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### **Energy Storage Opportunities for Lead Batteries in Emerging Markets**

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### **Emerging Market– Global GDP & Population**



#### **GDP** Growth Prediction



#### Population 2022



- Strong potential for **GDP growth** and **Population** can be observed in the emerging economies
- Africa, Middle East, SE Asia, India will see a huge upshift in GDP and population. They will be the potential emerging market.

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Data Source: https://www.visualcapitalist.com/visualizing-the-105-trillion-world-economy-in-one-chart/ Data Source: https://www.visualcapitalist.com/visualized-gdp-growth-projections-for-key-economies-2024-2025/

### **Energy Consumption Trend in Emerging Market**

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- There is a huge gap in **Per Capita Energy Consumption** between the Developed countries and Developing countries showing the most opportunistic emerging market scenario
- The projected upward energy consumption in emerging markets will be majorly seen in **Industrial, Transportation and Residential sectors**

 $Data\ Source:\ www.en.Wikipedia.org/wiki/list\_of\_countries\_by\_electricity\_consumption$ 



KWh/Year/Capita

Milan. Italy 2024

#### Total energy consumption by sector, world



### **Sector-wise Electricity Demand in Emerging Markets**









Thousand TWh

**Growth Drivers** 

Hydrogen and synfuels industries **Hydrogen Generation** Transport sector **Passenger Electric Vehicles Industry Sector Data Centers, Industry Digitization & AI** Power Demand in Buildings Access to energy/Urbanization and Electrification in emerging markets



Other Asia



- Hydrogen and synfuel
  Transport
  Buildings
- Industry

Source: McKinsey Energy Solutions' Global Energy Perspective 2023

#### **Transformation Driven by Access to Energy/Urbanization & Electrification in Emerging Markets**



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#### **Global Warming**







1960 1970 1980 1990 2000 This map is published by the World Bank Group, funded by ESMAP, and prepared by Solargis. For more information and terms of use, please visit http://globalsolaratlas.info.

1880 1890 1900 1910 1920 1930 1940

1940 1950 Year

#### **Sustainable Power Generation**





# The Solar Power Generation is expected to grow by 6X to 9X considering 3 different scenarios against the raise in demand by 2X to 3X by 2050

\* STEPS: Stated Policies Scenario: Consistent with NDC as of June 2021, 2100 temperature rise of 2.6°C
 APS: Announced Pledges Scenario: All net-zero countries have achieved 2.1°C in 2100
 NZE: Net Zero Scenario: Achieve net zero emissions by 2050 and increase the temperature by 1.5°C by 2100



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### **Energy Storage: The core to successful Renewable Energy**

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#### **RESS can be bundled with:**

- Photovoltaic panels
- Integrated into smart homes
- Home EV charging systems. Tailored products helps residential customers achieve goals such as self-sufficiency, optimized selfconsumption, and lower peak power consumption.

# Batteries will act as a bridge between the renewable energy generators and the consumers



### **Residential Energy Storage and Rooftop Solar**

**Power cuts** per day

solution

Go-to-

market

Market Attractiveness







### High growth Residential and Commercial Solar Opportunity

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**Key Differences vs. Developed Countries** 

**Robust Drivers** 



✓ High solar radiation advantage with 240-300 sunny day



✓ Reducing PV Module costs to make attractive payback



✓ Residential segment striding towards sustainable energy



✓ High growth in the commercial segment due to available space to set up panels



 ✓ Government initiatives such as the Smart City project, solar parks etc.





- **40** GW grid connected roof top Solar is being developed as a part of National Solar mission
- PM Surya Ghar Muft Bijli Yojana is a government scheme that aims to provide free electricity to households in India. Under the scheme, households will be provided with a subsidy to install rooftop solar panels. The subsidy will cover up to 40% of the cost of the solar panels. The scheme is expected to benefit 10 million households across India

#### **Growth Prospects for Rooftop Solar Power in other Emerging Markets**







#### **Existing Battery Technologies Usage in Residential Premises**







#### **Innovation Journey of Luminous in Lead Acid Battery Technology**

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### **The Most Recycled Product – Champion of Circular Economy**

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The Lead Battery has the best recycle rate compared to other consumer waste

- Batteries 99%
- Corrugated Boxes 88.5%
- Steel Cans 71%
- Newspapers / Paper 67%
- Aluminum Cans 55%
- Tires 40.5%
- Glass Containers 34%
- PET Plastic 31.3%
- HDPE Plastic 28.2%





#### Search for future in Storage affordable Solution at Home





#### **Technologies Suitability to Support Opportunities in Emerging Market**





**Recent Study also shows Lead Acid Technology is the most suitable solution till date for Residential Application from Economy, Safety and Reliability point of view meeting all application requirements conveniently.** 



Data Source: CBI, KPMG Report Battery Energy Storage Systems (BESS) 2035 Market Outlook and Opportunities



India & France to jointly laid the foundation stone of ISA Head Quarters in 2016.

1400

Carry -

and.

100000

1400

## BHADLA SOLAR PARK LIGHTING UP THE NATION

14000 Acres / 10M Panels

733 GWh Energy



### Signature battery

**Overall looks & General features** 













STREET, STREET

Efficient Design in Unique Container size (1<sup>st</sup> Time in Market)

Zero water top-up

Ö

 $( \overbrace{ \begin{matrix} \mathsf{CO}^2 \\ \downarrow \downarrow \downarrow \downarrow \downarrow }^{\mathsf{CO}^2} )$ 

(Q)

Consistent Performance

ALL THE T

Extremely low gas emission



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240Ah

DEPOSIT ON

*<b>SELPRO* 

Extremely low acid stratification

Son-spillable



best suitable for modern home

