



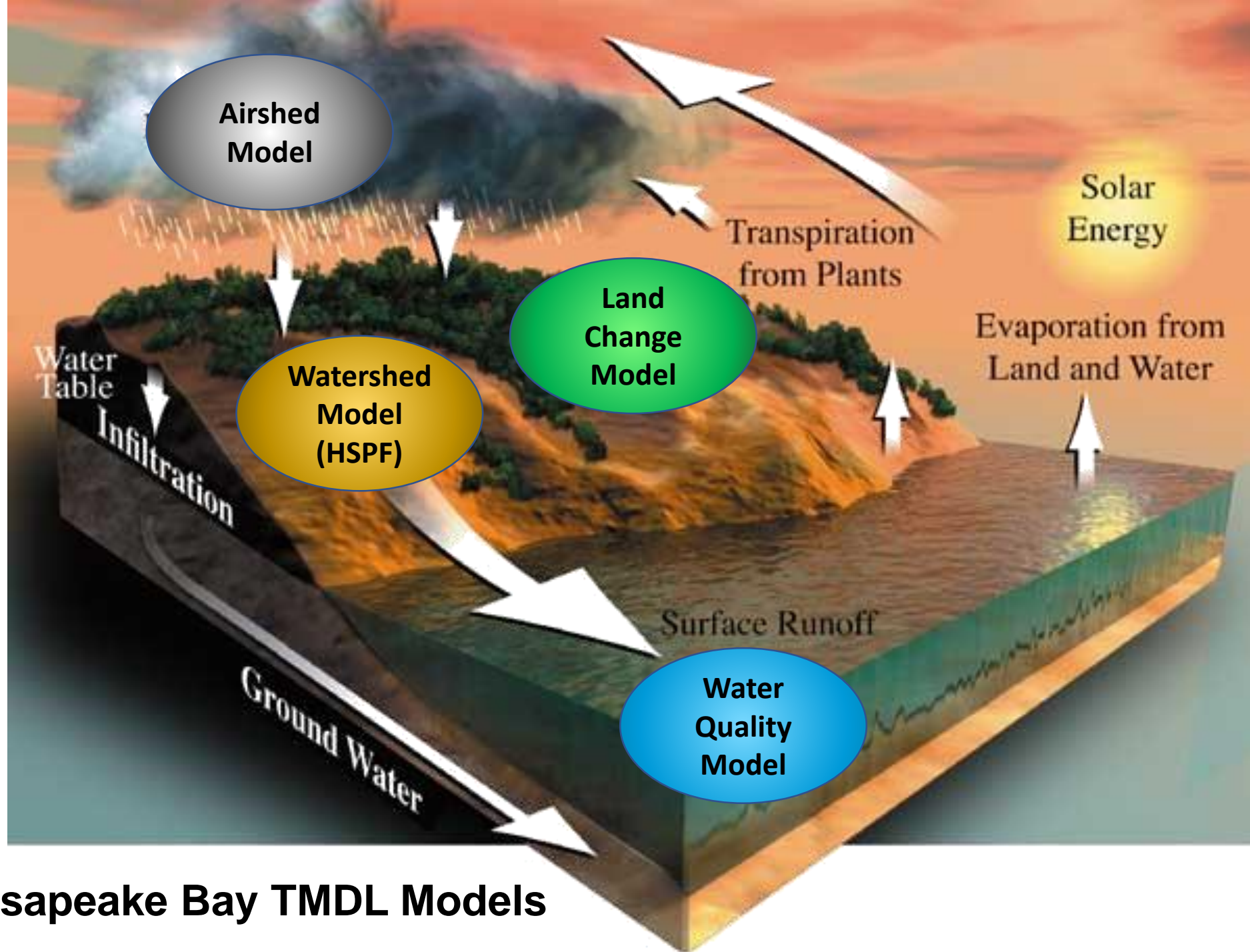
Chesapeake Bay Program
A Watershed Partnership

Chesapeake Bay Land Change Model: Future Functionality

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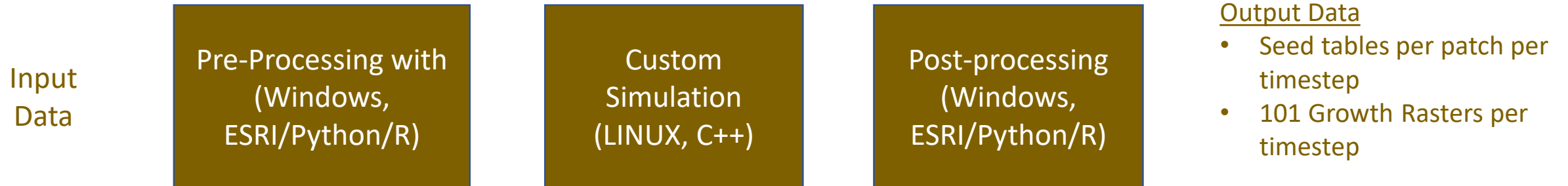
Chesapeake Bay TMDL Models

CBLCM Evolution (2010 – 2018)

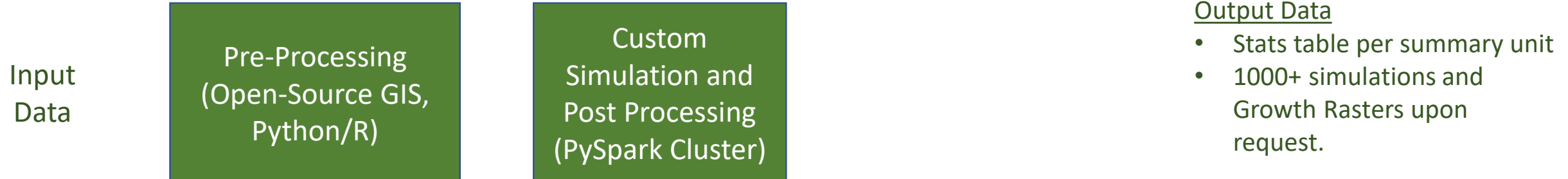
CBLCM v1 and v2 (2010 -2013)



CBLCM v3 and v4 (2014 -2018): Local, serial



CBLCM v5 (2019 -): Cloud-Based version, parallel and distributed



CBLCM Inputs

National Data

1. National Land Cover Database (2001 and 2011, 2014 edition)
 - Land Cover
 - Impervious Cover
2. National Elevation Dataset (30m, Slope)
3. HERE (formerly NAVTEQ proprietary vector data):
 - Streets
 - Public and private institutions such as airports, parks, golf courses etc.
4. Census Boundaries (2010):
 - Blocks, Block Groups, Tracts, Places, County Sub-divisions,
 - Counties, Traffic Analysis Zones, Urban Areas/Clusters (2000, 2010)
5. Census Data:
 - Population Estimates (2000 – 2016)
 - Decennial Census 1980 – 2010 (POP, AHHS, GRPQTRS, VAC, THU, THH)
 - American Community Survey 5-yr 2011-2015 (housing change)
 - Longitudinal Employer-Household Dynamics (2002 – 2011)
 - Bureau of Labor Statistics (CEW, decadal employment)
 - Bureau of Economic Analysis (CA25N, annual employment)
6. National Flood Hazard Layer (floodway)
7. PADUS 1.4 Public and Private Protected Lands
8. National Hydrography Datasets (NHD v1 and v2 catchments)
9. Watershed Boundary Database (HUC12s)

State/Metro/County Data

- Population and Employment Forecasts
- Zoning
- Sewer Service Areas
- Priority Funding Areas

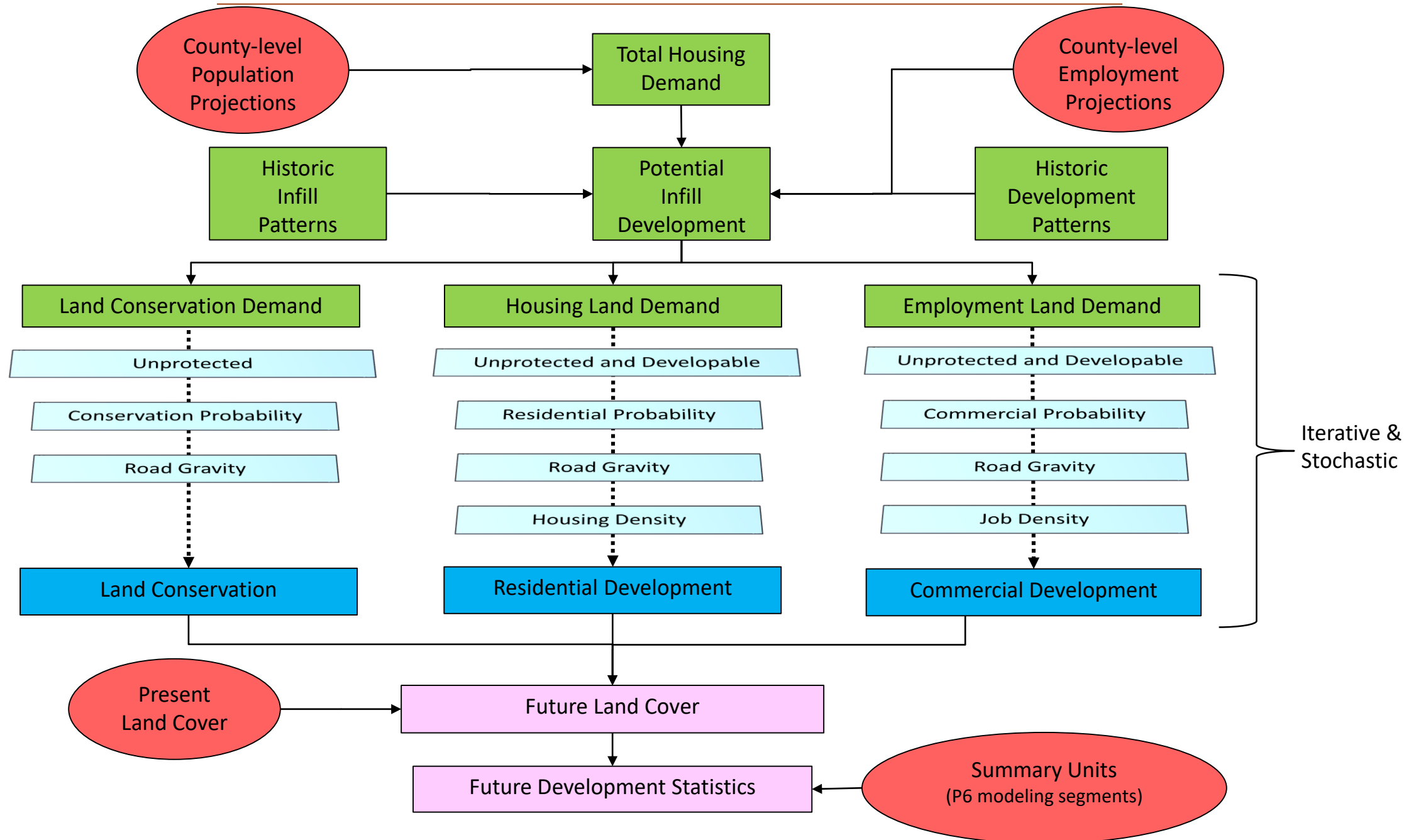
Chesapeake Bay Program Data

- High-resolution land cover (2013; CBPO)
- Protected Lands
- Phase 6 Model Segments

Scenario Data (examples)

1. National Wetlands Inventory
 - SSURGO Soils
 - Flood frequency
2. Prime soils
3. Agricultural Districts
4. Riparian zones
5. Sea-Level Rise Inundation (SLAMM)
6. Conservation rates and priorities

Chesapeake Bay Land Change Model v4



CBLCM Future Functionality

Planned Enhancements through 2025

- Add new summary units: municipalities, 1:24K NHD catchments
- Simulate annual timesteps instead of decadal
- Track forest age annually
- Simulate changes in agriculture grounded in Census of Agriculture trends
- Simulate infill/redevelopment spatially- within Census Tracts or Block Groups
- Inform development densities using local tax parcel and zoning data
- Simulate dynamic feedbacks between:
 - land availability/capacity and development densities
 - changing climatic conditions and agriculture
- Simulate alternative population projections

LUWG priorities???