# Assignment 3 - Planning

What is the primary function of a thesis statement in the introduction of an essay?  
A thesis statement presents the central argument that the essay will develop and support.  
  
What is the purpose of a concluding sentence in a body paragraph?  
A concluding sentence summarizes the paragraph's main points and provides closure.

What is the function of a topic sentence in a body paragraph?  
A topic sentence introduces the main point or argument that the paragraph will discuss.  
  
What does it mean to offer a 'nuanced perspective' when discussing a technological contribution?  
A nuanced perspective involves a balanced consideration of both benefits and limitations.  
  
Permissible use of artificial intelligence (AI) in completing the assignment?  
AI use should be restricted to supportive functions like generating ideas, finding sources, and editing, but not for writing the paragraph itself.  
  
Unethical use of source information will be heavily penalized.  
  
What is the correct way to integrate information from sources into your paragraph?  
Integrating information through paraphrasing and providing appropriate references for all sources used.

The primary purpose of submitting the paragraph through Turnitin?  
To determine similarity with other sources and to detect plagiarism.

What is the primary task in the first part of the assignment?   
The assignment requires describing a technological innovation, its environmental benefits in South Africa, and its potential shortcomings.

The main reason for paraphrasing and providing a reference for an idea from an additional source?  
Paraphrasing and referencing are essential to give credit to the original author and avoid plagiarism, which is a serious academic offense.

What are the key considerations when using AI as a writing assistant?   
Honesty about AI use, staying within the assessment scope, and avoiding large amounts of AI-generated text to prevent plagiarism.  
  
What is the primary purpose of using the Writing Centre or peer review, as suggested in the text?  
To improve the quality and clarity of academic writing.  
  
A key consideration when creating the final draft of a paragraph that includes paraphrased content?   
The final draft allows for changing the wording of the original paraphrase to integrate it and improve it based on feedback.

What formatting specifications are stipulated for the final draft of the introduction and body paragraph?  
Arial 11 font, 1.5 line spacing, and justified text (excluding the reference list).  
  
What should be included in the reflection on revision after the review process?  
The reflection should focus on what was learned during the review process and how the paragraph will be adjusted.  
  
What characterizes an introduction that receives a 'Total' score?  
A 'Total' score indicates that not all required elements of the introduction are provided and there are issues with content, formulation, or logical flow.

What are the characteristics of a well-structured paragraph?  
A paragraph with a clear topic sentence, appropriate heading, clear concluding sentence, and effective use of discourse markers is considered well-structured.

What characterizes excellent academic integration and writing style?  
Expressing source ideas in authentic language and meaningfully integrating information indicates good academic integration and writing style.

What characterizes 'Inadequate' English?   
Numerous grammatical errors and formulation issues that significantly affect readability and understanding indicate inadequate English.

Clear, concise, grammatically correct English indicates a good command of academic writing conventions.

What is essential for proper source utilization in academic writing?  
Accurate and consistent referencing, along with a complete and correctly formatted reference list, is crucial.

A serious breach of academic integrity?  
Direct copying and failure to acknowledge sources is a serious breach of academic integrity.  
3.1 Task analysis and preliminary planning

1.  
Action words: critically, discuss

Content words: technological innovation's possible contribution to environmental sustainability

Limiting words: one technological innovation, in South Africa

## 2.

Waste-to-Energy technologies convert municipal solid waste or industrial waste into electricity, heat, or biofuels through processes such as incineration, gasification, or anaerobic digestion. In South Africa, where landfills are overburdened and energy demand is high

# 3.2 Additional source: Paraphrase and reference

1.  
Source title: Waste-to-energy in a developing country: The state of landfill gas to energy in the Republic of South Africa

Authors: Setlamorago Jackson Mbazima, Daniel Mmereki, Masilu Daniel Masekameni

The research identifies major factors inhibiting the adoption and utilization of landfill gas to energy technologies that relates to technological innovations contribution to environmental sustainability.

## 2.

AI used to generate ideas and sources from the content words of the task analysis.

## 3.

"The study revealed that, although RSA has made significant progress in the adoption and utilization of landfill gas (LFG) through the seventeen (17) planned LFGE projects, only six (6) are operational and generate 15 MW of electricity supplied to the local grid in the KwaZulu-Natal, Western Cape, and Gauteng Province."

## 4.

According to Mbazima(2022) six landfill gas projects are operational and generate 15MW of electricity supplied to a local grid.

## 5.

Mbazima S.J, Mmereki D & Masekameni M.D. 2022. Waste-to-energy in a developing country: The state of landfill gas to energy in the Republic of South Africa. *Energy Exploration & Exploitation,* 40(4): 1287 – 1312.

# 3.3 First draft, revision and reflection

## 1.

Introduction

South Africa grapples with escalating environmental challenges, notably the dual crises of waste accumulation and energy scarcity. Landfills are nearing capacity, and the nation's dependence on coal exacerbates greenhouse gas emissions. In this context, Waste-to-Energy (WtE) technologies present a promising solution by converting municipal and industrial waste into electricity or heat. This approach not only addresses waste management issues but also contributes to diversifying the energy mix. However, the implementation of WtE systems in South Africa is fraught with complexities. While they offer potential environmental benefits, their success hinges on overcoming significant infrastructural, financial, and policy-related challenges.

Technological Mechanisms and Environmental Impact

Waste-to-Energy technologies encompass various methods, including incineration, gasification, and anaerobic digestion, to convert waste into usable energy. In South Africa, landfill gas-to-energy (LFGE) projects have been initiated to harness methane emissions from decomposing waste. According to Mbazima (2022), of the seventeen planned LFGE projects, only six are operational, collectively generating 15 MW of electricity supplied to the local grid in provinces such as KwaZulu-Natal, Western Cape, and Gauteng. These systems mitigate methane emissions, a potent greenhouse gas, and reduce reliance on coal-fired power generation. However, the environmental benefits of WtE technologies are contingent upon stringent emissions control and effective waste management practices. Without proper regulation and oversight, the combustion processes involved may release pollutants, negating the intended environmental advantages. Therefore, while WtE technologies hold promise, their contribution to environmental sustainability in South Africa is closely linked to the implementation of robust environmental safeguards and policies.

# 3.4 Final draft

Waste to Energy technologies contribution to environmental sustainability in South Africa

South Africa relies heavily on non-renewable resources primarily coal for electricity, the implementation of waste to energy technologies as an additional source of electricity that will benefit the environmental sustainability in South Africa by implementing thermal conversion methods and landfill gas capture they benefit the environment through generating renewable electricity while reducing waste volumes the limitations of these technologies are high initial capital investments, emission concerns and waste separation from biogenic and fossil based.

Benefits and limitations of Waste to Energy technologies

Waste to Energy technologies promote sustainability in South Africa by addressing waste management and renewable energy generation. Thermal conversion and landfill gas capture enables the production of renewable electricity, thereby reducing the country’s dependence on coal while also minimizing the waste volumes that end up in landfills. According to Thiele (2024), "we are also consuming renewable resources faster than the planet can replenish them and non-renewable resources at rates that cannot be sustained.". This highlights the urgency of transitioning to renewable energy sources. The recovery of methane emissions from the waste stream through anaerobic digestion and landfill gas recovery is a prominent method in South Africa to mitigate greenhouse gas emissions (Mbazima et al, 2022). The reduction of methane emissions and diverting waste from landfills, these technologies address both environmental sustainability and waste management concerns. However, significant limitations persist. The high initial capital investment required for waste to energy facilities remains a barrier in the South African context of budgetary constraints and infrastructure backlogs (Mbazima et al, 2022). Waste to energy technologies can reduce methane emissions, they also raise air quality concerns, as thermal conversion processes may release pollutants if not managed with advanced emission control technologies. Thus, although these technologies provide notable environmental benefits, their large-scale implementation is reliant upon overcoming financial, technological, and regulatory hurdles. In conclusion attention towards waste to energy technologies will significantly manage waste. Doing so would alleviate pressures on the rising waste and environmental concerns.

WORD COUNT: 334

## Reference List

Mbazima S.J, Mmereki D & Masekameni M.D. 2022. Waste-to-energy in a developing country: The state of landfill gas to energy in the Republic of South Africa. Energy Exploration & Exploitation, 40(4): 1287 – 1312.

Thiele, LP. 2024. Sustainability. Available from Google Books: <https://books.google.co.za/books?id=Nvj6EAAAQBAJ&printsec=frontcover#v=onepage&q&f=false> Date of access: 21 September 2025.