

CHAPTER ONE: INTRODUCTION.....	1
STUDY GOALS AND OBJECTIVES.....	1
REASONS FOR COMPLETING THIS STUDY	1
INTENDED AUDIENCE.....	1
SCOPE OF REPORT	2
WORLDWIDE MARKETS.....	2
<i>TABLE A LIST OF GLOBAL MARKETS CONSIDERED IN THIS STUDY</i>	2
METHODOLOGY.....	2
<i>TABLE B RESEARCH INFORMATION SOURCES</i>	3
INFORMATION SOURCES.....	3
ANALYST CREDENTIALS.....	4
RELATED BCC REPORTS	4
BCC ONLINE SERVICES.....	4
DISCLAIMER	5
CHAPTER TWO: SUMMARY.....	6
SUMMARY.....	6
<i>SUMMARY TABLE PROJECTED GLOBAL DISTRIBUTED GENERATION MARKET, THROUGH 2015 (\$ MILLIONS)</i>	7
<i>SUMMARY FIGURE COMPARISON OF PROJECTED DISTRIBUTED GENERATION MARKET, 2008-2015 (\$ MILLIONS)</i>	7
CHAPTER THREE: OVERVIEW	8
DISTRIBUTED ENERGY AND DISTRIBUTED GENERATION	8
<i>TABLE 1 CONVENTIONAL POWER PLANT GENERATION CAPACITIES (MW ELECTRICITY)</i>	8
<i>TABLE 2 DISTRIBUTED GENERATION TECHNOLOGIES CONSIDERED IN THIS REPORT</i>	9
RENEWABLE ENERGY AND DISTRIBUTED ENERGY GENERATION	10
<i>TABLE 3 ENERGY SOURCES FOR DISTRIBUTED GENERATION</i>	10
<i>TABLE 4 ENERGY SOURCES FOR DISTRIBUTED ENERGY TECHNOLOGIES</i>	11
A BRIEF HISTORY OF DISTRIBUTED ENERGY GENERATION.....	11
DISTRIBUTED ELECTRICITY USES.....	12
ADVANTAGES AND DISADVANTAGES OF DISTRIBUTED ELECTRICITY GENERATION	13
ADVANTAGES.....	13
<i>TABLE 5 ADVANTAGES OF DISTRIBUTED GENERATION</i>	14
Potential Cost Savings	14
Improved Distribution.....	14
Reliability: Peak Loads and Grid Interruptions	15
Power Quality and Consistency	15

Energy Independence and Security	16
Incorporation of Renewable Energy.....	16
Ancillary Utility Services	16
Microgrids	17
DRAWBACKS OF DISTRIBUTED ENERGY GENERATION.....	17
<i>TABLE 6 DRAWBACKS OF DISTRIBUTED GENERATION</i>	18
DISTRIBUTED ENERGY GENERATION TECHNOLOGIES AND APPLICATIONS.....	18
DISTRIBUTED ENERGY GENERATION ...(CONTINUED).....	19
<i>TABLE 7 MATURITY OF DISTRIBUTED ELECTRICITY TECHNOLOGIES</i>	20
<i>TABLE 8 CHARACTERISTICS OF SELECT DISTRIBUTED GENERATION TECHNOLOGIES</i>	20
CAPITAL, INSTALLATION, AND OPERATION COSTS	21
<i>TABLE 9 FACTORS CONTRIBUTING TO DISTRIBUTED GENERATION COST</i>	21
MICROTURBINES	22
<i>TABLE 10 MICROTURBINE OVERVIEW</i>	23
Advantages	23
<i>TABLE 11 MICROTURBINE ADVANTAGES</i>	23
Drawbacks	24
<i>TABLE 12 MICROTURBINE DRAWBACKS</i>	24
COMBUSTION TURBINES	24
<i>TABLE 13 COMBUSTION TURBINE OVERVIEW</i>	25
Advantages	25
<i>TABLE 14 COMBUSTION TURBINE ADVANTAGES</i>	26
Drawbacks	26
<i>TABLE 15 COMBUSTION TURBINE DRAWBACKS</i>	26
MICROHYDROPOWER	27
<i>TABLE 16 MICROHYDROPOWER OVERVIEW</i>	28
Advantages	28
<i>TABLE 17 MICROHYDROPOWER ADVANTAGES</i>	29
Drawbacks	29
<i>TABLE 18 MICROHYDROPOWER DRAWBACKS</i>	29
RECIPROCATING ENGINES.....	30
<i>TABLE 19 RECIPROCATING ENGINE OVERVIEW</i>	31
Advantages	32
<i>TABLE 20 RECIPROCATING ENGINE ADVANTAGES</i>	32
Drawbacks	33
<i>TABLE 21 RECIPROCATING ENGINE DRAWBACKS</i>	33
FUEL CELLS	33
<i>TABLE 22 FUEL CELL OVERVIEW</i>	34
Types of Fuel Cells	35
<i>TABLE 23 COMPARISON OF COMMON FUEL CELL TECHNOLOGIES</i>	35

Proton Exchange Membrane Fuel Cells (PEMFCs)	35
Alkaline Fuel Cells	36
Phosphoric Acid Fuel Cells	37
Molten Carbonate Fuel Cells	37
Solid Oxide Fuel Cells	38
Direct Methanol Fuel Cells	39
PHOTOVOLTAIC SYSTEMS (SOLAR PANELS)	40
TABLE 24 PHOTOVOLTAIC SYSTEMS OVERVIEW	41
Advantages of PV Systems	41
TABLE 25 ADVANTAGES SPECIFIC TO PV SYSTEMS	42
Drawbacks of PV Systems	42
TABLE 26 DRAWBACKS SPECIFIC TO PV SYSTEMS	43
SMALL WIND TURBINES	43
Small Wind Turbines (Continued)	44
TABLE 27 WIND TURBINE OVERVIEW	45
Advantages of DG Wind Turbines	45
TABLE 28 ADVANTAGES OF DG-SCALE WIND TURBINES	46
Drawbacks of DG Wind Turbines	46
TABLE 29 DRAWBACKS SPECIFIC TO DG-SCALE WIND TURBINES	47
COMBINED HEAT AND POWER	47
TABLE 30 COMBINED HEAT AND POWER OVERVIEW	48
Advantages of Combined Heat and Power	48
TABLE 31 ADVANTAGES OF COMBINED HEAT AND POWER	48
Drawbacks of Combined Heat and Power	48
TABLE 32 DRAWBACKS OF COMBINED HEAT AND POWER	49
OTHER TECHNOLOGIES	49
Stirling Engines	49
Trigeneration	50
CHAPTER FOUR: REGULATORY SUPPORT AND INCENTIVES FOR	
DISTRIBUTED GENERATION	51
UNITED STATES REGULATORY SUPPORT AND INCENTIVES	51
TABLE 33 OVERVIEW OF U.S. REGULATORY SUPPORT AND	
INCENTIVES	52
U.S. INTERNAL REVENUE SERVICE	53
Energy Efficient Commercial Buildings Tax Deduction	53
Modified Accelerated Cost-Recovery System + Bonus	
Depreciation	53
Residential Energy Conservation Subsidy Exclusion	
(Corporate)	54
Business Energy Investment Tax Credit	54
Residential Energy Efficiency Tax Credit	55
Residential Renewable Energy Tax Credit	55
Renewable Electricity Production Tax Credit	55

<i>TABLE 34 IN-SERVICE DEADLINE AND CREDIT AMOUNT BY FACILITY TYPE</i>	56
Alternative Fuel Infrastructure Tax Credit	56
Qualified Energy Conservation Bonds	57
Residential Energy Conservation Subsidy Exclusion (Personal).....	57
U.S. DOE	58
Tribal Energy Program Grant	58
Renewable Energy Production Incentive.....	58
State Energy Program Funding.....	59
Loan Guarantee Program.....	60
Energy Goals and Standards for Federal Government.....	60
U.S. Federal Government – Green Power Purchasing Goal.....	61
U.S. DEPARTMENT OF AGRICULTURE	61
USDA – High Energy Cost Grant Program.....	61
USDA REAP Grants and Loan Guarantees.....	62
U.S. DEPARTMENT OF TREASURY	63
Renewable Energy Grants	63
Federal Energy Regulatory Commission.....	63
Interconnection Standards for Small Generators	63
INTERNATIONAL REGULATORY SUPPORT AND INCENTIVES – EUROPE	64
<i>TABLE 35 OVERVIEW OF EUROPEAN REGULATORY SUPPORT AND INCENTIVES</i>	65
<i>TABLE 35 (CONTINUED)</i>	66
<i>TABLE 35 (CONTINUED)</i>	67
<i>TABLE 35 (CONTINUED)</i>	68
EUROPEAN UNION	69
20 20 by 2020 – Europe’s Climate Change Opportunity	69
An Energy Policy for Europe.....	69
European Council Action Plan (2007–2009) Energy Policy for Europe	70
Seventh Framework Program for Research and Technological Development	70
<i>TABLE 36 ENERGY RESEARCH UNDER FP7</i>	71
Strategic Energy Technology Plan: Toward a Low Carbon Future	71
European Photovoltaic Technology Platform	71
European Technology Platforms.....	72
Directive on the Taxation of Energy Products and Electricity	72
Biomass Action Plan.....	73
EU Climate and Energy Package: Renewable Energy Targets.....	73

Revised State Aid Guidelines for Environmental Protection.....	73
Renewable Energy Road Map – Renewable Energies in the 21st Century: Building a More Sustainable Future.....	74
POLICIES OF INDIVIDUAL EU MEMBER COUNTRIES	74
Austria	74
Klima:Aktiv Program	74
Renewable Energy & Energy Efficiency Partnership.....	75
Combined Heat and Power Law (CHP Law – KWK Gesetz).....	75
Okostromverordnung (Feed-in Tariffs) 2010 – OSVO 2010.....	76
<i>TABLE 37 PRIMARY TARIFFS FOR RENEWABLE ELECTRICITY (EUROCENTS/KWH).....</i>	<i>76</i>
Green Electricity Act	77
Federal Promotion of Extraordinary Efficiency in Buildings.....	77
Financial Incentives for Rural Biomass Energy Generation	77
Belgium.....	78
Solwatt-Wallonia.....	78
Grants Supporting Solar Energy – Brussels Region.....	78
Green Certificate Scheme – Federal.....	78
Tax Deductions for Investments in Energy Efficiency and Renewable Energy – Federal.....	78
Subsidies for Companies Investing in Renewable Energy – Wallonia	79
Provincial and Municipal Grants for Solar Energy – Flanders	79
Flanders – Call-System Ecological Investment Study	79
Subsidies for Renewable Energy in Tertiary Sector Buildings – Brussels Region	79
Flemish Government Second Climate Policy Plan.....	80
Support for Renewable Electricity (Photovoltaics) – Green Certificates – Flanders.....	80
Subsidies for Renewable Energy Investment – Wallonia	80
Access to the Grid (Renewables and CHP)	81
Czech Republic.....	81
Promotion of Power Generated by Renewable Sources	81
Tax Exemption for Renewable Energy Use	81

Building Retrofit Subsidies: Panel Program	82
Denmark	82
Agreement on Danish Energy Policy 2008–2011	82
Subsidies for Renewable Electricity Generation	82
Agreement on Green Growth	83
Feed-in Premium Tariffs for Renewable Power (Promotion of Renewable Energy Act)	83
Net Metering for Small-Scale PV	84
Finland	84
Energy Grants for Residential Buildings	84
Energy Aid	84
Tax Subsidies for Power Production Based on Renewable Energy Sources	85
France	85
Renewable Energy Feed-in Tariffs (I)	85
Renewable Energy Feed-in Tariffs (II)	86
Renewable Energy Feed-in Tariffs (III)	86
Renewable Energy Feed-in Tariff (IV)	87
Le Grenelle de l'Environnement	87
Plan for the Energy Performance of Agricultural Exploitations	87
Renewable Energy Feed-in: Biomass	88
Renewable Energy Feed-in: Solar PV	88
National Strategy for Research and Development in the Field of Energy	88
Flexible Depreciation	89
Extension of Tax Credit in Favor of Renewable Energy Equipment in New Housing	89
Extension of the Law on Reduced VAT for Residential Renewable Energy Equipment	89
Renewable Energy & Energy Efficiency Partnership (REEEP)	89
Government Crediting and Loan Guarantee for Energy Efficiency and Renewable Energy Investment – FOGIME	89
Germany	90
2009 Amendment of the Renewable Energy Source Act (Erneuerbare-Energien-Gesetz EEG)	90
KfW Renewable Energies Program (KfW- Programm Erneuerbare Energien)	91
Integrated Climate Change and Energy Program	91
Climate Legislation Package Enacted Under the Integrated Climate Change and Energy Program	91

Greece.....	92
Feed-In Tariff for Solar PV.....	92
Development Incentives for Renewable Energy Sources	92
Generation of Electricity Using Renewable Energy Sources	92
Hungary	93
New Hungary Development Plan (NHDP) and Environment and Energy Operative Program (KEOP).....	93
National Energy Conservation Program 2008 (NEP 2008).....	94
Ireland.....	94
Amendment of Part L of the Building Regulations.....	94
Best Practice Guidelines—Irish Wind Industry.....	94
Microgeneration Support Program	95
Combined Heat and Power (CHP) Deployment Program	95
Renewable Energy Feed-in Tariff	95
Italy	96
Finance Act 2008: Renewable Energy Provisions for the Green Certificates System	96
Research for Energy Efficiency and Renewable Energy in Urban Areas	96
Feed-in Tariff for Solar Thermodynamic Energy	96
Finance Act 2008: Renewable Energy Provisions for “All-Inclusive” Feed-in Tariff for Small Renewable Plants	97
New Feed-In Tariff to Promote Photovoltaic Systems.....	97
RES Promotion – Implementing Directive 2001/77/EC.....	98
Luxembourg.....	98
Think Climate – Financial Aid Program for Energy Savings and Renewable Energy in Housing.....	98
CO ₂ Reduction Action Plan.....	98
Feed-in Tariffs for Renewable Energy: Règlement Grand-Ducal of October 14, 2005.....	99
Grants for Energy Efficiency and Renewable Energy Investments	100
Règlement Grand-Ducal (July 17, 2001).....	100
Netherlands	100
SDE (Stimuleren Duurzame Energie): Renewable Energy and CHP Production Aid Scheme	100

Incentive Scheme for Sustainable Energy	
Production.....	101
Energy Transition.....	101
Energy Premium (EPR) and Energy Performance	
Advice (EPA).....	102
Green Certificate Trading	102
Norway	102
Enova SF – The Energy Fund	102
Clean Energy for the Future (RENERGI) Program	102
Strategy for Small-Scale Hydropower.....	103
Poland	103
Polish Energy Policy Until 2030	103
Program for Renewable Energy and High-	
Efficiency Cogeneration Projects	104
Loans from the National Fund for Environmental	
Protection and Water Management.....	104
Energy Law Act.....	104
Obligation for Power Purchase from Renewable	
Sources	105
Renewable Energy Excise Tax	105
Portugal.....	105
Implementation of the CHP Directive	105
National Energy Strategy 2020 (ENE 2020)	106
Microgeneration Law	106
Modified Feed-In Tariffs for Renewables – Decree	
Law No. 225/2007	106
Tax Reduction for Renewable Energy Equipment	107
Slovak Republic	107
Feed-In Tariffs for Renewable Energy	107
Slovenia.....	108
Feed-In Tariffs and Premiums	108
Program for Higher Biomass and Solar Energy Use ...	108
Spain	109
Feed-In Tariffs for Electricity from Renewable	
Energy Sources (Special Regime)	109
Technical Building Code.....	109
New Regulatory Framework for Administrative	
Procedures for Renewable Energy Facilities.....	110
Sweden	110
Grant for Local Authority Land Use Planning for	
Wind Power.....	110
Advisory Council for the Promotion of Wind Power	110
Funding for Wind Power Pilot Projects	110
Sustainable Municipalities Program	111

Environmental Bonus for Wind Power	111
Green Certificate Scheme	111
Switzerland	112
2009 Stabilization Program: Energy Measures	112
Feed-In Tariffs of the New Electricity Supply Act	112
Electricity Supply Act	113
United Kingdom	113
Feed-In Tariffs for Renewable Electricity	113
Low Carbon Transition Plan	114
Renewable Energy Strategy 2009	115
Energy Technologies Institute	115
Bio-Energy Infrastructure Scheme	115
Environmental Transformation Fund	116
International Element of the ETF	116
Domestic Element of the ETF	116
Climate Change and Sustainable Energy Act	117
Microgeneration Strategy	117
INTERNATIONAL REGULATORY SUPPORT AND INCENTIVES –	
ASIA AND AUSTRALIA	118
<i>TABLE 38 AUSTRAL-ASIAN COUNTRIES WITH DG SUPPORT AND</i>	
<i>INCENTIVES.....</i>	<i>118</i>
<i>TABLE 39 OVERVIEW OF ASIAN/AUSTRALIAN REGULATORY</i>	
<i>SUPPORT AND INCENTIVES.....</i>	<i>118</i>
<i>TABLE 39 (CONTINUED).....</i>	<i>119</i>
AUSTRALIA	120
New South Wales Solar Bonus Scheme	120
Renewable Energy Bonus Scheme	120
Australian Capital Territory Feed-in Tariff Scheme	120
Green Loans Program for Households	121
Solar Cities	121
Queensland Smart Energy Policy	121
National Solar Schools Program	122
Queensland Solar Bonus Scheme	122
Renewable Energy & Energy Efficiency Partnership	122
Victoria’s Feed-In Tariff Scheme	122
CHINA	123
Shandong Province One Million Rooftops Sunshine Plan	123
Shandong Province Energy Fund.....	123
Shandong Province Village Renewable Energy	
Regulations	123
Medium and Long Term Development Plan for	
Renewable Energy	124
INDIA	124
Solar Power Generation Based Incentive	124

New Feed-in Tariff Regulations	125
National Action Plan on Climate Change	125
Government Assistance for Small Hydropower Stations	125
National Solar Mission	126
Energy Conservation Act	126
Government Assistance for Wind Power Development	127
INDONESIA	127
National Energy Blueprint	127
Renewable Energy & Energy Efficiency Partnership	127
JAPAN	128
New Purchase System for Solar Power-Generated Electricity	128
Subsidy for Residential PV Systems	128
Cool Earth Energy Innovative Technology Plan	128
Renewable Energy & Energy Efficiency Partnership	129
Seaway Signals Converted to Use Renewable Energy	129
REPUBLIC OF KOREA	129
Tax Audit Exemption – Alternative Energy Businesses	129
Certification for New and Renewable Energy Facilities	129
Feed-in Tariff for Renewables (Electricity Business Law)	130
SINGAPORE	130
Clean Energy Research Program (CERP)	130
Tax Incentive for Energy-Saving Equipment	131
Renewable Energy & Energy Efficiency Partnership	131
INTERNATIONAL REGULATORY SUPPORT AND INCENTIVES – SOUTH AMERICA	131
<i>TABLE 40 SOUTH AMERICAN COUNTRIES WITH DISTRIBUTED GENERATION SUPPORT AND INCENTIVES</i>	<i>131</i>
<i>TABLE 41 OVERVIEW OF SOUTH AMERICAN REGULATORY SUPPORT AND INCENTIVES</i>	<i>132</i>
ARGENTINA	132
Promotion of Renewable Sources of Energy for Electricity Production	132
Renewable Energy & Energy Efficiency Partnership (REEEP)	132
BRAZIL	133
Brazil National Climate Change Plan	133
Luz para Todos (Light for All) Electrification Program	133
Program of Incentives for Alternative Electricity Sources	134
CHILE	134
Rural Electrification with Renewable Energy Program	134

CHAPTER FIVE: INDUSTRY STRUCTURE AND MAJOR MARKETS	135
INDUSTRY STRUCTURE	135
TABLE 42 POTENTIAL NICHE OVERLAP AMONG DG TECHNOLOGIES.....	136
MANUFACTURING HISTORY	136
LARGE, SMALL, AND WORLDWIDE PRESENCE.....	137
TABLE 43 CHARACTERISTICS OF MAJOR DISTRIBUTED GENERATION MANUFACTURERS IDENTIFIED IN THIS REPORT (%).....	138
MAJOR MARKETS.....	138
INSTALLED DISTRIBUTED GENERATION	139
Microturbine Market	139
Microturbine Market (Continued).....	140
TABLE 44 TOTAL ANNUAL INSTALLED MICROTURBINES WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED).....	141
TABLE 45 WORLDWIDE MICROTURBINE UNIT SALES THROUGH 2010 (UNITS).....	141
Small Combustion Turbine Market	141
Small Combustion ... (Continued).....	142
TABLE 46 TOTAL ANNUAL INSTALLED SMALL COMBUSTION TURBINES WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED)	143
TABLE 47 WORLDWIDE SMALL COMBUSTION TURBINE UNIT SALES THROUGH 2010 (UNITS)	143
Reciprocating Engine Market	143
Reciprocating Engine ... (Continued).....	144
TABLE 48 TOTAL ANNUAL INSTALLED RECIPROCATING ENGINES WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED).....	145
TABLE 49 WORLDWIDE RECIPROCATING ENGINE UNITS SALES THROUGH 2010 (UNITS).....	145
Fuel Cell Market.....	145
TABLE 50 TOTAL ANNUAL INSTALLED STATIONARY FUEL CELLS WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED).....	146
TABLE 51 WORLDWIDE STATIONARY FUEL CELL UNIT SALES THROUGH 2010 (UNITS).....	147
PV Systems Market.....	147
PV Systems Market (Continued).....	148
TABLE 52 TOTAL ANNUAL DISTRIBUTED INSTALLED PHOTOVOLTAIC CELLS WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED).....	149
TABLE 53 WORLDWIDE DISTRIBUTED PHOTOVOLTAIC CELL UNIT SALES THROUGH 2010 (THOUSANDS OF UNITS).....	149
Small Wind Market	149
Small Wind Market (Continued).....	150

<i>TABLE 54 TOTAL ANNUAL INSTALLED SMALL WIND CAPACITY, WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED)</i>	151
<i>TABLE 55 WORLDWIDE SMALL WIND UNIT SALES THROUGH 2010 (UNITS)</i>	151
Distributed Hydropower Market	151
Distributed Hydropower ... (Continued).....	152
<i>TABLE 56 TOTAL ANNUAL INSTALLED SMALL HYDROPOWER CAPACITY WORLDWIDE BY REGION, THROUGH 2010 (MW INSTALLED)</i>	153
<i>TABLE 57 WORLDWIDE SMALL HYDROPOWER UNIT SALES THROUGH 2010 (UNITS)</i>	153
Worldwide Distributed Generation Market	153
Worldwide ... (Continued)	154
<i>TABLE 58 TOTAL ANNUAL INSTALLED GENERATION CAPACITY, ALL TECHNOLOGIES, WORLDWIDE BY REGION THROUGH 2010 (MW INSTALLED)</i>	155
CHAPTER SIX: COMPANY PROFILES	156
MICROTURBINES	156
<i>TABLE 59 MICROTURBINE MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	156
MICROTURBINE MANUFACTURERS AND DEVELOPERS WORLDWIDE	157
Calnetix Power Solutions	157
<i>TABLE 60 COMPANY OVERVIEW – CALNETIX POWER SOLUTIONS</i>	158
Capstone Turbine Corporation	158
Capstone Turbine International, Inc.	158
<i>TABLE 61 COMPANY OVERVIEW – CAPSTONE TURBINE CORPORATION</i>	159
Ingersoll-Rand Energy Systems.....	159
<i>TABLE 62 COMPANY OVERVIEW – INGERSOLL-RAND ENERGY SYSTEMS</i>	160
Solar Turbines	160
<i>TABLE 63 COMPANY OVERVIEW – SOLAR TURBINES</i>	161
Toyota Turbine and Systems, Inc.	162
<i>TABLE 64 COMPANY OVERVIEW – TOYOTA TURBINE AND SYSTEMS, INC.</i>	163
Turbec	163
Turbec S.p.A.	163
Turbec R&D AB	163
<i>TABLE 65 COMPANY OVERVIEW – TURBEC</i>	164
Wilson Solarpower	165
<i>TABLE 66 COMPANY OVERVIEW – WILSON SOLARPOWER</i>	166
COMBUSTION TURBINES.....	166

<i>TABLE 67 SMALL COMBUSTION TURBINE MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	167
SMALL COMBUSTION TURBINE MANUFACTURERS.....	167
ALM Turbine	167
<i>TABLE 68 COMPANY OVERVIEW – ALM TURBINE</i>	168
Siemens Energy	168
Siemens S.A. de C.V. Power Generation.....	168
Siemens Industrial Turbomachinery Ltd.	168
Siemens Power Plant Automation, Ltd.....	169
<i>TABLE 69 COMPANY OVERVIEW – SIEMENS ENERGY</i>	169
Solar Turbines	170
<i>TABLE 70 COMPANY OVERVIEW – SOLAR TURBINES</i>	171
MICROHYDROPOWER	171
<i>TABLE 71 MICROHYDROPOWER MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	171
MICROHYDROPOWER MANUFACTURERS.....	172
Asian Phoenix Resources Ltd.....	172
<i>TABLE 72 COMPANY OVERVIEW – ASIAN PHOENIX</i>	172
Canyon Industries	173
<i>TABLE 73 COMPANY OVERVIEW – CANYON HYDRO</i>	173
Cargo & Kraft Turbin Sverige AB	174
<i>TABLE 74 COMPANY OVERVIEW – CARGO KRAFT TURBIN SVERIGE AB</i>	174
Fuchun Industry Development Company Ltd. Shenzhen	174
<i>TABLE 75 COMPANY OVERVIEW – FUCHUN INDUSTRY DEVELOPMENT CO. LTD., SHENZHEN</i>	175
Gilbert Gilkes & Gordon, Ltd.....	175
Gilbert Gilkes, Inc. (USA).....	175
Gilbert Gilkes & Gordon, Ltd. (Japan)	176
<i>TABLE 76 COMPANY OVERVIEW – GILBERT GILKES & GORDON, LTD.</i>	176
Gugler Water Turbines GmbH.....	177
<i>TABLE 77 COMPANY OVERVIEW – GUGLER WATER TURBINES</i>	177
Savoia Generators	178
<i>TABLE 78 POWER OUTPUT OF SAVOIA MICROHYDROPOWER TURBINE (KW ELECTRICITY)</i>	178
<i>TABLE 79 COMPANY OVERVIEW – SAVOIA GENERATORS</i>	179
Tyco Tamar	179
<i>TABLE 80 COMPANY OVERVIEW – TYCO TAMAR</i>	180
RECIPROCATING ENGINES	180
<i>TABLE 81 RECIPROCATING ENGINE MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	180
RECIPROCATING ENGINE MANUFACTURERS	181
Caterpillar.....	181

<i>TABLE 82 COMPANY OVERVIEW – CATERPILLAR</i>	181
Cummins Power Generation, Inc.....	182
Cummins Power Generation Americas.....	182
Cummins Brazil	182
Cummins Power Generation, Ltd.	182
Cummins Power Generation Southeast Asia	182
<i>TABLE 83 COMPANY OVERVIEW – CUMMINS POWER GENERATION, INC.</i>	183
Deutz AG.....	184
<i>TABLE 84 COMPANY OVERVIEW – DEUTZ AG</i>	185
Dresser Waukesha.....	185
<i>TABLE 85 COMPANY OVERVIEW – DRESSER WAUKESHA</i>	186
Fairbanks Morse Engine	186
<i>TABLE 86 COMPANY OVERVIEW – FAIRBANKS MORSE ENGINE</i>	187
GE Energy/GE Jenbacher	187
GE Jenbacher (North America).....	188
<i>TABLE 87 COMPANY OVERVIEW– GE JENBACHER</i>	188
Generac Power Systems, Inc.	189
<i>TABLE 88 COMPANY OVERVIEW – GENERAC POWER SYSTEMS</i>	190
Honda Power Equipment	190
<i>TABLE 89 COMPANY OVERVIEW – HONDA POWER EQUIPMENT</i>	191
Kohler Power Systems.....	191
<i>TABLE 90 COMPANY OVERVIEW – KOHLER POWER SYSTEMS</i>	192
Rolls Royce	192
<i>TABLE 91 COMPANY OVERVIEW – ROLLS ROYCE</i>	193
Wärtsilä Corp.....	193
Wärtsilä North America, Inc.	193
Wärtsilä South Africa (Pty) Ltd.	193
Wärtsilä China, Ltd.	193
<i>TABLE 92 COMPANY OVERVIEW – WÄRTSILÄ</i>	194
FUEL CELLS	194
<i>TABLE 93 FUEL CELL SYSTEMS MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	195
FUEL CELL MANUFACTURERS	195
Ballard Power Systems, Inc.	195
<i>TABLE 94 COMPANY OVERVIEW – BALLARD</i>	196
Cellkraft	196
<i>TABLE 95 COMPANY OVERVIEW – CELLKRAFT</i>	197
Electrochem, Inc.	197
<i>TABLE 96 COMPANY OVERVIEW – ELECTROCHEM, INC.</i>	198
Fuel Cell Energy	198
<i>TABLE 97 COMPANY OVERVIEW – FUEL CELL ENERGY</i>	199
Horizon Fuel Cell Technologies Pte. Ltd.	199
HFC Technologies (Shanghai) CO., Ltd.....	199

<i>TABLE 98 COMPANY OVERVIEW – HORIZON FUEL CELL TECHNOLOGIES</i>	200
MTI MicroFuel Cells Inc.	200
<i>TABLE 99 COMPANY OVERVIEW – MTI MICRO FUEL CELLS</i>	201
NexTech Materials, Ltd.....	201
<i>TABLE 100 COMPANY OVERVIEW – NEXTECH MATERIALS</i>	202
Nuvera Fuel Cells.....	202
Nuvera Fuel Cells Europe, S.r.L.	202
<i>TABLE 101 COMPANY OVERVIEW – NUVERA FUEL CELLS</i>	203
Plug Power, Inc.....	203
<i>TABLE 102 COMPANY OVERVIEW – PLUG POWER</i>	204
Powerzinc Electric, Inc.	204
<i>TABLE 103 COMPANY OVERVIEW – POWERZINC ELECTRIC, INC.</i>	205
Siemens Energy	205
Siemens S.A. de C.V. Power Generation.....	205
Siemens Industrial Turbomachinery, Ltd.	206
Siemens Power Plant Automation, Ltd.....	206
<i>TABLE 104 COMPANY OVERVIEW – SIEMENS ENERGY</i>	207
UTC Power.....	207
<i>TABLE 105 COMPANY OVERVIEW – UTC POWER</i>	208
PHOTOVOLTAIC SYSTEMS (SOLAR PANELS).....	208
<i>TABLE 106 PHOTOVOLTAIC SYSTEMS MANUFACTURERS AND DEVELOPERS WORLDWIDE</i>	208
PHOTOVOLTAIC SYSTEMS MANUFACTURERS	209
BP Solar	209
<i>TABLE 107 COMPANY OVERVIEW – BP SOLAR</i>	209
Conergy	210
Conergy USA.....	210
Conergy Renewable Energy Singapore Pte Ltd.....	210
<i>TABLE 108 COMPANY OVERVIEW – CONERGY</i>	211
First Solar, Inc.	211
First Solar Manufacturing GmbH.....	211
<i>TABLE 109 COMPANY OVERVIEW – FIRST SOLAR, INC.</i>	212
JA Solar Holdings.....	212
JA Solar USA, Inc.	212
<i>TABLE 110 COMPANY OVERVIEW – JA SOLAR HOLDINGS</i>	213
Kyocera Group	213
Kyocera America	213
Kyocera Solar, Inc.	214
<i>TABLE 111 COMPANY OVERVIEW – KYOCERA SOLAR, INC.</i>	214
Q-Cells.....	214
Q-Cells North America	215
<i>TABLE 112 COMPANY OVERVIEW – Q-CELLS</i>	215
Sharp Solar	215

<i>TABLE 113 COMPANY OVERVIEW – SHARP SOLAR</i>	216
Solar Edge	216
<i>TABLE 114 COMPANY OVERVIEW – SOLAR EDGE</i>	217
SolarWorld US	217
<i>TABLE 115 COMPANY OVERVIEW – SOLARWORLD AG</i>	218
SunPower Corp.	218
<i>TABLE 116 COMPANY OVERVIEW – SUNPOWER CORP.</i>	219
Suntech Power	220
Suntech Asia/Pacific & China	220
<i>TABLE 117 COMPANY OVERVIEW – SUNTECH-POWER</i>	220
Yingli Green Energy Holding Co., Ltd.	221
Yingli Green Energy Americas, Inc.	221
<i>TABLE 118 COMPANY OVERVIEW: YINGLI GREEN ENERGY</i>	222
WIND TURBINES	222
<i>TABLE 119 DG-SCALE WIND SYSTEMS MANUFACTURERS AND</i> <i>DEVELOPERS WORLDWIDE</i>	222
SMALL WIND TURBINE MANUFACTURERS	223
Aerogenesis Wind Energy	223
<i>TABLE 120 COMPANY OVERVIEW – AEROGENESIS WIND ENERGY</i>	223
Ampair Energy Limited	224
<i>TABLE 121 COMPANY OVERVIEW – AMPAIR ENERGY LIMITED</i>	224
Bergey Windpower Co.	225
<i>TABLE 122 COMPANY OVERVIEW – BERGEY WINDPOWER CO.</i>	225
Fortis Wind Energy	226
Fortis Wind Energy USA	226
<i>TABLE 123 COMPANY OVERVIEW – FORTIS WIND ENERGY</i>	226
Gazelle Wind Turbines/MKW Group	227
<i>TABLE 124 COMPANY OVERVIEW – GAZELLE WIND TURBINES</i>	227
Southwest Windpower	228
Skystream Energy Europe GmbH	228
<i>TABLE 125 COMPANY OVERVIEW – SOUTHWEST WINDPOWER</i>	229
Vergnet Groupe	229
<i>TABLE 126 COMPANY OVERVIEW – VERGNET GROUPE</i>	230
Wind Energy Solutions	230
<i>TABLE 127 COMPANY OVERVIEW – WIND ENERGY SOLUTIONS</i> <i>(WES)</i>	231
CHAPTER SEVEN: MARKET ASSESSMENT AND ANALYSIS	232
MICROTURBINES	232
KEY DRIVERS	232
GROWTH POTENTIAL	233
PROJECTED TRENDS	234
<i>TABLE 128 PROJECTED WORLDWIDE MICROTURBINE MARKET</i> <i>THROUGH 2015 (\$ MILLIONS)</i>	235

<i>FIGURE 1 PROJECTED MICROTURBINE SALES WORLDWIDE 2007-2015 (UNITS)</i>	236
SATURATION AND OTHER MARKET CONSIDERATIONS.....	236
SMALL COMBUSTION TURBINES.....	237
KEY DRIVERS.....	237
GROWTH POTENTIAL.....	238
PROJECTED TRENDS.....	238
Projected Trends (Continued).....	239
<i>TABLE 129 PROJECTED WORLDWIDE SMALL COMBUSTION TURBINE MARKET THROUGH 2015 (\$ MILLIONS)</i>	240
<i>FIGURE 2 PROJECTED SMALL COMBUSTION TURBINE SALES WORLDWIDE, 2007-2015 (UNITS SHIPPED)</i>	240
SATURATION AND OTHER MARKET CONSIDERATIONS.....	241
SMALL HYDROPOWER.....	241
KEY DRIVERS.....	241
Key Drivers (Continued).....	242
GROWTH POTENTIAL.....	243
PROJECTED TRENDS.....	244
<i>TABLE 130 PROJECTED WORLDWIDE SMALL HYDROPOWER MARKET THROUGH 2015 (\$ MILLIONS)</i>	245
<i>FIGURE 3 PROJECTED SMALL HYDROPOWER SALES WORLDWIDE, 2007-2015 (NUMBER)</i>	245
<i>FIGURE 3 (CONTINUED)</i>	246
SATURATION AND OTHER MARKET CONSIDERATIONS.....	246
RECIPROCATING ENGINES.....	246
KEY DRIVERS.....	246
Key Drivers (Continued).....	247
GROWTH POTENTIAL.....	248
PROJECTED TRENDS.....	248
<i>TABLE 131 PROJECTED WORLDWIDE RECIPROCATING ENGINE MARKET, THROUGH 2015 (\$ MILLIONS)</i>	249
<i>FIGURE 4 PROJECTED RECIPROCATING ENGINE SALES WORLDWIDE, 2007-2015 (UNITS)</i>	250
SATURATION AND OTHER MARKET CONSIDERATIONS.....	250
FUEL CELLS.....	251
KEY DRIVERS.....	251
GROWTH POTENTIAL.....	251
PROJECTED TRENDS.....	252
<i>TABLE 132 PROJECTED WORLDWIDE STATIONARY FUEL CELL MARKET, THROUGH 2015 (\$ MILLIONS)</i>	253
<i>FIGURE 5 PROJECTED STATIONARY FUEL CELL SALES WORLDWIDE, 2007-2015 (UNITS)</i>	254
SATURATION AND OTHER MARKET CONSIDERATIONS.....	254
PHOTOVOLTAIC SYSTEMS.....	255

KEY DRIVERS	255
GROWTH POTENTIAL.....	256
PROJECTED TRENDS.....	257
<i>TABLE 133 PROJECTED WORLDWIDE SOLAR PV MARKET, THROUGH 2015 (\$ MILLIONS).....</i>	<i>257</i>
<i>FIGURE 6 PROJECTED SOLAR PV MEGAWATTS SOLD WORLDWIDE, 2007-2015 (THOUSAND UNITS)</i>	<i>258</i>
SATURATION AND OTHER MARKET CONSIDERATIONS.....	258
SMALL WIND TURBINES	259
KEY DRIVERS	259
GROWTH POTENTIAL.....	260
PROJECTED TRENDS.....	260
<i>TABLE 134 PROJECTED WORLDWIDE SMALL WIND TURBINES MARKET, THROUGH 2015 (\$ MILLIONS)</i>	<i>261</i>
<i>FIGURE 7 PROJECTED SMALL WIND TURBINES MEGAWATTS SOLD WORLDWIDE, 2007-2015 (MEGAWATTS)</i>	<i>261</i>
SATURATION AND OTHER MARKET CONSIDERATIONS.....	262
OVERVIEW OF THE DISTRIBUTED GENERATION MARKET.....	262
<i>TABLE 135 PROJECTED WORLDWIDE DISTRIBUTED GENERATION MARKET, THROUGH 2015 (\$ MILLIONS)</i>	<i>263</i>
FUEL SOURCES AND ENERGY SECURITY	263
THE GREEN MOVEMENT – CORPORATE AND PERSONAL GREENING	263
THE GREEN MOVEMENT –...(CONTINUED)	264
<i>TABLE 136 GENERAL PUBLIC INTEREST/SUPPORT FOR DISTRIBUTED ENERGY TECHNOLOGIES</i>	<i>265</i>
APPENDICES.....	266
APPENDIX I – UNITS AND CONVERSION FACTORS	266
ELECTRICITY AND POWER	266
APPENDIX II – ABBREVIATIONS OF MEASUREMENTS	266
APPENDIX II – (CONTINUED)	267
REFERENCES	268
REFERENCES.....	268
REFERENCES (CONTINUED)	269