

West African Solar Corridor Initiative (SCI)

October 2018



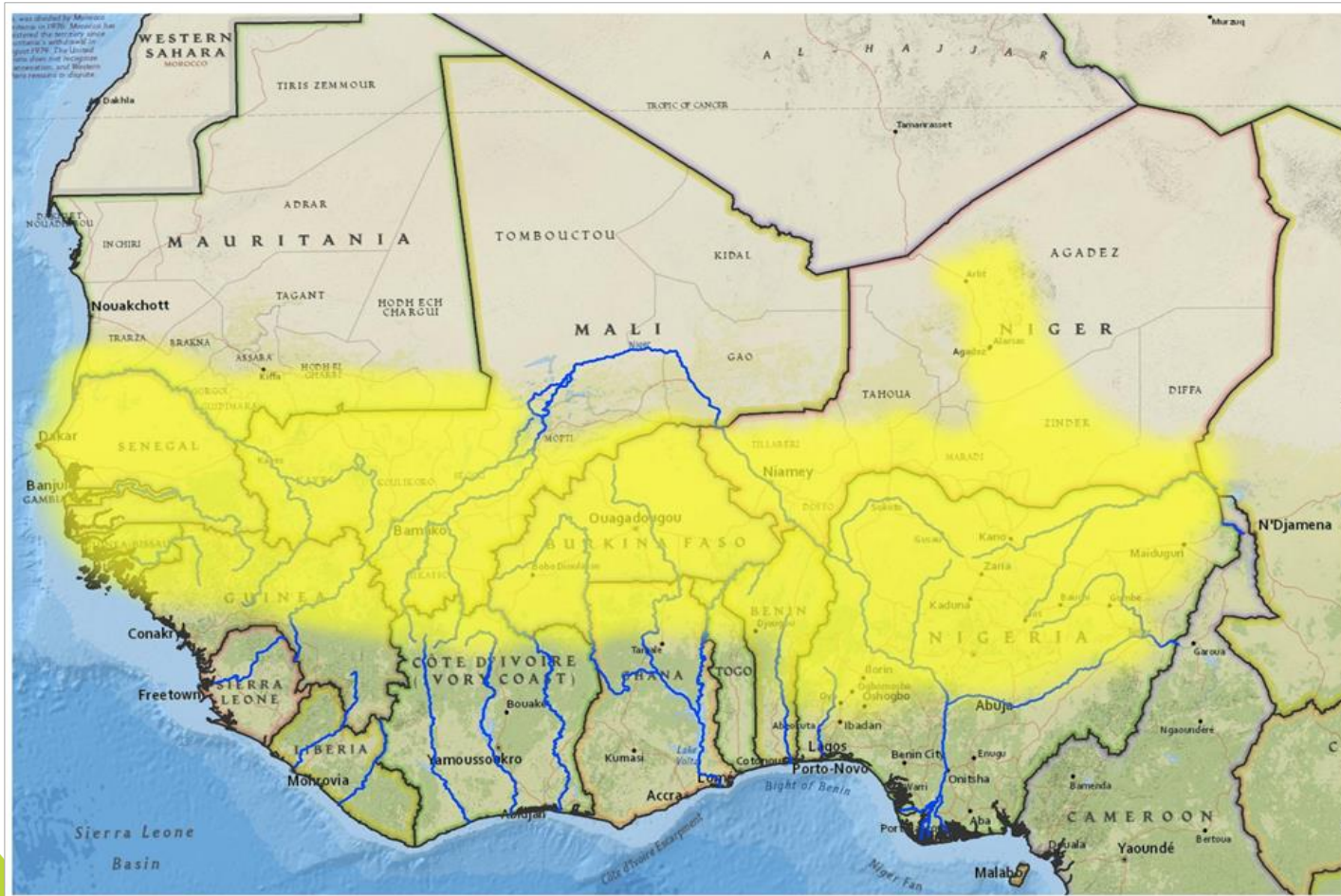
BACKGROUND

a) Introduction

- ▶ The West Africa Clean Energy Corridor (WACEC) Initiative was created by ECREEE in collaboration with multiple stakeholders including; IRENA, WAPP, ERERA;
- ▶ The Initiative aims at meeting a significant share of the region's demand for electricity with solar energy by making use of the high solar irradiation in the region;
- ▶ The preliminary target of the Solar Corridor is to develop 2GW of solar generation in the short term (2020) and 10GW in the long term (2030).
- ▶ The Solar Corridor will be integrated with three (3) other regional renewable energy corridors; wind, hydropower and biomass energy, taking into consideration the synergies and complementarities between the different sources of energy;

BACKGROUND

b) Geographic Scope of the Solar Corridor



The Solar Corridor involves:

- ▶ Benin,
- ▶ Burkina Faso,
- ▶ Côte d'Ivoire,
- ▶ Ghana,
- ▶ Mali,
- ▶ Niger,
- ▶ Nigeria,
- ▶ Senegal,
- ▶ Togo.

BACKGROUND

c) Concepts & Implications of Solar Corridor Vision

- ▶ Lower cost of generation can be achieved in certain regions;
- ▶ The need to adopt a regional perspective in power planning and procurement and exploit options to import/export solar power from/to neighboring countries where and when it makes sense;
- ▶ The need to create additional transmission infrastructure and to continue the efforts for facilitating regional power trade;
- ▶ The possibility of using hydro as storage solution for balancing intermittency of generation from solar (and wind) and its implications for operation of hydropower plants.

THE FACTORS OF West African Solar Corridor Initiative

Overview

The factors identified as crucial to the success are:

- a) **Barriers and Challenges** - these are factors that are likely to hinder the goal or the efforts of the SCI if not dealt with at national and regional level;
- b) **Five Pillars** – these are factors when put in place would facilitate the progress of the projects; and,
- c) **Basic Contracting Provisions** – these provisions are necessary to provide assurances to investors and project implementers as well as reduce the gestation periods of the projects.
- d) **Main Actors** – Owners, Operators, Offtakers, Development partners, Public or Private.

Factors

- ▶ **Barriers and Challenges**
 - Uncompetitive Policies & Subsidies
 - Battery Back-up Requirement / Intermittency Mitigation
 - Technical Bureaucracy
- ▶ **Five (5) Pillars**
 - Pillar 1 - Zoning & Resource Analyses
 - Pillar 2 - Integrated Planning & Interconnection
 - Pillar 3 - Enabling Regulatory Framework
 - Pillar 4 - Capacity Building
 - Pillar 5 - Public Support
- ▶ **Basic Contracting Provisions**
 - Standard Power Purchase Agreements (PPAs)
 - Security Package
 - Land Provision
 - Intermittency Mitigation / Complimentary RE Corridor

FACTORS

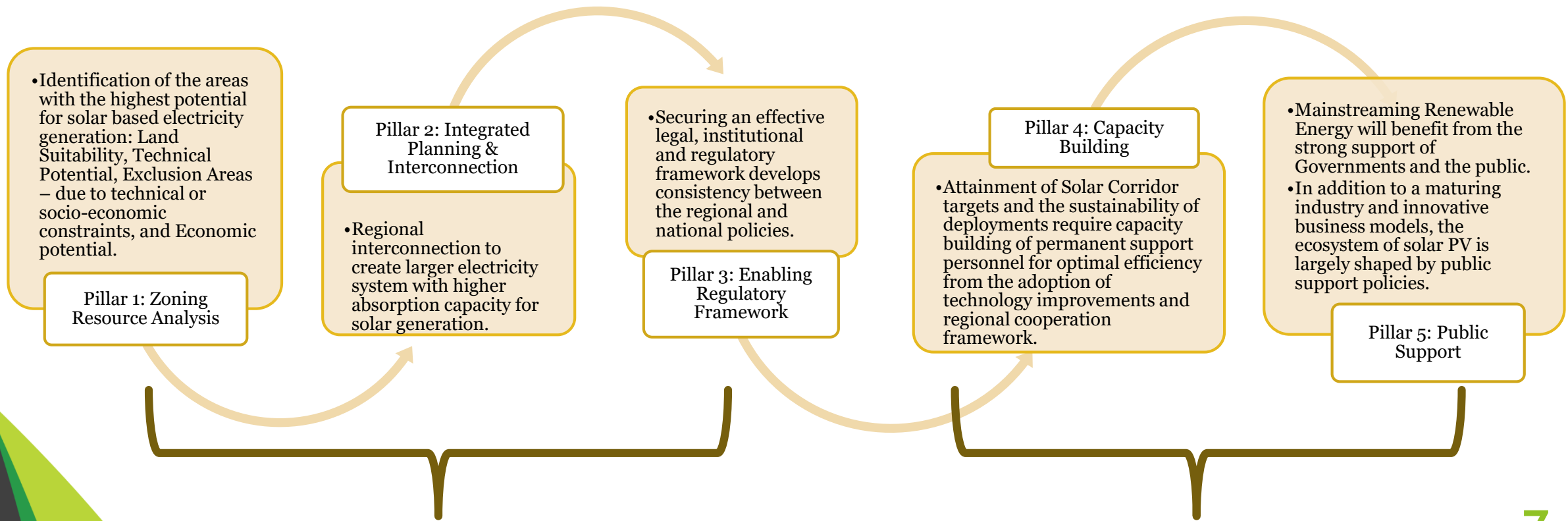
a) Barriers and Challenges

- ▶ These barriers and challenges have been identified as potential factors that can militate against the large scale development of the solar corridor initiative.
- ▶ These could be reduced through appropriate corrective measures.

	Barrier/Challenge	Description
1	Uncompetitive Policies & Subsidies	<ul style="list-style-type: none">▶ Inadequacies in the sector policies, planning, legislation means they are unable to respond to investor needs;▶ Subsidies for fossil fuel make solar generation offers uncompetitive for the off-taker.
2	Battery Back-up Requirement / Intermittency Mitigation	<ul style="list-style-type: none">▶ The existing cost for commercial electrochemical storage ranges from 250 to 1000 Euro/kWh depending on the battery technology and specifications;▶ Omission of battery back-up requirement is desired, in order to lower the investment and Levelised Cost of Energy (LCOE) for Solar.
3	Technical Bureaucracy	<ul style="list-style-type: none">▶ Knowledge of the basic principles and mutual benefits from regional cooperation in securing the complementarity of RE electricity generation technologies in the framework of the WACEC will be crucial.

FACTORS

b) Five (5) Pillars



Pillars 1-3 are taken into account in assessing the Readiness for Solar Corridor take-off and in determining Targets, Program of Activities and Action Plans

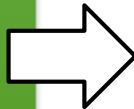
Pillars 4-5 are taken into account for Program of Activities and Action Plans

FACTORS

c) Basic Contracting Provisions

The availability of these basic contracting Provisions will facilitate the expedited closing of Solar Plant contracts.

These are therefore taken into account to assess the readiness for Solar Corridor take-off and in determining Targets, Program of Activities and Action Plans.



Standard Power Purchase Agreement

A balanced and well-crafted Power Purchase Agreement (PPA) is fundamental to power plant investment as it secures the payment stream for the plant or an Independent Power Producer (IPP).

The commercial viability of private grid-connected solar generation projects depends on the ability of the power companies to ensure regular payments to the independent solar-electricity producers.

Security Package

To attract desired investment funds, credit enhancement or financial support structures are often needed to:

i) reduce or transfer risk, ii) improve the certainty of liquidity for payments, iii) improve the terms on debt and debt-like instruments, and iv) enhance the prospects for a favourable investment decision.

Land Provision

Land acquisition can be a major challenge to solar investments often leading to prohibitive costs and long gestation periods.

Interventions to facilitate or help promote and speed up land provision will in many cases help in the realization of the solar corridor programme.

Intermittency Mitigation / Complementary RE Corridor

Important back-up potential in terms of hydro resources which are already available in some countries within West Africa could be used as back-up for solar generation Intermittency.

FACTORS

d) Main Actors - Key Actors - Inputs, Roles & Responsibilities

Key Actors	Key Actor Input	Role & Responsibility
Ownership Partners	<ul style="list-style-type: none">▶ Land▶ Permits▶ Licenses	<ul style="list-style-type: none">▶ Ensure land availability for the project▶ Secure all required permits▶ Secure all licenses needed▶ Arrange for Power evacuation
Operations Partners	<ul style="list-style-type: none">▶ Intermittency mitigation▶ Guarantor of power delivery▶ Interconnection / Access to off-taker	<ul style="list-style-type: none">▶ Operational stability▶ Plant maintenance▶ Power retail
Off-takers	<ul style="list-style-type: none">▶ Financial strength▶ Payment security	<ul style="list-style-type: none">▶ Provide financial security & guarantees

FACTORS

d) Main Actors - Partners - Inputs, Roles & Responsibilities

Partners	Partner Input	Role & Responsibility
<p><u>Sovereign/State Agencies</u> <i>Government, Ministries, Regulators & Commissions</i></p>	<ul style="list-style-type: none"> ▶ Regulatory framework ▶ Environmental Permits ▶ Sector licensing 	<ul style="list-style-type: none"> ▶ Provide enabling environment ▶ Development of adequate regulatory framework for the promotion of Renewable Energy Technology (RET)
<p><u>Regional & International Bodies</u> <i>ECOWAS, ECREEE, WAPP, ERERA, IRENA, EU, GIZ.</i></p>	<ul style="list-style-type: none"> ▶ Facilitate : <ul style="list-style-type: none"> ❑ Regional cooperation ❑ Project Prep. & Funding ❑ Infrastructure Dev. & strong power market ▶ Technical assistance <ul style="list-style-type: none"> ❑ Technology research /Technical specifications ❑ Assist tender preparation 	<ul style="list-style-type: none"> ▶ Provide feedback on performance and capability ▶ Recommend actions to be undertaken as necessary ▶ Continual research and analytical work on RE Technology and evolution e.g. IRENA ▶ Technical know-how support & capacity building ▶ Align regional studies to take into account Solar Corridor vision e.g. WAPP Master Plan
<p><u>Development Partners</u> <i>Int. Financial Institutions (WB, AFD, AfDB etc.) Natl. Funds, Financial Insts.</i></p>	<ul style="list-style-type: none"> ▶ Financing 	<ul style="list-style-type: none"> ▶ Financial low interest rates ▶ Innovative support for solar projects e.g. Regional Liquidity Support Facility (RLSF)

ECREEE's ASSISTANCE FOR SOLAR AND OTHER RE PROJECTS

Rationale for Assistance:

- ▶ There are a number of investors and funding institutions looking for viable and well justified RE projects that have been sufficiently studied and professionally prepared.
- ▶ Countries have project ideas at different stages of conceptualization and development that are not yet ready for investment consideration.
- ▶ With professional support, some of these ideas can be advanced to investment-ready status or packaged into viable concepts ready for financing consideration.

Objective for Assistance:

- ▶ To provide assistance to Private and Public entities of member countries to advance their project ideas towards implementation stage by providing expert support to identify and prepare projects sufficiently to attract the interest of investors for the purpose of getting successful pre-appraisal or appraisal missions to be undertaken.

Eligible Countries (Current Phase)

- ▶ Burkina Faso, Ghana, La Cote D'Ivoire, Mali

ECREEE ASSISTANCE: WAY FORWARD

a) External Support - Technical Assistance

Activities	Issues	To-Do
PPAs	<ul style="list-style-type: none"> ▶ Unbankable PPAs ▶ Lack of knowledge and familiarity 	<ul style="list-style-type: none"> ▶ Develop clear and well thought through standard PPAs ▶ Continual research and education on technology evolution ▶ Assist with Tender Specs. and procurement procedures
Subsidies/ uncompetitive policies	<ul style="list-style-type: none"> ▶ Distortions created by subsidies on fossil fuels and other policies. 	<ul style="list-style-type: none"> ▶ Advocate removal of subsidies on fossil fuels except subsidies on cooking fuels e.g. LPG ▶ Advocate taxing fuels that are not low emission e.g. coal ▶ Advocate for RE policies and promote RE Technologies ▶ Advocate Purchase Obligation and FIT (e.g. Senegal) and other helpful frameworks
Technology Transfer	<ul style="list-style-type: none"> ▶ Lagging Capacity of Project Implementers 	<ul style="list-style-type: none"> ▶ Capacity building on state of the art RE specifications ▶ Capacity building on maintenance of RE Installations
Pricing	<ul style="list-style-type: none"> ▶ Unclear methodology 	<ul style="list-style-type: none"> ▶ Tariff setting framework for intermittency support based on win-win benefit sharing between parties ▶ Uniform, clearly defined framework and transparent methodology for pricing

- ▶ RE technology and market are evolving rapidly. Most countries do not have the internal resources to build capacity and are constantly playing catch-up.
- ▶ There is the need for technology transfer to ensure technical efficiency and sustainability of projects as well as to ensure project implementers are current with technology and policy frameworks in place.
- ▶ Assistance is required for the right policy frameworks to be in place together with financial assistance for project preparation and funding support.
- ▶ This and the next slide outline the critical areas identified to require technical and financial assistance required amongst others.

ECREEE ASSISTANCE: WAY FORWARD

b) External Support - Funding Support

Activities	Issues	To-Do
Risk mitigation	<ul style="list-style-type: none"> ▶ Credit risks ▶ Currency risks ▶ Weak financial strength of off-takers 	<ul style="list-style-type: none"> ▶ Government and public support ▶ Innovative ways of providing financing e.g. RSLF initiative by KfW ▶ Overcome credit risk perceptions and mitigate risks ▶ Advocate low emission development strategy to access carbon financing and similar support. ▶ Adoption of regional currency
Funding	<ul style="list-style-type: none"> ▶ Project packaging and bankability ▶ High interest rates ▶ Limited financing options 	<ul style="list-style-type: none"> ▶ Capacity building and training on how to package projects and make them bankable ▶ Government commitment to providing guarantees ▶ Innovative financing to support all types of projects ▶ Flexible terms and conditions

- ▶ The critical areas that require interventions and funding support are as defined.

SUMMARY - TAKE AWAY

Support for Solar & other RE is available through ECREEE

- ▶ **Technical Assistance:**

For project design and support for project implementation available.

- ▶ **Funding Support:**

As part of technical support provided by experts will be facilitated with ECREEE's Regional & International partners.

- ▶ **Contact:**

- ▶ Arthur Energy Advisors (Accra Office): Attn: Josie @ +233 54 434 1478

- ▶ [Email: energy@arthuradvisors.com](mailto:energy@arthuradvisors.com)

- ▶ www.arthuradvisors.com



West African Solar Corridor Initiative (SCI)

The End