

# Okinawa Institute of Science and Technology

Bharat Light & Power

Jan 2015

# The Company

# Purpose/Vision

To improve the  
quality of life of  
people by  
providing clean  
energy at an  
affordable price



# Business Segments



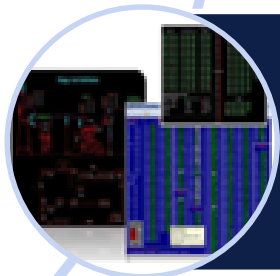
## **WIND**

- Green field projects : Concepts to Commissioning
- One of leading Players in the country
- Managing large fleet of machine with an active pipeline of 1 GW



## **SOLAR**

- Executed large utility scale projects
- Focus on grid connected projects with an active pipeline of >100 MW
- Managing O&M of assets with advanced technologies

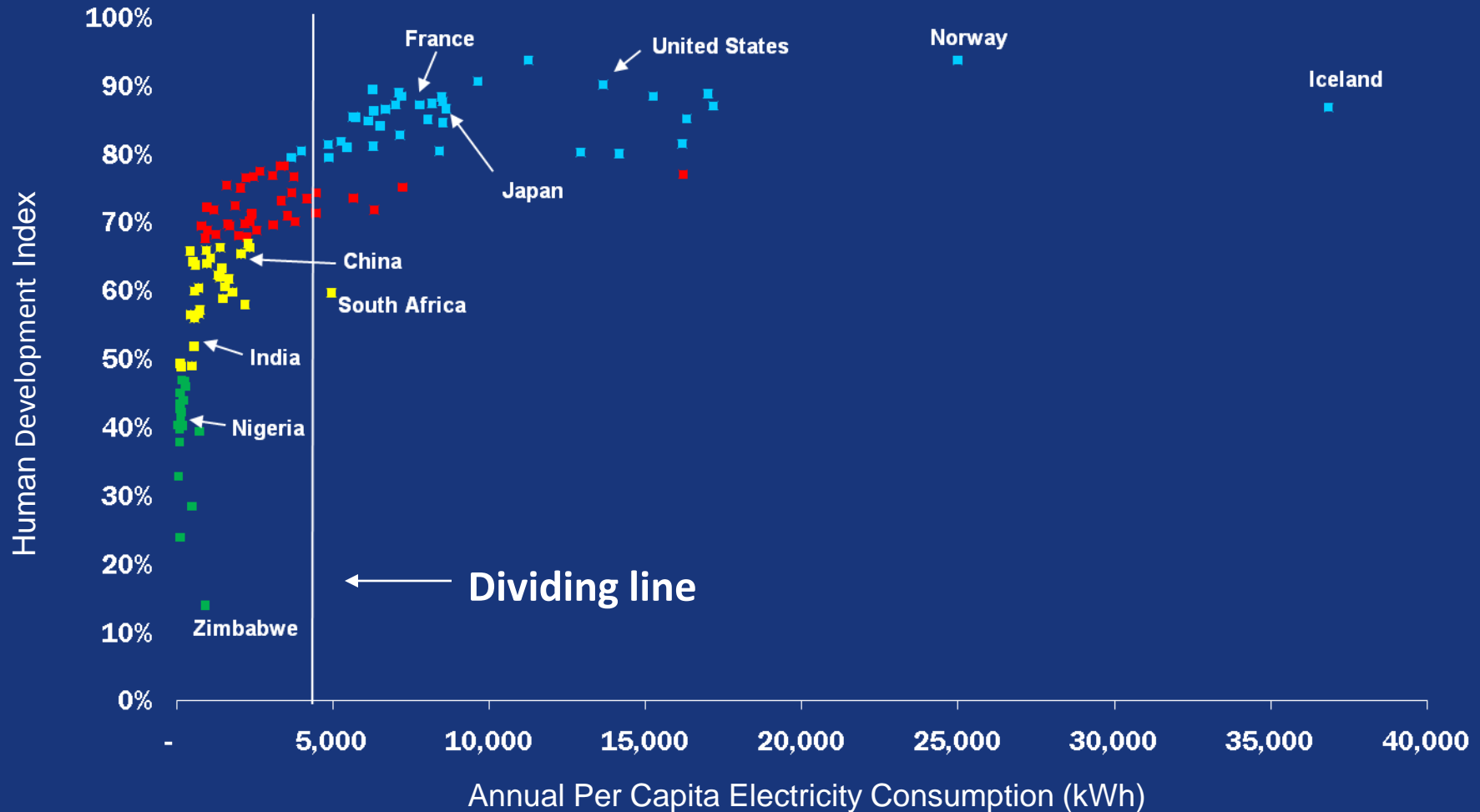


## **SERVICES**

- Portfolio management..... improve operational efficiency
- Leverage big data, cloud & analytics in renewable operations
- World Class Infrastructure ....and cost competitive

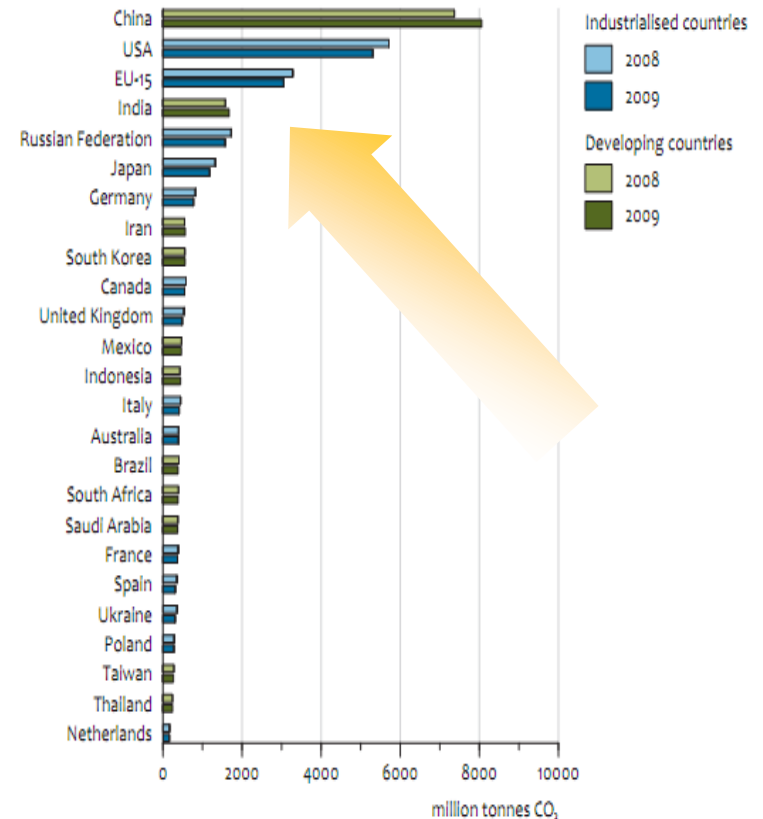
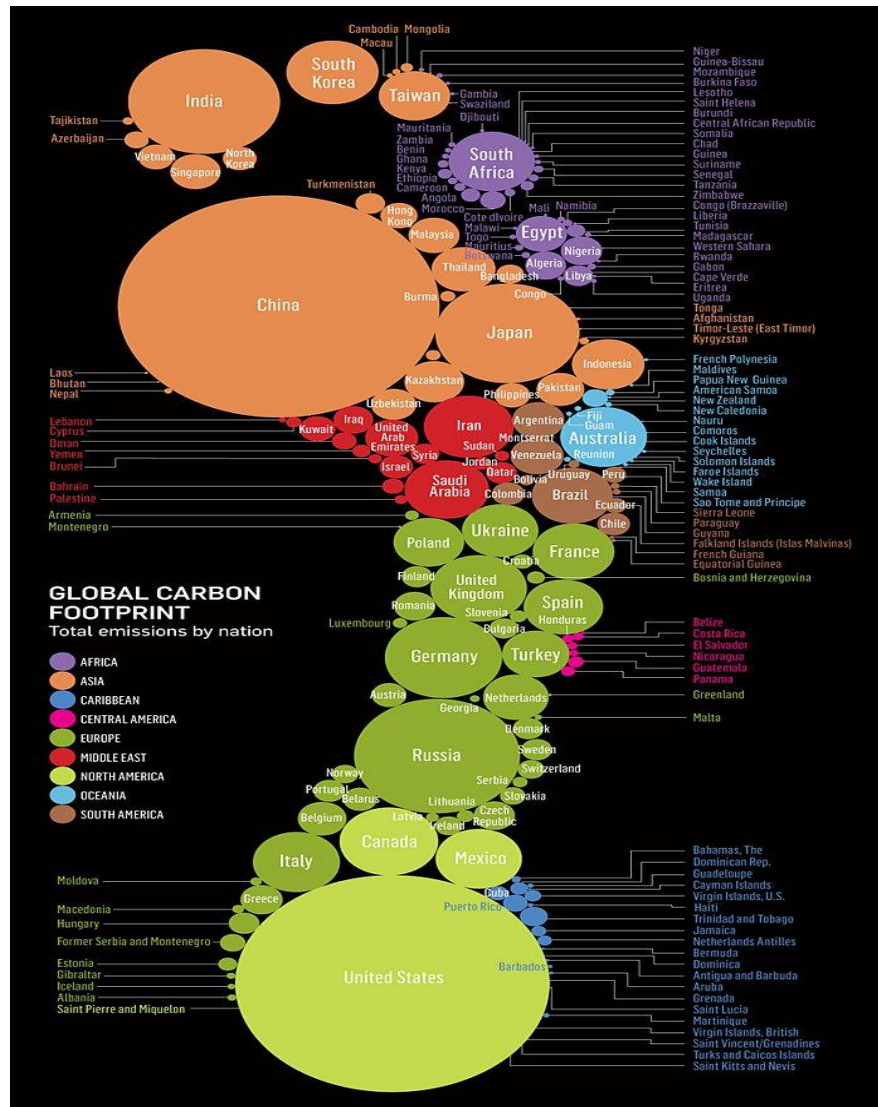
# Global Energy Challenges

# Human Development and Electricity



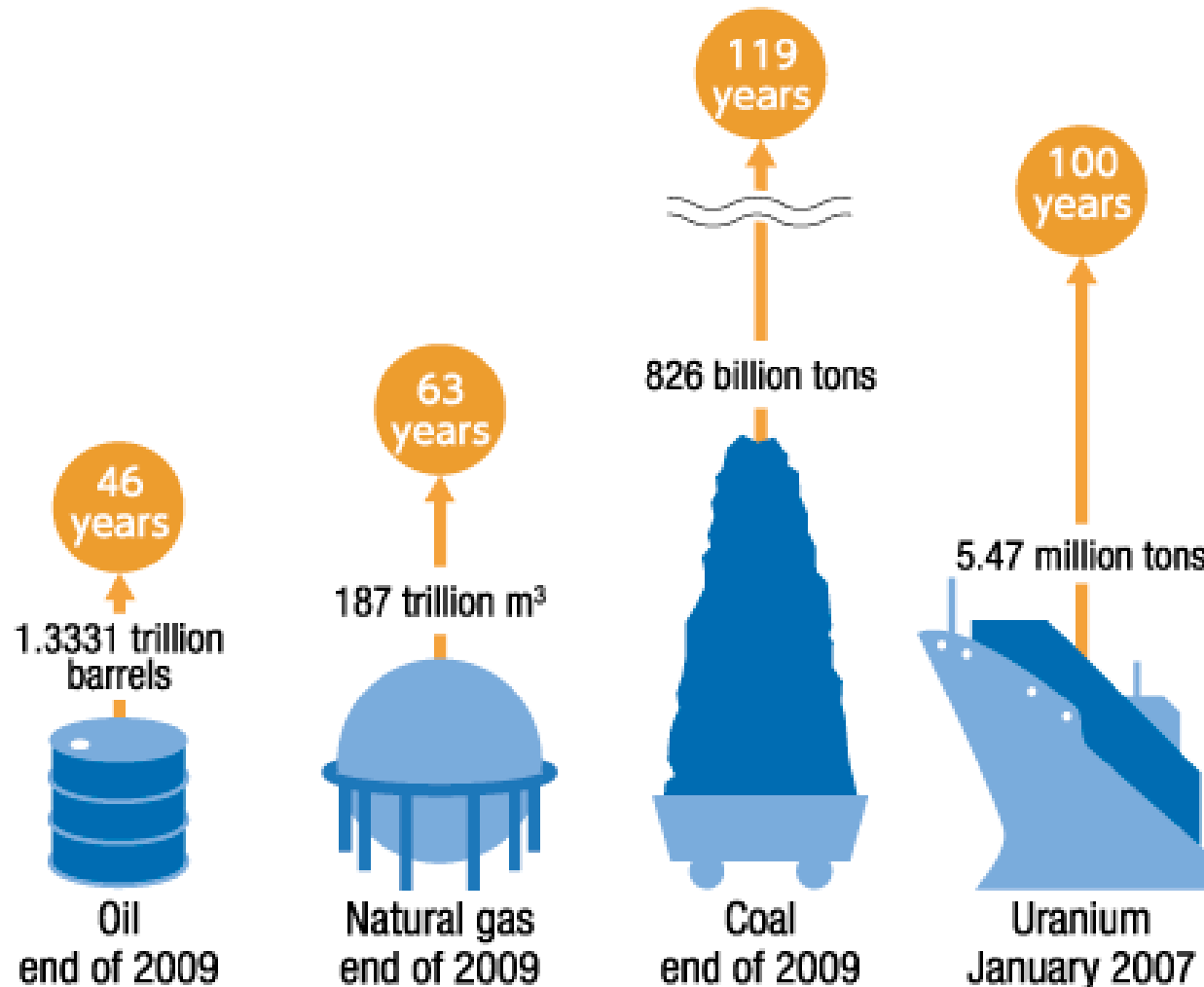
Source: Human Development Index – 2010 data United Nations; Annual Per Capita Electricity Consumption (kWh)  
- 2007 data World Bank

# Large Footprint Already...



Source: J.G.J. Olivier, J.A.H.W. Peters, "No growth in total global CO<sub>2</sub> emissions in 2009," Netherlands Environmental Assessment Agency, 2010.

# While running out of Resources...

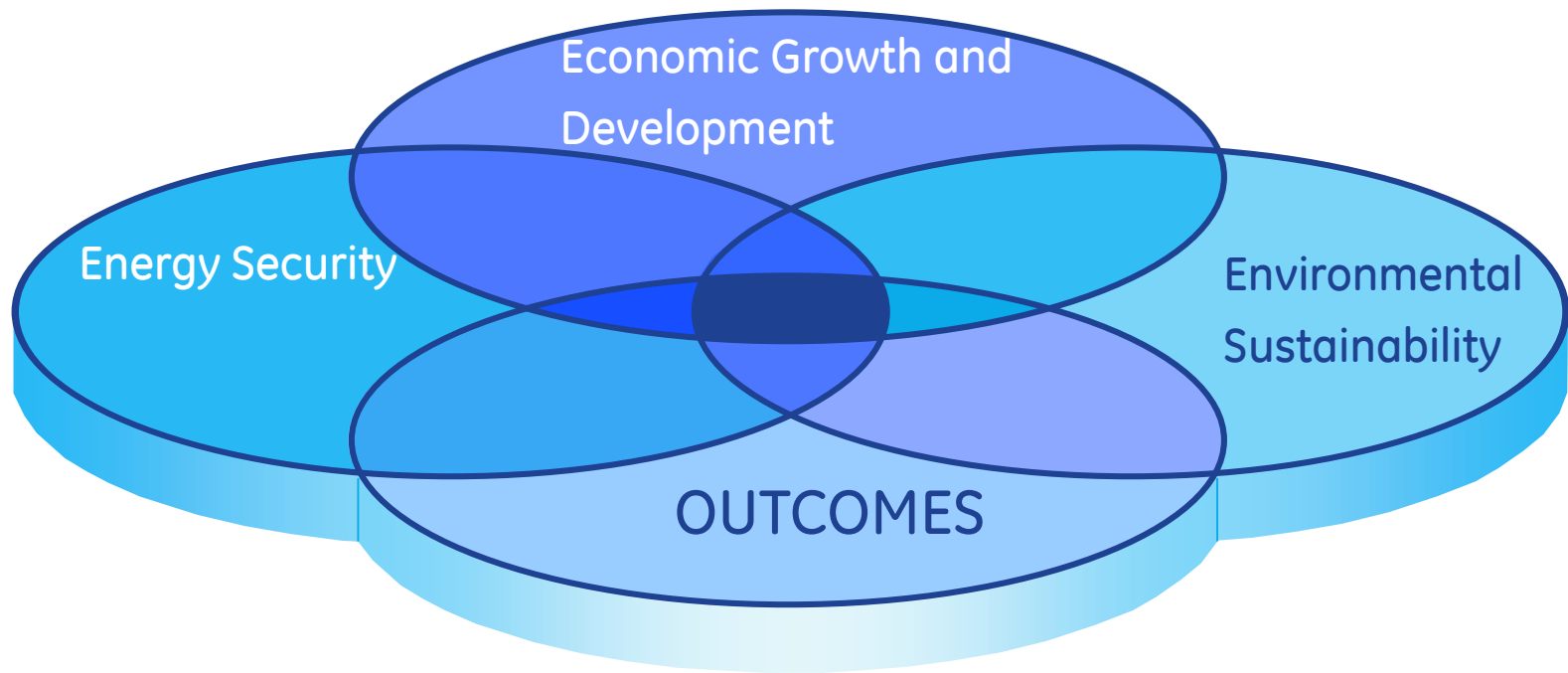




So what will the future look like?

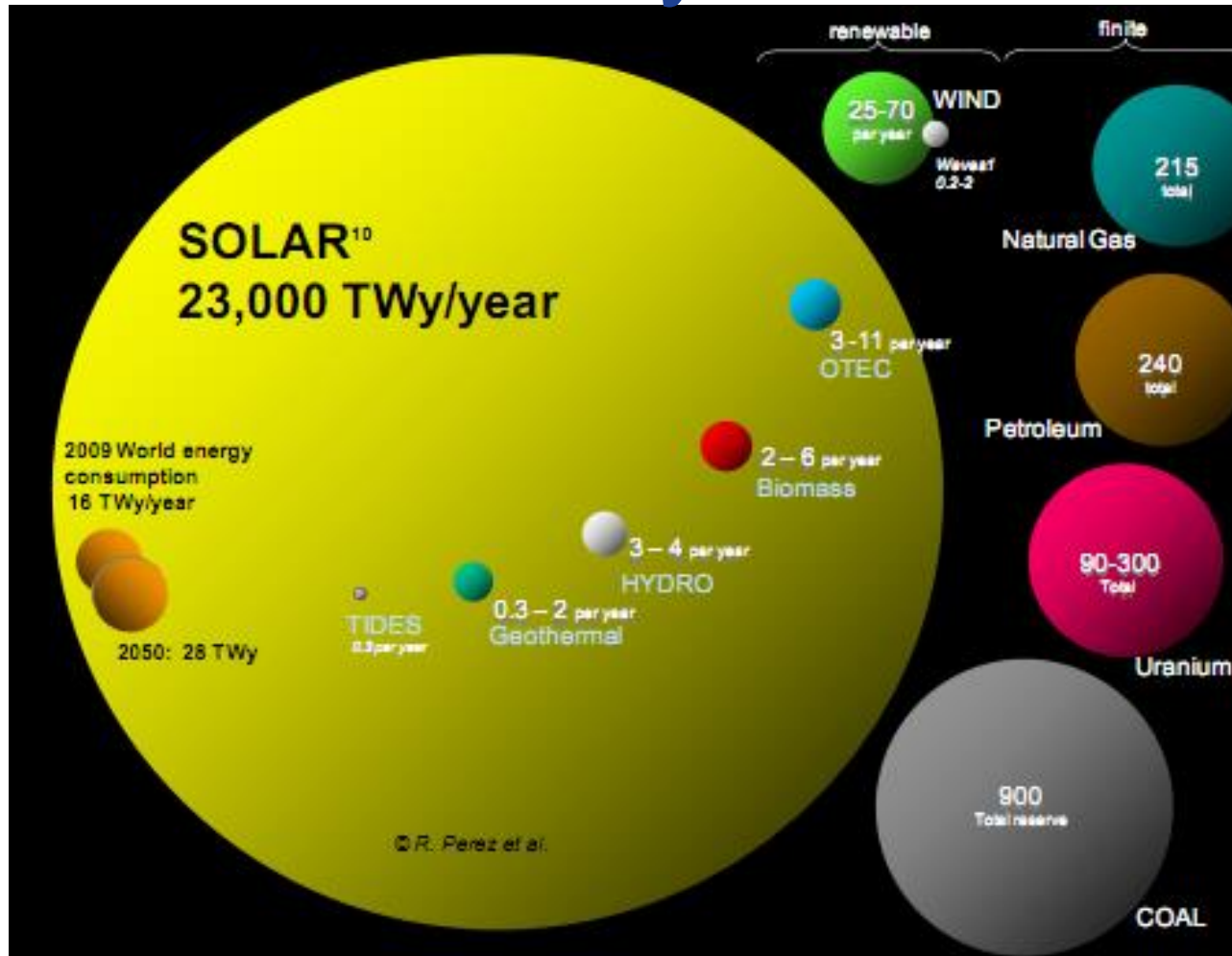


# Energy policy objectives



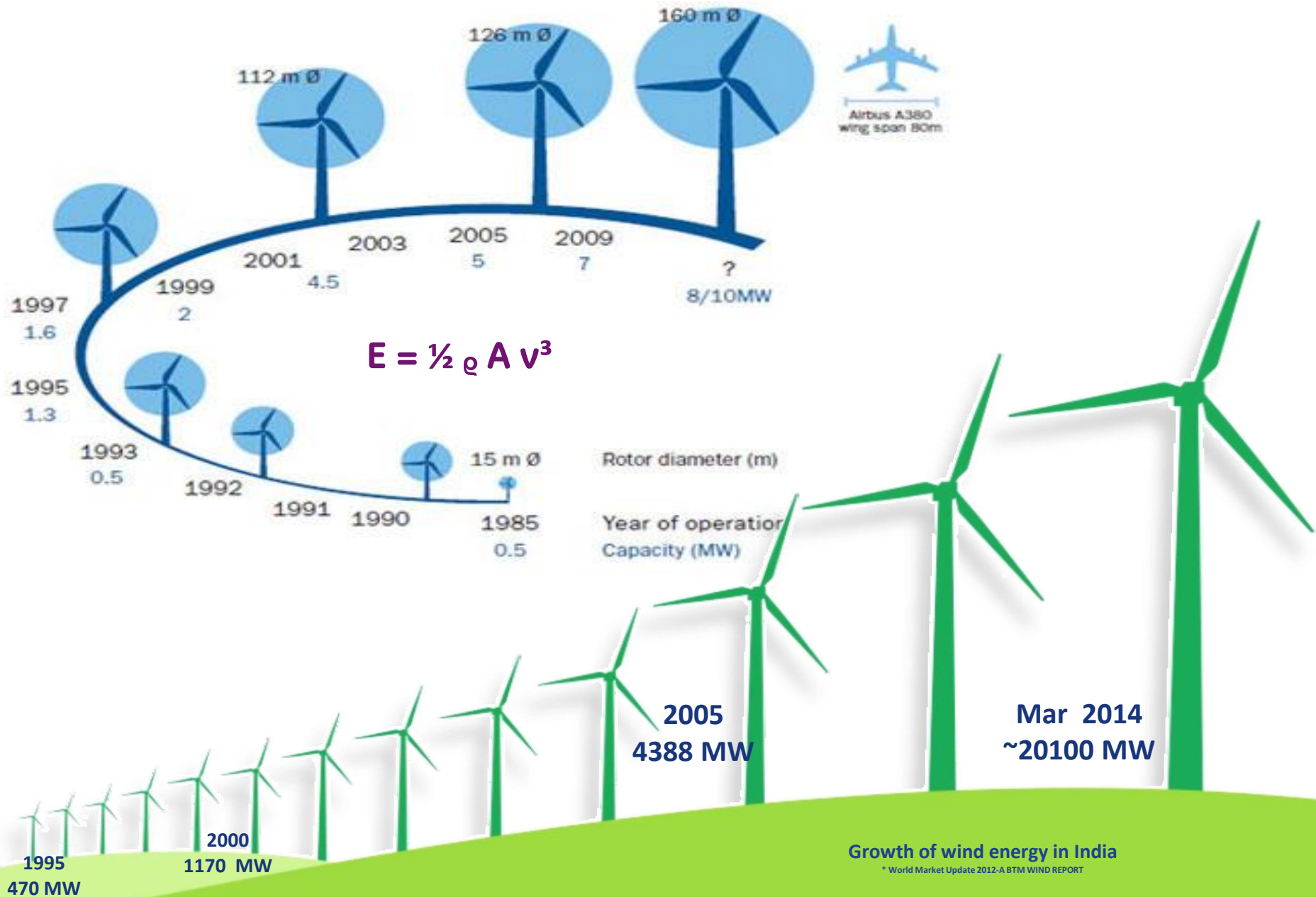
**Energy policy must balance affordability, security of supply and sustainability**

# Resource Availability...

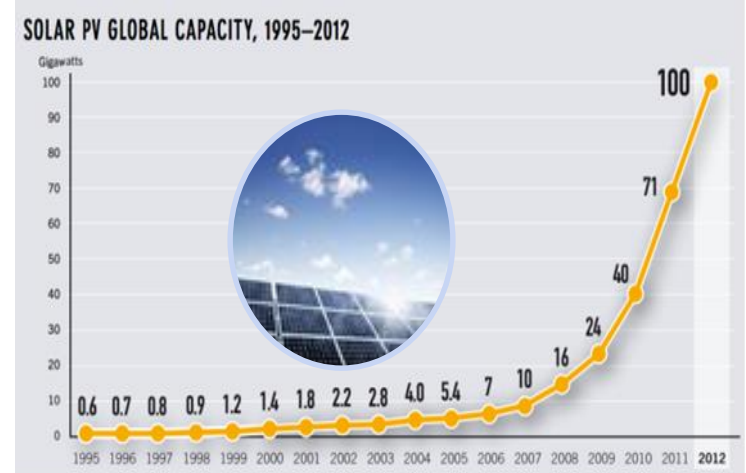
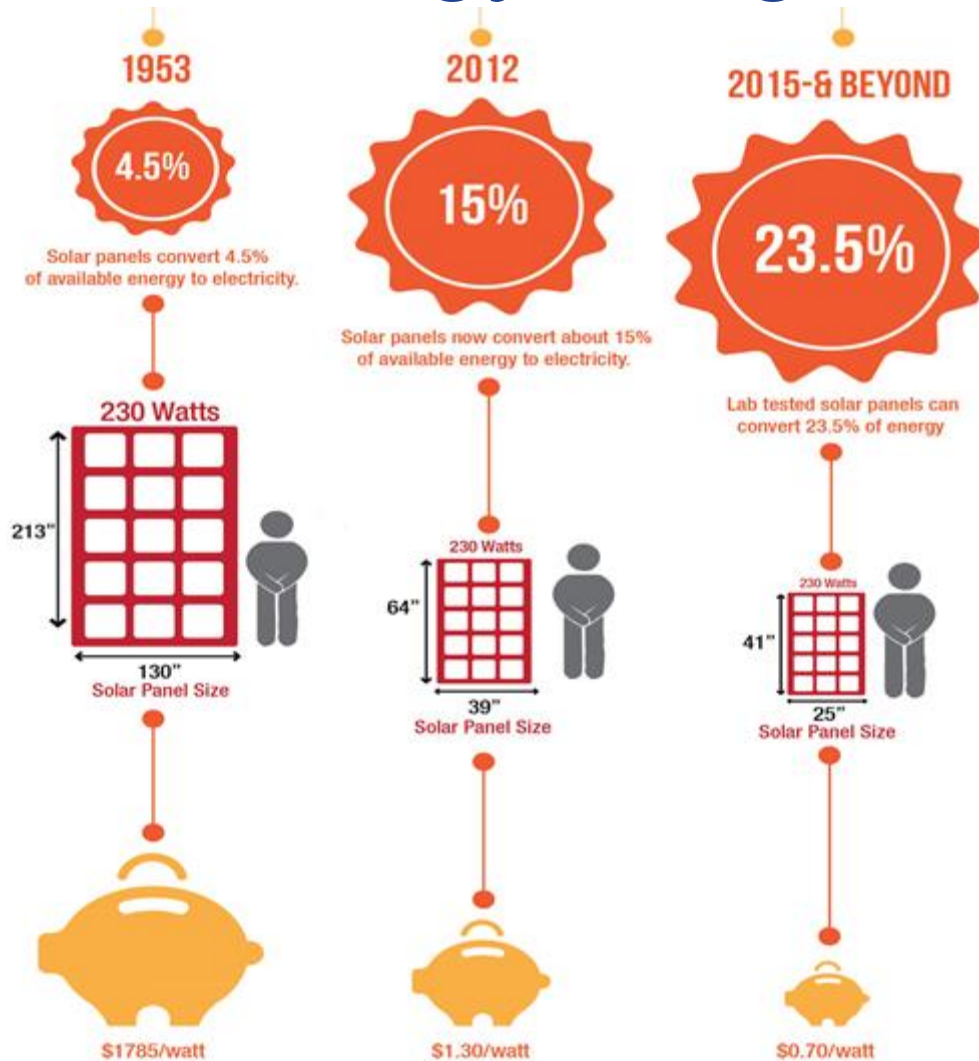


***“There is no energy crisis, only a crisis of ignorance”***

# Technology drives installations...

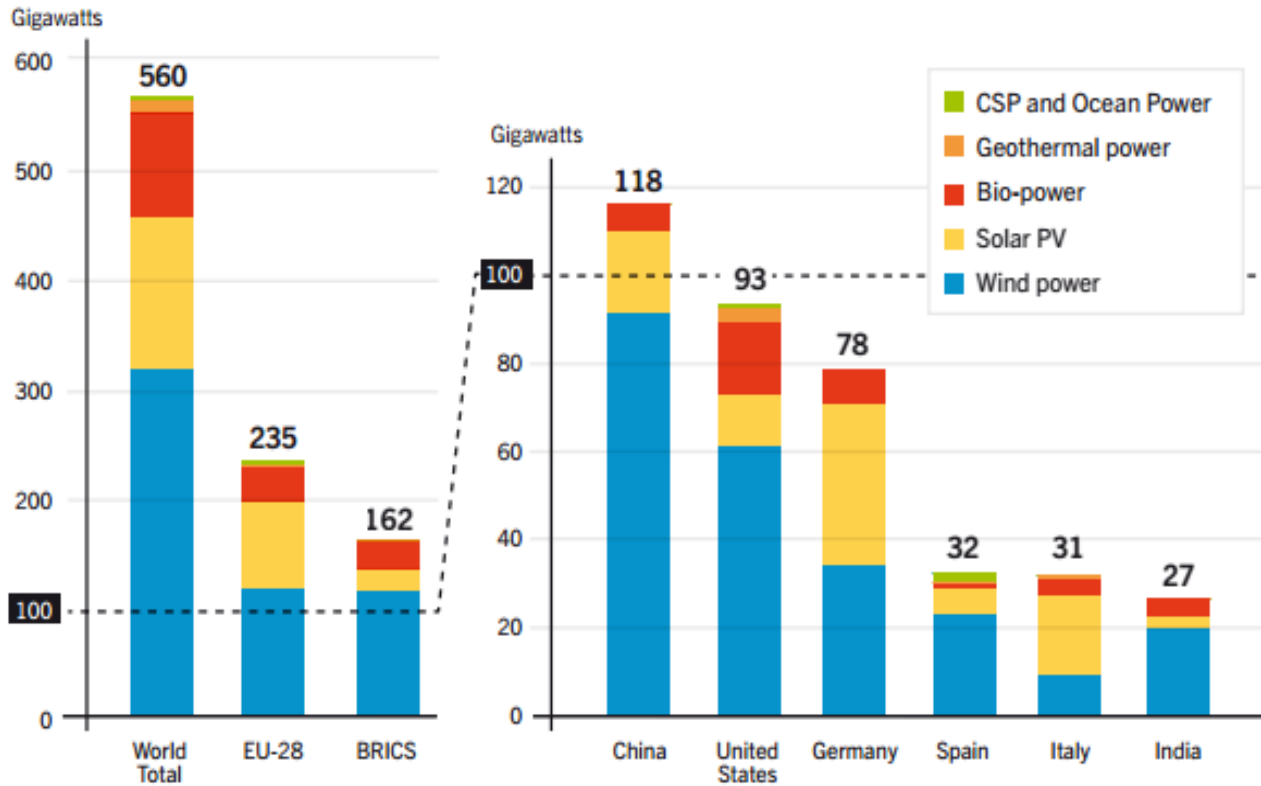


# Technology brings down price...





# Renewable Market Penetration

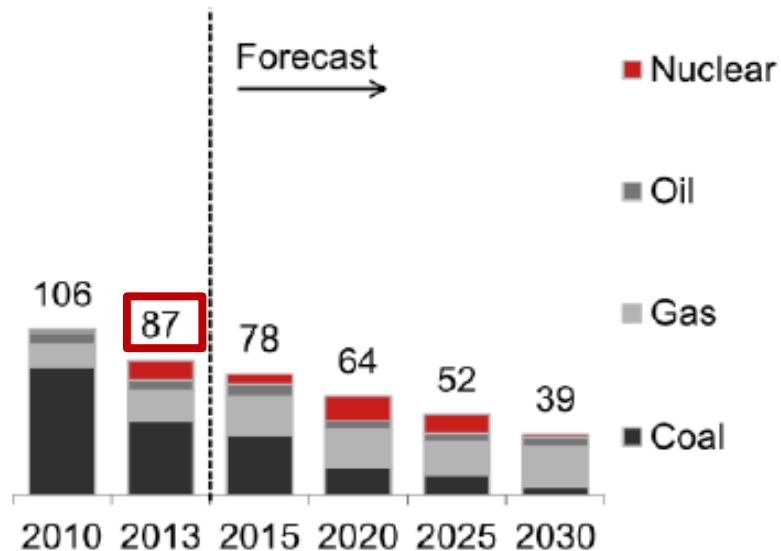


Renewable Power Capacities in World, EU-28, BRICS, and Top Six Countries, 2013

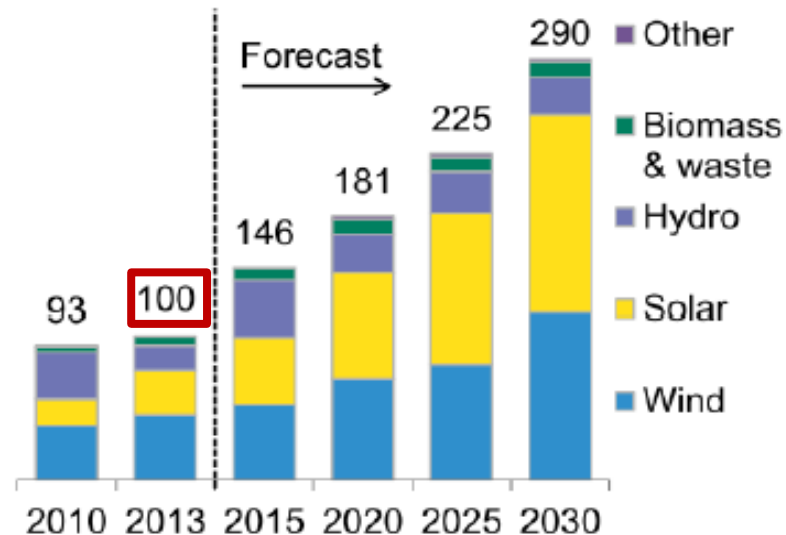


# Reversing Trends...

## FOSSIL FUEL AND NUCLEAR



## RENEWABLES



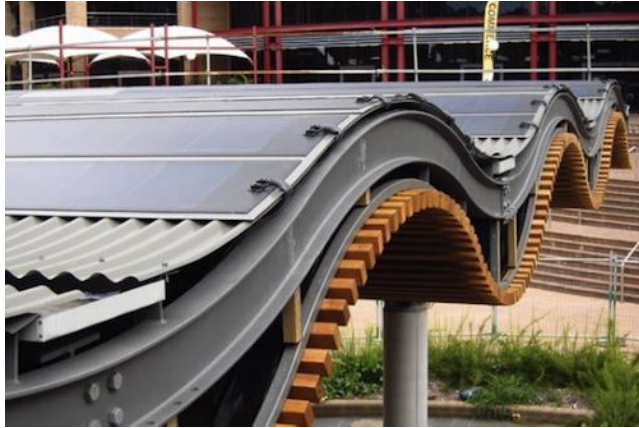
Source: Bloomberg New Energy Finance

## Annual new installations globally in GW





# Pushing Boundaries...



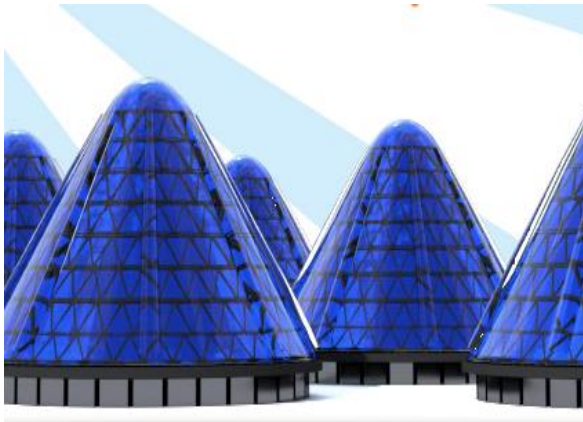
Flexible solar rooftops



Solar Carports



Floating Wind Turbines



Offshore Wind Technology

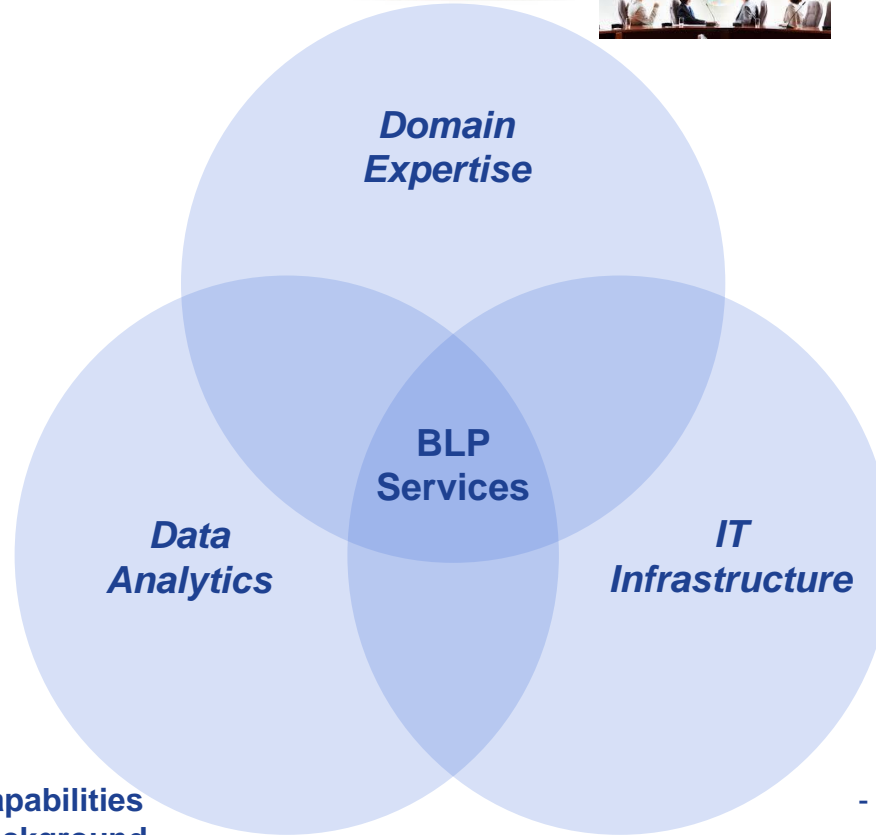


# BLP Services

- Services Business Overview
- Predictive Analytics

# Building Services Competence

- 250 years of Experience in the Energy Sector



- In-house analytics capabilities
- Team with diverse background



- Partnership with IBM
- Scalable Infra

# Services Capabilities

## Reporting

- Asset performance report (MIS)
- Generation tracking against Targets
- Basic Analytics

## Monitoring

- 24\*7 Active Monitoring
- Alerts & Watch list management
- Outage Management
- Weather monitoring

## Ticketing

- Automatic inputs
- Performance Management

## Field Ops

- Alerts Management
- Situational Awareness
- Mobile Portal

## Advanced Analytics

- Trend analysis
- Early fault prediction
- Rule Engines for Predictive Intelligence
- Forecasting models

## Power Forecasting

- Weather modeling
- Intraday/Nextday/Short Term Forecast

*Reactive..... to Active..... to Proactive Management*

# Our Approach



- Data munging
- Data Ingestion
- Data mining
- Research & Innovation
- Visualization
- Predictive Algorithms
- Asset Behavior
- Audits / Inspections
- Inventory management
- Component level expertise
- Resource forecasting
- Productionalised
- LOMO technology
- Remote access
- Robust, scalable
- Single source of data access
- Secured back up
- Cost Reduction
- Prevention of breakdowns
- Increase data utilities
- Increase Reliability and Performance

***Right data and getting the data right to enable better decisions !***

# Predictive Analytics

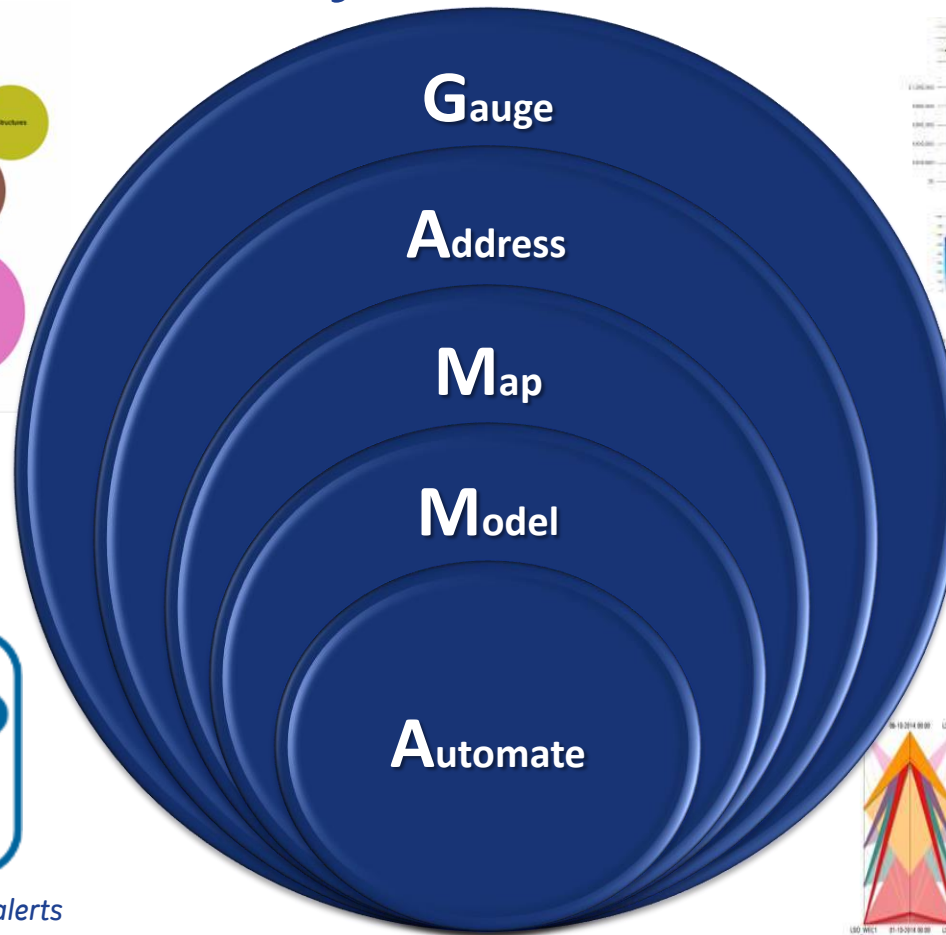
TM



Visual Analytics

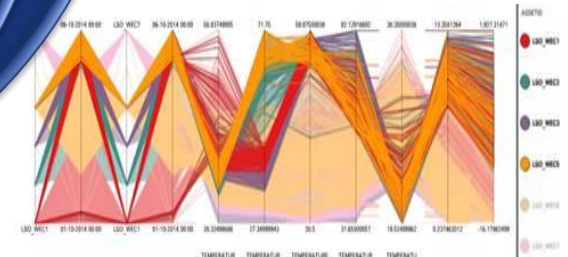


Automated rule based alerts



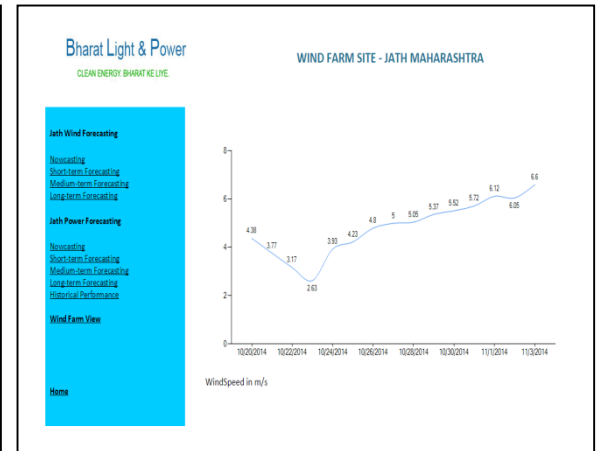
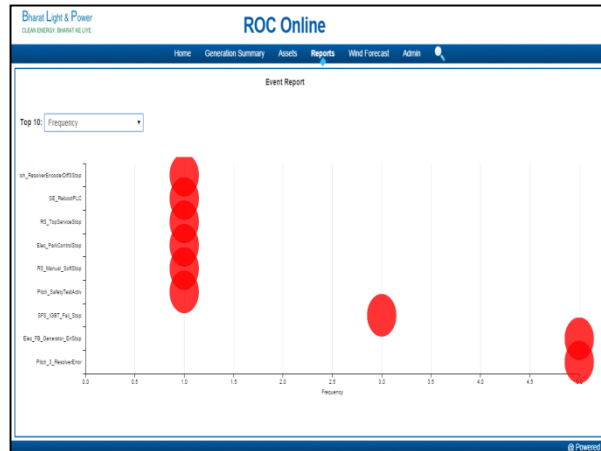
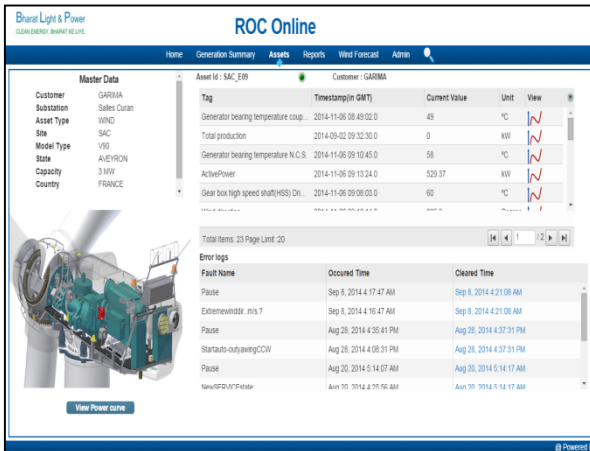
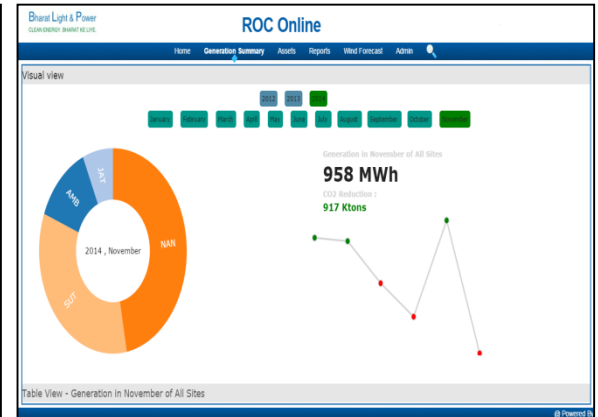
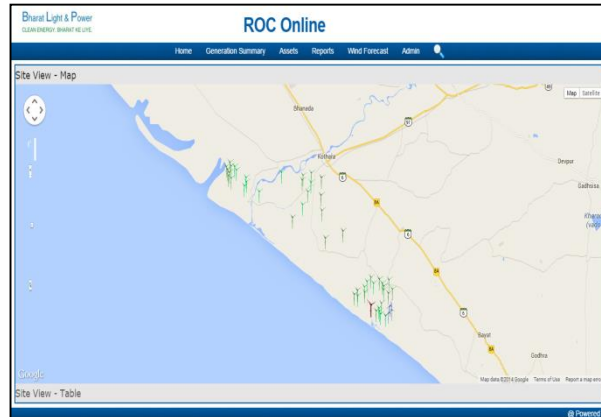
Predictive Modelling

Cognitive Approach



**BLP 5 Step GAMMA Approach for predictive intelligence leading to increased operational efficiency**

# Customer Portal

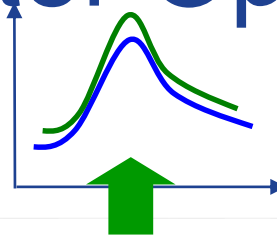


Integrated Platform for all Apps...Monitoring, Reporting , Ticketing and Power Forecasting...



# Building Smarter Operations

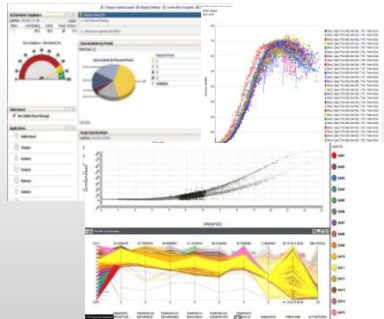
Optimized portfolios



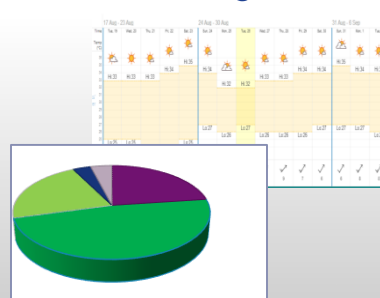
Monitoring & Ticketing



Reporting & Analytics



Forecasting & Scheduling



Field Strategy

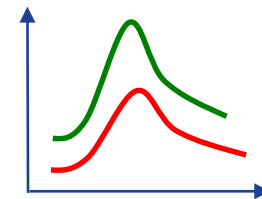


Learning & Development



Data and Cloud computing

Renewable Online & Historical Data



# New World Order





# Being Efficient...



***Effective utilization of smarter tools to be Energy Efficient***

Bharat Light & Power, Confidential



# Smart Cities...

## MASDAR



## SONGDO





# Fossil Fuels



# Renewable Fuels



Polluted  
Air



Clean Air





# Centralized Grid



# Decentralized Grid





# Consumer



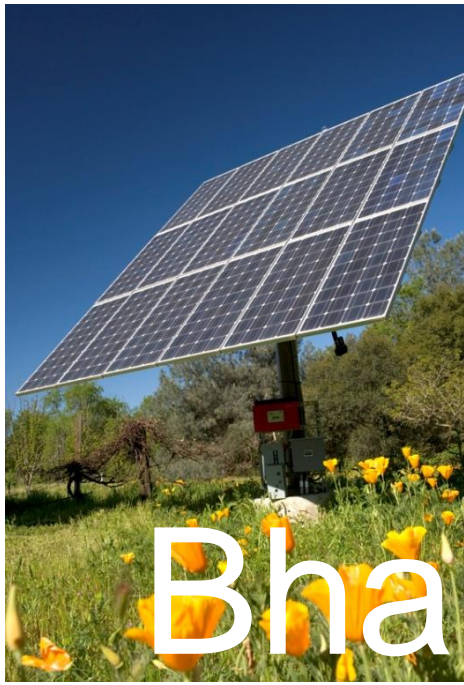
# Prosumer



# Future is NOW !







# Bharat Light & Power