LIST OF FIGURES

1	Figure1. 1	World Energy Consumption by End Use Sector	1
		2003- 2030	
2	Figure1. 2	World Marketed Energy Use by Energy Type,	
		1980-2030	2
3	Figure1.3	Demand Supply Gap for Oil	2
4	Figure1.4	World Events and Crude Oil Prices 1946-2011	3
5	Figure1.5	World Energy Related Carbon Dioxide Emissions,	
		2006-2035	4
6	Figure1. 6	The Percentage Share of Each Renewable Energy	
		Source in 1995	8
7	Figure1. 7	World biodiesel production trend	12
8	Figure2. 1	Research Process Flowchart	30
9	Figure2. 2	Research Framework	30
10	Figure3. 1	Jatropha curcas Trees	37
11	Figure3. 2	Jatropha Fruit	38
12	Figure3. 3	Jatropha Seeds	39
13	Figure3. 4	Value Chain of Jatropha for Biofuel Production	40
14	Figure3. 5	Flow Diagram of Enzyme Mediated Alcoholysis	
		for FAME Production	55
15	Figure4. 1	Various Steps Involved in Lipid Synthesis	66
16	Figure4. 2	Different growth techniques of algae on the basis	
		of energy and carbon source	79
17	Figure4. 3	Value chain of biofuel production from Algae	81
18	Figure4. 4	Effect of various external factors on the	
	J	photobioreactor design considerations	87
19	Figure4. 5	Different conversion technologies of algal	- •
	.	biomass for energy production	114
20	Figure 5 . 1	Importance of the Agronomical Practices in	

		deciding the future of National Biodiesel Mission	
		of India	128
21	Figure5. 2	System boundary of Jatropha green diesel	141
		production system	
22	Figure 5. 3	Energy balance per hectare during first five years	
		of Jatropha based biodiesel production	163
23	Figure 5. 4	CO ₂ emissions per hectare during first five years	
		of Jatropha based Green diesel production	163
24	Figure6. 1	System boundary, showing the various possible	
		combinations and routes for green diesel	
		production from Microalgae	170
25	Figure6. 2	Energy balance per hectare during first five years	
		for open pond dry route algae based green diesel	
		production	203
26	Figure6. 3	CO ₂ emissions per hectare during first five years	
		for open pond dry route algae based green diesel	
		production	204
27	Figure7. 1	Framework showing the details of the parameters	
		for comparative analysis of Jatropha and	
		Microalgae based green diesel production system	207
28	Figure7. 2	Package of practices/strategies for optimization of	
		commercial cultivation of Jatropha as an energy	
		crop	214