

Confidential Briefing Ministry of Water

To: Ministry of Water, Erasmusland

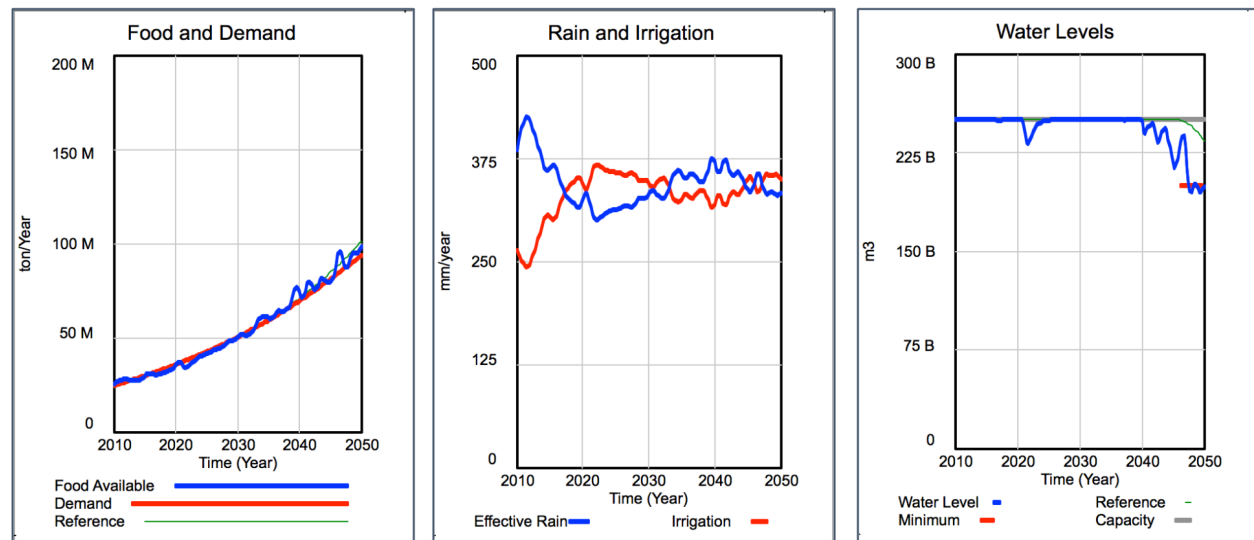
Subject: Briefing on Negotiating Goals

Erasmusland is a developing nation with a growing population, a desire to ensure food security, and aspirations for strong economic growth. You represent the Ministry of and the Water Control Board and will soon be convening for a national discussion of agricultural policy.

Context: While Erasmusland has come close to providing enough food to meet demand, the margin is low and production is highly variable due to fluctuating rainfall. As a result, food security is an intermittent issue for our most vulnerable population. Some increase in capacity is necessary to ensure that everyone can be consistently fed. Aquifer levels are subject to variability due to rainfall and the increasing demands of the country's agricultural sector. Rainfall is projected to fall overtime due to warming global temperatures. Despite this, increases in irrigation capacity is expected to compensate and allow for growth in food production. The combination of decreases in rainfall and increases in irrigation, lead us to project that water levels will start to drop and fall below 200m³ by 2047. The graphs below show your analysts' predictions of important measures.

Goals: Your goal is to improve food security while ensuring there is sufficient water to meet the needs of the population on an ongoing basis. Your analysts project that the requires that aquifer levels never drop below 200m³.

Other interests at the meeting may conflict with your goals. Your responsibility is to advocate for policies that will promote your goals. There are 12 policies currently being considered at the meeting. These are described more fully on the next page.



ALPS Policy Levers

POLICY LEVER	LEVER SETTING			DESCRIPTION
	-10 tokens	Current	+10 tokens	
Crop Land Growth	0%	3%	6%	Annual rate of expansion of land for growing crops, currently at 3% per year. There is potential to increase the cropland conversion rate of forests to cropland to as high as 6% or reduce it to as low as a total moratorium. Converting land to farm use requires clearing of forests and typically requires burning which contributes to greenhouse gas emissions.
Marginal Land Return	n/a	0%	15%	Percent of crop land that is abandoned and allowed to convert back to forest. 15% of crop land is marginal and ripe for abandonment. Because the land is lower yield, abandonment lead to a 5% increase in the average yield on the remaining crop land.
Livestock Growth	0%	3%	6%	Annual rate of growth in livestock, currently 3% per year. Livestock growth can be increased to as high as 6% or reduced to as low as a full halt. Livestock is raised primarily for status rather than food. While livestock do not require additional land, they do require more resources than crops and result in higher greenhouse gas emissions due to the cows' biological methane emissions.
Fertilizer Growth	0%	3%	6%	Annual rate of growth in fertilizer use per hectare, currently 3% a year. You can increase the fertilizer growth rate to up to 6% or place limitations on its use that reduce the growth rate to as low as 0%. While use of fertilizer increases crop yield, it creates N ₂ O which is a greenhouse gas.
Crop Yield Improvement	n/a	0%	25%	Increase in productivity per hectare from crops through means other than irrigation and fertilizer, like technology and practices (i.e., new seeds). There is potential to dramatically improve base crop yield and input effectiveness by up to 25%.
Livestock Yield Improvement	n/a	0%	25%	Annual increase in the food produced per head of livestock. There is potential to dramatically improve livestock yield by up to 25% through new technology and practices including new breeds, better livestock health, and better milk and egg practices.
Reservoir Expansion	n/a	0%	25%	Building of dams to expand water reservoirs. There is the potential to expand reservoir capacity by up to 25%, thereby increasing the availability of water for farming and other purposes.
Irrigation Expansion	n/a	0%	25%	Installation of irrigation systems to provide water to croplands. There is the potential to expand irrigation by up to 25%, thereby increasing the likelihood of successful harvest of croplands.
Irrigation Improvement	n/a	0%	50%	Improvements to technology and practices (i.e. drip irrigation) that result in more efficient water use for agricultural purposes. There is potential to facilitate adoption of best practices by up to 50% more farmers.
Export Crop Expansion	n/a	0%	10%	Shifting from traditional crops to those that have a higher value (i.e. tomatoes), usually through export to other countries. The value of crops can be increased by up to 10% by shifting a portion of production to higher value crops. These crops tend to require more water than traditional crops.
Greenhouse Gas Reduction	n/a	0%	25%	Reduction in greenhouse gas emissions (i.e. methane and nitrogen) that are produced by agricultural activities. Policies to encourage sound manure management and nitrogen runoff reduction can reduce greenhouse gas emissions from crops and livestock by up to 25%.
Food Waste Reduction	n/a	0%	20%	Percent reduction in food waste as it moves from the farm and the consumer. Policies to improve transportation, storage, and markets can reduce post-harvest losses by up to 20%.