Index

A
Access to food, 113, 115, 135
Agricultural production, 8, 17, 18, 20, 42, 46, 109, 122, 125–127, 130, 132, 135, 143, 149, 159, 163, 174, 181, 203, 204
Agro-Ecological Zones (AEZs), 6, 19, 37–41, 49, 54
Annual crops, 92, 122, 141
Armington elasticity, 180, 188
Autonomous adaptation, 161, 175–178, 180, 186, 187
Availability of food, 111, 112, 135

B
Back Of The Envelope (BOTE) Model, 127, 130
Bananas/Matooke, 117, 118, 122, 124, 125
Beans, 117, 118, 125, 134, 149, 152
Bilateral trade, 45, 50
Biodiversity international, 117
Biofuels, 24, 88, 100
Blue water, 24
Brazil, 7, 43, 46, 49, 51, 52, 60, 139–146, 148, 149, 151–155

C
Californian drought, 87, 101
Caloric intake, 118
Capital-water substitution, 12, 18, 23
Carryover provisions, 88
Cassava, 117, 118, 121, 122, 124, 125, 134, 150, 151, 152
Central valley, 6, 101, 105
China, 1, 2, 4, 42, 43, 46, 50–52, 60, 71, 119
Cholera and dysentery, 112
Climate change, 4, 7–9, 43, 68, 109, 110, 116–122, 126, 127, 134–136, 155, 159–163, 170, 176, 179, 182, 184, 187, 193, 201
CLIRUN-II, 29
Coffee, 114, 118, 119, 122, 125, 126, 134, 135, 150–152
Commercial water, 25, 26
Competition for water, 19, 42, 44
Computable General Equilibrium (CGE), 5, 6, 12, 13, 15, 18, 20, 23, 31, 32, 38, 50, 68, 77, 109, 159, 198
Computable General Equilibrium (CGE) models, 5–8, 11–13, 15, 18, 20, 23–29, 31, 32, 37–41, 43, 50, 53, 68, 70, 71, 77, 84, 87, 88, 90, 92, 95, 98, 101, 109, 110, 116, 122, 135, 142, 143, 153, 159–161, 187, 193, 197–199, 205
Conservation, 7, 24–26, 30, 32, 68
Constant Difference of Elasticities (CDEs), 25
Constant Elasticity of Substitution (CES), 12, 18–20, 23, 26, 41, 92, 163, 164, 166, 173, 175, 193, 199
Constant Elasticity of Transformation (CET), 42, 91, 102, 203
Cotton, 2, 89, 91, 92, 119, 132, 146, 150–152

D
Desalination, 7–9, 69, 83, 193–206
Drought modeling, 99

E
East Porterville, CA, 105
Economic growth, 1, 2, 5, 7, 11–13, 15–18, 23, 28, 30–32, 40, 43, 67–69

G. Wittwer (ed.), *Economy-Wide Modeling of Water at Regional and Global Scales*, Advances in Applied General Equilibrium Modeling,
https://doi.org/10.1007/978-981-13-6101-2

Effluent, 200
El Nino, 8, 98, 104
Elasticity, 12, 14, 19, 23, 25, 32, 42, 70, 77, 79, 80, 82, 143, 168, 181, 185, 187, 188, 198
Endowment, 14, 15, 27, 29, 49, 160, 161, 163–176, 180, 181, 186, 187
Entebbe, 110
Equivalent Variation (EV), 13, 73
Extreme rainfall events, 116

F
Factor rigidity, 91
Farm factors, flexibility, 1, 25, 69, 76, 80, 84, 91, 96, 98, 100, 102
Fisheries, 4, 27, 121
Food And Agricultural Organization Of The United Nations (FAO), The, 111, 117
Food security, 7, 9, 109–112, 114, 118, 135, 136, 139, 149

G
Global Crop Water Model (GCWM), 30
Global Trade Analysis Project (GTAP), 6, 18, 25, 40, 41, 54, 70, 77, 163, 167, 168, 188
Groundwater, 2, 3, 8, 29, 50, 61, 87–90, 102–105, 160–162, 164, 168–170, 172, 174, 181, 194
Green water, 00
GTAP-BIO-W, 6, 18–21, 39–42, 44, 45, 50, 53, 57
GTAP-W, 18, 40, 42, 161, 163–166, 168

H
Hay & forage, 91, 103
Hydrological boundaries, 37, 44
Hydropower, 4, 22, 27

I
IMPACT-WATER, 26, 27, 30
Improved sanitation, 112
Industrial productivity, 70–72
Industrial water users, 175, 183
Industry results, 132
Informal settlements, 112
Infrastructure investment, 149
Infrastructure upgrades, 94, 97, 105
Input Output (IO) table, 124
Inter-sectoral distortion, 32
Irrigated, 6, 7, 18–22, 29, 31, 37, 40–42, 44, 47–50, 57, 61, 62, 89–92, 94, 95, 98, 141, 143, 144, 146–151, 153, 155, 163, 164, 167–175, 181–183, 186, 198
Irrigated agriculture, 1, 5, 7, 15, 32, 40, 90, 95, 136, 139, 140, 143, 146, 168, 169, 181
Irrigation catchment, 39
Irrigation infrastructure, 3, 8, 97, 161, 169, 175, 177, 186
Irrigation Water Supply Reliability (IWSR), 43, 59

K
Kampala, 110, 112
Karamoja sub-region, The, 112

L
La Nina, 8, 88, 90, 94
Lake Albert, 110
Lake Edward, 110
Lake Kyoga, 110
Lake Victoria, 110
Land use change, 37, 48, 62
Landlocked, 7, 136
Livestock, 7, 30, 57, 61, 90–92, 96, 121, 122, 124, 125, 134, 135
LPJmL (dynamic vegetation, hydrology and crop) model, 29

M
Macroeconomic results, 127, 129
Maize, 117–122, 124, 125, 134, 135, 150–152
Marginal private benefit, 197
Marginal Value Product (MVP), 15
Market-clearing, 44
Market distortions, 5, 32, 94
Middle East, 193
Middle East and North Africa (MENA), 42, 43, 46, 49, 51, 52, 60, 69–75, 78, 81–84
Millet, 118, 120, 121
Multi-region, 11, 39, 41, 50
Municipal water, 13, 30, 77, 160
Murray-Darling Basin, 3, 6, 8, 22, 87–89, 91, 92, 94–96, 100, 102, 105

N
National Planning Authority (NPA), 111, 112
Natural water sources, 194, 195, 203, 206
Netherlands, The, 7, 8, 159–163, 167, 169–172, 178, 180–182, 184, 186, 187
Nile River, 110
Non-agricultural water use, 30
North Africa, 42, 69, 71, 73
Nutrition, 111

O
Open defecation, 112
Ord River Scheme, 94, 95
Organisation for Economic Co-operation and Development (OECD), 11, 29
Own-price elasticity, 24

P
Partial equilibrium, 23, 39, 197
Perennial crops, 6
Planned adaptation, 161, 175, 177, 186
Potato, 120
Price elasticity of demand, 14, 24–26

Q
Queen Victoria National Park, 110

R
Rainfed, 7, 19, 21, 31, 37, 39, 41, 42, 44, 47, 49, 50, 53, 57
Rain fed agriculture, 168, 169
Rest of the World (RoW), 43, 46, 123
Rice, 22, 46, 57, 72–74, 81, 82, 88, 89, 91, 92, 94, 96, 98–100, 120, 121, 125, 141, 148, 150–152, 155
River basin, 3, 20, 27–30, 37, 38, 40–42, 44, 45, 49, 50, 53, 75, 155, 160

S
Scenarios, 7, 8, 23, 68–71, 68–71, 73, 76, 77, 80, 84, 91, 95, 118, 119, 139, 141, 142, 144, 146–149, 155, 159, 162, 166, 172, 173, 175–177, 184, 185, 187, 197, 200–203, 206
Shadow value, 19, 42, 80, 171, 185, 203
Single-region, 20, 39, 43, 44, 46, 48–52, 62
Slack variable, 43
Social Accounting Matrix (SAM), 123, 124, 199, 200, 206
Social benefit, 00
Soldier settlement schemes, 94
Sorghum, 118, 120–122, 124, 125, 134, 135
South Asia, 42, 43, 46, 47, 50, 69, 84
Southern Sudan, 110
Specific capital, 91, 92, 123
Stability of good decurity, 00
Sub-Saharan Africa (SSA), 43, 46, 49, 51, 52, 60
Surface water, 8, 29, 31, 39, 95, 102, 161, 162, 164, 168–170, 174, 175, 177, 180, 181, 186
Sweet potato, 120

T
Tea, 119, 122
Temperature in Uganda, 114
TERM-H2O, 6, 19–22, 87, 88, 90–92, 94, 96, 98–100, 102
Terms-of-trade, 9, 99, 103, 104
Transport infrastructure, 7, 9, 109, 135, 136
Treated water, 199

U
Uganda Bureau of Statistics (UBOS), 115, 126
UN World Food Program (WFP), 110
Utilization of food, 112

V
Virtual water, 7, 74, 75

W
Water accounts, 6, 95, 102
Water Act 2007, 105
Water allocation, 5, 8, 14, 30, 98, 159, 160, 201, 206
Water availability, 4, 5, 7, 8, 13, 14, 19, 21, 23, 28, 29, 31, 38, 53, 61, 67, 69–71, 73, 75, 80, 83, 88, 90, 99, 101, 139, 141, 146, 149, 151, 152, 154, 155, 160, 161, 168, 169, 173, 175, 177, 182, 185, 187
Water buybacks, 3, 6, 87, 94, 98, 99
Water consumption, 5, 23–25, 40, 43, 59, 61, 70, 71, 74, 83, 144, 152
Water efficiency, 5, 7, 11, 26, 70, 71, 76, 77, 80, 83, 97, 171
Water footprint, 22, 24
Water infrastructure, 7, 61, 105, 110, 159–161, 163, 181
Water Institute (University Of North Carolina, Chapel Hill), The, 113
Water markets, 14, 160, 161, 176, 186, 188
Water price/pricing, 6, 25, 26, 30, 87–89, 91, 96, 98–102, 171, 172, 184, 197, 203
Water resources allocation, 76
Water scarcity, 3, 5–8, 11–18, 21–24, 26, 28, 30–32, 37–40, 42, 43, 45, 46, 50, 53, 58, 62, 67–69, 71, 73–76, 84, 91, 95, 97, 98, 101, 102, 139, 159–163, 174, 176, 178, 184, 186, 187, 193, 194, 198, 206
Water shortages, 3, 4, 28, 31, 109, 110, 122, 193, 198, 200, 206
Water stress, 1, 40, 67, 68, 80, 105
Water trading, 1, 3, 6–8, 30, 91, 98, 100, 103–105
Water use efficiency, 23, 25

Water use intensity, 40
Water volumes, 164, 166, 167, 170, 175, 182, 184, 187
Water withdrawal, 43, 69
Water-focused CGE model, 38, 39
WaterGAP Global Hydrology Model (WGHM), 29
Welfare, 13–18, 28, 37, 39, 45, 49–51, 60, 67, 68, 73, 76, 199, 200, 206
Wheat, 2, 44, 46, 57, 72–74, 81, 82, 120–122, 125, 127, 135, 150–152, 163, 167, 173, 174, 178–181, 180, 183, 188
World food crisis, 111

Z
Zero-profit, 44