* 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 institution offer support for medical students interested in enacting a sustainability initiative?	
2	Yes, the institution offers grants available to medical students for students to enact sustainability initiatives.
1	**The medical school 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.**
0	No, the institution does not offer opportunities or support for sustainability initiatives.

- GKT's fourth-year quality improvements projects (QIP) have a mandatory sustainability section to be fulfilled. There are a comprehensive range of resources to support students when designing and measuring sustainability outcomes, and it is an examinable learning objective.
- Students have the opportunity to present their QIP findings at a locally run conference. One of the prize categories for 2020 was best 'Sustainable Project', recognising and rewarding projects that demonstrated an excellent understanding of the principles of sustainable healthcare.
- Faculty were receptive to the inclusion of a student-led 'Planetary Health and Sustainable Healthcare' webinar, which was featured as part of the Elective and Global Health module. However, the driving forces for these changes were students rather than medical school encouragement or funding, as students were responsible for arranging meetings to pitch ideas to faculty and for designing the content of the webinar.
- There are no grants available to medical students for students to enact sustainability initiatives. Perhaps small stipe-ends or a system of certification could incentivise students to plan and implement such initiatives, whether within the curriculum or as a co-curricular activity. Some ideas of co-curricular activities are listed in Q6 of this section.

2. Does your institution offer opportunities for medical students to do research related to planetary health and/or sustainable healthcare?	
3*	The institution offers an explicit paid fellowship for medical students to do research related to planetary health and/or sustainable healthcare.
2*	The institution offers paid research opportunities for students and planetary health/sustainable healthcare projects would be considered eligible.

1	**There are unfunded research opportunities for students to perform research related to planetary health/sustainable healthcare.**
0	There are no opportunities for students to receive funding for planetary health/sustainable healthcare research.

- All medical students must complete a scholarly project. Students are given a list of titles to choose from, with a range of different supervisors. This year, three of the options involved sustainability/planetary health. We encourage the medical school to increase the number of scholarly projects that pertain to this topic, to give the opportunity for more students to be involved in such research as part of their degree. Some ideas to expand on are:
    - Carbon Footprinting - can medical students and health professionals reduce their emissions?
    - Leadership in delivering a more sustainable healthcare system
- KCL has a number of MSc courses which carry out environmental and sustainability research. Material from lecturers could be adapted for the medical curriculum if the medical school chose to work in alignment with these departments.

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.**

- The GKT webpage (Keats) has no dedicated section for planetary health or sustainable healthcare. Nor does the KCL Sustainability webpage have any subsection for the medical school specifically.
- Some information can be found if actively looking for it. For example, details of supervisors involved in quality improvement projects or student selected components who have an interest in sustainability are available online and on the intranet.
- The ‘Planetary Health and Sustainable Healthcare’ webinar can be accessed through Keats, under the final year Global Health module. This is part of a short series of pre-recorded lectures focusing on different topics in global health. Students can watch the lecture as part of the module and use it as material to support their assessment essay.
- It would be useful to have a dedicated webpage where students could find assimilated information related to sustainable healthcare mentors and initiatives that are underway. Medical students are a motivated and compassionate student body, many of whom would be keen to get involved in such initiatives if they were facilitated, appropriately publicised and accessible.

4. Does your medical school have funded, 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 funded 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 and/or funding.
0	**No, there is not a student organization at my institution dedicated to planetary health or sustainability in healthcare.**

- There is no formal student organisation that is dedicated to fostering a culture of planetary health engagement/advocacy at the medical school.
- There are a number of student societies that advocate for issues such as planetary health, sustainability in healthcare, and divestment of the institution from fossil fuels, but these are student-led and not explicitly supported by faculty. These include KCL Students for Global Health, KCL Environmental Society, and Fossil Free KCL.
- Encouraging faculty to strengthen ties with these societies and support them in both an advisory and financial capacity to increase planetary health engagement would be a welcome step going forwards.

5. Is there a student liaison representing sustainability interests who serves on a medical school or institutional decision-making council to advocate for sustainability best practices?	
1	**Yes, there is a student representative that serves on a medical school or institutional decision-making council.**
0	No, there is no such student representative.

- There are currently two student representatives on the faculty's Elective and Global Health committee, which has concerned itself with tackling planetary health/ESH in the curriculum. Ensuring that this committee features student liaisons on its panel in future years will be important to sustaining the momentum that has been established this year.
- However, there is no sustainability officer within the medical student association (MSA), who are the official body representing medical students and who liaise closely with the faculty. This is a position we would advocate for in future committees, perhaps modelled on the roles of 'Sustainability Champions' devised by King's.
- While the existing student representatives have highlighted gaps in medical education, a sustainability officer within the MSA could address other aspects of sustainable healthcare on campus, such as expanding the range of co-curricular programs, promoting 'greener' MSA event planning, and working on sustainability policies with our local hospital trusts.

6. In the past year, has the institution 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) that follow Leave No Trace principles.**

- KCL have partnered with Urban Growth Learning Gardens, a "social enterprise that improves Londoners' wellbeing by collaborating with them to create and maintain beautiful, biodiverse spaces." The medical school could encourage and incentivise students to gain first hand experience in agriculture and sustainable practices. (https://urbangrowth.london/)
- KCL hosted a sustainability month in February 2021 which included a Sustainability Careers Panel, the London Student Sustainability Conference and a Climate Action Panel among other workshops on zero-waste and plant based diets.
- Sustainability week 2020 included GeogFest, an event hosting live music and dance classes, which was organised by GeogSoc and the Geography Sustainability Champions to raise money for the International Tree Foundation. The Geography department raised money to help offset the flights from second year Portugal and Morocco fieldwork trips.
- Students for Global Health have run yearly speaker series on planetary health, which have students as an intended audience. These include advocacy workshops specific to healthcare professionals and information campaigns around the climate crisis. Speakers including Dr SanYuMay Tun, who discusses how healthcare professionals can advocate for sustainability in healthcare, have offered their time and ongoing support towards these events.
- Wilderness Medicine Society organises yearly outdoor expedition programmes which raise awareness of and follow Leave No Trace principles.
- We encourage the medical school to include similar events within the curriculum itself, to avoid students having to take time out of their free-time to gain exposure to these valuable experiences. Financial support from the medical school could help these student societies progress their projects and reach a wider audience.

Section Total (7 out of 14)	**7**

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
• King's College London has a Sustainability Team, which develops and implements the university-wide 'sustainability strategy'. The team has multiple full-time staff responsible for different areas of campus sustainability, including Martin Farley who is the 'Health school Sustainability Manager'. However, much of his work focuses on embedding sustainability into laboratories, rather than directly influencing sustainability strategies in the medical school. • With a comprehensive Sustainability Team working with KCL, extending campus-wide sustainability to include the GKT community is within reach. Healthcare carries the highest carbon footprint of all the UK's public sector - the addition of a sustainability officer dedicated to overseeing policies and practice at the medical school would be a small adjustment with a large impact. • https://www.kcl.ac.uk/aboutkings/strategy/sustainability/about-us/the-team	

2. Does your medical school and/or institution have a stated goal of carbon neutrality by 2050?	
4*	The medical school is already carbon neutral.
3	Yes, there is a stated carbon neutrality goal and the medical school has a well-defined and adequate plan in place to achieve this goal.

2	**Yes, there is a stated carbon neutrality goal, but the medical school has not created a plan to reach that goal or the plan is inadequate.**
1	There is a CO2 emission reduction goal, but it is not one of carbon neutrality.
0	There is no stated goal for reduction of CO2 emissions.

- KCL has set a target to be net zero carbon by 2025. This target will be dependent upon having options without significant financial impact. https://www.kcl.ac.uk/aboutkings/strategy/sustainability/policies-strategies/ethical-investment/ethical-investment#:~:text=King's%20College%20London%20will%20have,used%20to%20support%20academic%20activities.
- KCL has a comprehensive strategy to reach carbon neutrality, which includes investing in more energy efficient equipment for research laboratories, promoting 'Sustainability Champions', purchasing electricity from UK wind farms and investing in solar panels for university residences, and committing to divesting from all fossil fuels by 2022. https://www.kcl.ac.uk/aboutkings/strategy/sustainability/policies-strategies/carbon/carbon
- They produced a Carbon Management Plan (2010-2020) with yearly updates published. https://www.kcl.ac.uk/aboutkings/strategy/pdfs--resources/policies/kingscmp-2010-2020.pdf
- Subsequently, the King's Climate Action Network has focussed on key impact areas, proposing solutions to reduce carbon emissions from sources like energy, procurement and waste, while also maximizing positive impact on climate action in the areas of divestment, research, education, and community engagement. It hosts a series of events with the aim to engage, educate, and inspire the King's community to take climate action. https://www.kcl.ac.uk/aboutkings/strategy/sustainability/policies-strategies/carbon/kings-climate-action-network.
- Despite KCL's well set out carbon plan, the medical school does not have their own strategy to reach carbon neutrality by 2025. The medical school is a resource intensive entity, with facilities such as the ILR/research laboratories, students and staff commuting daily to placement, international travel encouraged by scientific conferences and medical elective programmes. A future plan could encompass campus/community specific commitments, associated research programmes, partnering trusts, and medical education updates.

3. Do buildings/infrastructure used by the medical school 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.

- KCL's electricity supply is backed by 100% renewable clean energy sources as part of EDF's

Clean Technology Renewable programme for businesses. KCL also has a Power Purchase Agreement (PPA) with onshore wind farms in Scotland and Wales, the first deal of its kind in the country.
https://www.kcl.ac.uk/aboutkings/strategy/pdfs--resources/renewablecertificate2020.pdf

- In terms of on-site renewables, the Denmark Hill campus features a Combined Heat and Power plant at the new Maurice Wohl Clinical Neuroscience Institute, which supplies the surrounding buildings with heat and electricity. A Ground Source Cooling has also been installed at the Wohl. Two university residences, Great Dover Street Apartments and Champion Hill, are fitted with solar panels. Ground Source Heat Pumps are in operation at Cicely Saunders. Solar thermal energy is used to heat water in both Cicely Saunders and Honor Oak Park.
- Overall, KCL largely utilises renewable energy however buildings specifically linked to the medical school could be upgraded to implement renewable technologies. The medical school could advocate for this change.

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

3	Yes, sustainable building practices are utilized 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 utilized 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.

- KCL uses the BREEAM green rating system and requires all new building projects to consider the use of appropriate standards to drive and award sustainability, including BREEAM targets and King's Standard Design Guides. All projects with a value of £4.3 million are to undertake a BREEAM assessment with new builds achieving at least Excellent and major refurbishments achieving at least Very Good. All large-scale projects are to apply King's Sustainability Guidelines and Checklist or complete SKA assessment.
- Since 2015, no projects have required BREEAM assessment. Furthermore, previous projects meeting BREEAM requirements are not the main buildings used by the medical school (Maurice Wohl Clinical Neuroscience Institute and Champion Hill). Furthermore, no medical school buildings have been retrofitted to meet green standards. The medical school could advocate for buildings to be retrofitted, which could have a big impact given that a number of the buildings are older and likely function less efficiently.

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-utilized 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.

- There are travel policies and students are encouraged to choose greener options, shuttle busses are offered and public transport encouraged, but there is lack of advertising and schemes offering to support students with costs. International travel is mentioned as the main downfall due to the large number of international students. Key Travel is a suggested partner to book through. Other policy suggestions include reducing suppliers to the campus to reduce the number of vehicles on campus.
- *"Examples of environmentally-friendly transportation options would be an electric-powered shuttle system that transports students between the different campuses, school offering a free pass for public transportation, a carpool program, and a good campus biking infrastructure."*
- There is a sub-committee of the King's Climate Action Network dedicated to measuring and reducing carbon emissions produced by travel from staff and students commuting - the results of this are not available online, but could perhaps be published to have some supporting statistics alongside initiatives to encourage more environmentally friendly transportation options.
- https://www.kcl.ac.uk/aboutkings/strategy/sustainability/how-to-be-sustainable/sustainable-travel/flying
- https://www.kcl.ac.uk/aboutkings/strategy/sustainability/policies-strategies/travel/travel

6. Does your medical school have an organics recycling program (compost) and a conventional recycling program (aluminum/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.

- Guy's campus is run by King's estates, which recycle through Southwark council. There are food waste bins, but we don't have a compost and it is not transparent as to how much of the waste actually gets recycled. The KCL website says they do have a food waste and recycling system in place, however it seems more focussed on King's food as opposed to the campus. King's food does have a presence on each campus however.
- https://www.kcl.ac.uk/aboutkings/strategy/sustainability/policies-strategies/food/food
- https://www.kcl.ac.uk/aboutkings/strategy/sustainability/how-to-be-sustainable/recycling/recyc

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7. Does the medical school apply sustainability criteria when making decisions about the campus food and beverage selections?	
3	**Yes, the medical school has adequate sustainability requirements for food and beverages 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.

- King's has received a two-star rating in the 2019 SRA Food Made Good rating.
- King's and KCLSU are co-signatories of the Fairtrade Policy which commits the university and student's union to promoting Fairtrade products and campaigns.
- In February 2019, King's Food introduced a 20p levy on all disposable coffee cups. All funds raised from this are put towards the Sustainability Projects Fund, which will be used to fund sustainability projects proposed by students and staff. From February to July 2019, 54% of hot drinks were sold in reusable coffee cups, up from 4% in 2016-17.
- King's Food has worked to source more sustainable products. Honey is now sourced locally from Bermondsey Street Bees, which are located less than a mile from Guy's Campus. Bread is sourced from Paul Rhodes, an independent bakery located in Greenwich in southeast London. For events where alcohol is served, King's Food serves Hawkes Cider which is made from London apples and brewed a mile from Guy's Campus, as well as beer brewed in Westminster.
- King's Food has made good efforts to improve sustainability across their cafe's. However, this work has been led by the King's food team and the university sustainability team, with no input from the medical school. Closer collaboration between the King's food team and the medical school could be facilitated by a meeting to discuss King's Food operations on Guy's Campus. https://www.kcl.ac.uk/aboutkings/strategy/pdfs--resources/environmentalsustainabilityreport201819.pdf
- https://www.kcl.ac.uk/governancezone/assets/estates/sustainable-food-policy.pdf

8. Does the medical school or associated 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.

- KCL has a comprehensive procurement process, within which there is a socially responsible procurement policy. However, whilst targets have been set we have found no evidence of whether these have been met, or any efforts to measure the effectiveness of the policy. Furthermore, there is lack of transparency related to supply procurement specifically for the medical school. The medical school should publish data on procurement if efforts have been made to utilise sustainable supplies. https://www.kcl.ac.uk/governancezone/assets/finance/socially-responsible-procurement.pdf

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.**

- Guides could be created which give suggestions on food, decorations, transportation and communication material for events. The document could be integrated into required reading when hiring out any GKT spaces for society or medical school events.
- Individuals who plan a lot of events, for example events officers for the MSA/other student societies, can go through a certification process to become 'Green Event Planners'. This could be incentivised by providing a proportion of funding towards future events.

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.

- Although not medical school specific, KCL has a variety of engagement and energy saving projects, which were recognised at the 2016 Green Gown Awards. These make the lab spaces associated with the medical school/medical-school researchers more environmentally sustainable, saving an estimated 125 tonnes of CO2 annually over 10 years. They include savings in electricity and water through reduced wash times and heat loads, sustainable

procurement practices, and changing 'mindsets' towards full integration of sustainability and science – i.e. sustainability doesn't need to stand out, it should appear as vital to the science itself. Outside of this the medical school does not have much involvement with laboratories as part of medical education, so we operate within this wider framework.
https://www.sustainabilityexchange.ac.uk/green_gown_awards_2016_facilities_and_services_1

- The laboratory efficiency assessment framework (LEAF) is a pilot tool at Kings laboratories headed by Martin Farley, the Sustainable Labs Project Coordinator. The programme, with Bronze, Silver, and Gold levels, allows users to estimate the impact of actions and aims to help laboratories bring down costs, reduce our impact on the environment, and inform users in the process. Criteria include waste, ventilation, chemicals and procurement. One of the most important criteria is research quality - in recognition that a repeated/mis-published experiment represents the most unsustainable research.
https://www.kcl.ac.uk/research/support/facilities/leaf
- https://www.kcl.ac.uk/aboutkings/strategy/sustainability/get-involved/staff/sustainability-champions/lab-champions/sustainable-labs

11. Does your institution's 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	No, the institution is entirely divested from fossil fuels.
2	**The institution has partially divested from fossil-fuel companies.**
1	The institution has not divested from fossil-fuel companies, but faculty and/or students are conducting organized advocacy for divestment.
0	Yes, the institution has investments with fossil-fuel companies and there have been no efforts to change that.

- The KCL Ethical Investment Policy commits King's to divest from all fossil fuel investments by the end of 2022. By 2020, 0.9% of KCL's total investments were in companies which own fossil fuel reserves. This was a significant decrease from 7.3% in 2017, 3.5% in 2018, 2.3% in 2019.

  https://www.kcl.ac.uk/about/assets/pdf/statements/2019-2020-financial-statement.pdf
- King's aims to invest 40% of its funds in investments with socially responsible benefits by 2025. Both commitments are subject to there being no significant impact upon financial risks and returns.

Section Total (18 out of 29)	**18**

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%

Planetary Health Grades for the GKT School of Medical Education
The following table presents the individual section grades and overall institutional grade for the GKT School of Medical Education on this medical-school-specific Planetary Health Report Card. 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.

Section	Raw Score	Grade
Planetary Health Curriculum (30%)	31 / 58 = 53.4%	C
Interdisciplinary Research (17.5%)	10 / 19 = 52.6%	C
Community Outreach and Advocacy (17.5%)	7 / 12 = 58.3%	C+
Support for Student-led Planetary Health Initiatives (17.5%)	7/ 14 = 50.0%	C
Campus Sustainability (17.5%)	18 / 29 = 62.1%	B–
Institutional Grade	**55.0%**	**C+**