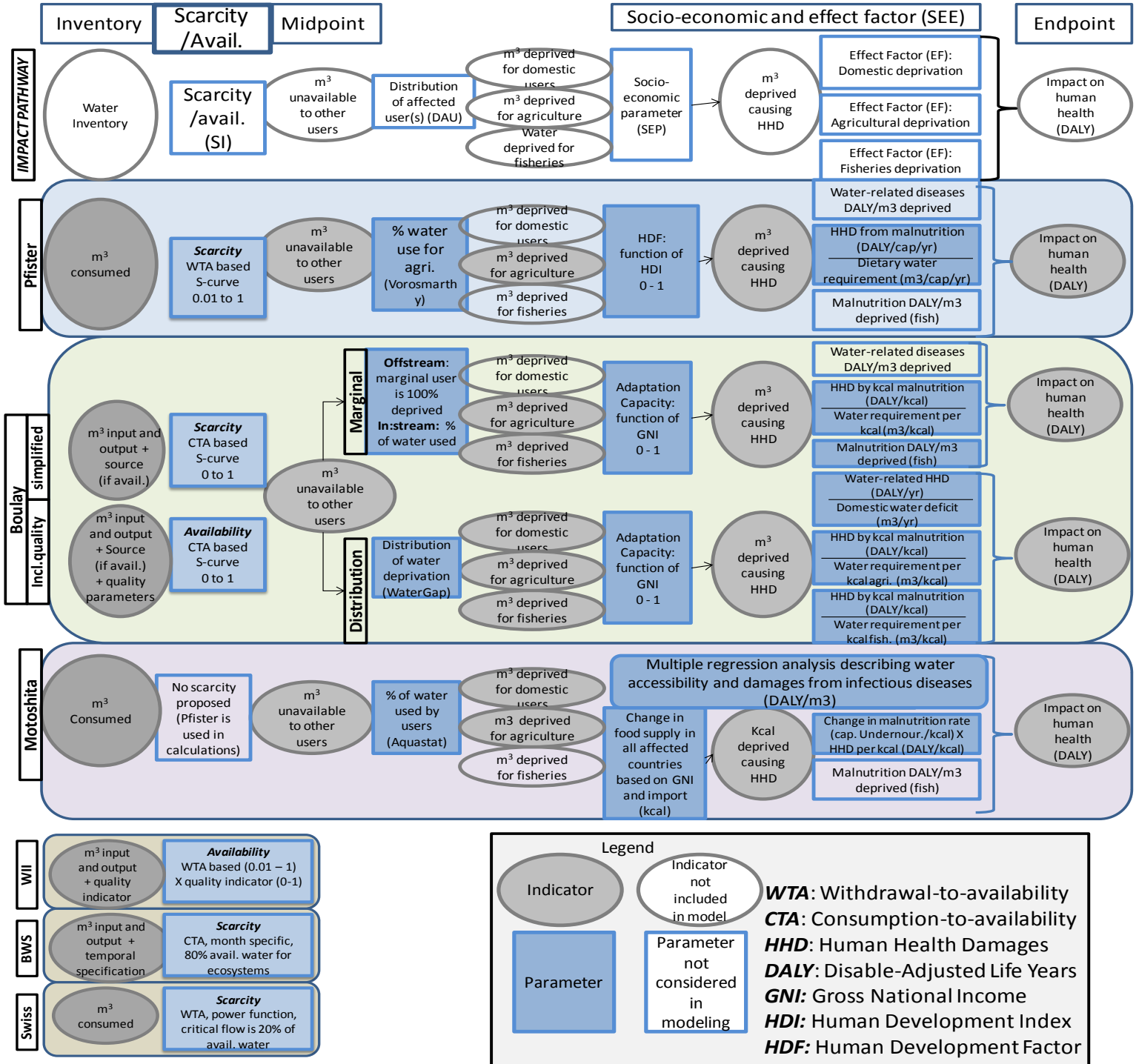
Inventory
Scarcity /Avail.
Midpoint
Socio-economic and effect factor (SEE)
Endpoint
IMPACT PATHWAY
Water Inventory
Scarcity /avail. (SI)
m³ unavailable to other users
Distribution of affected user(s) (DAU)
m³ deprived for domestic users
m³ deprived for agriculture
Water deprived for fisheries
Socio-economic parameter (SEP)
m³ deprived causing HHD
Effect Factor (EF): Domestic deprivation
Effect Factor (EF): Agricultural deprivation
Effect Factor (EF): Fisheries deprivation
Impact on human health (DALY)
Pfister
m³ consumed
Scarcity WTA based S-curve 0.01 to 1
m³ unavailable to other users
% water use for agri. (Vorosmarthy)
m³ deprived for domestic users
m³ deprived for agriculture
m³ deprived for fisheries
HDF: function of HDI 0 - 1
m³ deprived causing HHD
Water-related diseases DALY/m3 deprived
HHD from malnutrition (DALY/cap/yr) / Dietary water requirement (m3/cap/yr)
Malnutrition DALY/m3 deprived (fish)
Impact on human health (DALY)
Boulay
simplified
Incl.quality
m³ input and output + source (if avail.)
Scarcity CTA based S-curve 0 to 1
m³ input and output + Source (if avail.) + quality parameters
Availability CTA based S-curve 0 to 1
m³ unavailable to other users
Marginal
Offstream: marginal user is 100% deprived In:stream: % of water used
Distribution
Distribution of water deprivation (WaterGap)
m³ deprived for domestic users
m³ deprived for agriculture
m³ deprived for fisheries
Adaptation Capacity: function of GNI 0 - 1
m³ deprived causing HHD
Water-related diseases DALY/m3 deprived
HHD by kcal malnutrition (DALY/kcal) / Water requirement per kcal (m3/kcal)
Malnutrition DALY/m3 deprived (fish)
Impact on human health (DALY)
Water-related HHD (DALY/yr) / Domestic water deficit (m3/yr)
HHD by kcal malnutrition (DALY/kcal) / Water requirement per kcal agri. (m3/kcal)
HHD by kcal malnutrition (DALY/kcal) / Water requirement per kcal fish. (m3/kcal)
Impact on human health (DALY)
Motoshita
m³ Consumed
No scarcity proposed (Pfister is used in calculations)
m³ unavailable to other users
% of water used by users (Aquastat)
m³ deprived for domestic users
m3 deprived for agriculture
m³ deprived for fisheries
Multiple regression analysis describing water accessibility and damages from infectious diseases (DALY/m3)
Change in food supply in all affected countries based on GNI and import (kcal)
Kcal deprived causing HHD
Change in malnutrition rate (cap. Undernour./kcal) X HHD per kcal (DALY/kcal)
Malnutrition DALY/m3 deprived (fish)
Impact on human health (DALY)
WII
m³ input and output + quality indicator
Availability WTA based (0.01 – 1) X quality indicator (0-1)
BWS
m³ input and output + temporal specification
Scarcity CTA, month specific, 80% avail. water for ecosystems
Swiss
m³ consumed
Scarcity WTA, power function, critical flow is 20% of avail. water
Legend
Indicator
Indicator not included in model
Parameter
Parameter not considered in modeling
WTA: Withdrawal-to-availability
CTA: Consumption-to-availability
HHD: Human Health Damages
DALY: Disable-Adjusted Life Years
GNI: Gross National Income
HDI: Human Development Index
HDF: Human Development Factor