

## INDEX

- 3D printing of food, 274
- Advanced pest control, 260
- Aeroponics, 269
- Africa
- birth rates, 159
  - conventional farming no solution, 163
  - fertility rates, 159
  - food importation, 163
  - food insecurity, 160
  - refugees
    - escape to Europe, 161
    - ongoing effects, 162
  - undernourishment, 161
  - United Nations population projections to 2100, 159
- African Union
- Great Green Wall of Africa, 214
- Age of Food, 251–52, 277
- Age of Waste, 226
- Agrarian colonialism, 10
- Agribusiness
- doctrine, 115
  - genetic diversity, erosion of, 105
- Agriculture
- chemicals, role in, 93
  - financialisation of
    - core issue, 114
    - process, 114
  - footprint, 87
  - greenhouse gas emissions, 90
  - pesticides, use in, 95
  - R&D investment, 218
  - soak up atmospheric carbon dioxide (CO<sub>2</sub>), 91
  - splitting into three mutually supporting streams, 259.
    - See also* Global food supply
- Agritecture, 268
- growth in, 238
  - inspiration for, 237
- Agroecology, 258
- core elements, 258
- Al Qaeda, 132
- Al-Assad, Bashar, 126
- Alexander, Stephanie, 250
- Algae
- farming, 264
  - renewable solar fuel, production of, 265
- Al-Jundi, Omar, 238
- Amazon rainforest
- deforestation, 148
- American Association for the Advancement of Science, 272
- American Geophysical Union
- 2050 groundwater forecast, 68
- Amu Darya river, 149
- Andes
- glacial ice, 146
  - lakes and inland rivers, 146
- Anthropocene, 90
- Antonine Plague, 7
- Aquaculture
- ‘pro-poor’, 266
  - deepwater, 266
  - efficiency of, 266
  - growth of, 263
  - low end food supply, 259
  - sustainability of, 266

- Aquaculture (cont.)  
 World Resources Institute,  
 projected growth  
 1950–2050, 263
- Aquaponics, 235, 268
- Aquifers  
 Arabian system, 69  
 High Plains (US), 69, 143  
 Indo-Gangetic basin, 69  
 North China plain, 69  
 Northern Saharan, 69  
 Ogallala (US), 69, 144  
 Pacific Northwest, 143
- Arab Spring, 125, 132
- Arabia Eudaimon, 131
- Arabian system aquifers, 69
- Arable land loss  
 UNCCD statistics, 75
- Aral Sea, 67, 149
- Artificial intelligence, 175, 182,  
 196–97, 210, 260
- Artificial photosynthesis, 231
- Assyrian Empire, 127
- Asymmetric warfare, 212
- Atmospheric carbon dioxide (CO<sub>2</sub>),  
 91  
 soaking up, 91
- Autism spectrum disorder (ASD),  
 96
- Backe, Herbert, 54
- Bacque, James, 58
- Barbut, Monique, 129, 213–14
- Bare branches, 16
- Battle of Kadesh, 127
- Battle of the Allia, 5
- Batwa, 136
- Beaduheard, 9
- Beck, Dr Melinda, 192
- Bengal famine, 57
- Berdegú, Julio, 146
- Bezos, Jeff, 238
- Bhavanth, Yadav, 238
- Bioculture, 271  
 advantages of, 274  
 consumer acceptance, 273  
 products produced, 272
- Biodynamic farming, 122
- Biological farming, 262
- Biological weapons. *See* Weapons of  
 mass destruction
- Biosolids, 229
- Biotechnology  
 bacteria editing, 261
- BirdLife International  
 Trillion Trees Partnership, 247
- Birth rates  
 Africa, 159  
 China, 154  
 decrease in, 193
- Biswas, Professor Asit, 164
- Bittman, Mark, 251, 257
- Black Death, 7
- Blockchain, 196, 260, 270
- Bloody Sunday (1905), 32
- Blue Smart Farms, 235
- Boeri, Stephano, 236, 243
- Boko Haram, 73
- Bolivia  
 food insecurity and water  
 scarcity, 146
- Bonn Challenge, 247
- Borlaug, Dr Norman, 260
- Bosco Verticale*, 236
- Boston Medical Centre, 239
- Bostrom, Professor Nick, 196
- Boutros-Ghali, Boutros, 71
- Boxer Rebellion, 12
- Brautigam, Professor Deborah, 15
- Brazil  
 water stress, 148
- Breughel, Pieter, 26
- Broadacre single-crop agriculture, 7,  
 86
- Brooklyn Grange, 239
- Brown, Lester R, 154

- Brownlie, Annette, 216  
 Bulletin of the Atomic Scientists,  
     182  
 C4 Rice Project, 260  
 California Academy of Sciences, 255  
 Cambodia  
     Khmer Rouge  
         collapse of rice harvest, 40  
         Killing Fields, 40  
         ongoing impact of Khmer Rouge  
             policies, 41  
         re-importation of rice seed, 42  
 Camel Economy, 156  
 Campbell, Kurt, 184  
 Cannibalism  
     de-kulakisation, 38  
 Caputo, Silvio, 234, 243  
 Carbon  
     gross anthropogenic releases,  
         189  
 Carbon dioxide (CO<sub>2</sub>), 91  
 Caribbean  
     climate change, and, 146  
 Carson, Rachel, 95  
 Carter, Jimmy, 205  
 Carthage, 5  
     crops, 5  
     razing of city by Romans, 6  
 Catastrophic food conflicts, 20  
 Cato the Elder, 5  
 Cellular agriculture. *See* Bioculture  
 Central America  
     food insecurity, and, 146  
 Central Asia  
     food insecurity, 149  
     water stress, 149–50  
 Centre for Strategic and International  
     Studies (US), 184  
 Centres for Disease Control (CDC)  
     (US)  
     2000 ASD rates report, 96  
 Charas, Lars, 251  
 Chatham House  
     world grain supplies study, 78  
 Cheap food, 117  
 Chefurka, Paul, 162  
 Chemical dyes  
     child behavioural disorders, and,  
         97  
 Chemical weapons  
     Syrian civil war, 126  
 Chikungunya virus, 191  
 Child behavioural disorders  
     food additives and chemical dyes,  
         97  
 Chile  
     food insecurity and water  
         scarcity, 146  
 China  
     American farming model, use of,  
         157  
     birth rate, 154  
     Camel Economy, 156  
     Civil War famine, 20  
     climate change, creating, 156  
     drought, 157  
     food importation, 157  
     gender imbalance, 16  
     groundwater scarcity, 155  
     One Child Policy, abandonment,  
         154  
     reduced military spending, 219  
     South–North Water Transfer  
         Project, 155  
     water footprint, 156  
     water scarcity, 156  
     water security, 155  
 Cholera, 134, 191  
 Churchill, Winston, 46  
 Cincinnatus, Lucius Quinatus, 215  
 Clausewitz, Carl von, 51  
 Climate change, 8  
     China, creating, 156  
     denial, 39  
     effects of, 67

- Climate change (cont.)  
 feedback loop, as, 184  
 food quality, decline in, 79  
 future crop losses, 78  
 half a degree global warming,  
 and, 79  
 impact of, 78  
   control measures, 80  
   food insecurity, 80–82  
 impacts of  
   IPCC report 2018, 82  
 Late Antique Little Ice Age, 8  
 Latin America and Caribbean,  
 146  
 methane gas, impact of, 186  
   explosions and bubbling, 187  
   volume of deposits, 186  
 Middle East and North Africa  
 [MENA], 150  
 primary drivers of, 87  
 South Asia, 165  
 superheated condition of Earth,  
 185  
 Syria, and, 128  
 threat multiplier, as, 184  
 two degrees of global warming,  
 185
- Climate refugees, 171  
 Africa, 162  
 India, 167  
 Venezuela, 148  
 World Bank study, 161
- Climate-induced drought, 71  
 Climate-induced flooding, 71  
 Climate-smart agriculture (CSA), 121
- Coal  
 climate change, primary driver,  
 87
- Coats, Daniel, 81  
 Cole, Dr Megan, 161  
 Collingham, Lizzie, 57  
 Conference of the Parties (COP) 13,  
 91
- Confined animal feeding operations  
 (CAFOs), 110
- Conflict  
 climate, 78, 185, 204  
 cost of, 203  
 drivers of, 62, 77–78, 85, 203,  
 205, 213  
 ecosystem failure and, 177,  
 208–9  
 Environmental Justice Atlas 2018  
 report, 203  
 factors in food conflict, 60  
 food and, 1, 20–21, 26, 50, 59, 82,  
 196, 204–7, 211  
 food insecurity, relationship  
 with, 205–6  
 future, 73, 141, 211  
 genesis of, xi, 3  
 hotspots, 125  
 land degradation, and, 129  
 migration and, 72  
 nuclear, 20, 182, 190  
 number of, 203  
 over food, land and water, 3  
 prevention, 215–22  
 religious, 59  
 risk of, 66, 71, 124, 141, 200  
 threat to food, 84  
 worldwide, 8, 20, 26
- Conflicts  
 Africa, 159  
 future, 141  
 internal, 148, 150, 203  
 recent, 125–41
- Congo  
 civil war, impact of, 161
- Conquest, Robert, 39
- Controlled environment agriculture  
 (CEA), 269
- Cornish, Dr Paul, 45–46
- Crawford, Professor John, 75
- Crimean-Congo haemorrhagic fever,  
 191

- Crosscutting, 200
- Cultured meat  
   advantages and disadvantages, 272  
   impact on livestock, 273  
   ingredients for, 271
- Cyprian Plague, 7
- da Silva, José Graziano, 72, 84, 90, 92, 258
- Danelaw, 11
- Darfur. *See* South Sudan  
   drought, 140
- Daudin, Pascal, 28
- DDT  
   ban on, 95
- de Soysa, Dr Indra, 205–6
- de Waal, Dr Alex, 19, 134
- Deepwater aquaculture, 266
- Deforestation  
   Amazon rainforest, 148  
   Middle East and North Africa [MENA], 152
- Deng Xiaoping, 13
- Denning, Professor Glenn, 41
- Department of Defense (US)  
   defence landscape review (2014), 81
- Depression, 98
- Desert farms, 270
- Despommier, Professor Dickson, 238
- DiCaprio, Leonardo, 198
- Dichlorodiphenyltrichloroethane.  
   *See* DDT
- Doomsday Clock, 182
- Drones, 196, 210
- Droughts  
   China, 157  
   climate-induced, 71  
   Darfur, and, 140  
   frequency and severity of, 70  
   Horn of Africa, and, 137
- Syria, 128  
   world food production, impact on, 84
- Duma, 32
- Durer, Albrecht, 1
- Dustbowl, 79, 245
- Dyer, Gwynne, 211
- Ebola virus, 191
- Eco-agriculture, 120  
   technology use, 260
- Eco-farming, 120
- Ecological agriculture. *See* Eco-farming
- Ecological collapse. *See* Extinction
- Economic migrants, 24, 171
- Ehrlich, Professor Paul, 89, 254
- Eisenhower, Dwight D, 213
- El Salvador  
   food insecurity and water scarcity, 147
- Elmi, Professor Afyare, 137
- Endocrine-disrupting chemicals (EDCs), 99
- Engelke, Dr Peter, 130
- Entomoculture, 269
- Environmental Justice Atlas  
   2018 world conflict report, 203
- Environmental Working Group (EWG) (US)  
   industrial chemicals in blood of new-born babies, 97
- Epic of Gilgamesh*, 126
- Etruscans, 4
- European Community  
   Global Report on Food Crises 2018, 83
- European Union  
   reduced military spending, 219
- Eutrophia, 227
- E-waste  
   gross anthropogenic releases, 189

- Existential risks  
 crosscutting, 200  
 deeply interwoven, 175  
 pandemics. *See* Pandemics  
 population, 193
- Extinction  
 and ecological collapse, 176  
 caused by agriculture, 102  
 caused by climate, 82  
 caused by land degradation, 76  
 food sector, and, 190  
 heat spike, and, 186  
 human, 198–99  
 meat eating and, 109  
 nitrogen/phosphorus segments,  
 228  
 part of life, 176  
 rates of, 104  
 Sixth Extinction of Life, 103, 175,  
 177, 199–200  
 solution to, 178
- Falvey, Professor Lindsay, 245–46,  
 262
- Family farming  
 decline of, 244
- Famine Genocide. *See* *Holodomor*
- Famines  
 Bengal, 57  
 Chinese Civil War, 20  
 Gilded Age, 19  
 Great War, 19  
 Irish, 245  
 recent history, list, 20  
 Russian Civil War, 19
- Fan, Dr Shenggen, 256
- FARC, 148
- Farm robotics, 260
- Fatbergs, 229
- Feedback loop, 184
- Ferdinand II, 26
- Fergana Valley, 150
- Fertigation. *See* Hydroponics
- Fertile Crescent, 126, 128
- Fertility rates  
 Africa, 159  
 decreasing male sperm counts,  
 97  
 worldwide decrease, 193
- Final Solution, 35
- Financialisation of agriculture  
 core issue, 114  
 process, 114
- Fish  
 algae diet, 264  
 loss of wild fisheries, 178  
 supplied from farms, 263  
 turning feed into meat, 263  
 wastage, 117
- Fish wars, 178
- Fish waste, 178, 235
- Floating farms, 269
- Flooding  
 climate-induced, 71  
 Gwion Gwion era, 3  
 sea level rises, and, 70  
 world food production, impact  
 on, 84
- Foley, Jon, 255
- Food additives, 94  
 child behavioural disorders, and,  
 97
- Food conflicts, 21, 125–41  
 Rwanda. *See* Rwanda  
 South Sudan. *See* South Sudan  
 Syria. *See* Syria  
 Yemen. *See* Yemen
- Food insecurity  
 Central America, 146  
 Central Asia, 149  
 climate change, impact of, 80–82  
 conflict, relationship with, 60,  
 205–6  
 French Revolution, and, 30  
 Latin America, 146  
 pandemic diseases, and, 191

- refugees, and, 173, 184
- Sub-Saharan Africa, 160
- weapons of mass destruction, and, 184
- Yemen, 132
- Food levy, 118, 248
- Food or war
  - China's choice, 158
  - humanity's choice, 24
  - initiative, 219
  - scenario, 176
- Food Plant Solutions* project, 275, 277
- Food security, 73, 79, 82, 89, 104–5, 113, 141, 144, 147, 170, 172, 181, 190, 207, 233, 270
- Food sovereignty, 258
- Food supply chain
  - farmers, impact of, 113
- Food Tank, 254
- Food wars
  - five main categories, 59
- Food, Drug, and Cosmetic Act (US), 94
- Forced mass starvation, 19
- Fossil fuels
  - gross anthropogenic releases, 189
- Four Horsemen of the Apocalypse, 1
- Fourth Geneva Convention (1949), 60
- Fracking, 69
  - protests against, 144
- French Revolution, 29–31
- French, Dr Bruce, 275–77
- French, Professor Howard, 14
- Freshwater scarcity, 64
  - key regions, 69
- Future Meat Technologies, 272
- Gates, Bill, 196
- Gauls, 4
- Gene editing, 260
- Genetic diversity
  - erosion of, 105
- Genetically modified crops
  - dishonesty of debate over, 106
  - safety concerns, 105
- Gilded Age famine, 19
- Gilgamesh (King of Uruk), 126
- Glacial ice
  - Andes, 146
  - melting, 69
  - Tien Shan mountain range, 149
- Gleditsch, Professor Nils Petter, 205–6
- Gleick, Professor Peter, 71
- Global arms budget, 210
  - spending by country, 210
- Global Atlas of Excreta*, 229
- Global Campaign on Military Spending (GCMS), 216, 218
- Global Financial Crisis (2008), 114
- Global food supply, 7, 64, 66, 93, 124, 189, 218, 269
- Global Footprint Network, 179
- Global poisoning
  - DDT, and, 95
  - global food chain, impact on, 188
- Global tourism
  - World Bank statistics, 171
- Goodall, Dr Jane, 93
- Gorsevski, Dr Virginia, 215
- Grace, Dr Delia, 110
- Grain trade
  - Pacte de Famine*, and, 29
  - Romans, and, 6
- Grandjean, Professor Philippe, 96
- Great Famine
  - USSR
    - motivation behind, 39
    - Stalin, role in, 38
- Great Green Wall of Africa, 214
- Great Leap Forward
  - China, 12, 20
  - Venezuela, 147
- Great Salt Lake, 67

- Great War famine, 19
- Green cities
- agritecture
    - growth in, 238
    - inspiration for, 237
  - aquaponics, 235
  - Bosco Verticale*, 236
  - guerrilla gardeners, 236
  - hydroponics, 235
  - Parisculteurs*, 236
  - qualities of, 233
  - urban farms
    - advantages, 240
    - potential of, 234
    - soil and water, savings from, 235
    - supermarkets, impact on, 240
    - water recycling, 241
- Greenhouse gas emission
- diet, and, 250
- Greenhouse gas emissions
- agriculture, source of, 90
  - annual amount, 91
  - main types, 91
- Gross anthropogenic chemical release, 189
- Groundwater scarcity
- American Geophysical Union forcecast, 68
  - China, 155
  - conflict between farmers and frackers, 69
  - human consumption, 68
  - India, 164
  - key regions affected, 69
  - United States, 143
    - cities at risk, 144
    - dependence on, 143
    - fracking protests, 144
    - temperature impacts, 144
- Guatemala
- food insecurity and water scarcity, 147
- Guerrilla gardeners, 236
- Gustavus Adolphus, 27
- Guterres, Antonio, 71
- Gwion Gwion artwork, 2–3
- Haber–Bosch chemical process, 226
- Hadi, Abdrabbuh Mansur, 132
- Haider, Dave, 235
- Half Earth plan, 243
- Hannibal, 5
- Harte, John, 89, 254, 290, 314
- Hartley, Major General John, 82
- Harvard School of Public Health (US)
  - autism rates study, 97
- Hawking, Professor Stephen, 196
- Hayward, John, 10
- Hazardous waste
  - gross anthropogenic releases, 189
- Heart disease
  - processed foods, and, 98
- Heat spike, 186
- Hendra virus, 191
- Herz-Picciotto, Professor Irva, 95
- Hess, Rudolph, 52
- Hezbollah, 126
- High Plains (US) aquifers, 69, 143
- Hindu Kush mountain range, 149
- Hitler, Adolf, 51–53
- HK Farm, 239
- Holland
  - Hongerwinter, 57
- Holmgren, David, 241, 243
- Holocene, 89–90
- Holodomor*, 20, 39
- HomeFarm, 238
- Homo homini lupus*, 10
- Honduras
  - food insecurity and water scarcity, 147
- Hongerwinter, 57
- Horn of Africa
  - agricultural system, collapse, 137
  - civil conflicts, 137
  - maritime piracy, 138



- Houthis, 132  
 Hubei  
   loss of lakes, 67  
 HumanHabitat, 239  
 Hunger in a time of plenty, 17  
 Hunger Map of Europe, 50  
 Hutu, 135  
 Hydroponics, 235, 268
- IBPRES study, 74  
 Ice Age, 2–3  
 Illing, Sean, 211  
 Independent and Peaceful Australia  
 Network, 216
- India  
   groundwater scarcity, 164  
   military spending, 167  
   partition. *See* Partition  
   population growth, 17  
   reduced military spending, 219  
   water scarcity, 137  
   water stress, 165
- Indo-Gangetic basin aquifers, 69  
 Indo-Gangetic Plain, 164  
 Indus Waters Treaty, 67, 167  
 Industrial chemicals  
   gross anthropogenic releases,  
   189
- Infectious diseases  
   pandemic, 191
- Influenza, 191  
   obesity, and, 192
- Intergovernmental Panel on Climate  
 Change (IPCC)  
   impacts report 2018, 82
- Internally displaced people. *See*  
 Refugees
- International Food Policy Research  
 Centre, 256  
 International Physicians for the  
 Prevention of Nuclear War  
 (IPPNW)  
   nuclear winter report, 169
- International Red Cross, 28
- International Rice Research  
 Institute (IRRI)  
   Cambodian rice seed storage, 42
- International Year of Soils (2015), 73  
 Iraqi Kurds, 126  
 Irish Famine, 245  
 ISIS, 212  
 Islamic State of Iraq and the Levant  
 (ISIL), 126
- Jackson, Wes, 119  
 Jacobins, 30  
 Jinjaweed, 138
- Kaganovich, Lazar, 37, 39  
 Kazakhstan  
   food insecurity, 149
- Kelley, Dr Colin, 128  
 Kerry, John, 80  
 Keynes, John Maynard, 49
- Khmer Rouge  
   collapse of rice harvest, 40  
   impacts after fall of regime, 41  
   Killing Fields, 40
- Khrushchev, Nikita, 39  
 Killer robots, 175, 196, 210  
 Killing, 20, 34–40, 115, 135, 210, 228  
 Ki-Moon, Ban, 71, 140  
 King Brennus, 4  
 King George V, 45  
 King Louis XVI, 30  
 King of Uruk (Gilgamesh), 126  
 King of Wessex, 9  
 Komites, Penelope, 236  
 Kravik, Mikal, 127
- Kulaks  
   slaughter and dispossession of,  
   35  
   cannibalism, and, 38  
   human cost, 38  
   indiscriminate nature, 37  
   process, 36
- Kyrgyzstan  
   food insecurity, 149

- La Guerre des Farines (Flour Wars), 30
- Lake Chad, 67
- Lake Poopo, 67, 147
- Lake Tai, 67
- Lake Tanganyika, 67
- Lake Urmia, 67
- LakeNet, 67
- Lakes and inland seas, 67
- Andes, 146
  - Aral Sea, 67
  - climate change, impact of, 67
  - drying up, 67
  - industry damage, 68
  - Lake Chad, 67
- Laki volcanic fissure eruption, 30
- Lamarckian theory, 39
- Land degradation
- conflict multiplier, as, 130
  - conflict, and, 213
  - instability, and, 129
- Landrigan, Professor Philip, 96
- Lappé, Anne, 251
- Largescale involuntary migration, 72
- Lassa fever, 191
- Late Antique Little Ice Age, 8
- Latifundia, 7
- Latin America
- climate change, and, 146
  - food insecurity, and, 146
  - obesity, 146
  - para-military forces, 148
  - The Economic Case For Landscape Restoration In Latin America*, 247
- Latins, 4
- Leahy, Stephen, 74
- Lebensraum*, 10
- National Socialism, and, 53
  - origins of, 51
- Leggett, Jeremy, 196
- Lenin, Vladimir, 35
- LivingGreen, 239
- Local Roots, 235
- Locavores, 270
- Lufa Farms, 238
- Lysenko, Trofim, 39
- Macarthur, General Douglas, 58
- Manchukuo, 55
- Manchuria
- migration programme, 55
- Mann, Charles, 260
- Mao Zedong, 13, 214
- Great Leap Forward, 12
- Marburg virus, 191
- Marco Polo Bridge Incident, 55
- Maria Theresa, 30
- Marie Antoinette, 30
- Marx, Karl, 31
- Mass delusion, 198
- security of global food system, 199
- Mass migration, 172
- Mata Atlantica forest, 148, 247
- Mattick, Carolyn, 272
- McMichael, Tony, 8
- Medical ecology, 238
- Megacity collapse
- lack of preparation for, 195
  - variables affecting, 195
- Mein Kampf*, 52
- Mendelian genetics, 39
- Meningitis, 191
- MERS-CoV, 191
- Messerschmidt, Dr Manfred, 53
- Methane (CH<sub>4</sub>), 91, 186
- explosion craters, 187
  - frozen, 186
- Mexico
- food insecurity and climate change, 146
  - water scarcity, 146
- Michigan Urban Farming Initiative, 239

- Micronutrients  
   human sewage, 232  
   loss of, 192  
   recycling, 277  
   sewage sludge, contained in, 229
- Middle East and North Africa  
   [MENA]  
   climate change, 150  
   crisis dimensions, 152  
   overseas farm buying  
     programmes, 152  
   projected climate change, 151  
   projected population growth, 151  
   water reserves, 152
- Migration  
   economic migrants, 24, 171  
   enforced climate migration  
     statistics, 167  
   largescale involuntary, 72  
   mass migration, 172  
   Syria, 128
- Military-industrial complex, 213
- Miljogartniet, 235
- Millions to Manchuria*, 55
- Mimica, Neven, 84
- Ming Dynasty, 12, 158
- Mining waste  
   gross anthropogenic releases,  
     189
- Mobile apps, 252
- Moeller, Nina, 88, 258
- Mollison, Bill, 122, 241
- Molotov, Vyacheslav, 37
- Monash, General John, 43
- Monbiot, George, 246
- Monkeypox, 191
- Monocropping, 110
- Moon, Dr Twila, 70
- Moonshots  
   bacteria editing, 261  
   C4 Rice Project, 260  
   suberin, 260
- Morisetti, Rear Admiral Neil, 80
- Moss, Daniel, 257
- Mughals, 17
- Mukden Incident, 55
- Mundy, Emeritus Professor Martha,  
   133
- Murase, Dr Makoto, 241
- Musk, Elon, 196
- Naidoo, Indira, 237
- Nanmochloropsis*, 265
- Nanotechnology, 260  
   food production, 261
- Naryn river, 149
- National Aeronautics and Space  
   Administration (NASA)  
   glacier loss warning, 70
- National Defense Strategy (US)  
   climate references removed, 81
- National Health Statistics Report  
   2013 ASD diagnosis rates, 96
- National Institutes for Health (US)  
   1983 food contaminants report,  
     94
- National Socialism  
   *Lebensraum*, and, 53
- National Socialism philosophy, 53
- Nesbitt, Harry, 41
- New agriculture. *See* Eco-agriculture
- Niacin (vitamin B3), 23
- Nierenberg, Danielle, 254
- Nimitz, Admiral Chester W., 58
- Nipah, 191
- Nitrogen  
   gross anthropogenic releases, 189  
   human production, 228  
   yearly release of, 102
- Nitrous oxide (N<sub>2</sub>O), 91
- Noncommunicable diseases (NCDs),  
   188
- North Atlantic Treaty Organization  
   (NATO)  
   climate change as threat  
     multiplier, 81

- North China plain aquifers, 69  
 Northern Saharan aquifers, 69  
 Nuclear weapons. *See* Weapons of mass destruction  
 Nutrients  
   recycling  
     Age of Waste, and, 226  
     eutrophication, 227  
     extinction and nitrogen/phosphorus segments, 228  
     historically, 226  
 O'Neill, Associate Professor Daniel, 255  
 Obesity  
   influenza, and, 192  
   Latin America, 146  
   processed foods, and, 98  
   World Health Organisation (WHO) 2017 statistics, 98  
 Obesogens, 99  
 Ocean dead zones, 101, 178, 228  
 Odysseus, 226  
 Ogallala (US) aquifer, 69, 144  
 Oliver, Jamie, 251  
 One-child policy, 16  
 Online markets, 270  
 Operation Barbarossa, 54  
 Operation Starvation, 58  
 Organic farming, 121  
 Oslo Peace Research Institute (PRIO), 77  
   future conflict ranking, 167  
*Our Nutrient World* report, 229  
 Overcropping, 137  
 Overgrazing, 110, 137, 178  
 Oxfam, 181  
 Pacific Institute, 71  
 Pacific Northwest aquifers, 143  
*Pacte de Famine*, 30  
 Pakistan  
   military spending, 167  
   reduced military spending, 219  
   water stress, 166  
 Palaeocene–Eocene Thermal Maximum (PETM), 186  
 Pamir mountain range, 149  
 Pandemics  
   food insecurity, and, 191  
   infectious diseases, 191  
   Plague of Justinian, 8  
   population growth, and, 191  
 Paris Climate Accord, 199  
 Paris Commune (1871), 31  
*Parisculteurs*, 236  
 Partition  
   deaths during, 59  
   geographical separation, 59  
   reason for, 58  
 Payne, Dr Rodger, 207  
 Peace of Westphalia, 27  
 Peace through food defence strategy, 219  
   advantage of, 221  
   allocation of funds, 221  
 Peak land, 77  
 Peak people, 190  
 Permaculture, 122, 241  
   urban. *See* Urban permaculture  
 Perry, Captain Jim, 47  
 Peru  
   food insecurity and water scarcity, 146  
 Pesticides  
   agriculture, use in, 95  
   gross anthropogenic releases, 189  
 Phoenicians, 5  
 Phosphorus  
   future supplies, 229  
   gross anthropogenic releases, 189  
   human production, 228  
   yearly release of, 102  
 Photosynthesis, 231

- Phytomining, 232  
 Pimbert, Professor Michel, 88, 258  
 Plague, 191  
 Plague of Justinian, 8  
 Plagues  
   Antonine, 7  
   Cyprian, 7  
   effects of, 7  
   Justinian, 8  
 Plantagon, 238  
 Plastic  
   gross anthropogenic releases,  
     189  
 Plenty, 238  
 Ploughshares  
   nuclear arsenal distribution, 181  
 Po Valley, 4  
 Pol Pot, 40, 42  
 Pollan, Michael, 107  
 Polyface Farms, 119  
 Pope Francis, 198  
 Pope Urban VIII, 28  
 Population  
   birth rates, decrease in, 193  
   growth  
     driven by rich countries, 194  
     eightfold increase since 19<sup>th</sup>  
     century, 193  
     India, 17  
     Middle East and North Africa  
     [MENA], 151  
     pandemics, and, 191  
     South Asia, 164  
   megacity collapse. *See* Megacity  
     collapse  
   peak people, 190  
 Post, Professor Mark, 271–72  
 Prinzessinnengärten, 239  
 Profound social instability, 172  
 Protected agriculture. *See* Controlled  
   environment agriculture  
   (CEA)  
 Ptolemy, 131  
 Punic Wars, 5  
 Putin, Vladimir, 212  
 Qobil, Rustam, 149  
 Quantum computers, 197  
 Queen Mary, 45  
 Queen of Sheba, 131  
 Querishi, Dr Waseem, 66  
 Queste, Dr Bastian, 102  
 R&D investment, 218  
 Radd, Sue, 251  
 Ramses II, 127  
 Ratner, Dr Blake, 214  
 Ratzel, Friedrich, 51  
 Rees, Emeritus Professor Martin, 196  
 Refugees  
   climate  
     Africa, 162  
     India, 167  
     Venezuela, 148  
     World Bank study, 161  
   drivers for, 171  
   food insecurity, and, 173  
   worldwide increase in 21<sup>st</sup>  
   century, 170  
 Regenerative farming. *See* Eco-  
   farming  
 Reign of Terror, 30  
 Remote sensing, 260  
 Resource scarcity  
   consumption  
     blind spot on, 181  
     impact on, 180  
   food production, splitting into  
     three mutually supporting  
     streams, 259  
   increasing use of resources, 179  
   individual use during lifetime, 179  
   water. *See* Water scarcity  
 Riboflavin (vitamin B2), 23  
 Rift Valley fever, 191  
 Risk solving. *See* Existential risks

- Robock, Distinguished Professor  
 Alan, 168
- Rockstrom, Professor Johan, 227
- Rodale Institute, 120
- Rodriguez, Oscar, 230, 243
- Rolex Awards for Enterprise, 246
- Romans, 5–6  
 agricultural system, 7  
 grain trade, and, 6  
 monocrop broadacre export  
 system, 86
- Rotary International, 275
- Rothamsted Research, 120
- Rousseau, Jean-Jacques, 30
- Roux, Wilhelm, 271
- Rural Advancement Foundation  
 International (RAFI), 105
- Russian Civil War famine, 19
- Russian Revolution, 31–34
- Rwanda  
 cattle to people ratio, 136, 137  
 genocide, 135
- Sabin, Albert, 253
- Sabines, 4
- Sachs, Professor Jeffrey, 141
- Safe global boundaries, 102, 227
- Salatin, Joel, 119
- Saleh, Ali Abdullah, 132
- Salinization, 70
- Salk, Jonas, 253
- Salton Sea, 67
- Sánchez, Professor Juan Carlos, 147
- Sandanistas, 148
- Santayana, George, 20
- SARS, 191
- Savory, Alan, 110, 120
- Scottish Highland Clearances, 245
- Sea level rises  
 flooding and salinization, 70  
 rates of, 70
- Second Sino-Japanese War, 56
- Self-delusion. *See* Mass delusion
- Sen, Professor Amartya, 245–46
- Shahbazov, Fuad, 149
- Shand, Hope, 105
- Shenkkan, Nate, 150
- Shining Path, 148
- Siege of Leningrad, 54
- Silk Road, 11
- Sixth Extinction of Life, 103, 177,  
 199–200, 220
- Sky farms, 238, 267
- Skywater, Dr, 241, 243
- Slezkine, Yuri, 34
- Slow food movement, 270
- Small water cycle, 127
- Smallpox, 7, 191
- Smil, Professor Vaclav, 102, 107–8,  
 110
- Smith, W Douglas, 209
- Social media  
 farmers, role in educating, 123,  
 252  
 food health, publicising, 251
- Soil erosion  
 1975–2015, 74
- Soils for Life*, 123
- South Africa  
 environmental boundaries,  
 exceeding, 161
- South Asia  
 climate change  
 South Asia, 165  
 groundwater scarcity  
 India, 164  
 population growth, 164  
 refugee movements, 167  
 renewable energy, adoption of,  
 166  
 water scarcity  
 India, 164  
 water stress  
 India, 165  
 Pakistan, 166  
 weapons of mass destruction. *See*  
 Weapons of mass  
 destruction

- South Sudan  
 civil war  
   climate change, and, 140  
   human cost, 138  
   underlying factors, 139  
 South–North Water Transfer Project, 155  
 Soviet Union. *See* USSR  
 Spanish flu epidemic (1918), 51  
 Stalin, Josef, 34–35, 37  
   early life, 37  
   Great Famine, role in, 38  
   impacts of policies, 39  
   kulaks, liquidation of, 36  
 Stapper, Dr Martin, 100, 262  
 Steffen, Emeritus Professor Will, 227  
 Steiner, Rudolf, 122  
 Stewardship programmes  
   funding, 248  
   Rolex Awards for Enterprise, 246  
 Sticklor, Russell, 130  
 Stockholm International Peace Research Institute (SIPRI)  
   2017 military spending report, 216  
 Storm damage  
   World Meteorological Office  
     2017 statistics, 83  
 Suberin, 260  
 Sudan Liberation Movement, 138  
 Sun Tzu, 45  
 Sunlight, 231  
 Sunni muslims, 126  
 Sustainable grazing, 110, 247  
 Sustainable intensification, 122  
 Swaminathan, M S, 18  
 Syr Darya river, 149  
 Syria  
   ancient history, 126  
   Assyrian Empire, 127  
   civil war  
     chemical weapons, use, 126  
     origin of, 125  
     drought, 128  
     drought, and, 128  
     model for future conflicts, 131  
     parallel with other conflicts, 129  
     water scarcity, and, 128  
 Taiping rebellion, 12  
 Tajikistan  
   food insecurity, 149  
 Taliban, 212  
 Terror Famine. *See* *Holodomor*  
 Thalassocracy, 5  
 The Hunger Plan, 54  
 Thirty Years' War, 26–29  
 Three Gorges Dams, 70  
 Three Years of Difficulty, 12  
 Tien Shan mountain range, 149  
 Tijani, Dr Bukar, 161  
 Tolstoy, Leo, 32  
 Toon, Professor Brian, 168  
 Topsoil  
   gross anthropogenic releases, 189  
 Transformative agroecology, 258  
 Treaty of Brest-Litovsk (1917), 52  
 Tree, Isabella, 111  
 Trillion Trees Partnership, 247  
 Trump, Donald, 81  
 Tsar Nicholas II, 32–33  
 Tularaemia, 191  
 Turkmenistan  
   food insecurity, 149  
 Tutsi, 135  
 Type 2 diabetes  
   processed foods, and, 98  
 Undernourishment  
   Africa, 161  
 United Nations  
   Biological Weapons Convention, 182  
   Chemical Weapons Convention, 182

- United Nations (cont.)  
 Convention to Combat  
   Desertification (UNCCD), 129  
   arable land loss, 75  
   fertile soil loss, 74  
   food and environmental  
     insecurity, war and, 213  
 Educational, Scientific and  
   Cultural Organisation  
   (UNESCO)  
   natural wetland, loss of, 67  
   water scarcity, warning of, 65  
 Environmental Cooperation for  
   Peacebuilding Programme  
   (ECPP), 209  
 Food and Agriculture  
   Organisation (FAO)  
   2005–2015 crop damage  
   study, 84  
   2017 World Hunger Report,  
   204  
   2050 food production  
   forecast, 64  
   eco-farming, support for, 258  
   farm land statistics, 76  
   food security report, 172  
   Gaza rooftop farm aid, 239  
   Global Report on Food Crises  
   2018, 83  
   urban food production, future  
   of, 267  
 Global Environment Facility  
   (GEF), 107, 207  
   cultured meat production  
   statistics, 271  
   nanoproducts, benefits of, 261  
 Human Rights Council, 100  
 Interagency Framework Team  
   for Preventive Action, 77  
 Population Division, African  
   population projections, 159  
 Regional Settlements Programme,  
   225  
 Sustainable Development Goals,  
   255  
 Treaty to Ban Nuclear Weapons,  
   182  
 Water Agency, groundwater  
   depletion, 69  
 Water Programme, 63  
 United States  
   groundwater scarcity, 142  
   cities at risk, 144  
   dependence on, 143  
   fracking protests, 144  
   temperature impacts, 144  
   reduced military spending, 219  
 Universal surveillance, 175, 196–97  
 Urban Farm, 239  
 Urban farms, 267  
   advantages, 240  
   limitations  
     nutrients, 231  
     sunlight, 231  
   low end food supply, 259  
   potential of, 234  
   soil and water, savings from, 235  
   supermarkets, impact on, 240  
   water recycling, 232, 241  
 Urban Organics, 235  
 US Geological Survey  
   cumulative groundwater  
   depletion, 143  
   global soil loss calculation, 74  
 USSR  
   Great Famine  
     motivation behind, 39  
   Kulaks. *See* Kulaks  
   Lamarckian theory, 39  
 Uzbekistan  
   food insecurity, 149  
 Vardy, Professor Agnes, 38  
 Vardy, Steven, 38  
 Vegetarianism, 108  
   meat consumption, and, 111



- Venezuela  
 food insecurity, 147
- Vertebrate biomass, 103
- Vertical farms. *See* Sky farms
- Vikings  
 achievements, 10  
 background, 9
- Vitamin A, 23
- Vitamin C, 23
- Vitamin D, 23
- Vitamin K, 23
- Vogt, William, 260
- Volscians, 4
- Voltaire, 198
- von Brockdorf-Rantzau, Count, 49
- von Pappenheim, Gottfried Heinrich Graf, 28
- Water  
 gross anthropogenic releases,  
 189
- Water footprint, 64  
 China, 156
- Water scarcity  
 2050 projections, 65  
 China, 156  
 conflict multiplier, as, 130  
 conflict over, 71  
 freshwater, 64  
 global food output, impact on,  
 64  
 India, 164  
 Mexico, 146  
 regions afflicted in early 21<sup>st</sup>  
 century, 72  
 Syria, and, 128  
 World Bank report, 151
- Water stress  
 Brazil, 148  
 India, 165  
 Pakistan, 166  
 precursor to conflict, 72  
 size of problem, 65
- Weapons of mass destruction  
 Doomsday Clock, 182  
 global famine, and, 184  
 nuclear arsenal distribution,  
 181  
 nuclear ban treaty, 182  
 South Asia  
 China, impact on, 169  
 nuclear winter if used, 168  
 possible impact of, 168  
 United Nations Biological  
 Weapons Convention, 182  
 United Nations Chemical  
 Weapons Convention, 182
- Weimar Republic, 51
- Welzer, Professor Harald, 211–12
- Wildlife Conservation Society  
 Trillion Trees Partnership, 247
- Wilson, Professor E O, 176, 220, 243
- World Bank  
 climate refugee study, 161  
 enforced climate migration  
 statistics, 167  
 farm land statistics, 76  
 global tourism statistics, 171  
 megacity statistics, 225  
 water scarcity report, 150
- World Chefs Association, 275
- World Economic Forum (WEF)  
 aquaculture  
 ‘pro-poor’, 266  
 efficiency of, 266  
 global risks list, 72, 172  
 refugee rates, 170  
 urban farming review, 234
- World Food Programme (WFP)  
 2012 Yemen food report, 132  
*At the Root of Exodus*  
*Food security, conflict and  
 international migration* report,  
 172  
 Global Report on Food Crises  
 2018, 83

- World Health Organisation (WHO)  
 2017 mothers' milk report, 97  
 2017 obesity statistics, 98  
 potential pandemic diseases,  
 191
- World Meteorological Office  
 2017 storm damage statistics,  
 83
- World Peace Foundation (WPF)  
 famine catalogue, 19
- World Resources Institute  
 Indian water stress, 165  
 projected aquaculture growth  
 1950-2050, 263  
*The Economic Case For Landscape  
 Restoration In Latin America*  
 study, 247
- World War I  
 farm production, impact on, 43  
 Germany  
 British naval blockade, impact  
 of, 46  
 civilian morale, 47  
 death by starvation, 50  
 food imports, decreasing, 46  
 hunger after end of hostilities,  
 48  
 hunger, ongoing impacts, 49  
 two-front fighting, impact of,  
 46  
 U-boat campaign, impact of,  
 45
- Great Britain  
 change from food importer to  
 food producer, 48  
 flour crisis, 44  
 food rationing, 45  
 food supplies to Western  
 Front, 43  
 German U-boat campaign,  
 impact of, 45  
 starvation and hunger, 46
- World War II, 51
- hunger  
 Bengal famine, 57  
 German death figures, 58  
 Greek famine, 57  
 Henan, China, 57  
 Hongerwinter, 57  
 Poland, 58  
 total death figures, 57  
 USSR death figures, 57  
 Vietnam famine, 57
- Japan  
 acquisition of farming land,  
 54  
*Millions to Manchuria* migration  
 programme, 55  
 occupation of Manchukuo, 55  
 Operation Starvation, 58  
 The Hunger Plan, 54
- Worldwide Fund for Nature  
 Trillion Trees Partnership, 247
- Worldwide Fund for Nature Living  
 Planet Index, 176
- Wright, Orville, 253  
 Wright, Wilbur, 253
- Yellow fever, 191  
 Yellow River  
 flow, 155
- Yemen  
 civil war  
 air strikes against farms,  
 133  
 changes in, 133  
 farms as targets, 132  
 parties in, 132  
 targeting of water and  
 medical supplies, 134
- farming  
 history, 131  
 women, role in, 133  
 strategic location, 132
- Zika virus, 191