

Promoting Utility Scale Solar using Viability Gap Financing (VGF) modality in Nepal

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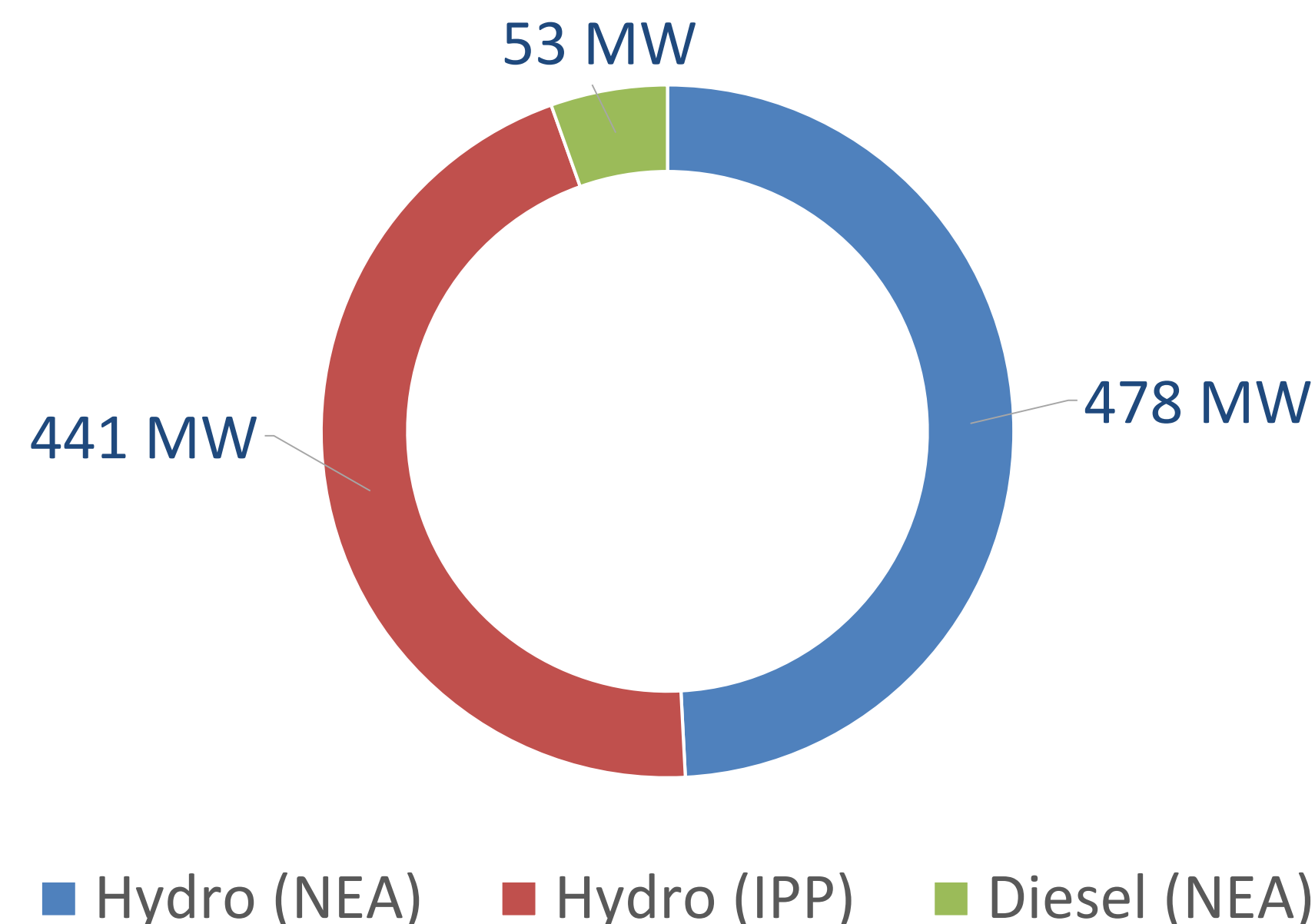
Road Ahead for Utility Scale Grid-tied Solar in Nepal

Nepal Electricity Authority

Established on **August 16, 1985** under the Nepal Electricity Authority Act. 1984

Objective- to generate, transmit and distribute adequate, reliable and affordable power by planning, constructing, operating and maintaining all **generation**, **transmission** and **distribution** facilities in Nepal's power system both **interconnected** and **isolated**.

Integrated Nepal Power System (INPS)

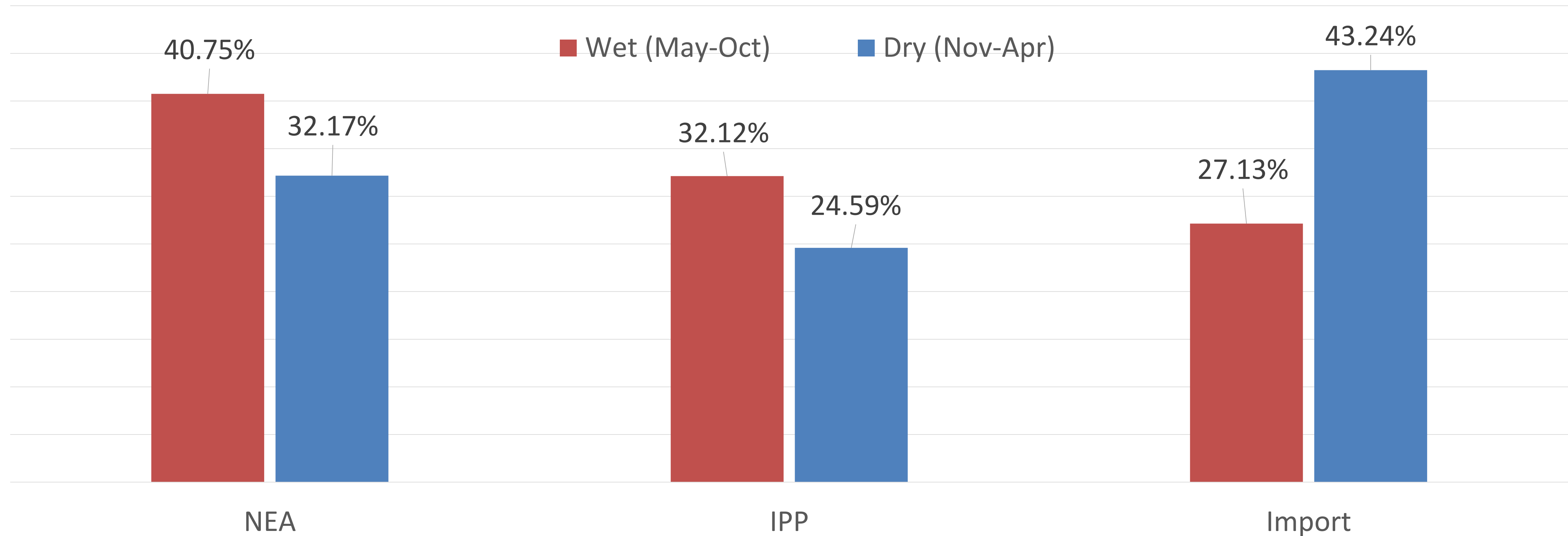


Predominately Hydropower - Elevation from the High Himalayas to the plain in the south over a width (about 180 km) combined with abundant snowmelt and torrential rain

Economically Viable Potential
Hydropower Generation: over 43000 MW

Prospect of Grid-Tied Solar in Nepal

Energy contribution of NEA, Private (IPP) and Import during Dry & Wet Season in Nepal



Pros: Private sector participation

Cons: High Dependence on Import due to seasonal variation in flow - a typical run off river Hydro power generates about only 40% of wet season energy during the dry season

Prospect of Grid-Tied Solar in Nepal

To address the problem of **seasonal variation** and **reduce dependence on import**:

NEA has opted for a **hybrid solution** - Grid tied solar as supplementary to daily peaking or reservoir type Hydropower plants

Water can be **stored during day time** by using grid tied solar and used for **increased generation of daily peaking or reservoir type hydropower plants during peak hours**

At Present, Hydro power with some storage facilities (Daily Peaking or reservoir) - **310 MW**

In the near Future with inclusion of plants under construction, Hydropower with some storage facilities (Daily Peaking or reservoir) is expected to increase by nearly 3 times - **920 MW**

This has **created opportunity** for utility scale grid-tied solar in Nepal

Introduction to the Project and VGF modality

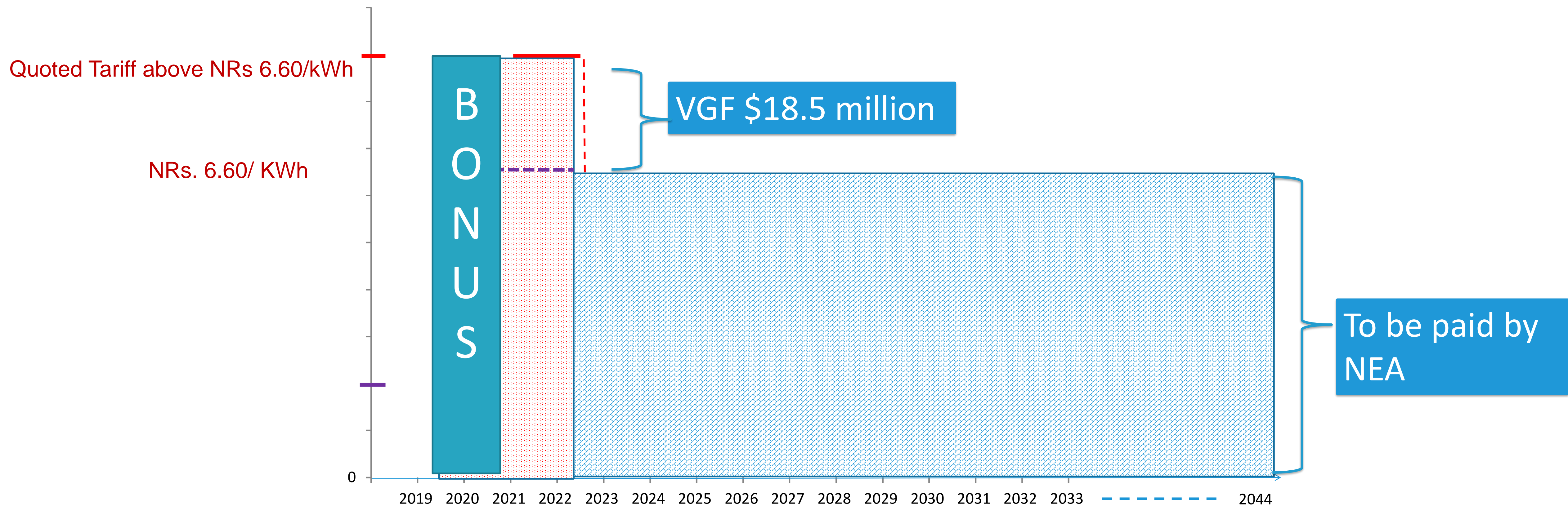
Financial grant support of US\$ 20 million from Climate Investment Facility/Scaling Up renewable Energy Project (SREP) and administered by the Asian Development Bank of which US\$ 18.5 million will be used for Viability Gap Funding purpose

Objective – 1) to support NEA to achieve grid parity prices by providing Viability Gap Funding
2) to promote private sector participation in grid-tied solar

How VGF works?

The proposers can only quote for tariff till 30th June 2022 A.D. after that date the tariff is set flat at NRs 6.60 (approx. 6 US cents) – Reward for early completion

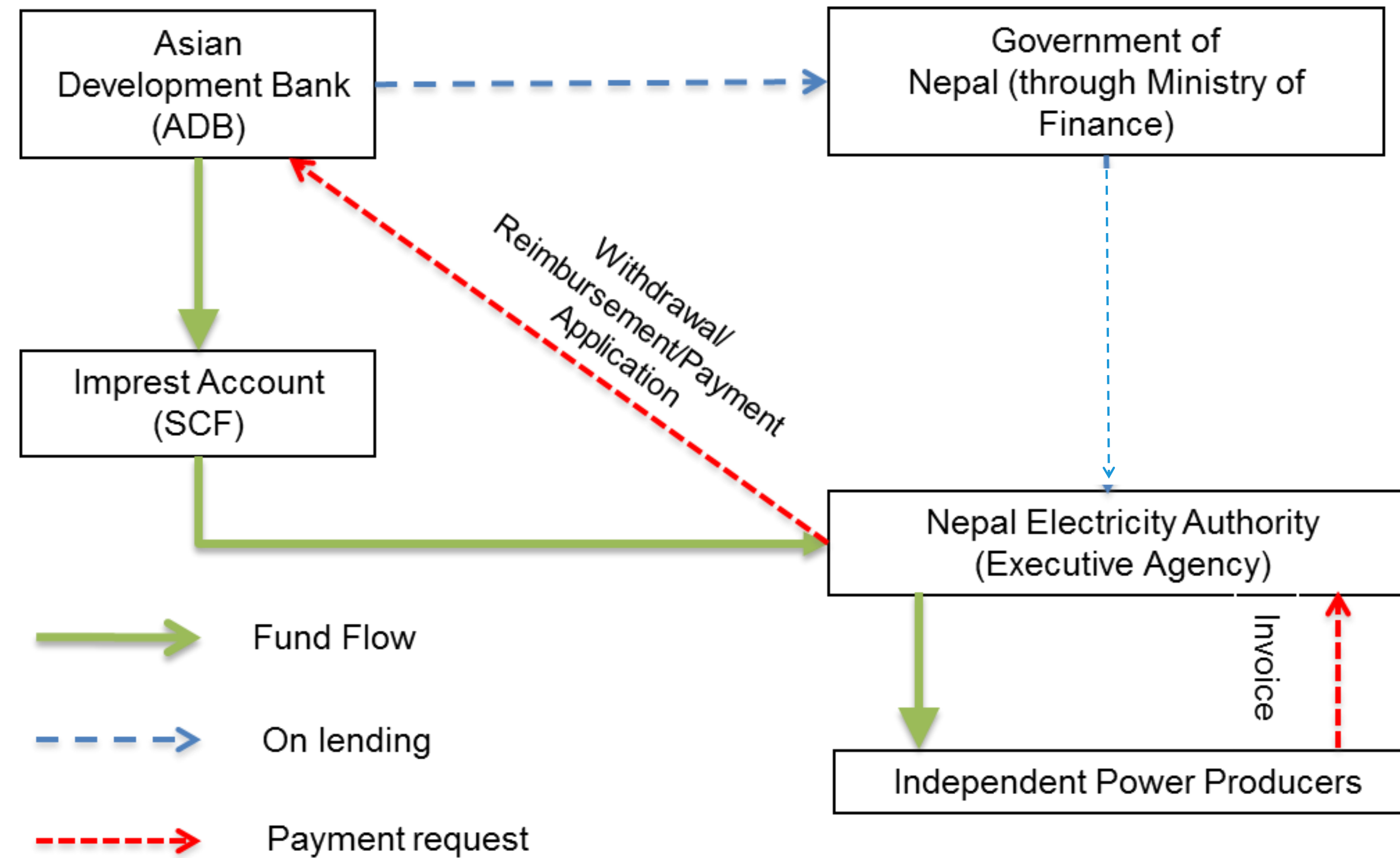
Introduction to the Project and VGF modality



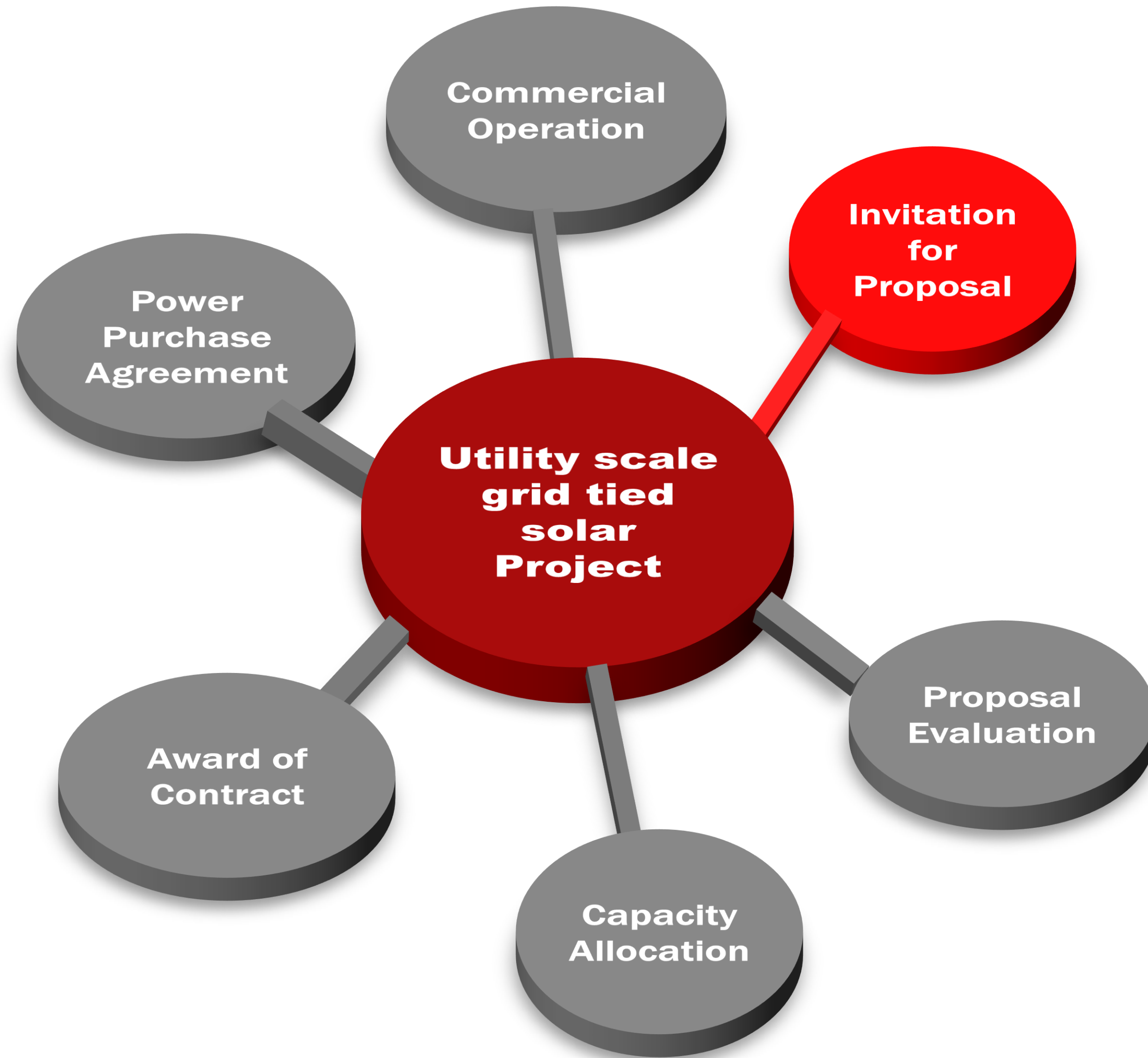
- * For tariff till 30th June 2022 A.D., NEA shall pay flat at NRs. 6.60 (approx. 6 US cents) and the rest will be paid from the VGF
- ** Early Completion: Longer bonus period
- *** Developers with increased revenue upfront can pay out debt

Introduction to the Project and VGF modality

Fund Flow Arrangement



Steps involved in the execution of the Project



Invitation for Proposal

1

- Invitation for Proposal – Two Stage, Single Envelope - 25th April 2018
- Request for Proposal can be found at http://www.nea.org.np/tender_prequalification
- Pre-Conference Meeting – 9th May 2018
- Proposal Submission – **21st June 2018**
- Opening of Technical Proposal – 21st June 2018

Steps involved in the execution of the Project



Proposal Evaluation

2

- Technical Proposal Evaluation and shortlisting of proposers
- Financial Proposal Opening
- Financial Proposal Evaluation

Steps involved in the execution of the Project



Capacity Allotment

All quoted tariff at substations of NEA will be piled up and the **lowest quote is awarded**.

If the **VGF remains**, the **second lowest tariff** is considered, provided there is **ample capacity** remaining in the substation. Likewise, the process continues till VGF is consumed.

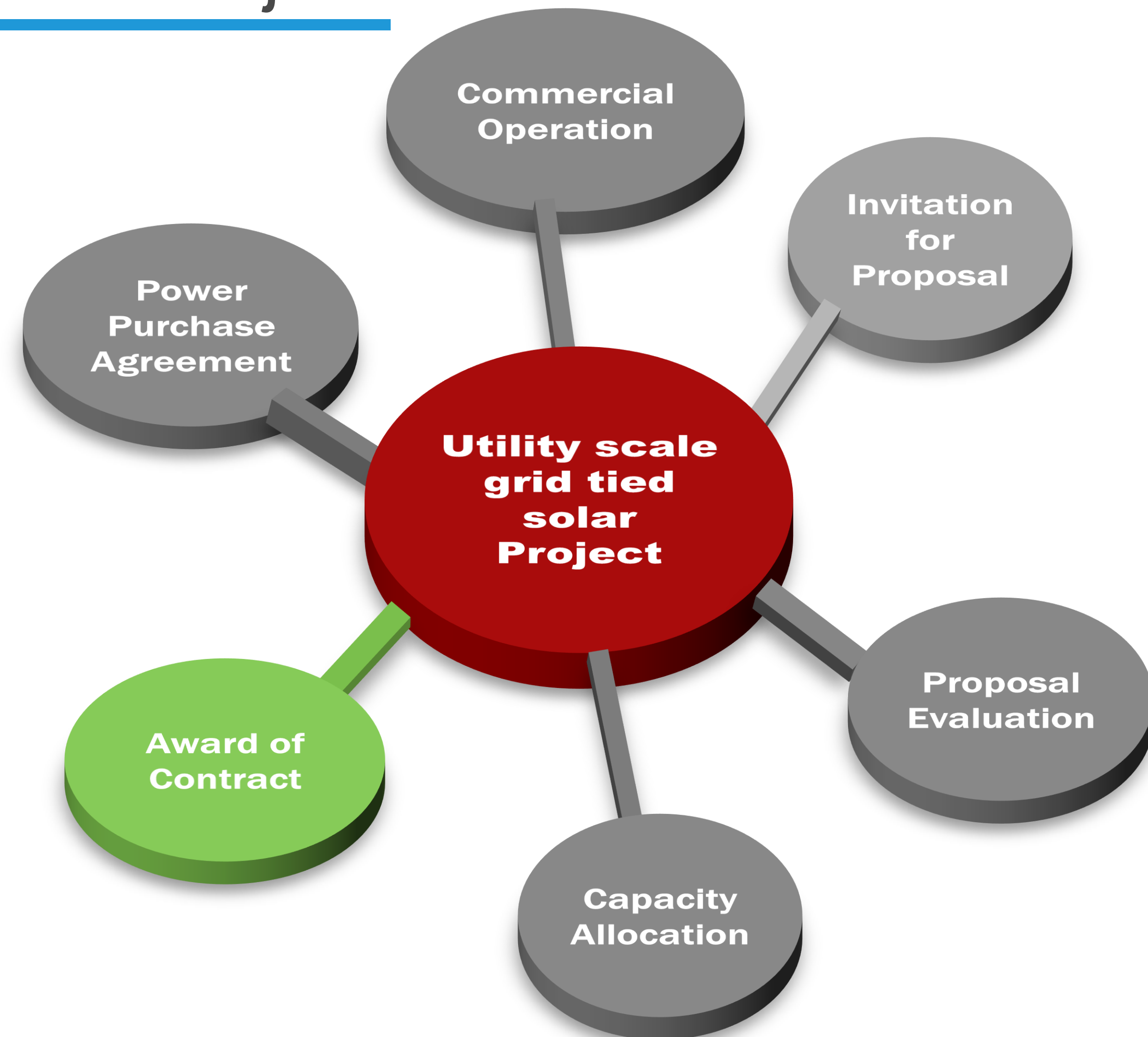
Steps involved in the execution of the Project

Award of Contract

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Milestones:

- a) Certificate of registration of Solar Developer Company in Nepal within 30 days from Award of Contract
- b) Land Ownership Certificate or Land Lease Agreement within 45 days of Award of Contract
- c) Performance Security within 45 days from Award of Contract



Steps involved in the execution of the Project

Power Purchase Agreement

5

- Draft Power Purchase Agreement and its annexes are included in the RfP Document



Steps involved in the execution of the Project



Commercial Operation

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- Within 120 days from signing of PPA, financial closure has to be achieved
- Commercial Operation Date - 12 months from signing of PPA
- Partial commissioning - minimum capacity of at least 50% of the total proposed capacity with minimum 1 MW and an integer

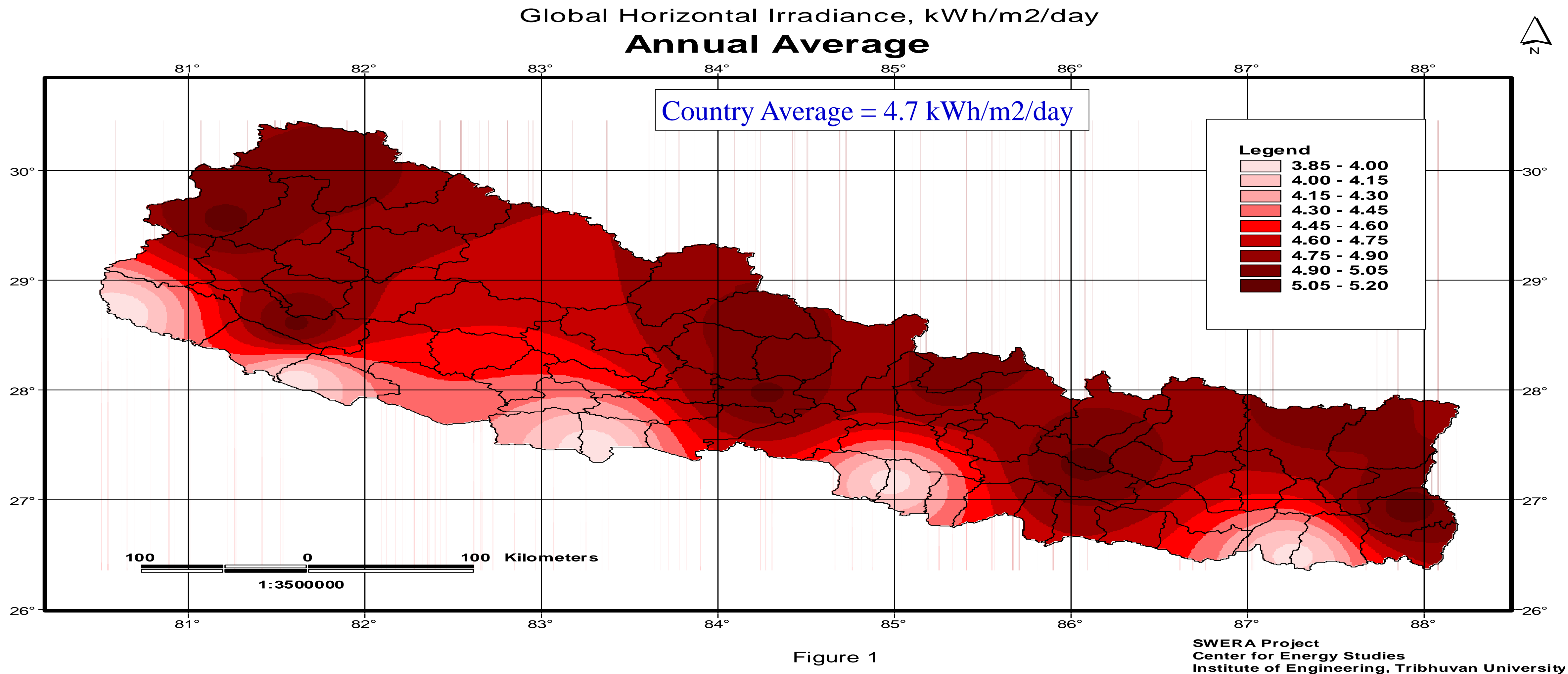
Prevailing Tax regime for utility scale grid-tied solar in Nepal

S. No.	Description	Value Added Tax	Custom Tax
1	Solar Panel	0%	1%
2	Solar Charge Controller	0%	1%
3	Solar Inverter- Efficiency higher than 80%	13%	1%

Expected Outcomes from the Project – NEA's Perspective

- ❖ Private Sector Participation from the domestic companies
- ❖ Technology & Knowledge Transfer from the International Companies
- ❖ Step towards achieving Grid Parity
- ❖ Better Voltage profile at the distribution end with generation scattered near the load center
- ❖ Reduced technical losses
- ❖ Decreased dependence on import of electricity
- ❖ Better utilization of peaking plants of NEA especially during dry season
- ❖ Competitive market

Road Ahead for Utility Scale Grid-tied Solar in Nepal



- ❖ Once grid parity is achieved, concept of **solar park** can be adopted by constructing high voltage transmission lines in the **unused land** of the Northern part of the country where solar insolation is high (> 5 KWh/m²/day)

Any suggestions....