

Scaling affordable, clean irrigation & water access

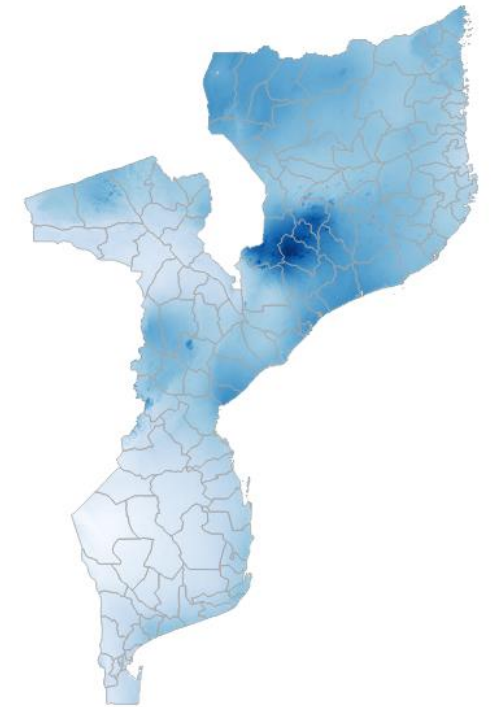
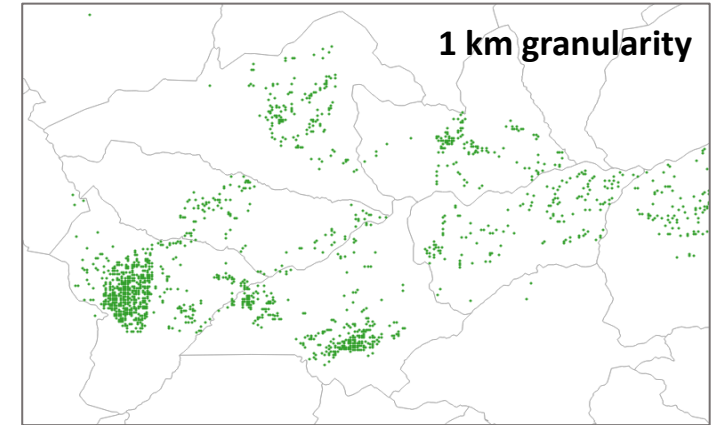
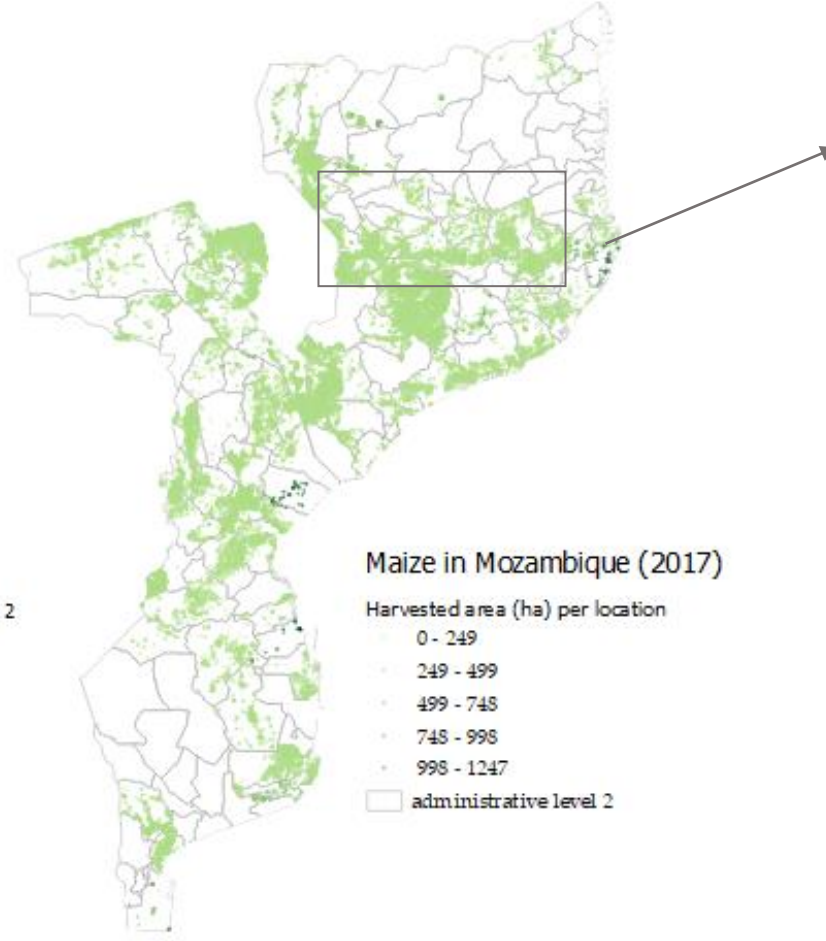
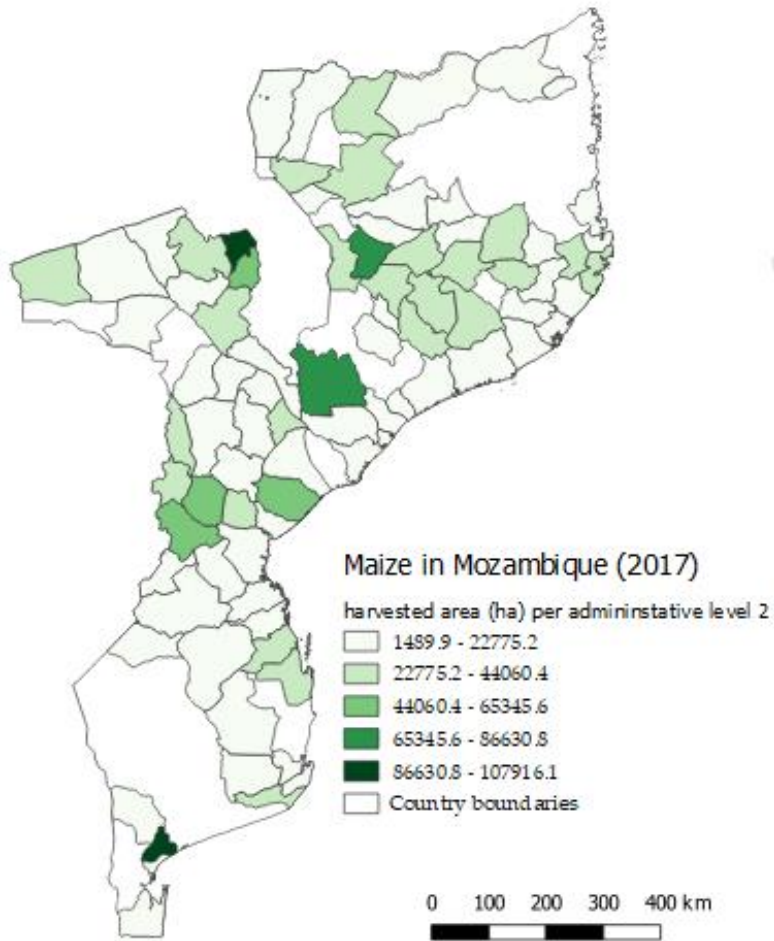
The role of data analytics

Exploratory analysis using the [Agrodem](#) & [GEP-OnSSET](#)
models for Mozambique

Alexandros Korkovelos -- akorkovelos@worldbank.org

Bonsuk Koo -- bkoo@worldbank.org

Mozambique Case Study



Annual average precipitation in Mozambique

Crop	Sowing phase		Development phase		Maturity phase		Harvesting season	
	Start	End	Start	End	Start	End	Start	End
Maize	01/10	31/12	01/01	28/02	01/03	30/03	01/04	30/05
Cassava	01/08	30/09	01/10	30/11	01/12	30/01	01/02	30/04
Rice	01/10	30/11	01/12	30/01	01/02	30/03	01/04	30/06

Estimated electricity requirements for irrigation

Output	Maize	Cassava	Rice
Total (rainfed) harvested area (ha) - 2017/18	1,871,876.6	1,108 316.5	141,840.7
Total locations in need for irrigation	2,142	18	215
Total ha in need for irrigation	136,627.6	10,744.6	7,616.7
Percentage of ha that need irrigation (%)	7.0	1.0	5.0
Total water needs (m ³ /year)	71,710,607.2	1,288,283.4	10,678,992.9
Total electricity requirements (kWh/year)	5,334,508.5	223,126.8	601,638.7

Results based on the [Agrodem](#) model, for an World Bank funded analysis conducted in 2020

Notes!

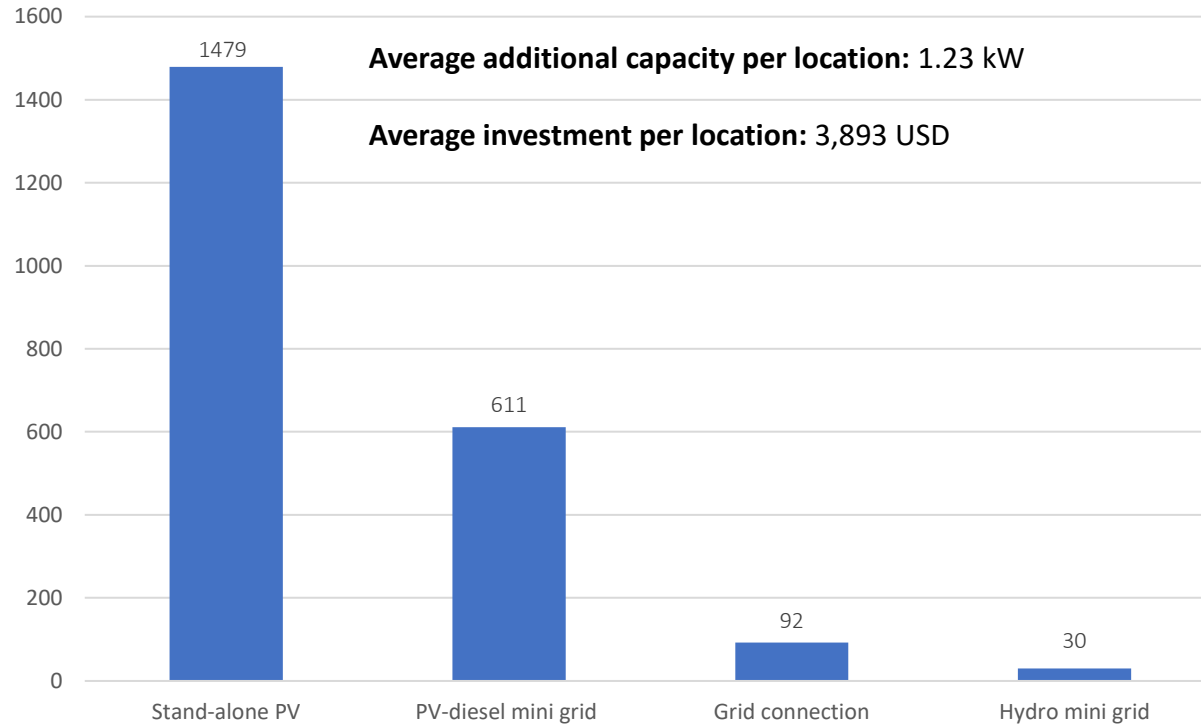
~ Results indicate that under current climatic conditions and assumptions in our modelling exercise, only a small portion of locations need irrigation in order to meet their necessary water requirements (that is evident in all crops) but particularly for Cassava; that is due to the low crop coefficient factors for this crop (half in comparison to maize) but also perhaps due to high precipitation values in main areas of cultivation.

~ About 50% of the locations show an estimate electricity requirement of less than 627 kWh/year and 75% of them less than 2775 kWh/year.

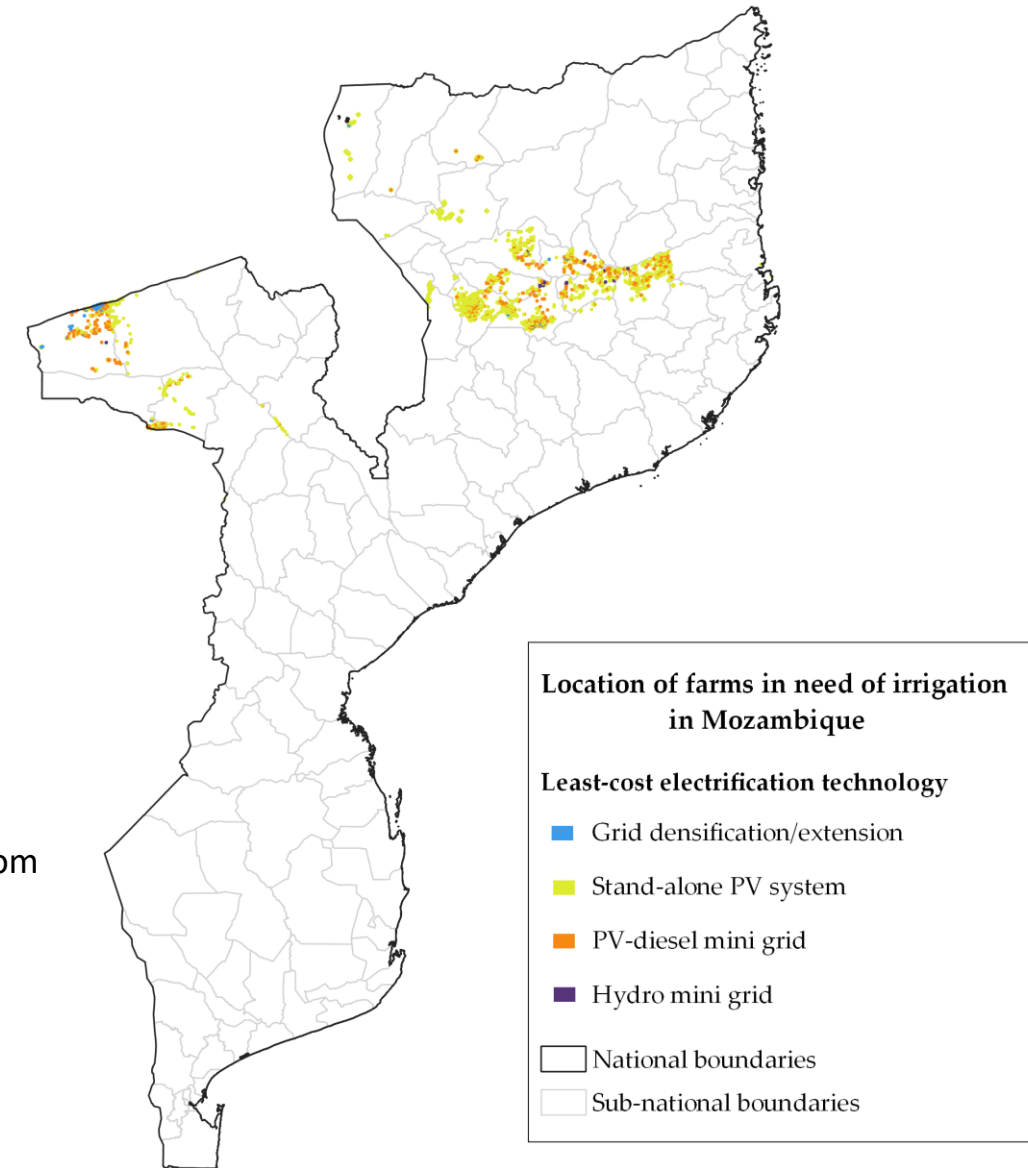
Maize farms in need for immediate intervention for irrigation in Mozambique



Focus on electrification of farms



- About 94% of farms find PV systems as the least cost electrification technology; from that about 67% in the form of stand-alone systems and about 27% in the form of mini-grids.
- Grid extension was identified in 92 locations, in which annual electricity requirements exceeded 6261 kWh.
- Hydro based mini-grids were selected for 30 farms.



The role of data & analytics, in a nutshell

A wide variety of agricultural & ancillary (geospatial) datasets have become available in the past few years. We can use data and analytics to:

- Identify the location of farms that could benefit from increased access to water and irrigation
- Estimate potential water & electricity requirements
- Identify the least cost electrification technology for irrigation in each location
- Support various stakeholders (government, private sector, donors) assess the potential opportunities and interventions requires at national or sub-national level

Supporting slides