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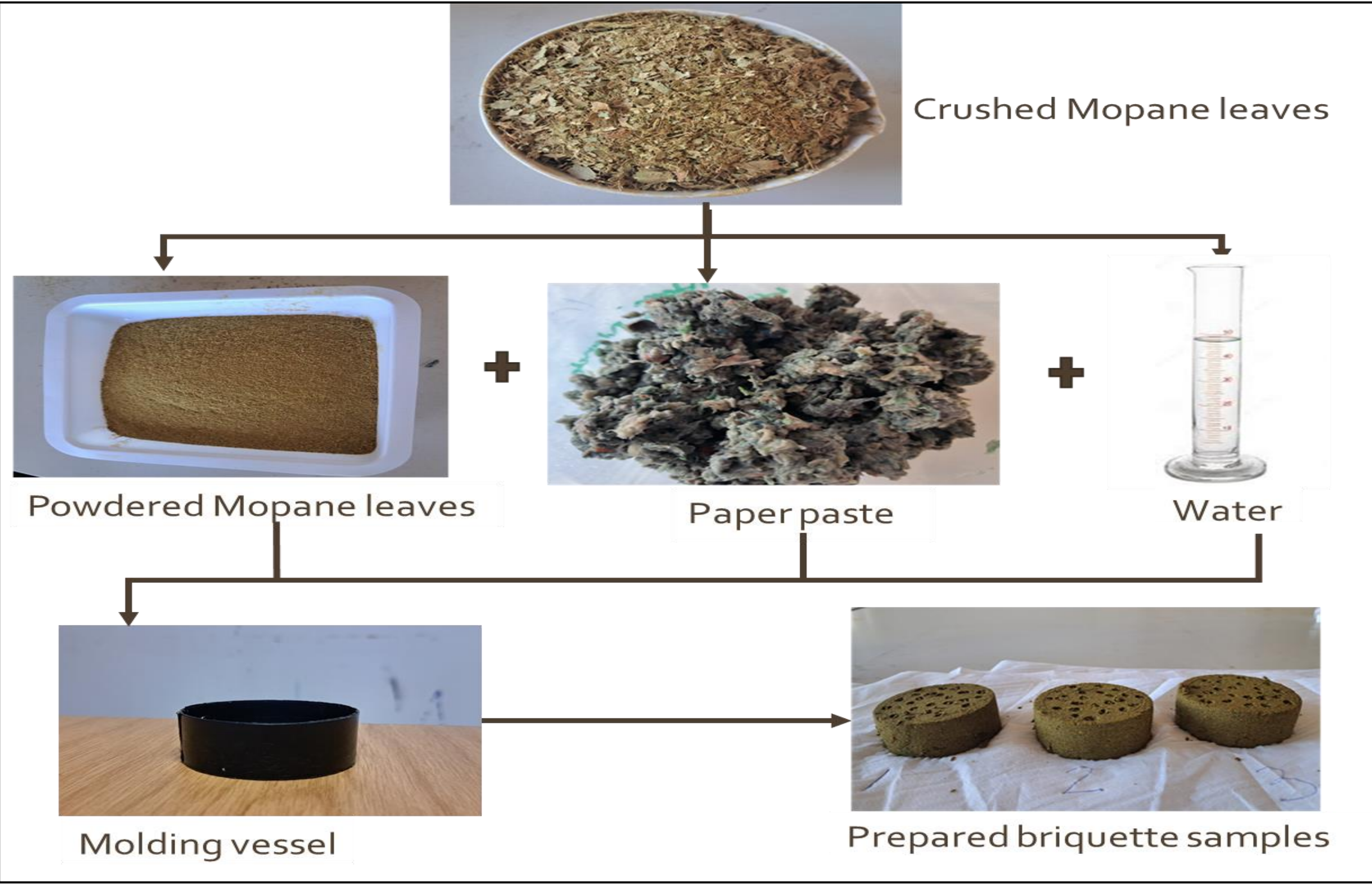
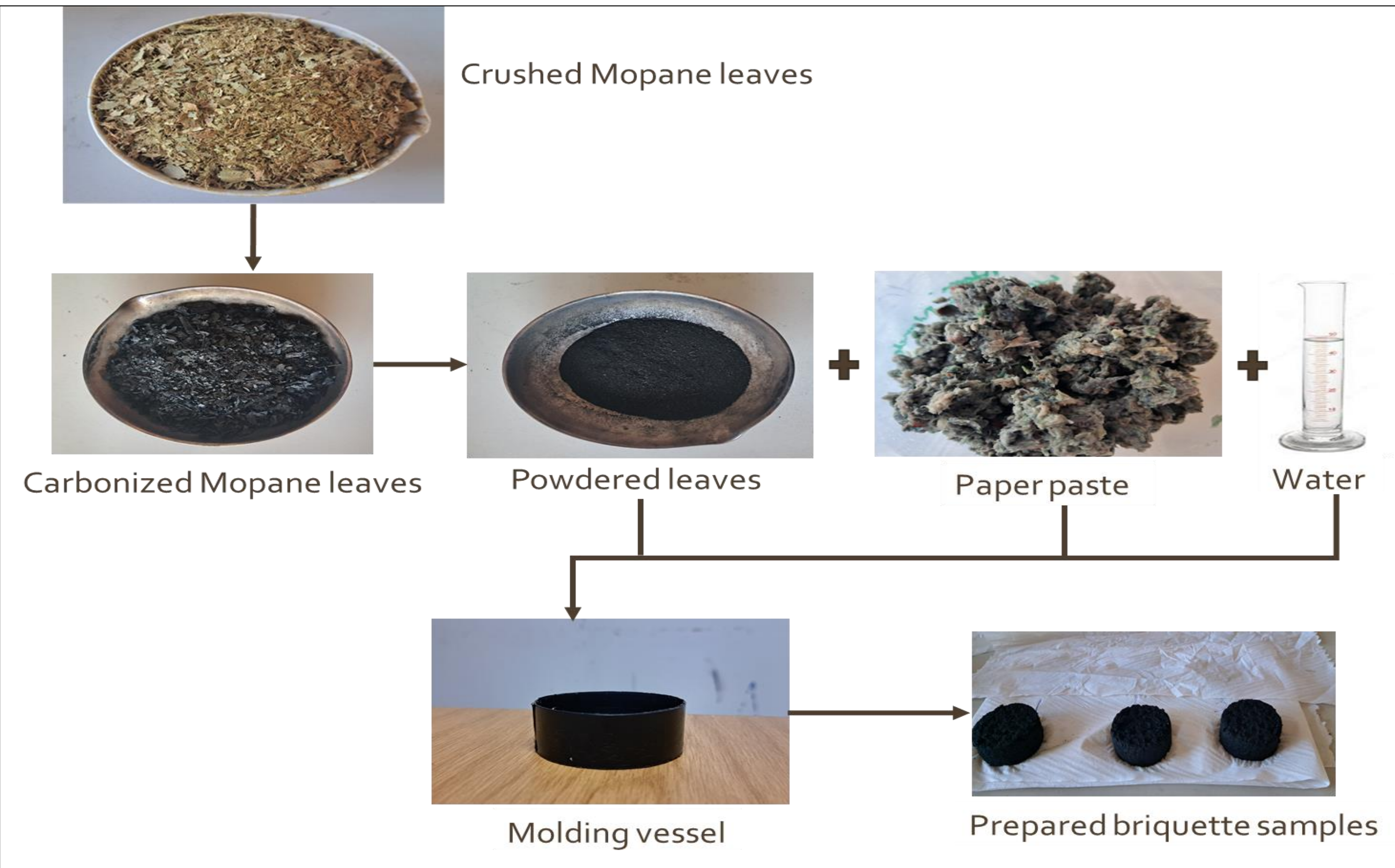
Introduction and Objectives



- A briquette is a flammable block prepared by compressing carbonized biomass or pulverized coal with a binder such as starch and molasses.
- Biomass briquette is made through the densification of agricultural and biomass waste.
- They are easy and cheap to make and can reduce the greenhouse gases emission.
- The use of biomass as a source of energy has been reported to increase the level of per capita sustainable development in several countries.
- Biomass briquettes made from agricultural waste and forest resources are one of the renewable sources of energy, which can reduce pollution.
- Trees such as Mopane shed leaves in large quantities annually. These litter the environment and water sources.

- In Sub-Saharan Africa, 70% of the population depend on wood fuel as their primary household energy source due to unaffordable and lack of access to other form of energy.
- The dependence on wood fuel causes high forest and woodland harvest, leading to deforestation.
- The use of firewood is also reported to cause respiratory infection, blindness and cataracts among these communities.
- Namibian forest area had decreased from 9.7% in 2001 to 8.1% in 2020.
- In Namibia, firewood accounts for 80% of rural energy consumption., due to lack of access to affordable energy sources such as electricity.
- Therefore, this study aimed to assess the production of briquettes from Mopane leaves as an alternative cooking solid fuel.

Procedure



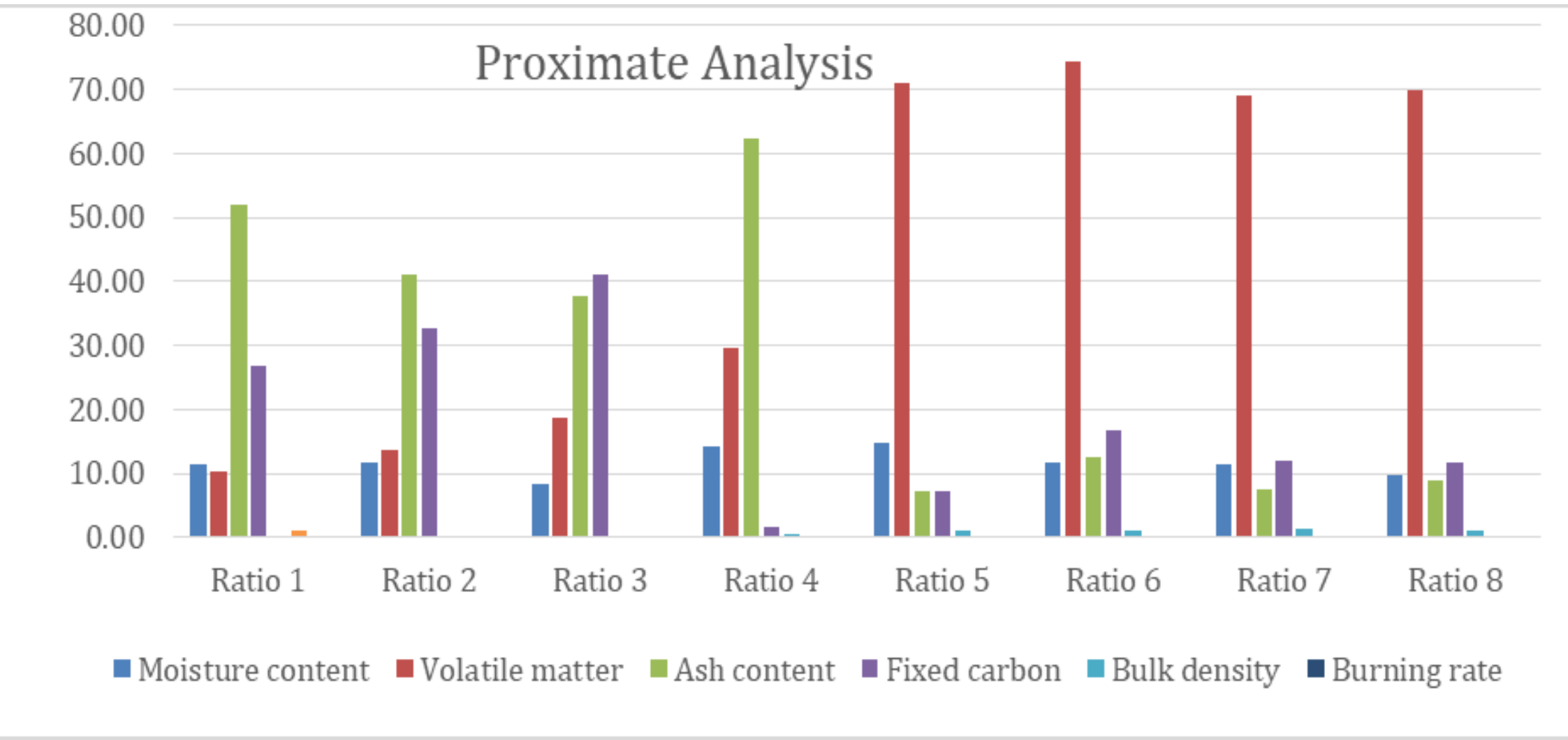
Acknowledgement

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Results and discussion

- ✓ The amount of powdered leaves and paper binder were varied to prepare different ratios (70:30, 50:50, 60:40, and 100) of the two treatments.
- ✓ The quality of the briquettes was evaluated through moisture content, volatile matter, ash content, bulk density and burning rate.
- ✓ Moisture content recorded was within the recommended range(8-15%) of a quality briquette.
- ✓ Volatile matter is made up of gas combustible gases such as H₂, CH₄ and other gases that do not burn the same way as CO₂ and H₂O.
- ✓ Briquettes with high volatility tend to react and produce more smoke.
- ✓ High ash content can be a nuisance to the users and the environment.
- ✓ The fixed carbon of a solid fuel is the percentage of carbon available for the combustion process.
- ✓ Some analysis values recorded in this study are comparable to quality briquettes in literature.

Ratio	Mopane leaves (%)	Paper binder (%)
Ratio 1	70 (Carbonised)	30
Ratio 2	60 (Carbonised)	40
Ratio 3	50 (Carbonised)	50
Ratio 4	100 (Carbonised)	0
Ratio 5	70 (non-carbonised)	30
Ratio 6	60 (non-carbonised)	40
Ratio 7	50 (non-carbonised)	50
Ratio 8	100 (non-carbonised)	0



Conclusion and Future work/research

- ❖ Mopane leaves Briquettes can be an affordable and accessible solid fuel for the Namibian rural communities.
- ❖ Using other binders such as animal dung.
- ❖ Improve and test other quality values.
- ❖ Application
- ❖ Optimization and standardization of the production methods.
- ❖ Densification on the quality values.



References

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