

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

It could be concluded that the Emission Charge would affect to the palm oil mill industry as below:

- The EC scheme provides an economic incentive for the palm oil mill industry to abate BOD load to 99.7% reduction for land application case and 92% reduction for wastewater treatment system case.
- The implementation of EC would not burden to the economic performance of palm oil mill industry, if AFTA obligation is not enforced. The EC could encourage factories to abate BOD load from their wastewater. Land application could be the best available solution for palm oil mill wastewater management
- If the AFTA obligation is enforced, the study indicated that the EC implementation would severely effect to the palm oil mill industry. Without tax barrier, Thai palm oil mill industry can not compete in world market due to higher production cost as compared to Malaysia and Indonesia. According to this study, all factories would take a loss and the EC scheme is not possible to implement. The impact of AFTA obligation may cause all palm oil mill factories shutdown their plants or the oil palm farmers have to quit their plantation due to low FFB cost.
- An incentive for wastewater utilization should be provided to the land application case by reducing emission charge rate with $f = 0.1$.

5.2 Recommendations

- The EC implementation is the polluter-pays-principle that levied the polluters based on pollution load. The operation of factories could come along good environmental management. Factories, which generate pollution, have to pay for discharged emission. The burden from EC can be reduced with cleaner technology/waste minimization/pollution prevention, and end of pipe treatment.

- The palm oil mill factories have 2 choices for abate their BOD load and EC payment. The first solution, land application, is applicable for factories which surrounded with palm oil or rubber plantation. The second is to install the aerobic treatment systems after the existing anaerobic treatment systems to abate their BOD load. The additional investment on wastewater treatment system can reduce more EC payment. From marginal abatement cost estimation of this study, the optimum emission of BOD load is equal to 1.65 tonBOD/year because the minimum total cost (abatement cost plus emission charge payment) generate at such level of emission. Thus, the factories could save their payment of EC by reducing their BOD load to 1.65 tonBOD/year.

- The palm oil mill factories should earnestly improve their production efficiency to reduce their production cost to increase the competitive ability in word market by using palm oil breed that provide high oil yield, waste utilization/waste minimization/pollution prevention/cleaner technology, installation of high oil extraction efficiency equipment/machines. Also, the government should promote oil palm plantation in the oil palm favorable area and supply high yield palm breeds to the oil palm farmers.

- The technical studies for the palm oil mill industry on waste utilization, suitable production process conditions (temperature, pressure, sterilization time), oil recovery and oil loss control method, the optimum load of wastewater for land application (in term of concentration and flow rate), for examples, should be developed to support the palm oil mill industry on increasing production efficiency.