Promoting Solar in Asia and Pacific

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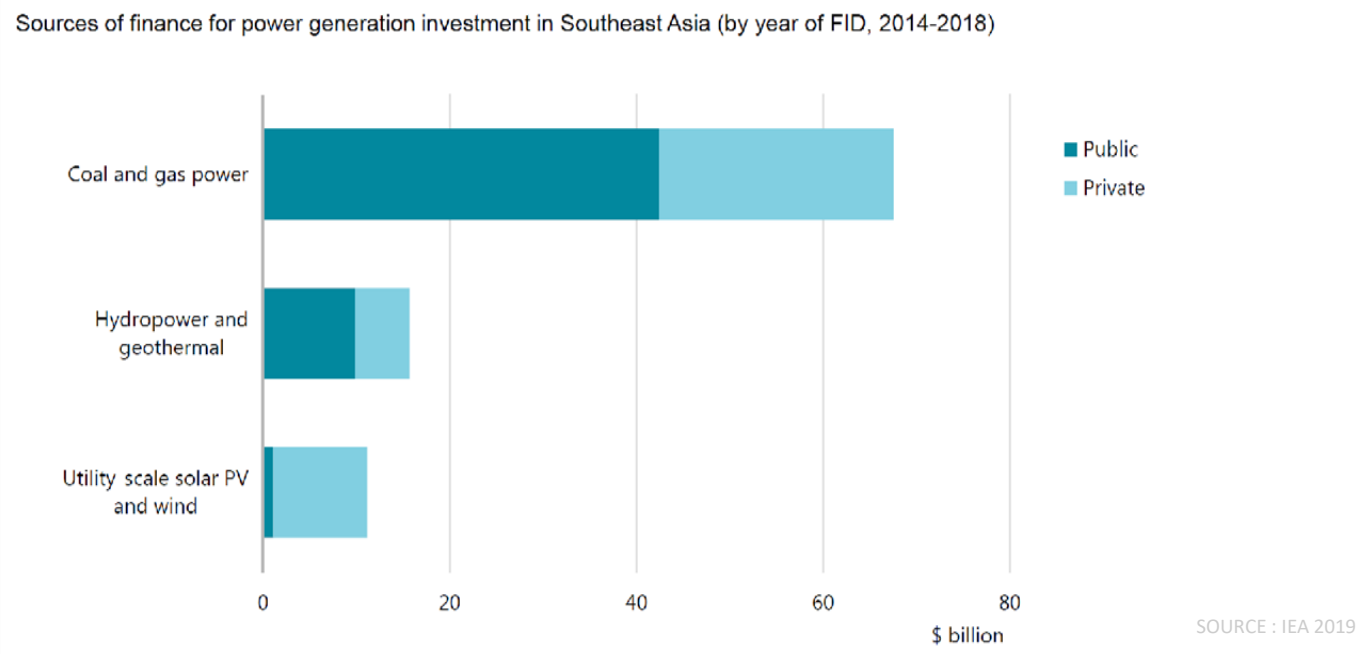
Financing Solar/Renewables – A Fundamental Change Needed

Governments have a determining influence over the flow of energy investments



SOURCE : IEA 2019

Most wind and solar projects are financed by private capital unlike coal, gas and hydropower plants which are mostly financed with public funding

How to effectively harness solar potential?

CHALLENGE 1: BUILDING CONSENSUS: GRID STABILITY, EFFICIENCY CONCERNS AND THE NATIONAL UTILITY

GRID STABILITY Coal/hydro vs. solar	EFFICIENCY CONCERNS Bilateral PPAs vs. tendering
○ Intermittency of solar unfamiliarity with large-scale VRE integration ○ Requirements for forecasting and regularizing supply to the grid	○ Time requirements for executing an international tender process ○ Inhouse capacity needs for the technical management solar integration + commercial management of the tender

How to effectively harness solar potential?

CHALLENGE 2: FORMULATING AN ENABLING BUSINESS ENVIRONMENT: TRANSPARENCY, RISK, PRICING AND THE PRIVATE SECTOR

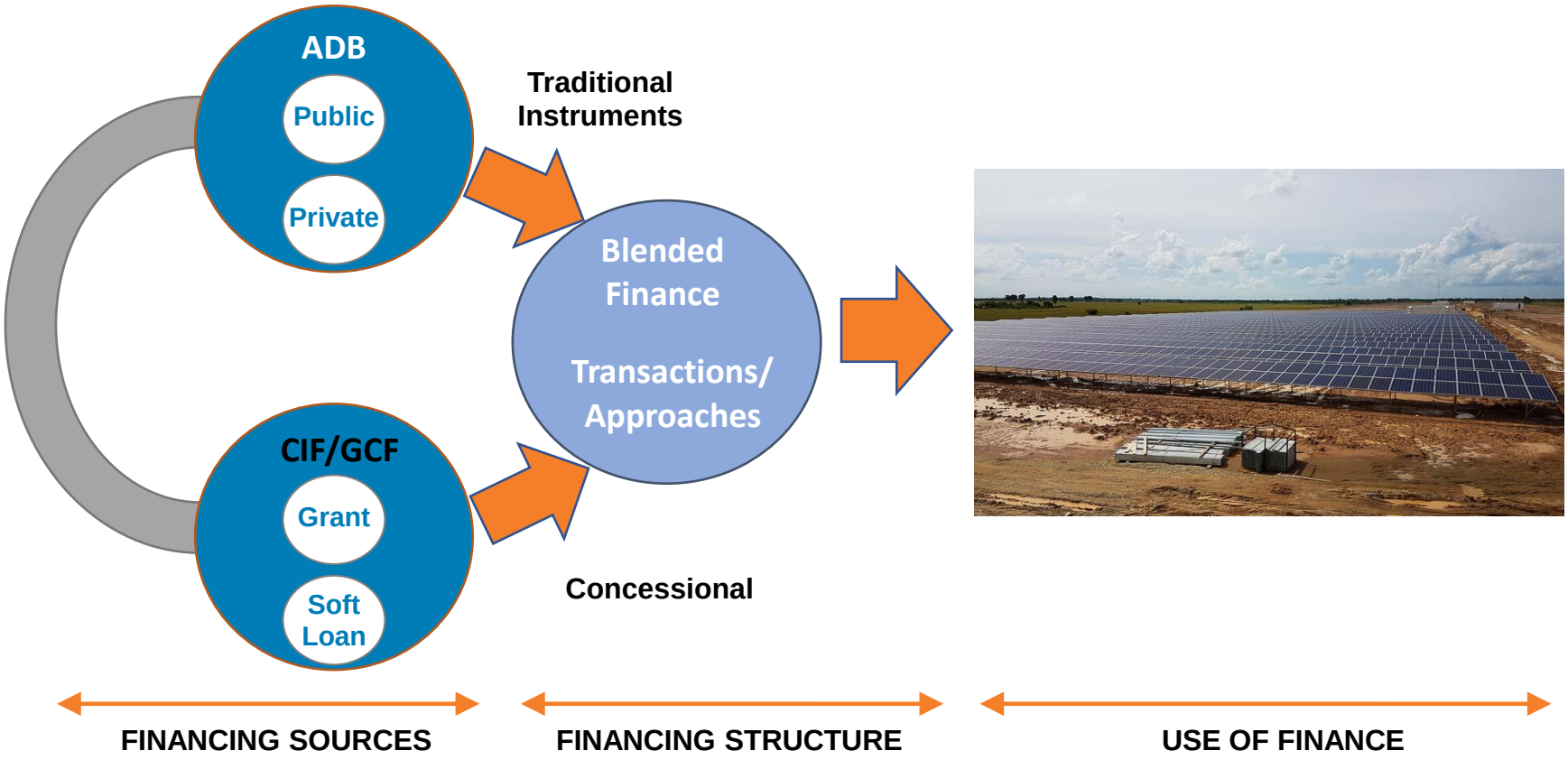
TRANSPARENCY Ensuring high investor confidence	PRICING Compensating costs and risk
○ Limited demonstration of executing transparent, open-door tendering practices ○ Limited international investor experience of working in the country's energy sector	○ State: high levelized cost of solar; costs of technical, regulatory and operational reforms; limited assurance of cost-compensatory pricing ○ Pvt sector: sovereign credit rating; no sovereign guarantee; land acquisition

ADB's End-to-End Support for Solar/Renewables (1)

Lack of well-structured and efficiently procured projects	Transaction advisory services (Office of PPPs, OPPP)
Need to enhance credit worthiness of off-takers	Strengthen SOE financial management through policy dialogue, set up guarantees and results-based loans (Public Sector Regional Depts)
Need for competitive funding mechanism	Private Sector Funding from ADB (Private Sector Dept, PSOD) and Access to Climate Financing for Sovereign and Private Investments

ADB's End-to-End Support for Solar/Renewables (2)

Plan to mobilize ADB public and private sector funds, alongside global climate finance (CIF/GCF)



Energy Sector Lending in 2019

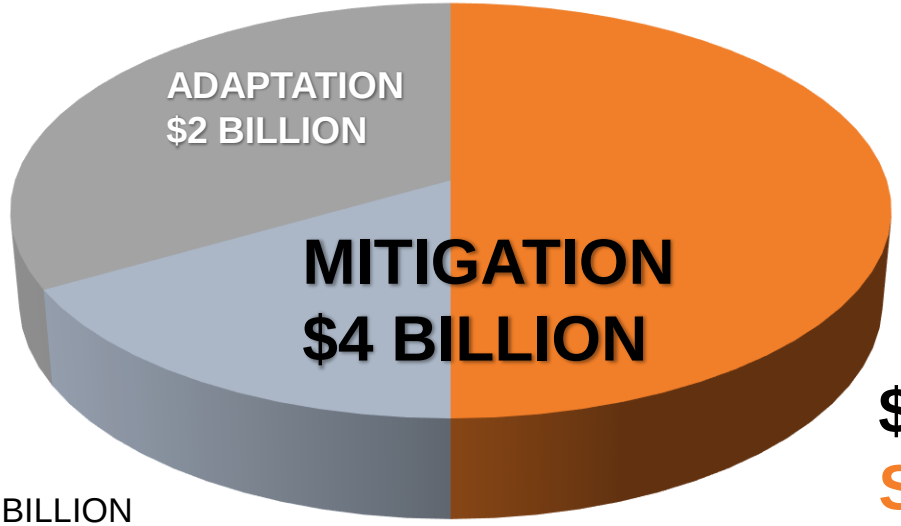
- Total approvals in the Energy Sector in 2019 amounted to $2.4 billion including $ 0.40 billion from PSOD (17% of total energy sector lending)
- Total climate mitigation finance approved in the sector in 2019 amounted $1.0 billion including $0.33 billion from PSOD (or 29% of the total climate financing)
- Transmission and distribution projects without energy efficiency improvement and greenfield natural gas projects are usually not considered as climate financing.

Amount	CWRD	EARD	PARD	PSOD	SARD	SERD	Total
Total	460.0	460.0	85.2	419.1	1,001.0	7.6	2,432.9
Climate Finance	200.0	87.3	85.2	333.7	452.6	7.6	1,166.4
- Mitigation	189.8	78.4	77.6	333.7	357.4	6.5	1,043.4
- Adaptation	10.2	8.9	7.6	0.0	95.2	1.1	123.0
T & D, Others	260.0	372.7	0.05	85.4	548.4	0.0	1,266.5

Clean Energy and Climate Financing

- Our target is **$6 billion annually by 2020**

Phase 1: 2016 to 2020
$6 billion annually by 2020



$1 BILLION
SUSTAINABLE TRANSPORT
SUSTAINABLE CITIES

$3 BILLION
SOLAR AND OTHER CLEAN ENERGY

https://www.adb.org/climate-change-financing

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Projected Energy Sector Lending in 2020-2022

- In 2020, energy sector sovereign lending approval program is $6 billion* :

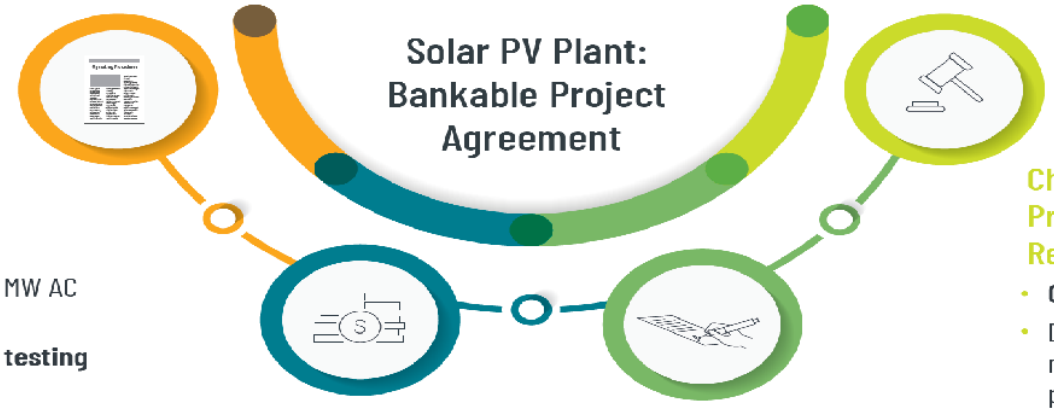
- Clean Energy : $2.4 billion, i.e. 40%
- Transmission & distribution: $2.6 billion, i.e. 43%
- Others (sector project, gas): $ 1 billion, 17%

- As of 28 May 2020, $907 million loans approved in energy sector. Due to Covid-19, challenges in delivering this program because DMCs' priorities for resources allocation and field work constraints

- In 2021-2022, the projected average lending will be $5 billion/year, with clean energy representing about 40-50% of the lending.

**estimate*

Improvements to the Power Purchase Agreement



Technical Requirements

- **Output based specification** – 60 MW AC capacity
- Clear **commission testing procedures**
- Detailed **operating procedures** including metering requirements, segregation of roles and responsibilities between EDC and Project Company within solar park

Payment Regime

- **USD tariff provides FX protection**
- **Detailed payment regime** including details of invoicing mechanism, liquidated damages, interest on late payments, etc.
- **Deemed Commissioning** and **Deemed Generation** provisions included to provided protection to Project Company

Defaults & Termination Regime

- Detailed description of roles and responsibilities for both EDC and Project Company and terms of defaults events for each party
- Detailed remedial provisions for any event
- **Clear Termination Regime** for: (i) Project Company Event of Defaults; (ii) EDC Event of Default; and (iii) Prolonged Force Majeure Event

Change in Law Protection & Dispute Resolution

- **Change in Law** protection
- Detailed dispute resolution mechanism including provision to conduct arbitration in **Singapore** pursuant to the **United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules 2010**

Solar PV Tender Process based on International Best Practices

Evaluation Process

Launch of Tender Documents

Pre-Bid Engagement
- Pre-bid meeting
- Site visit
- Response to Bidders clarifications

148 bidders purchased tender documents

Prequalification
- Pre-qualification based on financial and technical criteria
- Ensures selection of only credible developers

26 bids received

18 bidders prequalified

Technical Evaluation
- Compliance with technical requirements mentioned in the IFB

18 bids technically compliant

Financial Evaluation
- Compliance with financial requirements mentioned in the IFB

Tariff: USc 4.415 / kWh

Best and Final Offer (BAFO)
- Tariff proposed at BAFO to not be greater than tariff in Financial proposal
- Designed to attract best possible price for EDC

Tariff: USc 3.877 / kWh

Negotiation & Project Award

Signing of Project Agreements

Financial Closure

Pre-bid Meeting

Site Visit

Public Opening of Financial Proposal

Public Opening of BAFO

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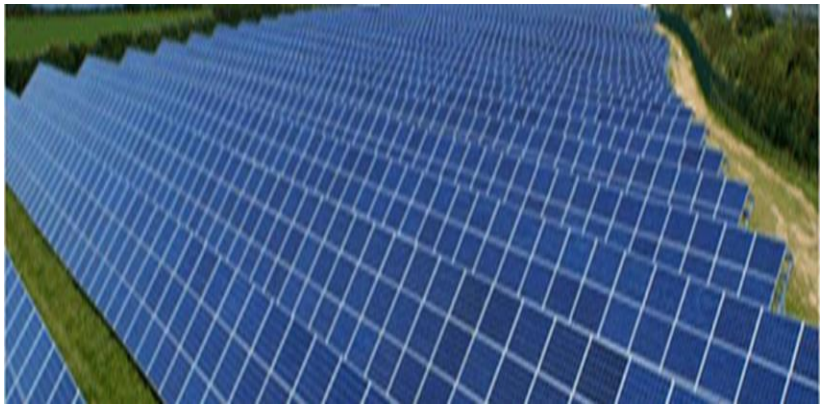
Project Examples

- UZB Solar II Project
  - $100 million investment
  - 100MW plant + utility-scale storage (demo) + efficient and solarized health clinics and schools



- AFG Solar Park Project
  - ($110 million plus joint and parallel co-financing)
  - Installation of up to 5 x 20 MW modular plants with AITF and IDB co-financing and potential private sector participation for at least 20 MW
  - Feasibility studies for additional sites including for industrial solar park with storage, off-grid, and rooftop

Project Examples

- IND: Solar Transmission Sector Project ($175 million ADB loan and $50 million Clean Technology Fund loan)
  - Improved capacity of interstate transmission network for increasing electricity generated from new mega solar parks (4.2 gigawatt) to the national grid
  - Improved Power Grid's autonomous management of safeguard and procurement systems, using the country systems at the agency level
- Pacific Renewable Energy Investment Facility ($750 million)
  - Innovative facility to finance a series of low-value renewable energy projects in the eleven smallest Pacific Island countries (total population less than 1.5 million) to fast track conversion of Pacific region to renewable energy.
  - Overall cost is estimated at $750 million equivalent to be financed by ADB ($200 million), co-financiers ($500 million), and governments ($50 million).

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TON: Renewable Energy Project

- Sovereign operations
- Subsector: Electricity Transmission & Distribution
- Approved on 11 March 2019
- $12.2 million project loan (ADF)
- Green Climate Fund grant co-financing: $29.9 million
- Government of Australia grant: $2.5 million

- **Issues**: multiple challenges (climate change, energy insecurity and high electricity cost, and low energy access rate)
- **Approach**: assist Tonga generate more than 50% renewable energy by 2020 and 70% by 2030. The project will create technically enabling environment for IPPs: a 6 MW solar PV of IPP transaction is being finalized (PSDI provided transaction advisory services, and PSOD is considering to co-finance the transaction under Pacific Renewable Energy Program approved in 2019)
- **Design/Innovative Solution:**
  - The project is under Pacific Renewable Energy Investment Facility (approved in 2017)
  - A large battery energy storage system capacity in the main island to store intermittent electricity renewable energy
  - Solar PV, hybrid system, and grid technologies and management upgrade in the outer islands
  - Effective gender mainstreaming

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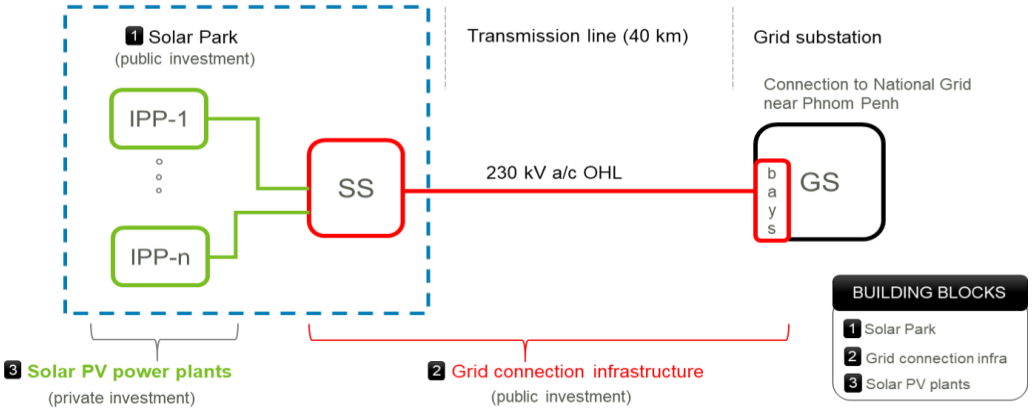
CAM: National Solar Park Project

- Sovereign Operations/OPPP
- Subsector: Electricity Transmission & Distribution
- Approved on 23 May 2019/Signed on 28 June 2019
- $7.6 million project loan (OCR)
- Strategic Climate Fund: $14 million (loan & grant)
- Expected private sector investment: $100 million by 2020 (potential PSOD support)

- **Issues:** overreliance on hydropower and fossil fuel generation and rapidly growing demand, high system costs, low private sector participation in large utility-scale solar power
- **Approach/Innovative Solution:** (i) demonstrate the ability of large-scale solar parks to lower solar energy prices, while providing technical benefits to the national grid and complementing hydropower through One ADB approach; (ii) combined an OPPP-led transparent, competitive tender for private solar PV generation with SERD public sector support for the common park facilities and transmission interconnection, de-risked the project and attracted strong private sector interest; and, (iii) PSOD is exploring financing for private PV generation within the park.
- **Design/Specifications:**



AFG: Kandahar Solar Power Project

- Non-sovereign operations
- Subsector: Renewable energy - Solar
- Approved on 2 April 2019/ Signed on 17 May 2019
- $4.0 million LIBOR-based loan (OCR)
- Canadian Climate Fund for Private Sector in Asia-II: $3.85 million

- **Issues:**
  - AFG ranks amongst lowest 5% per capita electricity consumption (100 kWh compared to global average of 3,125 kWh).
  - Total installed generation capacity of 568 MW falls far short of required demand. Chronic power shortage.
  - Significant import dependence (80% of power and 97% of fuel); major implications for scarce FX reserves.
  - Non-availability of long-term financing to support any infrastructure due to heightened country risk.
- **Approach/Innovative Solution:**
  - Identify a credible sponsor (with established track record and experience in Afghanistan)
  - Crowd in a blended finance package (innovative combination of long-term loans and concessional financing) to ensure commercial viability and meet entire financing requirement
  - Set precedent for private sector grid-connected solar sector by supporting the first, highly demonstrational solar power plant
  - Fully consistent with objective to support FCAS countries by providing essential infrastructure.
- **Design/Specifications**:
  - 15.1 MW solar power project; 6 KM transmission line upgradation; equipment procured from highly reputed suppliers; 20-year PPA with DABS
  - Generates 27.5 gigawatt-hours per year; Annual CO2 emission avoidance of 8,500 tons

Decentralized Solar Plants in India

- Decentralized solar plants of 0.3 MW to 10 MW capacity on surplus land of rural substations – to feed agriculture consumers directly
- Reduces the line losses of DISCOMs, reduces subsidy burden
- EESL in installing at least 160 MW with ADB financing (with CTF) under Scaling Up Demand Side Energy Efficiency Sector Project in India (total loan size of $296 million)

Collaboration with ADB

- For Public Sector (Sovereign) Projects:
  - Request should be sent to ADB through Ministry of Finance
  - Should be part of the annual discussion of pipeline and strategy
  - https://www.adb.org/what-we-do/public-sector-financing/main

- For Private Sector (non-sovereign) projects
  - Can send proposal to ADB's private sector directly
  - https://www.adb.org/what-we-do/private-sector-financing/main

Thank you!