Accelerating Climate Technology Transition (ACTT)

SOLAR IRRIGATION BUSINESS AND INVESTMENT CO-CREATION WORKSHOP

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SOLARPOWERED IRRIGATION SYSTEMS

What is Solar Powered Irrigation Systems (SPIS) ?

Solar-powered irrigation systems (SPIS) are a clean technology option for irrigation, allowing the use solar energy for water pumping, replacing fossil fuels as energy source, and reducing green house gas (GHG) emissions from irrigated agriculture.

How are Solar Powered Irrigations Systems Used ?

Types: Drag Horse Irrigation, Sprinkler irrigation, Drip irrigation

Components: Water Pumps, Solar Panels, Sprinklers, Pipes, Hose, treadle, Mounting Structures, Controllers

Business Models. Direct Sales, Lease to own, Irrigation as a Service, Pay for Use, Operations and Management.

Who is involved in the SPIS Value Chain ?

Manufacturers, distributors/local suppliers, Government, Development Agencies Financiers, Farmers, Groups/associations, aggregators such as NGOs, Agri-SMEs,

OUTCOMES OF PROMOTING SPIS INVESTMENT

- Identification of new customers through improved local presence in form of hubs, demos sights and irrigated farms.
- Reduced carbon emission due to replacing of engine pumps with solar pumps
- Improved data on market size, demand, environmental impact, climate impact, livelihoods through digital innovations such IOT, payments, sensors etc.
- Improved agricultural contribution to GDP.
- Market Assurance which attracts alternative forms of capital.
- Regional capital mobilization through alternative financing models and risk reduction.
- Improved access to capital and guarantees for SACCOS and groups with member farmers.

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What We All Already Know.

Market Challenges Facing Solar Irrigation

- High initial cost of irrigation set-up and maintenance exacerbated by high energy costs on fuel, electricity and farm labor.
- Influx of fake irrigation products threaten the market credibility even for genuine systems.
- The bulk of water resources are locked up in large water bodies and reservoirs which do not attract private investment.
- Physical water scarcity in some areas attributed to lack of/limited water sources and seasonality of water sources
- The risks associated with predictability of rainfall to guide investment planning and management of irrigation systems.
- Small growing market not yet large enough to attract investors
- Inadequate technical knowledge and skills on irrigation.
- Fragmented markets for irrigation services and equipment service providers.
- Lack of access to technical and market information.
- Challenge of capturing, measuring and reporting impact data
- Environmental degradation due to poor waste disposal of PV systems
- Etc

Financial Challenges Facing Solar Irrigation

- High interest rates.
- Un-favorable loan repayment schedules.
- Lack of access to technical and market information.
- Collateral: Farmers usually lack the collateral traditionally required by banks.
- Primary Agriculture is perceived as high risk by Financial Institutions
- Limited access to unsecured funding or alternative financing Models
- High reliance of grants and government subsidies distorting the market
- Short-term loans and investor mentality
- Financial Institution's lack of green finance knowledge or instruments
- Etc

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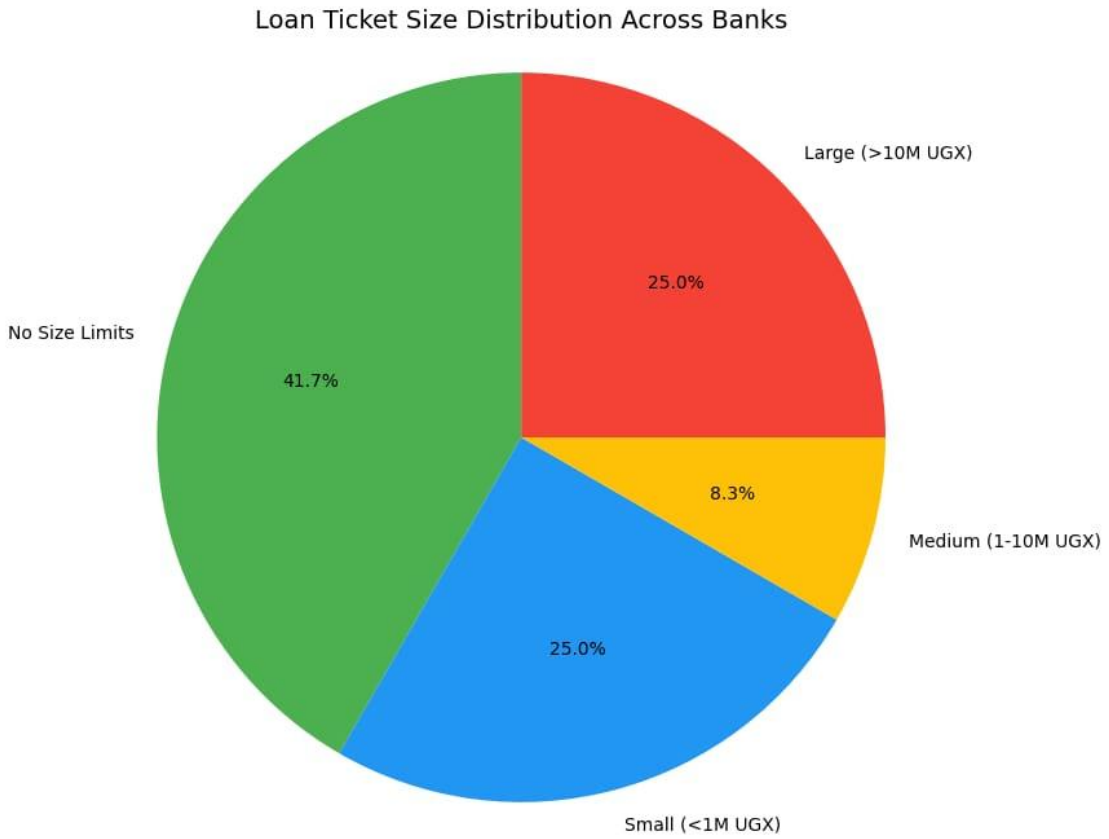
What We Now Know.

- Financial Institutions have no limits on the loan ticket sizes they can provide to climate technologies.
- Grants can be used as an incentive to reduce interest rates on loans for climate financing e.g. Uganda Energy Credit Capitalization Company, Agricultural Credit Facility, Uganda Green Enterprise Finance Accelerator..
- Collateral and alternative securities are a requirement for Financing.
- Climate technologies are sold through direct sales to commercial farmers or partnerships and sponsorships to smallholder farmers.
- Few suppliers use the pay go and lease to own models.
- Government, NGOs and Development agencies are the largest customers of Climate technologies.
- Payment terms to climate technology suppliers are not conducive for them to have a regional presence in rural areas.

Investment Forces

Loan Ticket Sizes

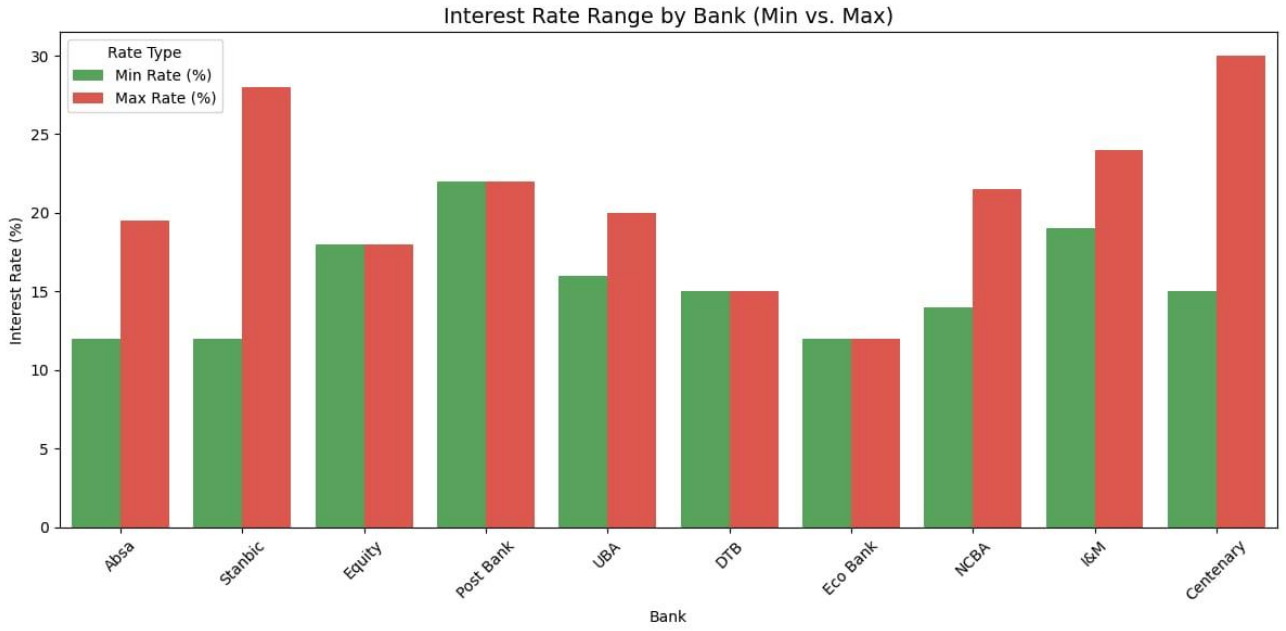
- 42% of banks offer loans with no size restrictions.
- 3/12 banks mentioned they can provide syndicate loans were necessary.
- While some banks cap the amount of money they can provide, 25% cater to small borrowers of less than 1M UGX while another 25% specialize in big-ticket financing that is above UGX 10M. .



Investment Forces

Interest Rates and Grants

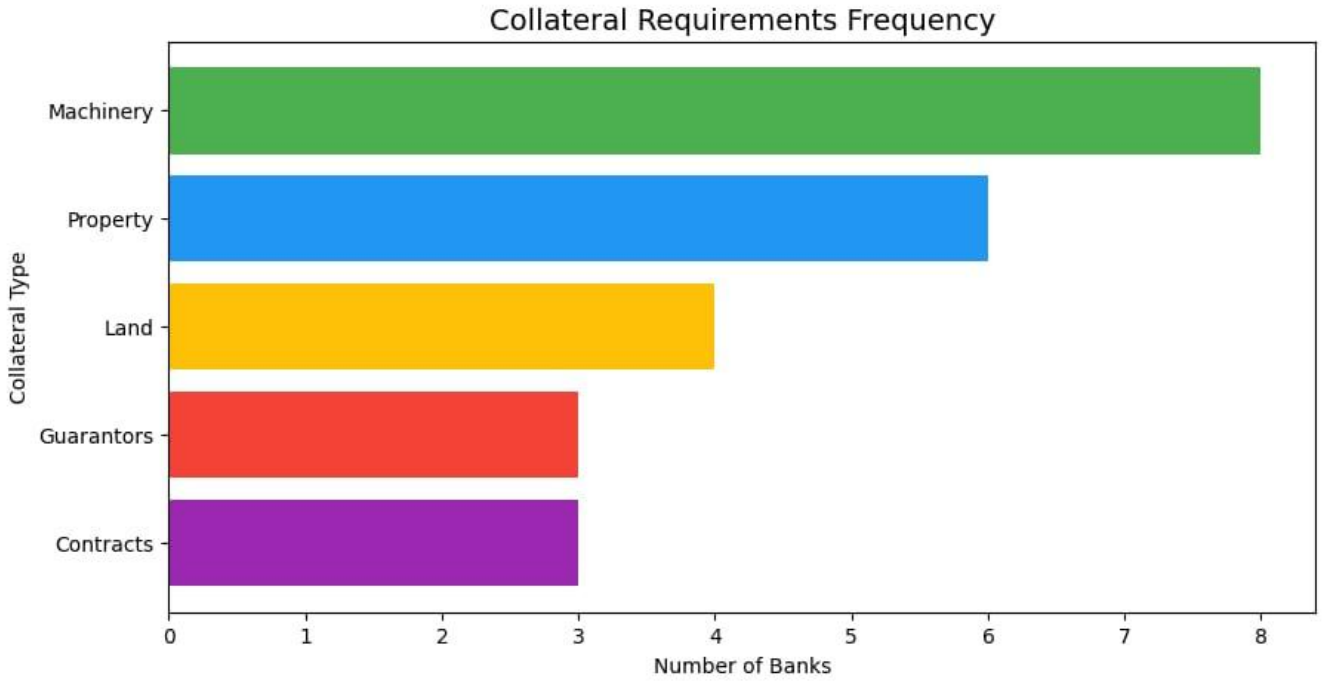
- Agriculture has had the most favorable rate at 12% under the Agricultural Credit Facility and renewable energy at 15% under Uganda Energy Credit Capitalization Company. Bank interest rates are negotiable depending on the sector and risk associated with the project.
- Commercial banks have on average an interest of rate of 21.1% for the Uganda Shilling loan and 8.4% for the US dollar loans (UBA, 2023)



Investment Forces

Collateral and Alternative Securities

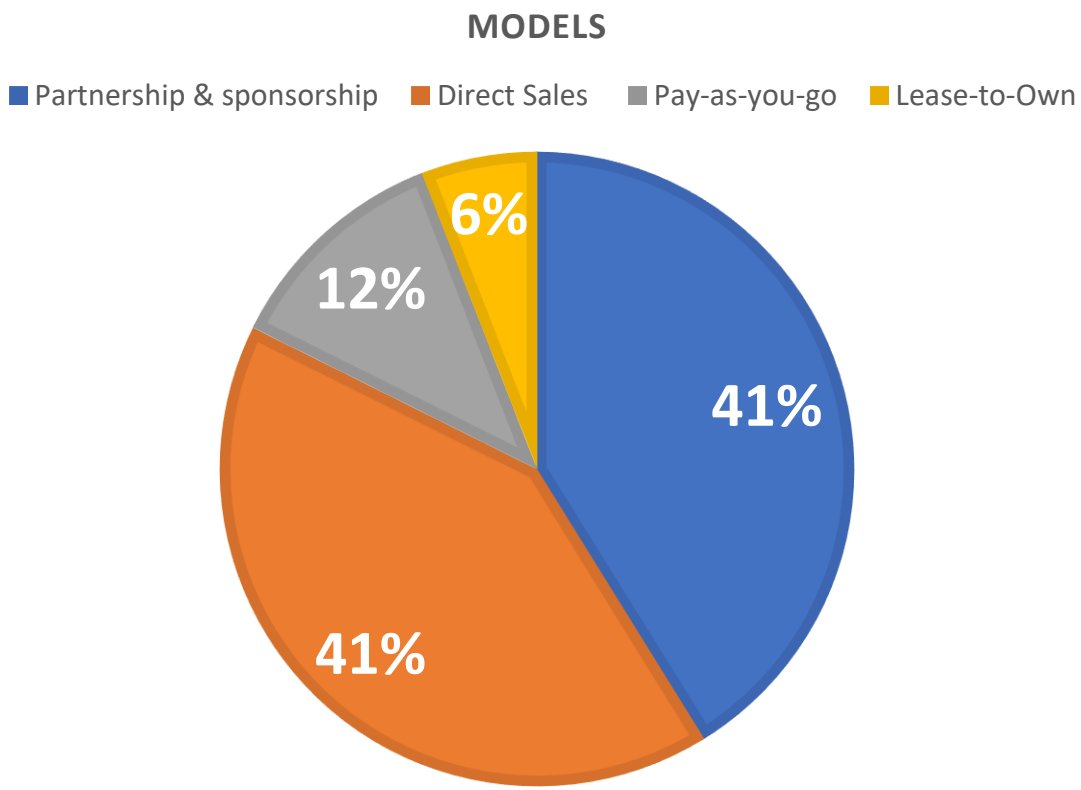
- 58% (7/12) of banks required property as collateral. For agricultural, 50% of commercial banks accept machinery and equipment as collateral
- Through the Agricultural Credit Facility, block allocation model, farmers can also secure loans of up to UGX 20 million with banks accepting alternative securities such as group guarantees, chattel mortgages, credit history, and projected cash flows (BOU 2024).



Market Forces

Business Models

82% of companies mentioned using partnership and sponsor and direct sales model. 12% of the companies use Pay as you go while 6 % use the lease to own model.



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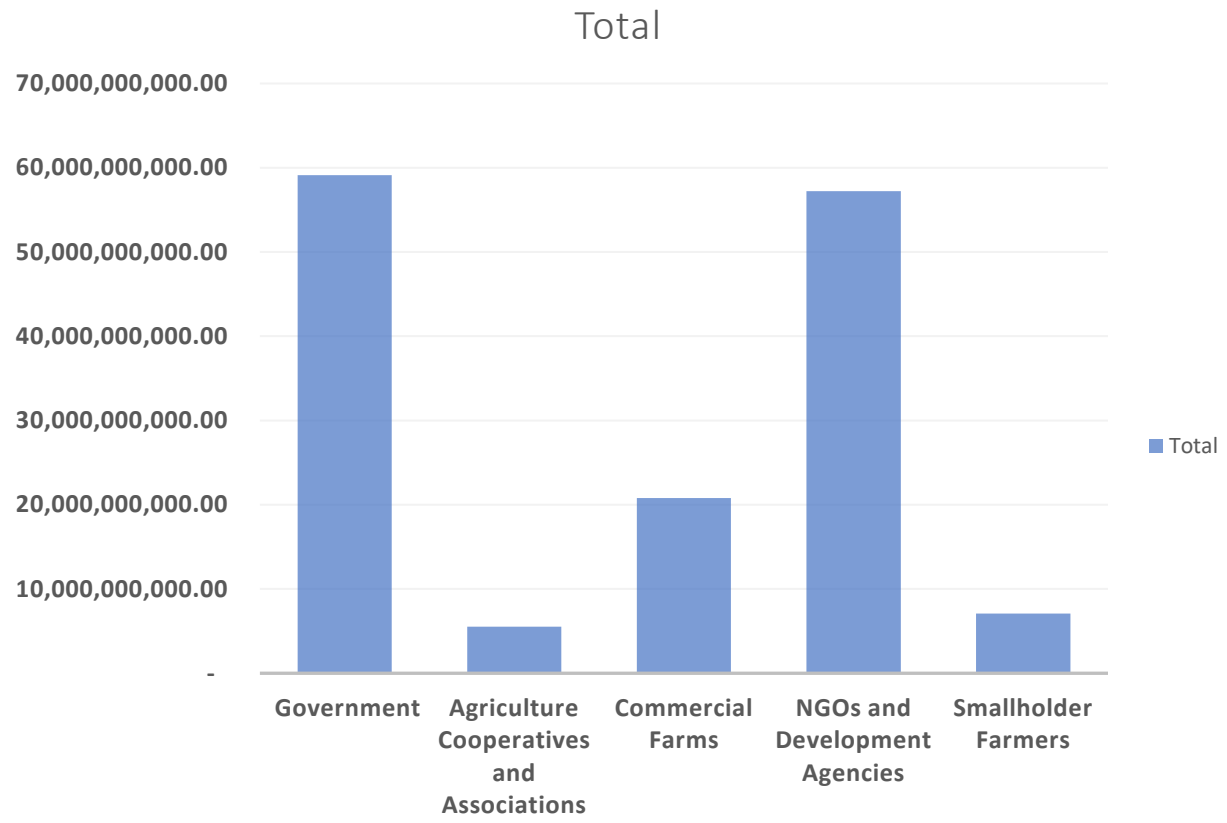
Market Forces

Customers

Demand for SPIS is driven public funding and philanthropy. Government, and NGOs & Development Agencies represented 39% and 38% of SPIS revenue respectively compared to 4.7% from small-holder farmers and 3.7% from agricultural cooperatives and associations.



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Market Forces

Pricing and Payments

- 6/8 Solar Irrigation companies reported projects under the pipeline worth UGX 8.6 Bn /USD 2.3 Mn
- 53% of the project contracts are from the government, 32% from NGOs and 15% from commercial farmers.
- On average, the companies make a gross margin of 9% - 40% on the project value.
- Projects with Local government, NGOs and commercial farmers had the highest gross margin equal to or above 30%.
- Projects with government ministries had the lowest margins equal to or less that 30%.

ENTITY	PROJECTS	PERCENTAGE
Government	10	52.63%
Commercial Farmers	3	15.79%
NGO	6	31.58%
Total	**19**	**100.00%**

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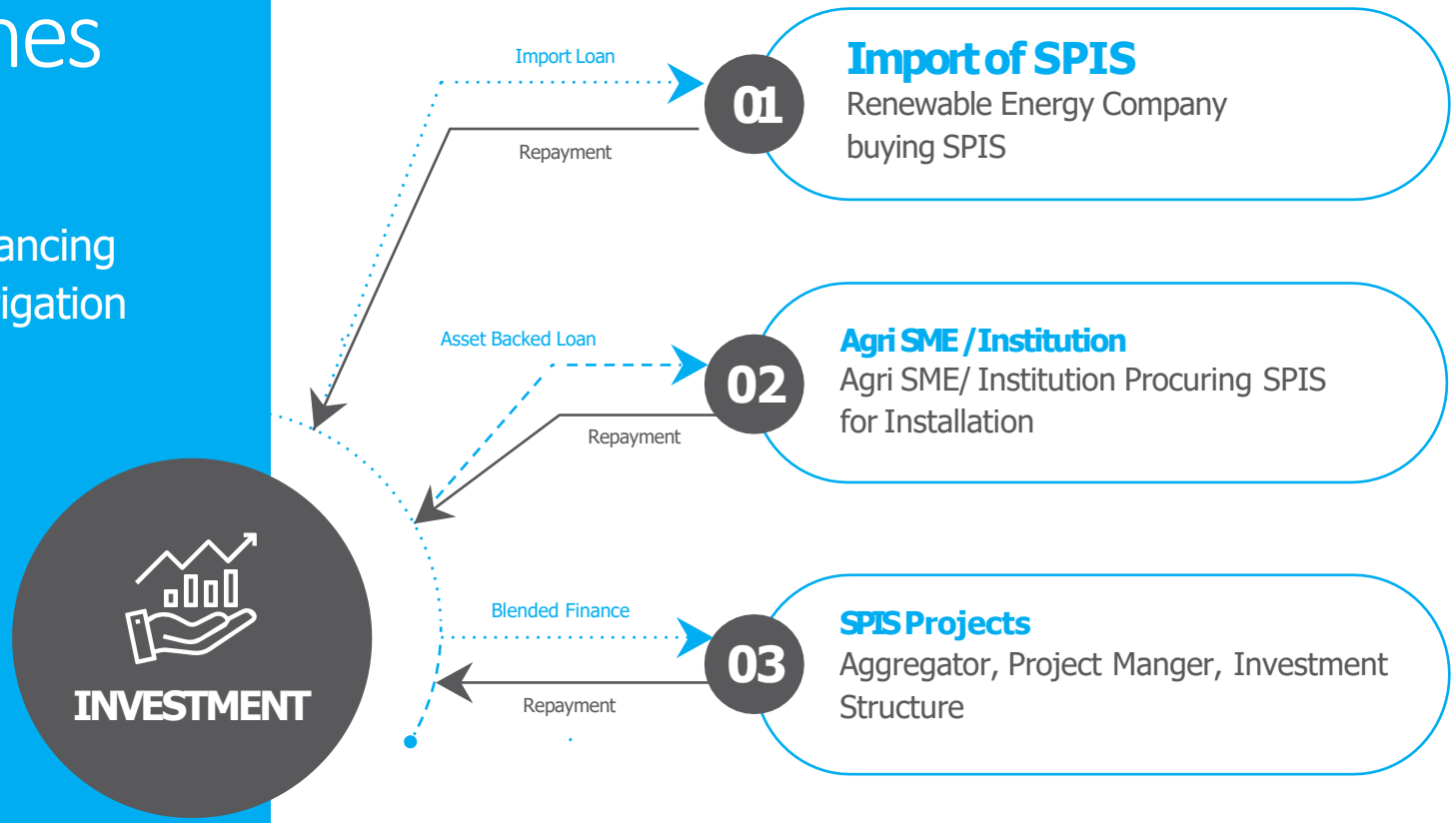
Investment Approaches

Approaches to Financing Solar Powered Irrigation Systems (SPIS)



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04

SPIS IMPORT
Financing

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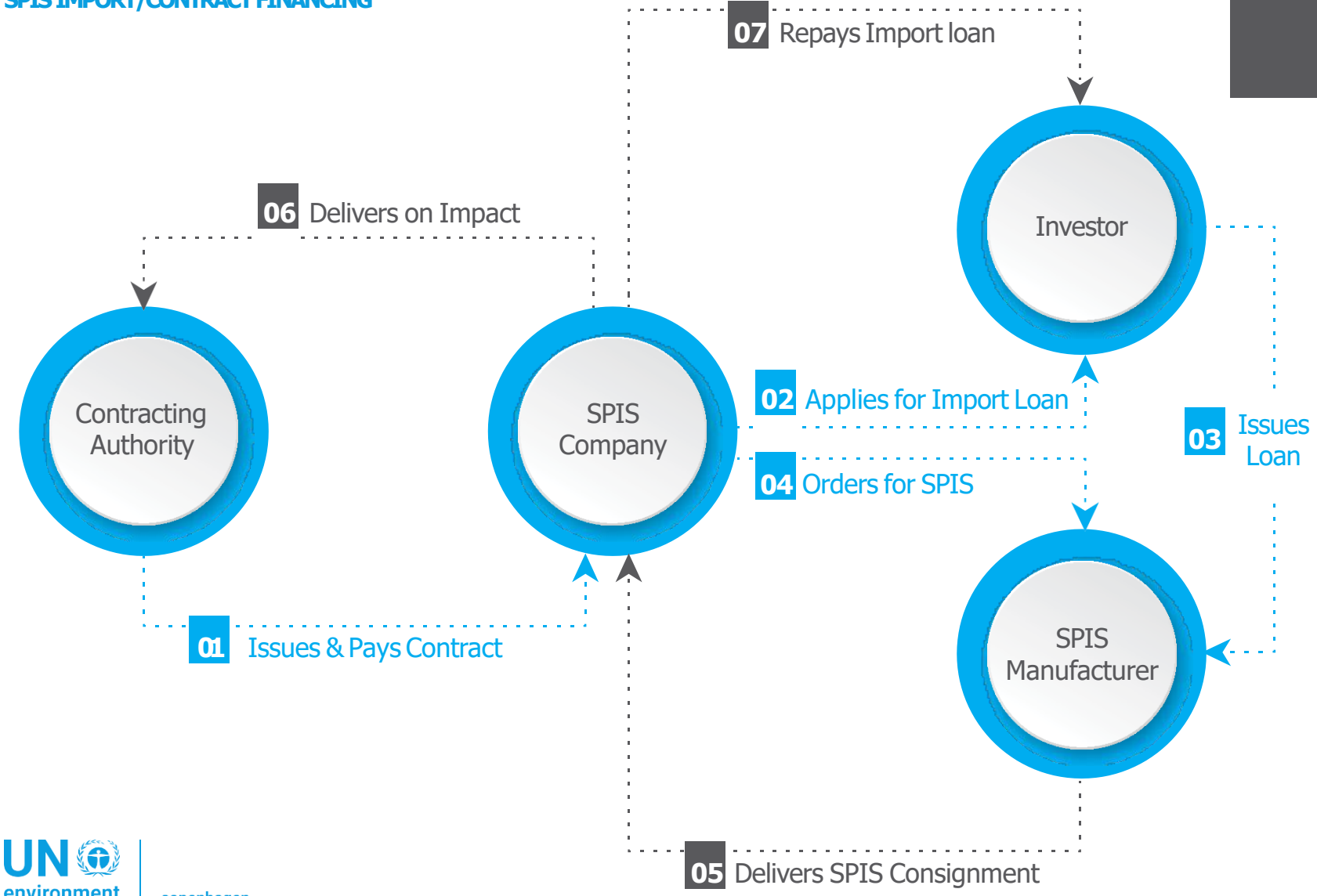
SPIS IMPORT/CONTRACT FINANCING



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SPIS IMPORT/CONTRACT FINANCING

Contracting Authority

An organization that issues a supply contract to an SPIS company. e.g., NGO or government issues an RBF contract.

SPIS company:

Contracted Energy Company engages an investor/Supplier for a credit line to import the solar irrigation pumps and kits.

Investor:

Bank or Impact Investor makes direct payment to the manufacturer/distributor of the solar powered irrigation systems (Including components) or provides a guarantee or letter of credit. The loan can also be issued directly to SPIS company but there is risk of loan diversion.

Manufacturer/Global Distributor:

On receiving payment from the investor, they ship the solar irrigation pumps to the local SIPS company.

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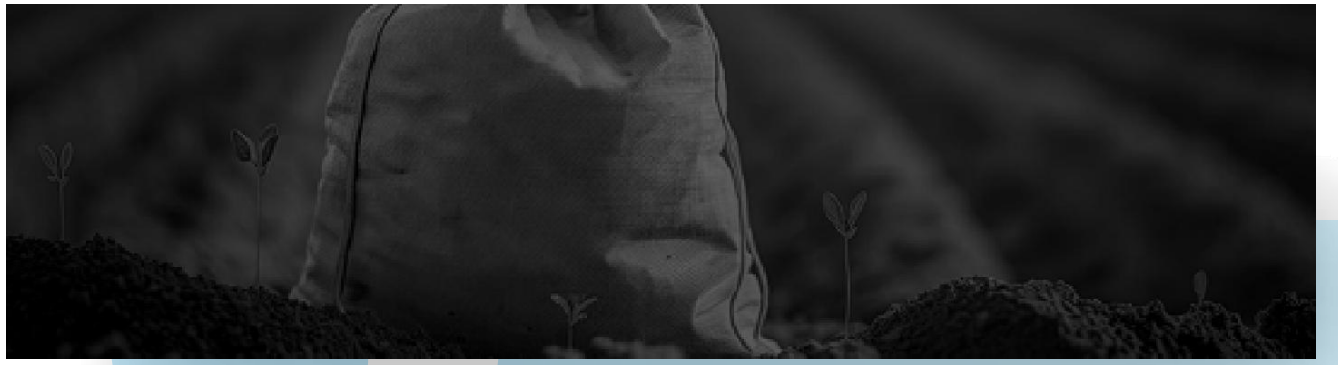

02 SPIS Agricultural Financing

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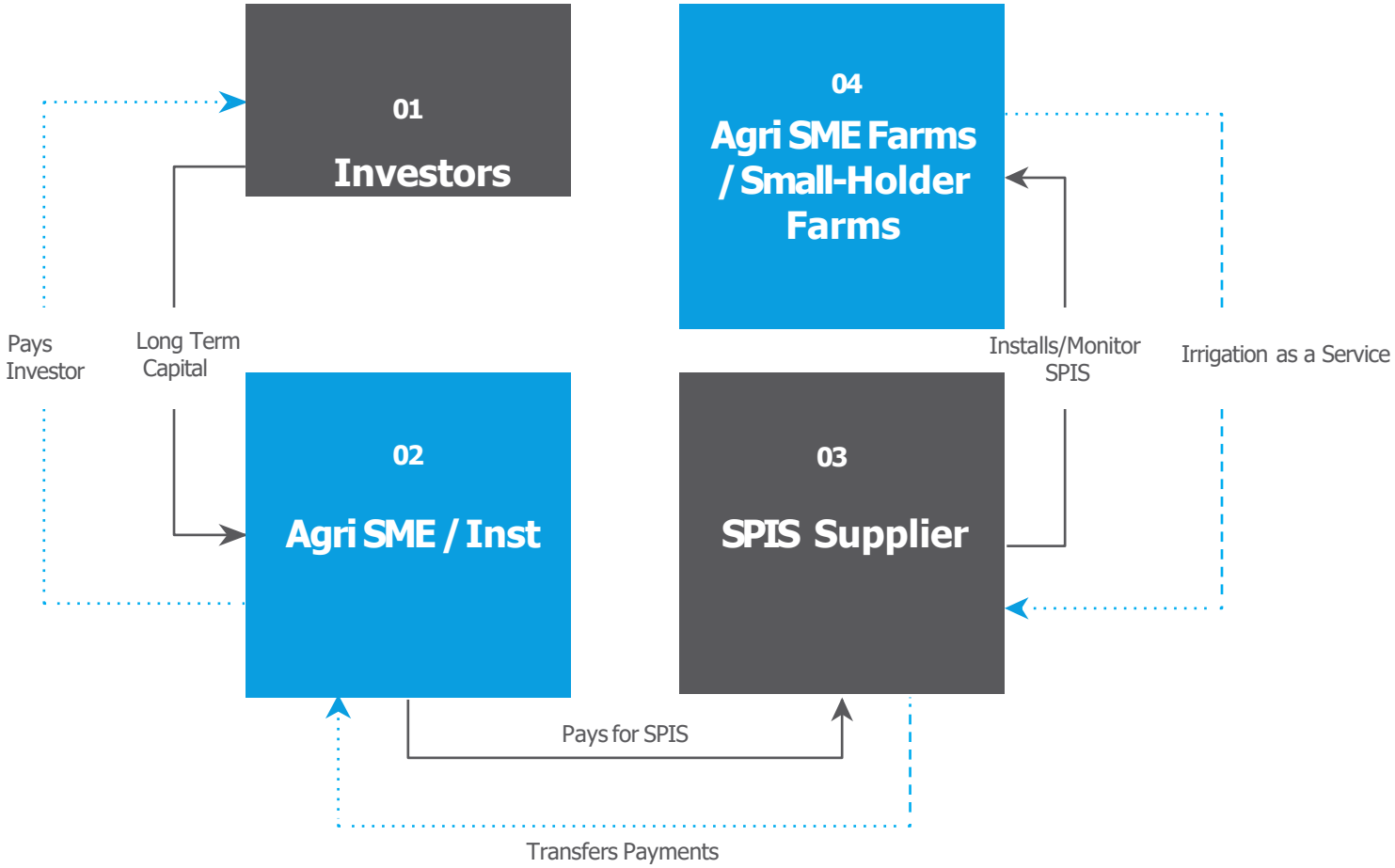
IRRIGATION AS A SERVICE

Demand driven by Agri SMEs or Institutions working with small holder farmers



a.

Agri SME/Institution

This is an agricultural company or institution doing backward integration with farms or small holder farmers in addition to other processing activities they have as a business or entity.

b.

SPIS Company

Company contracted by the Agri SMEs or Institution to supply it with solar powered irrigation systems

c.

Investors

These are banks, funds, foundation and family offices providing the financing.

05

SPIS Project Financing

Investors can invest in a Single Project or Portfolio

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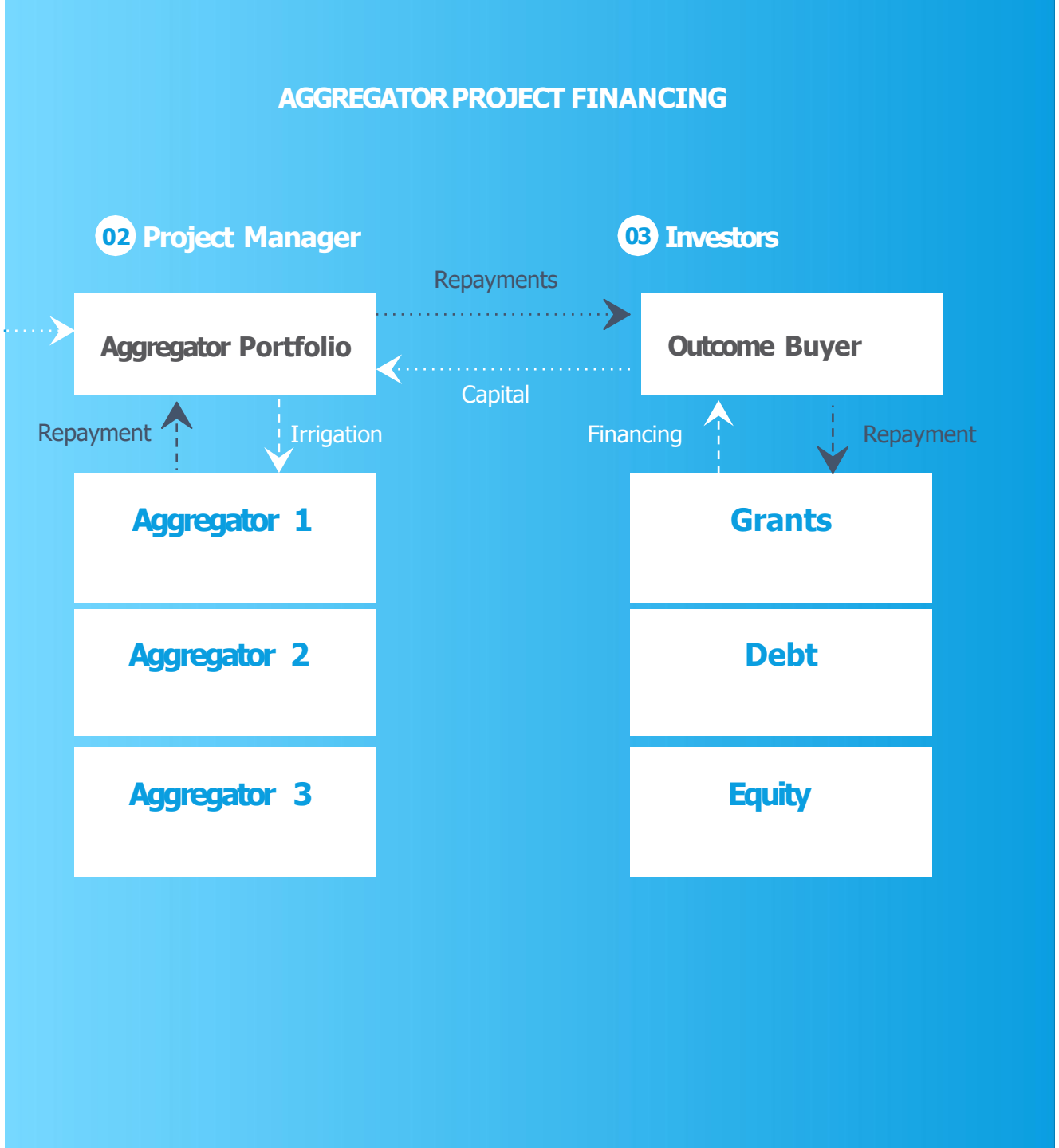
Investors can invest in a single Project or Portfolio



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Under Project Financing, different entities work together to profile and finance solar irrigation projects. Key Project Partners can include:

01 Partner Mobilization

02 Local Project Manager

03 Investment Structure

PARTNER MOBILIZATION

a. **Aggregator -** An Institution or private company that has an ongoing project in the target region. They have a value chain of farmers in their project organized in SACCOS or VSLAS. They support the SPIS company to supply the systems as per demand defined through the project. Can collect payments for SPIS by diverting part payment of produce supplied by farmers.

b. **SPIS companies –** Supplies Solar Powered irrigation Systems or Kits to the Aggregator using different financing approaches to collect repayments for the aggregator including lease to own, paygo, and cash payments.

c. **SACCOS & VSLA -** These are Savings and Credit Cooperatives (SACCOS) and Village Savings and Loans Associations that provide financial literacy, savings and credit to Framers. Farmers working with an aggregator can apply through SACCOs to access SPIS using their savings as a partial guarantee.

d. **Farmers/Small Holder Farmers -** Are either commercial farmers and smallholder farmers in primary agriculture or processing.

e. **Insurance Provider -** An insurance company that is providing cover to the investor on the SPIS loan issued, tracks productivity (IOT) on the farm production/yields or provides cover on production/yields.

PROJECT MANAGER

a. **Structures Irrigation Projects /District –** This is the total number of SPIS systems required for the project or portfolio including type and selling price.

b. **Aggregate Demand for SPIS –** These are the profiled demand for irrigation systems i.e., Number of potential buyers that have expressed need and ability to pay for SIPS.

c. **Investment Need -** This is the amount of capital needed by the Project Manager to supply and meet the demand of the profiled buyers.

d. **Projected Returns -** This is the expected flow of repayments, return on investment, and payback period.

STRUCTURED FINANCING

a. **Donors –** These provide grants to reduce the interest cost.

b. **Banks –** These provide senior debt including Agri SME financing and Import Financing

c. **Investors -** These are funds, foundations and family offices providing concessional financing. Concessions can include seasonal structuring of repayments include, revenue financing, grace periods and Technical Support. These could provide Junior debt where a syndicate loan is structured.

IDEATION MARATHON FOR CLIMATE CAPITAL INITIATIVES

01

CLIMATE CAPITAL FUND

- Partnership on Climate Initiatives
- Profiling Aggregators
- Feasibility demonstrating Transactions.
- Structuring SPV to mobilize Capital.
- Local Operator for Management.
- Investor outreach

02

MARKETS AND DIGITALS LAB

- Trainings to media, legal, marketing and digital experts
- Climate technologies Promotion to target markets
- Digital. tools for monitoring and reporting

03

POLICY SAND BOX

- Assessment of Climate Policies impact
- Policy papers to guide refine or removal of harmful policies.
- Measuring and Awarding Financial Institutions that are compliant at Strategy or Portfolio Level