



# Promoting Climate Adaptation by Upscaling Solar Irrigation Technology Options for Smallholder Farmers in Ghana through Innovative Financing Mechanisms, a Conductive Policy Framework for Technology Regulation and Tailored Training Modules

Kick-off Meeting

15 September 2022

# Agenda

- **Welcome/Introductions** (CTCN/NDE/Consultant's team)
- **Project Presentation** (CARES/INTee)
- **Discussion** (All)
- **Stakeholder Working Group** (CARES/INTee)
- **AOB/Closing remarks** (All)

# Introductions

Round table self-introduction of attendees:

- Climate Technology Centre and Network (CTCN)
- Environment Protection Agency (EPA)
- CARES Ltd
- INTEGRATION environment & energy
- Others

# Project: Context

- **Farming in Ghana**



# Context: Farming in Ghana

- Agriculture and rural livelihoods in Ghana
  - The agriculture sector employs 47% of the country's labour force, most of which are smallholder farmers, producing 80% of the country's food needs
  - About 90% of farm holdings in Ghana are less than 2 hectares in size
  - 90% of the population in semi-arid northern Ghana depend on rain-fed agriculture for their livelihoods
  - Less than 20% of smallholder farmers have access to formal irrigation.



# Context: Climate Change in Ghana

- Temperatures in Ghana are likely to increase by at least 3°C by 2080
- The impacts will be shorter wet season, increased number of dry days, heatwaves and evapotranspiration, leading to increasing risk of droughts
- In parallel, an increase in rainfall intensity could raise the risks of flooding
- The changes will directly affect the demand and availability of water supply for agriculture, leading to decreased productivity and prolonged periods of food shortages
- The Government of Ghana has acknowledged the vulnerability of its food systems to climate impacts and prioritized the need to build resilience of farmers, especially smallholders; initiating strategies including:
  - Climate Smart Agriculture And Food Security Action Plan (CSAFSAP)
  - Climate Smart Agriculture Investment Plan (CSAIP)
  - National Climate Change Policy (NCCP).

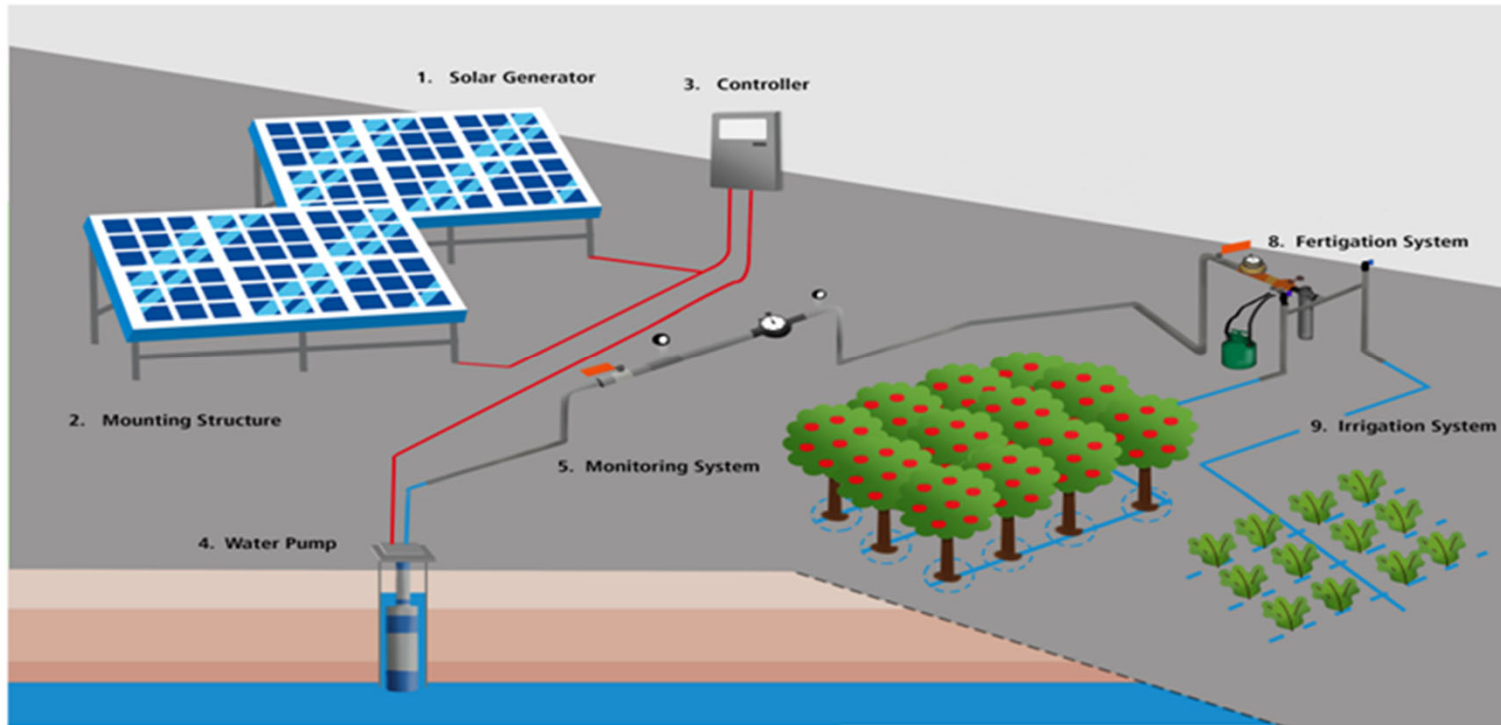
# Context: SPIS Opportunities

The introduction of **Solar Powered Irrigation Systems (SPIS)**, as an adaptation intervention, addresses the water insecurity issues caused by climate change and secures benefits for productivity and profitability.

- Solar power provides reliable and affordable energy for irrigation, especially in remote rural areas where diesel fuel is expensive or there is no access to an electricity grid.
- Flexible and climate-friendly alternative energy source, with reduced CO<sub>2</sub> emissions
- Reducing capital costs for SPIS equipment make it a more viable adaptation option for smallholder farmers
- SPIS can also be low maintenance and have a relatively long lifespan.

# Context: SPIS technologies

SPIS consists of key components, including the electrical photovoltaic (PV) panels, pump and controller; combined with irrigation distribution and application infrastructure.





# Context: SPIS Constraints

Several barriers exist that constrain the uptake of SPIS by smallholder farmers in Ghana, including:

- High capital costs
- Lack of information and training on SPIS
- Few smallholder farmers have bank accounts or access to finance
- Absence of an integrated equipment supply chain and certification standards
- Insufficient enabling policies and institutional frameworks.



# Project Aims & Objectives

The main outcomes are arranged around four pillars:

- Technology options that are best suited to the smallholder farmers
- Policy framework for technology standards and certification
- Financing options for the smallholder farmers
- Capacity building for key users and providers of the technology.

The objective of the TA is to promote smallholder farmers' adaptation to climate change by establishing a sustainable and efficient means of irrigation through the assessment of technology options that could be used in Ghana, the design of a sustainable business model that targets accessible financing for smallholder farmers, and the formulation of a policy framework for the use of Solar Powered Irrigation System (SPIS) which are the conditions for the establishment of an enabling environment for the uptake and scale up of the technology in Ghana.

# Project Aims & Objectives

The TA is divided into four main outcomes, as follows:

- **Outcome 1:** Benchmark Solar Powered Irrigation Technologies Suitable to Smallholder Farmers in Ghana and Assess their Respective Cost-Benefits
- **Outcome 2:** Define a Business Model Targeting Smallholder Farmers for the Use of Solar Pumping Irrigation Systems in Ghana
- **Outcome 3:** National Framework on Solar Powered Irrigation Technology
- **Outcome 4:** Capacity Training to Raise Awareness on the Benefits of Solar Pumping Irrigation Systems for Smallholder Farmers in Ghana

# Methodology

## **Outcome 1:** Benchmark Solar Powered Irrigation Technologies Suitable to Smallholder Farmers in Ghana and Assess their Respective Cost-Benefits

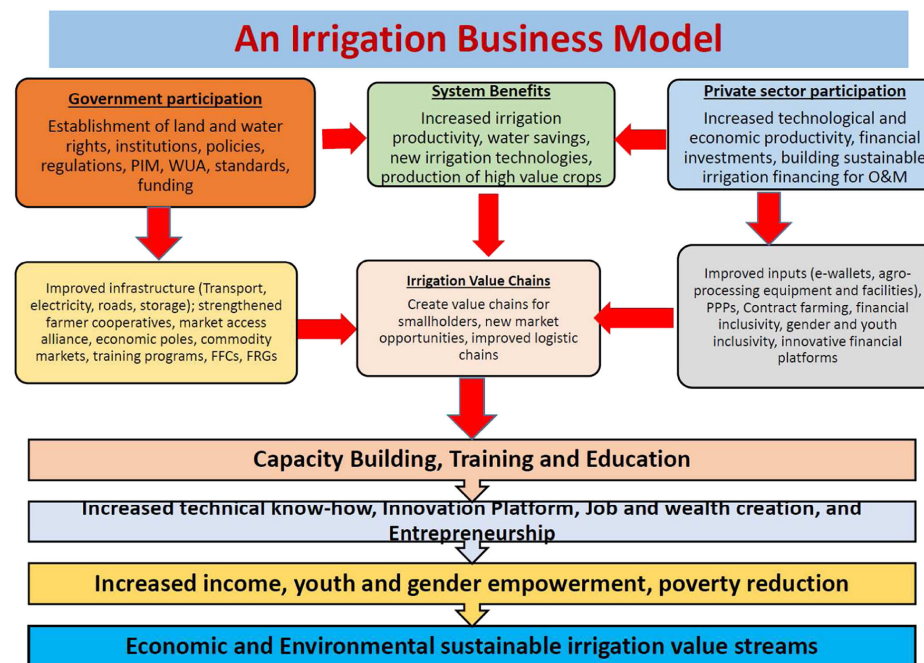
- Activity 1.1: Map relevant stakeholders and establish Stakeholder Working Group (SWG)
- Activity 1.2: Inception meeting
- Activity 1.3: Desk study of the agricultural and irrigation practices in Ghana
- Activity 1.4: Stakeholder workshop to introduce SPIS to Ghana's future users, national officers, investors and private sector
- Activity 1.5: Develop a guide to SPIS technology systems appropriate for use in Ghana
- Activity 1.6: Cost analysis of the SPIS technologies and architectures.



# Methodology

## Outcome 2: Define a Business Model Targeting Smallholder Farmers for the Use of Solar Pumping Irrigation Systems in Ghana:

- Activity 2.1: Stakeholder meeting with representatives of local smallholder farmers and financial institutions
- Activity 2.2: Define business model(s) that enable smallholder farmers to utilise SPIS
- Activity 2.3: Business model validation workshop



# Methodology

## **Outcome 3:** National Framework on Solar Powered Irrigation Technology:

- Activity 3.1: High level governmental meeting
- Activity 3.2: Consultation with the private sector (technology suppliers and distributors)
- Activity 3.3: Draft policy framework for compliance standards and certification
- Activity 3.4: Circulate and update the policy framework from official feedback
- Activity 3.5: Official review workshop with the concerned national ministries, governing authorities and SWG
- Activity 3.6: Incorporate comments into a second draft of the policy framework
- Activity 3.7: Circulate and update the policy framework from official feedback
- Activity 3.8: Incorporate comments and finalise the policy framework.

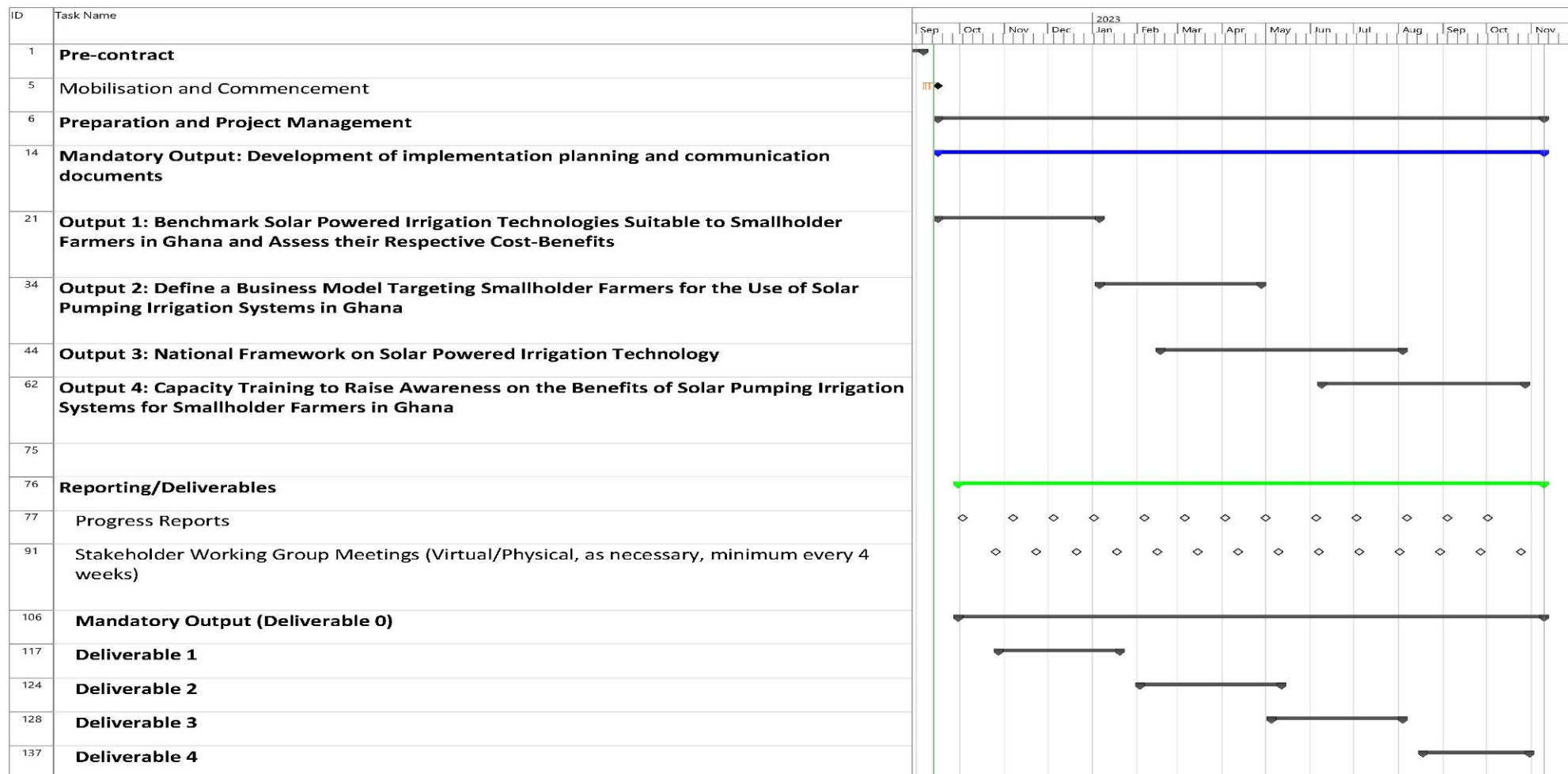


## **Outcome 4:** Capacity Training to Raise Awareness on the Benefits of Solar Pumping Irrigation Systems for Smallholder Farmers in Ghana

- Activity 4.1: Design training modules for smallholder farmers and investors
- Activity 4.2: Validate the modules through a meeting with the SWG
- Activity 4.3: Create an SPIS webpage hosted in the EPA website
- Activity 4.4: Disseminate the training modules through 3 stakeholder's workshops (Smallholder Farmers, Private sector, EPA officers)



# Workplan





# Questions & Answers

Discussion by attendees and Team:

- Questions & Answers on the Project presentation
- Issues to be addressed during the studies
- Experiences from the field
- Stakeholders not present that should be represented
- Others?

# Initiating the Stakeholders Working Group

- Role of the SWG is to make decisions on the SPIS technology options, the policy framework for technology standards and certification, financing options in the business model and the training modules, to ensure these align with Ghanaian strategic priorities
- Selection of maximum 8 representatives with a suitable balance and diversity of skills to provide both capacity and authority
- Vulnerable groups and women to be adequately represented
- Election of SWG Chair and Co-chair



