DRAFT: Agriculture VCAPS Causal Diagram
Meeting Date: 02/25/19

All Agriculture
Agriculture
Mānā Plain
(Waimea to Polihale)
Sea Level Rise
Saltwater Inundation
Marine Flooding, including groundwater
Crop will die/
Lower crop yield
Mānā Plains is pumped
Corn will die
immediately
Other crops will start having lower yields, like sugar
Eventual die off of other crops
Main crop subject to inundation are research crops

- Commission study of SLR groundwater impacts
- Study alternative AG uses, i.e aquaculture
- Dutch polders
- Build managed dike system, i.e. in Kekaha
- Alternative agriculture methods, i.e. aquaponics & greenhouse
- Commission study of SLR groundwater impacts
- Increase pumping in the short term
- Develop salt tolerant plants, alternative plants
- Relocation of AG (higher elevation or to fallow land)
- Alternative agriculture methods, i.e. aquaponics & greenhouse

Environmental
Consequence
of building dike
Energy Cost
to build dike
Pumping consumes energy and is costly
Requires infrastructure to relocate
Drains must be open all the time (e.g. Cox drain)
Costly
-Different techniques are crop specific

Socioeconomic
consequence
Flooded infrastructure:
- ditches/roads
- Limited access to AG fields

Extreme Weather Events
- Heavy Rainfall
- Extreme Heat
- Drought
- Former wetland
- Return portions to natural wetlands

Agriculture
River Valleys
(Hanapēpē and Waimea)
Intense rain
tribal
Flooding
Crops are lost
Ability to farm hindered
Increase in invasive species
Loss of infrastructure
Economic loss
Emotional Impact
- Social service dependency

Impacts Funding
- Long recovery time
- No crop insurance

Unintended consequences
- i.e. unwanted infrastructure

Community resilience planning
- Collaboration with agencies and farmers to create integrated approach

Drought
Lower freshwater table
Decrease River Flow
Higher rates of evapotranspiration
Stressed Crops/vegetation
Pest management issues
Economic consequence

Increased wildfire
Timing of high wind events
Depends on elevation
Crop type changes over time
Order depends on crop
Main crop is seed corn.
Other potential crops: alfalfa, tobacco, soy beans papaya, mango (located more mauka)

Crop downsizing
Needs to make decisions where water will go
Balance public trust as traditional water code
Ditches and Diversions
Balance traditional, environmental, domestic

Inreased irrigation
Crops grown presently and in past not tolerant to saltwater.

Good soil, lots of sunlight, highest yield AG on island, but ag needs manmade intervention

-Different techniques are crop specific

With sugar, they used to pump a lot more

Water quality impacts
Loss of topsoil

Food sustainability issues
Diverted riverways

- Plant drought resistant crops, i.e. dry taro rather than wet
- Shade crop
- Increased Costs
- Need to research potential cost to irrigate more

Increased wildfires