

# Contents

<b>List of Figures</b>	<b>ix</b>
<b>List of Tables</b>	<b>xi</b>
<b>List of Formulas</b>	<b>xv</b>
<b>Abbreviations</b>	<b>xv</b>
<b>Symbols and Units</b>	<b>xix</b>
<b>I Introduction</b>	<b>1</b>
1.1 Approaching the Issue . . . . .	1
1.2 Methodology . . . . .	4
1.3 Structure of the Study . . . . .	6
<b>2 Supporting Photovoltaics - The Case of the German EEG</b>	<b>9</b>
2.1 General Promotion Possibilities of Renewable Electricity Generation . . . . .	9
2.1.1 Rationale of Promoting Renewables . . . . .	9
2.1.2 Policy Options . . . . .	13
2.1.3 Quota Obligations . . . . .	15
2.1.4 Feed-in Tariffs . . . . .	17
2.2 Development and Vertices of the EEG's PV Support . . . . .	22
2.2.1 Development towards the EEG . . . . .	23
2.2.2 Vertices and Progress of the EEG's FIT Scheme . . . . .	25
2.2.3 Goal Development . . . . .	33
2.3 Reasoning behind the EEG's PV FIT scheme . . . . .	36
2.4 Effects and Induced Costs . . . . .	41

---

2.5 Interim Conclusion . . . . .	47
<b>3 Development of Environmental Assessment Indicators</b>	<b>51</b>
3.1 Criteria and Indicators for the Analysis . . . . .	51
3.2 Vertices of the conducted LCA Study . . . . .	59
3.3 Update of Indicator Results . . . . .	67
3.3.1 Energy Payback Time . . . . .	67
3.3.2 Carbon Footprint . . . . .	70
3.3.3 Space Requirements . . . . .	73
3.4 Sensitivity Analysis . . . . .	75
3.4.1 Crystalline Silicon Wafers . . . . .	76
3.4.2 Reconsideration of Building Integration . . . . .	80
3.4.3 Electricity from Renewables at Production Sites . . . . .	82
3.4.4 Lifetime and Location . . . . .	83
3.5 Comparative Literature Review . . . . .	88
<b>4 Environmental Performance of the EEG Feed-in Tariffs for Photovoltaics</b>	<b>95</b>
4.1 Normalization of Indicator Results . . . . .	95
4.2 Determination of a Base for Comparison . . . . .	99
4.2.1 Assumptions for the Subsequent Analysis . . . . .	99
4.2.2 Determination of Reference FITs . . . . .	104
4.3 Climate Protection and Primary Resource Consumption . . . . .	110
4.4 Space Requirements . . . . .	113
<b>5 Discussion of Results</b>	<b>117</b>
5.1 Result Preparation for Decision Making . . . . .	117
5.2 Effects on the Policy Design . . . . .	121
5.2.1 FIT Scheme . . . . .	122
5.2.2 Other Support Policy Options . . . . .	131
5.2.3 Interaction Policies . . . . .	139
<b>6 Conclusions and Prospect</b>	<b>145</b>
<b>Annex</b>	<b>151</b>

<b>References</b>	<b>182</b>
-------------------	------------