

# Index

acid rain, California 3 opposition to cap-and-trade 7	
ACORE (The American Council for Renewable opposition to mitigation measures 70	
Energy) 163 American Power Act (2009) 161–163	
adaptation measures 155 alternative bills 162, 184(Appendix)	
developing countries 226 discussion draft 184	
financing 226, 242(Table), 241–243, 292  American Recovery and Reinvestment Act (ARR	A)
monitoring 243 189, 221	
adoption externalities 199 budget 212(Figure), 213(Table), 210–214	
aerosols, restrictions on (California) 141 comparison with other countries 213(Table)	
AFL-CIO 65 funding levels 202	
age, and opinion on climate change issues 105 home insulation subsidy 203	
agriculture 56 American Wind Energy Association 73	
and biofuels subsidies 203 analytic framework 23(Figure), 16–23	
dairy industry 32 issue clusters 21, 22(Figure), 22(Table)	
and drought 35 Arrhenius, Svante August 46	
effect of high temperatures on 33 Asia-Pacific Partnership on Clean Development	and
emissions 27 Climate (APP) 216, 252	
methane from 24 asymmetric distribution, of mitigation costs and	l
sequestration 27 benefits 17, 19(Figure), 20, 270	
and Waxman–Markey bill 158 auto industry 30(Map)	
airline industry 246 and Californian restrictions on tailpipe emiss	ions
Alaska 136	
climate change impacts 33, 155 and electric automobiles 97	
per-capita emissions 43 emissions 27	
sources and impacts conflict 34 and GCC 70	
Alcoa company 56 unions 67	
Alliance of Automobile Manufacturers 67 USA lagging behind foreign rivals 58, 76	
alternative energy industry 76 and Waxman–Markey bill 158	
lobbying by 73 see also motor vehicles	
see also clean energy; renewable energy	
Alternative Fuels Act (1988) 220 Bachmann, Michelle, Tea Party Caucus 172	
aluminum industry 56 Balanced Energy Coalition, George W. Bush and	137
Amalgamated Transit Union 68 Ban Ki Moon, UN Secretary General 81	
American Clean Energy and Security Act, proposed Bangladesh 35, 227	
(2009) 7, 183 Barton, Representative Joe 172	
American Coalition for Clean Coal Electricity 74 battery technologies 97	
American Council for an Energy Efficient Economy Biden, Joe, Vice President 168	
58, 71 Bingaman, Senator 183	
American Electric Power (AEP) 67, 159, 163, biofuels, for motor vehicles 125, 141, 175, 288	
biofuels industry, subsidies 203	
American Federation of Teachers 68 black carbon 265n3	
American Petroleum Industry, lobbying against BTU Bloomberg, Michael 117	
tax 151 Blue Green Alliance 67	
American Petroleum Institute (API) Boehner, John, Speaker of the House 172	
challenges to 71, 163 Boucher, Representative, special sector provision	ns in
lobby group 4 Waxman–Markey bill 158, 158n7	

340



INDEX

341

Boxer, Senator 153(Table), 183 reputational benefits 54 BP (British Petroleum) 58, 59, 59n5, 70 short-term and long-term effects 56 splits within 53, 75, 163, 185(Appendix) commitment to emission reduction 259 USA lagging behind foreign rivals 58 pledge on deforestation 254 see also industry; insurance industry Brown, Gordon, UK Prime Minister 232 business associations Browne, Lord (John), CEO of BP 59 and government policies 54, 68-69, 272 Browner, Carol, "climate czar" 168 umbrella organizations 69-70, 75, BTU (British Thermal Unit) 79-81 (Appendix) Business Roundtable 69, 75, 79 defined 151n3 tax proposal (1993) 151 RESOLVE program 75, 79 Byrd-Hagel amendment (1997) 4, 152, 228 budget process 207, 222-225(Appendix), 272 annual budget cycle 200, 222 C2ES (Center for Climate and Energy Solutions) budget authority 225 congressional processes 223 Business Environmental Leadership Council Continuing Resolutions 225 82 executive agencies 222 California 3, 117, 126, 131 functional budgeting 222 Air Resources Board (ARB) 141 obligations 225(Appendix) cap-and-trade program 141 outlays 225 and Clean Air Act 134, 175 presentation format 222 emissions restrictions on ships 127, 141 presidential and executive agency actions 224 Global Warming Solutions Act (2006) 6, 127 impact of climate change 32 budgets, for technology programs 189, 212(Figure), 207-215 international agreements 127 for ARRA 212(Figure), 213(Table), 210-214 law on automobile emissions 67, 126, 127 earmarks 214, 215(Box), 224 oil industry 139 priorities 210 Proposition 23 vote (2010) 128 total levels 207 public support for policies 128, 143(Appendix), building sector 143(Table) energy efficiency measures 126, 214 state policies 6, 126-128, 139, 141(Appendix) local government regulations 118 wildfires 33 Bush administration (George W. Bush) Callendar, Guy 46 and API 70 Cantwell, Senator 183 and Californian restrictions on tailpipe emissions cap-and-trade programs 273, 287 136 111th Congress (2009-2010) 157-170, 205, and Clean Technology Fund (CTF) 241, 242 and Climate Change Technology Program business lobby views on 7, 69 California (2012) 6, 141 206 and EPA regulations 174 compared with taxes 218n3, 291 refusal of domestic restrictions on emissions 93 design issues 152, 154(Box), 277, and technological solutions 75 295-296(Appendix) Bush, George H.W., President 3 further reading 179 and UNFCCC 150, 228 House bills (2009-2010) 157-161 Bush, George W., President 189 industry opposition to 58, 75 and 2000 presidential election 5, 137 Northeastern states (2009) 6 and Kyoto Protocol 6, 80, 229 and nuclear power 204 proposed bills (2009) 7 business 51-77 adversarial relations with government 61 public opinion on 97 disclosure of business practices 63-65 RGGI 129 diversity of interests 53, 55-62, 75-77 Senate (2003, 2005, and 2008) 152-157 and economic opportunities 54, 75 short-term benefits 99 further reading 77-78 for sulfur dioxide (1989) 3 and incentives 291 car pooling 106 leaders and laggards 58(Table), 270 carbon capture and sequestration (CCS) technologies and need for regulatory certainty 54 99, 268 partnerships with environmental organizations 65, budgets for 210 66(Table), 82(Appendix) coal-fired plants 175 relations with stakeholders 54, 63-68 proposed government funding for 153, 273



carbon dioxide	Climate Action Plans
estimates of effect of atmospheric (1979) 2	Obama's measures (2013) 8
Hawaii measurements 1, 9	state government 8, 124, 125(Table)
predominance as greenhouse gas 24	climate change
projected levels 265, 266(Figure), 291	adaptation measures 155
ten largest-emitting US states 123, 124(Table)	as anthropogenic 48
in US power and transportation sectors 27(Table)	chronology of US responses to 1–10
carbon dioxide removal 197, 291	costs of inaction 100–101, 273
carbon disclosure 54, 63–65	and energy policy issues 153
Carbon Disclosure Project	estimate of costs 35, 273
oil industry 59, 60	impacts 34, 155
patterns and trends 55, 64	politicization 48
Carbon Limits and Energy for America's Renewal	problem of "scale" 190
(CLEAR) Act (2009) 183	regional impact variations 31, 31(Table)
carbon tax, as alternative to cap-and-trade 264, 276,	scientific conference (Villach 1985) 250
287	Climate Change Technology Initiative (1999) 205
Carter administration 2	Climate Change Technology Program 189, 200,
Carter, Jimmy, President 220	205–207
Caterpillar 58	management structure 206, 211(Box)
	Strategic Plan 206
cement industry 56 CERES (Coalition for Environmentally Responsible	Strategy for American Innovation 206, 208(Box)
	Climate Disclosure Project surveys, insurance
Economics) 64, 65, 82	
Charles of Commence 76, 80	companies 63
Chamber of Commerce 76, 80	Climate Savers Program (Ecofys) 65
lobbying 69, 163	climate science
opposition to cap-and-trade 7, 75, 80	further reading 36–40
chemicals industry 57	"guidance for decision makers" 277,
Chevron 59	290–292(Appendix)
Chicago 121	history of 45–49(Appendix)
heat-related deaths (1988) 150	projections 265
China	Climate Security Act, proposed (2008) 6
annual GHG emissions 25, 227	climate solutions
cooperative agreements with 9	criteria for 274
commitment to emission reduction 259	economic opportunities 54, 75
commitments in Copenhagen Accord 235,	incipient transformational trends 278–279
236(Box)	Climate Stewardship Act, proposed (2003) 6, 152,
competitive threat from 76	153(Table)
at Copenhagen (COP-15) (2009) 231	Clinton administration
as free rider 245	carbon emissions tax 4
share of cumulative GHG emissions	Climate Change Technology Initiative 205
227	and Kyoto Protocol 4
US complaints against 246	proposed BTU tax (1993) 151
chlorofluorocarbons (CFCs) 3	Clinton, Bill, President
Chu, Steven, Secretary of Energy 168,	election campaign (1992) 4
189	and Kyoto Protocol 4, 228
Citigroup 57	Clinton, Hillary, Secretary of State 168
Clean Air Act 133, 173	coal
1990 amendment 3	for electricity production 17, 26, 74, 132, 288
special provisions for California 134, 175	subsidies for alternative technologies 138
"tailoring rule" 174	coal industry 28(Map), 56
clean energy	lobbying 74
American Manufacturing 162	special sector provisions in Waxman-Markey bill
definitions 190, 191(Box)	158
national standard 96	coastal zones, and rising sea levels 34
Clean Energy Ministerial (CEM) 237n4	Collins, Senator 183
Clean Technology Fund (CTF), World Bank 241,	Communications Workers of America 68
242	competitiveness
climate	American Manufacturing 162
regional variations 31	international 76, 164, 164(Box), 245
see also extreme weather events	renewable energy 195
	<i>U1</i>



INDEX

343

Department of State 211 compliance costs 56 Conference Board 69n7 Department of Transportation 211 Conference of Mayors Climate Protection Agreement developing countries 120(Box), 121 annual GHG emissions 227 financing of adaptation and mitigation projects 226, geographic distribution 121, 122(Map) Congress 242(Table), 241-243, 292 112th, and new political context 171, 172(Box), 264 Marrakesh Accords to support adaptation 252 Bicameral Task Force on Climate Change 264 share of cumulative GHG emissions 227 budgeting processes 207, 222-225(Appendix), 272 Dillard, Kirk 117 Dingell, Representative John 149, 158 climate change legislation 149-179 1988-2008 150-157 Doerr, John 128 distortions of representation 138, 149, 160, 165, drought 35, 100 167(Figure), 176, 271 Duke Energy 159 DuPont company 57 further reading 179 influence of interests and ideologies 176-179 and international funding pledges 243 E-55 international industry organization 71 role of committees 217, 223-224 Ecofys 65 shifts in costs and benefits of legislation 163, economic geography 35-36 163(Figure) and distortions of representation in Senate 165 see also House of Representatives; Senate regional differences in support for government ConocoPhillips 58, 65 action 104 Conrad, Kevin, Papua New Guinea 263 economic growth ConservAmerica (Republicans for Environmental and environmental protection 97, 98, 273 links with mitigation measures and technology changes 97–99 Protection), policy recommendations 264, 277, 287(Appendix) conservatives and opportunities 54, 75 self-identified 86 and renewable energy programs 207, 208(Box) economic incentives, to discourage free riding 245 and view of problem 102 consumers economic interests 21 attitudes and behavior 106 Edison Electric Institute (EEI), and Waxman-Markey purchasing behavior 106 bill 159, 163 Einstein, Albert 279 and subsidies 203 corporate average fuel economy (CAFE) standard 221 election campaigns court cases 271, 276 2000 5, 137, 138 EPA and 174 2004 137 states versus national government 132-136, 139 2012, positions on climate change 264, 277, 284(Appendix) da Silva, Lula, Brazilian President 233 business contributions 54, 73, 74, 74(Figure) DaimlerChrysler 70 and public support for government action 93, dairy industry, and temperature changes 32 94(Table), 95(Table) Democrats role of swing states 136-138 and 2012 presidential election 284(Appendix) elections, 2010 congressional 171 electoral college, role in presidential election system and American Power Act (2009) 162n10 and view of problem 102, 111(Table), 271 138 denial and deniers 272 electricity production correlates of variation 87(Box), 101 and cap-and-trade legislation 67 House Committee on Energy and Commerce carbon capture and storage by coal-fired plants 175n17 175 House of Representatives 171, 172(Box) coal-based 17, 26, 74, 132 and impact of climate change 155 effect of sub-national programs 131, 132 social profiles of 86 from natural gas 132, 288 Department of Agriculture 211 from renewable resources 288 and Waxman-Markey bill 158 low-carbon sources 17 Department of Commerce 211 state regulations 124 Department of Defense 211 subsidies 202 Department of Energy 2, 211 see also nuclear power electricity utilities, support for mandatory CO2 policy legislation 200 Department of Energy Organization Act (1977) 220 emissions caps 71 Department of Health and Human Services 211 employment, jobs in renewable energy industries Department of the Interior 211



energy efficiency measures	ExportImport Bank (ExIm) 216
ARRA funding 213, 213(Table), 214	externalities 16, 18(Box), 21
buildings 126, 214	extreme weather events 32, 47
consumer adoption of 106	effect on public opinion 86, 100
homes 106, 203	insurance losses 62
public support for 202	US cities 119(Figure)
state policies 126, 288	ExxonMobil 59, 70
Waxman–Markey bill 157	
Energy Independence and Security Act (2007) 175, 221	Federal Energy Administration (1974) 220 Federal Energy Office 220
energy policy 153, 201–205	federal-level court system 139, 271, 276, 276(Box)
implications 217–218	financial services industry 76
legislation 200, 220–221(Appendix)	fishing industry 56
nuclear power 204–205, 288	Food, Conservation, and Energy Act (2008) 221
policy instruments 201	Ford 70
subsidies 201–204	Ford, Gerald, President 220
variations in industry interests 204	forestry
Energy Policy Act (1992) 221	emissions 27
Energy Policy Act (2005) 153(Table), 155, 175, 206,	sequestration 27, 29(Table)
221	and UN REDD program 244
Energy Policy and Conservation Act (1975) 220	Fourier, Joseph 45
Energy Tax Prevention Act 175n17	fracking see hydraulic fracturing
Environmental Defense Fund (EDF) 65, 82	France, and monitoring technologies 244
environmental NGOs 54	Franklin, Benjamin 45n4
business partnerships with 65, 66(Table),	free-rider problems 17, 18(Box), 21, 34
82(Appendix)	cultural constraints 274
environmental protection, and economic growth 97,	economic incentives to discourage 245
98, 273	international 226
Environmental Protection Agency (EPA) 149,	Friedman, Milton 16
173–175, 179, 212	fuels
and changes in administration 174	biofuels 125, 141, 175, 288
creation (1970) 2	petroleum-based 26
"endangerment" finding 80, 133, 134(Table), 174	Fukushima nuclear power plant crisis (2011) 205
failure to use Clean Air Act to regulate emissions	future options 263–279
133	further reading 279
and GHG emissions regulations 174	pathways 265, 274–277
GHG standards for power plants and refineries 174	and political economy 269–272
jurisdiction of 6, 271	realities 264, 265–272
legal challenges to regulations 173	technology 268–269
and legislation passed by Congress 173	visions 265, 272–274
limits on emissions by new electric power plants 174	FutureGen project 206
mandatory GHG reporting program 174	Gates, Bill 128
state court cases 133–134	gender, and opinion on climate change issues
and Texas 134, 135(Box)	105
ethical issues 227	General Electric (GE) 57, 163
responsibility to future generations 273	General Motors 67, 70
Europe	Generation IV project 206
business–government relations 61	geo-engineering 195, 197(Box), 268,
insurance industry 62	290–292(Appendix)
public opinion in 113	Global Change Research Program (1989) 3
European Union	Global Climate Coalition (GCC), opposition to Kyoto
commitment to emissions reduction 258	70
Emissions Trading System 245	Global Environment Facility (GEF) 251
and monitoring technologies 244	global warming
share of cumulative GHG emissions 227	consensus on 47
total emissions 25	perception of relative importance 85
Evans, Donald 137	public perception of problem 84-91
Exelon utility 159	"tipping points" 49



INDEX

345

Global Warming Potential (GWP) 50(Appendix),	partisan votes 160, 160(Table), 176
50(Table)	regional votes for Waxman–Markey bill 160
methane 194	Hurricane Katrina (2005), insurance industry and 62
Global Warming Solutions Act (2006) (AB32),	hurricanes 32
California 6, 127	effect on public opinion 100
Goldwater, Barry 289	insurance losses 62
Gore, Al 150n2	hydraulic fracturing (fracking) 65, 132, 192–195, 268
and 2000 presidential election 5, 137, 138	methane capture 175
government policies	methane during extraction 194
business associations' responses to 54, 68–69	pricing 269
and ideology 271	hydrofluorocarbons (HFCs) 9
and market mix 293(Appendix)	711 04
public preferences for 91–97	Idaho 34
range of business responses 54	ideology
to address market failures 17, 270	and government intervention 21, 270,
Graham, Senator Lindsay 80, 149, 161n8, 170, 183	293(Appendix)
grants, compared with tax credits 203	and public opinion 101–103, 107
Gray, Senator Boyden 152n6	Illinois 34
Greenhouse Gas Protocol (2010), World Resources	Immelt, Jeffrey 53, 57
Institute 82	incentives
greenhouse effect, early detection of 3	for business 291
greenhouse gas emissions	for consumers 292
annual 227	in international treaties 247, 248(Box)
concentration levels 50, 50(Table), 265	to discourage free riding 245 India
cumulative 227 and definition of pollution 133	commitment to emission reduction 259
emissions levels and concentration levels distinction	and Copenhagen (COP-15) (2009) 231, 233
227	and monitoring technologies 244
international comparisons 25(Table)	share of cumulative GHG emissions 227
key economic sectors 25, 26(Figure)	Indiana 34, 137
nitrous oxide 24	Industrial Revolution 268
per capita, states and regions 41(Map), 42(Table),	industrial Revolution 206 industry (manufacturing)
41–44(Appendix)	and carbon capture and sequestration (CCS) 99
projections 265, 266(Figure)	costs and benefits of legislation 164, 166(Table),
rates 50(Appendix), 50(Table)	270
and sequestration 27, 29(Table)	emissions 27
simulation of gap between goals and projections	impact of sub-national programs 131
235, 256(Figure), 256–257(Appendix)	individual changes to production processes 76
sources of 24–28, 131	and interests in Congress 176
time lags 50	regional variations 27, 28(Maps)
types of gases 24(Table)	subsidy funding 202
see also carbon dioxide; methane	variations of response within 56
Gulf of Mexico oil spill (2010) 169	see also auto industry; business; business
	associations; coal industry; oil and gas
Hansen, James, director at NASA, on greenhouse	Inhofe, Senator 150n2
effect 3, 150	institution building, international 226, 227, 228–241
Hawaii, carbon dioxide measurements 1, 9, 46	250–255(Appendix)
He Yafei, Chinese negotiator at Copenhagen 231, 232,	core design issues 245–247
233	further reading 258
heating, residential and commercial, impact of	proposals for new monitoring agency 244
sub-national programs 131	reforms 275, 277, 297–299(Appendix)
Holdren, John, White House Science Advisor 168, 282	see also UN Framework (UNFCCC)
Honda 58	Institutional Investors Group on Climate Change 60
House of Representatives	institutions, US federal 21, 271
BTU tax proposal (1993) 151, 151(Table)	insurance industry 53, 62–63
cap-and-trade bills (2009–2010) 157–161	as investors 62
clean energy definition 191(Box)	losses from extreme weather events 62
climate change amendments (2011) 171	slow response to climate change 62, 63, 76
distortions of representation 138, 149, 160, 176	and state regulations 128-129



Insurer Climate Risk Disclosure Survey (NAIC) 129, 145(Appendix)	Kerry, Senator John 80, 137, 161, 184 knowledge spillovers 199
Interfaith Center for Corporate Responsibility 64	Kyoto Protocol (1997) 4, 6, 228, 251
Intergovernmental Panel on Climate Change (IPCC)	agreement on extension (2012) 8
Copenhagen conference (2009) 48	business opposition to 69, 79
errors in 2007 review of research 48	goals 230, 253
establishment (1988) 3, 47, 250	Joint Implementation and Clean Development
reform of procedures 48	Mechanism 230, 251
Second Assessment Report (1995) 4	Marrakesh Accords on rules and guidelines 252
Third Assessment Report (2001) 70	partisanship in debate on 101, 102(Table)
see also UN Framework Convention (UNFCCC)	ratification 252
international agreements 200, 250–255(Appendix)	USA and 229–230
alternative approaches 253	03/1 and 22/-230
industry-specific 246	labor unions 54
see also UN Framework Convention; World Trade	attitude to climate change issues 65–68
Organization	Lander, Eric, Broad Institute 282
International Brotherhood of Electrical Workers	Langley, Samuel 45
(IBEW) 67	learning-by-doing 199
International Civil Aviation Organization 246	learning-by-using 199
International Geophysical Year (1957) 1, 47	liberals, and view of problem 102
International Maritime Organization 247	Lieberman, Senator 6, 73, 80, 152n5, 161, 169, 184
international technology issues 215–217	and 2008 cap-and-trade proposal 157
potential for collaboration 216	and Kerry–Lieberman bill 161–163
international trade	McCain–Lieberman cap-and-trade proposal 152,
climate change issues 246(Box)	153(Table), 155
implications of "border measures" 69, 245	light bulbs, energy-saving 106
regional organizations 247	lobbying 54, 71–75
shale gas and 196(Box)	against BTU tax 151
and US constitutional provisions 271	by alternative energy industry 73
WTO conflicts 216, 246	and campaign contributions 73
international treaties on climate change 226–248	distribution by sector 73
implications 247–248	expenditure on 73
importance of incentives 247, 248(Box)	increased numbers of organizations 72, 72(Figure)
and pledges of "fast track" financial assistance 237,	influence of business 149
238(Box), 242	issue-specific and industry-specific organizations
public opinion on 97	70–71
public support for new 93	Senate alternative bills (2009–2010) 163,
see also UN Framework (UNFCCC)	183(Appendix), 185(Appendix)
International Union of North American Laborers 68	umbrella organizations 69–70
investment banks, and disclosure of business practices	local governments
64	city policies 118–123
Investor Group on Climate Change 60	collective impact of programs 131–132
Investor Network on Climate Change 60, 64	and Conference of Mayors Climate Protection
Iron and Steel Institute (ISI) 67	Agreement 120(Box), 121
islands, and rising sea levels 34	and emissions reductions 118
isianas, and rising sea revels 3 i	further reading 140
Jackson, Lisa, EPA 168	initiatives 117–132
Japan	variations 122
business–government relations 61	Lugar, Senator 183
commitment to emissions reduction 258	Lutz, Robert 59n3
and monitoring technologies 244	Euro, Too of Coyllo
and reduction of GHG emissions 254	McCain, Senator John 6, 7, 73, 74, 289
	McCain–Lieberman cap-and-trade proposal 152,
Keeling, Charles 1, 46(Appendix)	153(Table)
Keeling curve 1, 2(Figure)	revised bill (2005) 155
Kerry–Lieberman bill 161–163	Major Economies Forum (MEF) 237
alternative bills 162, 183(Appendix)	Major Economies Meetings (MEM) 253
costs and benefits to industries 165, 166(Table)	maple syrup industry 32
failure of 168	maritime shipping industry 247



INDEX

347

market failures 16-17, 18(Box) National Association of Manufacturers 76, 79 government responses 17, 270, 275, 277, lobby group 4, 69, 163 293(Appendix) lobbying against BTU tax 151 and incomplete information 199 opposition to cap-and-trade 7, 75 opposition to Kyoto 79 negative externalities 16, 21, 198 positive externalities 16, 21 national clean energy standard (NCES), public in technological innovation and diffusion 199(Box), support for 96 198-201 National Commission on Energy Policy (2004) 152 Waxman–Markey bill 157 National Energy Conservation Policy Act (1978) 220 see also externalities National Science Foundation 212 Markey, Representative 7 natural gas 288 Massachusetts v. EPA (2007) 6, 133n6, 133-134 international trade policies 195, 196(Box) regional alignments 133, 134(Table) price decrease 195 Mauritius 227 to produce electricity 132 see also hydraulic fracturing (fracking); shale gas Merkel, Angela, German Chancellor 231 methane Natural Resources Defense Council (NRDC) 65, 68, 82 "fugitive" release in shale gas extraction 132, 175, negative externalities 198 market failures 16, 21 neighborhood effects, global 16 Global Warming Potential (GWP) 194 as greenhouse gas 24 network externalities 199 landfill capture, California 141 New England states, per capita emissions 44 Mexico, and reduction of GHG emissions 254 nitrous oxide, as greenhouse gas 24 Middle Atlantic states, per-capita emissions 44 Nixon administration 2 Nixon, Richard, President 220 Midwest 44 north-south comparisons 226, 227 and environmental concerns 139 per-capita emissions 44 see also developing countries Midwest Greenhouse Gas Reduction Accord Northeastern states climate and energy programs 139 (MGGRA) 129, 130(Box) impact of climate change 31 minimum energy performance standards (MEPS) 220 and RGGI 129 mitigation costs and benefits social capital 105 distributions 17, 99-100, 270, 273 support for government action 104 over time 99, 100(Figure) nuclear power industry and cap-and-trade regulations 204 mitigation measures links with economic growth 97-99 Congress support for 155 underinvestment in 290 and energy policy 204-205, 288 mobile air conditioning 141 public opinion on new power stations 93 monitoring, reporting, and verifying safety concerns 205 subsidies 157, 203, 205 adaptation and mitigation measures 243 emissions 226, 243-244 Montreal Protocol on Substances that Deplete the Obama administration Ozone Layer (1987) 3, 250 and ARRA funding 214 and HFCs 9 and Climate Change Technology Program 206 motor vehicles and EPA regulations 174 emissions limits 126, 175 and subsidies for nuclear and fossil-fuel industries mandatory fuel consumption 175, 221 205 renewable fuels for 125, 141, 175, 288 Obama, Barack, President 7, 189 on climate change 8, 10, 85, 263 Mountain states, per-capita emissions 43 multinational companies and Copenhagen Accord (COP-15) 230, 232, 233 diversity of interests 55 election campaign 74, 284(Table) foreign-based 69 and international agreements on energy measures 9 and international regulatory environment 69 and international cooperation 226 Murkowski, Senator 183 political dilemmas 169 support for cap-and-trade 168, 169 NAFTA regional trade agreements 247 tactical judgments 170 National Aeronautics and Space Administration oceans, effect of warming on hurricane activity 32 (NASA) 212 Office of Energy Efficiency and Renewable Energy 214 Office of Management and Budget (OMB) 222 National Association of Insurance Commissioners (NAIC) 129 Office of Nuclear Energy 214



offsetting border measures 69, 164, 164(Box), 245	categories of population segments 88, 89(Box),
Europe 245	89(Figure)
Ohio, swing state 137	on climate change 61
oil (and gas) industry 29(Map)	compared with politicians 92, 107, 149
and Californian policies 128	consensus and differences 107-108
carbon disclosures 60(Table)	correlates of variations in perceptions and
and GCC 70	preferences 87(Box), 101–106, 107
intra-firm greenhouse gas emissions trading 59	"directive" or "permissive" opinions 103
political influence of 71, 73	on domestic restrictions on emissions 93
support for offshore exploitation 205	further reading 108
USA lagging behind foreign rivals 58, 59–60, 76	influence on government policymaking 83
O'Neill, Paul 57n2	level of concern 84(Figure), 88
Overseas Private Investment Corporation (OPIC) 216	perceptions of the problem 84–91
- 10 -	realities about 270
Pacific Coast, per-capita emissions 43	shifts in trends 86(Table), 88, 107
Partnership for a Secure America 278	support for government action 91–97, 271
party politics	support for increased taxes to reduce global
and Kyoto debate 101, 102(Table)	warming 96
and opinion on issues 103(Table), 101–103,	public opinion surveys
111(Table)	California (2010) 128
and partisan voting 152, 153(Table), 155, 156(Box),	comparisons of USA and other countries
160, 160(Table), 176	113(Appendix), 114(Table), 115(Table),
Pennsylvania 137	116(Table)
insurers' climate risk disclosure 129	on environmental protection or economic growth
Peterson, Representative 158	97, 98
Pew Center on Global Climate Change see C2ES	on "global warming" (1988) 3
policymaking	on "global warming" (1992) 4
government processes 200	on "global warming" (1998) 4
influence of public opinion on 83	on "global warming" (2000) 5
institutional context 217	on "global warming" (2004) 5
political economy	on "global warming" (2008) 7
and ethical issues 274	methodological issues 101n5, 111(Table),
and future options 269–272	110–112(Appendix)
see also government policies; ideology	on priorities for global warming or clean energy 98
political geography, implications of federal system	99(Table)
138–140	on tax options (2002–2003) 96
political leaders	wording of questions 110, 111(Table)
and opinions on issues 85	public transportation 97, 106
and perceptions of party members 92, 107	1 ' 1 ' 1 ' 100
pollution	race, and opinion on climate change issues 106
definition 133	rail networks, high-speed 97
early concerns about 2	Rasmussen, Lars, Prime Minister of Denmark 231, 233
as negative externality 198	Raymond, Lee, CEO of ExxonMobil 60
Porter hypothesis 56n1	Reagan administration, and Montreal Protocol 3
Portland, Oregon, emissions reductions 122	Reagan, Ronald 289
positive externalities, market failures 16, 21	realities, of future options 264, 265–272
Practical Energy and Climate Plan (2010) 183	recycled materials, use of 106
premature deaths, economic value 35n2	Regional Greenhouse Gas Initiative (RGGI) 6, 129,
president	130(Box), 131
role in legislative process 168–170	regional programs on climate change 129–131
submission of budget 222, 224  Provident's Council of Advisors on Science and	collective impact 131–132 regional variations
President's Council of Advisors on Science and	
Technology 195, 263, 277	Conference of Mayors Climate Protection
recommendations 281–283(Appendix)	Agreement 121, 122(Map)
Prickett, Glenn 83 Project Independence (1973) 220	conflicting interests 34
	manufacturing industry variations 27, 28(Maps) in Massachusetts v. EPA 133
public goods 18(Box) measures to reduce emissions as 17	in public opinion on climate change 103–105, 107
public opinion 83–108	in "social capital" 104
pacine opinion 00 100	iii oceini cupitui 101



INDEX

349

socio-economic impacts 30-34 Senate state policies 126, 139 agenda on climate change (1988-1992) regulatory agencies, and proposed legislation 150-157 (2009–2010) 173–176 Byrd-Hagel amendment (1997) 4, 228 regulatory certainty 54 cap-and-trade proposals (2003, 2005, and 2008) regulatory regimes 152-157 business opposition to 75 clean energy definition 191(Box) state-level 69 climate change bills (2009-2010) 161-168, 183(Appendix) Reid, Senator Harry 165, 170n15 renewable energy Democrats in 169n12 competitiveness 195 distortions of representation 138, 149, 165, and economic growth 207, 208(Box) 167(Figure), 176 public support for 93 partisan votes 152, 153(Table), 155, 156(Box), R&D funding 214 176 and proposed BTU tax 151 state policies on 126, 288 subsidies 204, 204(Figure) and super-majority procedure 165 tax credits for 221 voting rules (cloture) 165-168 Renewable Energy and Energy Efficiency (RE&EE) Senate Committee on Energy and Natural Resources, 1988 hearings 3, 150 **Export Initiative 217** renewable energy industries 20, 273 sequestration 27, 29(Table), 99 subsidies 202 see also carbon capture and sequestration (CCS) Renewable Fuels Standard (RFS) 175, 221 technologies Renewable Portfolio Standards (RPS) 124 Service Employees International Union 68 reporting see monitoring, reporting, and verifying service sector, emissions 27 Republican Party shale gas and 2012 presidential election 284(Appendix) emissions during extraction 194 emissions from consumption 194 and opinion on government measures 92 and support for mandatory emissions reductions 96 hydraulic fracturing (fracking) 65, 132, 192-195, Republicans, and view of problem 102, 111(Table), as international trade issue 196(Box) Republicans for Environmental Protection pricing 269 (ConservAmerica) 264, 277, 287(Appendix) Shanghai 35 research and development 268, 272, 287 shareholders, resolutions on climate change disclosure cap-and-trade revenues to fund 157 for carbon dioxide removal 291 Sheet Metal Workers' International Association direct government participation 198 Shell (Royal Dutch Shell) 59, 70 and funding for projects 198 subsidies for 99, 155, 203, 270 Shultz, George 128, 279 Revelle, Roger 1, 47 Sierra Club 68 Singh, Manmohan, Indian Prime Minister Rio de Ianeiro 1992 conference 3, 150, 250 233 see also UN Framework (UNFCCC) skiing 32 Rogers, James 53 Snowe, Senator 152 Romney, Mitt 71, 284(Table) "social cost of carbon", working group on 10 Roosevelt, Theodore 289 socio-economic impacts, regional variations Royal Society, UK 197 30-34 Russia, per capita emissions 25 Solar Energy Industries Association 73 solar installations, residential 97, 122 Sarkozy, Nicolas, French President 232 solar radiation management 197 satellites, for monitoring emissions 244 South Africa, emissions 25 Schelling, Tom 290 South Atlantic states, per-capita emissions 44 Schwarzenegger, Arnold 117 South Korea, business-government relations 61 Southern Company utility 159 sea levels, rising 33, 227 and coastal zones 34 Southern states and environmental concerns 139 impact on small islands 34 Seattle, Washington 131 opposition to government action 104 Securities and Exchange Commission (SEC) 149, 176, per-capita emissions 44 social capital 105 179 firms' reporting requirements 176, 177(Box) Stabenow, Senator Debbie 149



states (US)	geo-engineering 195, 197(Box)
Climate Action Plans 124	imaginable changes 268
climate change policies 123-126, 271	international 275
collective impact of programs 131–132	links with economic growth 97–99
court cases against national government 132–136	market failures 199(Box), 198–201
direct regulation of producers 123	public support for 93
emission levels 28, 41(Map), 41–44(Appendix)	recent 268
insurance regulations 128–129	
	relative marginal GHG abatement 192, 194(Figure
local initiatives 117–132	see also carbon capture and sequestration (CCS);
Renewable Portfolio Standards (RPS) 124	research and development; shale gas
role of swing states in elections 136–138	technology transfer, international 216, 217, 246
support for mitigation measures 123	temperatures
support for national government action on climate	changes and CO <sub>2</sub> concentration 266(Figure), 267
change 91	effect on dairy industry 32
ten highest emissions 123, 124(Table)	effect on grain crops 33
under-representation of populous states in elections	regional extreme heat variations 119(Figure)
138	rise from eleventh to twentieth centuries 5,
variety of responses to climate change 138	5(Figure), 268
Statoil 59	urban areas 118, 119(Figure)
steel industry, and cap-and-trade legislation 67	Texaco 70
Stern Review (2007) 100	Texas
Stevens, Senator 155	emissions 123
Steyer, Tom 128	and Environmental Protection Agency 134,
Stoltenberg, Jens, Norwegian Prime Minister 232	135(Box)
Strategy for American Innovation 206, 208(Box)	sources and impacts conflict 34
subsidies 204(Figure), 201–204	Thailand, floods 35
compared with tax credits 203, 218	Tillerson, Rex, CEO of ExxonMobil 60
compensation for costs 273	"tipping points" 49(Appendix), 85
costs of 202	Toronto, international climate science conference
forms of 202	(1988) 150n1, 250
for investment in technological innovation 17, 20,	Total 59
107	Toyota 58
liability insurance, for nuclear power industry 201	transportation
for nuclear power 157	airlines 27
political economy of 205	CO <sub>2</sub> in 27(Table)
for research and development 99, 155	effect of sub-national programs 131
Suess, Hans 1, 47	local government regulations 118
Super Storm Sandy 86	maritime shipping 27
swing states	public 97, 106
and role of electoral college 138	road 26
and role in presidential elections 136–138	state regulations 125
and fole in presidential elections 150 150	Trewartha, Glen Thomas 46
tax credits	
compared with grants 203, 218	Tyndall, John 45
	LIN Paducing Emissions from Deforestation and
for hybrid automobiles and renewable energy	UN, Reducing Emissions from Deforestation and
221	Forest Degradation in Developing Countries
for technological innovation and diffusion 200	(REDD program) 244
taxes	UN Framework Convention on Climate Change
on carbon emissions 4, 264, 291(Appendix)	(UNFCCC) (1992) 3, 81, 150, 250
compared with cap-and-trade 218n3	Ad Hoc Working Group on Long-term Cooperativ
policy revisions 272	Action (AWG-LCA) 230, 253
public opinion on 96, 151n4	Annex I parties 228, 250, 258
revenue-neutral 273, 295–296(Appendix)	Buenos Aires Plan of Action 251
Tea Party caucus, opposition to climate change	Conference of Parties (COP) Montreal (2005) 6
negotiations 8, 172	COP-1 Berlin Mandate 251
technological solutions 75, 189–218, 268–269	COP-6 bis flexibility mechanisms 252
changes in progress 268	COP-6 Hague 252
costs and benefits 193(Box), 192–195	COP-7 Marrakesh Accords 252
further reading 218	COP-8 Delhi Declaration 252



INDEX

351

COP-9 credits for carbon absorption 252 Upton, Representative Fred 172 COP-10 Buenos Aires Program of Work 252 urban areas 118 COP-11 Montreal 253 temperatures 118, 119(Figure) COP-12 Nairobi 253 US Climate Action Partnership (USCAP) 71 COP-13 "Bali Action Plan" 6, 230, 253 "Call for Action" 57 COP-14 Poznan 254 support for cap-and-trade 163 COP-15 Copenhagen Accord (2009) 7, 230-237, 254 US Council for Energy Alternatives 71 Chinese commitments 236(Box) US Council for International Business 69, 75, 76 provisions for monitoring 244 US National Academy of Sciences 47, 70 summary 233, 234(Box) UTC heavy equipment manufacturers 57 transcript of meeting 231-233 Utility Workers Union of America 68 US commitments 236(Box) COP-16 Cancun Agreements (2010) 237, 238(Box), Vermont 34 Villach, Austria, scientific conference (1985) 254 "Fast Start" pledges 237, 242 COP-17 Durban Platform (2011) 237-240, 254 visions for future options 265, 272-274 COP-18 Doha (2012) 8, 240-241, 255 do-nothing approach 272 Global Environment Facility (GEF) 251 and imagination 274 political economy trade-off issues 273 non-Annex I parties 228, 259 parallel negotiating process 230, 240, 253 see also Intergovernmental Panel on Climate Warner, Senator John 6, 73, 156 Change; Kyoto Protocol Waxman-Markey bill (2009) 73, 74, 157-161, **UNEP Finance Initiative 63** 181(Appendix) United Auto Workers union 67 accommodations for sector interests 158 cap-and-trade provisions 159 United Kingdom, and monitoring technologies 244 United States 61, 227 partisan voting 160, 160(Table) business-government relations 61 regional voting 160 and Cancun Agreements (2010) 237 Waxman, Representative 7 Welch, Jack, GE 57 climate change issues in 269 commitment to emissions reduction 258 Wells Fargo bank 65 constraints of domestic politics 228, 243, 247, 264 Wen Jiabao, premier of China 233 and Copenhagen Accord 235, 236(Box) West Coast states criteria for pathways to solutions 275 climate and energy programs 139 and EU goals 235n2 per capita carbon footprint 121 evolution of climate change diplomacy 235, 263 social capital 105 federal political system 117, 138-140 West Virginia 137 federal-level court system 139, 271 per capita emissions 44 as free rider 245, 247 Western Climate Initiative 131 wildfires 33 incipient transformational trends 278-279 wind power, subsidies 204, 204(Figure) international comparisons 15, 25 on perceptions and policies 113(Appendix), wine industry, impact of climate change on 32 114(Table), 115(Table), 116(Table) Wirth, Senator 150n2 and Kyoto Protocol 229-230 World Bank, Clean Technology Fund (CTF) 241, 242 and Major Economies Meetings (MEM) 253 World Business Council for Sustainable Development multilateral budget for foreign assistance programs (WBCSD) 81 242(Table) World Climate Change Conference, First (1979) 2, 250 and pledges of financial aid for adaptation and World Resources Institute (WRI) 65, 81, 132, 175 mitigation 241-243 Greenhouse Gas Protocol 82 and political economy 269-272 World Trade Organization 216, 246 ratification of UNFCCC 150, 251 climate change agreements 246, 246(Box) share of cumulative GHG emissions 227 Wyoming, per-capita emissions 43 and UNFCCC parallel negotiations 230 United Steel Workers union 67

Zuma, Jacob, South African President 233