



# Adani Green Energy Limited

Visiting World's Largest RE Project at  
**Khavda**

March 2024

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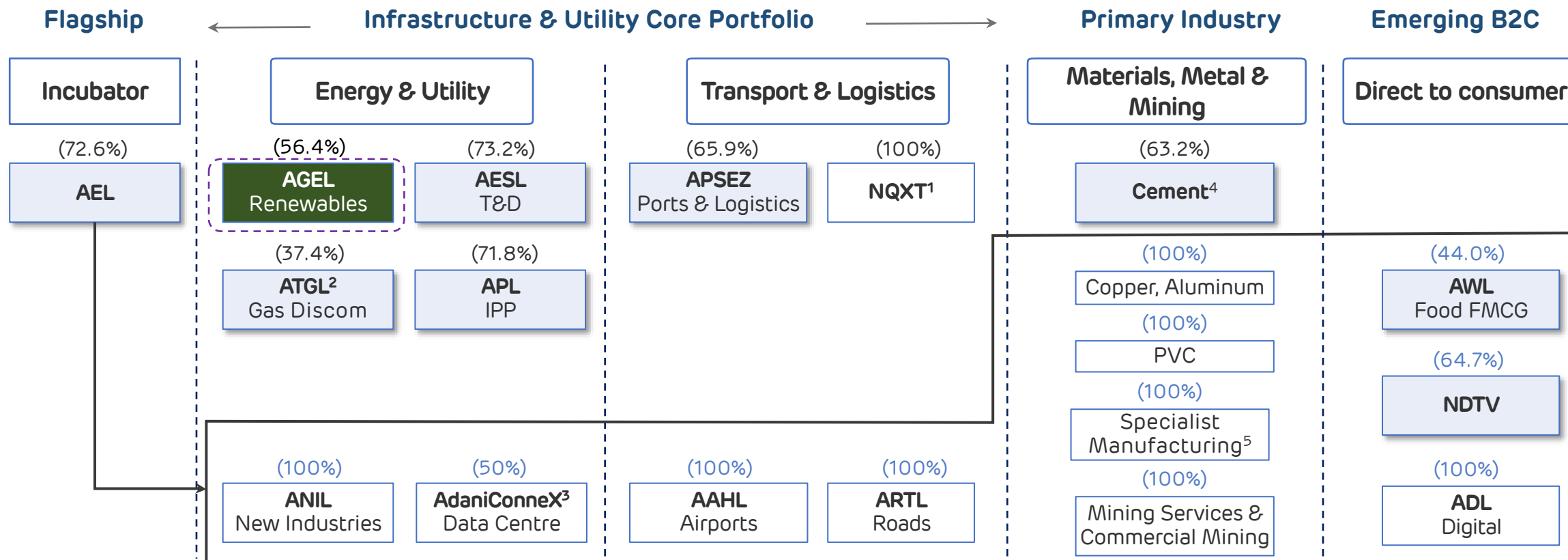


# 01

## Adani Portfolio



# Adani Portfolio: A World class infrastructure & utility portfolio



(%): Promoter equity stake in Adani Portfolio companies (%) : AEL equity stake in its subsidiaries

**A multi-decade story of high growth centered around infrastructure & utility core**

1. NQXT: North Queensland Export Terminal | 2. ATGL: Adani Total Gas Ltd, JV with Total Energies | 3. Data center, JV with EdgeConnex, | 4. Adani Cement includes 63.19% stake in Ambuja Cements which in turn owns 50.05% in ACC Limited. Adani directly owns 6.64% stake in ACC Limited | 5. Includes the manufacturing of Defense and Aerospace Equipment | AEL: Adani Enterprises Limited; APSEZ: Adani Ports and Special Economic Zone Limited; AESL: Adani Energy Solutions Limited; T&D: Transmission & Distribution; APL: Adani Power Limited; AGEL: Adani Green Energy Limited; AAHL: Adani Airport Holdings Limited; ARTL: Adani Roads Transport Limited; ANIL: Adani New Industries Limited; AWL: Adani Wilmar Limited; ADL: Adani Digital Limited; IPP: Independent Power Producer | NDTV: New Delhi Television Ltd | PVC: Polyvinyl Chloride | Promoters holding are as on 31<sup>st</sup> December, 2023

# Adani Portfolio: Decades long track record of industry best growth with national footprint

## Secular growth with world leading efficiency

## National footprint with deep coverage

**adani**

Ports and Logistics

Growth 3x<sup>6</sup>

EBITDA 70%<sup>1,2</sup>

**adani**

Renewables

Growth 4x<sup>6</sup>

EBITDA 92%<sup>1,4</sup>

**adani**

Energy Solutions

Growth 3x<sup>6</sup>

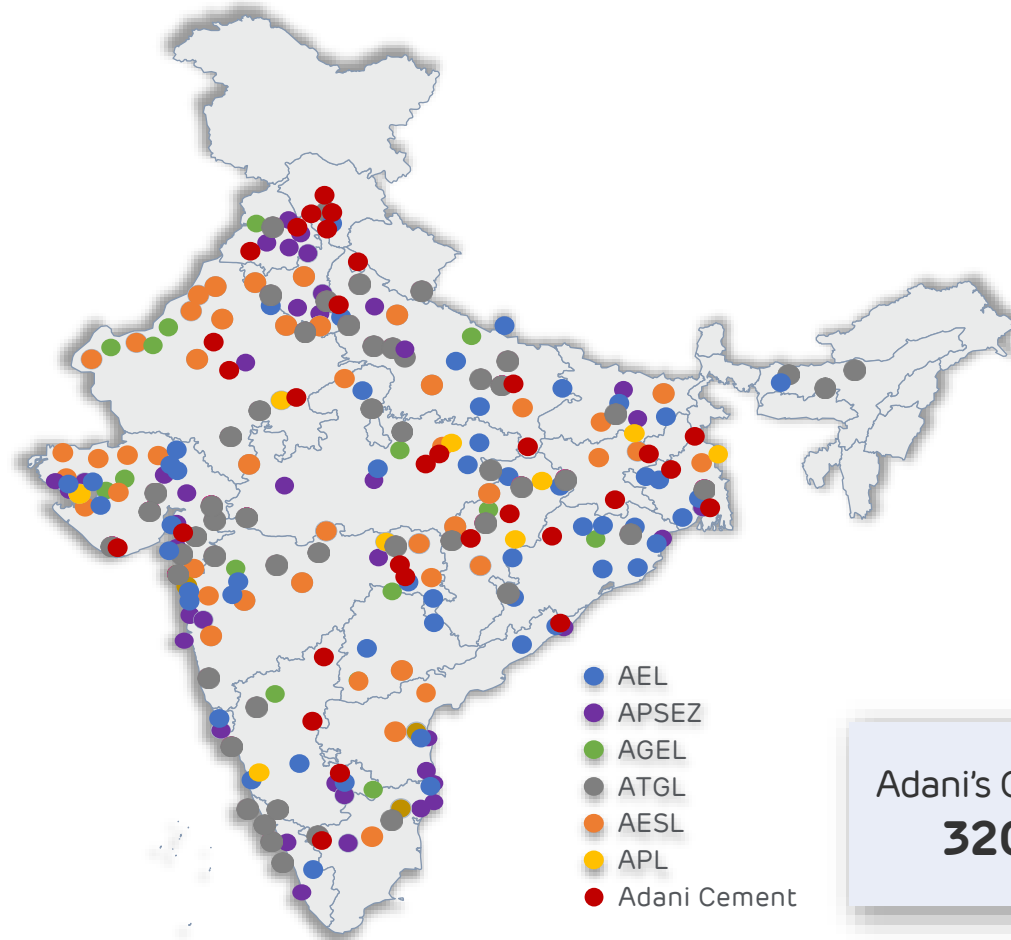
EBITDA 91%<sup>1,3,5</sup>

**adani**

Gas

Growth 1.4x<sup>6</sup>

EBITDA 19%<sup>1,3</sup>



- AEL
- APSEZ
- AGEL
- ATGL
- AESL
- APL
- Adani Cement

Adani's Core Infra. Platform –  
**320 Mn** Userbase

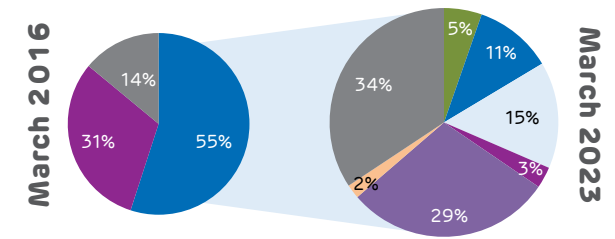
Note: 1. Data for FY23; 2. Margin for indian ports business only, Excludes forex gains/losses; 3. EBITDA = PBT + Depreciation + Net Finance Costs – Other Income; 4. EBITDA Margin represents EBITDA earned from power supply 5. Operating EBITDA margin of transmission business only, does not include distribution business, 6. Growth pertains to expansion and development aligned with market growth. Growth of respective Adani portfolio company vs. Industry growth is as follows: **APSEZ's** cargo volume surged from 113 MMT to 339 MMT (13%) between 2014 and 2023, outpacing the industry's growth from 972 MMT to 1433 MMT (4%). **AGEL's** operational capacity expanded from 0.3 GW to 8.1 GW (60%) between 2016 and 2023, surpassing the industry's growth from 46 GW to 125 GW (15%). **AESL's** transmission length increased from 6,950 ckm to 19,779 ckm (16%) between 2016 and 2023, surpassing the industry's growth from 3,41,551 ckm to 4,71,341 ckm (5%). **ATGL** expanded its geographical areas from 6 to 52 (31%) between 2015 and 2023, outperforming the industry's growth from 62 to 293 (21%). PBT - Profit before tax, ATGL-Adani Total Gas Limited, AEL: Adani Enterprises Limited, APSEZ: Adani Ports and Special Economic Zone Limited, AESL: Adani Energy Solutions Limited, APL: Adani Power Limited, AGEL: Adani Green Energy Limited | Growth represents the comparison with respective industry segment.

# Adani Portfolio: Repeatable, robust & proven transformative model of investment



	Origination	Site Development	Construction	Operation	Capital Mgmt
<b>Activity</b>	<ul style="list-style-type: none"> <li>Analysis &amp; market intelligence</li> <li>Viability analysis</li> <li><b>Strategic value</b></li> </ul>	<ul style="list-style-type: none"> <li>Site acquisition</li> <li>Concessions &amp; regulatory agreements</li> <li><b>Investment case development</b></li> </ul>	<ul style="list-style-type: none"> <li>Engineering &amp; design</li> <li>Sourcing &amp; quality levels</li> <li><b>Equity &amp; debt funding at project</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Life cycle O&amp;M planning</b></li> <li>Asset Management plan</li> </ul>	<ul style="list-style-type: none"> <li>Redesigning capital structure of assets</li> <li><b>Operational phase funding consistent with asset life</b></li> </ul>

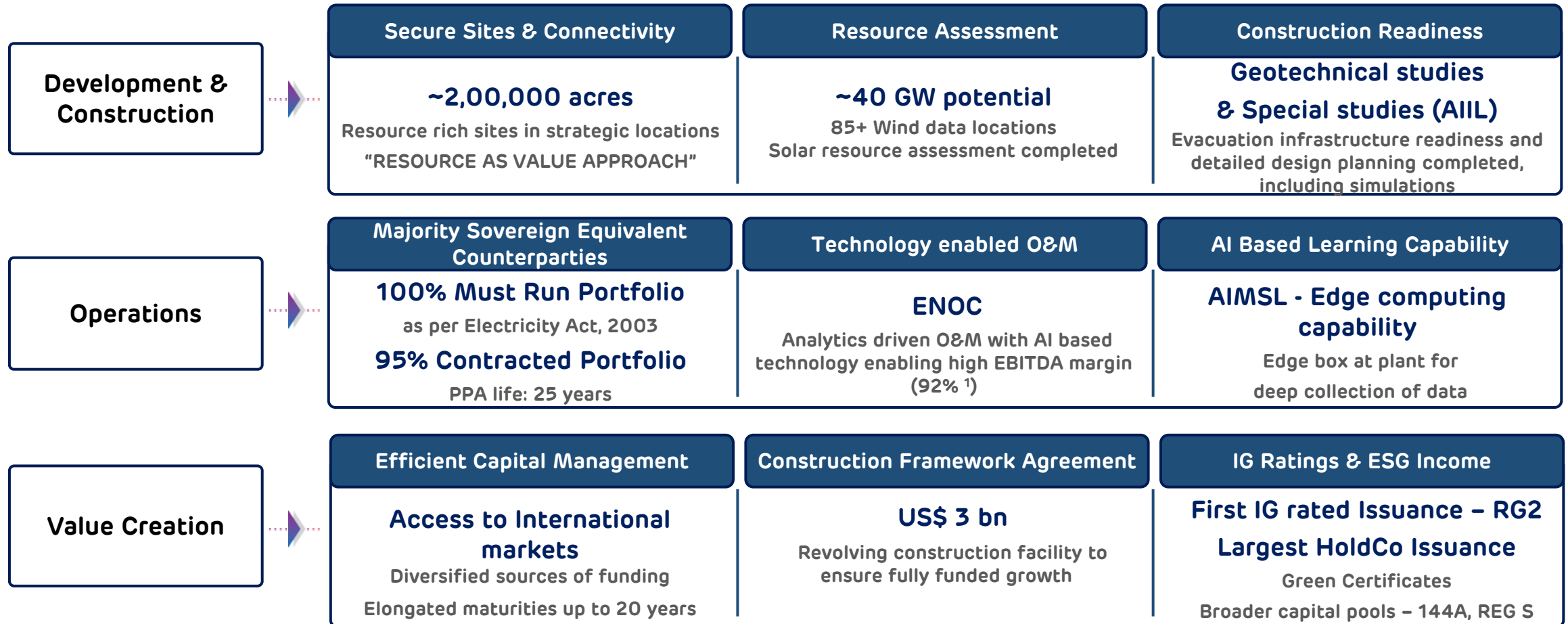
<b>Performance</b>	<p>India's Largest Commercial Port (at Mundra)</p> <p>↓</p> <p>Highest Margin among Peers</p>	<p>Longest Private HVDC Line in Asia (Mundra - Mohindergarh)</p> <p>↓</p> <p>Highest line availability</p>	<p>2,140 MW Hybrid cluster operationalized in Rajasthan in FY23</p> <p>↓</p> <p>India's first and World's largest solar-wind hybrid cluster</p>	<p>Energy Network Operation Center (ENOC)</p> <p>↓</p> <p>Centralized continuous monitoring of plants across India on a single cloud based platform</p>	<ul style="list-style-type: none"> <li><b>Duration Risk Matching</b></li> <li><b>Forex Currency Risk Management</b></li> <li><b>Interest Rate Risk management</b></li> <li><b>Governance &amp; Assurance</b></li> </ul> <p>(ABEX -Adani Business Excellence)</p>
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Note 1 Adani Environmental Resource Management Services Ltd. (additional company is being proposed)

O&M: Operations & Maintenance, HVDC: High voltage, direct current, PSU: Public Sector Undertaking (Public Banks in India), GMTN: Global Medium-Term Notes SLB: Sustainability Linked Bonds, AEML: Adani Electricity Mumbai Ltd., AIMSL : Adani Infra Mgt Services Pvt Ltd, IG: Investment Grade, LC: Letter of Credit, DII: Domestic Institutional Investors, COP26: 2021 United Nations Climate Change Conference; AGEL: Adani Green Energy Ltd. .NBFC: Non-Banking Financial Company, AAIL: Adani Infra India Limited

# AGEL: Replicating Group's Simple yet Transformational Business Model



**Well positioned for industry leading de-risked growth**

1. EBITDA margin from power supply in FY23

PPA: Power Purchase Agreement | ENOC: Energy Network Operations Centre | EBITDA: Earnings before Interest, tax, depreciation & amortization | IG: Investment Grade | AILL: Adani Infra India Limited |

AIMSL: Adani Infra Management Services Pvt Ltd





adani

Renewables

02

## Adani Green Energy Limited (AGEL): Company Profile



# AGEL – Focused on leading the energy transition with sustainable value creation

## Our Strategy

Focused on  
Renewables with  
Energy storage

Merchant & C&I  
to act as value  
enhancer

Capitalizing on  
execution  
expertise

Digital focus  
across project  
lifecycle

Disciplined  
capital  
management

## Our Commitment

**45 GW**

By 2030

**92%**

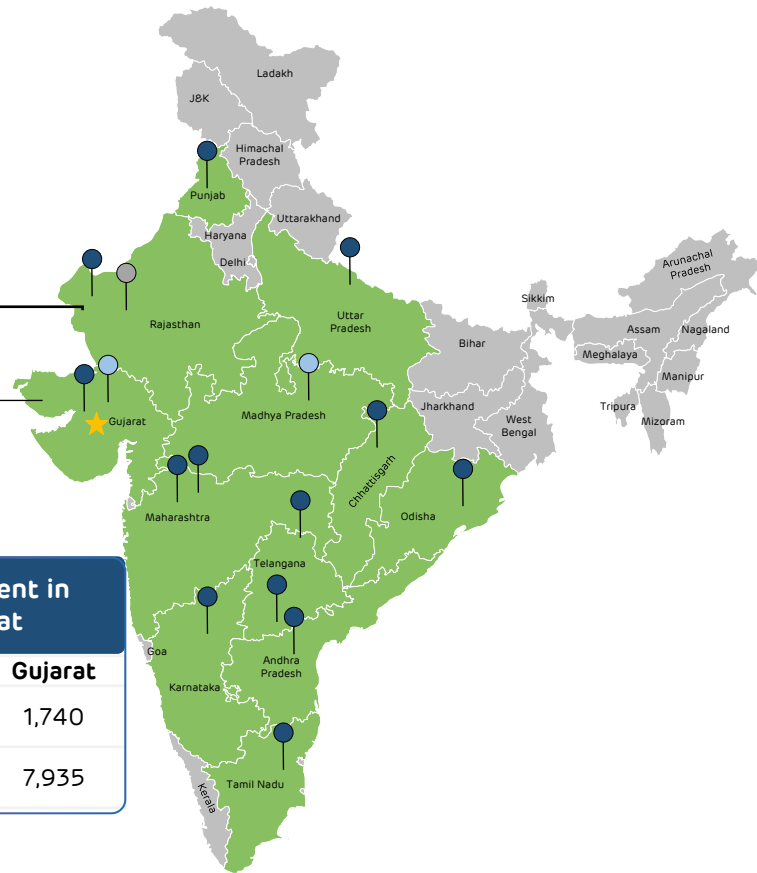
Industry leading  
EBITDA Margins (FY23)

Committed to  
delivering lowest  
cost green electron

# AGEL – India’s largest renewable player and world’s 2<sup>nd</sup> largest solar PV developer <sup>1</sup>

## Strategically located in 12 Resource rich states <sup>2</sup>

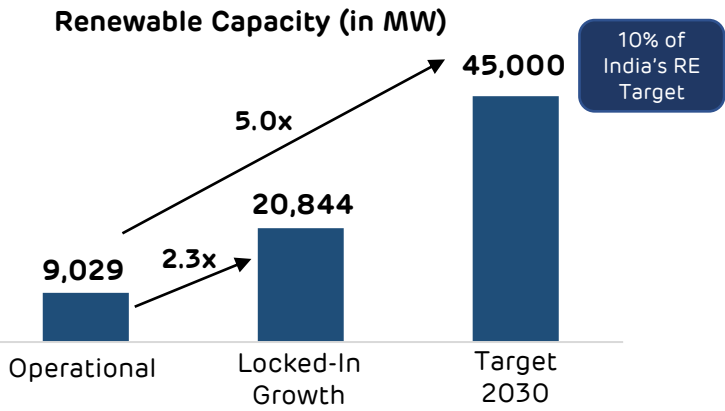
- Solar
- Wind
- Solar-Wind Hybrid
- ★ Head Office & ENOC



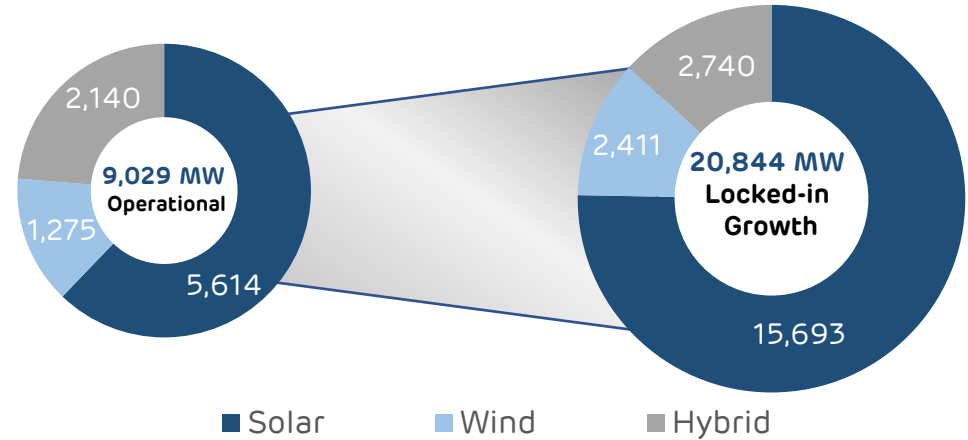
Large scale development in Rajasthan & Gujarat		
MW	Rajasthan	Gujarat
Operational	3,660	1,740
Under Execution	2,880	7,935

## 2.3x Locked-in Growth

**9,029 MW – Operational**  
**11,815 MW – Under execution**  
**20,844 MW - Locked-in Growth**



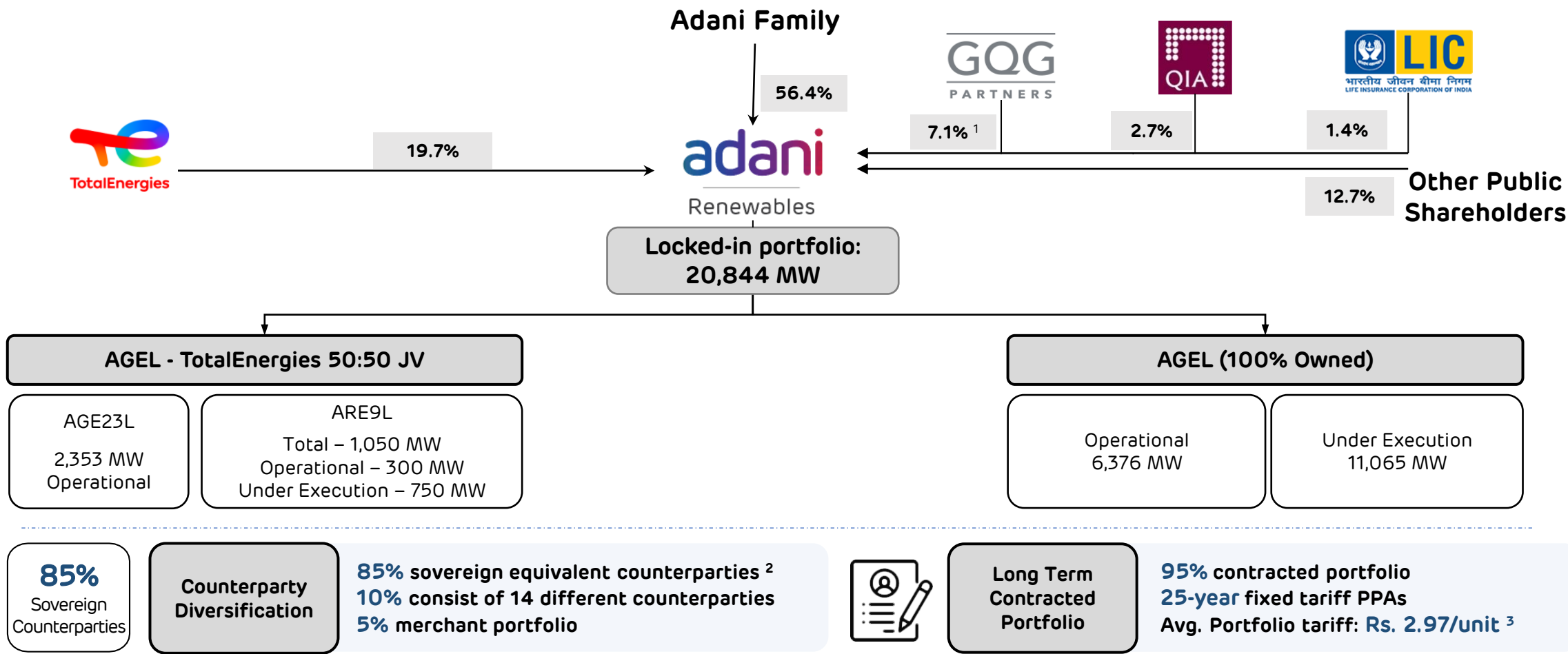
## Source-wise capacity Breakup (in MW)



## Leading the way towards large-scale adoption of affordable clean energy in India

1. As per Mercom Capital Group's Annual Global Report 2022-23  
 2. The indicated location for projects under execution is based on current planning and is subject to change.

# AGEL – Holding Structure & Key Portfolio Highlights



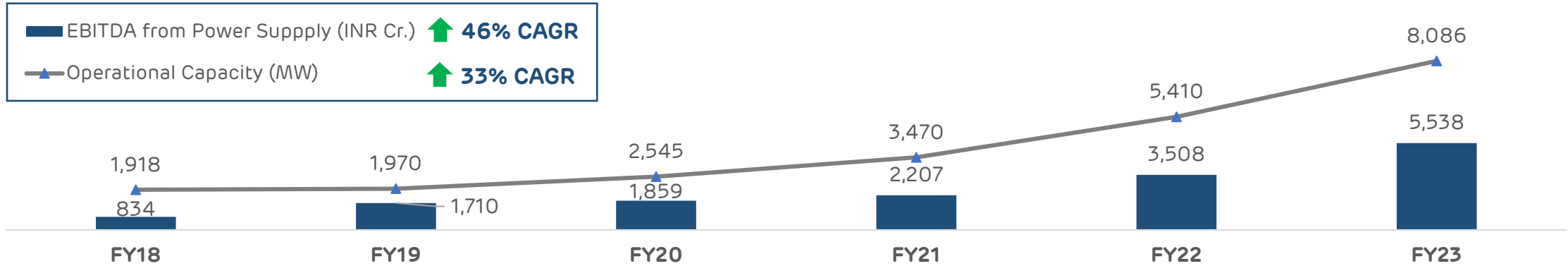
**A sustainable business model backed by strong counterparty profile and long-term contracts**

1. Shareholding by funds managed by GQG Partners  
 2. Includes 5% sovereign equivalent rated counterparties - Gujarat Urja Vikas Nigam Limited (GUVNL) and Adani Electricity Mumbai Limited (AEML)  
 3. Average tariff for total contracted portfolio



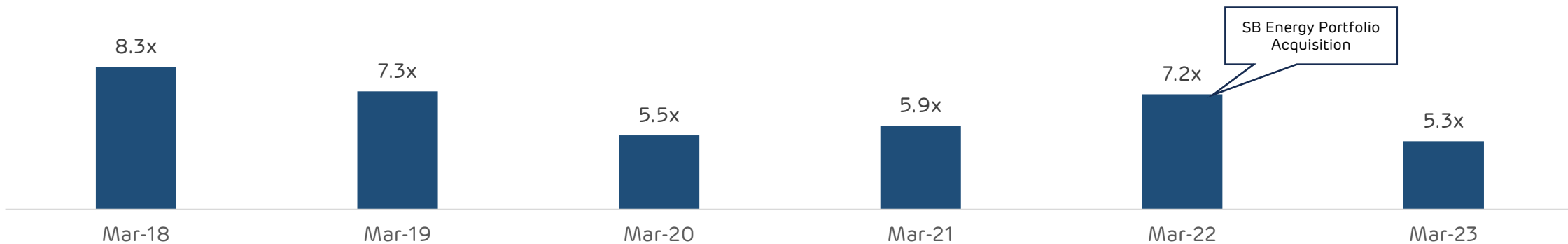
# AGEL – Growth & Cash Generation Capability De-risked

## Operational Capacity & EBITDA from Power Supply



Steadily increasing operating base thereby reducing the overall portfolio risk coupled with best-in-class EBITDA growth

## Leverage (LTD / FFO + Cash Cover)



Progressively reducing systemic risk ▼

# 03

## Adani Green Energy Limited (AGEL): Business Philosophy

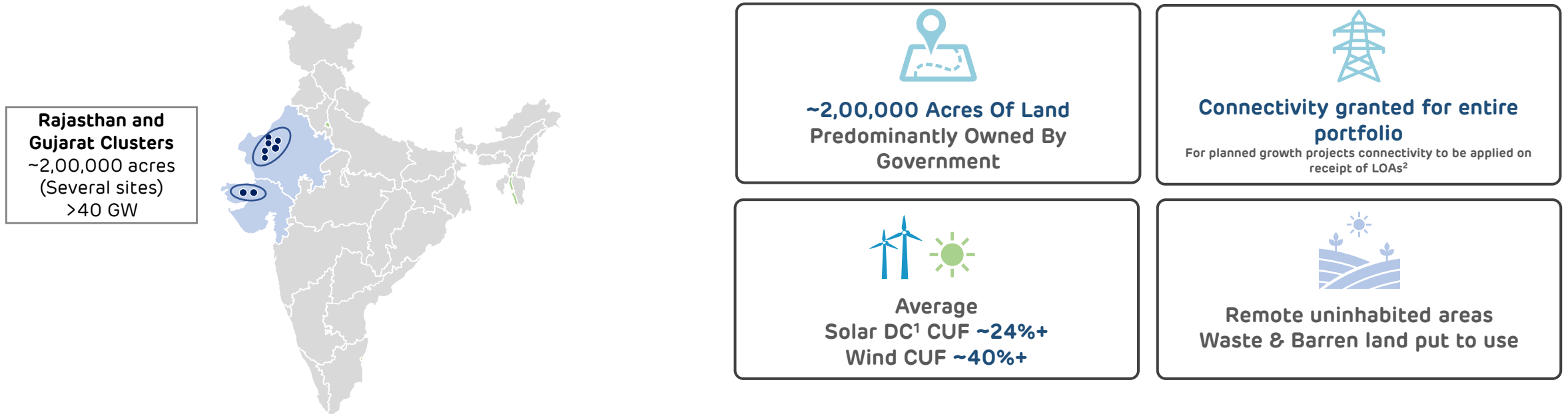


## 3a. Origination and Development Readiness



# Construction Ready Strategic Sites with High Resource Potential

Identified high resource potential sites of ~2,00,000 acres in Rajasthan and Gujarat



**Above Sites Available to Deploy:**

**Under Execution**  
~11.8 GW



**Future Project Potential**

Executing projects at above sites would take AGEL portfolio to >40 GW

1.DC – Direct Current; CUF – Capacity Utilization Factor

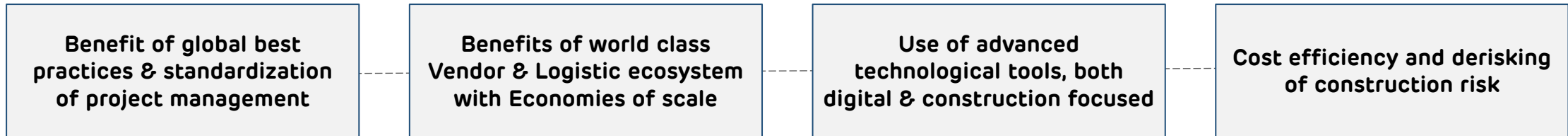
2.LOA: Letter of award received from power purchaser on winning the bid

# Project Management, Execution and Assurance through Adani Infra India Limited

## Project Management, Execution and Assurance



Access to large team of skilled professionals having specialized knowledge & hands-on experience of complete project management cycle of large infrastructure projects



**Strong Project Controls**



**Collaboration & Convergence**



**Effective Project Delivery**

**Best in class practices for planning, design, engineering and procurement driven by AILL leading to cost-effective project execution and assurance**

# Expertise in Developing Mega Scale Renewable Energy Projects



**Kamuthi: Tamil Nadu (FY16)**

**World's largest single location Solar project**

**648 MW**

**3x**

- Then, the largest single location solar power plant
- Executed within a **record time of 8 months**

Module	330 Wp
MMS	Fixed Tilt (99%) Tracker (1%)



**Rajasthan (FY23)**

**World's largest single location Hybrid RE Cluster**

**2.1 GW**

**14x**

- India's first ever hybrid power generation plant
- Achieved higher CUF (**9M FY24: 41.5%**)

Module	535 Wp
MMS	Fixed Tilt (40%) Tracker (60%)
WTG	2 MW machines



**Next Milestone - Khavda: Gujarat**

**World's largest RE Plant (Next Milestone)**

**30 GW**

- **Spread over 530+ sq. km**, i.e., 5x of Paris
- AIL and AIMSL are the enablers for the construction and operations of AGEL
- 81 Billion units of clean energy to be generated
- Targeted to power over 16 million homes

**Consistently setting new benchmarks for renewable energy industry with unmatched speed & scale of execution**





3b. Operational Excellence

# Operational Excellence through Energy Network Operation Center (ENOC)



- Real time monitoring of operating assets across 12 states through ENOC at Ahmedabad
- Granular performance insights
- Predictive Maintenance optimizing Mean time between failure (MTBF)
- Suggests corrective actions in real time reducing Mean time to repair (MTTR)
- Industrial cloud partnership with Google for ML & AI capabilities

High plant availability (Solar)

**~100%**  
In last 5 years

Consistently improving CUF (Solar)

**25%+**  
Up from 22% in FY19

Enabling industry-leading EBITDA margins <sup>1</sup>

**90%+**

**AI enabled O&M capability driven by AIMSLS leading to improved operations and better forecasting**

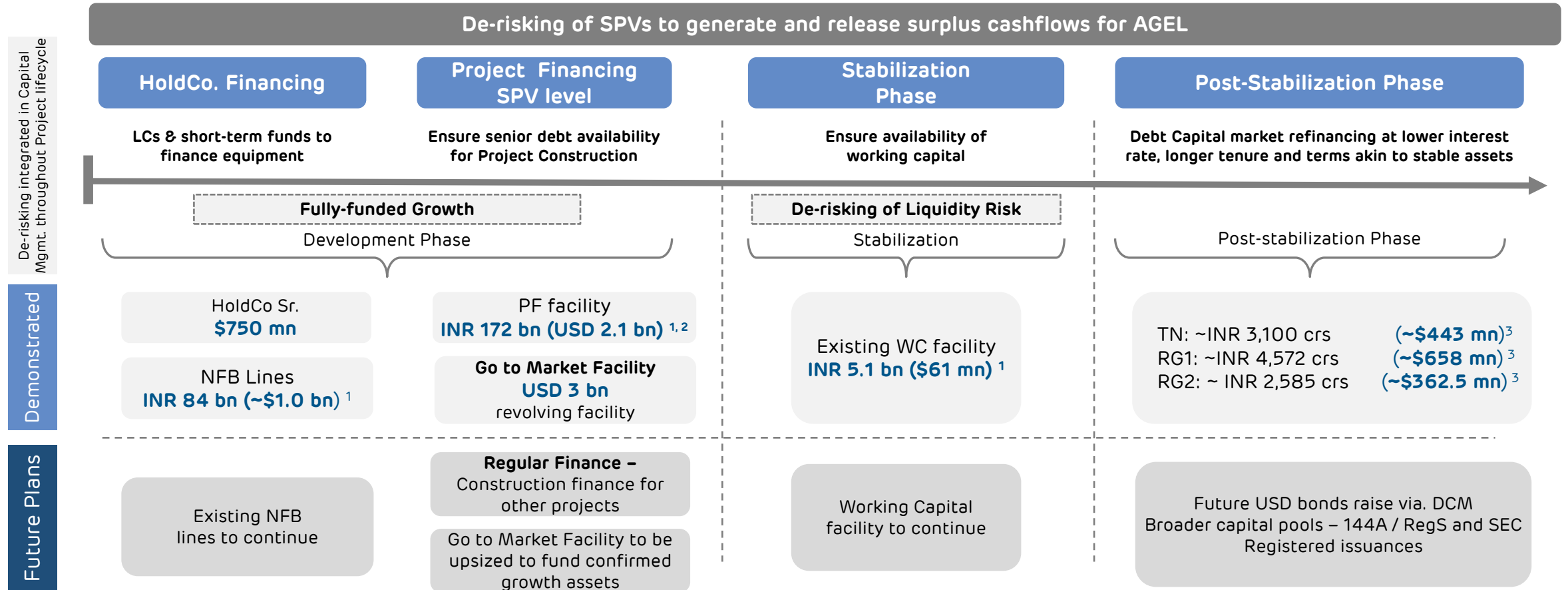
1. EBITDA margins from Power supply  
 ENOC: Energy Network Operations Centre, O&M: Operations and Maintenance, EBITDA: Earnings before Interest, tax, depreciation & amortization, GW: Gigawatt, CUF: Capacity Utilization Factor on MW<sub>AC</sub>, AIMSLS: Adani Infra Management Services Pvt Ltd



## 3c. Capital Management Philosophy



# Replicating Adani Business Model: Capital Management Philosophy



**Equity infusion for fully funded growth up to 45 GW by 2030**

<p style="text-align: center;"><b>USD 300 Mn</b></p> <p>Concluded 50:50 JV between AGEL &amp; TotalEnergies for 1,050 MW portfolio</p>	+	<p style="text-align: center;"><b>INR 93.5 Bn (~USD 1.1 Bn)</b></p> <p>Equity infusion by Promoters</p>
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**Maximising Stakeholder Value & De-risking projects with Disciplined Capital Management**

1. USD/ INR = 83.05 2. Includes INR PF of 127 bn and other ECB of 45 bn | 3. Exchange rate as of transaction date  
 PF: Project Finance; LC: Letter of Credit; SPV: Special Purpose Vehicle; RG1: Restricted Group 1 ; RG2: Restricted Group 2; NFB: Non-fund based; WC: Working Capital



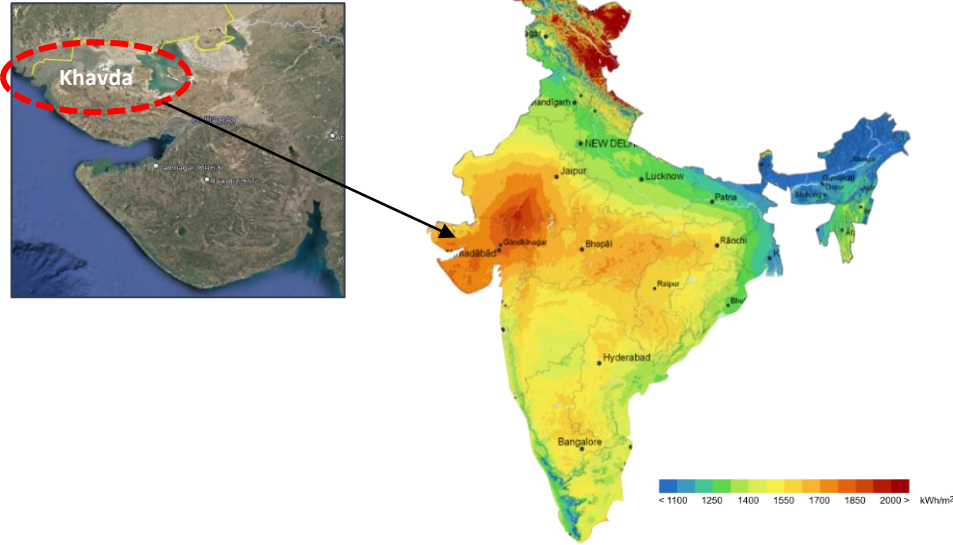
04

# Khavda: World's Largest Renewable Energy Project



# Khavda – World’s largest single-location Renewable Energy Project

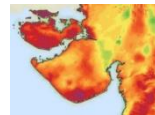
## Strategically located in Resource rich region of Gujarat



**Arid, non-cultivable contiguous land perfectly suited for mega scale RE development**



**Wind speed of ~8 meters/ second**



## A Renewable Energy Marvel in the Making

### Significant Scale Efficiencies

- ✓ All projects to be developed on contiguous land in Khavda Renewable Park
- ✓ Significant scale efficiencies in construction & O&M

### Well Planned Evacuation

- ✓ Advance phase wise evacuation planning matching AGEL's project timelines
- ✓ Connection to central grid and existing green corridor through high capacity transmission lines including 765 kV

### Advance Design planning

### Customized to the terrain

### Backed by extensive studies

- ✓ Topography survey
- ✓ Geotechnical Investigation for Soil
- ✓ Seismic Study
- ✓ Centrifuge Study
- ✓ Soil improvement Tests for WTG foundation
- ✓ Corrosion Study on Steel Structure & Concrete
- ✓ Area Drainage Study
- ✓ Customized design planning for Cable laying, piling, extra high voltage (EHV) substation and more

**First project of 551 MW operationalized in Feb 2024**

# 30 GW

**Spread across 530+ sq. km – 5x of Paris**

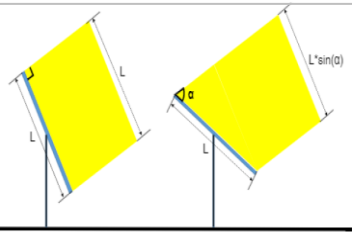
# Khavda – Latest technology adoption to optimize the LCOE

## TOPCon, N-type, Bifacial modules



- ✓ 580+ Watt peak modules
- ✓ Higher overall efficiency
- ✓ Better low light performance
- ✓ Lower degradation
- ✓ Longer life expectancy
- ✓ Bifacial - Solar power generation from both sides of the panel

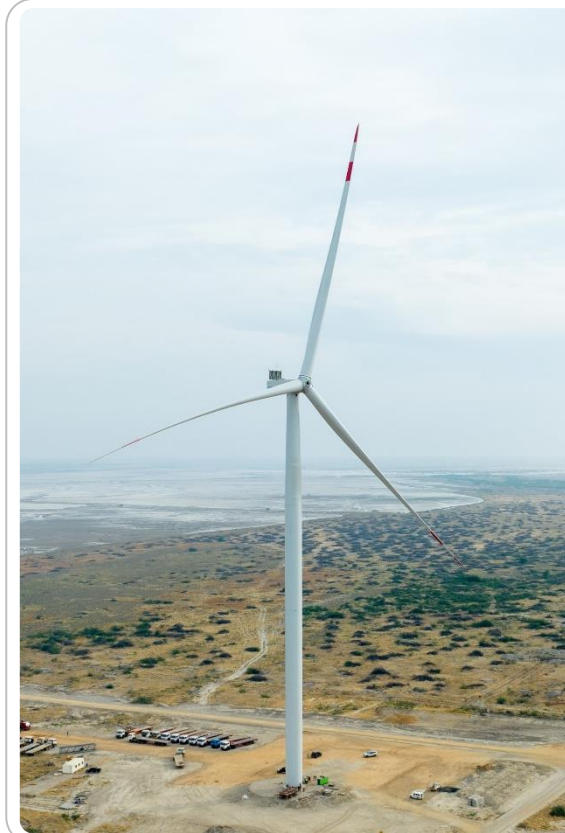
## Horizontal Single-Axis Tracking system



- ✓ Tracks the sun throughout the day
- ✓ Modules are fixed on the mounted Structure & will be rotated around a horizontal axis

**Solar CUF of ~ 33%**

## 5.2 MW Wind Turbines – India's highest rated capacity



- ✓ Developed indigenously by Adani New Industries Ltd in partnership with W2E, Germany
- ✓ Rotor diameter of 160 meters
- ✓ Tip height of 200 meters
- ✓ Included in MNRE's Revised List of Models and Manufacturers (RLMM)
- ✓ Accredited with Certificate under IEC System from WindGuard GmbH aligning with the highest global quality and safety standards

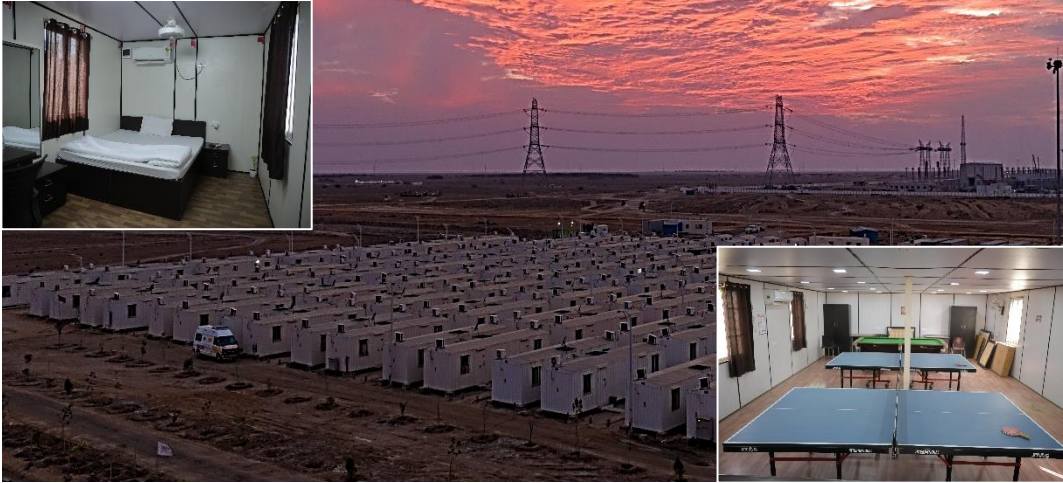
**Wind CUF of ~ 38%**

**Advanced technology adoption leading to higher electricity generation**



# Khavda – Complete Project & Social Ecosystem in place

Township for the workforce



- ✓ Operationalized **Airstrip and approach roads** for transfer of materials and resources
- ✓ **Employee Residential Camp** with canteen in place and being expanded
- ✓ **Workers Camp** with canteen in place and being expanded
- ✓ **O&M Township** under construction
- ✓ Operationalized **Healthcare facility with Ambulance, Fire tender, Recreational facilities, RO Water Plant, Sewage treatment plant and more.**

Construction Control Room



Site Office



Cable pullers for HT Cable



Shopping Complex



Airstrip



Healthcare Facility



RO Water Plant



Warehouses for materials



# Khavda – ESG Implementation

## Standardized ESG Practices

Study/Assessment	Consultant
<input checked="" type="checkbox"/> Environment & Social Impact Assessment (ESIA)	
<input checked="" type="checkbox"/> Critical Habitat Assessment (CHA)	
<input checked="" type="checkbox"/> Climate Change Risk Assessment (CCRA)	
<input checked="" type="checkbox"/> Human Rights Risk Assessment (HRRA)	
<input checked="" type="checkbox"/> Environment & Social Due Diligence (ESDD)	
<input checked="" type="checkbox"/> E&S action plan (ESAP) monitoring	
<input checked="" type="checkbox"/> Bird & Bat monitoring	

- ✓ Developed an entire **social ecosystem for the employees** and contractual workers
- ✓ **Waterless robotic cleaning** to address dust accumulation on solar panels, contributing to the UNSDG 6 by conserving water in the arid Kutch region and maximize electricity generation
- ✓ **Developing indigenous resilient supply chain** with significantly increased share of localized procurement, such as WTGs and trackers.

## Contributing to a greener planet with 30 GW RE plant

- ~81 Billion units of RE electricity generation
- To power **16.1 Million households**
- 15,200+** Green Job Creation
- CO<sub>2</sub> avoidance of **58 million Tons**
- Avoidance of **~60,300 tonnes of coal**
- CO<sub>2</sub> emission avoidance equivalent to carbon sequestration by **2.8 Bn trees**

## Empowering tomorrow with clean energy today



# 05

## Investment Rationale

# Key Investment Highlights

## Developmental & Operational Excellence

- **Resource Availability:** Strategic sites with generation potential of **~40 GW** backed by comprehensive geotechnical studies, fully prepared evacuation infrastructure, and meticulously crafted design work & resource analysis.
- **Project Management, Execution and Assurance through AILL:** **Large team of skilled professionals** having specialized knowledge & hands-on experience and **20,000+ vendor network** ensuring effective and timely execution
- **Operational Excellence: AI enabled O&M capability driven by ENOC through AIMSL** for operational fleet leading to ~100% plant availability (solar) and reduced cost

## Predictable & Stable cash-flows of OpCo's

- **95% contracted portfolio with fixed tariff for 25 years** and out of this **~90% comes from sovereign / sovereign equivalent rated counterparties**, significantly reducing counterparty risk.
- **Industry-leading EBITDA margins of 90%+** backed by the operational excellence

## Capital Management Philosophy

- **Fully funded growth** ensured through Revolving Construction Framework Agreement of **USD 3 bn** & Equity infusion of **~ USD 1.4 bn** through JV with TotalEnergies and Equity infusion by Promoters
- **Growth risk delinked from Credit performance** with ring fenced structures (LTD/FFO + Cash Cover reduced from 8.26x in FY18 to 5.26x in FY23)
- **No Concentration Risk** with diversified capital sources

## ESG

- **Ranked 1<sup>st</sup> in RE Sector in Asia and amongst Top 3 in RE Sector globally by ISS ESG** in its latest ESG assessment
- Apart from driving decarbonization of the grid, focused on Water positivity, SUP Free, Zero Waste to Landfill & No net loss of Biodiversity

## Strong Sponsorship

- **Adani** - the largest Infrastructure & Utility platform in the country, with extensive expertise and proven track record in developing large-scale projects in India.
- Emerging supply chain reliability with backward integration of solar and wind manufacturing at the portfolio level



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Thank You

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