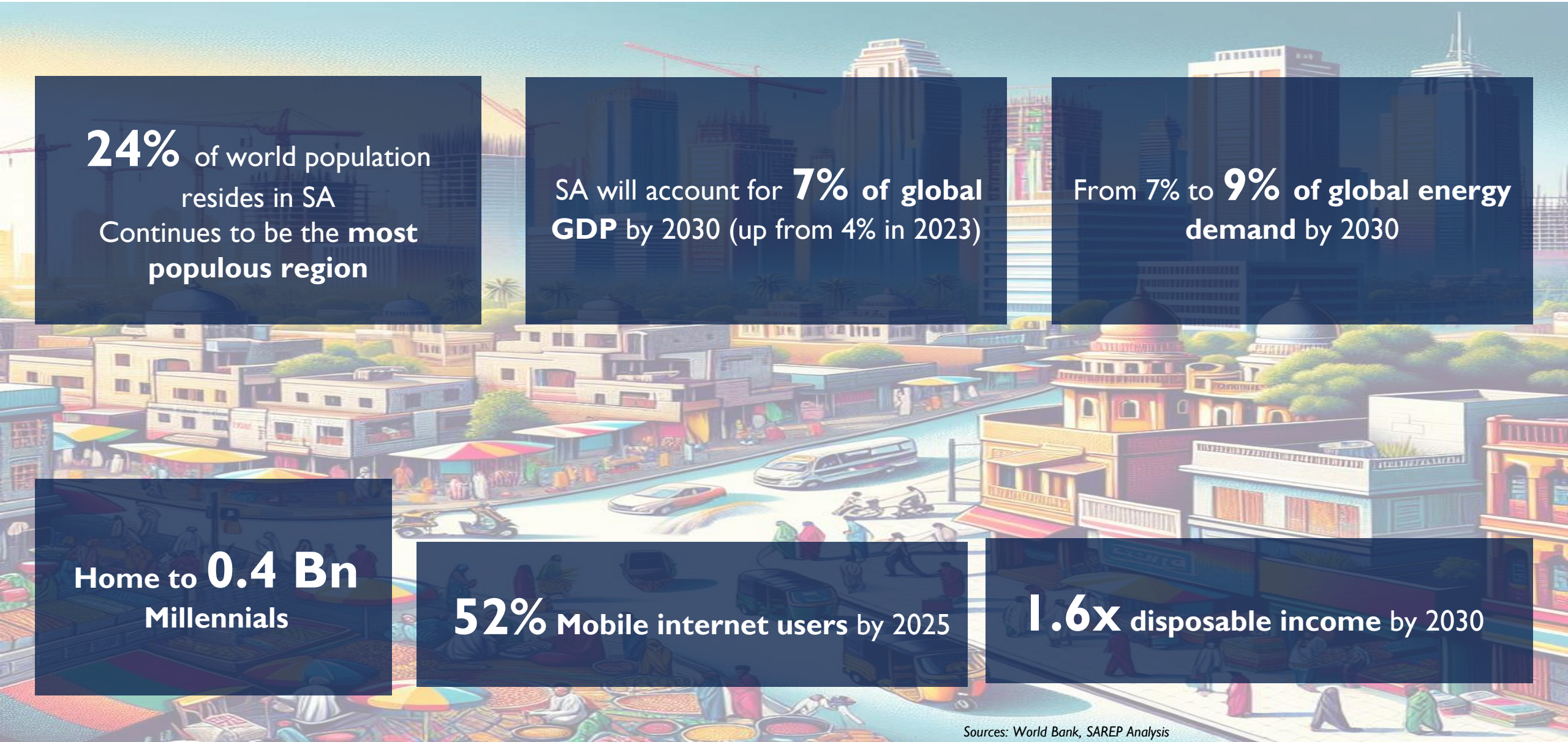
Leader's Roundtable

# Expanding regional cooperation across the clean energy value chain

**South Asia Clean Energy Forum (SACEF)**

Jaipur, India October 22, 2024

# South Asia: Leading industrialization, urbanization & economic expansion across Global South



**24%** of world population resides in SA
Continues to be the **most populous region**

SA will account for **7% of global GDP** by 2030 (up from 4% in 2023)

From 7% to **9% of global energy demand** by 2030

**Home to 0.4 Bn Millennials**

**52% Mobile internet users** by 2025

**1.6x disposable income** by 2030

*Sources: World Bank, SAREP Analysis*

# South Asian countries have common challenges & development priorities

## Challenges

### Energy Security

**2/3rd**
of its energy requirement imported (33% of total import bill in FY 23)

**80%**
of energy production is based on fossil fuel

### Climate Change

**>50%**
population affected by climate-related disaster in last 2 decades

**2023**
hottest year recorded on the planet

### Energy Demand

**38%**
of global average per capita electricity consumption

**4-7%**
loss in GDP due to power outages

## Development Goals

### Economic Growth

**>6%**
GDP growth which will need to continue

**5.5%**
Growth in manufacturing output in last decade, will need further fillip

### Environment Sustainability

**584 GW**
Cumulative RE Target by 2030

**Net Zero**
Targets set by 5 out of 6 countries

### Employment Generation

**55%**
Population in labor force

**1.2Mn+**
Jobs required per month

***Sources:*** South Asia: Navigating Green Energy Transitions, Together; Climate and Development in South Asia; NASA Analysis Confirms 2023 as Warmest Year on Record - NASA; South Asia - Labor Force Participation Rate, Total (% Of Total Population Ages 15+) (national Estimate) - 2024 Data 2025 Forecast 1961-2023 Historical; South Asia Manufacturing Output 1960-2024 | MacroTrends; Flagship: More and Better Jobs in South Asia World Bank; SAREP Analysis; Secondary Research;

# Clean energy transition will be at the critical for SAC to meet their climate commitments and development goals

## Climate commitments (NDCs) by South Asian countries

### Bangladesh

- Reduce carbon emissions by **21.8%** by 2030
- Development of a comprehensive **National Adaptation Plan (NAP)**

### Bhutan

- **Low Emission Development Strategy –** buildings, transport, industries, alternative RE, etc.

### India

- 50% **RE power capacity** by 2030
- 45% reduction in **emission intensity** by **45%** by 2030
- Carbon sink of **2.5–3 Bn $tCO_2$** by 2030

### Maldives

- Increase RE share to **15%** by 2030
- **26%** reduction in emissions by 2030

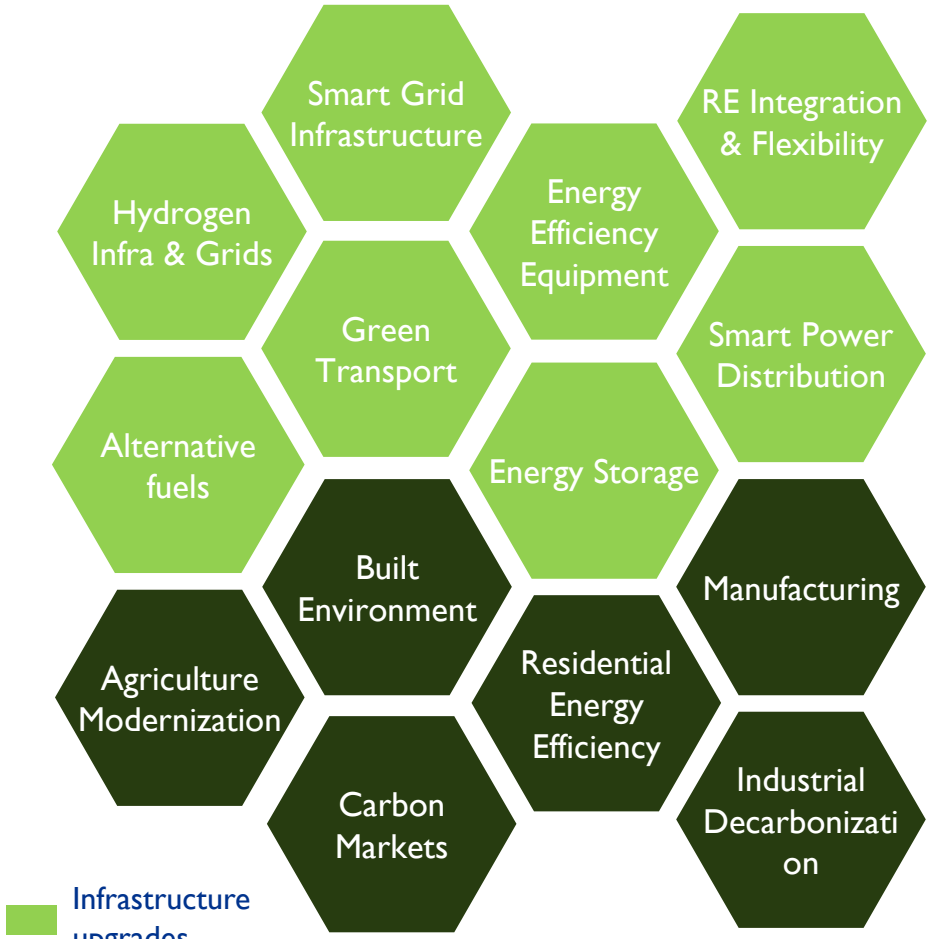
### Nepal

- **15% energy demand** from clean energy sources
- **90% EV penetration** by 2030
- **45%** forest cover by 2030

### Sri Lanka

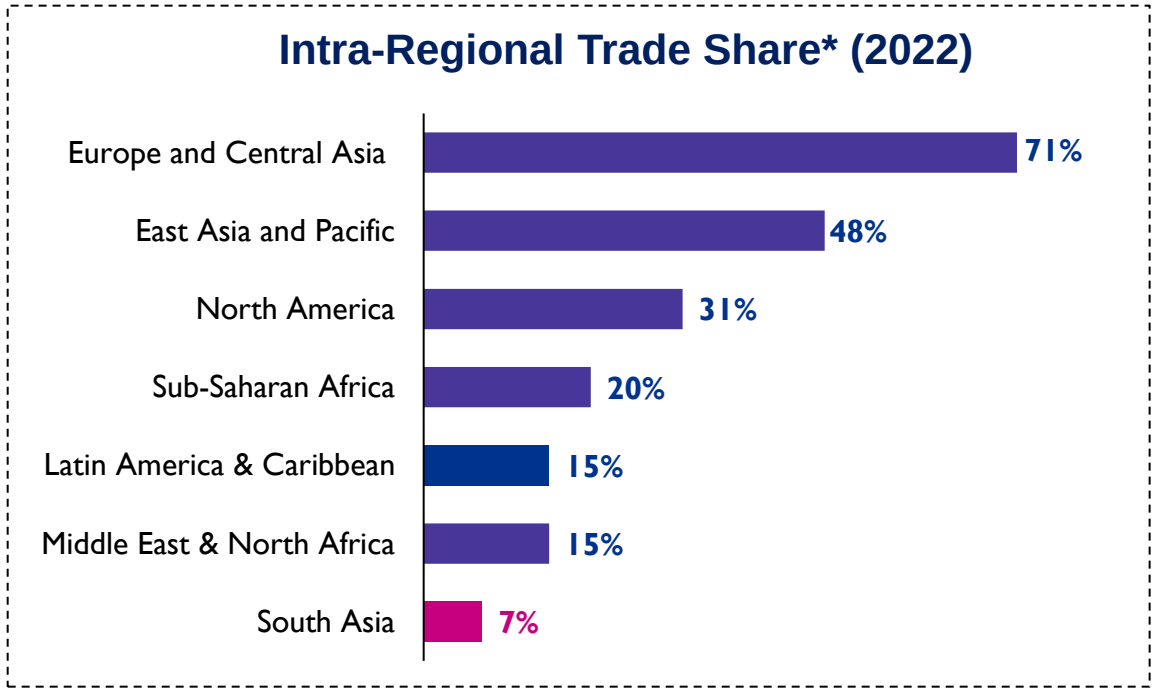
- Reduce GHG emissions by 14.5% by 2030
- **70%** electricity generation from **RE**

## …change will require massive infrastructure upgrades and demand side actions




***Sources:*** Nationally Determined Contributions Registry | UNFCCC

# Regional cooperation can play a catalytic role in making energy transition faster and more efficient




*Detailed Regional Trade Analysis | WITS | Visualization

- Despite efforts, South Asia remains least integrated
- Energy cooperation in South Asia limited to CBET
- Broad-basing cooperation to newer areas of energy transition

## Potential areas for energy cooperation

1. Grid & distribution equipment
2. Energy efficiency
3. Low carbon transport
4. Renewables & Storage

## Benefits

- Optimization of resources
- Accelerated pace of execution
- Cost competitiveness
- Access to quality products and services
- Enhanced energy and supply chain security
- Shorter learning curve

# Market potential for expanding collaboration exists in several segments across the clean energy value chain

**252 mn**

**Smart meters** to be deployed in South Asia by 2030

**$14 bn**

Investment required in South Asia for meeting the **e-bus deployment** targets

**$126 bn**

**Cooling market** in SA by 2050. **3.5x** from $28 bn in 2023**

**$1.8 bn**

**Investment opportunity in green buildings** in SA by 2030#

**4.5x**

Increase in **solar capacity** in SA by 2041

**$297 bn**

**Investments** required in **wind & solar sectors** to achieve country targets

**$59 bn**

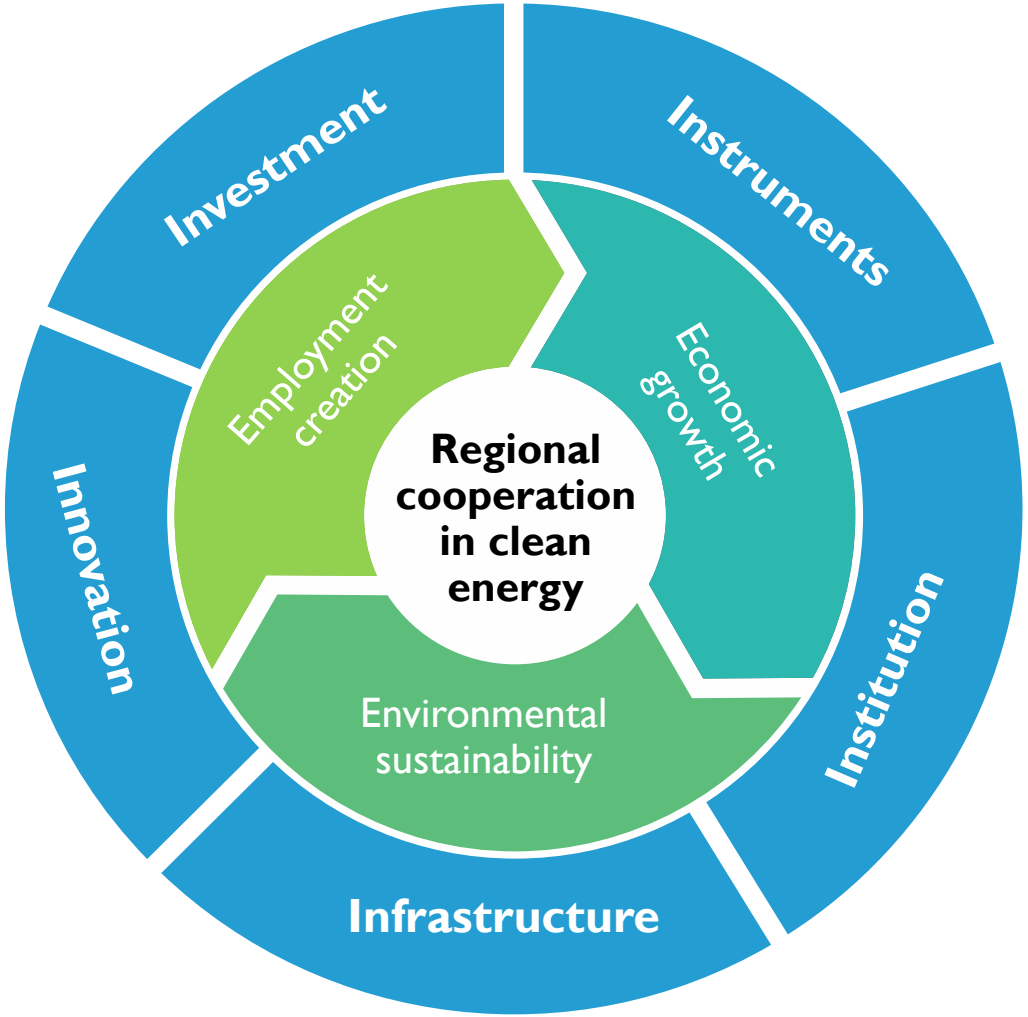
**Investments** required for **storage** in SA by 2041

**$210 bn**

**Annual financing required** to reach net zero goal*

**Sources:** *South Asia: Navigating Green Energy Transitions, Together (worldbank.org); **Cooler Finance: Mobilizing Investment for the Developing World's Sustainable Cooling Needs (ifc.org); # Green Buildings: A Finance and Policy Blueprint for Emerging Market; IFC; 2019. Please note that the above numbers are indicative only; BPDB; BPC; NSGM; NEA; Ministry of Environment, Maldives; CEB; PIB; UNESCAP; UNFCC; SREDA; MoENR; NBR; WEF; Druk Green; MNRE; AIIB; IRENA; WECS; NREL; ESMAP; World Bank;

# Integrated Market Framework dovetails development goals with action levers (5Is)




The **3Es** (growth imperatives) are common lenses basis which respective countries can evaluate impact of collaboration across **5Is** (action levers) on their respective economies

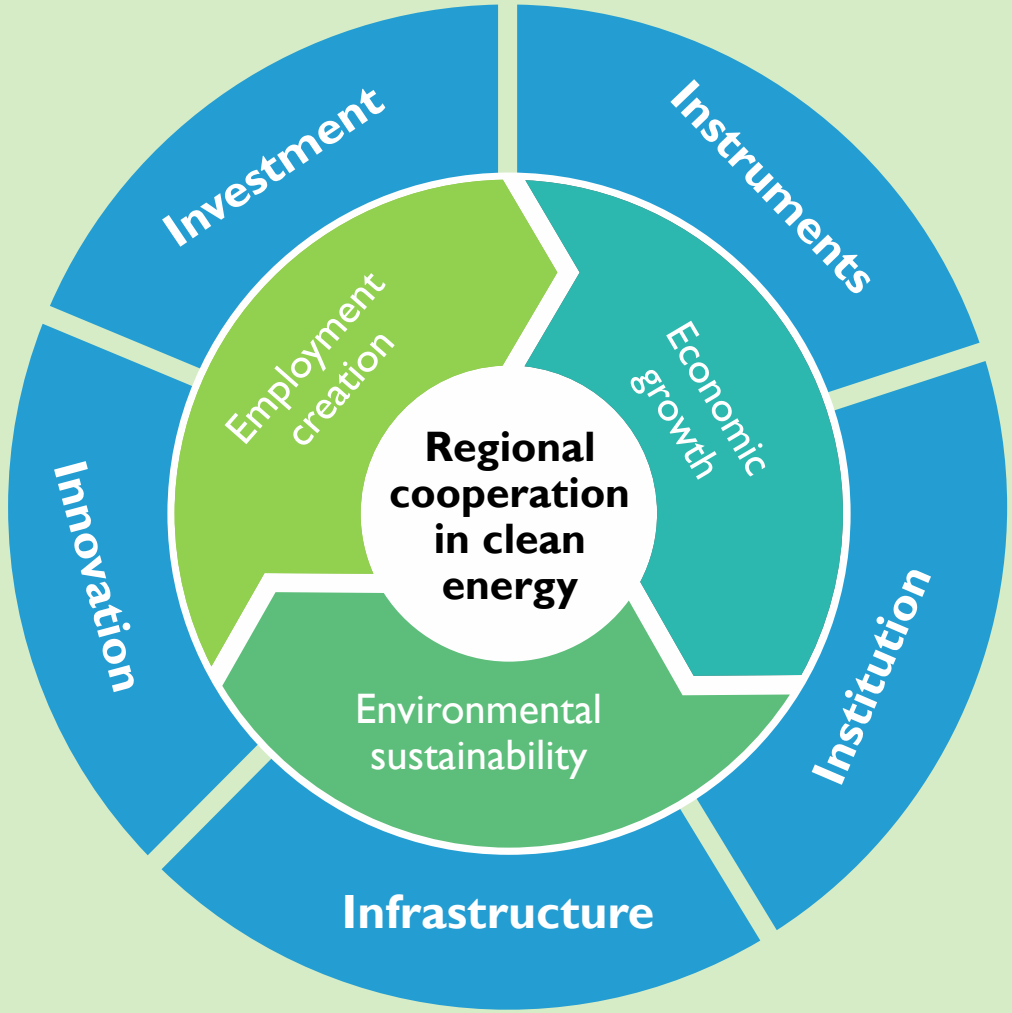
# Deliberation points for the panel

**Objective:** *Identify & create avenues for regional cooperation across the clean energy value chain to achieve common growth imperatives of South Asia*

What are your priority segments and how are you engaging with the market? What would regional co-operation in in these segments entail?

Which are the most logical segments to start from regional markets standpoint? Who could be the investors (OEMs, PEs, Entrepreneurs? DFIs?)

What could be the foundational actions for initiating economic cooperation in clean energy products/solutions ?



# Thank you

**Anish De** **Tanmay Tathagat**

*USAID SAREP*

# Illustrative SAC – wise targets for the identified opportunity segments (1/4)

| S. No | Opp. Segment | Country plans and progress |
|---|---|---|
| I | **Grid & distribution equipment** | |
| 1. | Smart Meters | **Bangladesh –** Plan to install 1 mn single phase and 50,000 three phase smart meters in four zones of Bangladesh Power Development Board (BPDB). BPDB has currently 25000 online meters installed and 3,10, 575 online meters are in the installation phase.<br>**Bhutan –** 5,000 smart meters deployed under Thimphu Engineering Services Division (ESD) in 2022. Smart meters have been deployed in other ESDs and integrated with IT systems<br>**India** – 250 mn+ smart meters to be deployed by 2026 under the Revamped distribution sector scheme (RDSS). 13.57 mn smart meters installed till September 2024<br>**Maldives –** Distribution network operated through Supervisory Control and Data Acquisition (SCADA) system. Roadmap for smart meter roll-out under consideration.<br>**Nepal –** Kathmandu Valley Smart Metering Project (first phase) has successfully implemented the installation of 98,000 smart meters. The second phase of the project with the objective of installing 600,000 smart meters is in advance stage of procurement.<br>**Sri Lanka –** Lanka Electricity Company (LECO) has installed 60,000 smart meters, which represent 10% of its customer base. It further plans to install 100,000 smart meters |

# Illustrative SAC – wise targets for the identified opportunity segments (2/4)

| S. No | Opp. Segment | Country plans and progress |
|---|---|---|
| II | **Sustainable transport** | |
| I. | e-buses | **Bhutan –** Introduction of first electric bus with 2 fast chargers and 1 30 KW charger in 2023<br>**India –** 7,000 e-buses deployed under Faster Adoption and Manufacturing of Electric Vehicles (FAME) Scheme. Plan to deploy 52,000+ e-buses under Prime Minister's Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) and PM-eBus Sewa- Payment Security Mechanism (PSM) program.<br>**Nepal -** Support to deploy 3,500 electric micro- and minibuses (EMBs) under "Sustainable Electric Transport for Nepal" project.<br>**Sri Lanka-** Plan to integrate electric buses in transport fleet by 2048 |
| II. | 2W/3W/4W | **Bangladesh –** 2 mn e2W/e3W on road in 2022. Mujib Climate prosperity plan also targets for 30% EV by 2030<br>**Bhutan –** As of 2022, 260 electric vehicles on road. Bhutan aims to have electric cars make up 70% of new sales by 2035<br>**India –** Deployment targets of ~2.48 mn e-2Ws, ~316,000 e-3Ws under PM E-Drive scheme<br>**Nepal –** Ramp up EV sales to 90% of all four- and two-wheeler private vehicles; 60% of all four-wheelers public vehicle sales by 2030<br>**Sri Lanka –** Draft policy & implementation plan formulated for transition to e-mobility by 2050 |

# Illustrative SAC – wise targets for the identified opportunity segments (3/4)

| S. No | Opp. Segment | Country plans and progress |
|---|---|---|
| III | Energy efficiency appliances | |
| 1. | Cooling | **Bangladesh –** plan to achieve 50% energy savings by 2030 (as compared to 2013) through efficient ACs with inverter technology<br>**Bhutan –** Plan to import 257 ACs by 2030<br>**India -** Indian Cooling Action Plan aims to reduce cooling demand across sectors by 20-25% by 2037-38<br>**Maldives –** Recommendations for efficient ACs and Hakathari labeling program as apart of Energy Efficiency Guidelines for Buildings<br>**Sri Lanka –** Minimum efficiency requirements defined under Energy Efficiency Building Code of Sri Lanka |

# Illustrative SAC – wise targets for the identified opportunity segments (4/4)

| S. No | Opp. Segment | Country plans and progress |
|---|---|---|
| IV. | Renewable Energy and Storage | |
| I. | Solar | **Bangladesh-** Target of ~41GW of solar generation by 2041.23 Bangladesh had an installed solar capacity of ~900MW in 2022.<br>**Bhutan-** Plans to achieve solar energy generation of 500 megawatts by 2025 and 1,000 megawatts by 2030<br>**India-** Installed solar capacity of 89.43GW in 2024. 26 Target to achieve 280 GW of solar capacity by 2030<br>**Maldives-** Plans to deploy 36 MW of solar power by 2026<br>**Nepal-** Installed solar capacity of 115MW 202329. Potential to deploy 2.1GW of solar capacity<br>**Sri Lanka-** Installed solar capacity of 966MW31. Plans to deploy 4,705 MW of solar capacity by 2032 |
| II. | Wind | **Bangladesh-** Installed wind energy capacity of ~63 MW in 2024. 33 Bangladesh has set target of generating 597 MW of electricity from wind by 2030 as per Nationally Determined Contributions (NDCs)<br>**India-** Installed wind power capacity of 47.19GW till 202435; Target to install 140 GW by 2030<br>**Maldives-** Build and operate a 75-megawatt wind farm in Gaafaru island, North Male' atoll<br>**Sri Lanka-** Potential capacity of 56GW offshore wind power |
| III. | Storage | **Bhutan** - Sustainable Hydropower Development Policy (SHDP) 2021 mandates ventures in energy storage technologies like clean hydrogen, green ammonia, etc.<br>**India** – Plan to build storage capacity of 411.4 GWh by 2031-32<br>**Maldives**- 50 MWh of battery energy storage solutions (BESS) being deployed by 2026.41 Plan to deploy 100MWh BESS by 2040.<br>**Sri Lanka** – 1825 MW of storage capacity to be added by 2030 |

# Successful initiatives and energy cooperation will have 5Is as key ingredients

**Instruments**

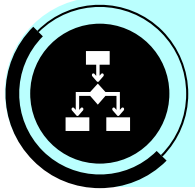
- Building conducive environment by harmonizing energy policies/ regulations, codes (buildings, charging infrastructure, grid, etc.) and standards (emission and labelling)

**Institution**

- Strengthening institutions and creating a skilled workforce covering governments, utilities, and private sector through knowledge sharing covering technologies, markets

**Infrastructure**

- Enabling physical infrastructure through development of regional manufacturing capabilities and supply chains to improve access to clean and affordable energy



**Investment**

- Developing structures like common procurement framework, bankable project pipeline, joint ventures, regional information repository, etc. to support investments in the energy sector

**Innovation**

- Creating an ecosystem comprising of R&D facilities, regional incubation centers, etc., to promote innovative enterprises to address the regional energy challenges