د افغانستان برشنا شرکت
DA AFGHANISTAN BRESHNA SHERKAT

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POWERING UTILITIES

10 MW KANDAHAR SOLAR PV POWER PROJECT

INDIA - AFGHANISTAN RENEWABLE ENERGY SUMMIT

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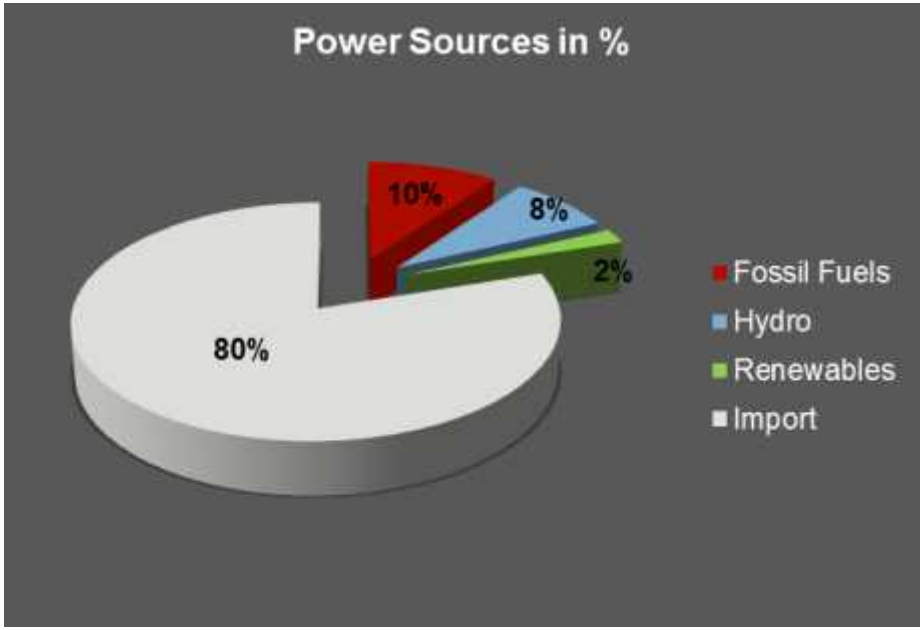
Afghanistan Power Sector – Key Characteristics

- Existing power supply heavily dependent on power imports.
- Major focus of energy sector development efforts directed towards transforming Afghanistan's electricity grid from isolated islands into an integrated national transmission grid.
- Afghanistan has two major grids:
  - I. The North East Power System (NEPS) with Kabul as major load center.
  - II. The South East Power System (SEPS) with Kandahar as the major load center.
- Energy imports in 2013-2014 represented about 80% of the total power supply.
- DABS customers connected to the National Grid have increased by more than 60% within the last 6 years.

Current Sources of Power		
Sl. No.	**Source of Power**	**Share in MW (%)**
1.	Fossil Fuels (Diesel & Gas)	10%
2.	Hydro	8%
3.	Renewable Energy	2%
4.	Power Imports	80%
	TOTAL	100 %



Context of Renewable Energy in Afghanistan

- Imports are backed by long-term PPAs, but future challenges regarding continuity and tariffs remain.
- Access to electricity is currently around ~35%.
- Enhancing access to about 65% over the next 5 years and meeting the growing demand of the existing load centers – high priority of the Government.
- Several provinces dependent on diesel generation resulting in extremely high cost of generation.
- Various supply augmentation initiatives underway:
  - CASA 1000
  - Turkmenistan – Afghanistan Interconnector.
  - Grid Integration between NEPS and SEPS.
- Meeting the above goal requires harnessing additional power supply sources including those closer to the loads.

Solar is now being looked at as a critical resource, and game changer to expand the supply base in the country.

Environment for Renewable Power Development in Afghanistan

Strong Governmental Commitment

- Solar energy is being considered as one of the key elements of Afghanistan's energy security initiatives.
- Strong Commitment demonstrated through a National Renewable Energy Policy, which is under implementation.
  - 50 MW of additional capacity in the first term (2015-2020).
  - 250-300 MW in the second term (2020-2032).
  - Regulations, incentives and other forms of facilitation to encourage private sector participation also being envisaged.
- An enabling legal regime exists:
  - Energy Services Law allows 100% foreign investment in generation, transmission and energy trade.
  - Afghanistan Investment Support Agency (AISA) serves as a single window for foreign investors to register and conduct business in the country.

The Govt. is also considering pooling of funds from the government budgetary resources and donor funds to create foundation blocks for a dedicated renewable energy financing institution. Multi-lateral and bi-lateral donor agencies are also supporting RE initiatives in the country.

Solar Power Potential in Afghanistan

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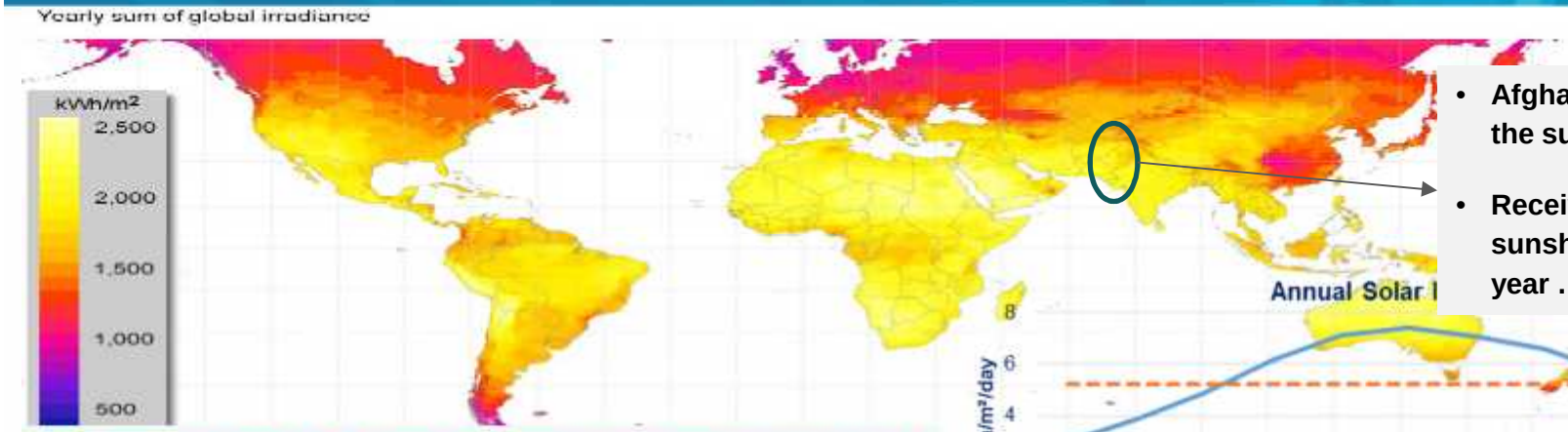
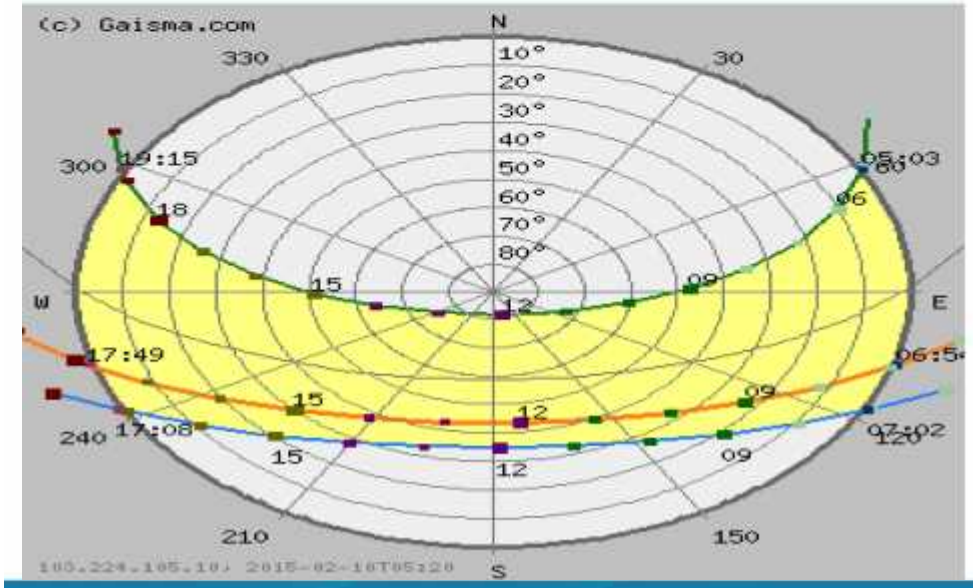
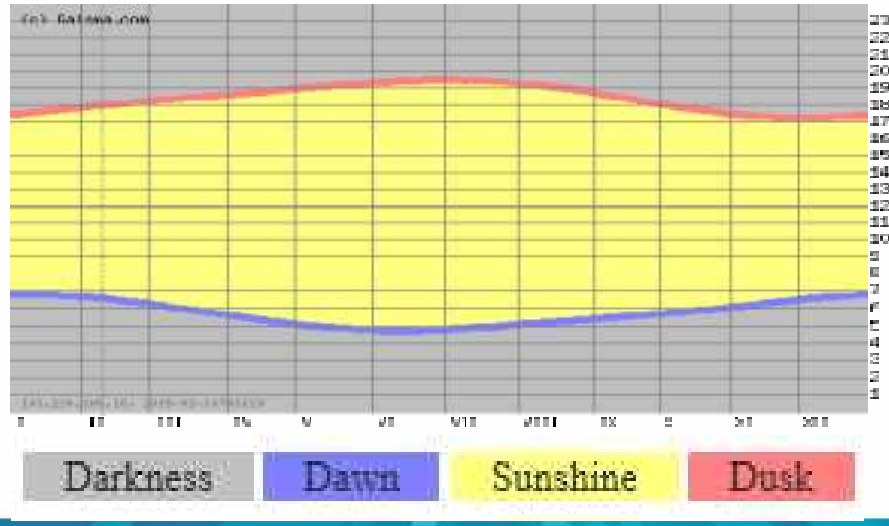


- **Afghanistan is located in the sub-tropical belt.**
- **Receives abundant sunshine throughout the year .**

300 sunny days in a year and annual average insolation of about **5.5 kWh/m2/day** portrays Afghanistan as a strong solar power potential country on the World Energy Map





Existing Solar Installations in Afghanistan

- Afghanistan has numerous small solar power installations aggregating to a total generation capacity of 13 MW.
- Installations are largely roof top stand-alone installations feeding power to government buildings, schools, hospitals and villages.
- Largest solar installation is in the Bamyan province with aggregate capacity of 1 MW.
- Various bilateral and multilateral donor agencies are supporting RE development in the country.

Successful implementation of various off-grid programmes exhibits strong prospects of more such solar based developments in Afghanistan in future

Project	Location	Capacity	Type	Coverage
Bamyan Solar PV Project	*Bamyan Province*	*1 MW*	*Solar PV Diesel Hybrid*	*2,500 rural households, businesses & govt. buildings*
Takhar Solar Programme	*Yakatoot and Khanaqa*	*200 KW and 44 KW*	*Solar PV Diesel Hybrid*	*560 and 363 customers*
Sayed Karam Solar PV	*Paktya Province*	*100 KW*	*Solar PV Diesel Hybrid*	*600 houses and small businesses*
Logar Solar	*Logar*	*1 KW*	*Standalone Solar PV*	*N.A.*

1 MW Installation in Bamyan Province in Central Afghanistan

80 kW at Kandahar University

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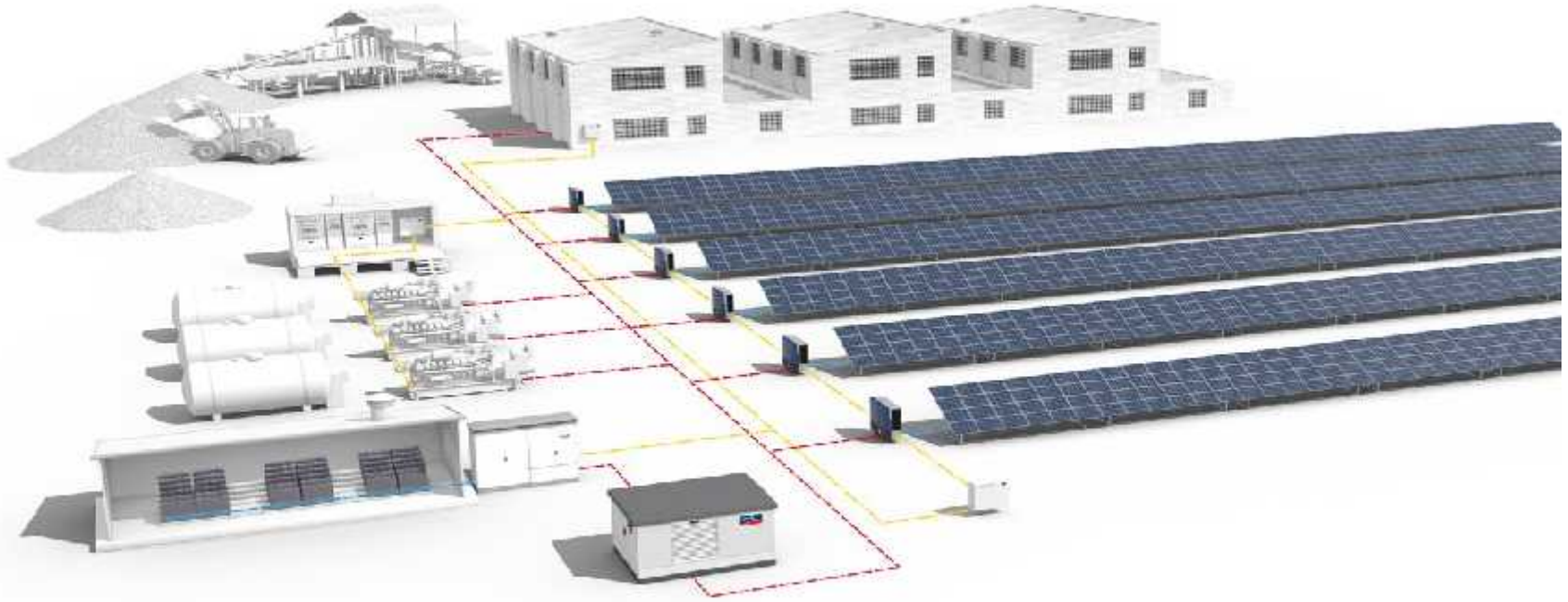

Kandahar Solar Programme

An initiative towards MW scale Solar Power

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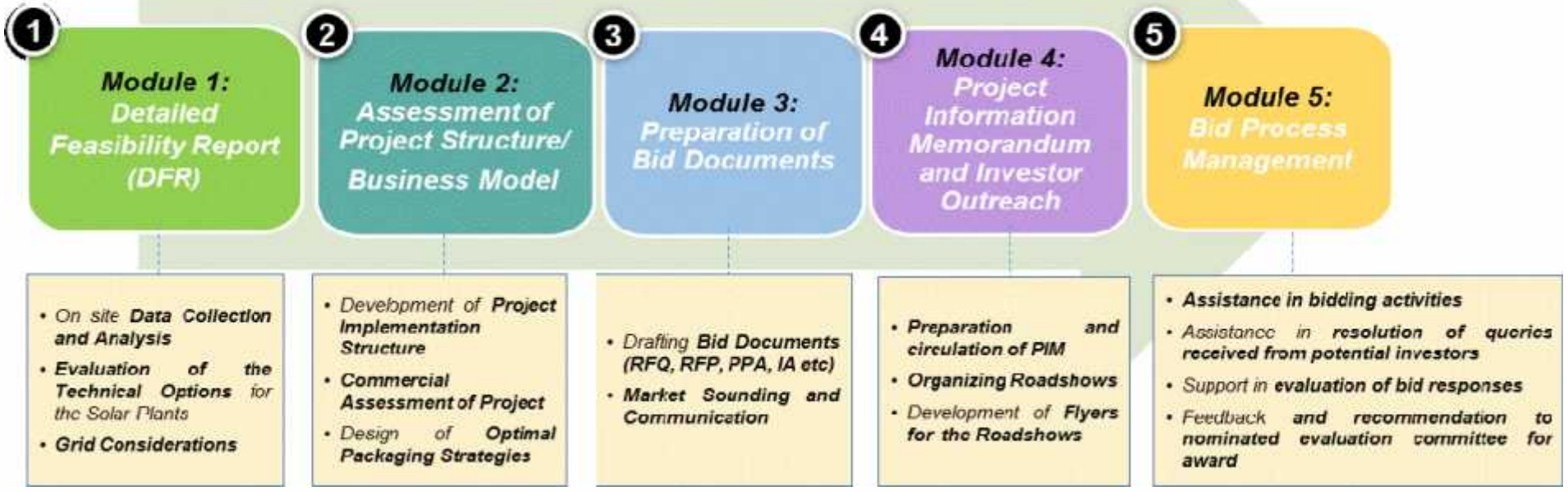
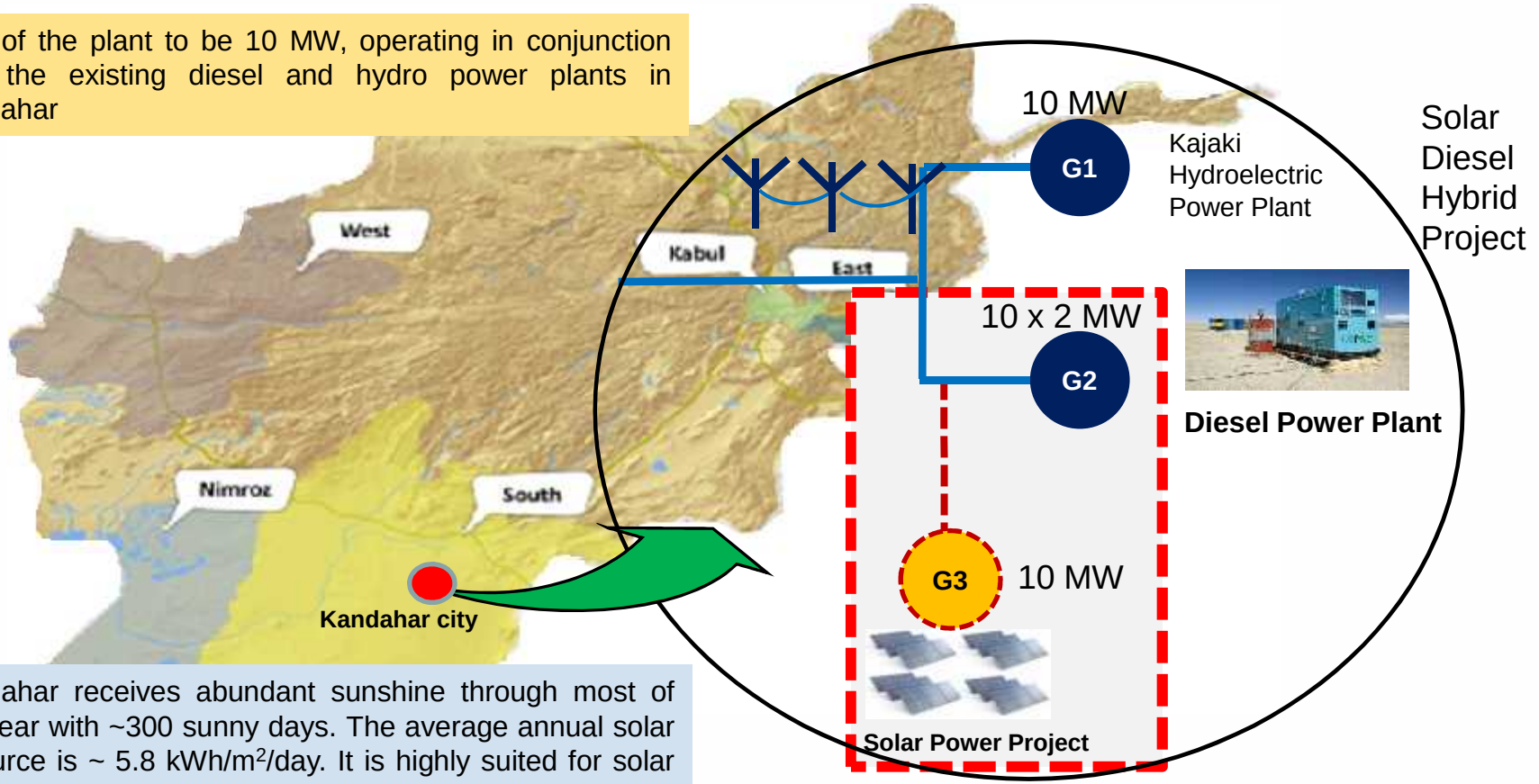
- GoA approved USAID proposal for development of a 10 MW Hybrid Solar PV Power Plant in Kandahar.
- The proposed programme is the first attempt, wherein an RE project of such large capacity with scalable model is being implemented through IPP route in Afghanistan.
- DABS and USAID with a consortium of companies viz. Phoenix, KPMG, Tractebel, Finnacle and RIAA LAW are working together for the development of a well designed and standardized program structure.

Work under process before award of the project to a Developer:



Project Design

Size of the plant to be 10 MW, operating in conjunction with the existing diesel and hydro power plants in Kandahar



Kandahar receives abundant sunshine through most of the year with ~300 sunny days. The average annual solar resource is ~ 5.8 kWh/m^2/day. It is highly suited for solar power generation

- Land of ~85 acres already identified for setting up the project.
- Several industrial parks and new industries planned to be set up in the adjoining areas, besides existing customer base.

Key Project Objectives and Priorities

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01

Improving living conditions of people of Kandahar

Provision of basic services and improving the living conditions of people of Kandahar is the shared objective of the United States Government (USG) and the Government of the Islamic Republic of Afghanistan (GoA)

02

Meeting the increasing demand of Power due to Industrialization

Installation of Solar Power Plant offers an environment friendly option to meet the increasing power demand of Kandahar city for the ongoing industrialization.

03

Cost effective option against existing diesel based generation

Solar power being cheaper vis-à-vis diesel based generation would act as a cost-effective supply option for DABS. Project to significantly reduce diesel consumption.

04

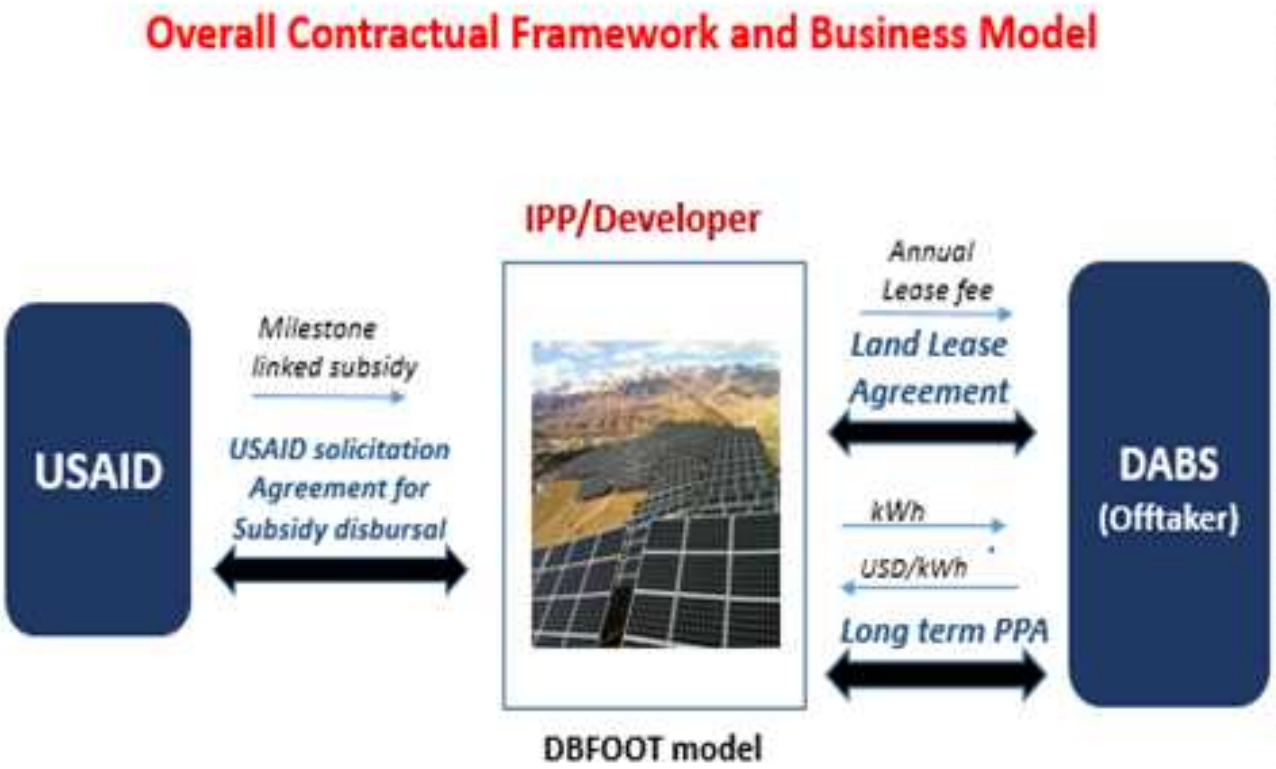
Scale up opportunities – Solar and other RE

Successful installation of Solar PV project built on IPP model offers opportunity for expanding the project in different parts of Afghanistan.

The Programme is receiving topmost attention and is being facilitated and monitored at the highest level in the GoA and the USAID

Proposed Project Structure
and
Commercial Framework

Framework and Business Model



Bidding framework

- **Bid Parameters:** Tariff per unit of electricity supplied to the grid (USD/ KWh
- **Bid Stages:** Single stage RFP process with two step price bid.
- **Technical Proposal:** Qualifications for price bid.
- **Price Proposal:** Reverse Auction.

Bidding framework

- Escrow Account established by DABS.
- Would cover 6 months' of average invoice value of the Contracted Energy
- In case of default, Seller can claim the unpaid amount against the Escrow Account.

Project incentivised by construction milestone based subsidy from USAID

Proposed Project Structure and Features – 1/2

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Mode of Selection

- **Transparent process** designed to select highly credible and committed project developer.
- Selection Criteria: Lowest **Tariff quoted through reverse auction process.**

Project Contract and Guarantee Framework

- **Standard PPA** with DABS, addressing appropriate measures for safeguarding developer interests.
- Long-term PPA of **15-20 years with USD denominated tariff**. No restriction on currency conversion or repatriation of funds related to investment.
- **Appropriate Guarantees** for payment security and termination payments - under discussion.

Model to be scaled up for deployment across the country

Proposed Project Structure and Features – 2/2

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A well designed and standardized program structure is under development to encourage private sector led development

GoA and USAID Commitment/ Facilitation

- Land procurement facilitated through GoA provides ready base for IPP based project development.
- Kandahar is a high demand growth area, with a mix of residential, commercial and industrial consumers. Several new Industrial parks also being set up. DABS, the power utility in Afghanistan, will act as a single buyer, providing ready market access.
- Facilitation commitment of the project counterparts for clearances and approvals.
- Strong support assured through suitable contractual structures.
- Access to a large and expanding market with projects facilitated through strong government and utility support, and commitment of funding agencies.

Security Structure (Under Development)

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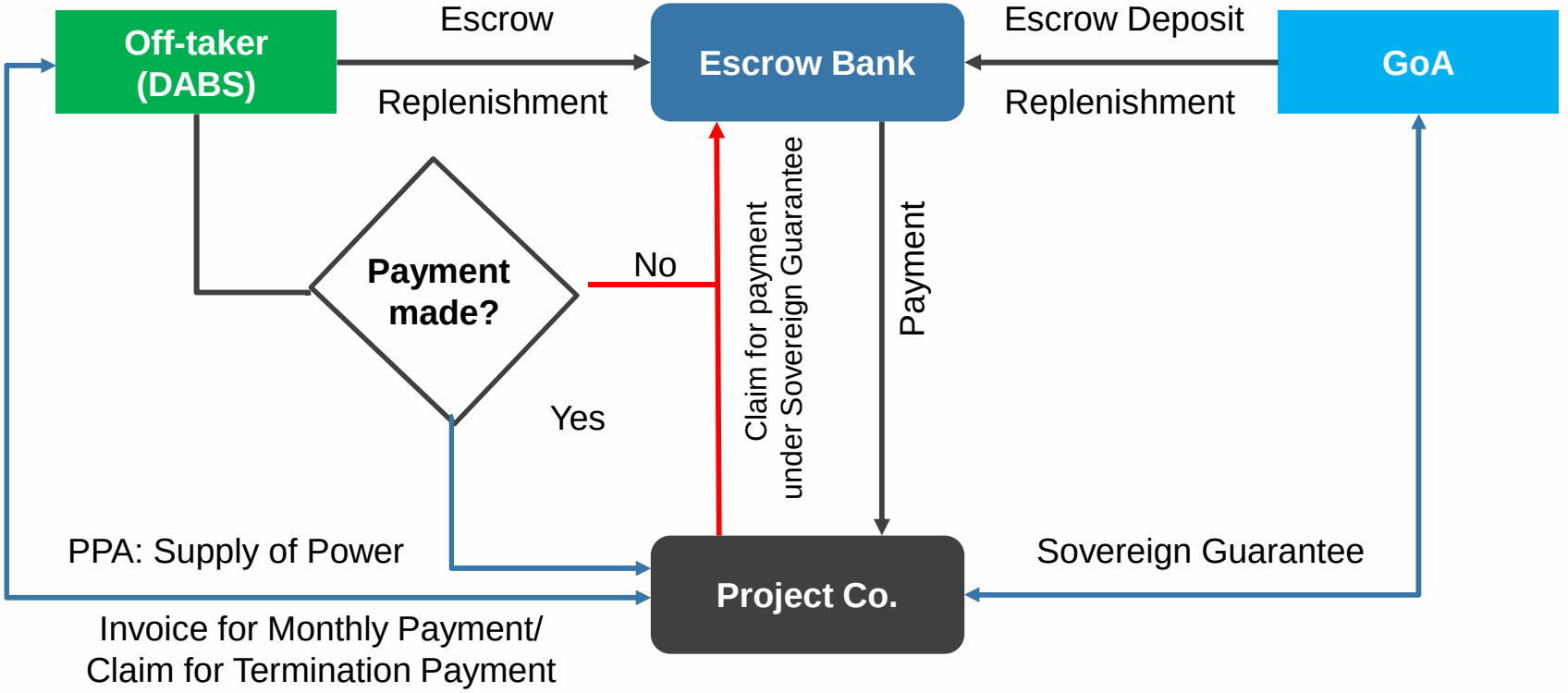
Sovereign Guarantee - Government of Afghanistan (GoA)

- To secure project developer against payment default of monthly invoices.
- To unconditionally and irrevocably guarantee payments of entire amounts under the PPA, within 30 days of claim.
- To indemnify the Project Company for losses arising from any event of Political Force Majeure.
- All currency fluctuations / tax and duties due to the State to be pass through.

MIGA / IDA Guarantee

- To provide partial risk guarantee for off-taker default in case of pre-identified political Force Majeure termination events.
- Acts as a comfort for investors. Historically, projects with partial risk guarantee instrument have rarely witnessed termination.
- However, no cover for termination due to default by the IPP.

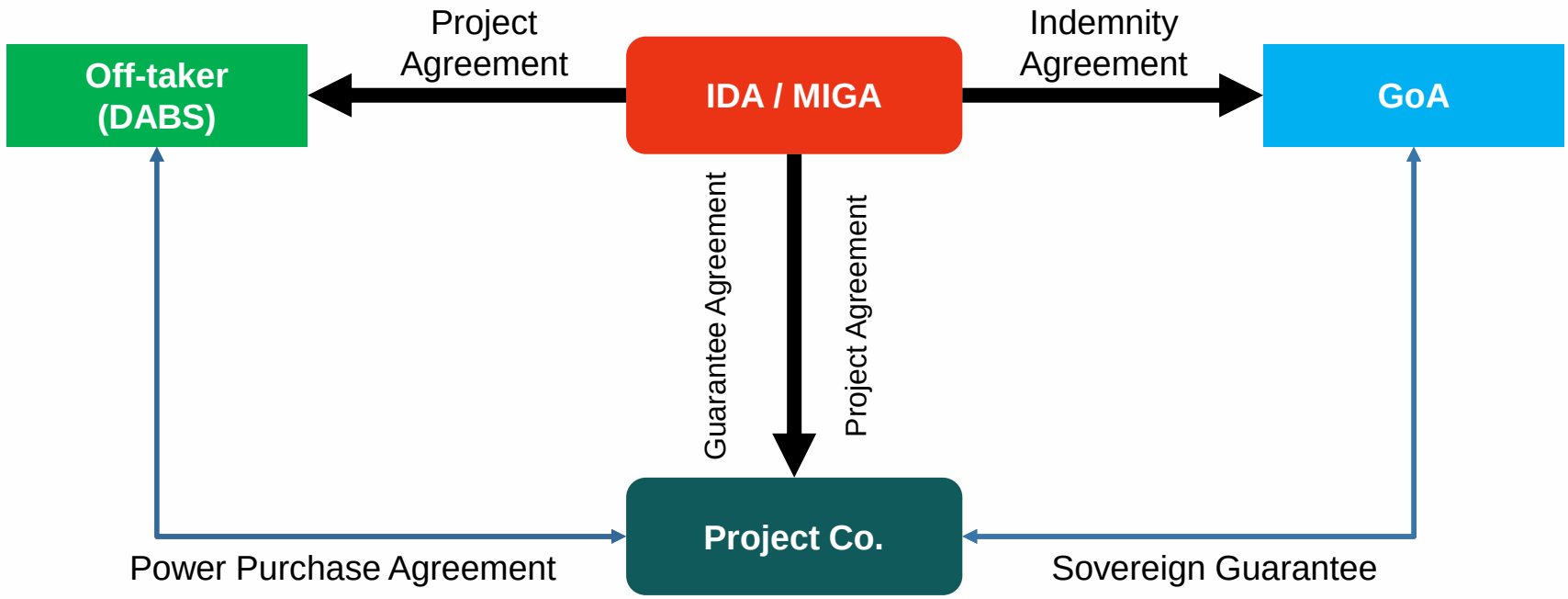
Payment Security Structure: Under Sovereign Guarantee



Features of the Payment Security Mechanism (PSM):

- Fixed months of invoice amount held in funded escrow.
- Drawdown under claim after expiry of payment period defined in PPA.
- Escrow replenishment by off-taker to ensure minimum number of month's balance at any time, failing which termination can be triggered.

Partial Risk Guarantee (PRG): IDA / MIGA



Features of the Partial Risk Guarantee (PRG):

- Partial Risk Guarantee provides for guarantee of partial payment on termination, commensurate with the structured obligation rating profile.
- Currently structured to ensure a certain level of USD based project IRR at any point of time.
- The PRG automatically falls-off after tariff revenue provides for the IDA covered project IRR, irrespective of PPA still being in force

Project Timelines

Sl. No.	Milestone	Tentative Timeline
1	Issuance of RFP	Mid Sep 2015
2	Pre-bid meeting and Road Shows	End Sep 2015
3	Receipt of Technical Bids	End Oct 2015
4	Evaluation and Award	End Nov 2015