

---

# Index

---

- Acclimatization, 128, 130, 143–4  
   in Cairo, 125, 132, 135–6  
   in Montreal and Toronto, 125, 137, 140  
   in Shanghai and Guangzhou, 124, 131  
 Active profile widths, 100, 103  
 Adaptations, farm-level, 37  
 Afforestation policies, 204  
 Afghanistan, *see* Indus River Basin  
 Agricultural trade, 28  
   balance, in Egypt, *see* Egypt  
   barriers, 206  
   liberalization, 43, 49, 206–7  
 Agricultural Water Productivity Index, 198  
 Air conditioning, 125, 135  
 Air pollution, 129, 143–4  
 Alexandria, vulnerability to sea-level rise, 106–7  
 Angola, 169, 171  
   *see also* Zambezi River Basin  
 Antarctica, 20, 93  
 Anticipatory adaptation, 88, 202–3  
   policies resulting in mitigation and adaptation, 203–4  
   no-regrets policies, 204–8  
   low-regrets policies, 208–9  
   responses to climate change impacts on human health, 143  
   responses to sea-level rise, 118  
 AOSIS (Alliance of Small Island States), 97  
 Argentina  
   vulnerability to sea-level rise, 105, 106, 107–9, 110, 113  
   *see also* Uruguay River Basin  
 Aswan Dam, *see* Nile River Basin  
 AVVA (aerial videotape-assisted vulnerability analysis), 96, 98–100  
  
 Bangladesh, vulnerability to sea-level rise, 92, 103, 104–5, 106, 114, 117, 119  
 Barotse Plain, *see* Zambezi River Basin  
 Batoka Gorge project, *see* Zambezi River Basin  
 Beach nourishment, 101, 103, 117  
*Berseem*, 186  
 Bioclimatic models, 147–8  
 Biome types, 149  
 Blackfly, 125, 140  
 BLS (Basic Linked System), 32–3, 39–42, 190, 191  
   *see also* Appendix 3 (Ch. 2)  
 Bombay, 114  
 Boreal forest, 146, 154–9  
 Botswana, 169, 171  
   *see also* Zambezi River Basin  
 Box and Wetz criterion, 127  
 Brazil, 36, 92  
   GCM weaknesses in, 25  
   *see also* Uruguay River Basin  
  
 Bruun Rule concept, 99  
 Building setbacks, 109, 118, 119–20  
 Burundi, *see* Nile River Basin  
  
 Cairo  
   acclimatization, 125, 132, 135–6  
   GCM results, 23  
   heat-related mortality, 125, 126–7, 132–7  
 Calcutta, 114  
 Calgary, 126, 137  
 Cambodia, *see* Mekong River Basin  
 Canada, 43, 44–5  
   heat-related mortality, 124, 125, 126, 137–40  
 CERES-Wheat, -Maize, -Rice, 33  
 China  
   acclimatization, 124, 131  
   heat-related mortality, 124, 126, 129–32  
   urban growth policies, 208–9  
   vulnerability to sea-level rise, 92, 104–5, 106, 114  
 Chobe Swamps, *see* Zambezi River Basin  
 Climate change scenarios, 21–3  
 CO<sub>2</sub> levels, 20, 33  
 CO<sub>2</sub> physiological effects on crops, 35–6  
 Coastal protection, *see* Protection, coastal  
 Consumer surplus, 193–7  
 Consumer-producer surplus, 193–7  
 Costa Rica (humid tropical forest case study), 161–9  
   anticipatory management responses to climate change, 169  
   deforestation, 161–2  
   effects of climate change on climatic sub-regions, 165–6  
   effects of climate change on forest management sectors, 162–3  
 Crop models, 33  
 Crop models, limitations of, 36  
 Crop yields  
   with arbitrary sensitivity tests, 43  
   without adaptation, 43–5  
   with adaptation, 45–6  
  
 Dakar, Senegal, 114  
 Dams, 114, 207–8  
 Deforestation policies, 204  
 Deltas  
   catchment management, 119  
   impacts of sea-level rise, 106  
   possible solutions to sea-level rise, 114–16  
 Demographic models, 148–9  
 Dengue fever, 144  
 Desert, 149  
 Developed countries, 19, 27, 47, 48, 49, 92  
   *see also* Box 2 (Ch. 2)  
 Developing countries, 1, 19–20, 27, 47, 48, 52, 92, 125, 128, 144, 204  
   *see also* Box 2 (Ch. 2)  
 Diseases, infections, *see* Vector-borne diseases  
 Dry forest, 149  
 Dryness index, 60  
 DSSEWM (Decision Support System for Environmental and Water Management), 60  
  
 EASM (Egyptian Agricultural Sector Model), 181, 191  
 EASM-CC, 191–2  
 Eco-climatic zones, 147  
   shifts due to climate change, 166–9  
 Edmonton, 126, 137  
 Egypt  
   acclimatization, 125, 132, 135–6  
   agriculture, impact of climate change, 190–1  
   agricultural sector, 185–7  
   agricultural trade balance, 191, 193–7  
   economy, 184–5  
   foreign food aid, 186, 194  
   GCM scenario results, 187–8  
   geography and climate, 181  
   heat-related mortality, 125, 126–7, 132–7  
   land reclamation, 186–7  
   long-range economic development, 187  
   population, 182–4  
   standard of living, 184  
   vulnerability to sea-level rise, 92, 104, 106, 189–90  
   water resources, impact of climate change, 83–7, 190  
   *see also* Nile River Basin  
 Elderly people, impacts of global warming, 124, 132  
 EPA, *see* U.S. EPA  
 Equatorial Plateau, *see* Nile River Basin  
 Erosion, 99, 104  
 Ethiopia, *see* Nile River Basin  
 Evapotranspiration models, 148  
  
*Feddan*, 185  
 Flooding, 114, 117  
 Food production and prices  
   reference scenario, 46  
   effects of climate change, 46–9  
 Food self-sufficiency, 193, 194, 197–8  
 Forest  
   deforestation/afforestation policies, 204  
   dry, wet (mesic), 149  
   gap models, 148–9  
   land uses (intensive, extensive, protection), 162  
   migration, 151

- Forest (*cont.*)  
 species acclimatization adaptation/  
 migration, 167
- Full trade liberalization, *see* Agricultural  
 trade liberalization
- Ganges–Brahmaputra Delta, 103, 106, 114,  
 115
- GCM (General Circulation Models), 21, 22  
 verification, 23–5
- Germany, 101
- Glaciers, 93
- Grassland, 149
- Greenhouse gases, 19, 21, 146, 201
- Greenland, 20
- Guangzhou  
 acclimatization, 124, 131  
 heat-related mortality, 124–5, 126, 130–2
- Halifax, 126
- Health, policies of, 207
- Heat-related mortality, 125  
 in Cairo, 125, 126–7, 132–7  
 in Montreal and Toronto, 124–5, 126,  
 137–40  
 in Shanghai and Guangzhou, 124–5, 126,  
 130–2  
 study procedure, 126–30
- High Aswan Dam, 86, 115, 119, 181, 188
- Holdridge Life Zone Classification, 147–8
- Hong Kong, vulnerability to sea-level rise,  
 106–7, 118
- Hydrological characteristics/sensitivities of  
 the case study river basins, 60–1
- Hydrological elasticity, 61
- IBMR (Indus Basin model), 76, 77
- IBSNAT (International Benchmark Sites  
 Network for Agrotechnology Transfer),  
 32, 33
- IIASA (International Institute for Applied  
 Systems Analysis), 32
- India, 28, 36  
 GCM weaknesses in, 24  
 vulnerability to sea-level rise, 92, 104, 105,  
 106  
*see also* Indus River Basin
- Indonesia, 31, 36  
 population relocation, 208
- Indus River Basin, 73–9  
 adaptations to climate change, 77–9  
 hydrological impacts of climate change,  
 75–6  
 physical and social setting, 74–5  
 water management impacts of climate  
 change, 76–7
- Infectious diseases, *see* Vector-borne diseases
- Inundation, 99, 104
- IPCC (Intergovernmental Panel on Climate  
 Change), 19, 20, 58, 93, 97, 117, 125–6
- Japan, 93
- Jonglei Canal Project, 87, 193
- Kapenta*, 82
- Kariba Reservoir, *see* Zambezi River Basin
- Kenya, *see* Nile River Basin
- Kharij*, 76
- Lake Nasser, 185  
*see also* Nile River Basin
- Lake Victoria, *see* Nile River Basin
- Land lost/at risk from sea-level rise, 98, 99,  
 104–5
- Land subsidence, 98, 103, 107
- Laos, *see* Mekong River Basin
- Lesotho, 169
- Life zones, *see* Eco-climatic zones
- MAB (Man and the Biosphere), 153
- Malaria, 125, 126, 140, 143–4
- Malawi, 169  
*see also* Zambezi River Basin
- Malaysia, 31  
 reclaimed lands, 208  
 vulnerability to sea-level rise, 92, 104, 105,  
 106
- Maldives, 97
- Mekong Committee, 68
- Mekong River Basin, 68–73  
 adaptations to climate change, 71–3  
 hydrological impacts of climate change,  
 69–70  
 physical and social setting, 68–9  
 water management impacts of climate  
 change, 70–1
- Mesic forest, 149
- Methane, 20
- Mexico, 45
- Mississippi Delta, 115, 119
- MITSIM (Massachusetts Institute of  
 Technology River Basin Simulation  
 Model), 59, 69–70, 80–1
- Montreal  
 acclimatization, 125, 137, 140  
 heat-related mortality, 125, 126, 137–40
- Mozambique, 169  
*see also* Zambezi River Basin
- Namibia, 169, 171  
*see also* Zambezi River Basin
- Netherlands, the, 93, 101, 117, 118, 120
- New Orleans, 117
- New York, 125, 130, 131, 140
- NIAID (National Institute of Allergy and  
 Infectious Diseases), 126, 140
- Niger Delta, 103, 105, 106
- Nigeria, vulnerability to sea-level rise, 103,  
 104, 105, 106, 107–9, 110, 113, 114
- NIH (National Institutes of Health), 126
- Nile Delta, 106, 115, 119, 181–2
- Nile River Basin, 83–7  
 adaptations to climate change, 86–7  
 hydrological impacts of climate change, 85  
 physical and social setting, 83–5  
 water management impacts of climate  
 change, 85–6
- Nile Waters Agreement, 86, 188, 190
- Nili*, 186
- Nitrous oxide, 20
- Offensive synoptic situations, 127, 128
- Onchocerciasis, 125, 126, 140, 143–4
- Orinoco Delta (Venezuela), 103, 106, 114
- Ottawa, 125, 126, 137–40
- Pakistan, 28, 43–5  
 GCM weaknesses, 24  
*see also* Indus River Basin
- Parana Delta (Argentina), 105
- Partial trade liberalization, *see* Agricultural  
 trade liberalization
- People at risk of hunger, 41–2, 204  
 effects of climate change, 46–52
- Polderization, 116
- Population, displaced/at risk due to sea-level  
 rise, 98, 106
- Population, reduced growth policies, 203–4
- Priestly–Taylor evapotranspiration model,  
 148
- Producer surplus, 193–7
- Protection, coastal  
 costs of, 109–11  
 options (none, total, important areas), 100
- Punjab, *see* Indus River Basin
- Quebec, 126
- Reactive adaptation policies, 88, 202, 206
- Resilience, 88, 203
- Rio de Janeiro, 23
- River blindness, *see* Onchocerciasis
- Robustness, 88, 203
- Runoff coefficient, 60
- Rwanda, *see* Nile River Basin
- SADCC (Southern African Development  
 Cooperative Council), 169
- Saint John, *see* St. John
- Saltwater intrusion, 113–14
- Schistosomiasis, 144
- Seawalls, 101–3
- Sediment management (deposition), 114–15
- Senegal, vulnerability to sea-level rise, 104,  
 105, 109, 110, 113, 114, 118
- Serengeti reserve, 171
- Shanghai  
 acclimatization, 124, 131  
 heat-related mortality, 124–5, 126, 130–2  
 vulnerability to sea-level rise, 98, 106–7,  
 114, 117
- Sleeping sickness, *see* Trypanosomiasis
- South Africa, 171
- SOYGRO, 33
- St. John, 126
- Sudan, *see* Nile River Basin
- Sudd swamps, *see* Nile River Basin
- Sulfur dioxide, 21
- Sunderbans, 92, 105
- Swaziland, 169
- Synoptic ‘air mass’ procedure, 127–8
- Tanzania, 169  
*see also* Zambezi River Basin and Nile  
 River Basin
- Temporal synoptic index (TSI), 128
- Thailand, 31  
*see also* Mekong River Basin
- Threshold temperature, 127  
 in Cairo, 132, 135  
 in Montreal and Toronto, 137  
 in Shanghai and Guangzhou, 130, 131
- Tianjin, vulnerability to sea-level rise, 106–7
- Tibet, *see* Indus River Basin
- Toronto  
 acclimatization, 125, 137, 140  
 heat-related mortality, 125, 126, 137–40
- Tropical (rain) forest, 146, 159
- Trypanosomiasis, 126, 144
- TSI, *see* Temporal synoptic index
- Tundra, 149
- Uganda, *see* Nile River Basin
- UNEP (United Nations Environment  
 Programme), 126
- United Kingdom, 101
- United States, 31, 36, 45, 93, 101, 118
- Uruguay  
 vulnerability to sea-level rise, 103, 104–5,  
 109, 110–11, 113, 118  
*see also* Uruguay River Basin
- Uruguay River Basin, 62–8  
 adaptations to climate change, 68  
 dams, 63  
 flood impacts of climate change, 67–8

- hydrological impacts of climate change, 63–5
- hydropower impacts of climate change, 66–7
- physical and social setting, 62–3
- U.S. EPA, 1, 2, 19, 126, 135
- USSR (former), 44, 45
- Vancouver, 126
- Vector-borne diseases, 125, 126, 140, 143–4
- Venezuela, vulnerability to sea-level rise, 103, 106, 109, 110, 113, 118
- Venice, Italy, 118
- Vernalization, 45
- Victoria Falls, *see* Zambezi River Basin
- Vietnam, 36
- see also* Mekong River Basin
- Vulnerability to hunger, *see* Box 1 (Ch. 2)
- Water resources, policies of, 207–8
- Wet (mesic) forest, 149
- Wetlands (coastal), 99, 100
- loss, 105–6, 116–17
- migration, 103, 106, 117, 120
- preservation, 117, 120
- Winnipeg, 126, 137
- Yellow fever, 144
- Yellow River Delta, 114–15
- Zaire, *see* Nile River Basin
- Zambezi River Authority (ZRA), 82
- Zambezi River Basin, 79–83
- adaptations to climate change, 82–3
- hydrological impacts of climate change, 80
- hydropower impacts of climate change, 81–2
- impacts of climate change on the Kariba Fishery, 82
- physical and social setting, 79–80
- Zambia, 169, 171
- see also* Zambezi River Basin
- Zimbabwe, dry tropical forest case study, 169–76
- climate and vegetation, 172
- fuelwood impacts of climate change, 172–4
- policy responses to climate change, 175–6
- protected areas impacts of climate change, 174–5
- vegetation impacts of climate change, 175
- see also* Zambezi River Basin *and* Box 1 (Ch. 2)