Index

accounting for emissions from degradation 194
additionality and establishing a baseline 128
additionality of carbon measured in forests 133
afforestation
definition 104
in US cap and trade scheme 169
afforestation and biofuels
in USEPA modeling 169
afforestation and deforestation
New Zealand cap and trade scheme 176
afforestation defined 104
afforestation/reforestation (A/R) 69, 104, 114
bankability of credits 45
biodiversity loss 100
carbon sequestration by location 85
costs in the CDM 63
first commitment period 46
CO₂e removal by 2012, potential 45
importance 45
importance in voluntary market 77
in CDM 41
in first commitment period 179
investment risk 182
proportion of projects in pipeline see CDM
registration of projects under the CDM 45, 57
responses to payments 29
sale of carbon sequestered ex ante 92
social costs offset, not offset 88
Africa 25, 27, 45, 46, 50, 80, 92, 95, 97, 99, 182, 188, 190, 204
biofuels 154
agricultural commodity prices
cap and trade in US 170
agricultural offsets in US
cost of emission reductions 168
allometric equation
carbon measurement in forests 126
Amazon 193, 194
deforestation and price of soybeans 156
Amazon Basin deforestation 155
Amazonia 156
Annex B countries
AAUs 166
cut in greenhouse gas emissions 33
Kyoto Protocol 33
Araucaria cunninghamii 85, 131, 136, 160
Asia 5, 25, 27, 45, 46, 73, 80, 92, 95, 97, 98, 99, 182, 188, 204
forestry offset projects 73, 75
source of biofuels 161
assigned amount units (AAUs) 12, 14, 16, 18, 34
asymmetry in funding biodiversity and carbon sequestration 212
atmosphere as unmanaged commons 33
atomic weight of carbon (C) 24
Australia
avoided deforestation 114
biofuels program 158
cap and trade scheme 18, 118, 162
carbon accounting model 125
carbon capture and biodiversity 106
carbon pollution reduction scheme 112
cost of measurement of carbon in forests 136
demand for offsets 72
emission targets 175
emitter of greenhouse gases 167
forest area 96
forestry in climate change policy 61
forestry potential 167
Carbon sinks and climate change

GHGs per person 167
government control of forests 29
government guide to forest sink planning 85
Greenhouse Challenge Program 82
Greenhouse Friendly Scheme 68, 76
importance of A/R 5
Kyoto Protocol 11, 91
Kyoto Protocol, LUCF arrangements 37
Kyoto target 37
LULUCF 35, 83
measuring the carbon in forests 122, 126
national carbon accounting toolbox 140
offset projects 73
offset providers 75, 94
offset retailers 74
reforestation 30, 45
targets and LULUCF 35
voluntary offsets market 176
avoided deforestation as a voluntary offset 81

Bali Action Plan 189
Bali climate change conference 123
avoided deforestation 92
REDD 81, 184
bankability of forestry CERs 180
baseline methodology, CDM 49
Berendt
federal standards forestry 171
BioCarbon Fund 62
pioneer in A/R in CDM 211
biodiesel comparison with reduction in GHGs by plantations 161
nitrous oxide emissions 154
biodiesel feedstocks in US and Europe 145
biodiversity implications of A/R in Tanzania 111
biodiversity implications of forestry offsets in Annex I countries 104
biodiversity implications of innovative funding mechanisms for voluntary REDD schemes 115
biodiversity implications of US cap and trade scheme 169

biodiversity standards in voluntary forestry offset schemes 112
bioenergy offset schemes 112
bioethanol crops, profitability 161
bioethanol 145
biofuels and land use 161
carbon debts, Brazil 156
commercialization of new technology 148
cost per tonne of CO$_2$e emissions avoided 154
deficit, US 151
deforestation in the Amazon Basin 155
economic cost 157
food prices 151
from forest residues 158, 161
from peat lands, Indonesia and Malaysia 156
from wood 154
indirect impacts on GHGs 153
land area devoted to 152
land as limiting factor 154
life-cycle analysis of GHGs 153
limits to land 150
perverse incentives 157
plantations and competition for land 158
policy 161
prices of corn and soybean, US 155
research 150
Quebec 157
savings in GHGs, direct and indirect 153
biofuels subsidies indirect effects 155
‘knock on’ effect 155
price of corn and soybean 155
US and EU 153
biologically diverse regions 97
Bolivia 192
tropical forest 204
Borneo 197
Boston University xi
bottom-up studies of forestry potential 169
Brazil 5, 44, 96, 98, 99, 147, 201, 202
biofuel crops 156
biofuels 148
biofuels and carbon debts 156
costs of ethanol production 153
sugarcane for ethanol 145
sugarcane production forecast 161
source of biofuels 161
tropical forest 204
Brazilian Amazon
illegal logging 201
Brazilian ethanol
GHG emissions 151
Britain, biofuels 157
Bush 146, 148, 150
buyers of afforestation and reforestation projects in the CDM 46
California
cap and trade 105
Climate Action Registry 79, 114
forestry protocols 18
Cameroon
tropical forest 204
CAMFor (see National Carbon Accounting System) 129, 134, 174
carbon measurement in forests 127
predicting carbon sequestration 129
Canada
government control of forests 29
offset projects 73
offset retailers 74
permanence of forests 41
reforestation on private land 29
Canadian provinces
cap and trade 167
Cangwa County 109
cap and trade 11
pricing of GHGs 163
cap and trade in-country 18
cap and trade schemes
main mechanism for emission abatement 166
New Zealand 18
Western Climate Initiative 167
caps on greenhouse emissions 12–13
global 12
carbon accounting 134
Carbon Conservation Ltd 115
carbon credits
commercialization in forestry 54
Ulu Masen avoided deforestation project 115
carbon dioxide equivalent (CO₂e) 8, 67, 204
Carbon Finance Mechanism 211, 212
Forest Carbon Partnership Facility 116
pilot phase 211
carbon in trees 124
carbon measured
and conversion to CO₂e 130
carbon measurement in forest 125
carbon neutrality, forestry projects 86
carbon neutrality by purchasing offsets 71
Carbon Pollution Reduction Scheme
forestry buffer 174
generations of permits by forestry 175
policy on forestry CERs 174
carbon sequestered
additionality in plantations of rainforest species 133
by monoculture 86
harvested and unharvested plantation 132
carbon sequestration and biodiversity mutually exclusive or complementary? 107
carbon sequestration and biodiversity Australia 107
carbon sequestration rates 124
carbon sequestration, incremental nature 85
carbon sink/biodiversity protection coupled 214
carbon sinks
biodiversity benefits 116
carbon, old growth forest 130
carbon-neutrality with offsets 70
Caribbean 97, 99
catastrophic climate change 170
‘catch-22’, offset costs and food prices 170
CBD 100, 101, 102
CCX (see Chicago Climate Exchange) 15, 68, 73, 75
and REDD 84
buffer stocks 83
CO₂e reduction schedule 75
crediting of carbon sequestered 74
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation between native species and exotic monocultures</td>
<td>104</td>
</tr>
<tr>
<td>Fungibility of forestry offsets</td>
<td>83</td>
</tr>
<tr>
<td>Limits on offsets</td>
<td>77</td>
</tr>
<tr>
<td>Permanence</td>
<td>84</td>
</tr>
<tr>
<td>Sale of forestry credits</td>
<td>84</td>
</tr>
<tr>
<td>CDM</td>
<td>16, 38</td>
</tr>
<tr>
<td>and biodiversity</td>
<td>108</td>
</tr>
<tr>
<td>Carbon measurement protocol</td>
<td>137</td>
</tr>
<tr>
<td>Executive Board</td>
<td>209</td>
</tr>
<tr>
<td>Forestry case study, China</td>
<td>58</td>
</tr>
<tr>
<td>Forestry contribution to CO2 removal</td>
<td>182</td>
</tr>
<tr>
<td>Forestry in pipeline</td>
<td>76, 179</td>
</tr>
<tr>
<td>Forestry policies post-Kyoto</td>
<td>178</td>
</tr>
<tr>
<td>Future A/R arrangements</td>
<td>181</td>
</tr>
<tr>
<td>Incentive for forestry</td>
<td>29</td>
</tr>
<tr>
<td>Investors’ liability</td>
<td>198</td>
</tr>
<tr>
<td>Policy analysis</td>
<td>180</td>
</tr>
<tr>
<td>Projects</td>
<td></td>
</tr>
<tr>
<td>Financing of</td>
<td>179</td>
</tr>
<tr>
<td>Registration of forestry projects</td>
<td>44</td>
</tr>
<tr>
<td>Replacement of forestry CERs</td>
<td>51</td>
</tr>
<tr>
<td>Road to 40</td>
<td></td>
</tr>
<tr>
<td>Rules for forestry</td>
<td>44, 180</td>
</tr>
<tr>
<td>Small-scale forestry projects</td>
<td>39, 58</td>
</tr>
<tr>
<td>Sustainable development</td>
<td>39</td>
</tr>
<tr>
<td>Temporary CERs</td>
<td>181</td>
</tr>
<tr>
<td>Temporary nature of forests</td>
<td>178</td>
</tr>
<tr>
<td>Cellulosic biomass</td>
<td></td>
</tr>
<tr>
<td>Sources in US and EU</td>
<td>161</td>
</tr>
<tr>
<td>Cellulosic ethanol</td>
<td></td>
</tr>
<tr>
<td>Substitution for fossil fuels</td>
<td>145</td>
</tr>
<tr>
<td>Lifecycle GHG emissions</td>
<td>158</td>
</tr>
<tr>
<td>Cellulosic feedstock</td>
<td></td>
</tr>
<tr>
<td>Savings of GHGs</td>
<td>154</td>
</tr>
<tr>
<td>Central and South America</td>
<td>25</td>
</tr>
<tr>
<td>Certainty equivalent discount rate</td>
<td>87</td>
</tr>
<tr>
<td>Forestry offset projects</td>
<td></td>
</tr>
<tr>
<td>Certified emission reductions (CERs)</td>
<td>174</td>
</tr>
<tr>
<td>Carbon Pollution Reduction Scheme</td>
<td></td>
</tr>
<tr>
<td>Equal to 1 tonne CO2e</td>
<td>179</td>
</tr>
<tr>
<td>Sale and purchase</td>
<td>39</td>
</tr>
<tr>
<td>Sale of, Pearl River CDM project</td>
<td>110</td>
</tr>
<tr>
<td>Sale of, Tanzanian CDM project</td>
<td>111</td>
</tr>
<tr>
<td>Temporary under the CDM</td>
<td>196</td>
</tr>
<tr>
<td>Certified Emission Reductions under the CDM</td>
<td>47</td>
</tr>
<tr>
<td>Characteristics of a federal cap and trade scheme</td>
<td>167</td>
</tr>
<tr>
<td>Chicago Climate Exchange (see CCX)</td>
<td>74</td>
</tr>
<tr>
<td>China</td>
<td>44, 96, 109, 184</td>
</tr>
<tr>
<td>Afforestation</td>
<td>98</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>59</td>
</tr>
<tr>
<td>Demand for forestry offsets</td>
<td>184</td>
</tr>
<tr>
<td>Forestry, Kyoto Protocol</td>
<td>44</td>
</tr>
<tr>
<td>Greenhouse gas emissions</td>
<td>169</td>
</tr>
<tr>
<td>Watershed management in the Pearl River Basin</td>
<td>58</td>
</tr>
<tr>
<td>Clean Development Mechanism (see CDM)</td>
<td></td>
</tr>
<tr>
<td>Climate change policy</td>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
<td>176</td>
</tr>
<tr>
<td>Climate Change Registry</td>
<td></td>
</tr>
<tr>
<td>Forestry protocols</td>
<td>18</td>
</tr>
<tr>
<td>Climate Community &amp; Biodiversity Alliance</td>
<td>112, 182</td>
</tr>
<tr>
<td>Certification of forestry projects</td>
<td>92</td>
</tr>
<tr>
<td>Climate policy and forestry</td>
<td></td>
</tr>
<tr>
<td>in Australia and New Zealand</td>
<td>173</td>
</tr>
<tr>
<td>in the EU</td>
<td>171</td>
</tr>
<tr>
<td>in the US</td>
<td>167</td>
</tr>
<tr>
<td>Climate Wedge</td>
<td>75</td>
</tr>
<tr>
<td>Clinton Climate Initiative</td>
<td>125</td>
</tr>
<tr>
<td>Clouded Leopard</td>
<td>110, 115</td>
</tr>
<tr>
<td>CO2e (see carbon dioxide equivalent)</td>
<td></td>
</tr>
<tr>
<td>Equivalence of CO2e in sources</td>
<td>123</td>
</tr>
<tr>
<td>CO2e equivalence in REDD</td>
<td>212</td>
</tr>
<tr>
<td>Collins, corn-based ethanol</td>
<td>158</td>
</tr>
<tr>
<td>Colombia, expiry of carbon credits</td>
<td>41</td>
</tr>
<tr>
<td>Commercialization of carbon credits</td>
<td></td>
</tr>
<tr>
<td>in forestry</td>
<td>52</td>
</tr>
<tr>
<td>Commission of the European Communities</td>
<td></td>
</tr>
<tr>
<td>Avoiding deforestation</td>
<td>174</td>
</tr>
<tr>
<td>Forestry plantations, EU</td>
<td>172</td>
</tr>
<tr>
<td>Communities in tropical forests</td>
<td></td>
</tr>
<tr>
<td>Substitution of agriculture for biodiversity forest</td>
<td>100</td>
</tr>
<tr>
<td>Confidence interval</td>
<td></td>
</tr>
<tr>
<td>Results of carbon measurement</td>
<td>126</td>
</tr>
<tr>
<td>Congress</td>
<td></td>
</tr>
<tr>
<td>Cap and trade</td>
<td>171</td>
</tr>
<tr>
<td>Conservation Reserve Program (CRP)</td>
<td>159</td>
</tr>
</tbody>
</table>
Convention on Biological Diversity 100, 116
lack of economic incentives 103
Convention on Migratory Species 101
Convention on the International Trade in Endangered Species of Flora and Fauna 101
conventional economic analysis and unpriced economic benefits 100
conversion of forests to agricultural land 97, 99
COP 9, tCERs, lCERs 41
Copenhagen climate change conference 4, 63, 161, 173, 189
corn ethanol
substitution for fossil fuels 145
corn ethanol, US indirect GHG increase 156
corruption and REDD 200
cost not offset by ex ante forestry offsets 86
cost of compensation in REDD 204
cost of sequestered carbon native species versus monocultures 30
Costa Rica 193, 209
costs and funding of forestry in CDM 50
costs of carbon sequestration, US and Europe 172
costs of measurement of carbon in forests, Australia 136
cropland required for biofuels, EU 146
CRP lands, biofuels 161
DBH see diameter at breast height
deforestation definitions, afforestation and reforestation 104
deforestation and demand for agricultural products 187
GHG emissions 187
incentives lack 123
incentives to reduce 189
measures to avert 161
underlying causes 190
deforestation and biofuels Amazon, Indonesia, Malaysia 156
deforestation and degradation causes 190
deforestation forecast under business as usual 189
deforestation in tropical developing countries, GHGs 181
DEFRA 105
Democratic Republic of Congo 98, 99, 202
tropical forest 204
density of wood, carbon in trees 124
Department of Energy, biofuels 157
Designated National Authority, CDM 49
Designated Operating Entity, CDM 49
developing countries caps on emissions 177
exempt from caps on emissions 38
developing country sovereignty and REDD 209
diameter at breast height (DBH)
carbon measurement in forests 126
discount rate marginal social costs 9, 54, 55, 85
displacement of deforestation and REDD 205
drivers of biodiversity loss human population and consumption increase 101
drivers of deforestation proximate and direct 99
dry matter estimation measuring carbon in forests 124
Eastern Europe, Kyoto Protocol 44
economic growth 99
economics of ethanol from wood 160
EcoSecurities, buying CERs 46
ecosystem loss 100
ecosystems and ecosystem services 99
emission allowances and offsets 122
trade in 20
Emission Reduction Purchase Agreement, CDM 49
emission taxes 8
emissions from non-Annex I countries 178
estimation of carbon sequestered project level and in-country 124
estimation of carbon sequestered per hectare, reforestations 130
ethanol and biodiesel from wood
GHG savings analysis 162
ethanol from logging residues 158
ethanol from wood 160
EU
biofuels policy 144, 156
feedstocks for bioethanol 145
REDD policy 172
source of cellulosic biomass 161
subsidies for biofuels 148
tariffs on biofuels 149
Western Europe, JI funding 38
wood for biofuels 159
EU Emission Trading Scheme (EU ETS) 5, 61, 167
allocation of allowances 17
forestry offsets 105
forestry plantations 172
EUROPA 61, 172, 173
Europe, wood for energy 158
European Parliament
biofuels from sustainable sources 157
Executive Board of CDM 46, 48, 49, 58, 67, 76, 109, 137
expansion of agriculture
indirect drivers 99
extensification of agriculture 99
failed states and REDD 200
FAO 95, 96, 97, 98, 99, 102, 123, 138, 204
Fauna & Flora International 115
financial risks in CDM forest project development 55
financial viability, offset projects 109
first commitment period, 2008–2012 see Kyoto Protocol
first generation biofuels 145
flexibility mechanisms, cap and trade 166
food prices
biofuels 153
cap and trade 170
forecasting carbon sequestration in commercial plantations 131
forest and land ownership, developing countries 190
forest carbon 3, 4, 74, 81
Forest Carbon Partnership Facility 116, 211
funding 116
forest management
carbon sequestration 168
in US cap and trade scheme 169
forest plantations
effectiveness in GHG reduction, compared with biofuels 161
forest plantations global 98
harvesting forest plantation and carbon sequestration 87
forest sector
emission allowances generated 167
offsets generated 167
forest sinks on private land in US and price of CO₂e 169
forestry
and cuts in emissions 183
in models of abatement 28, 27
limited role in mitigating climate change 31
forestry CERs
intrinsic value of 180
issue of in CDM 112, 179
replacement in CDM 179
Forestry Commission Scotland 105
forestry for carbon capture and biodiversity in Australia 106
forestry in cap and trade in Australia 173
forestry in complying with targets 34
forestry in the Kyoto Protocol 33
post-Kyoto role 184
potential by 2012 44
potential role 166
forestry in US cap and trade
design features 171
forestry offset projects
benefits in developing countries 182
ex ante accounting 82
forestry offset schemes
guarantees of permanence 82
forestry offset schemes and biodiversity in the US 104
forestry offsets 4, 15, 22, 75, 91, 93, 105
achieving cost neutrality 87
demand: design features and biodiversity 92, 104
hidden costs of 89
<table>
<thead>
<tr>
<th>Index</th>
<th>229</th>
</tr>
</thead>
<tbody>
<tr>
<td>permanence 82</td>
<td></td>
</tr>
<tr>
<td>transparency 91</td>
<td></td>
</tr>
<tr>
<td>verification 182</td>
<td></td>
</tr>
<tr>
<td>forestry offsets and biodiversity in the UK 105</td>
<td></td>
</tr>
<tr>
<td>forestry offsets in global markets 22</td>
<td></td>
</tr>
<tr>
<td>forestry offsets in US</td>
<td></td>
</tr>
<tr>
<td>cost of emission reductions 168</td>
<td></td>
</tr>
<tr>
<td>forestry offsets, issues of permanence and timing 81</td>
<td></td>
</tr>
<tr>
<td>forestry project cycle under the CDM 46</td>
<td></td>
</tr>
<tr>
<td>forestry projects in the CDM pipeline 45</td>
<td></td>
</tr>
<tr>
<td>forestry sinks in the Kyoto Protocol timing and impacts 177</td>
<td></td>
</tr>
<tr>
<td>forestry’s potential in the US 26</td>
<td></td>
</tr>
<tr>
<td>forests for cellulosic ethanol 161</td>
<td></td>
</tr>
<tr>
<td>forests in the provision of biofuels 159</td>
<td></td>
</tr>
<tr>
<td>France, biofuels 158</td>
<td></td>
</tr>
<tr>
<td>fuelwood 58</td>
<td></td>
</tr>
<tr>
<td>funding of REDD 209</td>
<td></td>
</tr>
<tr>
<td>and co-benefits 211</td>
<td></td>
</tr>
<tr>
<td>funds-based REDD 212, 214</td>
<td></td>
</tr>
<tr>
<td>future of the CDM 181</td>
<td></td>
</tr>
<tr>
<td>Garnaut, greenhouse policy, Australia 173</td>
<td></td>
</tr>
<tr>
<td>General Agreement on Tariffs and Trade 101</td>
<td></td>
</tr>
<tr>
<td>Germany, biofuels 157</td>
<td></td>
</tr>
<tr>
<td>Ghana, tropical forest 204</td>
<td></td>
</tr>
<tr>
<td>GHG cuts, role of forestry offsets 29</td>
<td></td>
</tr>
<tr>
<td>GHG emissions, biofuels 171</td>
<td></td>
</tr>
<tr>
<td>GHG Protocol, World Resources Institute 138</td>
<td></td>
</tr>
<tr>
<td>GHG savings by displacement of petroleum fuels by biofuels 160</td>
<td></td>
</tr>
<tr>
<td>global financial crisis 26, 171</td>
<td></td>
</tr>
<tr>
<td>global markets for carbon and the Kyoto Protocol 38</td>
<td></td>
</tr>
<tr>
<td>global models, indirect effects on land-use change 171</td>
<td></td>
</tr>
<tr>
<td>global scenarios in biofuels production 161</td>
<td></td>
</tr>
<tr>
<td>globalization and deforestation 190</td>
<td></td>
</tr>
<tr>
<td>globalization, biofuels and GHGs 154</td>
<td></td>
</tr>
<tr>
<td>Gold Standard 79</td>
<td></td>
</tr>
<tr>
<td>governance and deforestation 202</td>
<td></td>
</tr>
<tr>
<td>governance and REDD 200</td>
<td></td>
</tr>
<tr>
<td>governance, failed states and corruption 200</td>
<td></td>
</tr>
<tr>
<td>Government of Aceh</td>
<td></td>
</tr>
<tr>
<td>Ulu Masen avoided deforestation project 115</td>
<td></td>
</tr>
<tr>
<td>Great Britain 12</td>
<td></td>
</tr>
<tr>
<td>greenhouse gas abatement by biofuels 153</td>
<td></td>
</tr>
<tr>
<td>greenhouse gas pricing alternative energy sources 163</td>
<td></td>
</tr>
<tr>
<td>Greenhouse Gas Reduction Scheme of New South Wales</td>
<td></td>
</tr>
<tr>
<td>forestry offsets</td>
<td></td>
</tr>
<tr>
<td>greenhouse gases, global warming potential 33</td>
<td></td>
</tr>
<tr>
<td>Grieg-Gran, costs of compensating for tropical deforestation 204</td>
<td></td>
</tr>
<tr>
<td>gross–net accounting 35</td>
<td></td>
</tr>
<tr>
<td>growing new forests for biofuels 160</td>
<td></td>
</tr>
<tr>
<td>Guangxi watershed reforestation 109</td>
<td></td>
</tr>
<tr>
<td>Guangxi Zhuang Autonomous Region 58</td>
<td></td>
</tr>
<tr>
<td>Hohn 40, 177</td>
<td></td>
</tr>
<tr>
<td>Huanjiang County 109</td>
<td></td>
</tr>
<tr>
<td>hybrid poplar for biofuels 161</td>
<td></td>
</tr>
<tr>
<td>illegal logging 201</td>
<td></td>
</tr>
<tr>
<td>impacts of avoiding deforestation on local communities 206</td>
<td></td>
</tr>
<tr>
<td>incentives, lack of for forest conservation 100</td>
<td></td>
</tr>
<tr>
<td>incremental annual value of carbon, plantations 130</td>
<td></td>
</tr>
<tr>
<td>India 96, 184</td>
<td></td>
</tr>
<tr>
<td>demand for forestry offsets 184</td>
<td></td>
</tr>
<tr>
<td>indirect effects of US cap and trade scheme 170</td>
<td></td>
</tr>
<tr>
<td>indirect GHG impacts of biofuels policies 156</td>
<td></td>
</tr>
<tr>
<td>Indonesia 96, 98, 99, 156, 190, 202, 204, 205</td>
<td></td>
</tr>
<tr>
<td>illegal logging 202</td>
<td></td>
</tr>
<tr>
<td>institutional change and REDD 213</td>
<td></td>
</tr>
<tr>
<td>institutional failure and loss of forests 101</td>
<td></td>
</tr>
<tr>
<td>international financial mechanism REDD 173</td>
<td></td>
</tr>
<tr>
<td>International Monetary Fund, tariffs on biofuels 163</td>
<td></td>
</tr>
</tbody>
</table>
International Tropical Timber Organization (ITTO) 203
International Union for the Conservation of Nature (IUCN) 98
investors in carbon sequestration 124
IPCC 25, 27, 28, 34, 40, 67, 125, 188, 195
ISO 1464, forestry offsets 84
Japan 12, 36
JI funding 38
Jensen
DBH measurement in old growth tropical forest 129
identification of tree species in old growth tropical forest 129
JI (joint implementation) 38, 63
A/R projects in 181
Joint Research Centre 154, 159
Joint Research Commission biomass for biofuels 156
fossil fuels used in biomass production 156
Jung
modeling the Kyoto options for forestry 41
role of LULUCF 44
Kalimantan 192, 198
illegal logging 202
Kazakhstan, Kyoto Protocol 33
Kyoto Protocol 4, 12, 16, 138, 298
adoption 33
agreement to cut emissions 166
bankability of projects 181
definition of forest 194
definitions of afforestation and reforestation 122
developed country offsets 167
estimation of emissions, sequestration 124
exclusion of deforestation in developing countries 38
forestry and first commitment period 45
forestry post-2012 166
future arrangements for forestry 61
future rules for LULUCF 62
greenhouse gases in Annex A 33
Höhne 40, 177
inclusion of sinks in 40
LULUCF 178
permanence of forestry projects 82
ratification 166
registration of forestry projects 44, 46, 58, 63, 76, 109, 211
rules for LULUCF 34
trade in AAUs 34
uncertainty at expiry, forestry CERs 57
US Congress 18
Kyoto Protocol, Annex B 8
Kyoto Units 39
landholder payments for conserving carbon 161
land-use change regulation to avert deforestation 161
land-use change in other countries
US policy implications 171
land-use change, Brazil and south-east Asia
biofuels policy 163
Latin America 25, 45, 46, 73, 80, 97, 99
leakage and REDD 205
leakage, forest sinks 39
LINK 105
local communities economic benefits of forestry offsets 92
logging 190
long-term CERS (ICERs), in afforestation and reforestation 51, 53
with harvesting in A/R 55
loss of biodiversity and deforestation 95
LUCF, cap and trade schemes 166
LULUCF
Australia and Kyoto Protocol 44
Canada and Kyoto Protocol 44
Japan and Kyoto Protocol 44
Kyoto Protocol 177
proponents historically 44
US and Kyoto Protocol 44
Mabi forest, Queensland, endangered ecosystem 106
Mabi forest reforestation 106
Malaysia 157, 190, 204
Malmisheimer
ethanol from wood 159
managed forests
Kyoto protocol 177
management and enforcement, protected forests 100
Maplpana 111
marginal opportunity costs of REDD 204
marginal social cost (MSC) CO₂e emissions 9
emissions and markets 12
forestry offsets 86
market failure and biodiversity loss 100
markets for voluntary offsets 72
Marrakesh Accords 13, 15, 40, 41, 196, 197, 198
limits on CDM credits 178
McCarl, diversion of land from food crops to forestry, US cap and trade scheme 170
McKinsey
forest sinks in US and the price of CO₂e 168
forestry in global model of abatement 25
least-cost combination of abatement by sector 24
study of US abatement 26, 27
measurement protocols 137
measuring carbon in forests developments 124
measuring carbon in tropical forests in North Queensland 126
measuring the carbon in forest sinks 121, 123, 125, 127, 128, 130, 131, 132, 133, 134, 135, 136, 142
Merrill Lynch 115
methodologies for measuring deforestation 195
methodologies of carbon measurement 126
in the CDM 137
Millennium Ecosystem Assessment 97, 98, 99, 101
trade-offs, Millennium Development Goals and biodiversity loss targets 101
mixed rainforest species plantations, north Queensland 85, 126
modalities and procedures for forestry under the CDM 51
modeling of carbon sequestration rates 85
modeling the Kyoto options for forestry 41
models of carbon sequestration application in REDD 137
molecular weight of CO₂ 24
monitoring and reporting, standards and costs 172
monitoring of CDM projects 49
monitoring process in CDM, complexity 180
monoculture plantations, biodiversity loss 100
MSC (marginal social cost) of carbon emissions compared with C sequestration rate 86
definition of MSC 84
MSC of CO₂e and market price 13
Mufindi 111
multiplier effect and palm oil 205
Mulun Reserve, China 110
Myanmar 202
Nabuurs, afforestation in the US 172
National Carbon Accounting System 125, 127
National Carbon Accounting Toolbox 129, 174
national carbon accounts 13
need for measurement of carbon in forests 122
Neeff, financial risks in forestry project development 55
net–net accounting 35, 191
Netherlands, biofuels 157
New South Wales
clearing of native vegetation 37
Greenhouse Gas Reduction Scheme 11, 68, 78, 106, 136
New York Times 77, 157
New Zealand
cap and trade 19, 167, 176
forestry in climate change policy 61
New Zealand Emissions Biodiversity Exchange 107
New Zealand's ETS and biodiversity 106
non-Annex I tropical developing countries
deforestation in 187
non-government organizations
forestry offset policy, US 117
forestry policy in US cap and trade schemes 105
Nordhaus, price of carbon 27
North America, forestry offset projects 73, 75
Northern Ireland 12
Obama (see President Obama) 74, 169, 170
Oceania 97
OECD 161
agricultural commodity prices 161
offset claims 80
offset potential by forestry, top-down models 25
offsets, market sources 73
oil palm and deforestation 190, 192
old growth rainforest
carbon measurement 126
variation in size of trees 129
opportunity cost
conversion of land to forestry in US 168
REDD 203, 210
opportunity costs of afforestation/reforestation 29
Orangutan 115
Oregon, forestry carbon offsets 105
Papua New Guinea 207, 208
logging concessions 207
REDD 187, 207
tropical forest 204
Paragominas 202
payments for carbon and ecosystem services 210
payments for CO₂ removals 134
PDD (project design document, CDM) 47, 48, 49
Pearl River Basin, China
CDM forestry project 58, 211
Perlack
biofuels feedstock, US 146
ethanol production 158
feedstocks for biofuels, US 151
permanence of forests 82, 173
permanence of sequestered carbon 196
Peru 192
perverse incentives
biodiversity loss 101
biofuels 157
photosynthesis, removal of atmospheric CO₂ 24
policies for biofuels, US and EU 161
policy for forestry offsets in voluntary markets 182
post-Kyoto agreement and REDD 214
post-Kyoto policies and rules for forestry in developed countries 176
post-Kyoto Protocol
recommendation on forestry in CDM 184
REDD 181
Poznań climate change conference 172
pre-compliance market
CDM 76
President Obama
biofuels 157
cuts in greenhouse gases by 2050 167
price of dry biomass for biofuels 161
price of carbon in averting deforestation 161
price on emission allowances, cap and trade schemes 166
private sector and REDD 199, 208, 210
property rights and deforestation 190
proposals for REDD accounting 191
pyrolysis, biofuels 150

palm oil and EU biofuels policy 156
palm oil exports, Indonesia and Malaysia 204
palm oil production for biofuels 156
OECD forecast 161
Panama afforestation versus cattle 29
Queensland, clearing of native vegetation 37, 114
Wet Tropics Region of Queensland, Mabi forest 106

rainforest habitat 103
rainforests, species richness 98
Ramsar Convention on Wetlands 101
randomized plots, carbon measurement in forests 127
rate of forest loss 97, 98
Readiness Mechanism 211, 212
Forest Carbon Partnership Facility 116
REDD (reduction in deforestation and forest degradation)
advantage over A/R 92
costs and benefits of conserving forests 203
credits 196
effectiveness in reducing emissions 189
emission cuts 211
equivalence with Kyoto units 213
Europe 173
financing 199
funds-based approach 183
inclusion in CDM 63
independent verification 211
international financial mechanism 173
leakage 197
market-based approaches 183, 198, 212
market impacts 172
marketable credits 64
national inventories 196
non-market funds 198
payments for, combined with conservation funding 198
payments to communities 203
physical measurement of carbon in tropical forests 138
pilot projects 92
price of credits 211
Readiness Mechanism 211
returns from the sale of credits 211
Stern, cost CO₂e abatement, tropical countries 204
supplementary benefits 183
tackling poor governance and corruption 214
UNFCCC workshops 188
value in market 213
REDD and remote sensing 139
reducing deforestation in the tropical developing countries 184
reforestation 11, 16, 26, 29, 127
defined 104
subsidization, Australia 107
Regional Greenhouse Gas Initiative (RGGI) 17, 105, 168
allocation of allowances 17
forestry 18
registration under the CDM 76
removal of CO₂e potential by forestry 2012 44
research on indirect impacts of LUC 183
root biomass 124
Russia, Kyoto Protocol 44
sampling error, carbon measurement in forests 126
Sathaye, afforestation in the US 172
Schlamadinger 34, 203, 209
School for Field Studies xi
Scottish National Forest Estate 105
second generation biofuels
advantages 145
biodiversity 161
cellulosic ethanol 149
commercialization and timing 160
costs 148
cut in emissions 154
land availability 161
production 159
supply of feedstock 148
secondary benefits of avoiding deforestation 206
sequestration of carbon over time 85
small-scale projects, CDM 58
Snowdon, allometry 126
social and economic consequences of REDD 208
social costs of carbon released to the atmosphere 84
social costs of increases in biofuel production 151
socioeconomics of REDD and the costs of avoiding deforestation 203
Sohngen, afforestation in Europe 172
South America 75, 92, 95, 182, 190
forestry offset projects 75
south-east Asia, biofuels and deforestation 156
soybean demand 99
species extinction 97
standards for offsets 91
stratification of reforestation plantations
sampling procedure 126
Subsidiary Body for Scientific and Technological Advice 188
subsidies for biofuels IMF 163
social and climate impacts 171
US and EU 149
subsidies for emission reductions 10, 11
Sulawesi 192
Sumatra 192
Ulu Masen avoided deforestation project 115
Sumatran Elephant 115
Sumatran Tiger 115
switchgrass for biofuels 161
Switzerland, biofuels 157
Tanzania 109, 111, 202
tariffs on biofuels, US and EU 148, 153
temporary CERs (tCERs), in afforestation and reforestation 51, 52, 53
Transport
biofuels 157
fueLS from wood 158
lack of alternative fuels 163
limit to fuel efficiency gains 163
tree plantations for cellulose GHGs compared with crops 161
TreeFarms AS, Norway 111
Trees for the Evelyn and Atherton Tableland xi, 134
Ulu Masen forest ecosystem, Sumatra 115
UN Convention to Combat Desertification 101
UN Framework Convention on Climate Change 101
underlying factors in deforestation 190
UNEP 100, 101
UNEP Risoe 46, 47
UNEP Risoe, DOEs listed 49
UNFCCC 2, 12, 13, 15, 16, 33, 34, 40, 41, 45, 51, 58, 62, 81, 84, 104, 106, 109, 124, 125, 138, 179, 181, 188, 189, 194, 195, 197, 298, 207
see Bali climate change conference; Copenhagen climate change conference
food production threats 171
REDD workshops 198
registration of forestry projects 109
United Kingdom
demand for offsets 91
offset retailers 74
United Nations 2, 8, 12, 16, 33, 34, 35, 39, 94, 101, 104, 121, 124, 207
United Nations Framework Convention on Climate Change (see UNFCCC)
United States Society for Ecological Economics xii
University of Georgia 150
University of Massachusetts 150
US (United States of America)
abatement opportunities study 26
abatement proposals to Congress 27
biofuels and rural communities 148
biofuels policy 144
biofuels production target 146
biomass from forests 159

The Economist 78, 79
threatened and endangered species 92, 98
Tisdell viii–xi
tones of carbon sequestered per hectare
plantations and old growth plots 129
reforestation of mixed rainforest species 128
top-down models of forestry potential 169
trade in emission allowances
cap and trade schemes 18
cost of compliance with emission cuts 167
cap and trade schemes 17, 166, 167
Chicago Climate Exchange see CCX
contribution to mitigation by forestry 29
corn for ethanol 145
demand for credits from forestry projects in developing countries 63
demand for credits from forestry projects in developing countries
emission caps 70
energy from biomass 158
Energy Independence and Security Act 146
Environmental Defense 113
forest potential 168
forestry in climate change policy 61
forestry offset demand 91
forestry offset schemes and biodiversity 117
forestry offsets 73
forestry potential 5
gasoline taxes 9
GHG savings, ethanol 153
government control of forests 29
greenhouse gas emissions 167
Kyoto Protocol 33, 44, 166
Kyoto Protocol modeling 42
land for wood 159
Lieberman-Warner Bill S. 2191 27
non-government organizations and biodiversity 105
not-for-profit tree planting organization 80
offset retailers 74
population and economic growth 26, 167
reducing US greenhouse gas emissions 31
RGGI see Regional Greenhouse Gas Initiative
rise in greenhouse gas emissions 170
role of forests in abatement 27
subsidies for biofuels 148
target for biofuels 151
the cost of US-based carbon sequestration 94
timber plantations 85
US Agriculture Secretary, biofuels 157
US and EU targets for biofuels 146
US Congress, Kyoto Protocol 167
US Department of Agriculture National Agricultural Statistical Service 155
US Department of Energy 152
biofuels feedstocks 146
US Environmental Protection Agency (USEPA) 27, 160, 169, 170
forestry’s role in cap and trade 168
GHG savings of fuels 158
international action 170
modeling forestry 168
value of carbon in measured reforestations and old growth 130
Vatican, carbon neutrality 77
Verifiable Carbon Units (VCUs) 83
verification
Australian forestry offset projects 83
carbon by measurement 134
CDM projects, DOE 49
verified emission reductions (VERs) 68, 76
voluntary carbon offsets market 183
Voluntary Carbon Standard (VCS) 79, 91, 112, 137, 138
carbon measurement protocol 137
CDM projects 83
CDM rules 181
measurement, additionality, buffer stock 83
REDD and buffer stocks 84
temporal mismatch of emissions 84
voluntary forestry offsets 182
buffer stocks 82
carbon neutrality 86
cost neutrality 87
ex ante accounting 82
future of 90
incremental crediting and debiting 89
MSC not offset 86
policy 88
prices 73
recommendations 89
registration 83
size of projects 77
social costs, ex ante accounting 89
temporal mismatch with emissions 84
voluntary market contribution to REDD 184
Waxman-Markey Bill H.R. 2454 214
weaknesses of the Kyoto Protocol in relation to forestry 35
wild populations loss 100
wildlife corridors 92
Pearl River Basin CDM project 110
Tanzanian CDM project 111
Williams on deforestation 200
willow for biofuels 161
wood
biofuels, EU 159
pellets for biofuel 150
source of liquid fuels 150
World Bank 46, 50, 62, 64, 75, 92, 115, 116, 117, 144, 147, 149, 152, 183, 199, 203, 211, 212
buyer of forestry projects 46, 62, 75, 115, 181
CDM forestry project, China 59
funding of CDM forestry projects 181
pilot programs for REDD 214
purchase price CERS 50
subsidies for biofuels 157
World Business Council for Sustainable Development 75
World Resources Institute 75, 178, 186
carbon measurement protocol 137
World Trade Organization 101
world’s population 2050 99