

Low Emissions Development Strategies (LEDS) Small scale irrigation

Mozambique Modelling Team

MOÇAMBIQUE

MAPA DE USO DA TERRA LAND USE MAP

ESCALA 1:2000000

Fonte 1: do Inquérito "Estatística da Terra de Moçambique"

Este mapa foi elaborado com base em dados de 1990, com uma escala de 1:2000000. O mapa foi elaborado com base em dados de 1990, com uma escala de 1:2000000. O mapa foi elaborado com base em dados de 1990, com uma escala de 1:2000000.

Fonte 2: do Inquérito "Estatística da Terra de Moçambique"

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MAPA DE USO DA TERRA
TERRA
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Moçambique, 1990

Country surfasse: 80.1 million ha

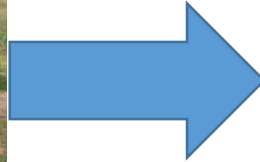
Crop area: 5.65 million ha (**12% of potential agricultural area**)

Forest area: 41 million ha

Low Emissions Development Strategies (LEDS) Modelling Support - Mozambique

- Establish Mozambique's project level baseline as reference for extrapolating future policy & implementation options in the identified priority sectors
- Long term LEDS policy planning analytical framework established targeting emissions abatement & climate resilience trends, socio-economic development tradeoffs and cost-benefit analysis of prioritized options

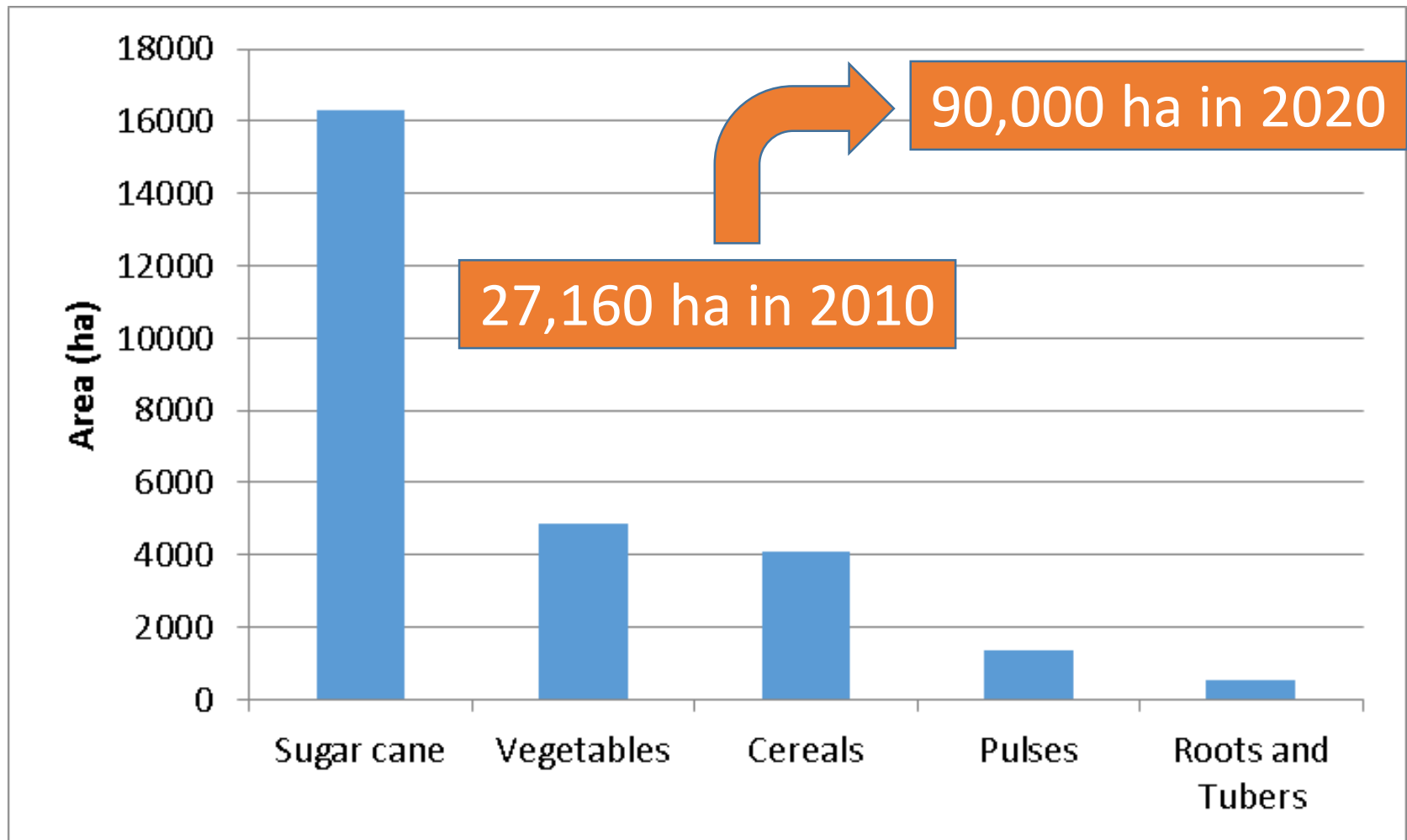
Action 1: Replace fuel powered irrigation pumps (FPI) with Solar Powered Irrigation (SPI)



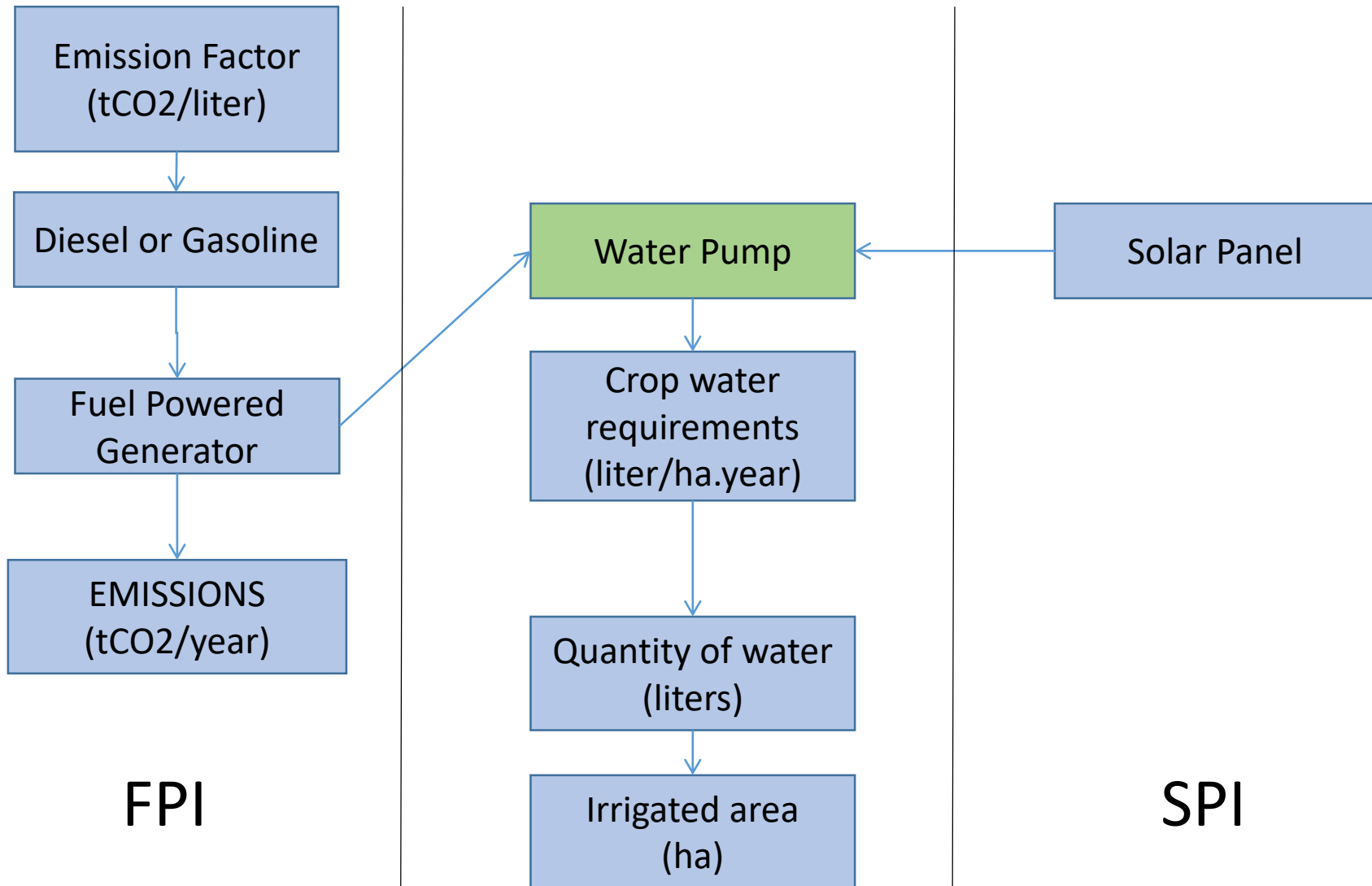
Replacing Fuel Powered Irrigation by Solar powered Irrigation

- Based on 2010 national statistics
 - 27,160 ha irrigated land
 - Sugar cane (60%), Cereals, Legumes, Roots and Tubers
 - Energy source: mostly from fuel-based pumps; gravity; national grid (hydropower)
- Projections based on national strategies
 - Based on national irrigation strategy
 - Increase irrigated land up to 90,000 ha by 2020
 - Assumed the same rate up to 2030
 - Assumed linear trends
- Emissions estimations
 - Emission factors from the Literature (tCO₂eq/liter fuel)
 - Crop water requirements (liter water per hectare per year)
 - Sugar cane (60% of the irrigated area) **not included**
 - Irrigation efficiency (rate liter fuel:liter water)

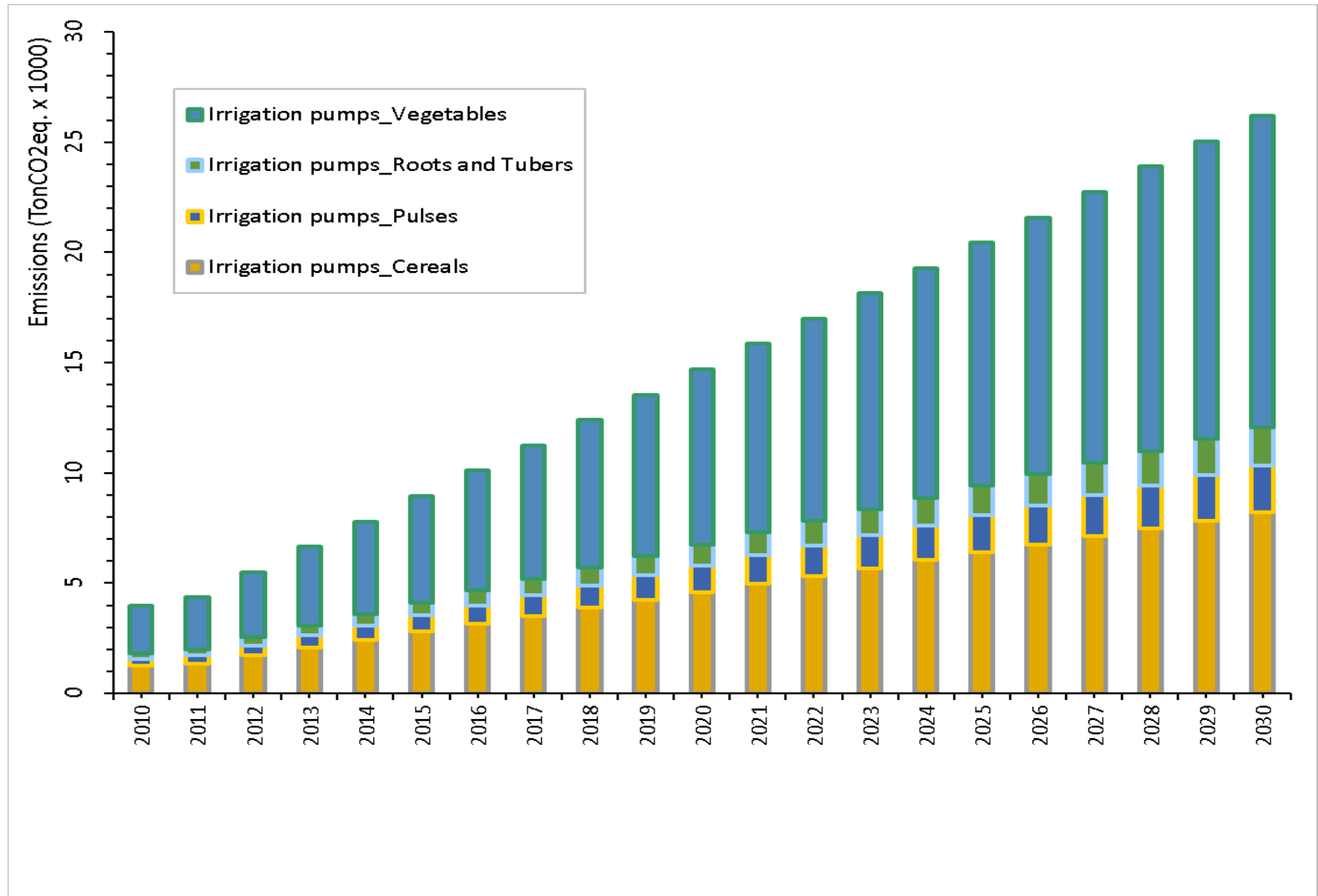
Irrigated crops (initial and projected area)



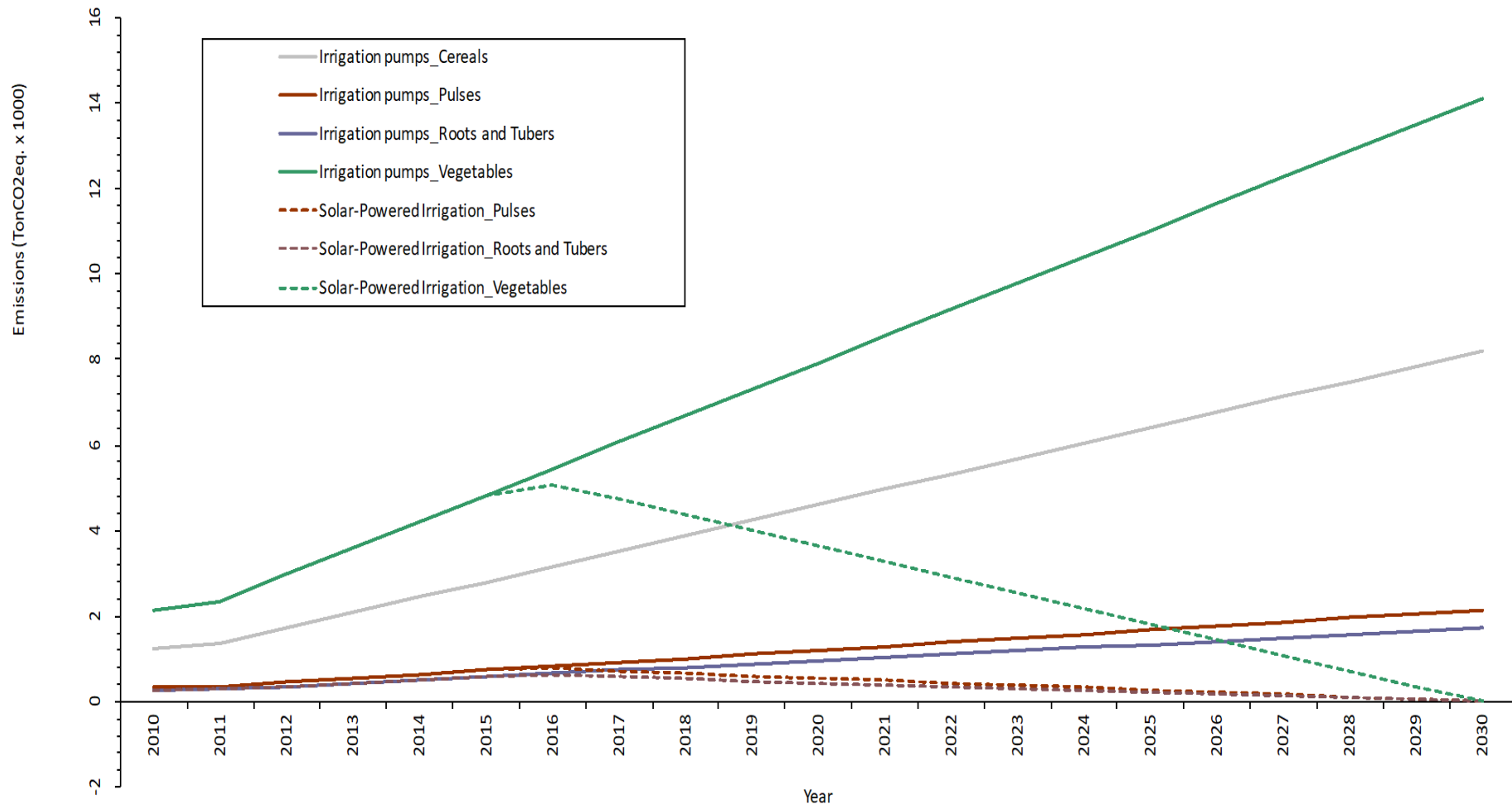
The irrigation scheme



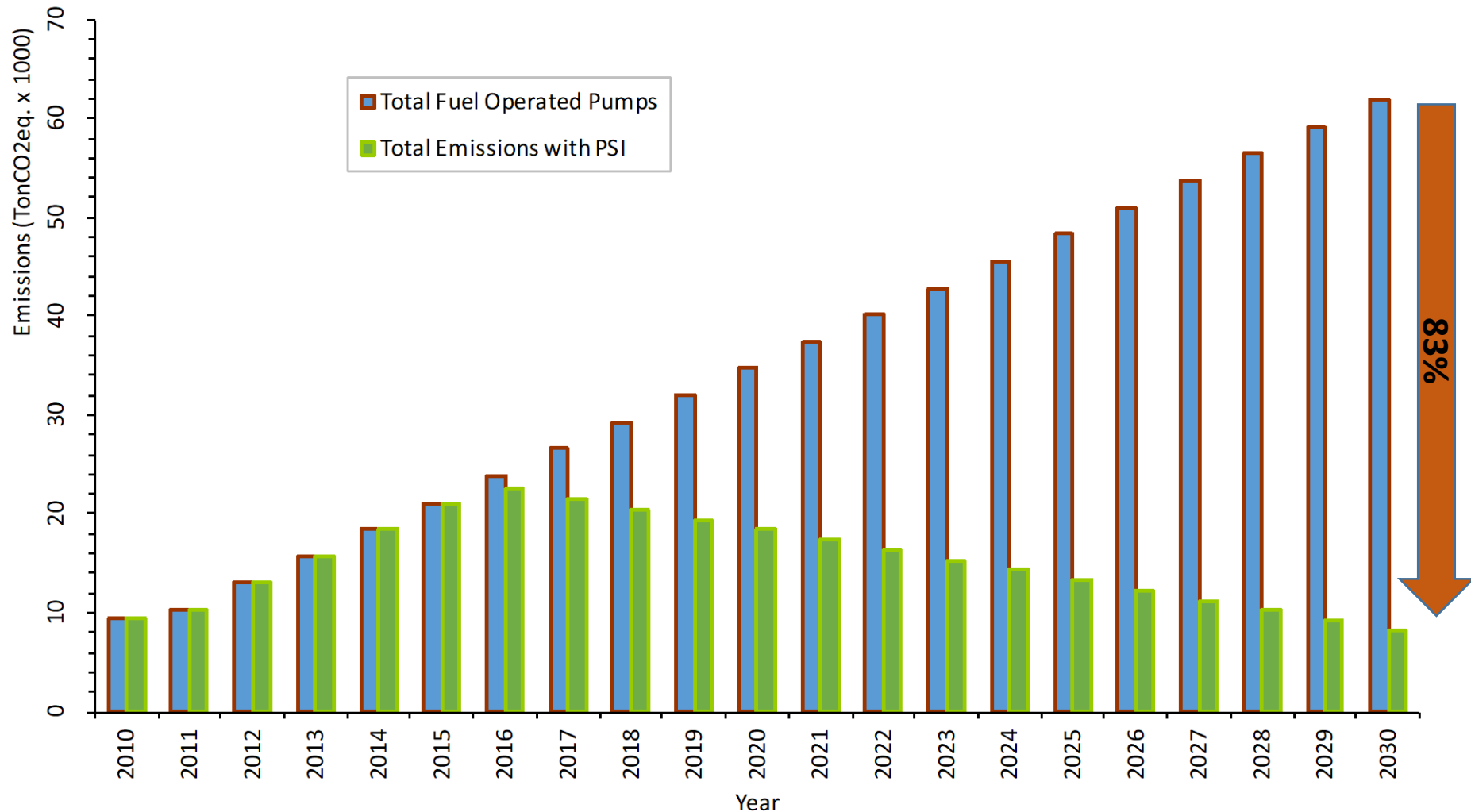
Emissions Business as Usual



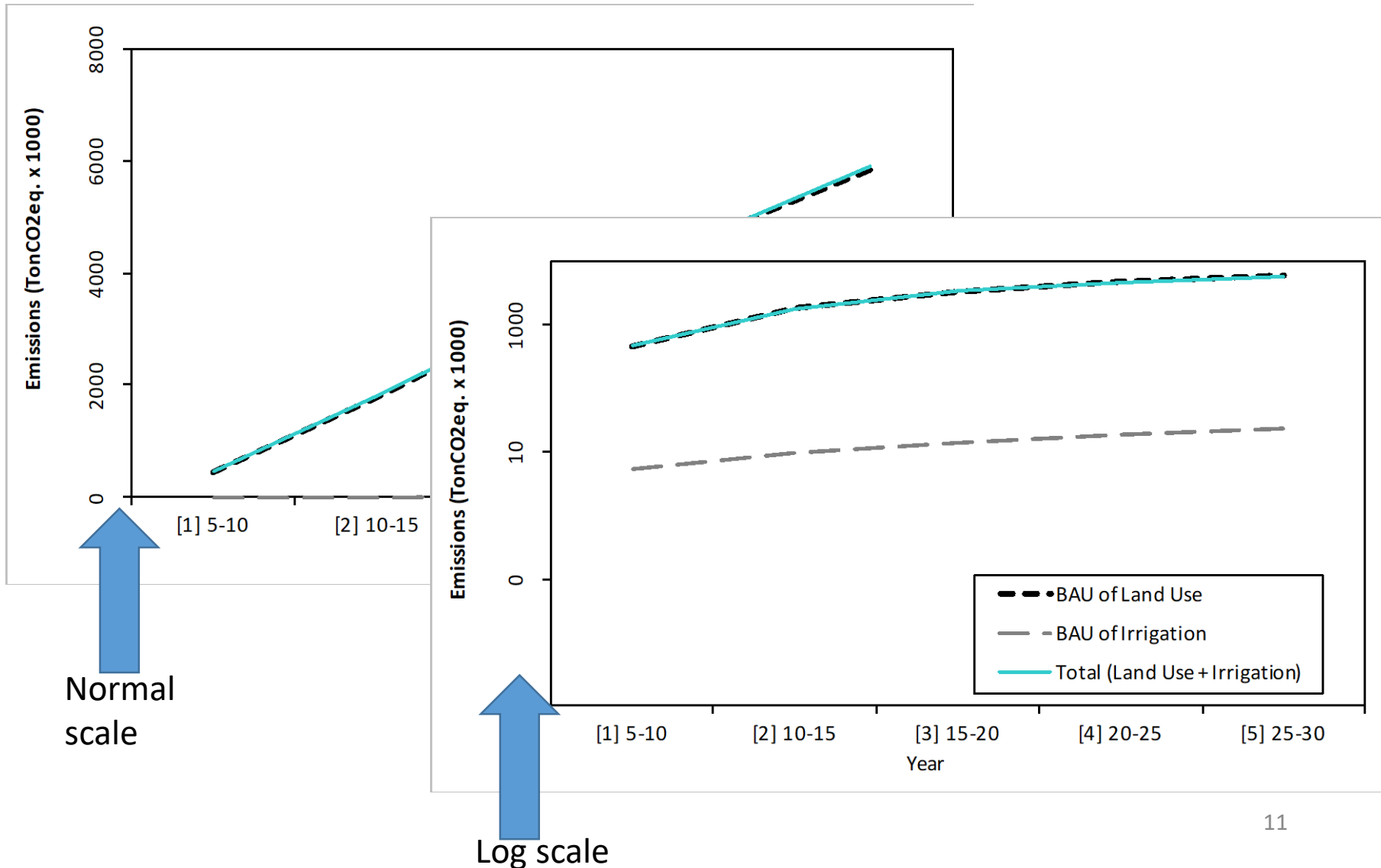
Replacing fuel operated pumps by PSI (selected crops)



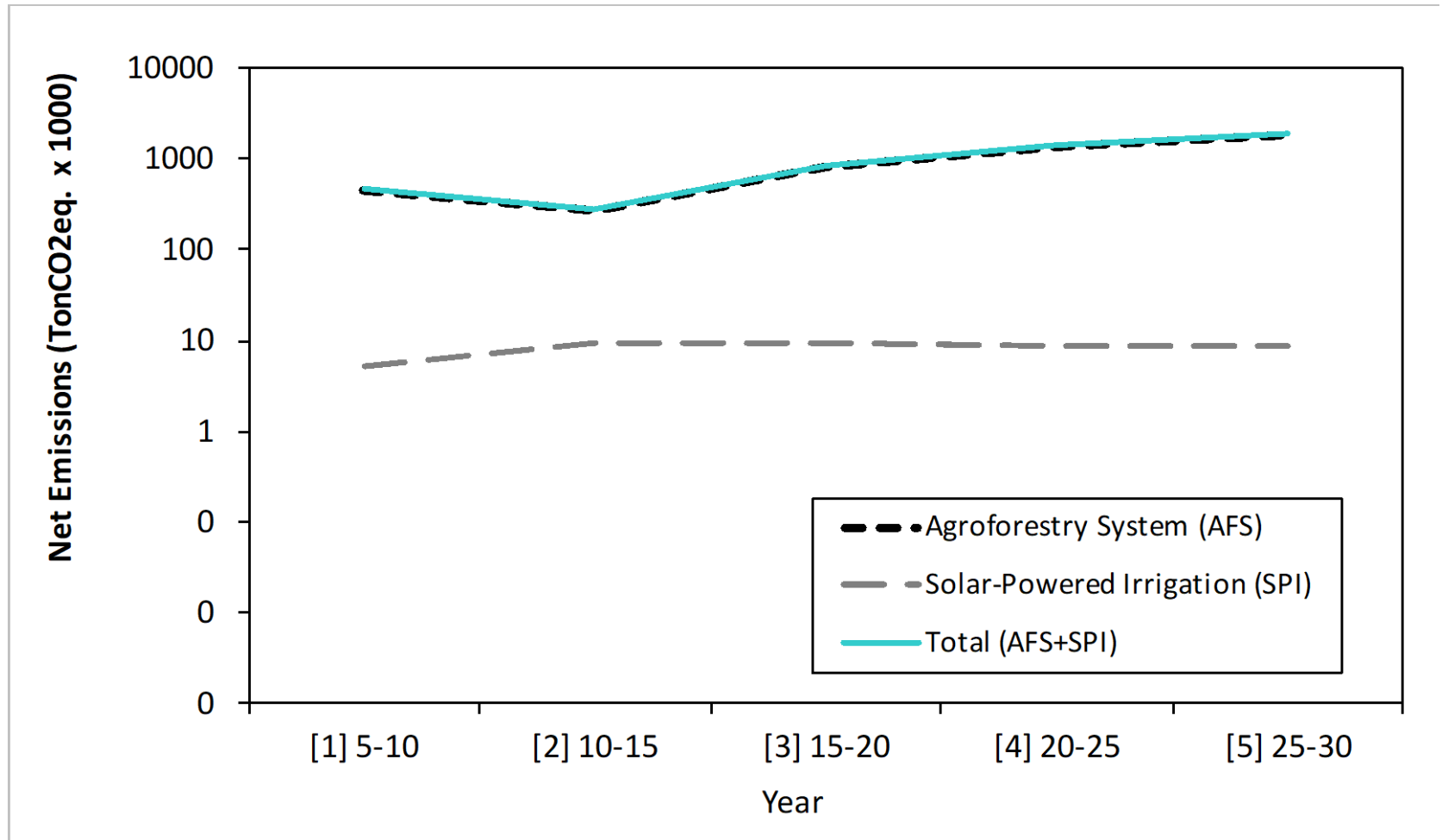
Total emissions reduction



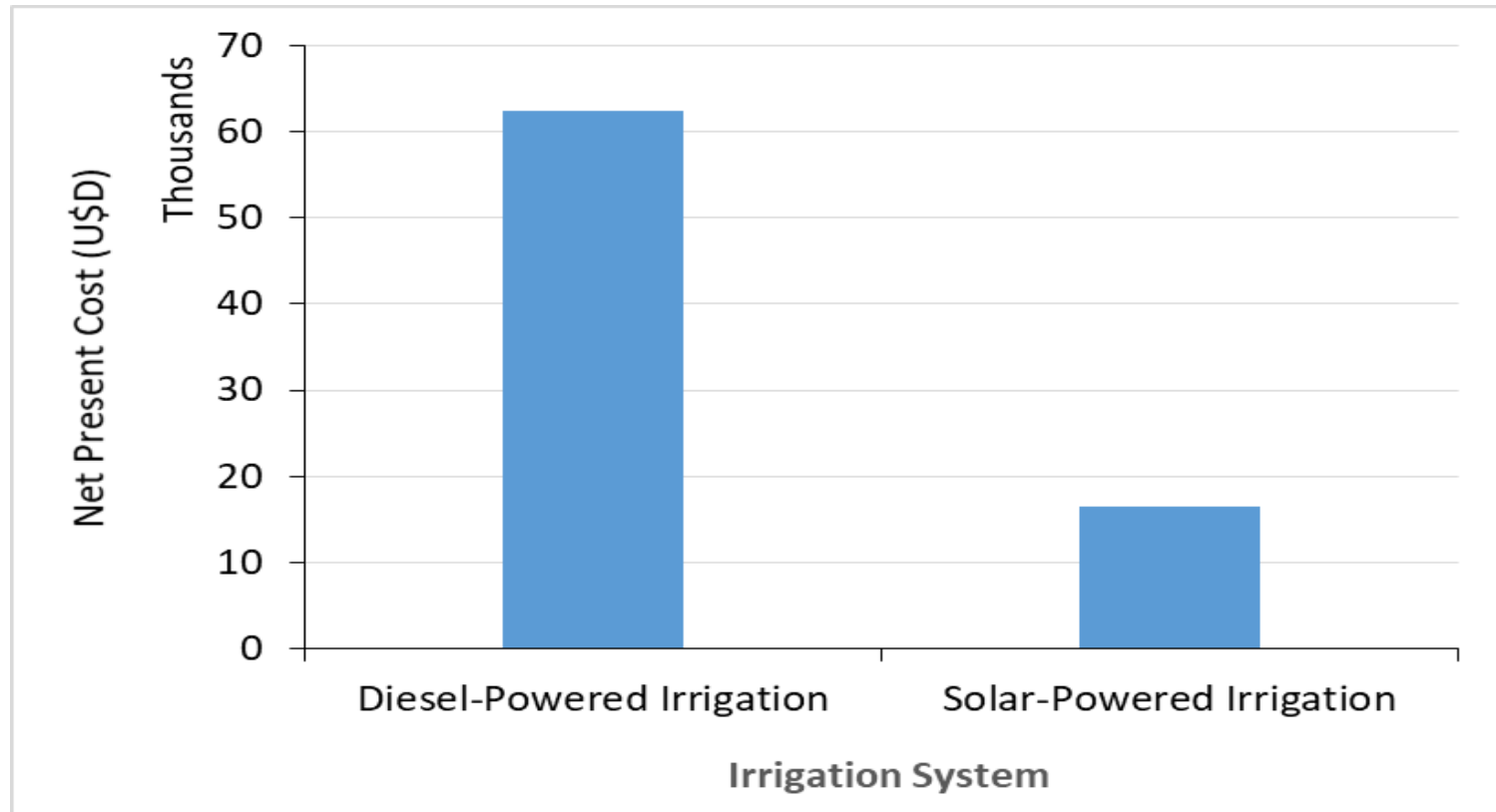
Total emissions including land use change: BAU



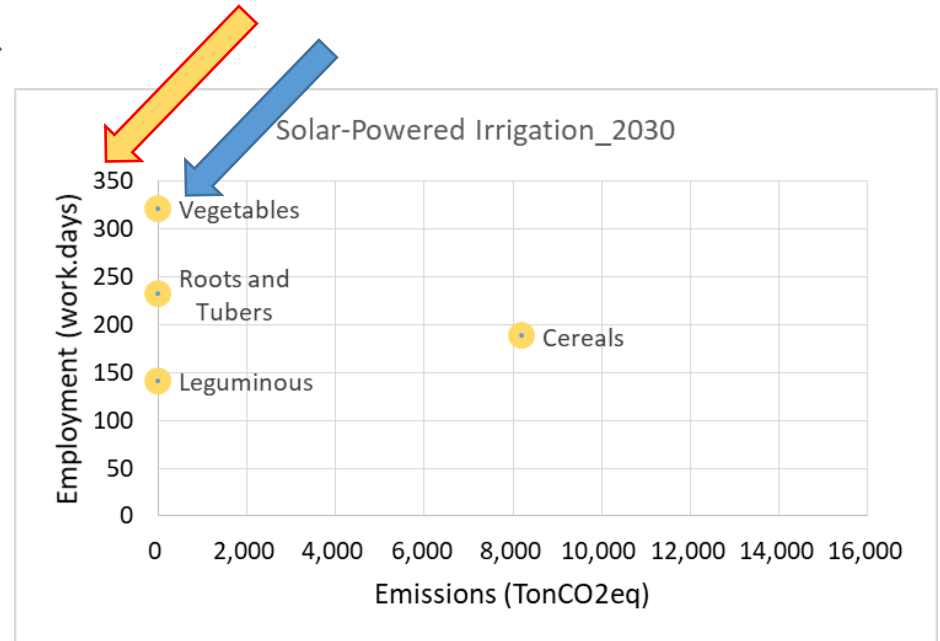
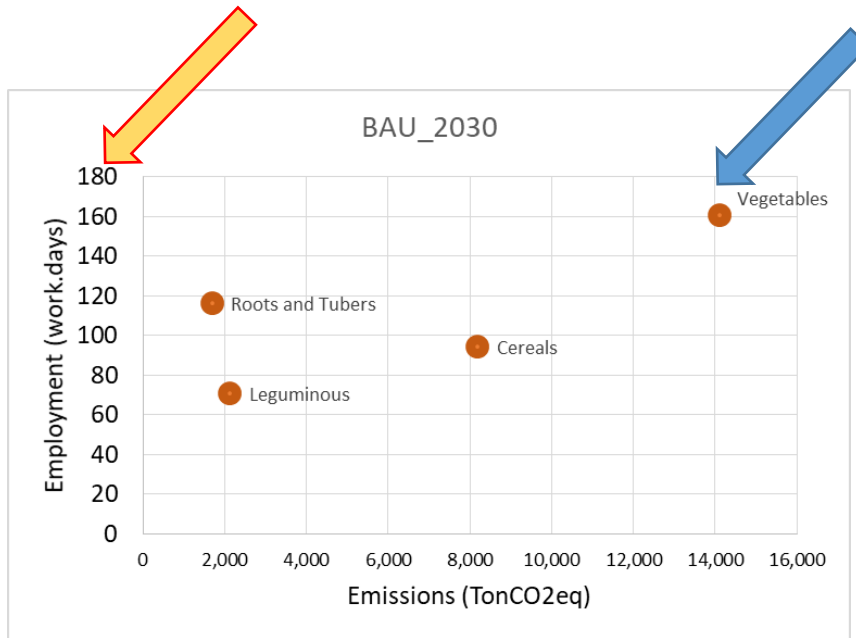
Agroforestry (sequestration)+ SPI (emission reduction)



Net Present Cost



Socio-economic analysis



- SPI: Reduce emissions, but not all systems can be replaced **yet**
- SPI: Increase chances for more people to invest in irrigation

Conclusions and Lessons Learned

- There is a great deal of opportunities to reduce CO₂ emissions, and increase CO₂ sequestrations in the Agricultural sector, including the SPI
- Solar powered irrigation: although it has reduced impact in emissions reduction, it provides significant increased economic returns, and increase opportunities for more people to engage in irrigated agriculture
- This analysis does not consider emissions associated with manufacturing and disposal of the PV system
- SPI is being considered as part of the country NDC

Thank you!