

SCEN102: Contemporary Issues in Science: The Environment

Spring 2021, 3 Credits, MWF 10:20 am – 11:10 am, 21CCB Small Arena

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Course description: Science for citizens. Interdisciplinary survey of contemporary issues in and future outlook on the science of our environment, including: climate change, energy, plastics, agriculture, and food and water safety. Future outlook on the health of our environment. Critically analyze science presented in the news, on TV, and on social media.

Grading: Grading will be based on the following criteria. Please see more details for each section below.

	Total Points	Percent
Online Homework	150	15%
Class Participation	150	15%
Packback Discussion Board	250	25%
Exams (2)	200	20%
Final project	250	25%
TOTAL	1000	100%

Grades will be assigned as follows: A: $\geq 90\%$; B: 80 - 89%; C: 70 - 79%; D: 60 - 69%; F: $<60\%$. *These grade cut-offs may be lowered, but they will not be raised.*

Learning outcomes: By the end of the course, you should be able to:

1. Identify well established facts and theories in science
2. Outline the steps of scientific inquiry
3. Interpret observations, statistical data, estimates, results summarized in graphs and tables, and conclusions in popular science (*empirical and quantitative skills*)
4. Analyze a source's use of statistics to evaluate its reliability (*empirical and quantitative skills*)
5. Evaluate the quality of a scientific claim (*critical thinking*)
6. Compare how science is presented in the media to original scientific sources in order to determine if the science presented is accurately discussed (*critical thinking*)
7. Classify science, including that presented in newspapers, on websites, in popular science books, etc. as either science or non-science (*critical thinking*)
8. Assess scientific findings that impact your current life and future, to make well informed decisions on a personal level (*critical thinking*)
9. Communicate science by citing data that supports conclusions with scientifically and statistically accurate information (*communication*)
10. Build teamwork skills by communicating with a group of your peers a recent scientific finding through a poster presentation to a general audience (*teamwork and communication*)

Required Texts: Course reader (includes compilation of both popular and science writing) & *Science Matters* by Hazen and Trefil

Course questions: Course content questions can be directed to faculty listed above. All other questions should be sent to SCEN100@gmail.edu.

Online Homework:

Online homework (**150 points, 15%**) is intended to help familiarize you with the background knowledge required to understand certain lectures and class discussions as well as assess empirical and quantitative skills learned throughout the course. Reading from *Science Matters* as well as other sources (course reader, journal articles, review articles, textbook excerpts) will be assigned weekly. Homework assignments will be presented in brief (5-15 questions), mostly multiple-choice format, and will be based on comprehension of the assigned reading. Homework will be due 30 minutes before the beginning of each class session. Please see "**Attendance and Make-up Policy**" for information on **University Approved Excused absences**.

Class participation:

Participation (**150 points, 15%**) will be monitored by "short quizzes," which will be administered during class periods only, using the Learning Catalytics (LC) system in conjunction with a cell phone, smart phone, laptop, or ipod Touch. These quizzes are designed to enhance your engagement with the course material and will be graded as participation ONLY (you will receive full credit regardless of your answer). There are NO make-up opportunities for missed LC activities. To register for LC, visit:

<https://www.pearson.com/us/higher-education/products-servicesteaching/learning-engagement->

tools/learning-catalytics.html

or follow the instructions posted on eCampus under Course Content. We strongly suggest that you purchase a 12-month subscription, as LC will be used in both SCEN101 and SCEN102.

Bonus points:

Bonus point opportunities will be provided each class. If you answer the bonus point questions correctly, you will receive extra credit towards your **Participation** score. A maximum of **50 bonus points** will be given over the course of the semester. The LC bonus points will be entered/updated in eCampus prior to mid-term grades and prior to the final exam.

Packback Discussion Board:

Packback Questions is an online curiosity community where you can be fearlessly curious and ask BIG questions about how what we're studying relates to life and the real world.

Writing amazing questions and answers on Packback will:

- Help you develop communication skills through writing, which is necessary for any career path
- Reinforce the imperative skill of justifying thoughts and claims with credible evidence - and then citing the evidence!
- Enhance critical thinking sought out by employers
- Deepen your understanding of the course content

Our goal for using Packback is to foster discussion about concepts presented in class. The Packback discussion board serves as a starting point on discussion days designated in the course schedule. Each week, specific paper(s) will be provided to help inspire the discussion.

Your participation on Packback will count towards **25% (250 points)** of your final grade. **In order to receive your points per week, you 1) must post 1 Question and 2 Answers per week and 2) must maintain an average curiosity score of 50/100.** There will be a **Sunday 11:59 PM deadline** for submissions in your community each week. *While there is no official deadline to post questions, we expect that questions will be posted by Wednesday each week.* There are NO make-up opportunities for missed Packback activities.

Before you start posting, be sure to read the [Community Guidelines](#) found in the tutorial on Packback. If your post doesn't follow the Packback Community Guidelines, there is a chance it will be removed and you won't receive points for that post. More information on Packback will be provided the first week of class. **Note:** it takes 24 hours for the Packback team to moderate a post and send a coaching email. If by any reason your post is moderated because it does NOT meet the Community Guidelines, you will need to edit and re-publish your post to receive credit for the week. This is why it is important that you complete your Packback questions and responses far before the deadline in case your post is moderated.

Exams:

Progress towards learning outcomes pertaining to empirical and quantitative skills, as well as critical thinking, will be assessed by two 50-minute multiple choice exams administered during class periods. Each exam will count 10% (100 points) towards the final grade. A portion of each exam will test the acquisition of fundamental knowledge from the course. The primary portion of each exam will consist of questions based on reading short passages. These are intended to measure your ability to interpret the information presented in the readings and evaluate any conclusions made. Please see “**Attendance and Make-up Policy**” for information on **University Approved Excused absences**.

Final Project:

In lieu of a final exam, you will participate in a poster session on **Saturday, April 24th from 1-5pm**, demonstrating the communication and critical thinking skills that you have learned in the course. In groups of 4-5, you will pick a contemporary science topic related to the course content and present that topic in the form of poster. On the poster, you should answer the following questions:

1. What is the new discovery? Why is it important?
2. Provide any background information (definitions) needed to understand the science.
3. What data (evidence) was collected and how does it support conclusions?
4. What impact do the conclusions have on our everyday lives?

Your presentations should be supported by multiple, reliable sources, published in both popular science and scientific articles, from 2015 to present. The poster session will be open to all A&M students as well as the BCS community. As such, your posters should be aimed at a general audience. You will be assessed on the following criteria:

1. Content
2. Organization
3. Style/Quality of the poster
4. Delivery
5. Teamwork

The final project is worth **25% (250 points)** of your final grade. A rubric and more detailed instructions about the project can be found on eCampus.

Late project assignments will receive a 10% reduction the first 24 hours late. Each subsequent 24 hours will result in a 5% grade reduction. Assignments turned in more than 7 days late will receive a zero. Weekends count towards the late penalty. Please see “**Attendance and Make-up Policy**” for information on **University Approved Excused absences**.

Attendance and Make-up Policy:

Attendance is required and will be monitored by participation using LC (see above). If you are going to miss a class, exam, or final presentation with a University excused absence, contact SCEN100@gmail.edu in order to arrange the makeup of missed work. Documentation will be required in most instances for University excused absences. See <http://student-rules.tamu.edu/rule07> to verify that your absence is excusable. If prior contact is impossible, the student must provide notification by

the end of the second working day after the absence. Any misinformation included on the form or an inability to verify the information will lead to sanctions under the Aggie Code of Honor.

Americans with Disabilities Act (ADA) Policy Statement:

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

Academic Integrity Statements:

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, you immediately assume a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. You will be required to state your commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

For additional information please visit: <https://student-rules.tamu.edu/aggiecode/>

Plagiarism or cheating of any kind will not be tolerated.

Pledge:

On all course work, assignments, or examinations at Texas A&M University, the following Honor Pledge shall be pre-printed and signed by the student: “On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work.”

Title IX and Statement on Limits to Confidentiality:

Texas A&M University and the College of Science are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, University employees — including instructors — cannot maintain confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructor, I must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff, or third parties visiting campus.

These reports may trigger contact from a campus official who will want to talk with you about the

incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (<https://scs.tamu.edu/>).

Students and faculty can report non-emergency behavior that causes them to be concerned at <http://tellsomebody.tamu.edu>.

Schedule Spring 2021

Jan 20	How do you resist strategic misinformation?
Jan 22	Why is basic understanding of statistics important? Case Studies
Jan 25	Climate Change Part 1: What are greenhouse gases?
Jan 27	Climate Change Part 2: What is global warming?
Jan 29	Climate Change Part 3: Climate methodologies
Feb 1	Discussion
Feb 3	Climate Change Part 4a: What are the consequences of climate change?
Feb 5	Climate Change Part 4b: What are the consequences of climate change?
Feb 8	Discussion
Feb 10	Industrial revolution part 1: Combustion
Feb 12	Industrial revolution part 2: Nitrogen fixation
Feb 15	Discussion
Feb 17	Energy Part 1: What is the difference between renewable and sustainable?
Feb 19	Energy Part 2: Nuclear power – what is it and how does it generate electricity?
Feb 22	Energy Part 3: How do we use water and the Earth to create energy?
Feb 24	Energy Part 4: The electric grid, solar, and wind energy
Feb 26	Energy Part 5: Why are batteries the key to incorporating more renewables into the grid?
Mar 1	Discussion
Mar 3	Plastics Part 1: How are plastics made?
Mar 5	Plastics Part 2: What are biodegradable plastics?
Mar 8-12	SPRING BREAK
Mar 15	Elements of an excellent poster Discussion: Microplastics are found in our food, water, and air.
Mar 17	EXAM I
Mar 19	The role of Land Part 1: Forests, oceans, and sequestration

Mar 22	The role of Land Part 2: Carbon and water footprint of agriculture
Mar 24	The role of Land Part 3: Loss of biodiversity
Mar 26	Discussion
Mar 29	The role of land part 4: Antibiotic resistance
Mar 31	The role of land part 5: Water and Air Pollutants
Apr 2	Discussion
Apr 5	Food and Water Safety part 1: What is a toxin?
Apr 7	Food and Water Safety part 2: Case studies of safety limits
Apr 9	Discussion
Apr 12	Food and Water Safety part 3: How do we currently clean the water we drink?
Apr 14	Future of Food: Not real meat? Impossible!
Apr 16	Calculating your carbon footprint
Apr 19	What can we do about climate change? Part 1: Social Solutions
Apr 21	What can we do about climate change? Part 2: Technological Solutions
Apr 23	EXAM II
Sat Apr 24	Poster presentation 1-5pm

Please find artifacts supporting the component area definition and core objectives below, including:

1. Example homework, clicker, and exam questions
2. Detailed description of the video project/rubrics
3. Example Packback discussion

Example Homework Questions

Learning outcomes: Reading comprehension, general knowledge

Reading: *Science Matters* Chapter 19 - Ecosystems

Atoms and molecules are recycled as they undergo chemical transformations in our environment. In the carbon cycle, atmospheric CO₂ is mainly transformed by what terrestrial process?

- a) The Krebs cycle
- b) Photosynthesis**
- c) Acid rain
- d) Catalytic converters
- e) Glaciers

What molecule is necessary for trees to grow and accumulate mass?

- a) Carbon dioxide**
- b) Calcium
- c) Ammonia
- d) Methane
- e) Oxygen

Photosynthesis is which of the following reactions:

- a) $\text{CO} + 2\text{O}_2 + \text{light} \rightarrow \text{CO}_2 + \text{O}_3$
- b) $[\text{CH}_2\text{O}]_{\text{carbohydrate}} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- c) $\text{H}_2\text{CO}_3 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- d) $\text{CO}_2 + \text{H}_2\text{O} + \text{light} \rightarrow [\text{CH}_2\text{O}]_{\text{carbohydrate}} + \text{O}_2$**

Example Clicker Questions

Learning outcomes: Critical thinking, general knowledge, using graphics, making estimates

Where did all the carbon locked in fossil fuels come from?

- a) **Photosynthesis**
- b) Carbonate minerals
- c) Dinosaurs
- d) Coal

How many tons is in a Gigaton?

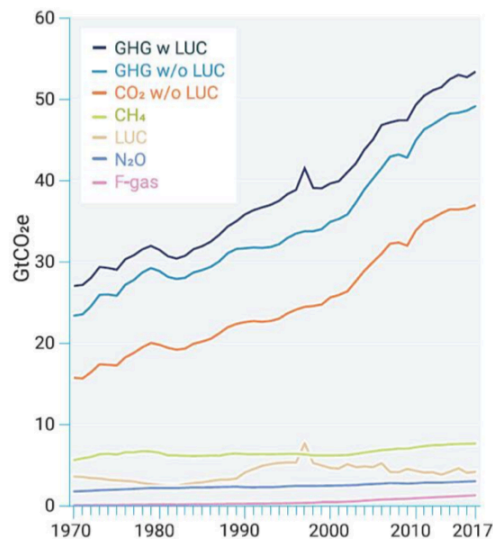
- a) **1,000,000,000 (billion)**
- b) 1,000,000 (million)
- c) 1,000
- d) 10

How many pounds is in a ton?

- a) 10,000
- b) 5,000
- c) **2,000**
- d) 1,000

According to the most recent IPCC report, total global emissions reached 53.5 Gt CO₂ equivalent in 2017 (see figure below). If we need to reduce emissions by 50% by 2030, what historical emission year would that put us closest to?

- a) 2000
- b) 1990
- c) 1980
- d) **Before 1970**



Source: IPCC Emission Report 2018

Example Exam Questions

Learning outcomes: Using graphic information, making estimates, synthesizing knowledge

What is a CO₂ equivalent?

- a) The amount of CO₂ released by any given emission
- b) Any GHG that is equivalent in volume to CO₂
- c) The degree of global warming potential of a GHG using a functionally equivalent concentration of CO₂ as a reference**
- d) The degree of global warming potential of one gigaton of CO₂

Based on the graph below, approximately what percentage of agricultural GHG emissions are due to animal products?

- a) 70%**
- b) 25%
- c) 1%
- d) 100%

The current estimate for agricultural GHG emissions is 6 billion tons of CO₂ equivalent. In the absence of mitigation measures, approximately how many tons of GHG emissions will agriculture contribute by 2050 according to this model?

- a) 6 billion tons
- b) 11 billion tons**
- c) 40 billion tons
- d) 25 billion tons

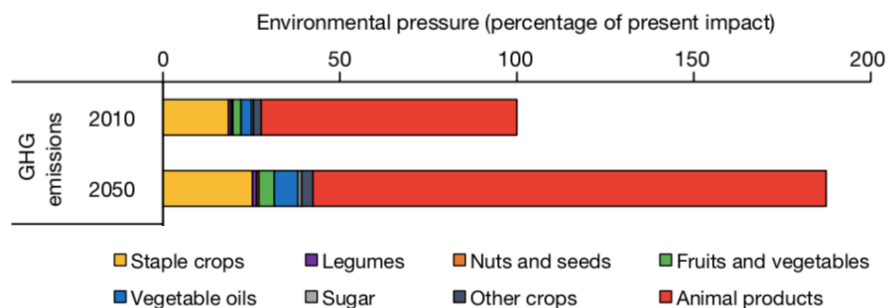
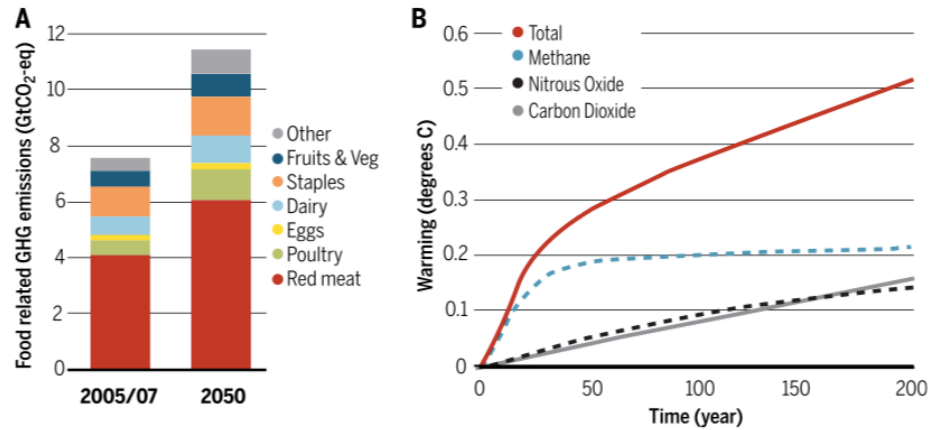


Fig. 1 | Present (2010) and projected (2050) environmental pressures on five environmental domains divided by food group. Environmental pressures are allocated to the final food product, accounting for the use and impacts of primary products in the production of vegetable oils and refined sugar, and for feed requirements in animal products. Impacts are shown as percentages of present impacts, given a baseline projection to 2050 without dedicated mitigation measures for a middle-of-the-road socioeconomic development pathway (SSP2). Absolute impacts for all socioeconomic pathways are provided in the main text and the data referred to in the 'Data availability' statement (see Methods).

Source: Springmann, et al. *Nature* **562**, 519-525 (2018).

Fig. 3. Meat and climate change. (A) GHG emissions from the production of different food types in 2005–2007 and projections for 2050 (assuming an emissions pathway that would keep global temperatures below 2°C). The y axis is the percentage of total GHG emissions. Animal-sourced foods are the major source of food-system GHGs, and their relative importance is likely to increase in the future (43). (B) The three major GHGs have quite different effects on climate. The figure shows the effect on climate warming of each gas if emissions at the current rate produced by livestock operations were introduced in Year 0 and thereafter held fixed indefinitely [methodology from (54)]. The warming due to methane is substantial and rises quickly but, because of the gas's short residence time in the atmosphere, ceases growing after about two decades, whereas the warming due to carbon dioxide continues to grow throughout the two centuries shown and indeed would continue to grow indefinitely so long as emissions continue. The warming due to nitrous oxide has begun to level off at the end of the two



centuries and grows little in subsequent years. Although the warming in response to a fixed methane emission rate levels off rather quickly, an increase in the rate of methane emissions, caused by an increase in livestock production, would still cause proportionate increases in the methane-induced warming.

The figure above was taken from an article titled “Meat consumption, health, and the environment,” in *Science* magazine, published in 2018.

What is Figure 3B showing us?

- A) Amount of greenhouse gas produced by livestock over time.
- B) The effect each greenhouse gas produced by livestock has on temperature over time.**
- C) Greenhouse gas potentials as a function of time.
- D) The total percentage of greenhouse gas emissions by agriculture.

According to the figure, which greenhouse gas emitted by agriculture will contribute most significantly to rising temperatures in 300 years?

- A) carbon dioxide**
- B) methane
- C) nitrous oxide
- D) water

Which of the following food products produced the greatest amount of greenhouse gas emissions between 2005 and 2007?

- A) Poultry
- B) Dairy
- C) Red Meat**
- D) Eggs

Final Project Guidelines and Assignments
250 points total (25% of final grade)

In groups of 4-5, you will pick a contemporary science topic related to the course content and present that topic in the form of a poster. The final project is worth **25% (250 points)** of your final grade. **Posters will be presented on Saturday, April 24th from 1-5pm and will be open to the public.** As such, your poster should be aimed at a general audience.

When creating your video, you should consider the following guidelines:

1. **Title.** A descriptive title that includes proper branding of the Texas A&M University College of Science should be placed at the top of your poster. Include a list of team member names and their role(s).
2. **Style.** While your posters must look professional, there are no restrictions on style. Use a large enough font (~20 point font) that attendees can read the text from a distance of 4 to 5 feet or more. Lettering on illustrations should be large and legible. Photographs should be a minimum of 5 x 7 inches.
3. **Original content.** Aim to create your own resources: drawings, pictures, graphs, etc. When this is not possible, use only material that is permissible under the Creative Commons license.
4. **Audience.** When creating your poster, you will want to define any science terms that will aid in the understanding of your discussion. You can assume your audience has high school level science knowledge.
5. **Acknowledgment.** Resources used should be properly cited using MLA format.

There are two stages to this project, including: planning & research and presentation. The final project includes three assignments, which will sum to **250 points total**.

Final Project Point Breakdown

Planning/Research: Assignment 1	25
Planning/Research: Assignment 2	100
Final Poster	120
Teamwork Evaluation	5

Final project total points: 250

Planning & Research:

During the planning and research stage, you will first select your group members and pick a topic. Once your group chooses a topic, you should begin rigorous research, looking for both popular science articles (magazines, newspapers, books) and science literature related to your topic. **Select at minimum 6 articles** (4 popular and 2 scientific sources) from *reliable sources, published no later than 2015*, which will be the foundation of your poster.

Assignment 1 (25 points): Upload to eCampus a detailed description of your proposed topic. *Address the following questions:* What is the general topic you are going to address? What is your take-home message? *You must also include:* Your group member names, a list of 6 references (see requirements

above) in MLA format, and a completed “*Teamwork Worksheet*” found at the end of this document. **Assignment 1 is due on March 5th at 11:59pm. Each student in a group is responsible for uploading Assignment 1 onto eCampus.**

Assignment 2 (100 points): Upload to eCampus a draft poster. **Assignment 2 is due on April 2nd at 11:59pm. Each student in a group is responsible for uploading Assignment 2 onto eCampus. Please see content requirements in the next section below.**

Presentation:

Final Poster (120 points): *Don’t forget to follow the guidelines #1-5 outlined at the beginning of this document!* Your final poster will be assessed on the criteria below.

1. Content, including:
 - a. What is the new discovery? Why is it important?
 - b. Provide any background information (definitions) needed to understand the science.
 - c. What data (evidence) was collected, and how does it support conclusions?
 - d. What impact do the conclusions have on our everyday lives?
2. Organization
3. Style/Quality
4. Delivery
5. Teamwork

A detailed rubric can be found at the end of this document. **The final poster is due on April 23rd at 11:59pm. Each group member must upload his/her poster onto eCampus.**

Final Teamwork Evaluation (5 points): You will complete a “*Final Teamwork Evaluation*” found at the end of this document, which will help with assignment of the teamwork score for your final poster. **The Teamwork Evaluation is due on the same day as the poster (April 23rd at 11:59pm). Each student in a group is responsible for uploading his or her own individually completed rubric onto eCampus.**

Teamwork Worksheet

Due: March 5th at 11:59pm as part of Assignment 1

Before creating your poster, groups should assign each member a project role. **Each group** should fill out the table and answer the question below. Some group members will have multiple roles.

Role	Description	Team member name(s)
Leader (should also take on additional role below)	Leader of the team. Leads team discussions. Checks that all copyright laws are followed. Coordinates project schedule/tasks. Schedules meetings. Ensures that team stays on task and poster meets project requirements.	
Researcher	Responsible for finding and compiling information for project. Research may include: interviews, surveys, primary source materials, facts, and statistics.	
Writer	Works with team to provide exact wording to be used for the poster project. Reviews the research to determine what facts best convey research through a poster format.	
Designer	Creates the layout of the poster. Ensures poster is visually pleasing, text is readable from 5 feet away. Creates original images for poster when possible.	

When will your first group meeting take place? _____

Please provide a rough schedule and articulate goals for each meeting:

Final Teamwork Evaluation

Due: April 23rd at 11:59pm

Adapted from: Emily Britton, Natalie Simper, Andrew Leger & Jenn Stephenson (2017) Assessing teamwork in undergraduate education: a measurement tool to evaluate individual teamwork skills, *Assessment & Evaluation in Higher Education*, 42:3, 378-397, DOI: 10.1080/02602938.2015.1116497

In the space provided, include your team member names. *You should keep any peer and self-evaluation confidential (i.e., do not fill out the form with your group members!).*

Please rate each member of your group based on the frequency of the teamwork behavior according to the scale below.

0 = Never; 1 = Sometimes; 2 = Usually; 3 = Regularly; 4 = Always

Team member
name

Component	Description						Self-Evaluation
Contributes to team project	Participates actively and accepts a fair share of the group work						
	Works skillfully on assigned tasks and completes them on time						
	Gives timely, constructive feedback to team members						
Facilitates Contribution of others	Communicates actively and constructively						
	Encourages all perspectives to be considered and acknowledges contribution of others						
	Constructively builds on contributions of others and integrates own work with work of others						
Planning and Management	Fulfilled appropriate role in the group as decided in the "Teamwork Worksheet"						
	Clarifies goals and plans the project						
	Reports to team on progress						
Fosters a Team Climate	Expresses positivity and optimism about team members and the project						
Manages Potential Conflict	Displays appropriate assertiveness: neither dominating, submissive, nor passive aggressive						
	Responds to and manages direct/indirect conflict constructively and effectively						
	Contributes appropriately to healthy debate						
Overall	Generally how would you rate your peer on effort they put into team tasks, their interactions with others, and quantity/quality of contributions to team discussions 0 = Unacceptable; 1 = poor; 2 = acceptable; 3 = good; 4 = excellent						

Rubric for Final Poster

Due: April 23rd at 11:59pm

	Excellent (30)	Good (25)	Fair (22)	Poor (19)	Comments
Content	<ul style="list-style-type: none"> Includes all 4 requirements outlined in video requirements. Sources cited appropriately. 	<ul style="list-style-type: none"> One topic missing, incomplete, or incorrect. 	<ul style="list-style-type: none"> Two topics missing, incomplete, or incorrect. 	<ul style="list-style-type: none"> Three topics missing, incomplete, or incorrect. Failure to cite sources and/or inappropriate sources used 	
	Excellent (15)	Good (13)	Fair (11)	Poor (9)	Comments
Organization	<ul style="list-style-type: none"> Organized logically with clear transitions. 	<ul style="list-style-type: none"> In one or two cases weak transitions. 	<ul style="list-style-type: none"> Confusing organization or missing transitions. 	<ul style="list-style-type: none"> Jumping back and forth between topics No transitions 	
	Excellent (30)	Good (25)	Fair (22)	Poor (19)	Comments
Style/Quality	<ul style="list-style-type: none"> Text is legible from 5 feet Appealing layout with appropriate figures/graphs included No mechanical errors Original images made when possible 	<ul style="list-style-type: none"> Few mechanical errors Some legibility/layout problems or overreliance on text Figures inappropriate or mis-sized 	<ul style="list-style-type: none"> Several mechanical errors Frequent legibility/layout problems or overreliance on text Few figures 	<ul style="list-style-type: none"> Repeated mechanical errors Poor legibility or layout Overreliance on text with very few appropriate figures 	
	Excellent (30)	Good (25)	Fair (22)	Poor (19)	Comments
Delivery	<ul style="list-style-type: none"> Clear, confident delivery with strong beginning and ending. Appropriate language, figures, and examples used for general audience Clear explanations. Holds the audience's interest and understanding. 	<ul style="list-style-type: none"> Poor beginning or ending. Mostly appropriate language, figures, and examples used. Mostly holds the audience's interest and understanding. 	<ul style="list-style-type: none"> Delivery detracts from content of video. Occasional use of inappropriate language, figures, and examples used. Loses audience's interest or understanding. 	<ul style="list-style-type: none"> Extreme nervousness. Consistent use of inappropriate language, figures, and examples used. Loses audience's interest and understanding. 	
	Excellent (15)	Good (13)	Fair (11)	Poor (9)	Comments
Teamwork (Grade based on teamwork evaluation package)	<ul style="list-style-type: none"> All students on the team contributed to the discussion and were part of the final project. Team members showed respect with each other. 	<ul style="list-style-type: none"> Most of the students on the team contributed to the discussion and were part of the final project. Team members mostly showed respect with each other. 	<ul style="list-style-type: none"> Most of the students on the team contributed at some level, but a majority of the work was done by one or two. 	<ul style="list-style-type: none"> Some of the team members did not contribute at all to the project. Low levels of respect were evident within the team. 	
Overall comments					
Total:	/120				

← Back to **Explore** (/explore)

Question



Asked by a **Curious Mind**

🔒 0

ABOUT THIS DISCUSSION

This discussion has received:

6 Responses

Tanzania is planing to build the massive Stiegler's Gorge Dam on the Rufiji river in order to power Tanzania's and Egypt's growing populations. Is squandering a nations natural environment worth the tradeoff of having clean, renewable energy?

In December 2018, the President of Tanzania, John Magufuli, signed a contract along with Egypt approving the building of Stigler's Gorge Dam on the Rufiji river. The issue with this is the dam's location in the Selous reserve which is one of the worlds largest and most significant natural areas.

This project would cost the area huge environmental impacts. To begin work on the dam there would need to

impacts. To begin work on the dam there would need to be an estimated 1,200 square kilometers of protected forest cleared in order to make room for the construction efforts. In addition there would need to be between 120-160 kilometers of roads built through the area in order to transport all of the construction materials. The presence of the estimated 1,200 workers would also increase the flow of pollution in and around the area further damaging one of the world's most significant natural areas.

Once the dam is built the area would likely see irreversible damage to the habitats downstream from the dam. Downstream from the dam is Selous's richest wild life area with the highest concentrations of fauna and flora. Building the dam would greatly impede the river's natural flow putting these delicate ecosystems in great danger of being destroyed. The impeded river would also have great impacts on the people that live downstream from the dam that depend on the flooding of the river to bring nutrients for farming and also depend on the fish in the river as a food source.

 **Source:**

<https://www.theglobalist.com/tanzania-stieglers-gorge-dam-environment-unesco/>
(<https://www.theglobalist.com/tanzania-stieglers-gorge-dam-environment-unesco/>)

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Complications of Utilizing Entirely Renewable Energy vs. Fossil Fuels

Even at our current state, humans are using more energy per person than the Earth can supply for each individual. As the demand for fossil fuels has increased, the cost of using them has also increased. Renewable energy is generated from natural energy sources and unlike fossil fuels, these sources of energy never run out. I believe that although it is better to protect and maintain what we currently have and better it for the future, realistically humans are going to continue to overuse. Therefore, having a balance of natural resources and renewable resources so that when it's a cloudy windless day, we will still have fossil fuel to provide energy. Building renewable energy should only be done if it has no other effects on the environment.

However, in the case Tanzania, building Stiegler's Gorge Dam would only burden the nation more instead of creating a more prosperous land. In this country, money would become a huge problem if

they are struggling to provide for its people and now adding on a huge project that isn't going to be inexpensive. This project will also endanger 200,000 people which include farmers and fishermen who living downstream from the proposed dam.

Overall, the discontinuation of this project for this country would be in their best interest. The inability to help the people's needs and protect the lives of every organism present would only result in damage to their environment in the future.

 **Source:**

<https://www.bbc.com/news/world-africa-46539422> (<https://www.bbc.com/news/world-africa-46539422>)



(/questions/08bde27f-ab11-46cb-bdec-76ac854a553d/response/3a0a5a06-978a-4f53-b409-29b7f0ffdfdb?source=questionFeed)

5:00 PM,
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The Benefits of Renewable Energy Do Not Outweigh the Costs of Destroying the Natural Environment

I do not think that destroying the natural environment is a sustainable way to create clean and renewable energy. While the outcome of the destruction may be beneficial in some aspects, I believe the environmental damage will pose a greater threat to the Earth. The benefits will not outweigh the damage created.

We need a solution that will pose minimal threat to the Earth's ecosystem and be sustainable over time. One solution is to look into what land is already available for use, instead of destroying a new environment. There may be an area of old buildings or an abandoned town that would be less of a threat to existing wildlife if turned into a renewable energy source.



(/questions/08bde27f-ab11-46cb-bdec-76ac854a553d/respo
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With wetlands, an important ecological area, nearby, this dam may cause more harm than good.

The Rufiji-Mafia-Kilwa Marine Ramsar Site, which is located in an area to be greatly and directly impacted by the Stiegler's Gorge Dam, is home to an expanse of natural wetlands. Wetlands play a defining role in an ecosystem. Not only do they hold excess water in case of floods, preventing much damage from occurring, but they also provide many other services to their environment. They also absorb pollutants, resulting in improved water quality. In addition, wetlands are home to a wide variety of plants and animals which aren't found anywhere else. Thus, their destruction could have effects much beyond the loss of a certain area, creating a trophic cascade which we have no way of knowing where it might end.

 Source:

<http://www.environment.gov.au/water/wetlands/about>

(<http://www.environment.gov.au/water/wetlands/about>)



(/questions/08bde27f-ab11-46cb-bdec-76ac854a553d/response/0863f9b4-0132-42bb-ac5a-a9255f8e6b7a?source=questionFeed)

8:42 PM,
2/4/2019



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The need to convert to sustainable energy is certainly looming, but a dam with such an intense environmental impact is not the way to tackle the issue.

While I do commend the Tanzanian government for trying to push renewable energy sources, I think that they need to find an alternative that is not so environmentally impactful. The use and dependence on fossil fuels has a major impact on the environment, and these materials are not at all sustainable. In this vein of thinking, a dam seems like a reasonable and even smart option for generating power. However, the fact that this dam's specific location is so biologically diverse and life sustaining means that the environmental advantages will likely not outweigh the costs of displacing wildlife. Instead, I would advise that the money that was going to be used to undergo such a massive project be put towards creating a source of energy that is just as sustainable but creates less environmental impact. There are lots of sustainable options other than hydro-power, so why not tap into them? The government could fund a solar panel installation program to help convert people's businesses and houses to being run with solar power. This way, their source of power is sustainable and the only construction happening would occur in already residential/commercialized areas.



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Ultimately its just not worth it.

While yes, the renewable energy source seems to be beneficial, acquiring it through the destruction of the environment seems like one step forward and two steps back. Destroying the natural ecosystem not only harms the wildlife there but also heavily hits the way of life of the locals. These farmers who have their rivers dried up will likely have few things to fall back on to make their livings. Additionally, the ecosystem damaged caused is likely irreversible and deadly.

The best solution is to simply search for other sources of renewable energy. Being located near the equator, solar energy could be a totally viable option that the country could look into utilizing, as it would take advantage of a large number of sun rays the country receives without the need of a massive construction project.



(/questions/08bde27f-ab11-46cb-bdec-76ac854a553d/responses/f75b778a-a319-4882-a8c3-3866b584fca6?source=questionFeed)

8:06 AM,
2/8/2019

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The benefits of Stiegler's Gorge Dam outweigh the impact it has on its immediate surroundings.

The drawbacks of the dam are significant. The damage it causes to everything living downstream is immense. Squandering such a large natural reserve seems like a terrible idea almost anyway you look at it. However, as Tanzania attempts to keep up with the rest of the world, this may be a necessary sacrifice.

The jobs this project creates cannot be overlooked. This dam will stimulate the local economy in Tanzania. The renewable energy this dam will provide is also significant. This project is not for short-term gain. The value of this dam 50 or even 100 years from now, will outweigh any costs of building it, natural or capital. Clean, renewable energy is the future, it should be promoted as much as possible. I believe some of the ecosystem will recover in time but, lasting damage from the implementation of this dam will persist.