Index

Note: Page numbers in bold indicate tables or figures.

26/41 Commitment (Indonesian emissions reduction pledge), 1, 75–77, 90, 167

Agence Française de Développement (AFD), 101
Alam, Dipo, 76
Alcaraz, Arturo Pineda, 130, 141, 143, 158, 167, 171
Asian Development Bank (ADB), 85, 87, 100, 101, 106, 150
  ADB Energy Transition Mechanism, 86, 178
Australia, 53

Badan Perencanaan Pembangunan Nasional (BAPPENAS), 2, **66**, 76, 115, 117
Bali, Indonesia, 116
Bali Plan of Action, 52
barriers to energy capacity development in Indonesia, 68–69, 187
barriers to geothermal development in Indonesia, 102–17
  financial, 97–**98**, 102–9, 121
  regulatory, **98**, 109–12
  sociocultural, 98, 112–16, 129
  technical, 98, 116–17
barriers to geothermal development in Philippines, 133–40
  financial, **134**, 140, 149–50, 151–52, 156
  regulatory, 133–36, **134**, 138–39
  sociocultural, 133–38, **134**
  technical, 133, **134**, 139–40
Bataan Nuclear Power Plant, Philippines, 145
Bedugal geothermal project, Indonesia, 116
bilateral development aid, 20, 25, 58, **77**–78, 86, 107, **118**, 144, 153
binary turbine technology, 8
biomass energy, 63, 81, **87**, **104**
blackouts, 74, 145
Brazil, 5

C40 Cities initiative, 51
capacity-building mechanism
  defined, 13, 62
  and domestic blocking factors, **39**
  and effectiveness of clean energy regime complex, 162, 168–69, 176, 178, 184
  effects of, **30**, 35–**36**
  and geothermal development, 95–96, 125
  and geothermal development in Philippines, 155, 157
  technical capacity building in Indonesia, 78–81, **89**, 91
carbon lock-in, 7, 171
Catholic Church, **134**, 135, 147
Chevron, 139
China, 5
Clean Development Mechanism (CDM) of UNFCCC, 35, 46, 103–5, 121, 124–25, 151–52, 163, 166–67
clean energy
  barriers to development, 6–7
  defined, 6
Clean Energy Ministerial (CEM), 54–55
clean energy regime complex, 11
  Indonesia's participation in, 74–81
clean energy regime complex, effectiveness of, 161–76
  development aid comparison across three periods, 173–75
  and domestic political interests, 162, 169–72, 184
  and policy advising, 162
  and social learning mechanism, 161–62, 165–**68**
  and technical capacity building, 162, 168–**69**
  and utility modifier mechanism, 161–62, 163–**65**
clean energy regime complex, history of, 42–60
  Period 1 (1980–2001), 45–49
  Period 2 (2002–2008), 49–54
  Period 3 (2009–2023), 54–59

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010

Clean Technology Fund (CTF), 60, 103, 105–6, 163
climate activism, 54
Climate Investment Funds (CIF), 54, 57, 60
climate justice norms, 57–58, 178–79
Climate Technology Centre and Network (CTCN), 47, 56, 80
coal, 8, **87**
  in Indonesia, 65, 70–73, 83–84, 86
  in Philippines, 147, 167
common but differentiated responsibilities (CBDR), 5
community relations, 116, 126
Competitive Renewable Energy Zones (CREZ) process, 151
ComVol (Philippine Institute of Volcanology), 141
conferences, international, 50–51
COP. *See* UN Climate Conference of Parties
corruption, 38–39
  in Indonesia, 17, 69, 72–73, 110–12, 127
  in Philippines, 145
Cusi, Alfonso G., 139

decentralization, in Indonesia *(Reformasi)*, 67, 99–100
decoupling, 2, 49, 58
deforestation, 1, 2, 65, 75
Denmark, 55
development aid, 17, **89**. *See also* financial barriers to geothermal development
  climate change mitigation aid (OECD), **77**–78
  comparison of, 173–75
  and effectiveness of clean energy regime complex, 164, 184
  for geothermal, 101–2, 117–20, 153–55
domestic political interests
  and effectiveness of clean energy regime complex, 162, 169–72, 184
  and effectiveness of regime complexes, 36–**38**, **39**, 179
  and geothermal development, 125–28, 152, 158–**59**

earthquakes, risk of, 96, 110, 115
EBTKE (Directorate of Renewable Energy and Energy Conservation, Indonesia), 2, 65, 76, 79
effectiveness of regime complexes. *See* clean energy regime complex, effectiveness of; regime complexes, effectiveness of
Electricity Power Reform Act (EPIRA, 2001, Philippines), 146
electricity prices, 140, 146
electrification, 63, 81
emerging markets and developing economies (EMDEs). *See also* specific countries
  clean energy investments in, 5
  energy transitions in, 3–4, 24, 30
  geothermal potential in, 9
  and technical capacity, 35–36
  technology adoption in, 6
emissions
  26/41 Commitment, 1, 75–77, 90, 167
  decoupling of growth from, 2, 49, 58
  in Indonesia, 1–2, 65
emissions reduction credits (ERCs), 104, 105
energy crises
  in Indonesia, 79, 101, 126
  oil, 131, 142, **159**, 170–71, 174
  in Philippines, 131, 144–45
Energy Development Corporation (EDC) [Philippines], 135, 137–38, 143, 145, 152
energy security
  defined, 4
  in Indonesia, 90–91
  in Philippines, 131
  and policy change, 127
energy transitions
  and geothermal technology, 7–9
  global governance of, 10–14
  requirements for, 4–7
en.lighten initiative, 79
Environmental and Social Framework (ESF) due diligence, 112–13
European Union (EU), 48, 51–52
exploration drilling (geothermal), 102, **103**, 108–9, 150, 186

feed-in tariffs, 84–85, 140, 148, 170, 186
finance flows, 52, **53**, 58–**59**, 153–55, **164**–165, 173–75
financial barriers to geothermal development, 186
  in Indonesia, 97–**98**, 102–9, 121
  in Philippines, **134**, 140, 149–50, 151–52, 156
forests, 65, 109–10, 139
fossil fuel subsidies
  in Indonesia, 66, 70, 72–73
  and social learning, 34

G8 summits, 51–52, 75
G20 summits
  2009, Pittsburgh, Pennsylvania, 1–2, 74, 75
  2021, Bali, Indonesia, 3, 85
geographical barriers to geothermal development, 69, 187
geothermal development in Indonesia. *See* Indonesia, geothermal development in
geothermal development in Philippines. *See* Philippines, geothermal development in
geothermal energy development
  legal definition of, 109
  negative impacts of, 110
Geothermal Energy Upstream Development Project (GEUDP), 108, 121
Geothermal Fund Facility, 106–7
Geothermal Law No. 27 (2003, Indonesia), 100–102, 109, 124, 166
Geothermal Law No. 30 (2014, Indonesia), 102, 109, 111, 124, 127, 166

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010

geothermal policy recommendations, 185–88
Geothermal Resource De-Risking Facility (GRDF), 150
Geothermal Resource Risk Mitigation Project (GREM), 94, 103, 108, 121
geothermal technology, 7–9
  drilling technologies in, 8–9, 188
  financial barriers to, 9
  land needs of, 8
Germany, 48, 50, 52, 55, 101
The Geysers (geothermal power plant, California), 8
Global Environment Facility (GEF), 79, 101, 108
global governance of energy transitions, 10–14
Global Renewable Energy Policies and Measures Database, 56
Global Status Report on Renewables (REN21), 51
governance, global, 10–14. *See also* transnational governance
governance, national. *See* Indonesia, governance of; Philippines, governance of
Grindley, George W., 141

Habibie, B. J., 99–100
hydropower, 81, 83, 84, **87**, **104**, 149

India, 5
Indigenous peoples
  land rights, 112–14, 133–34, 136–38, 150–51, 183
  protests against geothermal projects, 116, 126
Indonesia
  carbon emissions, 1–2, 65
  coal production in, 65, 70–**71**, 73
  as comparative case study, 14–18
  development aid, 17
  economic status of, 63–65
  energy access in, 63
  energy consumption rates, 16
  energy efficiency lighting policies, 78–80
  energy mix, 70–**71**, 81–83, **87**
  energy supply, **16**
  energy transition goals, 1–3
  Fast Track programs, 2, 71, 74, 83
  geothermal energy capacity, 14–15, 17, 96–**97**
  and Just Energy Transition Partnership (JETP), 85–88
  maps, **64**, **99**
  oil production in, 65
  participation in clean energy regime complex, 74–81
  standards and labeling policies, 78–79
Indonesia, comparison with Philippines case, 161–76
  and capacity-building mechanism, 168–**69**
  and social learning mechanism, 165–**68**
  and utility modifier mechanism, 163–**65**
Indonesia, geothermal development in, 93–129
  barriers to, 93–94, 97–98, **98**, 102–10, 112
  and capacity building mechanism, 95–96, 125
  case description, 96–97
  clean energy regime complex's impacts on, 94–95, 120–21
  contestation of, 114–16, 126–27
  corruption in tendering, 110–12, 127
  and domestic political interests, 125–28
  financing trends, 117–20, 121–22
  Period 1: history of (1972–2007), 98–101
  Period 2: international support for (2008–2014), 101–2
  Period 3: overcoming barriers to, 102–17
  and resettlement norms, 112–14
  and social learning mechanism, 95, 96, 123–25
  technical capacity building, 116–17
  and utility modifier mechanism, 95, 121–23
Indonesia, governance of
  35,000 MW Plan (2014), 2, 71, 83–**84**
  Blueprint of National Energy Management, 79, 81, **83**
  decentralization, 67, 99–100
  Directorate of Renewable Energy and Energy Conservation (EBTKE), 2, 65, 76, 79
  Ministry of Energy and Mineral Resources (MEMR), 2, 65, **66**, 72, 76, 79, 84–85, 108–9, 115, 117
  Ministry of Finance, 65, **66**
  National Action Plan on Emission Reduction, 2, 76
  National Climate Change Council, 2, 75
  National Council of Climate Change, 80
  National Development Planning Agency (BAPPENAS), 2, **66**, 76, 115, 117
  National Electricity Plan (Rencana Umum Ketenagalistrikan [RUKN]), 81, **83**, 84
  National Energy Conservation Master Plan, 79, **82**
  National Energy Council, 65–66, **82**
  National GHG Inventory, 2, 76
  National Mid-Term Development Plan, **83**
  Oil and Gas Task Force, 72–73
Indonesia, laws/regulations of, **82–83**
  and climate change considerations, 75, 76
  and energy conservation, 79–80
  and energy development planning, 81
  and geothermal development, 99, 106
  Geothermal Law No. 27 (2003), 100–102, 109, 124, 166
  Geothermal Law No. 30 (2014), 102, 109, 111, 124, 127, 166
  and land use, 68
  and power generation sector, 66–67
  and renewable energy development, 84
Indonesia, regulatory evolution of renewable energy in, 61–92
  case description, 63–65
  major players in energy sector, 65–67
  Period 1: legacy of oil production, 69–73, **89**
  Period 2: rising salience of climate change and emissions reduction, 74–81, **89**
  Period 3: shifting political will, 81–88, **89**

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010

Indonesia, regulatory evolution (cont.)
transition opportunities and challenges, 67–69
Indonesian Geothermal Association, 111
interagency coordination, 184–85
International Bank for Reconstruction and Development (IBRD), 101, 104
International Energy Agency (IEA), 4, 87
on clean energy investments in EMDEs, 5
criticisms of, 47
membership of, 55
role of, 56
Working Party on Renewable Energy, 45, 47
International Partners Group (IPG), 3, 85
International Renewable Energy Agency (IRENA), 10, 50, 51, 55, 56

Japan, 76, 87, 144
Japanese Investment Corporation Agency (JICA), 69, 101, 102–3, 106, 163
Java, Indonesia, 69, 115, 187
Johannesburg Renewable Energy Coalition (JREC), 49, 51
Jokowi. *See* Widodo, Joko (Jokowi), administration of
Just Energy Transition Partnership (JETP), 3, 58, 60, 85–88
just transition norms, 114, 126, 178–79, 181, 183, 187–88

KfW (German development bank), 101, 106, 107
Kingston, Reynolds, Thom and Allardice (KRTA), 143
Kyoto Protocol, 43, 46, 48–49, 75

Lahendong II geothermal project, Indonesia, 101, 104, 163
land rights, 112–14, 136–37
laws and regulations. *See* Indonesia, laws/regulations of
leadership, political
Alcaraz, 130, 141, 143, 158, 167, 171
Malixi, 131, 145, 158, 171
Prayitno, 100, 126, 171
Velasco, 143
Yudhoyono, 1, 73, 75–76, 172
Leyte geothermal project, Philippines, 137, 145
lighting, energy efficiency in, 78–80

Major Economies Process on Energy Security and Climate Change (later Major Economies Forum for Energy and Climate), 51, 54
Malixi, Pabling V., 131, 145, 158, 171
Marcos, Ferdinand, Jr. "Bongbong," 132
Marcos, Ferdinand, Sr., regime of, 142–43, 171
marine biodiversity, 180–81
methodology, 18–20
Millennium Development Goals (MDGs), 47–48
mining, 109. *See also* coal
Ministry of Energy and Mineral Resources (MEMR) of Indonesia, 2, 65, **66**, 72, 76, 79, 84–85, 108–9, 115, 117
Mt. Apo geothermal project, Mindanao, Philippines, 137
multilateral and bilateral support, in Philippines, 153, 160
multilateral development banks, 57, 58, 101, 173
multilateral processes, failures of, 45–49, 52

Nasulo geothermal project, Philippines, 138, 151–52
National Geothermal Association of the Philippines (NGAP), 140, 150
National Geothermal Capacity Building Program, 115
National Power Corporation of the Philippines, 142, 143, 144–45
natural disasters, 96, 110, 115
Netherlands, the, 101, 104, 115
net zero, 4–8, 12
definitions, 4–5
Indonesia's 2050 plan, 3, 81–83, 86, **87**
Kyoto Protocol, 43, 46, 48–49, 75
Paris Agreement, 4–5, **6**, 44, 54
New Zealand, 98–99, 101, 143, 151, 157
New Zealand Geological Survey, 141
NIPAS Act (1992, Philippines), 135–36
non-binding agreements, and effectiveness of regime complexes, 29
norm diffusion
and Indonesia's participation, 2, 74–78, 80
just transition norms, 114, 126, 178–79, 181, 183, 187–88
resettlement norms, 112–14
and social learning, 34

oil crisis (1973), 131, 142, **159**, 170–71, 174
oil production, in Indonesia, 65, 69–73
opportunity for change, and political will, 13–**14**, 127, 171–**72**
opportunity matrix, **14**
Organisation for Economic Co-operation and Development (OECD), 45, **77**
Organization of the Petroleum Exporting Countries (OPEC)
Indonesia's exit from, 1, 70, 76

palm oil, 65
Paris Agreement, 4–5, **6**, 44, 54
permitting process, 186–87
Pertamina (Indonesian national oil company)
fuel subsidies, 66
and geothermal development, 99, 107
oil theft, 72
Perusahaan Listrik Negara (PLN), 65, **66**–67, **82**, 85
and coal production, 71
and financial barriers to geothermal development, 102–3
and geothermal development, 104, 107

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010

Petral (Pertamina's oil trading arm), 72–73
Philippine Geothermal, 142
Philippine Institute of Volcanology (ComVol), 141
Philippine National Oil Company (PNOC), 135, 137–38, 143
Philippines
as comparative case study, 14–18
constitution of, 136, 139
development aid, 17
energy capacity, 131, **144**
energy mix, 131, **133**
energy security in, 170–71
energy supply, **16**, **133**
foreign ownership in, 138–39, 148
geothermal energy capacity, 14–15, 17, 140, 149
map, **132**
Philippines, comparison with Indonesia case, 161–76
and capacity-building mechanism, 168–**69**
and social learning mechanism, 165–**68**
and utility modifier mechanism, 163–**65**
Philippines, geothermal development in, 130–60
barriers to, 133–40, 149
and capacity-building mechanism, 155, 157
case description, 131–32
clean energy regime complex's impacts on, 153–60
contestation of, **134**, 136–38
Green Energy Auction Program (GEAP), 149–50
history of, 141–52
Period 1: international financing, 144–47
Period 2: lobbying for reform, 147–48
Period 3: industry ups and downs, 149–52
and social learning mechanism, 156–57
and utility modifier mechanism, 153–56
Philippines, governance of
Bureau of Mines, 141
Department of Energy (DOE), 137, 149, 151
Department of Environment and Natural Resources, 135
Energy Regulatory Commission, 146
Environment Management Bureau, 135
Independent Power Producer Framework, 145–46
National Commission on Indigenous Peoples, 136, 137
Power Sector Assets & Liabilities Management Corporation, 146
Renewable Energy Coalition, 167
Renewable Energy Commission, 147–48, 157
Retail Competition and Open Access Model, 146
Philippines, laws/regulations of, 135–36, 142, 143, 145, 146
Renewable Energy Act (2008), 139, 148, 167
PLN. *See* Perusahaan Listrik Negara (PLN) (Indonesia's state-owned electricity utility)
policy advising
and effectiveness of clean energy regime complex, 162, 182
and geothermal development in Indonesia, 95, 109, 118, 122–25, **128**, 129
and geothermal development in Philippines, 153, 155, 156–57, **159**
geothermal policy recommendations, 185–88
impacts of, **39**, 164, 165–68, **173**, 175, 182, 184
and renewable energy policy adoption in Indonesia, **89**
policy windows, 13–14
political will, 177–78
and opportunity for change, 13–**14**, 127, 171–**72**
Prayitno, Irwan, 100, 126, 171
privatization of Philippine power sector, 146–47, **159**
PT Pertamina Geothermal, 104, 105
PT Sarana Multi Infrastruktur, 108
PT Supreme Energy, 105–6, 115–16, 163
Pusat Investasi Pemerintah (PIP), 106–7

Rantau Dedap geothermal project, Indonesia, 105–6, 163
regime complexes. *See also* clean energy regime complex
actors in, 25–26
complexity of, 25
defined, 25
regime complexes, effectiveness of, 11–14, 24–41. *See also* clean energy regime complex, effectiveness of
approaches to, 27, 176, 179, 180–81
defined, 28–29
and domestic political interests, 36–**38**, **39**, 179
further research opportunities, 180–82
mechanisms of, 29–36, 40–41, 180–81
and overcoming technology and policy lock-in, 38–40
overlapping institutions, 10–11, 24–26, 29, 44, 67–69, 185
policy implications, 182–83
regime complex literature, 11–14, 27–29
regime complex lock-in matrix, 171–**72**, 180
regimes, 10, 11, 28, 168. *See also* clean energy regime complex
regulatory barriers to geothermal development, 186–87
in Indonesia, **98**, 109–12
in Philippines, 133–36, **134**, 138–39
Renewable Energy Act (2008, Philippines), 139, 148, 167
Renewable Energy and Energy Efficiency Partnership (REEEP), 49–50
Renewable Energy Policy Network for the 21st Century (REN21), 50–51
rent-seeking, 110, 127, 170
defined, 39
resettlement process, 112–14
risk-sharing facilities, 108, 121, 124, 150, 186

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010

Said, Sudirman, 73
social learning mechanism
  defined, 13, 62
  and domestic blocking factors, **39**
  and effectiveness of clean energy regime complex, 161–62, 165–**68**, 176, 178, 184
  effects of, **30**, 33–**34**
  and geothermal development, 95, 96, 123–25, 129
  and geothermal development in Philippines, 148, 156–57
  and Indonesia's participation, 74–78, 80, 88, **89**–90
  and regulatory reform, 111–12
  and restructuring of Philippine power sector, 146
sociocultural barriers to geothermal development, 187–88
  in Indonesia, 98, 112–16, 129
  in Philippines, 133–38, **134**
solar power, 8, 81, **87**, **104**
South Africa, 58, 85
Spain, 55
Star Energy, 104
state-owned enterprises (SOEs), 65–**66**, 97. *See also* Pertamina; Perusahaan Listrik Negara (PLN)
Suharto regime, **71**, 100, 142, 171
Sumatra, Indonesia, 69, 115
Sustainable Development Goals, 54
Sustainable Energy for All (SE4All) initiative, 10, 35, 57, 80

tax credits, 186
technical capacity building
  and effectiveness of clean energy regime complex, 162, 168–69, 176, 184
  funding for, 162
  further research opportunities, 182
  and geothermal development, 129
  and geothermal development in Philippines, 155, 157
  in Indonesia, 78–81, 116–17, 125
technology and policy lock-in, 38–40
tendering, corruption in, 110–12, 127
Tiwi geothermal project, Philippines, 141
transnational governance, 11, 25–26, 35, 37
  and geothermal development in Philippines, 160
  partnering with intergovernmental organizations, 57
  rise of, 44, 49–53, 174

United Kingdom (UK), 49, 52
UN Climate Conference of Parties (COP)
  COP-7, 46–47
  COP-13 (2007, Bali, Indonesia), 1, 52, 74, 75
  COP-14 (2008, Poznan, Poland), 47, 75
  COP-19, 47
  COP-21 (2015, Paris, France), 44
United Nations Development Programme (UNDP), 87, 141
United Nations Environmental Programme (UNEP), 32, 49, 79–80
United Nations Framework Convention on Climate Change (UNFCCC), 43, 46–47, 56
  2021 report, 7
  Clean Development Mechanism (CDM), 35, 46, 103–5, 121, 124–25, 151–52, 163, 166–67
United States, and international climate agreements, 43, 45, 48, 53, 54–55
US Agency for International Development (USAID), 101, 142, 151
US–Indonesia Geothermal Development Initiative, 117
US Trade and Development Agency (USTDA), 101, 117
Unocal (multinational energy company), 142
utility modifier mechanism
  defined, 12–13
  and domestic blocking factors, **39**
  and effectiveness of clean energy regime complex, 161–62, 163–**65**, 176, 178
  effects of, **30**, **31**–33
  and geothermal development, 95, 121–23, 129, 153–56

Velasco, Geronimo, 143

Widodo, Joko (Jokowi), administration of, 61, 72, 83–84, 85, 93
wind power, 8, 81, **87**
workforce development, 99
Working Party on Renewable Energy (IEA), 45, 47
World Bank, 45–**46**
  and decentralization in Indonesia, 100
  Energy Sector Management Assistance Program (ESMAP), 42
  and geothermal development, 9, 94, 101–2, 107–8, 137, 146, 152
  and Policy Working Group of JETP Indonesia, 87
  resettlement programs, 112–14, 137–38
World Wildlife Fund (WWF), 49, 110, 116, 147–48

Yudhoyono, Susilo Bambang (SBY), 1, 73, 75–76, 172

Downloaded from https://www.cambridge.org/core. UNIVERSIDAD AUTONOMA METROPOLITANA, on 16 Nov 2026 at 03:33:51, subject to the Cambridge Core terms of use, available at https://www.cambridge.org/core/terms. https://doi.org/10.1017/9781009352604.010