Planetary Health Report Card (Medicine):

Faculty of Medicine Siriraj Hospital, Mahidol University

Mahidol University
Faculty of Medicine Siriraj Hospital

2024-2025 Contributing Team:

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Summary of Findings

Overall Grade	C

Curriculum	C

- Siriraj Hospital integrates planetary health into its curriculum, covering climate change, environmental toxins, and healthcare sustainability across multiple years. Strengths include broad topic coverage (infectious diseases, respiratory health, extreme weather), strong institutional support, and longitudinal integration, with further expansion planned in 2026.
- **Recommendations:** Enhance curriculum depth by including climate-related mental health, healthcare's carbon footprint, and Thai Traditional Medicine. Strengthen clinical training to ensure students can discuss climate-related health risks and integrate them into patient care.

Interdisciplinary Research	B-

- Siriraj conducts interdisciplinary research on air pollution and environmental health. The Siriraj Center of Research Excellence for Immunoregulation collaborates on public health policies, while the Bangkoknoi Model Project integrates community input into research.
- **Recommendations:** Establish a centralized planetary health website for visibility and collaboration. Join national and international organizations to expand networking, funding, and policy impact.

Community Outreach and Advocacy	B

- The Bangkoknoi Model Project fosters strong community collaboration through CPR training, AI telemedicine chatbots, and air pollution awareness. Educational outreach includes Siriraj Channel (YouTube) and SirirajPR (Facebook), covering environmental health topics like air pollution, seasonal hazards, and toxic exposures.
- **Recommendations:** Introduce annual community courses or events on planetary health and collaborate with NGOs for workshops. Strengthen communication by integrating planetary health into university-wide channels and establish postgraduate training to keep healthcare professionals updated.

Support for Student-Led Initiatives	C-

- The Siriraj Medical Student Union participates in institutional decision-making and curriculum development but has not directly influenced planetary health topics. Mahidol University and the Faculty of Medicine Siriraj Hospital support student-led environmental initiatives, including Envitalk discussions, a fundraising and telehealth project for flood victims, and a mangrove tree-planting activity on World Environment Day.
- **Recommendations:** To strengthen student engagement in planetary health, the institution should develop a centralized planetary health website to connect students with research opportunities, initiatives, and mentors. Additionally, funding mechanisms and structured research programs should be introduced to support student-led sustainability projects. Establishing faculty-supported student groups and a student body dedicated to planetary health, climate change, and sustainable

healthcare will further promote advocacy and collaboration in both extracurricular activities and curriculum development.	
Campus Sustainability	**D**
• The institution demonstrates a strong commitment to sustainability through its dedicated Sustainability Unit and committees overseeing various initiatives. Efforts to reduce emissions include the expansion of electric shuttle buses for campus transportation. Additionally, a systematic recycling waste management program was launched in 2024, with a goal to increase recycling rates by 2030. Sustainable practices are also integrated into laboratory operations, adhering to ISO 15189 and ISO 15190 certifications. • **Recommendations** The institution should establish a carbon neutrality roadmap with clear targets for increasing renewable energy and sustainable infrastructure. Strengthening procurement and event policies by implementing mandatory sustainability guidelines will promote eco-friendly practices. Additionally, accelerating fossil fuel divestment discussions and adopting responsible investment strategies will enhance long-term sustainability efforts.	

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 analysing 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, urbanisation, 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 health professional schools' 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 health professional training. It is imperative that we hold our institutions accountable for educating health professional 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 colour, 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 health professional schools, we have created a Planetary Health Report Card that students internationally can use to grade and compare their institutions on an annual basis. This student-driven initiative aims to

compare health professional 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 centred on environmental health impacts 5) 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 health professional 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/Department vs. Institution:** When "Medical school" is specified in the report card, this only refers to curriculum and resources offered by the School/department 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 including all of its campuses. 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 students 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 mould 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. Please be as specific as possible when providing evidence for this metric.

- **Elective:** The word "elective" refers to an optional course or lecture series that a 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.

- **Core Curriculum:** This refers to taught material that is delivered to the entire cohort of students in one year.

- **Clerkship / Outreach:** 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, outreach or placements. This is a relatively short (approximately 4-8 weeks) period of study and patient-centred clinical experience that takes place as part of the undergraduate programme.

- **Clinical rotation:** This is a term used to refer to placements that students go on (e.g., ophthalmology, surgery, cardiology).

- **Physiotherapy vs Physical Therapy:** For the purposes of this report card these terms are considered interchangeable. However, physiotherapy will be used primarily.

- **Community organisations:** For most institutions, there are existing groups that are not directly affiliated with the university and exist as a product of what the community the institution exists in cares about or needs. These specific community organisations relevant to this report include those that are focused around some aspect of climate and health preservation. These community organisations can include but are not limited to local mutual aid initiatives, underserved-resource distribution groups, clean-up and nature conservation groups, community gardeners, and other environmental-related organisations. If your institution does not have access to local volunteerships with community groups, please report any community organisations your institution or school has collaborated with.

- **Climate justice:** The idea that certain population groups and geographical locations which are disproportionately more impacted by climate change are already economically and socially disadvantaged. This double vulnerability sits alongside pre-existing social justice concerns and should therefore shift policy and practice to mitigate the inequitable effects of the climate crisis.

- **Extractivisim:** The removal of natural resources typically in large quantities. Within anthropology this term is often used in the context of colonialism to refer to

the historic seizing of natural resources, a practice which has developed business models tied to ecological degradation and loss of biodiversity.

- **Global South:** Nations that often have less economic and industrial development and are typically in the southern hemisphere. These nations have been found to be disproportionately impacted by the climate crisis.

- **Low socioeconomic status (SES):** An individual or geographical area that across a variety of socioeconomic factors (e.g., income, education, race/ethnicity) is considered vulnerable. This vulnerability has been correlated to more adverse health outcomes often as a consequence of encountering more barriers in accessing and receiving healthcare.

- **Low and Middle-Income Countries (LMIC):** Countries that have lower degrees of economic affluence.

- **Anthropogenic:** Created through human activity

- **Marginalized communities:** Groups excluded from mainstream economic, educational, social, and/or cultural experiences due to race, gender identity, sexual orientation, age, physical ability, language, and/or immigration status (Sevelius et al., 2020).

Other considerations:

- If there are more than one "tracks" at your institution 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). Where possible please indicate the proportion of students that are on each track.

Completed in 2022 a Literature Review by Metric is available for the 2022 medicine report card metrics. We are in the process of updating this review and making it more applicable to all the disciplines. However the review serves as a rough 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

1.1. Did your medical school offer elective courses (student selected modules) to engage students in Education for Sustainable Healthcare or Planetary Health in the last year?	
Yes, the medical school has offered **more than one** elective whose primary focus is ESH/planetary health in the past year. (3 points)	
Yes, the medical school has offered **one** elective whose primary focus is ESH/planetary health in the past year. (2 points)	
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. (1 points)	
No, the medical school has **not** offered any electives on planetary health or electives that include ESH/planetary health topics in the past year. (0 points)	
Score Assigned:	1
Score explanation: The selective module “Toxicology, Occupational and Environmental Medicine” for 4th-year medical students includes a 3-hour session featuring a lecture and case-based learning titled “Health Effects of Climate Change and Air Pollution”	

Curriculum: Health Effects of Climate Change

1.2. Does your medical school curriculum address the relationship between extreme heat, health risks, and climate change?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the core curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2

Score explanation: The topic of heat-related illness is covered in the Occupational Medicine curriculum for 4th-year medical students during the Preventive Medicine and Family Medicine rotation. The discussion highlights the increasing incidence of heat-related illnesses as a consequence of climate change.

The following excerpt is taken from the handouts provided to 4th-year medical students during the Preventive Medicine and Family Medicine rotation, under the topic of occupational hazards:

"Climate change is significantly intensifying heatwaves and increasing average temperatures across Southeast Asia, making heat-related illnesses an escalating public health concern. As global temperatures rise, the human body's ability to maintain thermal balance becomes more challenged, particularly in outdoor work environments. Heat stress, which is the total thermal load on the body, and heat strain, the body's physiological response, can lead to a range of serious health outcomes such as heatstroke, heat exhaustion, heat cramps, and increased susceptibility to cardiovascular diseases. In Thailand alone, over 3,000 cases of heatstroke were reported during the hottest months in 2023, illustrating the growing impact. Vulnerable populations, such as outdoor workers, urban dwellers, the elderly, and those with chronic conditions, are especially at risk. This highlights an urgent need for public health adaptation, including early warning systems, heat-health action plans, community education, and improved infrastructure such as cooling centers and environmental modifications. As climate conditions continue to shift, Southeast Asia must prioritize both preventive strategies and responsive systems to manage the health risks associated with extreme heat."

1.3. Does your <u>medical school</u> curriculum address the impacts of extreme weather events on individual health and/or on healthcare systems?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2
Score explanation: The impacts of climate change on individual health and health systems are covered in the topics of Disaster Medicine and Health Systems, which are parts of the Preventive Medicine curriculum for 3rd-year medical students.	

1.4. Does your <u>medical school</u> curriculum address the impact of climate change on the

changing patterns of infectious diseases?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	3
Score explanation: The impacts of climate change on infectious diseases are addressed through specific topics in the medical curriculum. During the Medicine rotation for fourth-year medical students, discussions focus on tropical infections, including malaria, dengue, leptospirosis, and other vector-borne diseases. Additionally, in the Preventive Medicine and Family Medicine rotation, students explore emerging and re-emerging infections, highlighting the evolving challenges posed by climate change on infectious disease patterns. Additionally, these topics may be addressed on an ad hoc basis when students encounter patients with relevant conditions during their clinical placements in the 4th, 5th, and 6th years.	

1.5. Does your medical school curriculum address the respiratory health effects of climate change and air pollution?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2
Score explanation: The effects of air pollution on the respiratory system are covered in sessions designed for both second-year and third-year medical students. For second-year students, the content includes a lecture on basic applications from the nasal cavity, sinuses, and pharynx to clinical relevance, along with a case-based learning session focusing on the clinical applications of the respiratory system in laryngology. Third-year students engage in an interactive lecture on respiratory allergic disorders and a case-based learning session that explores the approach to sore throat.	

1.6. Does your medical school curriculum address the cardiovascular health effects of climate change, including increased heat	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The effects of air pollution on the cardiovascular system are taught in an interactive lecture as part of the selective module Clinical Preventive Medicine, under the topic "Non-Traditional ASCVD Risk Factors". This content is covered in a focused presentation comprising four slides.	

1.7. Does your medical school curriculum address the mental health and neuropsychological effects of environmental degradation and climate change?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The selective module "Toxicology, Occupational and Environmental Medicine" for 4th-year medical students includes a 3-hour session featuring a lecture and case-based learning titled "Health Effects of Climate Change and Air Pollution". The psychological effects of climate change are briefly addressed in one slide.	

1.8. Does your medical school curriculum address the relationships between health, individual patient food and water security, ecosystem health, and climate change?
This topic was explored **in depth** by the **core** curriculum. (3 points)
This topic was **briefly** covered in the **core** curriculum. (2 points)
This topic was covered in **elective** coursework. (1 point)
This topic was **not** covered. (0 points)

Score Assigned:	1
Score explanation: The selective module "Toxicology, Occupational and Environmental Medicine" for 4th-year medical students includes a 3-hour session featuring a lecture and case-based learning titled "Health Effects of Climate Change and Air Pollution". The issues of food and water insecurity caused by climate change are briefly covered in two slides.	

1.9. Does your medical school curriculum address the outsized impact of climate change on marginalised populations such as those with low SES, women, communities of colour, Indigenous communities, children, homeless populations, and older adults?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 points)	
This topic was **not** covered. (0 points)	
Score Assigned:	2
Score explanation: The Preventive Medicine curriculum for 3rd-year medical students touches on the disproportionate health impacts of climate change on low-income populations through topics like Disaster Medicine and Health Systems.	

1.10. Does your medical school curriculum address the unequal regional health impacts of climate change globally?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The selective module "Toxicology, Occupational and Environmental Medicine" for 4th-year medical students includes a 3-hour session featuring a lecture and case-based learning titled "Health Effects of Climate Change and Air Pollution". The unequal regional health impacts of climate change are briefly addressed in one slide.	

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

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

This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The selective module Toxicology, Occupational, and Environmental Medicine for 4th-year medical students includes a 3-hour session comprising a lecture titled Heavy Metals Poisoning and a case-based learning session titled Occupational Safety and Health.	

1.12. Does your medical school curriculum address important human-caused environmental threats that are relevant to the university's surrounding community?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The selective module Toxicology, Occupational, and Environmental Medicine for 4th-year medical students includes a 3-hour session featuring a case-based learning session titled Occupational Safety and Health. This session examines the occupational and environmental health hazards faced by residents of a railway workers' village and workers at a nearby railway depot, both located in the same neighborhood as the medical school and the hospital's dormitories.	

1.13. To what extent does your medical school emphasise the importance of Indigenous knowledge and value systems as essential components of planetary health solutions?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	0

Score explanation: The curriculum does not cover the importance of Indigenous knowledge and value systems as essential components of planetary health solutions, despite the presence of the School of Thai Traditional Medicine at the Faculty of Medicine Siriraj Hospital.

1.14. Does your <u>medical school</u> curriculum address the outsized impact of anthropogenic environmental toxins on marginalised populations such as those with low SES, women, communities of colour, children, homeless populations, Indigenous populations, and older adults?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	1
Score explanation: The selective module “Toxicology, Occupational and Environmental Medicine” for 4th-year medical students includes a 3-hour session featuring a lecture and case-based learning titled “Health Effects of Climate Change and Air Pollution”. The discussion highlights the unequal health impacts of air pollution on populations of lower socioeconomic status and outdoor workers.	

Curriculum: Sustainability

1.15. Does your <u>medical school</u> curriculum address the environmental and health co-benefits of a plant-based diet?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	2
Score explanation: The health and environmental benefits of a plant-based diet are discussed in a 2-hour session titled “Diet and Physical Activities for Cardiovascular Risks” for 4th-year medical students during the Preventive Medicine and Family Medicine rotation. During the session, the benefits related to cardiovascular health and non-communicable diseases are discussed extensively, while the environmental health benefits are only briefly mentioned.	

1.16. Does your medical school curriculum address the carbon footprint of healthcare systems?	
This topic was explored **in depth** by the **core** curriculum. (3 points)	
This topic was **briefly** covered in the **core** curriculum. (2 points)	
This topic was covered in **elective** coursework. (1 point)	
This topic was **not** covered. (0 points)	
Score Assigned:	0
Score explanation: The curriculum does not address the carbon footprint.	

1.17. Does your medical school curriculum cover these components of sustainable clinical practice in the core curriculum? (points for each)	**Score**
The health **and** environmental **co-benefits** of **avoiding** over-medicalisation, over-investigation and/or over-treatment (2 points)	1
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 fulfil this metric. (2 points) .	0
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 point)	1
Environmental impact of **surgical** healthcare on planetary health and the climate crisis, and how can it be mitigated. (1 point)	0
The impact of **anaesthetic** gases on the healthcare carbon footprint and ways to reduce anaestheisa's environmental impacts, such as total intravenous anaesthesia or choosing less environmentally harmful anaesthetic gas options with reduced greenhouse gas emissions. (1 point)	1
The impact of **inhalers** on the healthcare carbon footprint and the environmental benefit of dry powdered inhalers over metered dose inhalers. (1 point)	0
Waste production within healthcare **clinics** and strategies for reducing waste in clinical activities (e.g. single use items in the inpatient or outpatient setting) (1 point)	0
Score explanation: For third-year medical students before they enter clinical placement, the "Principles of Investigative and Therapeutic Medicine" course includes topics on Rational Drug Use (RDU) and Rational Laboratory Use (RLU), which impact the healthcare system. These topics are the responsibility of the Department of Pharmacology and the Department of Medicine. The health and environmental benefits of lifestyle modifications and non-pharmacological therapies are covered in a 2-hour session titled "Diet and Physical Activities for Cardiovascular Risks" and a	

3-hour session on “Proper Management for ASCVD Risk Reduction” for 4th-year medical students during the Preventive Medicine and Family Medicine rotation. For fifth-year medical students, the anesthesia course includes a lecture on the topic "Principles of Anesthesia." This covers the transition away from anesthetic gases with environmental impacts, such as nitrous oxide (N_2O) and volatile agents like isoflurane and desflurane, in favor of increased use of intravenous anesthesia.

Curriculum: Clinical Applications

1.18. 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?	
Yes, there are strategies introduced for having conversations with patients about climate change in the **core** curriculum. (2 points)	
Yes, there are strategies introduced for having conversations with patients about climate change in **elective** coursework. (1 points)	
No, there are **not** strategies introduced for having conversations with patients about climate change. (0 points)	
Score Assigned:	0
Score explanation*:* There are no strategies to ensure that students engage in conversations about climate change with patients, as these discussions currently depend on the cases students encounter.	

1.19. In training for patient encounters, does your <u>medical school's</u> curriculum introduce strategies for taking an environmental history or exposure history?	
Yes, the **core** curriculum includes strategies for taking an environmental history. (2 points)	
Only **elective** coursework includes strategies for taking an environmental history. (1 point)	
No, the curriculum does **not** include strategies for taking an environmental history. (0 points)	
Score Assigned:	2
Score explanation: A 3-hour session comprising an interactive lecture and simulated history-taking on the topic Taking Environmental and Occupational History is included for 4th-year medical students during the Preventive Medicine and Family Medicine rotation.	

Curriculum: Administrative Support for Planetary Health

1.20. Is your <u>medical school</u> currently in the process of implementing or improving Education for Sustainable Healthcare (ESH)/planetary health education?

Yes, the medical school is currently in the process of making **major** improvements to ESH/planetary health education. (4 points)**)**
Yes, the medical school is currently in the process of making **minor** improvements to ESH/planetary health education. (2 points)
No, there are **no** improvements to planetary health education in progress. (0 points)

Score Assigned:	4

Score explanation: In the new medical curriculum, set to be implemented in 2026, planetary health and sustainable healthcare are intentionally integrated into the majority of topics.

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

Planetary health/ESH topics are **well integrated** into the core medical school curriculum. (6 points)
Some planetary health/ESH topics are appropriately integrated into the core medical student curriculum. (4 points)
Planetary health/ESH is not integrated and is primarily addressed in **(a) standalone lecture(s).** (2 points)
There is **minimal/no** education for sustainable healthcare. (0 points)

Score Assigned:	6

Score explanation: The issues of climate change, sustainability, planetary health, and sustainable healthcare are integrated throughout the entire curriculum as follows:

- Year 1 (Foundation Year): Education focused on the importance of planetary health.
- Years 2 and 3 (Pre-Clinical Years): Topics on climate change, sustainability, planetary health, and sustainable healthcare are incorporated into the subject of Health System Science, with longitudinal hands-on activities in the community surrounding the campus.
- Years 4, 5, and 6 (Clinical Years): Sustainable healthcare considerations are integrated into all aspects of clinical care, alongside the continuation of longitudinal care practices initiated in Years 2 and 3.

1.22. Does your medical school 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?

Yes, the **medical school** has a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (1 point)	
No, the **medical school** does **not** have a specific faculty/staff member responsible for overseeing curricular integration of planetary health and sustainable healthcare. (0 points)	
Score Assigned:	1
Score explanation: The medical school assigns faculty members from the Siriraj Health Policy Unit and the Division of Toxicology, Occupational, and Environmental Medicine to take responsibility for teaching and educational planning related to planetary health.	

Section Total (37 out of 72)	**51.4%**

Interdisciplinary Research

Section Overview: ***This section evaluates the quality and quantity of interdisciplinary planetary health research at the 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, institutions 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 emphasised.*

2.1. Are there researchers engaged in planetary health research and healthcare sustainability research at your institution?	
Yes, there are faculty members at the **institution** who have a **primary** research focus in planetary health **or** sustainable healthcare/vetcare. (3 points)	
Yes, there are individual faculty members at the **institution** who are conducting research **related** to planetary health or healthcare sustainability, OR are part of a national/international sustainability working group, but it is not their primary research focus. (2 points)	
There are sustainability researchers at the **institution**, but not specifically associated with healthcare/vetcare. (1 point)	
No, there are **no** planetary health and/or sustainability researchers at the **institution** at this time. (0 points)	
Score Assigned:	2
Score explanation: Several researchers at the Faculty of Medicine Siriraj Hospital are actively engaged in planetary health research, covering a wide range of topics. Their work includes psychiatric, ocular, and dermatological disorders, allergic conditions, infectious diseases, and non-communicable diseases such as hypertension, as well as the health effects of air pollution, particularly PM2.5. These interdisciplinary studies provide valuable insights into how air pollution influences disease progression, quality of life, and healthcare burdens. Their findings contribute to the development of evidence-based exposure guidelines for vulnerable populations and help inform sustainable healthcare policies.	

2.2. Is there a dedicated department or institute for interdisciplinary planetary health research at your institution?
ere is **at least one** dedicated department or institute for interdisciplinary planetary health research. (3 points)
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. (2 points)

There is an **Occupational and Environmental Health department**, but no interdisciplinary department or institute for planetary health research. (1 points)	
There is **no** dedicated department or institute. (0 points)	
Score Assigned:	3
Score explanation: The Siriraj Center of Research Excellence for Immunoregulation, in collaboration with the Department of Otolaryngology, Faculty of Medicine Siriraj Hospital, Mahidol University, has established an interdisciplinary research network to study the immunological effects of PM2.5 exposure on allergic rhinitis (AR) patients in Bangkok. This initiative integrates expertise from multiple disciplines and engages key stakeholders, including the Thailand Institute of Nuclear Technology, the Pollution Control Department, and the Ministry of Natural Resources and Environment. Through these collaborations, the center translates scientific evidence into public health policies and environmental health strategies, reinforcing its commitment to planetary health research and healthcare sustainability.	

2.3. 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 <u>institution</u>?	
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. (3 points)	
Yes, there is a process in which community members impacted by climate and environmental injustice **advise** the climate + environmental research agenda. (2 points)	
No, but there are **current efforts** to establish a process for community members to advise or make decisions on the research agenda. (1 points)	
There is **no** process, and **no** efforts to create such a process. (0 points)	
Score Assigned:	2
Score explanation: The Bangkoknoi Model Project is a community-driven initiative that combines community service and research to address key challenges in environmental and planetary health. The project focuses on vector-borne diseases, water and air pollution, waste management, telemedicine, and gender inequality, ensuring that the needs and perspectives of local communities surrounding the campus guide its direction. A central aspect of this initiative is its commitment to environmental justice, incorporating input from communities disproportionately affected by pollution and health disparities. For example, allergic rhinitis (AR) patients in Bangkok receiving treatment at Siriraj Hospital have expressed concerns about the worsening effects of PM2.5 pollution on their condition. Their insights have directly influenced research priorities, leading to the study of the immunological impacts of PM2.5 exposure on AR patients in Bangkok. This collaborative and interdisciplinary approach involves key partnerships with the Thailand Institute of Nuclear Technology, the Pollution Control Department, and the Ministry of Natural	

Resources and Environment. By aligning scientific research with community needs, the project translates findings into public health policies and environmental health strategies, promoting sustainable and evidence-based solutions.

2.4. Does your institution have a planetary health website that centralises ongoing and past research related to health and the environment?	
There is an **easy-to-use, adequately comprehensive** website that **centralises** 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. (3 points)	
There is a website that **attempts to centralise** various campus resources related to health and the environment, but it is hard-to-use, not updated, or not adequately comprehensive. (2 points)	
The **institution** has an **Office of Sustainability website** that includes **some** resources related to health and the environment. (1 point)	
There is **no** website. (0 points)	
Score Assigned:	0
Score explanation: Our institution does not currently have a dedicated planetary health website that centralizes ongoing and past research related to health and the environment.	

2.5. Has your institution recently hosted a conference or symposium on topics related to planetary health?	
Yes, the **institution** has hosted at least one conference or symposium on topics related to planetary health in the past year. (4 points)	
Yes, the **institution** has hosted at least one conference or symposium on topics related to sustainable healthcare/vetcare in the past year. (3 points)	
Yes, the **institution** has hosted a conference on topics related to planetary health / sustianable healthcare/vetcare in the past three years. (2 points)	
The **institution** has not hosted any conferences directly, but they have provided financial support for a local planetary health event. (1 point)	
No, the **institution** has not hosted a conference on topics related to planetary health in the past three years. (0 points)	
Score Assigned:	4
Score explanation: The Mahidol University and the Faculty of Medicine Siriraj Hospital hosted an international conference titled “Integrating Planetary Health and Sustainable Healthcare into Healthcare and College-Level Education” on January 29, 2025.	

2.6. Is your institution a member of a national or international planetary health or ESH/ESV organisation?	
Yes, the institution is a member of a national or international planetary health **or** ESH/ESV organisation. (1 points)	
No, the institution is **not** a member of such an organisation. (0 points)	
Score Assigned:	0
Score explanation: -	

Section Total (11 out of 17)	**64.7%**

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 colour. 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.*

3.1. Does your institution partner with community organisations to promote planetary and health?	
Yes, the **institution** meaningfully partners with **multiple** community organisations to promote planetary and environmental health. (3 points)	
Yes, the **institution** meaningfully partners with **one** community organisation to promote planetary and environmental health. (2 points)	
The **institution** does not partner with community organisations, but participates in community focused events relating to planetary health. (1 point)	
No, there is **no** such meaningful community partnership. (0 points)	
Score Assigned:	3
Score explanation: The Siriraj Medical School oversees the Bangkoknoi Model Project, a community-based initiative in Bangkoknoi, the district where the campus is located. This project aims to educate and empower community members to take charge of their health across various aspects. It is a collaborative effort involving the medical school, the local community, government bodies such as municipal offices, and NGOs like Thai Health. Driven by the needs and voices of the community, the project addresses key concerns through initiatives such as CPR training for high school students and community members, programs on child health and development, AI chatbots for telemedicine services, awareness campaigns on air pollution issues, addressing gender inequalities, prevention and screening of non-communicable diseases, and health promotion activities in local monasteries.	

3.2. Does your institution offer community-facing courses or events regarding planetary health?
The **institution** offers community-facing courses or events at least once every year. (3 points)
The **institution** offers courses or events open to the community at least once per year, but they are not primarily created for a community audience. (2 points)

The **institution** has promoted community-facing courses or events, but was not involved in planning those courses or events. (1 point)	
The **institution** has not offered such community-facing courses or events. (0 points)	
Score Assigned:	3
Score explanation: The Faculty of Medicine Siriraj Hospital regularly conducts on-site events, television programs, and social media initiatives to educate the public and the community about health issues related to environmental exposure. Topics include air pollution, hazardous exposures during rainy and flood seasons, and strategies for coping with heat waves during the summer.	

3.3. Does your institution have regular coverage of issues related to planetary health and/or sustainable healthcare in university update communications?	
Yes, all students **regularly** receive communication updates dedicated to planetary health and/or sustainable healthcare. (2 points)	
Yes, planetary health and/or sustainable healthcare topics are regularly included in communication updates to **some courses**. (1 point)	
Students **do not** receive communications about planetary health or sustainable healthcare. (0 points)	
Score Assigned:	0
Score explanation: -	

3.4. Does the institution or main affiliated hospital trust 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?	
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. (2 points)	
Yes, the **institution** or **main affiliated hospital trust** offers one course relating to planetary health and/or sustainable healthcare for post-graduate provider. (1 point)	
There are **no** such accessible courses for post-graduate providers. (0 points)	
Score Assigned:	0
Score explanation: -	

3.5. Does your institution or its affiliated teaching hospitals have accessible educational materials for patients about environmental health exposures?	
Yes, **all affiliated hospitals** have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated hospitals have accessible educational materials for patients. (0 points)	
Score Assigned:	2
Score explanation: The medical school communicates health-related information to the public and community through platforms such as the YouTube channel Siriraj Channel and the Facebook page SirirajPR. Topics include environmental exposures, such as air pollution, hazardous exposures during rainy and flood seasons, strategies for coping with heat waves in the summer, and prevention of common toxic exposures in households and workplaces. Patients have access to these media both at the hospital and at home.	

3.6. Does your institution or its affiliated teaching hospitals have accessible educational materials for patients about the health impacts of climate change?	
Yes, **all affiliated hospitals** have accessible educational materials for patients. (2 points)	
Some affiliated hospitals have accessible educational materials for patients. (1 point)	
No affiliated hospitals have accessible educational materials for patients. (0 points)	
Score Assigned:	2
Score explanation: The medical school communicates health-related information to the public and community through platforms such as the YouTube channel Siriraj Channel and the Facebook page SirirajPR. Topics include environmental exposures, such as air pollution, hazardous exposures during rainy and flood seasons, strategies for coping with heat waves in the summer, food-borne diseases, suitable exercise during specific weather conditions and prevention of common toxic exposures in households and workplaces.	

Section Total (10 out of 14)	**71.4%**

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.*

4.1. Does your institution offer support for students interested in enacting a sustainability initiative/QI project?	
Yes, the **institution** *either* offers grants for students to enact sustainability initiatives/QI projects *or* sustainability QI projects are part of the core curriculum. (2 points)	
The **institution** encourages sustainability QI projects (to fulfil 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. (1 point)	
No, the institution offers opportunities or support for sustainability initiatives or QI projects. (0 points)	
Score Assigned:	1
Score explanation: In 2024, Mahidol University is hosting an innovation challenge on Sustainable Development, focusing on social, economic, and environmental aspects for teams of Mahidol University students. Siriraj medical students may participate voluntarily as members of Mahidol University. However, the medical school does not provide funding support for this program nor require students to participate.	

4.2. Does your institution offer opportunities for students to do research related to planetary health and/or sustainable healthcare/vetcare?	
The **institution** has a **specific** research program or fellowship for students interested in doing planetary health/sustainable healthcare/vetcare research. (2 points)	
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. (1 point)	
There are **no opportunities** for students to engage in planetary health/sustainable healthcare research. (0 points)	
Score Assigned:	0
Score explanation: -	

4.3. Does the institution have a webpage where students can find specific information related to planetary health and/or sustainable healthcare/vetcare activities and mentors within the institution? For example, projects achieved, current initiatives underway at the medical school and/or contact of information of potential mentors.	
The institution has a webpage with specific information related to planetary health or sustainable healthcare/vetcare that includes up-to-date information on relevant initiatives and contact information of potential mentors. (2 points)	
There is an institution webpage that features some information on projects and mentors within planetary health and sustainable healthcare within the institution but it lacks key information. (1 point)	
There is **no institution** specific webpage for locating planetary health and/or sustainable healthcare projects or mentors. (0 points)	
Score Assigned:	0
Score explanation: Neither the institution (Mahidol University) nor the medical school (Faculty of Medicine Siriraj Hospital) has a website dedicated to planetary health or sustainable healthcare to help students find a relevant mentor.	

4.4. Does your institution have registered student groups dedicated towards fostering a culture of planetary health engagement, scholarship, and advocacy on campus, supported by faculty advisors?	
Yes, there is a student organisation **with faculty support** at my institution dedicated to planetary health or sustainability in healthcare. (2 points)	
Yes, there is a student organisation at my institution dedicated to planetary health or sustainability in healthcare but it **lacks faculty support.** (1 point)	
No, there is **not** a student organisation at my institution dedicated to planetary health or sustainability in healthcare. (0 points)	
Score Assigned:	0
Score explanation: Neither the institution (Mahidol University) nor the medical school (Faculty of Medicine Siriraj Hospital) has a website dedicated to planetary health or sustainable healthcare to help students find a relevant mentor.	

4.5. Is there a student liaison representing sustainability interests who serves on a department or institutional decision-making council to advocate for curriculum reform and/or sustainability best practices?
Yes, there is a student representative that serves on a department or institutional decision-making council/committee. (1 points)

No, there is no such student representative. (0 points)	
Score Assigned:	1
Score explanation: A representative from the Siriraj Medical Student Union presents students' concerns at the Siriraj Medical School Committee meeting, which is held twice a month. Additionally, they serve on the curriculum development committees for both pre-clinical and clinical education at the Faculty of Medicine Siriraj Hospital. However, they have never influenced the planetary health aspect of the curriculum.	

4.6. 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)	**Score**
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.	0
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.	0
Local volunteer opportunities related to building community resilience to anthropogenic environmental impacts.	1
Wilderness or outdoors programs (e.g., that organise hiking, backpacking, kayaking, or other outings for students)	1
Score explanation: Mahidol University offers Envitalk every few months as a platform for students to learn, exchange ideas, and discuss environmental issues in Thailand, such as air pollution, microplastics, waste management, and endangered species. Students who participate in these activities receive activity credits. The Siriraj Medical Student Union, with the approval and support of the medical school, organized a fundraising rally to donate essential supplies and provide telehealth services for flood victims in Northern Thailand. The initiative began in November 2024 and will continue until March 2025. A volunteer activity for senior and junior medical students to plant mangrove trees will take place on World Environment Day 2024 (June 5, 2024) in the seashore mangrove forest of Samutprakan Province. This initiative aims to promote environmental awareness of coastal ecology, encourage student participation in outdoor activities, and strengthen bonds among participants. Students who participated received activity credits.	

Section Total (6 out of 15)	**40.0%**

Campus Sustainability

Section Overview: ***This section evaluates the support and engagement in sustainability initiatives by the 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 endeavour, the healthcare sector is well poised to lead the world to a more sustainable future. This will involve scrutinising 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 minimising environmental impact.*

5.1. Does your institution have an Office of Sustainability?
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. (3 points)
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 hospital sustainability. (2 points)
There are **no salaried sustainability staff,** but there is a sustainability task force or committee. (1 point)
There are **no** staff members **or** task force responsible for overseeing campus sustainability. (0 points)
Score explanation: Mahidol University and the Faculty of Medicine Siriraj Hospital have established the Sustainability Policy Committee and the Sustainable Development Goals Committee to translate policies and strategies into actionable plans. Various relevant departments are responsible for implementing sustainability initiatives. Additionally, a dedicated Sustainability Unit has been established, with multiple full-time personnel specifically assigned to oversee and manage sustainability efforts across the university and hospital campuses.

5.2. How ambitious is your institution's plan to reduce its own carbon footprint?	
The institution has a **written and approved plan** to achieve carbon neutrality by **2030** (5 points)	
The institution has a **written and approved plan** to achieve carbon neutrality by **2040** (3 points)	
The institution has a stated goal of carbon neutrality by **2040** but has **not created a plan** to reach that goal or the **plan is inadequate** (1 point)	
The institution does **not** meet any of the requirements listed above (0 points)	
Score Assigned:	1
*Score explana*tion: Mahidol University introduced its Net Zero Emission Policy to align with global climate goals set out in the 24th Conference of the Parties to the UN	

Framework Convention on Climate Change (COP24), which aims to achieve net-zero greenhouse gas (GHG) emissions by 2030 and limit the global temperature increase to within 1.5°C. In support of this commitment, the university launched the "9 to Zero" initiative, targeting net-zero emissions within nine years.
The university encompasses a wide range of entities, including the University Council Office, Office of the President, Kanchanaburi Campus, Graduate School, Library and Knowledge Center, 16 faculties, 7 institutes, 6 colleges, 10 centers, 12 administrative divisions, and 2 emerging campuses. GHG emissions are measured in tons of carbon dioxide equivalent (tCO_2e), covering seven key gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). Emissions are categorized as follows:

- **Scope 1: Direct emissions** from stationary and mobile combustion, as well as fugitive emissions (e.g., fuel used in machinery and university vehicles, CO_2 leaks from fire extinguishers).
- **Scope 2: Indirect emissions from purchased electricity**, measured through electricity consumption from the Provincial and Metropolitan Electricity Authorities.
- **Scope 3: Other indirect emissions**, including emissions associated with purchased water from regional authorities and procurement of goods and services.

Mahidol University's Salaya Campus recorded 31,244.05 tCO_2e in fiscal year 2021 as the baseline. In the following year, emissions were reduced to 30,072 tCO_2e, reflecting meaningful progress under the "9 to Zero" roadmap. These efforts directly support Sustainable Development Goal (SDG) 13: Climate Action.

More information is available at the following link:

https://op.mahidol.ac.th/pe/en/carbon-emission/

5.3. Do buildings/infrastructure used by the institution for teaching (not including the hospital) utilize renewable energy?
Yes, institution buildings are **100%** powered by renewable energy. (3 points)
Institution buildings source **>80%** of energy needs from off-site and/or on-site renewable energy. (2 points)
Institution buildings source **>20%** of energy needs from off-site and/or on-site renewable energy. (1 point)
Institution buildings source **<20%** of energy needs from off-site and/or on-site renewable energy. (0 points)

Score Assigned:	0
Score explanation: Currently, the Faculty of Medicine Siriraj Hospital utilizes less than 20% renewable energy. However, studies are underway to explore the feasibility of increasing renewable energy usage.	

5.4. Are sustainable building practices utilised for new and old buildings on the institution's campus, with design and construction of new buildings and remodelling of old buildings conforming to a published sustainability rating system or building code/guideline?	
Yes, sustainable building practices are utilised for new buildings on the intitution's campus and the **majority** of old buildings **have been retrofitted** to be more sustainable. (3 points)	
Sustainable building practices are utilised for new buildings on the institution's campus, but most old buildings have **not been retrofitted.** (2 points)	
Sustainable building practices are **inadequately or incompletely** implemented for new buildings. (1 point)	
Sustainability is **not considered** in the construction of new buildings. (0 points)	
Score Assigned:	1
Score explanation: The Faculty of Medicine Siriraj Hospital plans to renovate the 84-Year Anniversary Building as a sustainability model building and is currently conducting a preliminary feasibility study.	

5.5. Has the institution implemented strategies to encourage and provide environmentally-friendly transportation options for students and reduce the environmental impact of commuting?	
Yes, the institution 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. (2 points)	
The institution has implemented **some** strategies to provide environmentally-friendly transportation options, but the options are **unsatisfactorily** accessible or advertised. (1 point)	
The institution has **not** implemented strategies to encourage and provide environmentally-friendly transportation options. (0 points)	
Score Assigned:	2
Score explanation: Currently, the Faculty of Medicine Siriraj Hospital has expanded its electric shuttle bus service for staff, students, and patients from three routes to seven	

routes, which became operational in 2024. There are also plans to further increase the number of electric buses to replace combustion-engine vehicles

5.6. Does your institution have an organics recycling program (compost) and a conventional recycling program (aluminium/paper/plastic/glass)?	
Yes, the institution has **both** compost **and** recycling programs accessible to students and faculty. (2 points)	
The institution has **either** recycling **or** compost programs accessible to students and faculty, but not both. (1 point)	
There is **no** compost or recycling program at the institution. (0 points)	
Score Assigned:	1
Score explanation: The Faculty of Medicine Siriraj Hospital has implemented a systematic recycling waste management program since 2024 and plans to increase the recycling rate from 2025 to 2030. The **Waste Bank Project**, initiated in 2017 by the Facilities Division at Siriraj Hospital, Mahidol University, promotes effective waste management and environmental conservation within the hospital. In response to increasing waste volume, the project encourages proper segregation of recyclable materials such as plastic, paper, metal, and glass at the source. It operates through a structured system involving trained personnel, scheduled collection times, and on-site recycling services. The initiative has significantly improved waste management efficiency and generated over 1.17 million Baht in revenue from recycling, part of which supported the construction of the Navamindrapobitr 84th Anniversary Building. Complementing this initiative, Siriraj Hospital also implements a comprehensive hazardous waste management system to ensure the safe handling, segregation, and disposal of medical and laboratory waste, in accordance with national regulations and hospital sustainability goals. Together, these efforts reflect Siriraj's commitment to responsible consumption, sustainable operations, and environmental stewardship, positioning the hospital as a model for sustainability in large healthcare institutions. In addition, The Faculty of Medicine Siriraj Hospital has implemented a systematic recycling waste management program since 2024 and plans to increase the recycling rate from 2025 to 2030. More information can be found at the link : https://www.si.mahidol.ac.th/th/division/um/admin/download_files/204_48_13XJ9WL.pdf	

5.7. Does the institution apply sustainability criteria when making decisions about the campus food and beverage selections (e.g. local sourcing, reduced meat, decreased plastic packaging)?
Yes, the institution has a**dequate s**ustainability requirements for food and beverages, including meat-free days or no red-meat, and **is engaged** in efforts to increase food and beverage sustainability. (3 points)
There are sustainability guidelines for food and beverages, but they are **insufficient or optional**. The institution **is engaged** in efforts to increase food and beverage sustainability. (2 points)

There are sustainability guidelines for food and beverages, but they are **insufficient or optional.** The institution is **not** engaged in efforts to increase food and beverage sustainability. (1 point)	
There are **no** sustainability guidelines for food and beverages. (0 points)	
Score Assigned:	0
Score explanation: The institution currently does not have a sustainable food and beverage guideline.	

5.8. Does the institution apply sustainability criteria when making decisions about supply procurement?	
Yes, the institution has **adequate** sustainability requirements for supply procurement **and** is **engaged** in efforts to increase sustainability of procurement. (3 points)	
There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The institution is **engaged** in efforts to increase sustainability of procurement. (2 points)	
There are sustainability guidelines for supply procurement, but they are **insufficient or optional.** The institution is **not engaged** in efforts to increase sustainability of procurement. (1 point)	
There are **no** sustainability guidelines for supply procurement. (0 points)	
Score Assigned:	1
Score explanation: Mahidol University has a Green Procurement policy, and the Faculty of Medicine Siriraj Hospital acknowledges this policy and is in the process of aligning its procurement practices accordingly. The following is the link to Mahidol University's Green Procurement Policy: https://op.mahidol.ac.th/pe/green-procurement/	

5.9. Are there sustainability requirements or guidelines for events hosted at the institution?	
Every event hosted at the institution **must** abide by sustainability criteria. (2 points)	
The institution **strongly recommends or incentivizes** sustainability measures, but they are **not required.** (1 point)	
There are **no** sustainability guidelines for institution events. (0 points)	
Score Assigned:	1
Score explanation: The Faculty of Medicine Siriraj Hospital encourages conferences and seminars to consider environmental impacts; however, this is not yet mandatory.	

5.10. Does your institution have programs and initiatives to assist with making lab spaces more environmentally sustainable?	
Yes, the institution has **programs** and **initiatives** to assist with making lab spaces more environmentally sustainable. (2 points)	
There are **guidelines** on how to make lab spaces more environmentally sustainable, but not programs or initiatives. (1 point)	
There are **no** efforts at theinstitution to make lab spaces more sustainable. (0 points)	
Score Assigned:	1
Score explanation*:* Laboratories in the Faculty of Medicine are certified under ISO 15189 and ISO 15190 standards, which include environmental and sustainability considerations.	

5.11. Does your institution's endowment portfolio investments include fossil-fuel companies?	
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. (4 points)	
The institution is **entirely divested** from fossil fuels. (3 points)	
The institution has **partially divested** from fossil fuel companies **or** has made a **commitment to fully divest**, but **currently** still has fossil fuel investments. (2 points)	
The institution has **not divested** from fossil-fuel companies, but faculty and/or students are **conducting organised advocacy** for divestment. (1 point)	
Yes, the institution has investments with fossil-fuel companies and there have been **no efforts** to change that. (0 points)	
Score Assigned:	0
Score explanation: The university's endowment includes fossil fuel companies in its portfolio. Governing committee members have raised concerns about divestment. In addition, the university has a policy to invest only in corporations with strong ESG profiles.	

Section Total (11 out of 32)	**34.4%**

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+.*

Planetary Health Grades for the Faculty of Medicine Siriraj Hospital
The following table presents the individual section grades and overall institutional grade for the **Faculty of Medicine Siriraj Hospital** on this medical-school-specific Planetary Health Report Card.

Section	Raw Score %	Letter Grade
Planetary Health Curriculum (30%)	(37/72) x 100 = 51.4%	C
Interdisciplinary Research (17.5%)	(11/17) x 100 = 64.7%	B-
Community Outreach and Advocacy (17.5%)	(10/14) x 100 = 71.4%	B
Support for Student-led Planetary Health Initiatives (17.5%)	(6/15) x 100= 40%	C-
Campus Sustainability (17.5%)	(11/32) x 100 = 34.4%	D
Institutional Grade	**(51.4%x0.3 + 64.7%x0.175 + 71.4%x0.175 + 40%x0.175 +**	**C**

	34.4%x0.175) = **52.3%**	