

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This research aimed to investigate the unit processes and factors affecting the activities of municipal solid waste management in Thailand and to study the potential reduction of carbon emission from municipal solid waste management. The four selected municipalities were Nonthaburi, KhonKaen, Phitsanulok and Phuket Municipality.

From the Carbon Balance Model; carbon equivalences occurring in the process scheme of MSWM were categorized into carbon emission, fixation and reduction, which were used to explain the activities of carbon transfer between atmosphere and lithosphere.

The analysis of the 4 MSWM show that the net potentials of carbon balance from the base-line scenario were -2,374.56, -122.46, -450.37, and +2,932.78 MTCE/year and average unit carbon of -22.98, -2.13, -17.30, and +138.38 kgCE/ton of solid waste, for Nonthaburi, Khon Kaen, Phitsanulok and Phuket Municipality, respectively. The negative sign indicates the quantity of carbon reduction of MSWM which would help to reduce the concentration of carbon dioxide in the atmosphere. The positive sign indicates the carbon emissions to the atmosphere.

The highest contribution to carbon reduction potential is recycling. The carbon potentials of recycling are negative in all base-line scenario of four municipalities. The recycling can replace products manufactured from virgin resources. Therefore, the carbon emitted from the virgin manufacturing processes and the consequent impact potentials can be avoided.

The study shows that incineration is the waste treatment option contributing most to carbon emission potential due to the emission of fossil carbon from plastic burning. The landfilling is the waste management option contributing potential to carbon emission but methane from biogenic solid waste is not accounted

for the carbon balance model, because returning back to carbon pool in the atmosphere. If methane was captured and utilized as renewable energy the methane will be accounted as carbon reduction in the carbon balance model.

From the scenarios testing, it is suggested that a policy promoting 3R, especially recycling should be pursued in order to sort out recyclable waste for further recycling. Other improvements that should be considered in the process of decision making are the landfill gas recovery and waste utilization such as refuse-derived fuel and/or compost.

5.2 Recommendation for Further Study

This study indicates that the Carbon Balance Model is appropriate for local government in Thailand to use as a tool in assessment of MSW management and the output of carbon emission, fixation and reduction can be developed to the CDM project as to gain the benefit for our country. The recommendation for further study are the testing and development of the model in all type of local government and the potential utilization of food waste in MSWM.