# Index


Acid deposition, 18, 19, 29, 30, 47, 132, 155, 159, 228, 256
Advanced power systems, 85, 322
Agriculture, 4, 5, 8–11, 14, 33–39, 49, 60, 63, 64, 69, 97, 109, 113, 114, 130, 140, 173, 181, 195, 211, 241–245, 272, 291, 306, 330
Air pollution, 16, 18, 26–29, 155, 156, 163, 234–236, 281, 296–298, 301
Air quality, 26, 29–30, 119, 163, 186, 236, 288
Albedo, 62, 130–137
Atlantic Rainforest, 271, 301–306

Bagasse, 261, 264, 267–270
Bandeirantes Landfill Gas to Energy Project, 111, 112, 221
Bangladesh, 4, 12, 28, 60, 93, 142, 145, 242, 284–291, 296, 329
Biochar, 134, 136, 324
Biodiversity, 18, 140, 142, 212, 302, 318, 324
Biofuels, 26, 41, 84, 85, 95–99, 171, 207, 268, 270, 272, 322
Biomass power and heat, 16, 31, 40, 50, 51, 85, 88–92, 95–100, 109, 117, 121, 123, 134, 135, 171, 247–255, 265, 272, 287–301, 322
Brazil, 4, 12, 27, 33, 40, 41, 64, 73, 96, 109, 111, 154, 201, 242–245, 260–274, 301–307, 329
Bureau of Environmental Protection and Energy (China), 293–300

Capacity factors,101, 248–250
Cap-and-trade schemes, 11, 189, 194–199, 211, 224, 252
Carbon capture and sequestration, 8, 69, 85, 86, 102–110, 165, 172, 194, 323
Carbon-cycle engineering, 133–137, 324
Carbon lock-in, 11, 62, 148–150, 175–177
Carbon offsets, 134, 137, 183
Cellulosic ethanol, 66, 96–98
Charcoal, 16, 134, 287, 293
China, 4–33, 40, 45–49, 56, 60, 64, 71, 74, 79, 93, 100, 105, 115, 137, 146, 154, 167, 180, 185, 187, 196, 201, 209, 211, 235, 242, 251, 281, 292–301
Clean Air Act (US), 163, 164, 174, 185, 230, 236, 312
Clean Water Act (US), 230, 236
Clean Development Mechanism, 146, 198, 305, 328
Climate-change refugees, 60, 61, 129
Climate Change Technology Program (US), 68, 81, 115–119
Cloud reflectivity, 132, 324
Coal, 3–9, 13, 16–24, 27, 31–34, 50–52, 64–70, 85–92, 100–112, 117, 123, 151, 155, 159, 165, 166, 170, 184, 189, 196, 225, 231, 246–252, 257–262, 287, 292–298, 317, 318, 329
Coal mining, 112, 151, 155, 196, 329
Coal-burning power plants, 18–24, 50, 86, 104, 105, 231
Cogeneration, 76, 86–92, 121, 160, 169, 249, 250, 255, 321

Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, 197, 220
Combined heat and power, 76, 81, 82, 86, 119, 121, 160, 163, 169, 173, 246–252
Combustion, 19, 23, 39, 40, 51, 69, 73, 80, 84–86, 89–92, 102–106, 112, 116, 118, 134, 166, 180, 268, 289–296, 321–324
Cookstoves, 4, 12, 16, 242–245, 285, 288–301, 329
Cool Earth, 50, 187
Copenhagen Accord, 40, 318
Co-production, 85, 86
Cultural eutrophication, 50–52

Deforestation, 2, 5, 12, 36–49, 64, 109, 197, 203, 212, 241–245, 268, 271, 285, 288–305
Denmark, 12, 92, 93, 196, 203, 242, 246–252, 257, 318, 329
Department of Energy (US), 71, 81, 86, 88, 105, 107, 115, 133, 161, 162, 172
District energy systems, 86, 119

Electricity, 5, 18–24, 33, 35, 50, 52, 68, 81–97, 101–103, 111, 113, 119, 124, 131, 140, 146, 148, 155–160, 164–174, 225, 231, 234, 248–254, 261, 267, 288, 299–301, 306, 317, 322
Electric utility companies, 5, 16, 65, 151, 156, 174, 231, 255, 290, 307, 310–313
Electronic road pricing, 274–284, 329
Energy balance, 54, 55, 96, 134, 262
Energy conservation, 70, 164, 211
Energy efficiency, 5, 24, 31, 36, 38, 64, 69–82, 97, 117, 123, 125, 140, 144, 148, 158–161, 164, 175, 194, 209–211, 231, 236, 246–252, 295–296, 328
Energy Independence and Security Act of 2007 (US), 91, 97, 99
Energy Information Administration (US), 7, 10, 19, 31, 56, 70, 100
Energy intensity, 56, 70, 211
Energy Policy Act of 2005 (US), 91, 161
ENERGY STAR program, 70, 167
Energy taxes, 194, 204–206, 246, 247, 250
Enhanced oil recovery, 104–107
Environmental Protection Agency (US), 71, 111, 163, 242, 293, 302, 303, 308, 317
Ethanol, 8, 12, 31, 64–67, 73, 95–98, 158, 170, 173, 185, 196, 207, 260–274, 329
European Union, 21, 29, 30, 49, 64, 78, 154, 162, 180, 191–198, 207, 213, 215, 249
Extended producer responsibility, 203, 212, 213, 325

Feed-in tariff, 12, 91, 121, 186, 201–206, 246–260
Flex-fuel vehicles, 73, 260–262, 265, 269, 273, 321
Flue gases, 86, 102–105
Food production, 36–39, 48, 58, 60
Forestry, 4, 8–11, 14, 60, 63, 97, 109, 173, 181, 195, 211, 307, 316, 330
Fossil energy and fuels, 1, 5–8, 13–15, 23, 29, 33–42, 69, 73, 79, 84–86, 90, 91, 96–108, 116–120, 151, 184, 201, 225, 247, 250, 251, 257–260, 265, 267, 270, 288, 290, 317, 322
Fuel cells, 4, 66, 73, 81, 87–90, 196, 225, 322
Fukushima accident, 101, 102
Fundação O Boticário de Proteção à Natureza (Brazil), 301–307

Gasification, 85, 86, 104, 159, 322
Gasohol, 263–265
General Agreement on Tariffs and Trade, 41, 105
Geo-engineering, 10, 11, 124–149, 187, 324
Geologic storage, 69, 102–108, 173, 323
Geothermal energy, 22, 51, 84, 88–91, 94, 121, 123, 201, 209, 255, 257, 322
Germany, 4, 12, 35, 36, 74, 91–93, 105, 121, 138, 181, 196, 203, 207, 213, 242, 246, 249–260, 329
Glaciers, 59, 61, 128, 129, 137, 183, 318
Global warming potential, 69, 110–116, 153, 176
Grameen Shakti, 12, 242, 284–292, 329

Great Plains Synfuels Plant, 103, 104
Greenhouse gases, 14, 18, 26, 31, 37, 40, 55, 64–73, 76, 80, 85, 91, 96, 97, 110–121, 127, 139, 140, 144, 151–156, 162, 170, 174, 184, 185, 194, 199, 216, 220–222, 231, 234, 236, 257, 269, 281, 298, 318, 325, 327
Grid parity, 91, 93, 290

High-performance buildings, 69, 73, 321
High-temperature superconducting, 83, 321
Hydrocarbons, 6, 14, 91, 97, 114, 117, 268, 314
Hydrogen, 4, 69, 73, 84–104, 164, 173, 196, 322
Hydro power, 84, 91–104, 164, 173, 196, 322

Industrial efficiency, 37, 169
Intellectual property, 148, 165–167
Intergovernmental Panel on Climate Change, 14–16, 54–58, 62, 103, 110, 129, 149, 201, 203
Internal-combustion engines, 23, 73, 89, 90
International Energy Agency, 8, 10, 19, 27, 32, 68, 70, 82–85, 102, 174, 180
Ironmaking, 80, 321

Japan, 4–7, 13, 29, 36, 47, 56, 64, 71, 76–79, 88, 100, 101, 120, 166, 180, 187, 194–196, 209, 210, 285

Kyoto Protocol, 38, 40, 55, 180, 195, 198, 305

Landfill gases, 47, 91, 111, 112, 203, 255, 323
Landfills, 2, 44–49, 91, 110–113, 117, 121, 134, 151, 183, 203, 234, 255, 323
Land management, 109, 211
Land use, 33–39, 64, 68, 72, 73, 119, 120, 133, 142, 211, 239, 298, 304, 324
Lighting, solid-state, 74, 321
Livestock, 37–39, 113
Low-carbon technologies, 63, 148, 153, 154, 160, 163, 175, 176, 194, 196, 325

Market failure, 11, 147, 151, 159, 174, 199, 320
Methane, 38, 39, 47, 54, 56, 59, 69, 89, 92, 95, 105–114, 117, 121, 128, 145, 165, 173, 174, 195, 268, 290, 323
Mitigation technologies, 11, 66, 73, 148, 149, 167, 171, 177, 194, 196
Mitsubishi International Corporation Foundation, 303–307
Montreal Protocol (1987), 54, 114

National Aeronautics and Space Administration (US), 59, 61
National Improved Stove Program (China), 292–301
Natural gas, 6–9, 20, 26, 27, 33–36, 50, 51, 64, 65, 70, 73, 85–90, 102–111, 121, 160, 190–193, 196, 209, 210, 246–252, 257, 260, 322
Net-zero energy, 77, 78
Non-selective catalytic reduction, 116, 324
Nuclear energy, 4–9, 14, 20, 33, 50–52, 68–70, 84–90, 97–102, 117, 120, 159, 164, 258, 260, 323
Nuclear Regulatory Commission (US), 52, 100

Oasis Project (Brazil), 12, 242, 301–307
Ocean acidification, 58, 106, 131–134, 137, 142
Ocean iron fertilization, 135–137, 324
Oil embargo, 33, 35, 180, 182, 263
Organisation for Economic Co-operation and Development, 134, 137, 183
Organization of the Petroleum Exporting Countries, 35, 246, 263, 270
Ozone, 29, 39, 54, 55, 114, 116, 131, 132, 234
Ozone-depleting substance, 111, 124

Particulate matter, 19, 30, 31, 234, 268, 289, 296, 298
Passive bystander effect, 215, 239
Payments, for ecosystem services, 203, 211, 212, 325
Permafrost, 43, 56, 109, 142, 145, 324

Photovoltaics, 22, 51, 68, 77, 91, 93, 123, 157–160, 169, 196, 203, 255–258, 285, 322
Pipelines, 20, 64, 65, 85, 90, 97, 104, 106, 112, 171, 190–193
Plug-in hybrid vehicles, 30, 72, 73, 97, 117, 208, 209, 217
Polycentrism, 12, 119, 214–246, 253, 260, 273, 284, 292, 300, 301, 307, 316, 327
Precautionary principle, 11, 180–184
Production tax credit, 91, 161, 162, 186, 203
Programa Nacional do Álcool (Brazil), 260–274
Public goods, 11, 151, 154, 157, 162, 167
Pyrolysis, 92, 96, 322

Race to bottom, 224, 229, 230, 236, 237
Radiative forcings, 55, 134
Regional Greenhouse Gas Initiative, 224, 231
Regulations, 2, 20–24, 30, 41, 118, 147, 158–164, 174–177, 182, 185–186, 192–196, 199, 203, 210–212, 224, 229–233, 238, 249, 256, 298, 305, 310, 320
Regulatory commons, 231, 232
Regulatory uncertainty, 148, 156, 172, 199, 219
Renewable energy, 12, 84, 85, 91, 97, 117, 120–123, 147–149, 157–159, 162, 170, 186, 191, 201–209, 225–228, 231, 246–260, 284–292, 328
Risk paradigm, 11, 180–183
Risø National Laboratory (Denmark), 242, 247
Road pricing, 274–284

Sea levels, 2, 50, 56, 60, 61, 129, 142–145, 182, 324
Singapore, 12, 41, 73, 112, 113, 194, 242, 274–284, 329
Smart roofs, 77, 321
Solar energy, 4, 13, 22, 51, 74, 77, 82–84, 88–94, 117–123, 129–137, 153, 154, 157–160, 169, 170, 196, 201–209, 242–244, 248, 253–260, 284–292, 295, 329
Standby charges, 160, 173
Subsidies, 26, 27, 82, 93, 147, 161, 186, 189, 200–208, 213, 214, 246–251, 258, 261, 264, 265, 272, 273, 292–294, 299–301, 314, 325
Sugarcane, 96, 242, 260–274
Sustainability, 82, 289, 292

Tax credits, 91, 156, 161, 162, 186, 200–206, 211, 274
Thermoelectric power plants, 44, 50, 52, 270
Toxic materials, 2, 18, 236
Toxics Release Inventory (US), 12, 242, 307–315
Transit-oriented development, 73, 119, 120
Transmission loading relief, 20, 22
Transportation sector, 31, 71, 87, 88

US Geologic Survey, 59, 107
United Kingdom, 5, 60, 93, 203, 242, 246, 317, 318, 325, 326, 329
United Nations, 58, 146, 157, 191, 242, 275, 318
Urban design, 73, 117, 118, 140

Vehicle-miles, 27, 28, 32, 119, 140
Vehicle Quota Scheme (Singapore), 275, 280, 281

Watershed valuation index, 304, 307
Wealth, transfers of, 32, 33, 328
White roofs and roads, 4, 131, 133, 136, 324
Windows, 76, 321
Wind power, 68, 83, 91–93, 121, 123, 153, 154, 162, 166, 196, 200, 246–252, 256, 257, 295, 329
World Bank, 5, 29, 144, 191, 242

Zero-energy homes, 78, 321