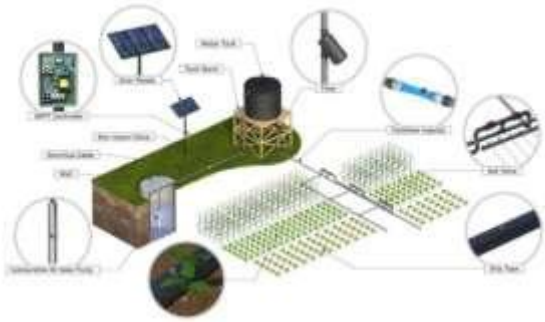
Concept Note

on

DEMONSTRATION & PILOTING of CLIMATE SMART IRRIGATION TECHNOLOGIES

in Burkina Faso



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CONTEXT: The world is changing and is becoming more unpredictable and uncontrollable. This holds for both social and natural conditions, with climate change and globalization being major drivers of change in the world. People around the world are increasingly exposed to extreme weather events, economic crises, food crises, disease epidemics, social instability and political conflicts. The resulting insecurity not only affects the global social and economic systems, but also local food systems and their farmers who stand at the core of food production. With these increasing uncertainties and future challenges in prospect, there is the need for development of resilient and sustainable food systems that can cope with unexpected shocks and ensure food security for future.

WEST AFRICA & CLIMATE CHANGE: Nearly 93% of agriculture in Africa (south of the Sahara) is currently rain fed and a large share of the rural population is subject to the vagaries of climate to grow crops and support livestock production. Yields for both crops and livestock have stagnated or grown only slowly for decades; as a result, net food imports of basic staples have increased rapidly in line with growing populations and are projected to continue into the future. Many studies have found that, compared to historic climate scenarios, climate change will lead to changes in yield and area growth, with overall lower yield growth and therefore larger expansion, higher food prices and therefore lower affordability of food, reduced calorie availability, and growing childhood under-nutrition in Africa south of the Sahara.

With climate change already compounding the socio-economic and biophysical constraints to Development in West Africa, the adoption of Climate-Smart Agriculture (CSA) is one mainstream opportunity for improving food and livelihood security in the region. As an innovative approach, CSA may effectively achieve the development goals of vulnerable populations highly dependent on agriculture although this will depend on effective management of the synergies and trade-offs between the mitigation, adaptation and productivity goals of CSA.

The Case of Burkina Faso: As a landlocked country in sub-Saharan Africa, Burkina Faso is extremely susceptible to droughts. Its agriculture sector is dominated by small-scale farms producing mostly millet, sorghum, and maize. Overpopulation, overgrazing, and desertification have all led to soil and environmental degradation. Mainly rain-fed agriculture makes agricultural production in Burkina Faso vulnerable to irregularity rainfall in the Sahel region; and this can hamper efforts to increase production to improve food security in the country, not only in the short term but also in the long-term - By 2050, the population in Burkina Faso is expected to reach 47 million people and the demand for food in the major crop categories will triple or even increase fivefold, for some products. The development of irrigated agriculture can help overcome this barrier and can contribute to an increase in national food security in the future.

Irrigation/Justification

Irrigation is a particularly robust Climate Smart Agricultural (CSA) technology in the semi-arid and arid areas of SSA and is often essential to the deployment of any other CSA technology. While the potential for irrigation can be enormous, farms equipped with irrigation hardly exceed 5% of total agricultural area[1]. Developments in improving water availability

on farmlands are seen in the investments in drip irrigation facilities as a climate-smart option in West Africa esp. for the production of high value vegetables[2].

Photovoltaic Solar powered drip irrigation facilities are in particular being promoted in the Sudano-Sahel zones of West Africa due to their cost-effectiveness and significant correlation to increase household income and nutritional intake in the region. Evidence from the literature shows farmlands equipped with drip irrigation could record up to 100% increase in yields relative to control fields[3]. In addition, significant savings in water use, up to about 80% could be realized compared with conventional irrigation practices.

Introduction of Climate Smart Irrigation Pilot Project (CSI): Duration: 24 months

Keeping in view the enormous potential for developing Irrigation technologies, this concept note propagates an idea of introducing a focused "Climate Smart Irrigation Project" as a test pilot in Burkina Faso with a *CSA Irrigation Technology Demonstration Centre* at the country's capital (Ouagadougou) and 3 test pilot zones in three agro-climatic zones of it.

Project Goals

- Increase small & marginalized farmers' capacity to mitigate and adapt to climate change by using Climate Smart Irrigation technologies
- Encourage and promote frugal innovations in small farming & cropping systems especially concerning irrigation
- Build partnerships between private and public organizations in furthering both the Goals of Country Government & the best practices achieved in CSA technologies
- Facilitate to contribute to sustainable development and the reduction of poverty for the local community.
- Build partnerships between private and public organizations in furthering both the Goals of Country Government (NAPA) & the best practices achieved in CSA technologies so far
- Leverage additional financing for climate action for replication of the CSI project in neighboring West African countries

Strategy: 3 pronged strategy will be adopted as under:

- **Adaptation:** Climate resilience techniques i.e. Kinetic energy, Renewables
- **Mitigation:** Flood & Drought Proofing conservation measures
- **Productivity Enhancement**: Measured/Drip Irrigation techniques

Project Partners:

1-Farmers Action Association for Integration and Development (APID-Burkina) 2-Youth Solidarity Association for Development (AJSD-Nong Taaba)
3-The Town Hall of Koubri Rural Municipality
4-The group of market gardeners of Koubri
5-The Ministry of Agriculture and Hydrolic Resources of Burkina Faso

Methodology:

[2] Wanvoeke et al., 2016
[3] Maisiri et al., 2005

1. **Baseline Survey**: In collaboration with the local partners, a baseline study of the three probable sites along with some other potential sites will be made.
2. **Scanning & Database development of different Agro-Climatic Zones**: This task entails both the desk research through available secondary sources and primary research based upon national/local priorities to safeguard small farm ownder' livelihood & food security.
3. **Planned Interventions**: Various technology demonstrations will be held and the capacity building programs for farmers organized with pre & post scenario documentation.
4. **Piloting & Sale/Order booking of Innovative CSI solutions:** An important aspect of the project is commercial sale of frugal irrigation technologies as consultancy packages to earn some revenue for twin purposes: a) contribution towards project costs b) sustainability of CSI project beyond project duration.

Field level trial/dissemination of Climate Smart Irrigation technologies will be held upon:

WATER STORAGE

With a view to provide low-cost storage to help farmers optimize the use of water in water storage bags/tanks of varying capacities.

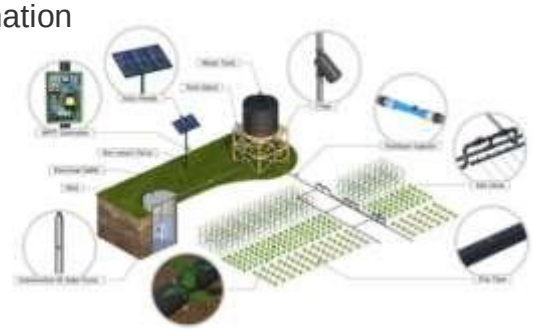

Water Bag for Drip Irrigation

WATER APPLICATION

The frugal water application technologies like drip irrigation, impact sprinklers are significantly low in cost, available in small packages, operate at very low pressure and are easy to operate. The slow and regular application of water maintains optimum moisture at the root zone which improves plant quality and yield increases by 30-50%.

WATER LIFTING

Climate Smart water lifting technologies are characterized and are driven by human energy and/or photovoltaic solar energy with a combination of lifting and pumping device. These technologies can be used to cultivate all types of crops. Since majority of these are low on cost they can be easily afforded by the farmers. A popular approach similar to iDE's of using Farm Business Advisors (FBAs) and Farm Demonstration Plots in Burkina Faso. iDE has successfully done this under the Productive and Safe Water project, funded by the Swiss Agency for Development and Cooperation (SDC). In practical over 20,000 farmers have visited those demonstrations so far and gradually started to believe in such life changing technologies. CSI project will further this successful demonstration-cum-piloting project in collaboration with iDE, Burkina Faso[4].



Likely Project Benefits: Following key benefits are envisaged by CSI project:

[4] https://www.ideglobal.org/country/burkina-faso

- Enormous saving of precious run-off (at least 20 mn. litres) by wider adoption of climate resilience technologies at least by 800 Farmer Households (direct/indirect)
- Coverage of an additional 1200+ hectares under irrigation (mainly thru CSI tech.)
- At least 10 new climate smart techniques will be tested which may spring up new green business ideas and facilitate to generate 200 new jobs will be created as a multiplier if 10 with each new CSI tech
- At least 40-50% income enhancement for over 500 farmer households enabled to do second and/or third crop with conserved water; drastic reduction of vulnerability
- More than 70% income enhancement for farmers shifting to water intensive crops with availability of water in off-season due to sub-surface innovative irrigation tech.
- Significant offtake and acceptance of Climate Smart technologies (with sales of more than 15000 USD) among small farmholders through all round visibility
- At least 65% productivity enhancement with the use of climate smart irrigation
- Greater gender inclusion by ensuring water rights for women and lessening their burden of water arrangements for farm/family
- Public-Private-Community partnerships to emerge in key developmental efforts leading to effective climate change adaptation & mitigation measures
- Burkina Faso taking a lead in West Africa in CSI technology for more replications. At least 7 or 8 among public, private and communities and will approach ACT Foundation, IWMI, UNDP, FAO, iDE, World Bank and JICA for partnership among all those who will be approved for leveraging project finance for CSI and flagship innovative technologies like Deep Tube Well and Bore-Recharge
- Significant reduction in out-migration of farmers to look for water sources and would try to achieve to stop 500 farmer households to migrate.

Budget:

Expenditure Budget

Activity Head	Task Detailing	Amount (usd)	% Total
A: Program Cost of Demenostration & Piloting			
Adaptation measures		33 200	7 %
Mitigation measures		105 000	23 %
Productivity Enhancement measures		63 000	14 %
Operational & Management cost		175 500	38 %
Sub Total A		***376 700***	*82 %*
B: Other Administrative and Overhed Cost			
Land acquisition costs for demonestration & pilots		14 500	3 %
Travel Cost		37 000	8 %
Logistic food & loging as Perdium		11 200	2 %
Administration & Overhead Costs		20 000	4 %
Sub Total B		***82 700***	*18 %*
Grand Total: Total Program Cost		**459 400**	100 %

Funding Budget

Sources of Financing		Fund	% Total
ACT FOUNDATION		344 550	75 %
ICAF		45 940	10 %
Local partner		22 970	5 %
Co financing: Local, ssss& Other Partners		45 940	10 %
Total Fund		**459 400**	**100 %**