

SOLAR AGRICULTURAL FUND

A Sukuk-backed fund dedicated to fostering agricultural development in West Africa through sustainable energy production

THE CHALLENGE: 48% of Sub-Saharan Africa's 600m-population lack access to electricity, which significantly affects the region's growth potential.

Due to limited electricity access, farmers in Sub-Saharan Africa are facing many problems and cannot produce as much as they could to supply national food demand. Indeed, there is a critical lack of storage facilities, of irrigation systems, and agricultural products processing and conserving systems:

- Potentially irrigable lands are five times the present level in Sub-Saharan Africa, and this lack of irrigation is against the development of agriculture;
- All production surpluses are lost, rotting before being marketed, due to the lack of storage facility (good year problem).

These factors explain why farmers cannot expand their business and grow sustainably. Sub-Saharan Africa countries are thus compelled to import in order to meet the food needs of their population.

Raising agricultural productivity in order to reduce import dependence and reduce vulnerability to market volatility is our main challenge, especially in poor countries. Food insecurity remains a daily concern for the most vulnerable ones: women, children, rural households in dry areas, and urban and rural households headed by single women. The deployment of clean energy innovations that increase agricultural productivity and stimulate low carbon economic growth in developing countries will directly contribute to ending extreme poverty and hunger.

To answer these increasing needs, investments in energy infrastructure projects serving the region's sustainability ambitions are necessary. However, funding these can be burdensome as Sub-Saharan Africa is seen as a risky location for investors.

In parallel, there has recently been a growing appetite for ethical and sustainable investments from Muslim investors. Indeed, even though merely 1% of financial products are Shariah-compliant, the Islamic investment market is growing at a 15% rate per annum. Moreover, a large share of the Sub-Saharan African Muslim population, mainly located in the West part of the continent, is asking for a development through a fully asset-backed financing, with no interest-bearing debt, i.e. based on the real economy.

Our challenge is therefore to sustainably bridge the gap between power supply and demand for agricultural purposes in West Africa while offering an innovative financial structure that would target a broader range of investors.

THE SOLUTION: Solar-powered energy dedicated to serve the needs of agricultural production.

Through investments in solar energy production, we aim at increasing the power supply available to local West African farmers. Indeed, as agriculture has become more and more dependent on energy, a higher access to electricity leads to an improved agricultural productivity.

This will be a multi-step process:

- Selection of dense and fertile lands and storage warehouses with low or no access to electricity.
- Issuance of a 10-year maturity Sukuk al Ijara, which would allow the Energy Company to focus on its core expertise without having to commit large amounts of CAPEX to own the panels. The Company would operate them through a 20-year financial lease with the exercise of a partial purchase option at the mid-life, in order to prevent the Holding Company from fully bearing the residual value risk. Sukuk financing provides access to an incremental investor base that cannot participate in conventional bond issues.
- Acquisition of the PV panels from specialized Malaysian companies.
- Installation of the PV panels at desired locations by the operator: the produced energy would be sold to the farms while the surplus would be distributed via the national grids.
- Storage facilities, irrigation systems and pumps will run on the produced electricity. Local employees will be trained for maintenance operations, creating jobs in the surrounding villages.
- Transfer of the PV solar panels' ownership to local farmers at the end of the project through a donation, as the fund is not intended to capture the residual value of the assets. Indeed, after 20 years these latter are fully depreciated but hold a non-zero residual value (glass, silicon) and an additional use of 4-5 years can be expected.

The energy Operating Company would be Masen or Solektra International, since both specialize in solar power production on the African continent.

The investment would be allocated to pay the advisory, legal, structuring and distribution fees and to purchase and install the PV solar panels.

THE OPPORTUNITY: The first AAA-rated Green Sukuk in Africa

The African continent benefits from the greatest solar irradiation with an average 2,190 kWh/sq.m./year¹ while its photovoltaic capacity account for merely 3% of the world's capacity.

Implementation in 7 of the 8 countries of the West African Economic and Monetary Union (UEMOA): the involved States are incentivized to negotiate a common or near prices or even organize their grid connection in the view of a regional integration²

The Union's currency is indexed to the Euro (EUR/XOF = 655.96), fully mitigating currency risk.

Development banks programs

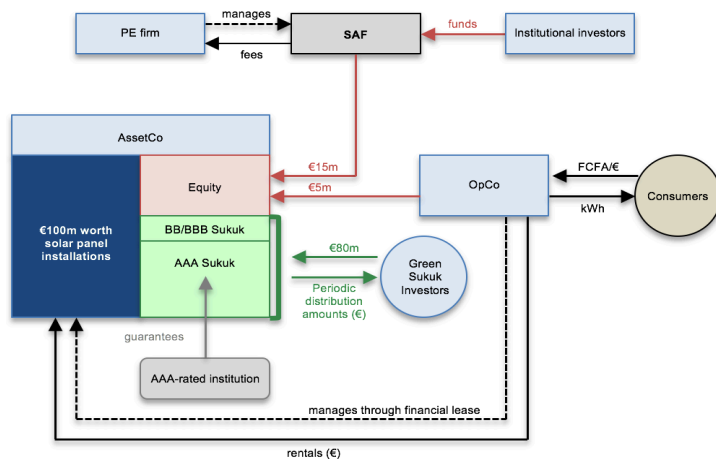
- **The World Bank's (WB)** West Africa Agricultural Productivity Program (WAAPP) aims for regional integration and technological innovations for agriculture through a carefully planned schedule. There is a clear opportunity to enter this scheme by providing specific solar energy know-how. Indeed, in collaborating with R&D labs, the Energy Company will be able to provide the most efficient possible solar PV panel installations in regards to agriculture.
- **The ACP-EU agreement** allows aids for long-term development projects: €2m worth subsidies would be attributed to the project.
- **The African Development Bank's (ADB)** Sustainable Energy Fund for Africa (SEFA) is committed to providing equity financing for Green Energy initiatives on the continent. Moreover, the ADF PCG scheme of the ADB offers strong guarantees.
- **The Islamic Development Bank (IDB)** equity involvement in the project is subjected to a Shariah-compliant financial structure.

With the involvement of AAA-rated IDB and ADB, a tranche of the issued Sukuk would be guaranteed, making it the first ever AAA-rated one in Africa.

Tax incentives in Luxembourg

- An adequate fund structuring allows to benefit from a 0%-taxation on dividends³.
- The Periodic Distribution Amounts (PDA) to Sukuk holders are fully deductible at the issuer's level and is not subject to withholding tax: it is treated as interest⁴.

FUND STRUCTURE



SOLAR AGRICULTURAL FUND PROFILE	
Fund size	€100m
Investment manager	Assafwa Asset Management
Fund structure	20% equity ; 80% Sukuk debt
SPV life	20 years
Target investment	70MW
Regional focus	Senegal, Mali, Burkina Faso, Niger, Benin, Togo, Ivory Coast
Target investors	Impact investors: Family offices, Development banks, Sovereign wealth funds, Trusts
Target Equity IRR	8,5 - 10,0 %
Fees	Mgmt fees: 1%; Carried Interest = max(0%, min(Realized Equity IRR, 30%) - Target Equity IRR)

Solar Agricultural Fund (SAF) would be based in Luxembourg and structured as an Alternative Investment Fund (AIF) by Fuchs Asset Management, a Management Company regulated by the CSSF.

The fund would be a sub-fund of Assafwa Sharia, which is currently managed by Assafwa Asset Management (AIFM) and for which accounting and reporting is handled by a fiduciary.

The IDB and the ADB would each invest €3m in SAF while the remaining €9m would be raised from Family offices, SWF and Trusts.

SUKUK STRUCTURING

The Sukuk al Ijara issuance will allow the financing of the solar PV panels and their installation. The Sukuk holders will become owners of the financed assets and will therefore:

- bear the risk of the assets' detention;
- be entitled to the income generated by assets (i.e. the yearly rental fees paid by the Energy Company) in the form of PDA according to a pre-agreed percentage.

Morgan Stanley would carry out the arrangement of the Sukuk al Ijara.

SUKUK PROFILE*					
Tranche	Rating	Size	Coupon (PDA)	IRR	Maturity
Senior Note	AAA	€68m	16.2% profit rate	1.0 - 1.5%	8 years
Senior Note	BBB	€8m	4.7% profit rate	3.0 - 3.5%	9 years
Mezzanine	BB	€4m	5.7% profit rate	6.5 - 7.0%	10 years

*A continuum liability structure allows for a reduced required equity for the fund investment. AAA Sukuk is depreciated from year 3 onwards; BBB Sukuk is repaid at year 9; BB Sukuk is subordinated to the repayment of the senior tranches (PDA and the principal are repaid at year 10)

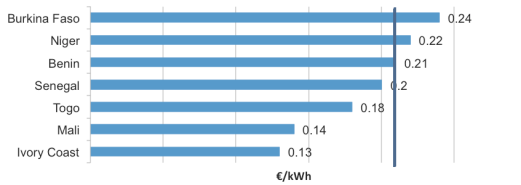
The predetermination of a price is not allowed for the repurchasing of the Sukuk tranches at maturity¹: the amount payable to their holders must therefore be the then-current market value of the underlying installations instead of the principals originally invested.

As the repurchasing of the AAA tranche by the Operating Company is laid out over 6 years from year 3, the solution would be to carry yearly valuations of the installations through the appointment of an independent expert. As a result, the yearly ownership transfers between the AAA-Sukuk holders and the Operating Company would be carried at a fair price.

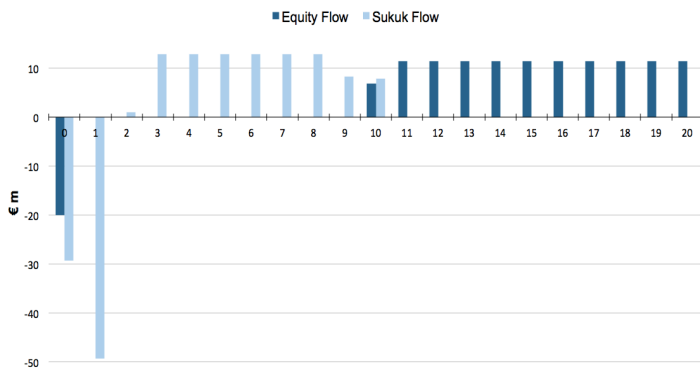
The securities would be issued on the Luxembourg Stock Exchange, the London Stock Exchange as well as the Nasdaq Dubai/DFM.

CASH FLOW PROFILE

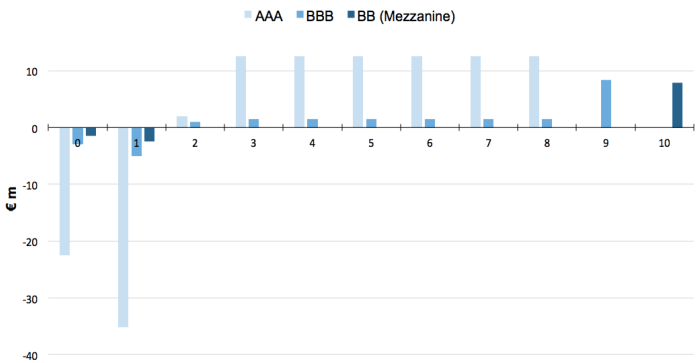
Electricity prices in the target countries



AssetCo Cash Flow Profile



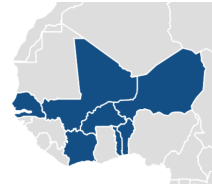
Sukuk Repayment by Class



Assumptions

- Total production of 73.5 GWh per annum
- Sale price of €0.21 per kWh, allowing the Operating Company to manage the business with a 7%-margin rate, while paying rental costs amounting €0.17 per kWh to the Asset Company
- From Y2 included, the Asset Company's revenues will stabilize allowing it to meet its distribution objectives

INVESTMENT CRITERIA



Geographical focus

West African countries members of the UEMOA except Guinea-Bissau as it is experiencing a major political crisis since mid-2016

Target electricity production

8 to 12 GWh per country per year

Location requirements

- Proximity to local farms and storage warehouses with low or no access to electricity;
- Necessity of flat land with excellent exposure to sunlight throughout the year;
- Grid connexion to serve the local population.

IMPACT

By powering villages, we provide concrete solutions to local populations. We generate enterprise activity and create wealth: this is a crucial step towards an accelerated and inclusive growth in Africa.

Economic	<ul style="list-style-type: none"> ▪ Job creation for the Operating Company as it operates and maintains the solar farms ▪ Spur agricultural business growth and job creation in the agricultural industry (agriculture-related rural employment) ▪ Lower energy costs in the long run ▪ Spur the entire economy, since agricultural growth not only stimulates agro-industries but also contributes the most to manufacturing and to the service activity in Africa
Social	<ul style="list-style-type: none"> ▪ Health improvement as solar energy production does not cause any air pollution, unlike burning fossil fuels ▪ Wealth creation and improved living standards by increasing the income of farmers, who represent 58% of the workforce ▪ Tackling extreme poverty and extreme hunger ▪ Enough energy to supply 200,000 households in the case of lower than expected demand from agricultural farms
Environmental	<ul style="list-style-type: none"> ▪ Clean energy provision (27% decrease in CO₂ emissions) contributing to the fight against global warming ▪ Dismantlement of the solar PV panel infrastructures at the end of their residual life (profits recouped by the local population)

WAAPP R&D teams would assess the effectiveness attributable to our project by comparing the local agricultural output to input used in farm production, at the beginning and at the end of the investment period.

RISK FACTORS

	KEY RISK	PROB	IMPACT	MITIGATION
Operating Risk	The Operating Company does not manage the sites as intended, leading to a lower-than expected total electricity production.			We strategically choose the Operating Company with a strong track record.
Market Risk	With increased production, electricity price may turn out lower than expected.			Demand largely outweighs supply and this should go on for the twenty coming years.
Political Risk	The region is under threatening political instability, which can damage the economic environment.			By diversifying the investment over 7 countries, we will reduce our exposure to individual country risk.

SCALABILITY

The proposal can be applied to other green energies (wind, water, biogas, hydroelectric) in West Africa. It can also be scaled to other regions in Africa. This would be facilitated by the adoption of the Pan-African Investment Code, which is clearly aiming for continental integration.

The financial structure of the SAF meets many Asian countries' requirements in terms of Sharia-compliance. It could thus be replicated in Indonesia for sustainable palm oil production for instance, with the involvement of the Asian Development Bank instead of the African Development Bank.

¹Solar Radiation Maps: Global Horizontal Irradiation (GHI), Solar GIS

²The Amended Treaty, WAEMU/UEMOA

³Page 10-11: Taxation and Investment in Luxembourg 2016: Reach, relevance and reliability,

Deloitte Touche Tohmatsu

⁴Circular L.G-A nr 55

⁵AAOIFI Standard n° 17