

TABLE OF CONTENTS

SUMMARY	11
1. INTRODUCTION	17
2. MAIN FACTS ABOUT BIOFUELS, GTL AND CTL	21
2.1. Current Production of Biofuels, GTL, and CTL	21
2.2 Biofuels, GTL, CTL – What Main Issues Are Involved?	25
3. NON-PETROLEUM FUEL ECONOMICS	33
3.1 Assessment of Direct Economic Costs / Benefits for Each Pathway / Modality (Capital Cost, Operational Cost, End-user Cost)	33
3.2 Assessment of Economic Competitiveness to Petroleum-based Fuels	37
3.3 Return on Investment	39
3.4 Assessment of Energy Efficiency for Each Pathway / Modality	40
3.5 Assessment of Greenhouse Gas Emissions for Each Pathway / Modality	41
3.5.1. <i>How much GHG can be avoided during production?</i>	41
3.5.2. <i>Overall cycle GHG emissions (well-to-wheels, seed-to-wheels)</i>	41
3.6 Assessment of Land Use and Alternative Crops for Each Pathway / Modality ...	45
3.6.1. <i>Bioethanol yield for different crops</i>	45
3.6.2. <i>Land use</i>	45
3.6.3. <i>Abandoned Land Potential</i>	48
3.6.4. <i>Global potential for bioethanol production from wasted crop</i>	48
3.6.5. <i>Area needed to move an automobile a kilometre</i>	49
3.7. Summary of techno-economic uncertainties	51
3.7.1. <i>Uncertainties of direct economic nature and the need for comprehensive models</i>	51
3.7.2. <i>Assessment of some externalities, including social costs / benefits (e.g., possible impact on employment) for each pathway / modality</i>	52
4. MAIN CONTENT OF LEGISLATION AND REGULATORY ENVIRONMENT FOR BIOFUELS, CTL AND GTL	54