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Terms of Reference/Scope of Work on developing the Model framework guidelines for non-discriminatory Access/Open access regime in Transmission in South Asian Countries (except India)

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6th Meeting of Task Force 2 on Advancement of Transmission Systems Interconnection
and
3rd Meeting of Task Force 3 on south Asia Regional Electricity Markets

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Background

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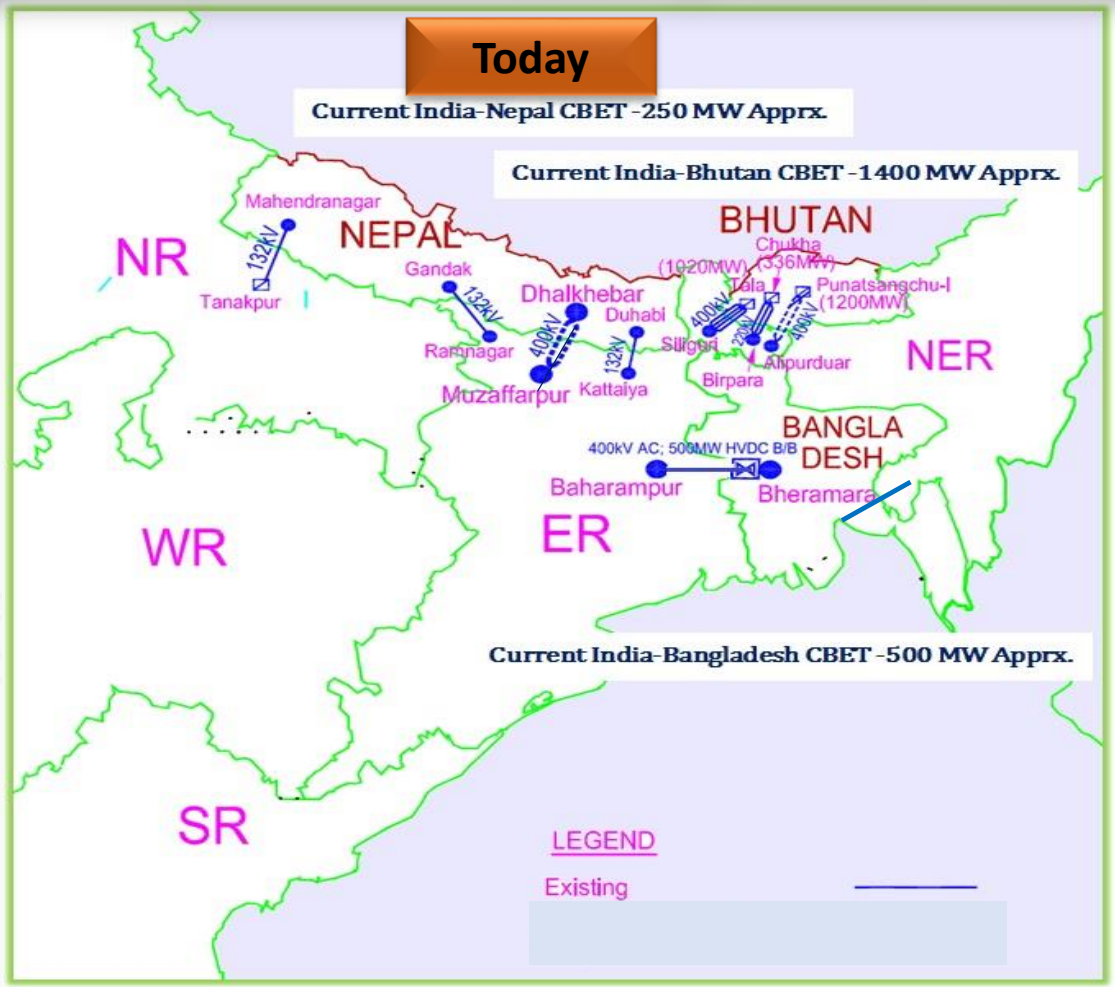
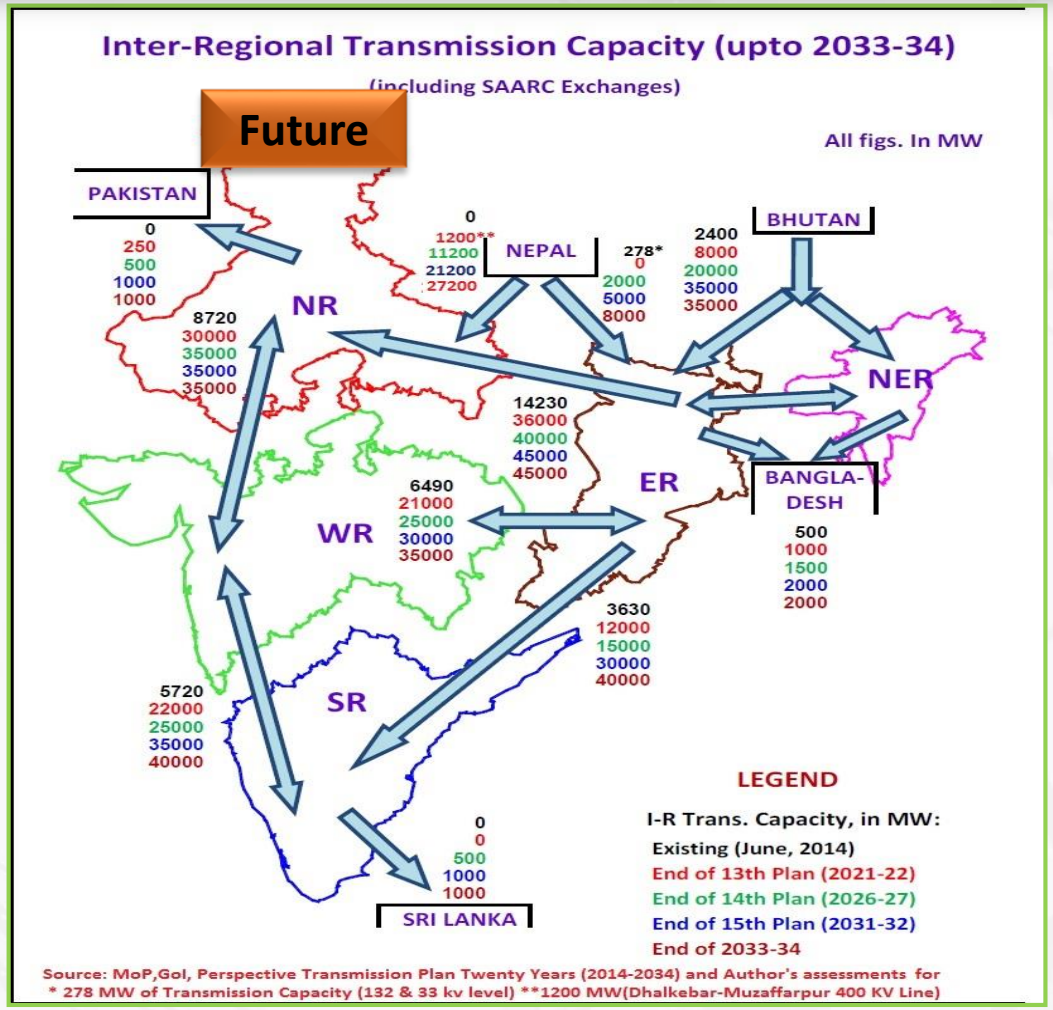
Background : CBET by 2033-34





Significant Transmission System Interconnection (Both AC and DC) are being Planned and Proposed. Bangladesh is in the process of Planning to Import around Apprx. 6000 MW by 2034 (PMSP 2015-JICA Presentation,4th June,2015)

Background : How such level of Interconnection can be Materialized

- ✓ ***Non-Discriminatory Access to Transmission Network is one of the important requirement.***

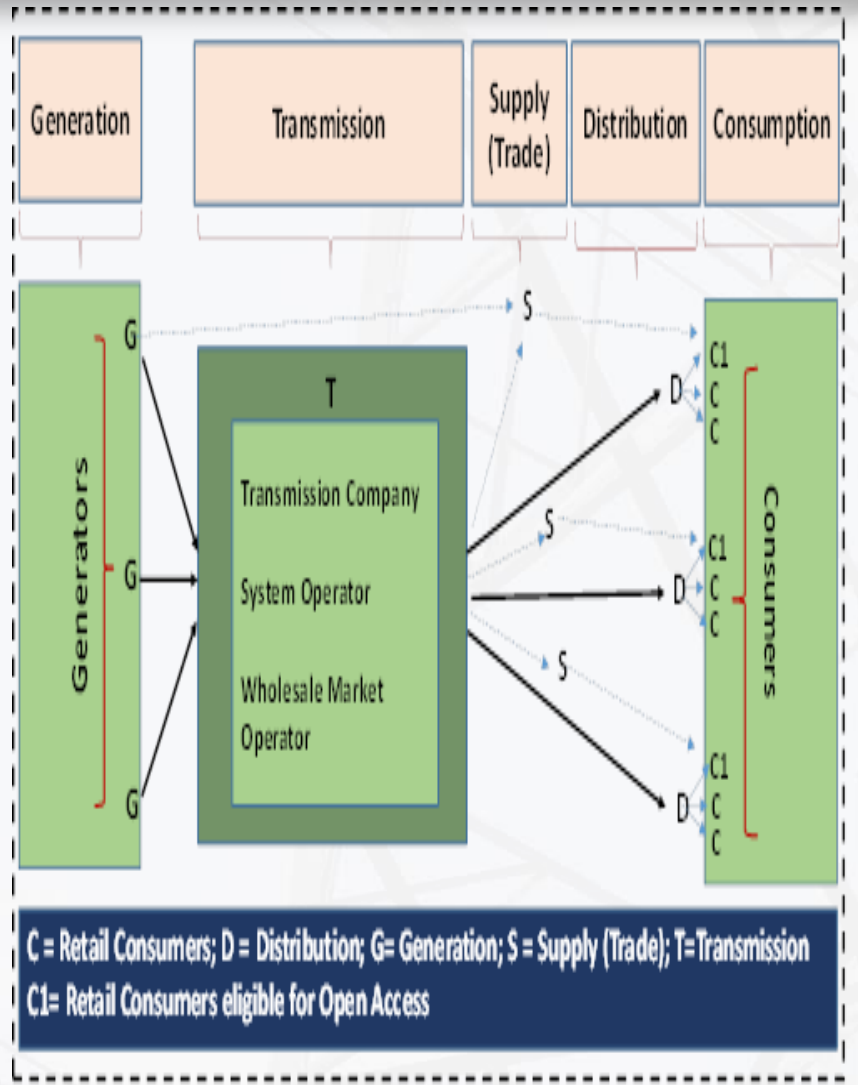
- ✓ **Open Access :** Possibility for any party selling or buying electricity to use Transmission systems:
  1. Without discrimination
  2. Subject to transparently formulated system-security constraints
  3. Against payment of adequate fees.

- ✓ *In CBET,* ***non-discriminatory access to their respective transmission systems increases opportunities for any party to sell/buy electricity at a cost-reflective fee and to take advantage of the load and time diversity and contribute to better utilization of resources.***

- ✓ ***Cross-border transmission interconnections with freedom of access is a critical instrument of integration of the national electricity markets, or "market coupling (European Union).*** *Open access is also one of the key to free and fair electricity market and facilitates better integration of two or more power systems (Europe).*

- ✓ **OA has been recognized through** Protocols, Supplementary Acts (WAPP), Strategy Documents (GMS), Operational Manuals (SAPP).

- ✓ *Open Access is also one of the essential element of introducing competition to electricity markets and increasing their efficiency*



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Background : SAARC IGFA,PTA and Regional Regulatory Guidelines(TF-1)

SAARC IGFA

✓ **Article 12 :Transmission Access**

Member States shall, for the purpose of cross-border trade, enable non-discriminatory access to the respective transmission grids

✓ **Article 6 : Promoting competition**

Member States shall encourage the process of opening up of electricity sector guided by respective national priorities with the aim of promoting competition.

PTA-India-Nepal

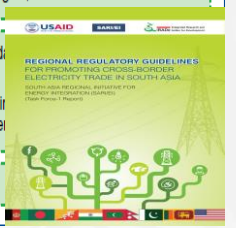
✓ *Article 2 (B) The Parties shall allow non-discriminatory access to the cross-border interconnection(s) for all authorized/licensed participants in the common electricity market.*

✓ *Task force -1 Members have come out with Regional Regulatory Guidelines.*

✓ *Out of six guidelines, one of the Guidelines focuses on Non-Discriminatory open access.*

✓ *It recognizes the importance of Non-Discriminatory open access in CBET and its role for Creating a Regional Power Market in South Asia.*

1 Licensing CBET	• Recognition of Trading as a separate licensed business activity • Grant of licence for CBET through a well defined process • License requirements and the underlying rules/limitations
2 Non-discriminatory open access	• Setting of fair rules and procedures for non-discriminatory open access • Modification/amendment of applicable regulations and gradually legally binding provisions • Defining application process, eligibility criteria, priority order and nodal agency for QA
3 Transmission Pricing	• Transmission pricing mechanism based on a country's requirement and acceptability • Setting up principles and mechanism for determination of economically efficient transmission pricing regime based on concept of location specific pricing • Adoption of tariff framework in respective country power system through enabling regulations
4 Transmission Planning	• Development of regional coordination forum of National Transmission Utilities to coordinate between Member Countries on transmission planning aspects • Development of a database of information that enables coordination and cooperation towards transmission planning • National Transmission Plans to also include details of cross border transmission lines (specially for CBET) and associated infrastructure • Sharing of the national transmission plan at the regional level and progress towards developing a regional level master plan.
5 Imbalance Settlement	• Member countries to develop a common set of procedures for Imbalance Settlement for CBET transactions • This will include preparation of scheduling, dispatch, energy accounting and settlement procedures for both AC-AC and AC-DC interconnections in the region.
6 Harmonization of Codes	• Harmonization through formulation of guidelines on techical standards for interconnection of power systems on aspects related to voltage standards, frequency tolerance, thermal limits etc. • Sharing of technical characteristics and system specific data among the member countries • Rules on metering standards, communication technologies, Protection Schemes etc.
7 Dispute Resolution	• Dispute Resolution process should primarily be in accord through amicable settlement • Referring the disputes to the SAARC Arbitration Council i are unable to resolve disputes through amicable settlemer
8 Taxes & Duties	• Countries to gradually move towards a zero tax regime



Background : Task Force -1 Study : Regional Regulatory Guidelines

Guideline 2: *Provision of Non-discriminatory Open Access to Transmission Network*

Rationale

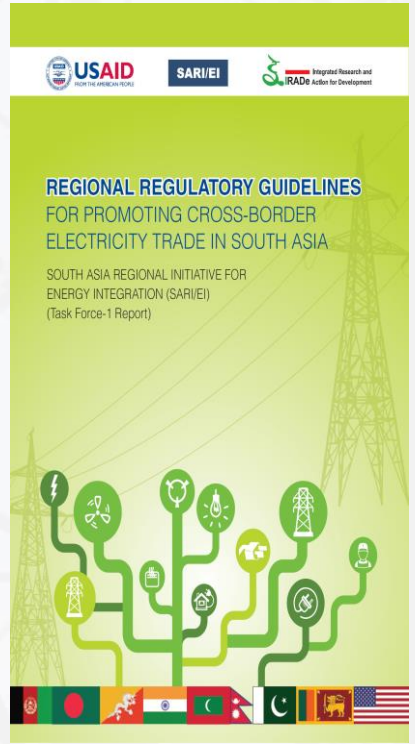
Open Access makes it possible to sell or buy electricity, irrespective of location of buyer/seller in the grid; subject to transparently formulated **system-security constraints without discrimination** and against **payment of adequate fees** for accessing the system.

1. Member countries shall coordinate setting of **fair rules and procedures** for non-discriminatory open access. **Notification of enabling regulations in respective SAC, by working along with the national regulators** and/or other empowered entities

2. **Explicitly defined through amendment of regulations or enactment of separate regulations/orders** and eventually, in the **long-term legislative enablement of open access**

3. The enactment of various provisions/regulations inter alia shall include

   - ***Nominating nodal agency for grant open access-*** *Responsible for undertaking scheduling and dispatch operation as well as processing of applications filed by the applicants*
   - ***Procedure for filing applications, application fee-*** *Customers shall have to apply to seek access on a format to be prescribed by nodal agency giving necessary details such as capacity required, point of injection, point of drawal, duration, type of service required, average load, peak load etc.*



Background : Task Force -1 Study : Regional Regulatory Guidelines

Guideline 2: *Provision of Non-discriminatory Open Access to Transmission Network*

3

The enactment of various provisions/regulations inter alia shall include

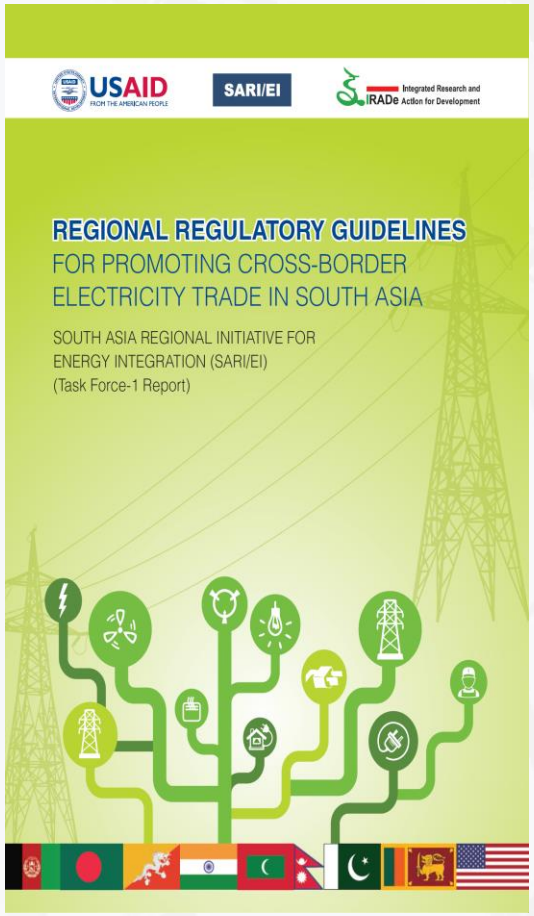
- ***Processing of applications, priority order and criteria for grant of access-*** The request for transmission access shall be processed by the nodal agency in a time bound manner taking into account line loading, voltage profile, system stability etc. and ensuring that the existing loads continued to be serviced with reasonable reliability. Subject to Available Transmission Capacity (ATC), the long-term customers shall have priority over short-term customers
- ***Principles with regard to non-discriminatory and transparent charges for network use-*** The objective in the design of the open access charges should be to recover the sunk cost of the transmission system. Further, open access customers to compensate the nodal agency for scheduling, system control and dispatch services rendered by them**.**

4

Enabling provisions for the system operators in respective countries to **coordinate scheduling and dispatching of cross border flows**

5

Eventually, in the **long-term legislative enablement of open access may be considered** through inclusion of **non-discriminatory open access provisions in the relevant laws.**



Back ground- Access/Open Access in SA countries

Currently, it is only in India, Bhutan, and Bangladesh that specific provisions related to Access/open access exist ,however comprehensive framework/guidelines/regulations exist only in India, whereas Afghanistan, Pakistan, Nepal, and Sri Lanka have not yet introduced specific provisions .

India through EA 2003 has mandated open access for inter- as well as intra-State transmission lines. The Regulatory Commissions (CERC and SERCs) provide a facilitative framework for non-discriminatory open access through enabling regulations.

Bangladesh- POLICY GUIDELINES FOR ENHANCEMENT OF PRIVATE PARTICIPATION IN THE POWER SECTOR, 2008 :

PGCB and all Distribution Licensees shall provide non- discriminatory open access, to their transmission and/or distribution system for use by any Generation Licensee subject to payment of transmission/distribution wheeling charges determined by BERC.

Draft Electricity (amendment) act, 2012 requires the Bangladesh Electricity Regulatory Commission (BERC) to introduce, operate, and maintain an independent, fair, and competitive market structure for the bulk trading of electricity in the country and take necessary measures to facilitate a smooth transition from the single buyer system to the open market system in consultation with the Government of Bangladesh. While the Act mandates the transmission utility, Power Grid Corporation of Bangladesh (PGCB), to provide non-discriminatory open access to its transmission system for use by any licensee or generating company on payment of the transmission charges, it also directs the Commission to issue necessary regulations in order to ensure open non-discriminatory access by all the concerned parties to the grid system in Bangladesh.

In Bhutan, the EA 2001 mandates the Bhutan Electricity Authority to ensure non-discriminatory access.

Objective of the Study



A. The objective of the study is to develop the Model framework guidelines for non-discriminatory open access regime in Transmission with a view to initiate/advance power trading in SA countries as well as for facilitating Cross Border Electricity Trade (CBET) Region.

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B. Scope of Work (SoW)/Terms of Reference (ToR)

1. Review and analyse the prevailing framework/regulations/procedures relating to Open Access to Transmission Systems in SA countries from the perspective of developing Model framework guidelines for non-discriminatory open access regime in Transmission in SA Countries (other than India*) both for domestic as well as Cross Border Power Trade.

2. Review and analyse the prevailing institutional structure/arrangements for granting open access /access to transmission in SA countries.

3. Review and analyse the international best practices (with particular focus on Indian experience) on Open Access in transmission in the context of domestic power sector as well as from the perspective of cross Border Electricity Trade/Regional Power Markets particularly focusing on:

   - Key ingredients for open access in transmission.
   - Key governing and enabling factors lead to the implementation of Open Access in Transmission.
   - Challenges associated with implementation of Open Access in Transmission and key learnings.
   - Type of open access consumer licenses (long, medium and short term), eligibility, tenure, priority order, application process, nodal agency, conditions for grant of access, connectivity, Relinquishment of access rights, information system and applicable charges etc. related to grant of open access.

*However for India, study will come out with Model Framework for Open Access to Transmission for Cross Border Electricity Trade and Guidelines for open access for CBET.

Scope of Work (SoW)/Terms of Reference (ToR)

4. Assess and analyse the views of key stakeholders (country wise) such as Regulators, Transmission Utilities, Power Generation Companies, Power/Energy Ministries, Independent power procedures etc. with respects to grant of Open Access in transmission with a view to enhance power trading and CBET in SA countries.

5. The study will take in to account the Cross Border Electricity Trade Policy being developed by MoP, GoI and will focus on technical aspects of the open access regime. The study will also take in to account the various studies being undertaken by SARI/EI Task Forces.

6. Experience around the globe and in SA countries (India) suggests that opening access to the grid is an evolutionary process, not a discrete event. The basic foundations of open access are laid by establishing an initial, or minimal, open access regime through enforcing the generators' legal right to access the grid to sell their capacity and energy, and wholesale buyers' right to contract with the generators, either directly or through an authorized market operator. The institutional requirements for minimal open access include transparent rules, procedures, and protocols for grid and neutral system operator. Etc. Therefore while developing model framework guidelines for non-discriminatory open access regime in transmission needs to be carefully designed, keeping in view of the existing level of power sector reform in each south Asian countries and as well as keeping the larger perspective of Cross Border Electricity Trade in south Asia.

C. Scope of Work (SoW)/Terms of Reference (ToR)

Deliverables:

1. To submit draft report on Review/Analysis and key findings emerged from the Scope of Work /Terms of Reference.

2. Develop suggested draft Model framework guidelines for non-discriminatory open access regime for South Asian Countries for Long/Medium/Short term Open Access regime and connectivity in transmission both for domestic as well as for Cross Border electricity Trade.

3. The above suggested draft model framework guidelines(C.2) shall also include Terms and Conditions ,connectivity, eligibility, tenure, priority order, relinquishment of access rights, information system, applicable charges, nodal agencies, Procedure for grant of open access and other key aspects of the grant of open access etc. (both for domestic and cross Border electricity Trade). The above Suggested model framework guidelines should also include various standard formats such as a) Application form b) Grant of Connectivity Agreements c) Grant of Long Term/Medium Term Open access Agreements and other required formats.

4. To submit final model framework guidelines after incorporating suggestions and inputs of various stakeholders such as Regulators, Transmission Utilities, Power Generation Companies, Power/Energy Ministries, Independent power procedures, TF Members, USAID,SARI/EI etc.

Thank You

Why Open Access is not easy to achieve ?

Creating a well functioning open access regime usually requires: –

1. Unbundling generation from T&D
2. Effective regulatory oversight to enforce nondiscriminatory access to the grid
3. Efficient and predictable pricing of grid services
4. Transparent and effective network congestion management
5. and Safeguards against opportunistic behavior by incumbent T&D operators having potentially strong incentives to inhibit entry.

Challenges of Unbundling:

1. Entrenched monopoly interests blocking market entry for third parties
2. Special case: distribution-level unbundling, where the distribution companies hold a joint license for the network service provision and retail sale of electricity.
   - Resistance to switching: Distribution company resisting open access for fear of losing high-paying industrial and large commercial consumers (India).
   - Resistance to connection: Distribution company reluctant to connect new consumers who wish to procure energy elsewhere (India).

Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

Why Open Access is not easy to achieve ?

Governance Issues.

1. Many developing countries lack the institutional governance structure necessary to successfully enforce open access, even if the legal framework is in place. – E.g., the state intervenes in electricity market operations, the regulatory bodies at a subnational level act in ways substantially deviating from the national law, or proper guidelines for OA implementation are lacking.
2. Other regulatory and technical issues specific to open access in distribution such as stand-by arrangements, metering, and billing.

"Coping with Success":

1. Demand for new connections, especially from generators, can overwhelm the limited resources of the grid and its operators (Turkey).

With the introduction of open access, the transmission grid operator, Turkish Electricity Transmission Company (TEIAS), has faced thousands of requests from independent generation developers, with a total capacity of twice the existing installed power, asking for connection to the grid in a very short time.

Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

Why Open Access is not easy to achieve ?

Planning Challenges:

1. Planning can no longer be confined to the utility level and must include many more players, such as IPPs, multiple buyers, and demand responders.
2. Planning is more challenging when consumers connected to distribution systems leave the franchise area too frequently or unexpectedly, e.g., large retail customers arbitraging between the regulated and free markets.

Small Distributed Generators:

1. In some countries, small distributed generators accessing the distribution grid have become part of the open access policy package.
2. Distributed generators contribute positively to supply diversification.
3. However, such policies pose challenges related to planning as well as technology.
    - Strengthening the medium- and low-voltage network, as well as new operational procedures, are required.
    - Technology for metering and billing for reverse flows.

Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

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Open Access: Minimal and Full Points of View

Minimal Access View:

Permits All Physically Interconnected Generators and Buyers to do Transactions

Characteristics of Minimal Open Access:

1. Administrative Management of Congestion/Redispatch
2. Administrative Management of Ancillary Services
3. Top Down Planning Model d. Socialized (Partial or Total) Transmission Costs
4. Base Rates (Various Formulations)
5. Contract Model and Emphasizes Price at Bus Bar

Full Access View:

Enables Market Based Opportunities and Flexibility for Generators

Characteristics of Full Open Access

1. Locational Marginal Cost Pricing
2. Congestion Pricing/Financial Transmission Rights
3. Redispatch for Security Only
4. Competitive Ancillary Services Market
5. Base Rates (Various Formulations) Plus Congestion Rents
6. Pool Model and Participatory Planning Model
7. Facilitates Demand Response Market
8. Emphasizes Price at Delivery Point

Common Characteristics of Minimal and Full Open Access : 1) Independent System Operator 2)Transparent Operating Protocols 3) Centralized System Planning 4) Non Economic Security Constraints 5) Opportunity for Non-Traditional Investment in Grid

Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

General Conclusions on Minimal vs. Full Open Access

1. Both Enable Competition, but Full OA Enables More Robust and Varied Market
2. Full OA Produces More Sophisticated Price Signals and Incentives
    - Location Specific
    - Siting Incentives
    - Provide Economic Signals for Optimizing System Enhancements

1. Full OA Provides More Business Opportunities for Generators
    - Ancillary Services
    - Trading FTRs
    - Swaps, Buy/Sell, Trading
2. Full OA Provides More Opportunities for Buyers
    - Demand Response
    - Local Generation (e.g. Economic DG)
    -
3. Full OA is Less Dependent on Administrative Intervention in Market

Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

Sequencing of Implementation Phases of Open Access

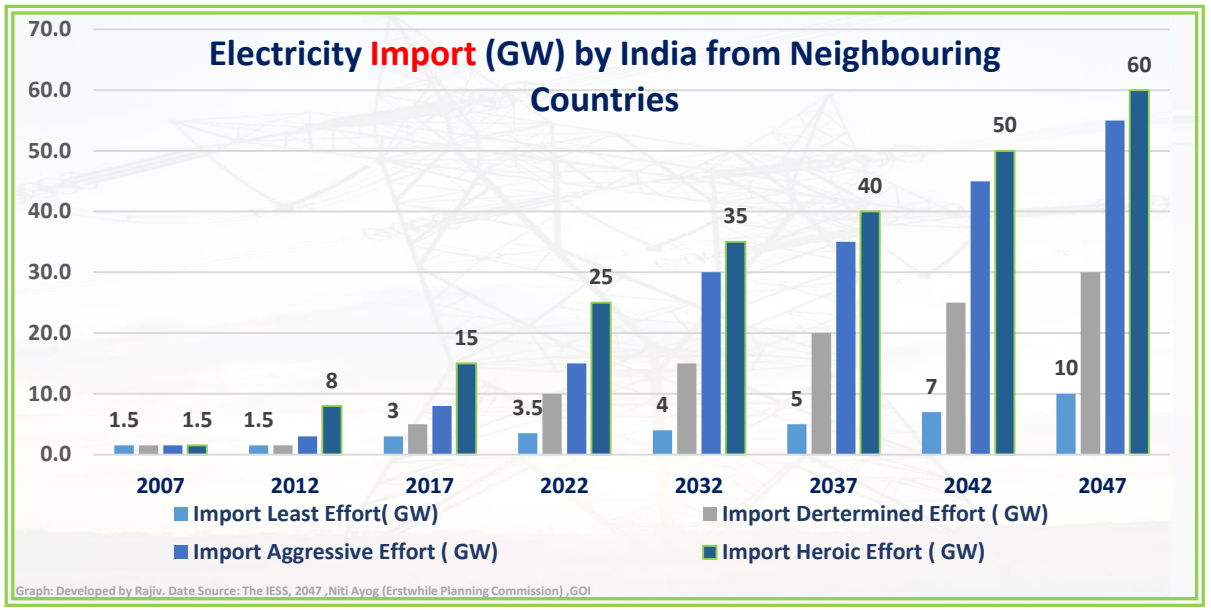
1. Finding a Suitable Model:

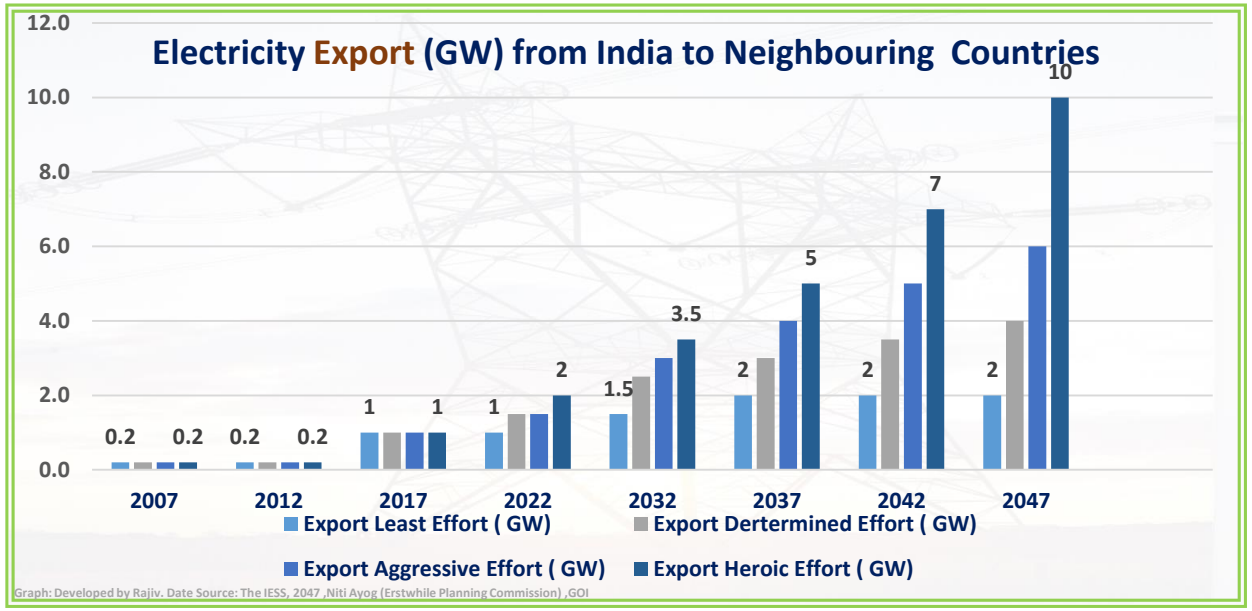
   First of all, the country needs to decide on the model of open access it wants to pursue. Different levels of open access may be envisaged—from a minimalist approach, which simply establishes the legal right for generators to access the grid in order to sell their capacity and energy, to more sophisticated models, aiming to put pricing signals to work and remove arbitrary influences from the marketplace.

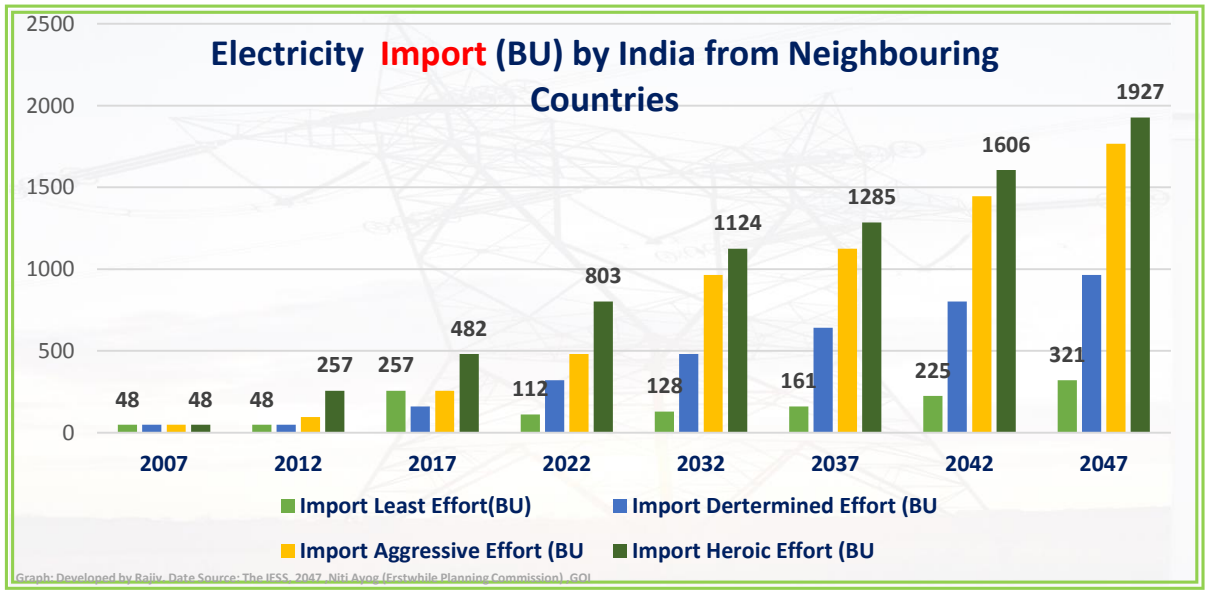
   - ✓ *Early introduction of institutional components, such as the independent regulator and system operator.*
   - ✓ Access to the transmission grid by wholesale market participants is an area where markets can be put to work more readily, thus offering the best initial opportunities for improved market efficiency.
   - ✓ Once initial version of the competitive wholesale market is launched, additional features can address congestion management, locational price signals, demand response, ancillary services, and higher standards of transparency.

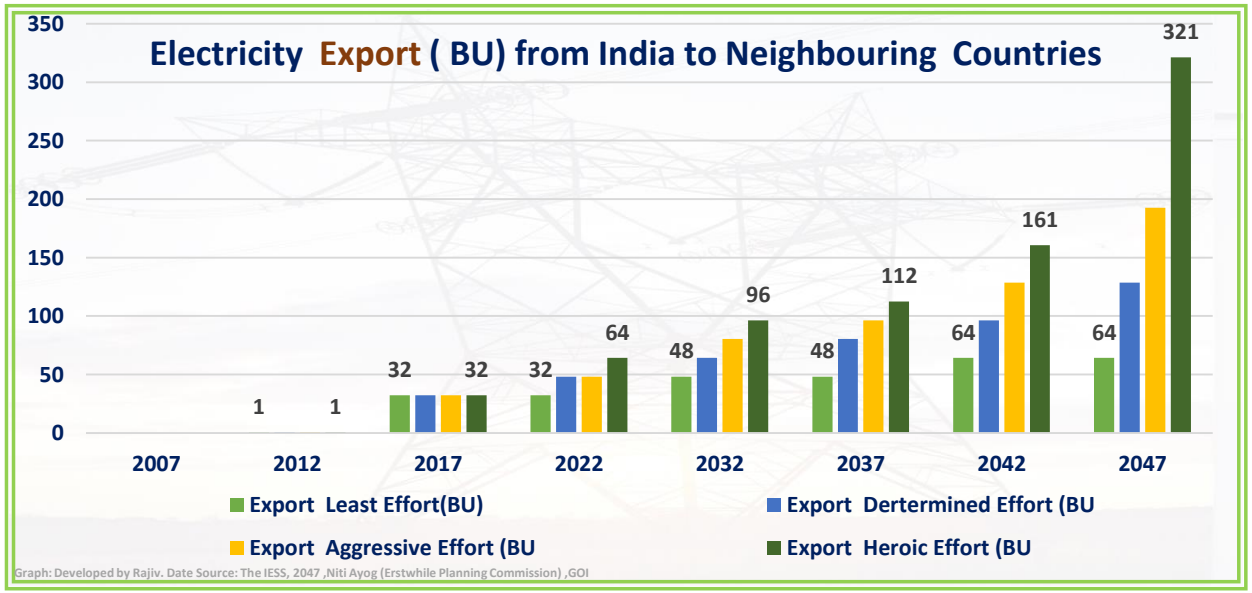
Source: International Experience with Open Access to Transmission and Distribution Systems in the Electricity Sector- ESMAP –WORLD BANK.

India: Cross Border Electricity Trade Export and Import by India from Neighbouring Countries









Source: The IESS, 2047 ,Niti Ayog (Erstwhile Planning Commission) ,GOI

Terms of Reference-Model Framework Guidelines- Open Access Regime in Transmission and Trading licence for both Domestic as well as for CBET/Rajiv/SARI/EI/IRADe

Possible -Phases of Market development for CBET