# **Index**

Page numbers for entries occurring in figures are suffixed by an *f*; those for entries in notes by an *n*, with the number of the note following; and those for entries in tables by a *t*.

AATF. See African Agricultural Technology African Union Summit, 3 Foundation Agency for International Development, U.S., ABSF. See African Biotechnology Stakeholders' 181 Forum Agenda 21, 79 Accountability, 53, 55, 61 Agreement on Technical Barriers to Trade Action maps, 67 (TBT), 189 Adulteration of foods, 121-22, 123, 126, 143 Agreement on the Application of Sanitary and Advisory Committee on Ethics and Phytosanitary (SPS) Measures, 81, 159, 189 Biotechnology in Animals (Netherlands), Agreement on the Trade Related Aspects of 105 Intellectual Property Rights (TRIPS), 90-91, 93, 94, 177, 179, 183, 189, 217; Advocacy science, 44 Affected peoples, 42, 62 aim of, 90; Regional Policy Dialogue on, AfricaBio, 231 236 African Agricultural Technology Foundation Agricultural production: of GMO crops, SADC, 193-94; of GMO crops, world, (AATF), 180 188-89; in SADC, 192 African Biotechnology Stakeholders' Forum (ABSF), 35, 183, 232, 250-51, 274 AIDS. See HIV/AIDS African Center for Technology Studies, 232 Algeria, 74 African Growth and Opportunity Act, 193 Allergens, 88, 105, 143; FDA policy on, 123, African Intellectual Property Organization, 176 124, 127-28, 129; health status and, 139, African Model Law, 178-79, 217, 236, 254, 144; uncertainty factor and, 148t, 149; in 256 U.S. versus African diet, 137-38 African Regional Intellectual Property Alliance for Bio-Integrity v. Shalala, 130 Organization (ARIPO), 176, 182 Amino acid sequences, 128 African Union (AU), 3, 255, 274 Andersen, I.-E., 55

Andhra Pradesh, India, 52-55 Bilateral agencies, 42 Angola, 16t, 20t, 27t, 174t, 231 Biological diversity, 73, 77-78, 79, 87, 190 Animal diseases and pests, 161 Biological nitrogen fixation, 230 Animal feed, 137, 138, 190, 191, 195 Biophysical sciences, 3-5, 202 Animal welfare, 104-5 Bioprospecting, 92-93 Antibiotic resistance marker genes, 85-86 Biosafety Committee (Zambia), 231 Biosafety policy, 11, 32-33, 71, 72-82, Antibiotics, 14 Area/neighborhood forums, 64 157-71, 183, 200, 201, 208, 215; Argentina, 21, 82, 173, 188, 191, 196 background to, 24-26; challenges to, ARIPO. See African Regional Intellectual 166-67; consultation on, 34-35; draft of Property Organization proposed framework for, 162-65t; financial Artificial insemination, 230 resources and, 169-70, 219-20; framework Ascorbic acid, 73 for, 160-66, 211; historical perspective on, Ashby Committee, 72–73 72-75; international status of, 159; Asia, 102, 104, 173 promoting, 209-13; public involvement in, Asilomar, California, 72, 75 167-69; recommendations for, 170-71; Association for Strengthening Agricultural Regional Policy Dialogue on, 234-36, Research in Eastern and Central Africa, 183 249-53, 254-55, 257, 259t, 263-64; status AU. See African Union of, 16-17, 20-22, 159-60, 174t; trade and, Australia, 21, 83, 173, 191 159, 161, 167, 213–14, 235, 253, 264. See Autonomy, 100-101 also Environmental issues; Food safety policy Aventis, 191 Biotechnology: defined, 12; generations of, Awareness. See Policymaker awareness; Public 13-14; gradient of, 14, 15f; status of development and use, 16-19t; status of awareness policy, 174t; traditional, 12 Bacillus thuringiensis (Bt), 261; cotton, 22-23, Biotechnology Alliance (Namibia), 249 194, 195, 231, 250; maize, 2, 138, 140, Biotechnology Association (Zimbabwe), 231 141f, 143, 181, 194, 231, 251; toxin of, Biotechnology Science Coordinating 128, 144 Committee (BSCC), 145 Backcrossing, 123, 124, 129 Biotechnology Trust of Africa, 183, 232 Bananas, 32, 196 Biotechnology Trust of Zimbabwe (BTZ), 15, Beans, 104; Enola, 93; kidney, 136; yellow, 30, 33, 36, 183, 230, 231 92-93 Biowatch (South Africa), 231 Beef, 160, 192, 195-96 Botswana: biosafety policy in, 20t, 160, 174t; Beef and Veal Protocol, 192, 196 biotechnology development and use in, 16t; Benefits: just distribution of, 101-2; potential, biotechnology regulations in, 77, 231; 139; risks versus, 97-99 Cartagena Protocol ratified by, 74; public Berne Convention, 178t awareness in, 27t; trade in, 192, 193, 195 Best alternative to a negotiated agreement, 240 Bottom-up participatory process, 35

Boundaries and context, values regarding, 142, Cassava, 32, 104, 136, 181, 192 144, 146 CBD. See Convention on Biological Diversity Brazil, 35 Central Africa, 104 British Medical Association, 84, 108n16 Centre de Coopération Internationale en Broad-spectrum profiling, 150, 211 Recherche Agronomique pour le Brundtland Report, 99-100 Développement (CIRAD), 181 BSCC. See Biotechnology Science Cereals, 125, 136, 181, 192, 193, 195 Coordinating Committee CGIAR. See Consultative Group on Bt. See Bacillus thuringiensis International Agricultural Research BTZ. See Biotechnology Trust of Zimbabwe Chickpeas, 125, 136 Children, 42, 147, 150, 218, 219 Burkina Faso, 74 Bush, G. W., 191 Chile, 191, 196 Business stakeholders, 42 China, 21, 188, 237 Christian Aid, 84, 85, 108n16 Calorie intake, 103-4, 116, 137, 152n2, 211 Chymosin, 73, 107n6 Cambridge University, 14 CIMMYT. See International Maize and Wheat Cameroon, 74 Improvement Center Camp David talks, 38 CIRAD. See Centre de Coopération Canada, 21, 34, 41, 80, 81, 105, 173, 181; Internationale en Recherche Agronomique biotechnology regulations in, 77; production pour le Développement of GMO crops in, 188; public opinion in, Citizens' juries, 35, 52-55, 66 82, 83; science-based decisions in, 87; trade Citizens' panels, 64 Civil society, 1, 7, 40, 47, 201, 204, 205, 208, with, 191 Canola, 88, 188 227; biosafety policy and, 166; information Capacity building, 215-16, 244, 254, 262; sharing in, 207; stakeholder status of, 42; biosafety policy and, 169, 213; intellectual World Commission on Dams and, 59 property rights and, 183-84; Cloning, 72, 73, 230 recommendations on, 30-32 Codex Alimentarius, 159 Capacity constraints, 47-48, 205 Coffee, 193, 195, 196 Caribbean, 102 Cohen, J. I., 160 Carlson, C., 42 Colombia, 32, 191 Cartagena Protocol on Biosafety, 11, 17, 77, Commercial confidentiality, 26-28, 216, 232, 79, 82, 84, 87, 159, 210; countries ratifying, 235, 236 Commercialization of biotechnology, 15, 74; historical background on, 73-74; 22-23, 76-77, 160, 175, 200, 230 objective of, 107n12; on openness, 102-3; on public involvement, 24-25, 86; Regional Commission of the European Communities, 80 Policy Dialogue on, 235, 252, 254; trade Community issues groups, 64-65 policy and, 161, 190, 214 Compositional substantial equivalence, 126

Comstock, G., 102

Cash crops, 193, 195

Conflict assessment, 42-44 Cowpeas, 104 Conflict resolution, 240-41 Crisis of implementation, 242 Consensus building, 37-69; determining point Cruciferae, 136 of, 47; joint fact-finding process in, 46f, 207; Crustacea, 127 CRY9C, 138 phases of, 49f; recommendations on, 202, 203, 204, 205-6, 207; Regional Policy Cry genes, 181, 182 Dialogue on, 9-10, 227, 240, 244, 246. Cucumbers, 125 See also Multistakeholder processes Cucurbiticin, 125, 136 Consensus Building Institute, 240 Cultural factors, 28, 135-37, 233 Consensus conferences, 65 Cyanoglycosides, 125, 136, 149 Consensus participation, 65 Consultation, tools for, 34-35 Dalit caste, 54 Consultative Group on International Dams. See World Commission on Dams Danish Board of Technology (DBT), 55-56, Agricultural Research (CGIAR), 181, 182 Consumer choice policy, 11, 103, 113-52; options and trade-offs in, 140-51; Regional Danish Center of Urban Ecology, 58 Policy Dialogue on, 227, 229, 247, 262. See Dates, 193 also Food safety policy Debates, 66, 257 Consumers International, 232 Decision EX.CL, 3 Contingent agreements, 44 Decision making: participatory, 61, 62; science-Controversy, 10, 24; on intellectual property based, 86-89 rights, 179-80; on trade policy, 190-92 Decisionmaking bodies, 44-48 Convention on Biological Diversity (CBD), 12, Deliberative opinion polls, 66 17, 73, 74, 77, 78, 159, 225; intellectual Democratic Republic of Congo, 16t, 27t, 231 property rights and, 93, 94-95; trade policy Denmark, 37, 55-59 and, 190 Deoxyribonucleic acid. See DNA Coordinated Framework for the Regulation of Department for International Development Biotechnology, U.S., 74-75, 76t (DFID)-India, 55 Corn, 188, 191, 192. See also Maize Department of Agriculture, U.S. (USDA), 77, Corn Belt, 14 131 Cornmeal, 188 Dickson, D., 29 Dignity, 100-101 Costa Rica, 102 Directive 2001/18/EC, 190 Cotonou Agreement, 192, 196 Cotton, 188, 191, 261; Bt, 22-23, 194, 195, Djibouti, 74 DNA, 14, 78, 230. See also Recombinant DNA 231, 250; trade in, 193, 194, 195 Cottonseed cake, 188t, 195 technology Cottonseed oil, 188t, 195 DNA bar code, 190 Council of Europe Parliamentary Assembly, 73, Doha conference, 93-94 86, 89-90, 95-96 Dolly (cloned sheep), 230

Dow Agro Sciences, 181 EPA. See Environmental Protection Agency, Droughts, 29, 97-98, 113, 161, 192, 231, 239, U.S. Epitopes, 128 Equity, 61 Drought-tolerant crops, 32, 114 Dummy field experimentation, 250 Ethics, 10, 11, 202-4, 208; intellectual Dumping, 103 property rights and, 89-95, 184; specific issues in, 95-105 Dupont, 181 Ethiopia, 74, 174t, 175t EU. See European Union Earth Summit, 42, 241, 242 Eastern Africa, 30-31, 33, 160, 174t, 175 Eurobarometer surveys, 82, 83 Educational tools, 35-36 Europe, 29, 41, 231; biosafety policy and, Efficiency, 48, 61, 204 73-74, 230; biotechnology regulations in, E-Forum on Participatory Processes for Policy 77; intellectual property rights and, 91-92; Change, 52-55 optimism about technologies in, 84f; public opinion in, 82, 83, 84-86; trade with, 167, Eggs, 127 Egypt, 38, 74, 191 194-95, 214 Electronic democracy, 66 European Novel Food Regulation, 78 El Salvador, 191 European Patent Convention, 92 Embryo transfer, 230 European Patent Office, 92 Encyclopaedia of the Atmospheric Environment, European Union (EU), 3, 29, 71, 72, 73, 78, 100 105, 192, 195-96; biosafety policy and, 160, Engagement issues, 53, 54-55 210, 253; biotechnology policy in, 233; Enola beans, 93 controversies over trade policy of, 190-92; Environmental issues, 34, 71, 73, 166, 168, science-based decisions in, 87 190, 199, 218; interface with other issues, Evidence issues, 53-54 29; liability limitations and, 29; Exploitation, 103-4 multistakeholder processes in, 41, 44, 48; Export credit guarantee agencies, 42 policy on, 77-78; public opinion on, 85; Exports, 85, 93, 113, 150-51, 160, 189, 191, Regional Policy Dialogue on, 229, 264; 192, 212, 253; facilitating, 213-15; growth regulations on, 76; rights-based approach to, in, 193; liability limitations and, 29; policy 37, 59-63; stakeholders in, 167; trade and, issues and trade-offs, 194-96 99, 214. See also Biosafety policy; Facilitators and facilitation, 39-40, 48, 50 Precautionary principle; Sustainable development Fairness, 48, 204, 242 Famines, 29 Environmental Protection Agency (EPA), U.S., 41, 138 FanMeat, 195 Environment and Development Activities FANRPAN. See Food, Agriculture, and Natural (Zimbabwe), 29 Resources Policy Analysis Network Enzymes, 14 FAO. See Food and Agriculture Organization

Farmers. See Smallholder farmers 123-24; timeline for key policy events, 118, FDA. See Food and Drug Administration, U.S. 119-20t Federal Register, 115 Food crises, 1-2, 231 Ferenz, M., 240-44, 245, 246, 272 Food, Drug and Cosmetic Act, 121-22, 131 Fermentation technology, 14, 32, 230 Food insecurity. See Food security/insecurity Fertilizers, 239 Food processing, 135-37 Field tests, 79, 82, 87, 250 Food safety policy, 11, 113-52, 218; options Figs, 193 and trade-offs in, 140-51; Regional Policy Financial Gazette, 76-77 Dialogue on, 262; southern African context, Financial resources: biosafety policy and, 135-39; U.S. versus southern Africa context, 114, 116-18, 137-39. See also Biosafety 169-70, 219-20; creating sustainable, 219-21; Regional Policy Dialogue on, policy; Food and Drug Administration, U.S. 237-38, 255 Food security/insecurity, 98, 161, 199, 200, First generation of biotechnology, 14 214, 220, 252, 260t, 261; developing Fish, 127 strategy for, 216-19; food safety policy and, Floods, 161, 192, 253 147, 149-50; intellectual property rights Flowers, 193 and, 179; uncertainty factor and, 147, 148t Focus groups, 64, 66 France, 21, 84 FOIA. See Freedom of Information Act Freedom of Information Act (FOIA), 127 Folate, 114 Free trade area (FTA), 187, 192, 193 Folic acid, 132 Friends of the Earth, 84, 108n16 Food additives, 121, 122, 126 Frontiers, 168 Food, Agriculture, and Natural Resources Fruit juices, 193 Policy Analysis Network (FANRPAN), 1, FTA. See Free trade area Functional substantial equivalence, 126 219-20. See also Regional Policy Dialogue Food Agriculture and Natural Resources Sector, Fungus-resistant crops, 114 160-61 Future search conferences, 66-67 Food aid, 2, 35, 84, 113, 166, 187, 191, 209, 213; interface with other issues, 29-30; Gambia, 74 Regional Policy Dialogue on, 253 GAO. See Government Accounting Office Food and Agriculture Organization (FAO), 89, GEF. See Global Environment Facility 98, 104, 125, 159, 182, 259 Generally regarded as safe standard. See GRAS standard Food and Drug Administration (FDA), U.S., 11, 114, 115, 118-37, 143, 144, 145, General welfare, principle of, 97-99 150, 151, 210, 251; action levels of, 122; Generations of biotechnology, 13-14 effectiveness of regulations, 130t; failure Genes, 14, 86; cry, 181, 182; terminator, 182; to address cultural issues, 135-37; legal trans, 124, 127 framework for, 118-23; proposed rules "Genetically Modified Crops: The Ethical and for 2001, 131-33; scientific issues and, Social Issues" (report), 95

Genetically modified organisms (GMOs): Hemolytic agents, 136 defined, 107n11; four-year ban on, 190-92; Herbal medicines, 92 global and regional production trends, Herbicides, 73, 102, 239 20-21; overview of use in SADC, 23; SADC Herbicide-tolerant crops, 86, 193 production of, 193-94; world production HIV/AIDS, 94, 117, 139, 169, 211, 218, 251, and trade in, 188-89 262 Holmes, T., 64 Genetic Resources International (GRAIN), 180 Geneva, Kenya, 177 Honduras, 191 Germany, 251 Humanities, 3-5 Ghana, 74 Hunger, 173, 218 Global Environment Facility (GEF), 26, 30, Hybrid crops, 14 77, 159, 161, 169 Glucosinolates, 88, 136 ICRISAT. See International Maize and Wheat Glycol-alkaloid accumulation, 88 Improvement Center GMOs. See Genetically modified organisms IIED. See International Institute for Government, 42, 48, 211-12, 234, 244 Environment and Development Government Accounting Office (GAO), 126 Imports, 23, 157, 194, 195, 212, 213; bans on, Gradient of biotechnology, 14, 15f 191, 192; Cartagena Protocol on, 25; growth GRAIN. See Genetic Resources International in, 193; Regional Policy Dialogue on, 253 GRAS (generally regarded as safe) standard, Independent advisory committees, 35 121, 122, 123, 126, 131 Independent public inquiries, 35 Green Foundation, 58 India, 32, 35, 173, 237; electronic Greenpeace, 84, 108n16, 244 multistakeholder dialogue in, 37, 52-55; Green Revolution, 102, 116, 173 Green Revolution in, 102; neem tree in, 92, Groundnuts, 104 108n20 Indigenous people, 42 Hague Agreement, 178t Indigenous plants, 236-37 Halal foods, 98 Information sharing, 38, 206-8; Regional Hallman, W. K., 72, 83 Policy Dialogue on, 249-56; tools for, Harare, Zimbabwe, 176, 182 35-36 Harmonization, 2, 33, 209-10, 213, 216; Innovative development, 67 Regional Policy Dialogue on, 227, 228, 234, Insecticides, 73 256, 257, 262; trade and, 214 Insect-resistant crops, 114, 181, 193, 250 Harvest, A, 183 Insect Resistant Maize for Africa (IRMA), 181, 182 Health status, 29, 117, 139, 144, 209, 218; biosafety policy and, 167; ethical Insertional mutagenesis, 123, 124, 127, 131, consideration of, 98; intellectual property 135 rights and, 94; trade policy and, 194. See also Institute of Development Studies, 53 Morbidity Insurance, 143

Integrative bargaining, 38 International Union for the Protection of New Varieties of Plants (UPOV), 91, 177-78, Integrity, 100-101 Intellectual property rights, 11-12, 71, 89-95, 173-85; abuse of, 103; benefits of, 216-17; IRMA. See Insect Resistant Maize for Africa conceptual framework for, 180-83; Iron (dietary), 114, 150, 219 controversy over, 179-80; disadvantages of, Israel, 38 91; extension of, 90; importance of, 175-77; Issue forums, 67 issues and policy needs, 174-75; ITPGR. See International Treaty on Plant participation in agreements on, 178t; policy Genetic Resources for Food and Agriculture trade-offs for, 180-83; recommendations on, 184-85; Regional Policy Dialogue on, 229, Jaeger, B., 55 233, 239, 259t, 261, 262; status of Jakarta, Indonesia, 73 knowledge on, 177-79; status of laws on, Johannesburg, South Africa, 9, 10, 180, 201 175t; trade and, 194 Joint fact-finding (JFF) process, 44, 45f, 46f, Interactive panels, 64 Intermediate Technology Development Just distribution, 101-2 Group, 35 Justice, principle of, 96-97, 203 International associations, 42 International Center for Maize and Wheat, 194 Kalibwani, F., 272 International Center for Tropical Agriculture, Kandawa-Schulz, M., 249, 252-53 Kenya, 32, 181, 263; biosafety policy in, 174t, 93 International Convention for the Protection of 250-53; biotechnology regulations in, 77; New Varieties of Plants, 91 Cartagena Protocol ratified by, 74; International Food Policy Research Institute intellectual property rights in, 175t, 177, (IFPRI). See Regional Policy Dialogue 178, 182 International Institute for Environment and Kenya Industrial Property Institute, 182 Development (IIED), 41, 52, 53 Kidney beans, 136 International Maize and Wheat Improvement Kosher foods, 98 Center (CIMMYT; ICRISAT), 181, 263 Kryszczun, J., 272, 276 International Monetary Fund, 40 Kuiper, H. A., 133 International Seed Federation, 188 Kwazulu-Natal Province, 22, 193 International Service for National Agricultural Research, 15, 255 Labeling, 23, 85, 151, 211; FDA policy on, 118, 143, 144; Regional Policy Dialogue on, International Service for the Acquisition of Agro-biotech Applications, 21, 181 252-53; trade policy and, 190-91, 195-96 International Treaty for the Protection of Plant Laboratory tests, 15, 82, 181, 250, 251 Genetic Resources, 93 Language barriers, 28, 168-69 International Treaty on Plant Genetic Resources Lathyrogens, 125, 136 for Food and Agriculture (ITPGR), 182 Latin America, 102, 104

Malnutrition, 97, 211, 218, 219, 251; factors Lectins, 125, 136, 149 Legal framework: enabling, 34; FDA, 118-23; responsible for, 173; food safety policy and, for trade policy, 189-90 117, 139, 147, 148t, 149-50 Legumes, 125, 127, 136, 149 Mandaza, I., 167 Lentils, 104, 181 Maputo, Mozambique, 2 Lesotho: biosafety policy in, 20t, 174t; Marker-assisted selection, 230 biotechnology development and use in, 17t; Market mechanisms, 143 biotechnology regulations in, 77, 231; Marrakesh Agreement, 189 Cartagena Protocol ratified by, 74; Mauritius, 200, 232; biosafety policy in, 21t, intellectual property rights in, 175t; public 174t; biotechnology development and use awareness in, 27t; trade in, 193, 195 in, 15, 17t; biotechnology regulations in, 231; Cartagena Protocol ratified by, 74; Liberia, 74 Licensing systems, compulsory, 92, 94 intellectual property rights in, 175t; public Life sciences, 158, 231 awareness in, 27t; trade in, 192 Literacy rates, 28, 167, 169 McClean, M. A., 161 Livestock, 193, 195 MCM. See Multicriteria mapping Local Agenda 21, 69 Media, 36, 85, 245 Local authorities, 42 Mediators and mediation, 40, 48, 50 Local knowledge, 40 Medline, 130 Luhanga, B., 253, 255-56 Metanarratives, 5 Mexico, 21, 83, 92-93, 181, 191 Madagascar, 74 Middle East, 102 Madrid Agreement, 178t Milk, 127 Maize, 29, 30, 84, 102, 181, 187, 211, 250, Millet, 104, 192 252, 253; acreage devoted to, 173; Bt, 2, Mining, Minerals, and Sustainable 138, 140, 141f, 143, 181, 194, 231, 251; Development Project, 40, 41 calories provided by, 103, 152n2; Mnyulwa, D., 160, 271 commercialization of, 23; production of, Moderators, 50, 66, 245 188t, 192; Starlink, 138; trade in, 188t, 193, Modernism, 5-6 194, 195. See also Corn Molecular biology, 32 Makhathini Flats, 22 Molecular diagnostics and markers, 230 Malaria, 94 Mollusks, 127 Malawi, 2, 30, 35, 200, 232, 253; biosafety Monopoly status, 101, 179 policy in, 16, 21t, 160, 169, 174t, 209; Monsanto, 181, 191 biotechnology development and use in, 15, Montreal, Canada, 73 17t; biotechnology regulations in, 231; Morbidity, 147, 251. See also Health status intellectual property rights in, 175t; public Movable options cards, 68 Mozambique, 191; biosafety policy in, 21t, awareness in, 27t; trade in, 192 Mali, 74 161, 174t; biotechnology applications in,

Mozambique (continued) 17t; biotechnology regulations in, 77, 231; Cartagena Protocol ratified by, 74; intellectual property rights in, 175t; public awareness in, 27t MSDs. See Multistakeholder dialogues Mugabe, J., 9, 223, 224, 225-26, 247, 249, 257-59, 265, 267, 269, 271, 272, 273, 274 Mugwagwa, J., 230-32, 238, 271, 272, 274 Multicriteria mapping (MCM), 67 Multidimensionality, 48-52 Multilateral agencies, 42 Multistakeholder dialogues (MSDs), 40-41, 246; alternatives to, 245; decisionmaking bodies in, 44-47; electronic, 37, 52-55 Multistakeholder processes, 1, 3, 10–11, 12, 37-69, 220; alternatives for design of, 64-69; challenges addressed by, 241-44; concept of, 37-48; contingency and monitoring plans, 39-40; criteria for dividing joint gains, 39; decisionmaking bodies and, 44-48; examples of, 52-63; expanding and sustaining, 201-6; fairness and efficiency in, 48; information sharing in, 38; invention of options for, 38-39; lessons learned from, 41-48; packaging of options for, 39; participatory planning in, 40-41; policy-focused approaches in, 41; Regional Policy Dialogue on, 9, 241-44; relevant parties in, 42-44; rights-based approach in, 37; scientific information in, 44. See also Stakeholders Museveni, Y., 267

37; scientific information in, 44. See also
Stakeholders

Museveni, Y., 267

Nairobi, Kenya, 74, 180

Nairobi, Kenya, 74, 180

Namibia, 25, 232; biosafety policy in, 21t, 160,
169, 174t, 249; biotechnology development
and use in, 18t; biotechnology regulations
in, 77, 231; Cartagena Protocol ratified by,

259,
New Ze
NGOs.
Nice Ag
Niger, 7
Nigeria,
NIH. Sc
Nongov
53, 1

property rights in, 175t; public awareness in, 27t; trade in, 192, 193, 195 National Academy of Sciences (NAS), U.S., 115, 134–35, 145, 146 National biosafety frameworks (NBFs), 24, 26 National Biotechnology Alliance (Zambia), 231 National Biotechnology Development Agency of Nigeria, 183 National Corn Growers Association, 191 National Council of Science and Technology Act, 175 National Institute for Scientific and Industrial Research (Zambia), 231 National Institutes of Health (NIH), U.S., 74, 75, 145 National Research Council (NRC), U.S., 115, 126, 127, 130, 132, 134-35, 136-37 Natural products, 96 NBFs. See National biosafety frameworks Neem products, 92, 108n20 Negotiated rulemaking, 41 Neighborhood Initiatives Foundation, 68 NEPAD. See New Partnership for Africa's Development Nestle UK, 108n17 Netherlands, 34, 105, 250 Neurotoxins, 136 New Partnership for Africa's Development (NEPAD), 3, 9, 224, 225, 232, 247, 256, 259, 262, 264, 265, 266, 267, 269 New Zealand, 191 NGOs. See Nongovernmental organizations Nice Agreement, 178t Niger, 74 Nigeria, 74, 102, 183 NIH. See National Institutes of Health, U.S. Nongovernmental organizations (NGOs), 41, 53, 138, 143, 201, 205; influence on policy,

74; information sharing in, 249; intellectual

Patents, 89-93, 94, 108n18, 181, 182, 189; 216; Regional Policy Dialogue on, 227, 244; controversy over, 179; database of, 176-77; as stakeholders, 42 Normative theories, 140, 142, 145-46, 203-4 exclusion from, 90-91, 92, 106n1, 177; for North Africa, 102 genes, 86; Regional Policy Dialogue on, North versus South, political myths in, 6-7 236, 237 Novartis Foundation, 194 Peanuts, 127 Pelletier, D., 261, 268 Novel foods, 77, 92, 93, 105, 108n14, 136 NRC. See National Research Council, U.S. Penicillin, 14, 230 Nuffield Council on Bioethics, 95, 96-97, People's Panel, 64 202 - 3Peru, 191 Nutritional status, 139, 144, 147. See also Pesticides, 102, 108n20, 138, 187, 194, 239 Hunger; Malnutrition; Starvation Pest-resistant crops, 130, 158 Pharmaceuticals/drugs, 14, 73, 82, 92, 94 Phytate, 114, 132 OECD. See Organization for Economic Phytosanitary regulations, 196 Cooperation and Development Pigeon peas, 104 Olembo, N., 250-53, 272, 273 Pineapples, 193 Omamo, S. W., 269, 275, 276 Planning for real, 68 Openness, 102-3 Plantain, 104 Orange Free State, 193 Playing God, 96, 105, 202-3 Ordre public, 72, 90 Pleiotropy, 123, 124, 127, 131, 135 Organization for Economic Cooperation and POD-NERS, LLC, 92-93 Development (OECD), 41, 79, 88, 105, Policy, 72-82; awareness of, 231-32; checklist 125, 179 of questions for, 48-52; design and Organization of African Unity, 178-79, 217 implementation of, 215-16; disputes over, 1; Organization of Organic Producers and environmental, 77-78; historical Processors (Zambia), 196 background on, 72-75; multistakeholder Our Common Future, 99-100 processes in, 41; poverty alleviation and, Outcomes: list of potential, 148t; values 218-19; Regional Policy Dialogue on, regarding, 142-43, 146 225-26, 229, 232-33, 259-64; in response Oxfam, 195 to public reactions, 24-30. See also Biosafety policy; Food safety policy; Intellectual Paarlberg, R., 160 property rights; Regulations; Trade Paris Union, 178t Policymaker awareness, 231-32 Participatory decisionmaking, 61, 62 Political myths, 6-7 Participatory planning, 40-41 Politics: food safety policy and, 140-42; Participatory research and action (PRA), 67-68 interface with other issues, 29-30 Participatory rural appraisal, 67-68 Poor: bias against, 104; increasing awareness in,

207

Patent Cooperation Treaty, 178t

Population growth, 173 Recommendation 1213, 73 Positive theories, 140, 142, 204 Red lines, 44 Postmodernism, 5-6 Regional Agricultural and Environmental Potatoes, 88, 104, 130 Initiative (RAEIN-Africa), 169 Potentialities, 67 Regional Agricultural and Environmental Poverty alleviation strategy, 216-19 Network (Zimbabwe), 231 PRA. See Participatory research and action Regional Early Warning Unit (REWU), 192 "Prajateerpu: A Citizens Jury/Scenario Regional Policy Dialogue, 1, 8-10, 200, 201, 219-20, 223-69; links with other initiatives, Workshop on Food and Farming Futures for Andhra Pradesh," 52-55 265; mandate of, 266-67; meeting notes, Precautionary principle, 78-82, 146, 190, 191, 272-77; nomination criteria for, 267; 220-21 objectives, expectations, and ground rules, Private sector, 7, 42, 201, 234 224-29; program, 271-72; regional scope Procedural fairness, 48 of, 265; regional synthesis, 230-39; Proctor, J., 92-93 reporting/coordination in, 266; role of, Prolamine, 132 265-66; timeline/benchmarks for, 267-68 Protease inhibitors, 125, 136 Regional synthesis, 10, 13-36; on biosafety Protein, 127-28 systems, 20-22; on public and policy Protoplast fusion, 123, 127 responses, 24-30; recommendations based Pro-vitamin A, 85, 114, 132, 150, 219 on, 30-33; in Regional Policy Dialogue, Public awareness, 232, 239, 254; background, 230-39 24-26; building, 206-8; defined, 25; levels Regulation 1829/2003, 78 of, 27t; status of in SADC, 26; SWOT Regulation 1830/2003, 78 analysis of, 30 Regulations, 30-31, 105-6, 209-13; basis for Public dialogue. See Public participation in life sciences, 158; interface with other Public disputes, 240-49 issues, 30; Regional Policy Dialogue on, 231, Public opinion, 82-86 234-36; science and values in, 144-46; Public participation: background, 24-26; in status of, 174t; strengthening, 150-51; biosafety policy, 167-69, 211; challenges of, systems for, 75-77; in the U.S., 74-75, 77. 26-30; defined, 25; tools for, 34-35 See also Policy Religious issues. See Playing God RAEIN-Africa. See Regional Agricultural and Representation, 53, 54, 244 Research, 34; capacity strengthening in, Environmental Initiative Rapeseed, 188 215-16; enabling environment for, 32-33; Rapid rural appraisal (RRA), 68 intellectual property rights and, 183-84; Reasonable certainty of no harm standard, 122 investing in, 208-9; participatory, 67-68; Recombinant DNA (rDNA) technology, 72; recommendations on, 30-33; Regional

Policy Dialogue on, 232-33, 238, 239, 261;

status of in SADC, 14-17

FDA policy on, 123-24, 127, 129, 131-32;

possible unpredictability of, 151-52

Research institutes, 42 policy statement, 123-28; food safety and, Research panels, 64 113-14, 140-46; interface with other issues, REWU. See Regional Early Warning Unit 29-30; life, 158, 231; modernism versus Rice, 83, 85, 102, 103, 132 postmodernism on, 5-6; multistakeholder Rights-based approach, 37, 59-63 processes on, 44; normative approach and, Risk assessment, 11, 28, 33, 87-88, 159, 211, 145-46; policymaker awareness of, 231-32; simplifying information, 28; social, 3-5, 251, 252; Cartagena Protocol on, 79; trade and, 196, 214 202; stakeholders in, 42; variations in expertise, 230-31. See also Technology Risk management, 28, 33, 211; methods of, 143-44; trade and, 159, 214 Scoones, I., 52, 64 Risks: benefits versus, 97-99; posed by dams, Second generation of biotechnology, 14 60, 61, 62; potential, 158; Regional Policy Seed Network, SADC, 263 Seeds, 188, 235, 236-37, 252, 261, 263, 264 Dialogue on, 239 River basin authorities, 42 Selective breeding, 12 Rockefeller Foundation, 15, 180, 261 Senegal, 74 Service user forums, 68 Role groups, 57 Rome Declaration on World Food Security, 98 Seychelles: biosafety policy in, 22t, 174t; Royal Society of Canada, 87, 88 biotechnology development and use in, 18t; Royal Society of the United Kingdom, 88-89, biotechnology regulations in, 231; Cartagena Protocol ratified by, 74; public awareness in, RRA. See Rapid rural appraisal 27t Rutivi, C., 272 Silent pathways, 127 Rwanda, 74, 77 Sinai Desert, 38 Smallholder farmers, 227, 262; food safety SACU. See Southern African Customs Union policy and, 116; grievances of, 248; rights of, SADC. See Southern African Development 235, 236-37; risks faced by, 158; as Community stakeholders, 42; trade and, 214 Safe Age, 231 Social sciences, 3-5, 202 Safety tests, 121, 129, 143, 211. See also Field Social values. See Values tests; Laboratory tests Soft pesticides, 108n20 Sainsbury's, 196 Somaclonal variation, 123 Saline-resistant crops, 114 Sorghum, 104 South Africa, 21, 35, 83, 173, 230-31, 232, Sanitary measures, 196 235, 239; biosafety policy in, 16, 22t, 160, Scenario workshops: in Denmark, 37, 55-59; in India, 52-55 161, 174t, 209; biotechnology development SciDev.Net, 29 and use in, 15, 18t; biotechnology Science, 203, 230-32; advocacy, 44; regulations in, 76-77, 231, 234; Cartagena biophysical, 3-5, 202; biosafety policy and, Protocol ratified by, 74; commercialization 169; decisions based on, 86-89; in FDA in, 15, 22-23, 76-77, 175, 200, 230;

South Africa (continued) "Statement of Policy: Foods Derived from New intellectual property rights in, 177; public Plant Varieties" (FDA), 118 awareness in, 27t; science in, 169; trade in, Stem borers, 181 192, 193, 194, 196 Stewardship, 105 Southern African Customs Union (SACU), Strengths, weaknesses, opportunities, and 193 threats analysis. See SWOT analysis Southern African Development Community Striga-resistant crops, 181 (SADC): Advisory Committee on Substantial equivalence, 88-89, 125-26 Sugar, 192, 193, 195 Biotechnology, 228, 253-56, 261, 265, 267, 274, 275, 276; agricultural production Sugar beets, 104 in, 192; biosafety framework for, 160-66; Sugar cane, 104, 231 overview of GM use in, 23; Seed Network, Sui generis protection, 91, 94, 177 Sustainable development, 61, 99-100, 161 263; status of biosafety in, 20-22t, 159-60; status of biotechnology in, 16-19t; Sustainable housing, 56-59 status of research in, 14-17; trade in, Swaziland: biosafety policy in, 22t, 174t; 192-93 biotechnology development and use in, 19t; Southern African Regional Biosafety Initiative, biotechnology regulations in, 231; intellectual property rights in, 175t; public Southern Africa Regional Biosafety Program, awareness in, 27t; trade in, 192, 193 Sweet potatoes, 32, 104, 181, 250 South versus North, political myths in, 6-7 SWOT (strengths, weaknesses, opportunities, Soybean cake, 188t and threats) analysis, 30, 31t Soybean oil, 188t Syngenta, 181, 192 Soybeans, 104, 127, 132, 173, 188, 193, 196, 252 TA. See Technology assessment Spain, 21 Takavarasha, T., 228, 268-69, 272, 273 SPS measures. See Agreement on the Tanzania, 2, 238; biosafety policy in, 174t, Application of Sanitary and Phytosanitary 234, 264; biotechnology development and use in, 19t; biotechnology regulations Measures Squash, 125, 136 in, 231; Bt cotton cultivation in, 23t; Stakeholder decision analysis, 68-69 Cartagena Protocol ratified by, 74; Stakeholders: defined, 25; differing viewpoints, intellectual property rights in, 175t; public awareness in, 27t 3-5; in environmental issues, 167; identifying, 244; types of, 42; uninformed Taste tests, 129 versus well-informed, 3. See also Multi-TBT agreement. See Agreement on Technical stakeholder processes Barriers to Trade Staple foods, 137-39, 211 Tea, 193, 195 Starlink maize, 138 Technology: development and transfer of, 259t, Starvation, 2, 173, 191 260t; investment in, 232; modernism versus

142. See also Science Technology assessment (TA), 9 Terminator gene, 182 Tescos, 196 Theme groups, 57 Third generation of biotechnology, 14 Thompson, J., 52 Tissue culture techniques, 15, 32, 230 Tobacco, 193, 195, 264 Togo, 74 Tomatoes, 136 Top-down approaches, 40, 166-67 Toxicants, 88, 105, 143, 251; Bt, 128, 144; FDA policy on, 123, 124, 125-27, 129, 136; health status and, 144; uncertainty factor and, 148t, 149; in U.S. versus African diet, 137 Traceability, 190, 191, 195 Trade, 12, 187-97, 201, 209; biosafety policy and, 159, 161, 167, 213-14, 235, 253, 264; controversies over, 190-92; environmental concerns and, 99, 214; facilitating, 213-15; food safety and, 113; in GMO crops, world, 188-89; intellectual property rights and, 90-91, 176, 180; international legal framework for, 189-90; policy issues and trade-offs, 194-96; public participation and, 28-29; Regional Policy Dialogue on, 227, 229, 233, 257-58, 259t, 262, 264; in SADC, 192-93; website on, 197n1. See also Exports; Imports Trade unions, 42 Traditional biotechnology, 12 Transgenes, 124, 127 Transparency, 24, 28, 33, 34, 42, 48, 67, 242 Tree nuts, 127 TRIPS. See Agreement on the Trade Related Aspects of Intellectual Property Rights

postmodernism on, 5-6; values regarding,

Trypanosomosis, tolerance to, 4-5 Tuberculosis, 94 Tunisia, 74 Uganda, 74, 77, 174t, 175t UN. See United Nations UNCED. See United Nations Conference on Environment and Development Uncertainties, 39, 151, 208; comparison of, 147-49; Regional Policy Dialogue on, 239; values regarding, 142, 143-44, 146, 207 UNEP. See United Nations Environment Program UNESCO. See United Nations Educational, Scientific, and Cultural Organization Unilever UK, 108n17 Unintended effects of genetic breeding, 133t United Kingdom, 34, 55, 64, 65, 95; biosafety policy in, 72-73, 74; biotechnology regulations in, 75; trade with, 196 United Nations (UN), 41, 42, 71, 74, 191, 234, 257 United Nations Conference on Environment and Development (UNCED), 40, 42 United Nations Educational, Scientific, and Cultural Organization (UNESCO), 100-101 United Nations Environment Program (UNEP), 25, 26, 30, 34, 77, 159, 161, 167, 169; International Guidelines of, 84; Regional Policy Dialogue on, 232, 249, 255 United Republic of Tanzania. See Tanzania United States, 3, 11, 21, 23, 41, 71, 105, 113, 150-51, 203, 231, 251, 252; biosafety policy in, 210-11; biotechnology policy in, 233; biotechnology regulations in, 74-75, 77; food aid from, 2, 29, 191, 253; food

safety policy in, 114, 116-18, 137-39;

intellectual property rights in, 91, 92-93;

United States (continued) Wide-cross hybridization, 123 Windhoek, Namibia, 30 leading GM crops in, 173; production of GM crops in, 188; public opinion in, 82, WIPO. See World Intellectual Property 83; science-based decisions in, 87; Organization technology assessment in, 9; trade with, Women, 42, 54, 102, 147, 150, 204, 218, 219, 190-91, 192, 196. See also Food and Drug 267 Administration, U.S. Workers, 42 Universal Declaration on the Human Genome World Bank, 41, 102, 250 and Human Rights, 100-101 World Business Council for Sustainable University of Sussex Institute for Development Development, 41 Studies, 263 World Commission for the Environment and Unnatural products, 96 Development, 99-100 UPOV. See International Union for the World Commission on Dams (WCD), 37, 41, Protection of New Varieties of Plants 42, 59-63, 240 Urban ecology, 56-59 World Food Program, 29 World Health Organization (WHO), 88, 125, Uruguay, 191 USDA. See Department of Agriculture, U.S. Ushewokunze-Obatolu, U., 253-54, 255, 272, World Intellectual Property Organization 273 (WIPO), 177 World Summit on Sustainable Development, Vaccines, 73 180, 242 Values, 140-46, 147, 207 World Trade Organization (WTO), 28-29, 40, 81, 99, 189, 190, 215, 225, 246, Virus-resistant crops, 114, 181 Vision 2020, 52, 54 258, 259; biosafety policy and, 159, Visioning exercises, 69 213, 214; European Union and, 191; Vitamin A. See Pro-vitamin A intellectual property rights and, 90-91, Vitamin B12 deficiency, 132 93-94, 176 Vitamins, 14, 114 WTO. See World Trade Organization Von Braun, J., 224-25, 228-29, 247, 256-57, 265, 268, 269, 271 Xanthophylls, 132 Von Grebmer, K., 272, 273, 274, 275 Yams, 32, 104 Vulnerability, 100-101 Yellow beans, 92-93 Walker, S., 91, 95

Zambia, 29, 30, 32, 191, 200, 228-29, 232,

development and use in, 15, 19t; bio-

253; biosafety policy in, 161; biotechnology

technology regulations in, 77, 231; Bt cotton

WCD. See World Commission on Dams

WHO. See World Health Organization

Wheat, 102, 103, 127

White man's dilemma, 6

cultivation in, 23t; Cartagena Protocol ratified by, 74; intellectual property rights in, 175t; public awareness in, 27t; public opinion in, 84; trade in, 192, 196

Zero-sum game, 39

Zimbabwe, 29, 30, 32, 35, 102, 181, 191, 200, 232, 245, 253, 263; biosafety policy in, 16, 160, 161, 174t, 209; biotechnology

development and use in, 15, 19t; biotechnology regulations in, 76–77, 231; *Bt* cotton cultivation in, 23t; Cartagena Protocol ratified by, 74; intellectual property rights in, 175t; public awareness in, 27t; public opinion in, 84; science in, 169; trade in, 192, 193 Zinc (dietary), 114