ACKNOWLEDGEMENT

I would like to thank and offer my sincere gratitude to my advisor, Dr. Sahataya Thongsan, and co-advisor Assistant Professor Dr. Sarayouth Vivuidth. I greatly appreciate the guidance, support, and encouragement that were offered to me throughout the length of the study. Working with them was the most amazing experience in my life because i have learnt so much from them both academically and socially. I also would like to give special thanks to all thesis committee members, and deeply grateful for their contributions to my thesis. I would like further to thank Thailand Cooperation International Development Agency (TICA) and the Government of Malawi for the financial support. I feel highly humbled to have had benefit from such a good scholarship to study in amazing Thailand.

I wish to acknowledge all staffs at the School of Renewable Energy Technologies especially the director, Dr. Sukrudee Sukchai, for her endless support rendered towards me and the academic staffs for their help. Not forgetting the staff and students of civil engineering faculty.

The friendship and encouragement offered to me by my classmates is also appreciated. I want to give special thanks to my father (Anderson Kulugomba), mother (Martha Longwe) and husband (Enocks Mchilima) for their endless love, understanding and support. My son's understanding was the driving force for my success. At that tender age growing without a mother was not easy. Above all, I own my thanks and gratitude to God for giving me the wisdom and grace to continue this program.

Finally, I would like to express my gratitude to all others not mentioned in this acknowledgement that has made me complete this thesis.

Regina Kulugomba