



**EASAC Electricity Storage Study-Workshop**  
**Brussels Belgium 14<sup>th</sup> October 2015**

Presented by Michael Flynn Executive Chairman FLI Group, Ireland



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## Who we are:



- Diversified international environmental services business
- Established in 1989
- Employ 150 staff
- Offering technologies and services
- Main sectors of activity are:
  - Wastewater treatment
  - Contaminated land remediation
  - Anaerobic Digestion- Gas to Grid and Electricity to Grid
  - Engineered landfill and Mining services
- Established business presence in Ireland, UK and France
- Trade globally in terms of services to mining sector
- Technology taker
- Entrepreneurial in approach to business

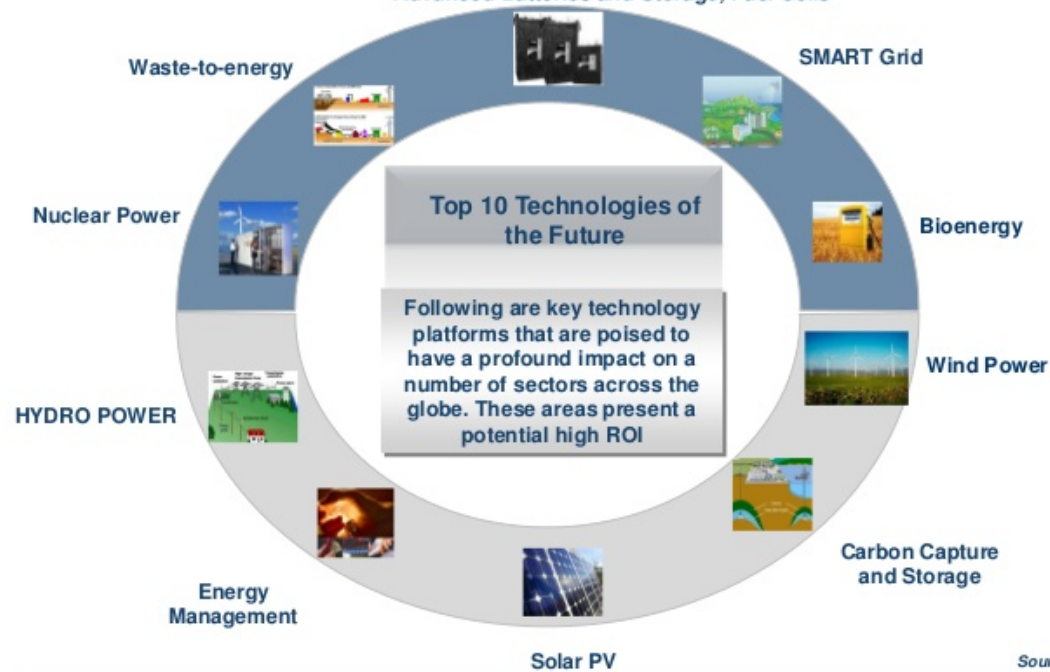
# Opportunities in renewable energy sector



## Outlook for the Energy & Power Industry

Top 10 Technologies to Watch For in 2020

Outlook for the Energy & Power Industry: Top 10 Technologies to Watch For (World), 2010  
Advanced Batteries and Storage, Fuel Cells



Source: Frost & Sullivan

FROST & SULLIVAN

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# Investors Perspective of Battery Storage Market



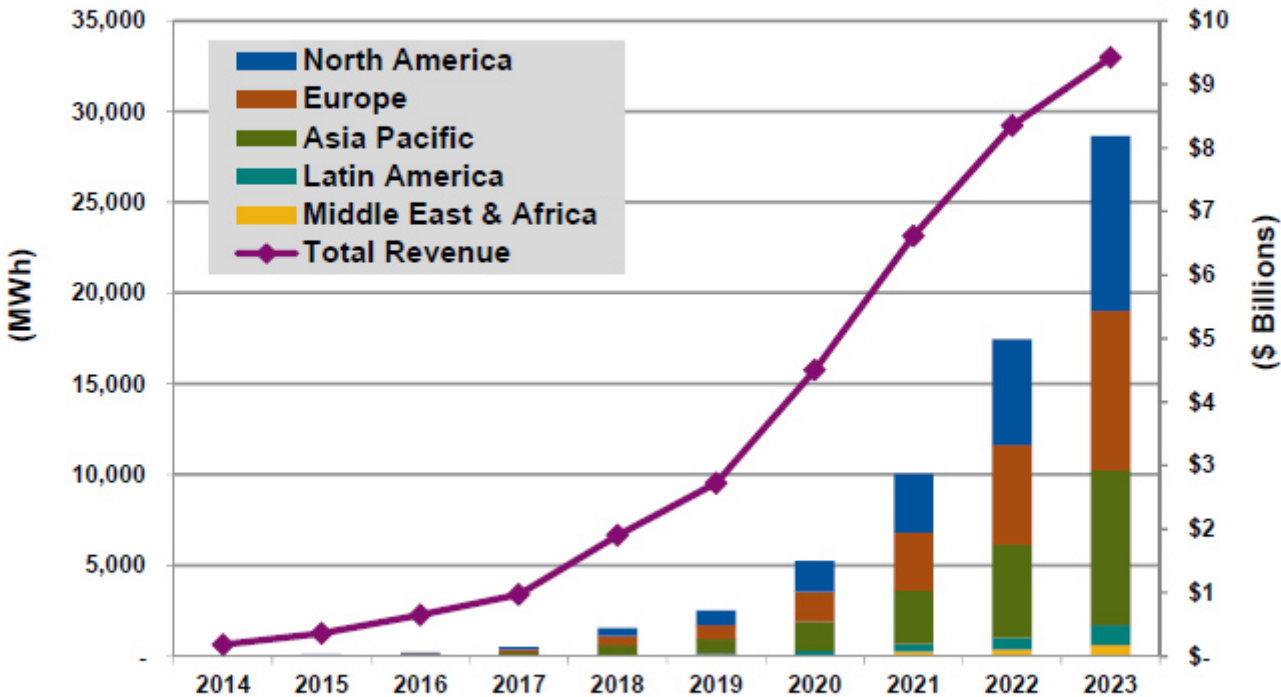
Top level considerations when considering the sector:

- Identify global market drivers
- Identify opportunities –gaps in market
- Identify customer base
- Identify the client/customers NEEDS
- Identify geographic or regional market drivers
- Identify barriers – eg. regulation, legislation, gridlock
- Identify technologies
- Identify costs

# Global assessment of emerging markets for advanced battery energy capacity 2014-2023



**Chart 1.1** Next-Generation Advanced Battery Energy Capacity and Revenue by Region, All Applications, World Markets: 2014-2023



(Source: Navigant Research)

# ESS Technology - Market drivers



- Consumer demand for Electric vehicles
- Global warming
- Climate change
- Surge in investment in renewable energy technologies –wind and solar
- Grid instability
- Grid lock
- Smart grid development
- Grid management
- Proven technology
- Falling costs of technology
- Manufacturing capacity increase
- Commercial viability
- Mobility of technology
- Emerging economies and markets – eg. Africa
- Globalisation

# ESS – Battery types and Battery development



Considerations:

- Lithium ion or other?
- Battery type, Cylindrical, Prismatic or Pouch cell?
- Format size?
- Does size matter?
- Cost differential?
- Performance differential?
- Reliability?
- Safety?
- Modular and scalable?
- Application?
- Mobility
- Cost

# Qualify Investment Opportunity



Carry out a SWOT analysis on several levels:

SWOT- Strengths, Weaknesses, Opportunities, Threats

- Technology selection
- Market selection
- Sector selection
- Market Intelligence
- Market entry strategy
- Competitors
- Prospects & Needs assessment of target customer
- Value proposition
- Cost of technology
- Return on investment
- Financing



# ESS - Market sector selection



Considerations for FLI as an investor in ESS technology:

- Identify a robust and proven technology that is affordable and offer to:

1. Existing clients

- Review our existing customer base – Water Utilities, Mining Companies
- Review their challenges and needs
- Identify opportunity
- Offer solutions with proven ESS technology

2. Prospective new clients in both existing and in new markets

- Wind farm developers
- Solar farm developers
- Industrial and Commercial clients where unstable electrical power is an issue



**Thank You!**



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