

Electricity Production in LDCs

Assessment Type

Reflecting on the Impacts of Science

MYP Criterion Level

MYP 3

MYP Assessment Criteria

Criterion D: Reflecting on the impacts of science

MYP Command Terms Used

summarize, describe, apply, document

MYP Global Context

Globalisation and Sustainability: Human impact on the environment

MYP Key Concept(s)

Systems

MYP Related Concept(s)

Consequences, Energy

MYP Branch of Science

Physics

MYP Topics and Skills

- Electricity generation
- Research and communication skills
- Evaluation of scientific innovation
- Documenting sources

Prior Knowledge Needed

- Renewable and non-renewable resources
- Greenhouse effect

Assessment Description

This is a two-part assessment. In Part 1, students will research and create a written report summarising an electrical energy issue faced by one of the Least Developed Countries (LDC), as identified by the United Nations. Using specific knowledge of that country, students will discuss the best choice for an electrical energy system.

In Part 2, students will present key information about their LDC in an oral presentation and be assessed on their communication skills.

Materials Needed

Laptop

Task-specific instructions / Recommendations

It is recommended that within a class no student does the same LDC to increase knowledge and awareness to a greater part of the global community.

It may also be worth reminding students of the citation expectations in your school (for example MLA9).

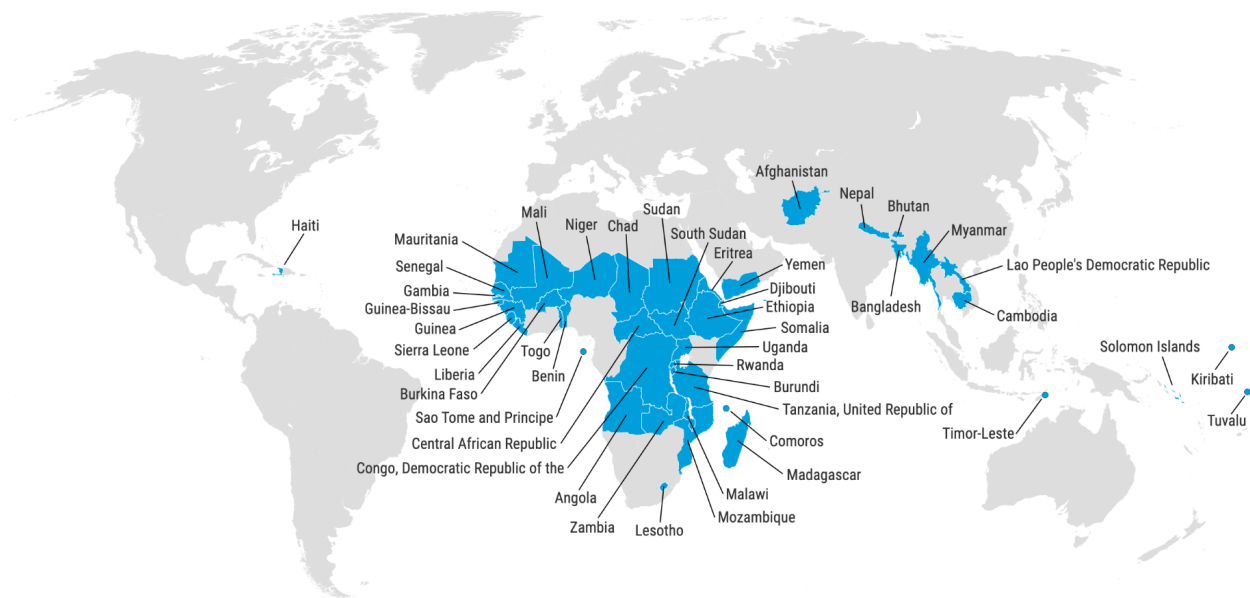
Inquiry Statement

The unintended **consequences** of electrical **energy systems** have significantly **impacted the natural environment**..

ATL Skill(s):	Reflection skills
Key Concept(s):	Systems
Related Concept(s):	Consequences, Energy
Global Context and Exploration:	Globalization and Sustainability: Human impact on the environment

(G)goal	To identify and evaluate the most suitable electricity generation for one of the UN identified <u>Least Developed Countries (LDCs)</u> .
(R)ole	You are the Minister of Energy & the Environment in one of the UNs identified list of LDCs.
(A)udience	Your audience is the governmental body of your country.
(S)ituation	<p>Many LDCs struggle to provide consistent electricity for their whole population.</p> <p>You have been tasked to investigate what would be the best electricity generation system for you country to build and invest in based on:</p> <ul style="list-style-type: none"> ● Cost benefit analysis ● The natural environment of your country ● Access to renewables and non-renewables ● Geographic area (space) and climate <p>Global and local environmental considerations</p>
(P)roduct	<p>Part 1: You will produce a research paper that includes the following:</p> <ul style="list-style-type: none"> ● Summarise the specific issues in your chosen LDC related to the production and use of electricity (Di). ● Describe your chosen electricity generation system including the science behind how it generates electricity (Di). ● Discuss at <i>least</i> one benefit and one limitation of the identified electricity system linked to specific factors (Dii). ● Document all research sources completely (Div). <p>Part 2: You will use your research to produce a presentation to educate others about your chosen LDC, their issues with electricity generation, and your chosen solution (Diii).</p>
(S)tandards	Your report must meet all strands of the MYP 3 criterion D.

List of LDC Countries (no student should choose the same country):



African Continent

Angola	Benin	Burkina Faso	Burundi	Central African Republic
Chad	Comoros	Democratic Republic of the Congo	Djibouti	Eritrea
Ethiopia	Gambia	Guinea	Guinea-Bissau	Lesotho
Liberia	Madagascar	Malawi	Mali	Mauritania
Mozambique	Niger	Rwanda	Sao Tome and Principe	Senegal
Sierra Leone	Somalia	South Sudan	Sudan	Togo
Uganda	United Republic of Tanzania	Zambia		

Asian Continent

Afghanistan	Bangladesh	Bhutan	Cambodia	Lao People's Democratic Republic
Myanmar	Nepal	Timor-Leste	Yemen	

Caribbean

Haiti

Pacific

Kiribati	Solomon Islands	Tuvalu
----------	-----------------	--------

Guided Research Questions

Chosen LDC:

Research Questions	Research Sources & Citations
1. What are some details about your chosen LDC? Consider location, population, climate, area, geography, economic potential etc.	
2. What are the issues of electricity usage and generation in your chosen LDC?	
3. What kind of access does your LDC have to both renewable and non-renewable resources for electricity generation? This could be direct or indirect access.	
4. Taking into account all the previous questions, what is the most appropriate electricity generation system to invest in for the LDC?	
5. What are the benefits of the chosen system, linked to either environmental, economic or political factors (both local and global).	
6. What are the limitations of the chosen system linked to either environmental, economic or political factors (both local and global).	

Assessment Criterion D: Reflecting on the impacts of science

	Achievement Level Descriptor (MYP3)	Task Specific Descriptor
0	The student does not reach a standard described by any of the descriptors below.	
1-2	<p>The student is able to, with limited success:</p> <ol style="list-style-type: none"> i. state the ways in which science is used to address a specific problem or issue ii. state the implications of using science to solve a specific problem or issue, interacting with a factor iii. apply scientific language to communicate understanding but does so with limited success iv. document sources, with limited success. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. state how a chosen electricity generation system will solve an energy issue in a chosen LDC ii. state the benefits and limitations of the chosen electricity generation system linking to a factor iii. sometimes apply scientific language related to electricity generation iv. attempt to document at least 1 source.
3-4	<p>The student is able to:</p> <ol style="list-style-type: none"> i. outline the ways in which science is used to address a specific problem or issue ii. outline the implications of using science to solve a specific problem or issue, interacting with a factor iii. sometimes apply scientific language to communicate understanding iv. sometimes document sources correctly. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. outline how a chosen electricity generation system will solve an energy issue in a chosen LDC and state specific issues faced by an LDC around electricity generation ii. outline the benefits and limitations of the chosen electricity generation system linking to a relevant factor iii. sometimes apply scientific language related to electricity generation iv. document at least 1 source fully or 2-3 sources partially (in-text citations and/ or works cited list).
5-6	<p>The student is able to:</p> <ol style="list-style-type: none"> i. summarize the ways in which science is used to address a specific problem or issue ii. describe the implications of using science to solve a specific problem or issue, interacting with a factor iii. usually apply scientific language to communicate understanding clearly and precisely iv. usually document sources correctly. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. summarise how a chosen electricity generation system will solve an energy issue in a chosen LDC and outline specific issues faced by an LDC around electricity generation ii. describe the benefits and limitations of the chosen electricity generation system linking to a relevant factor iii. consistently apply scientific language related to electricity generation iv. document at least 3 sources (both in-text citations and works cited list, but may have slight errors or omissions).
7-8	<p>The student is able to:</p> <ol style="list-style-type: none"> i. describe the ways in which science is applied and used to address a specific problem or issue ii. discuss and analyse the implications of using science and its application to solve a specific problem or issue, interacting with a factor iii. consistently apply scientific language to communicate understanding clearly and precisely iv. document sources completely. 	<p>The student is able to:</p> <ol style="list-style-type: none"> i. describe how a chosen electricity generation system will solve an energy issue in a chosen LDC and summarise specific issues faced by an LDC around electricity generation ii. discuss the benefits and limitations of the chosen electricity generation system linking to a relevant factor iii. consistently apply scientific language related to electricity generation iv. document at least 3 sources completely (both in-text citations and works cited list match).