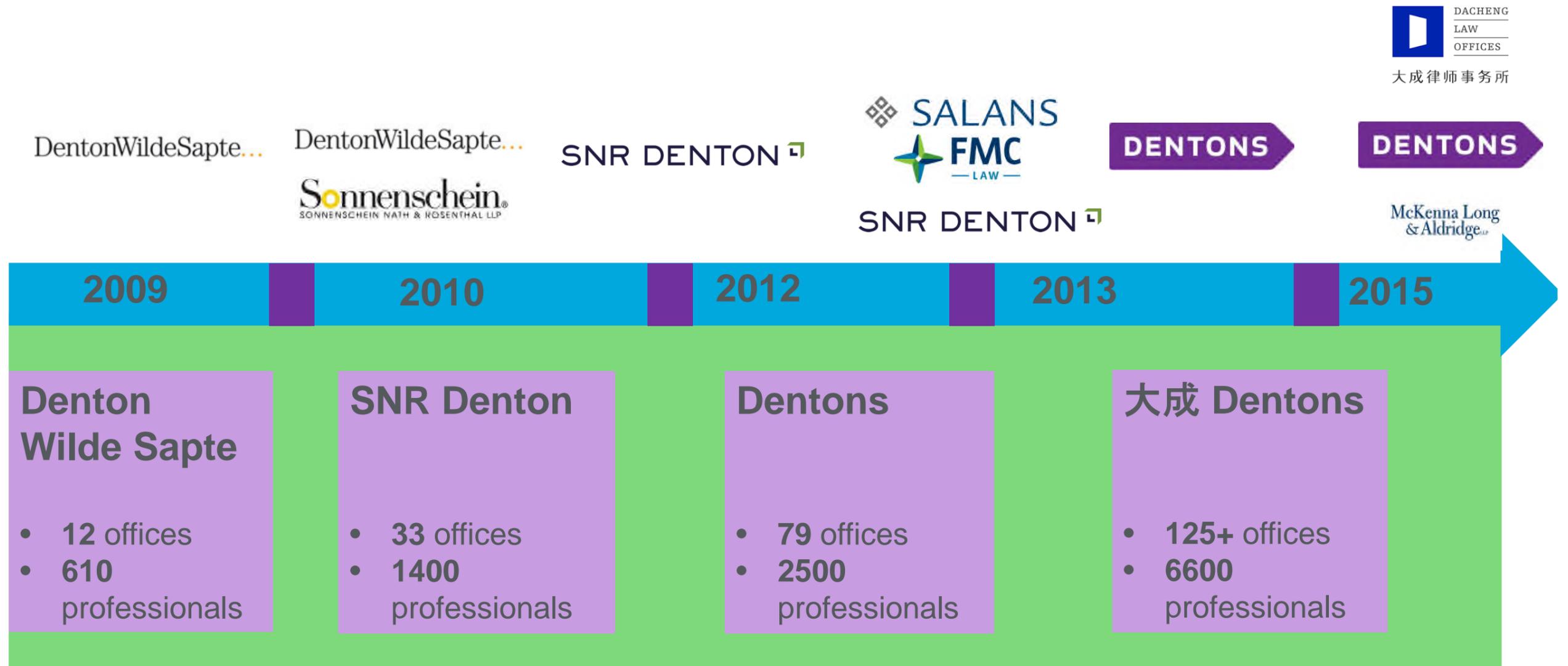




Christopher McGee-Osborne
Partner
Dentons, London

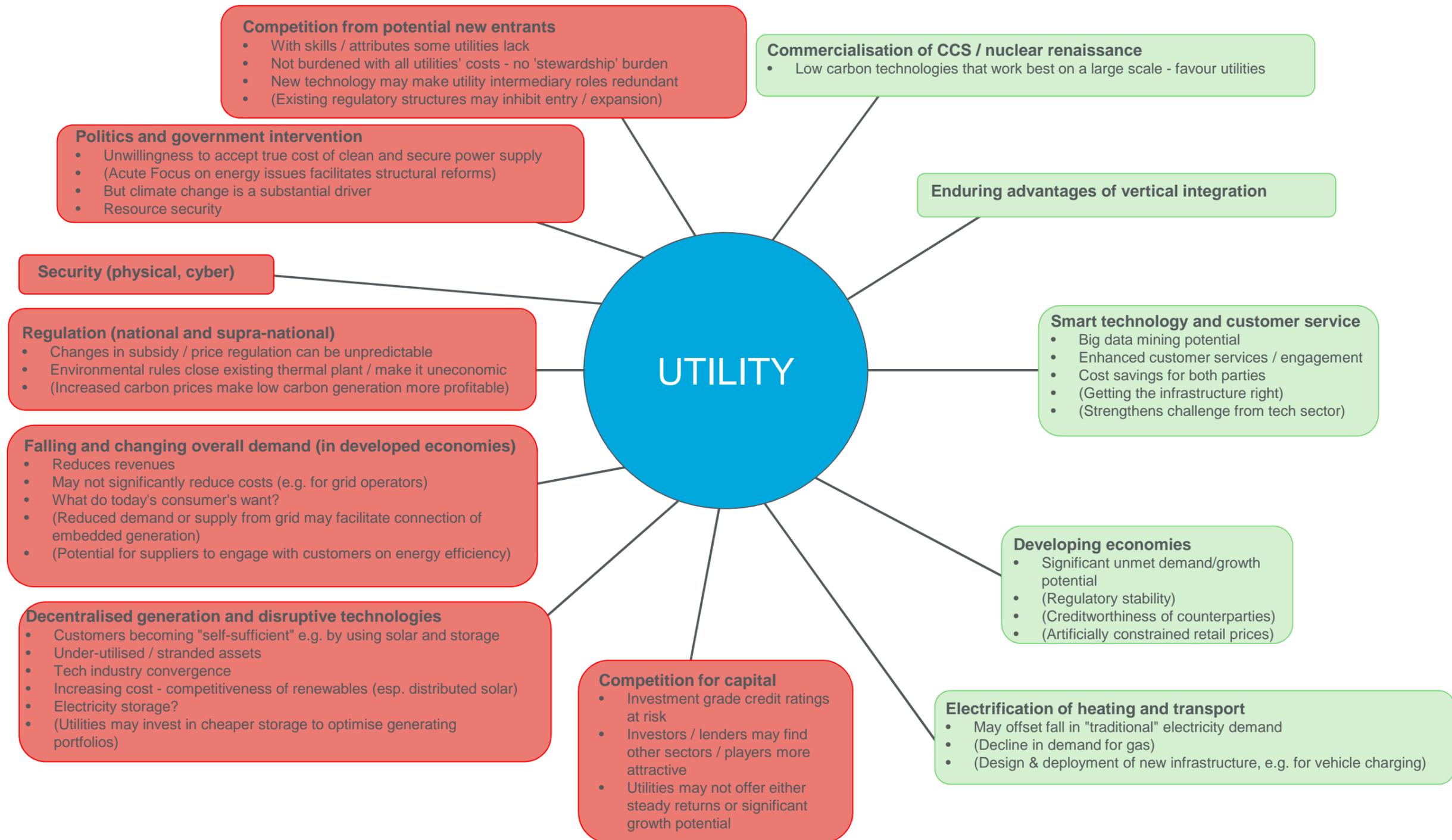
Our story - Building a global firm



CHALLENGES FOR THE TRADITIONAL UTILITY MODEL

POTENTIAL THREATS (WITH MITIGATING FACTORS)

POTENTIAL OPPORTUNITIES (WITH ISSUES TO MANAGE)





DENTONS

Doyle N Beneby
President and CEO
CPS Energy

DENTONS GLOBAL ENERGY SUMMIT 2015

**RESETTING THE TRADITIONAL
UTILITY MODEL**

*DOYLE N. BENEBY
PRESIDENT & CEO
CPS ENERGY
APRIL 2015*

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TRADITIONAL UTILITY MODEL - THINK GLOBAL, ACT LOCAL



- Continued focus on central station generation, long-haul transmission
- Technology initiatives focus on improving the existing integrated system
- May see reduced loads due to energy efficiency and distributed resources, but customers do not secede
- Utilities driving the “discussion”

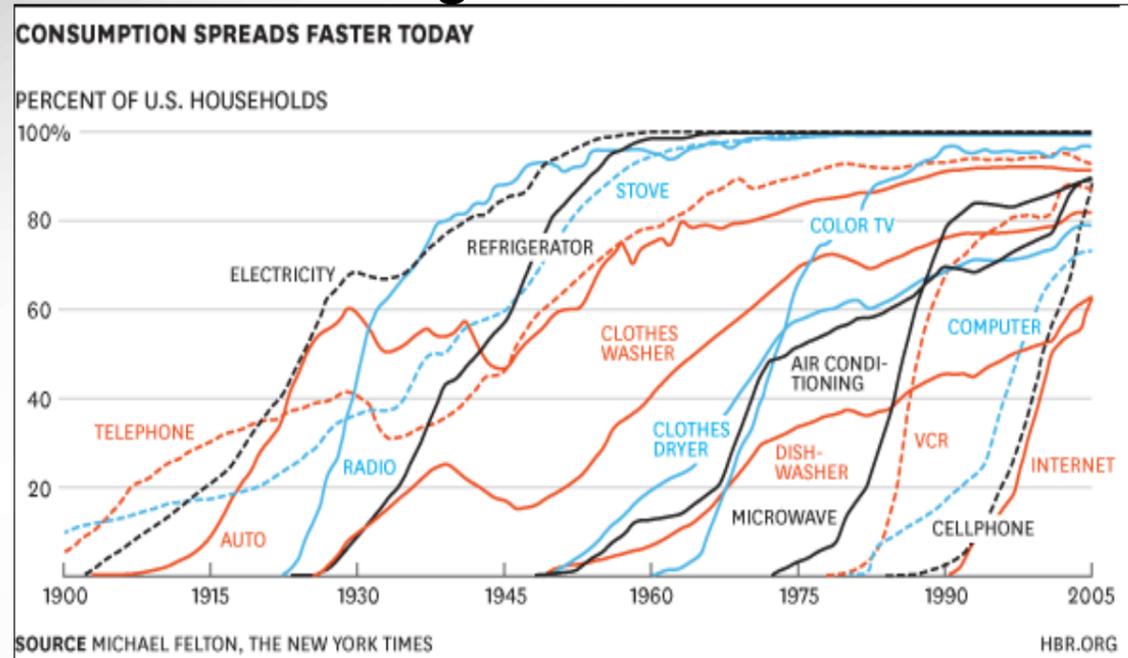
***Business case:
Generate power and deliver to the meter***

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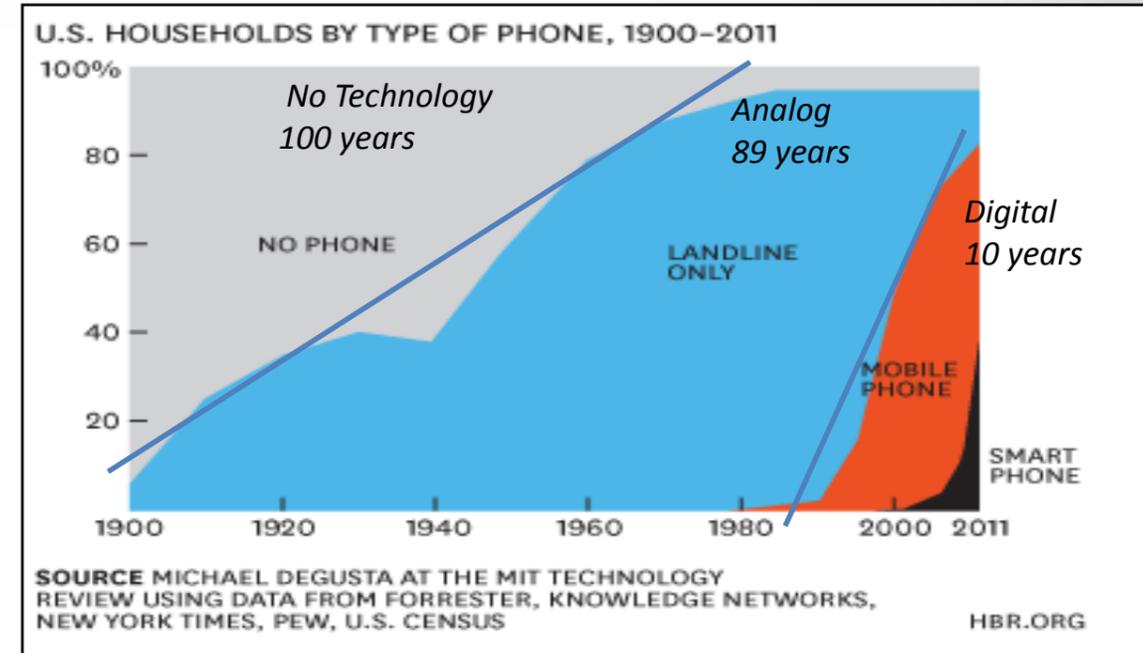


DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL-TECHNOLOGY ADOPTION CURVE

Change is Inevitable



OT/IT Convergence



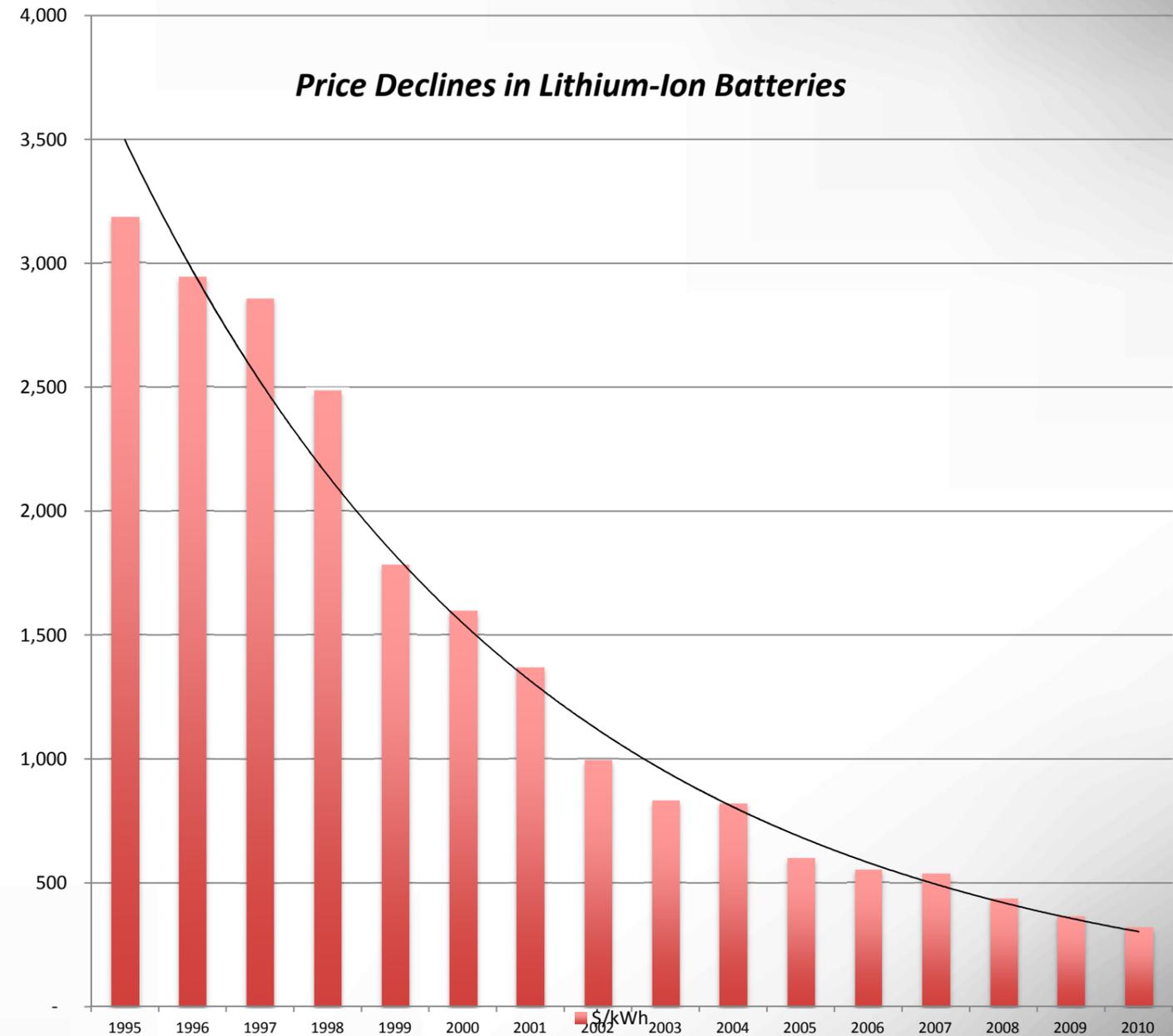
Emerging technologies will continue to be more automated and less invasive while providing greater value.

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DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL- BATTERY STORAGE PRICE DECLINE

- Pricing of lithium-ion batteries fell by 20% in 2014 with the possibility of prices falling another 15% in 2015

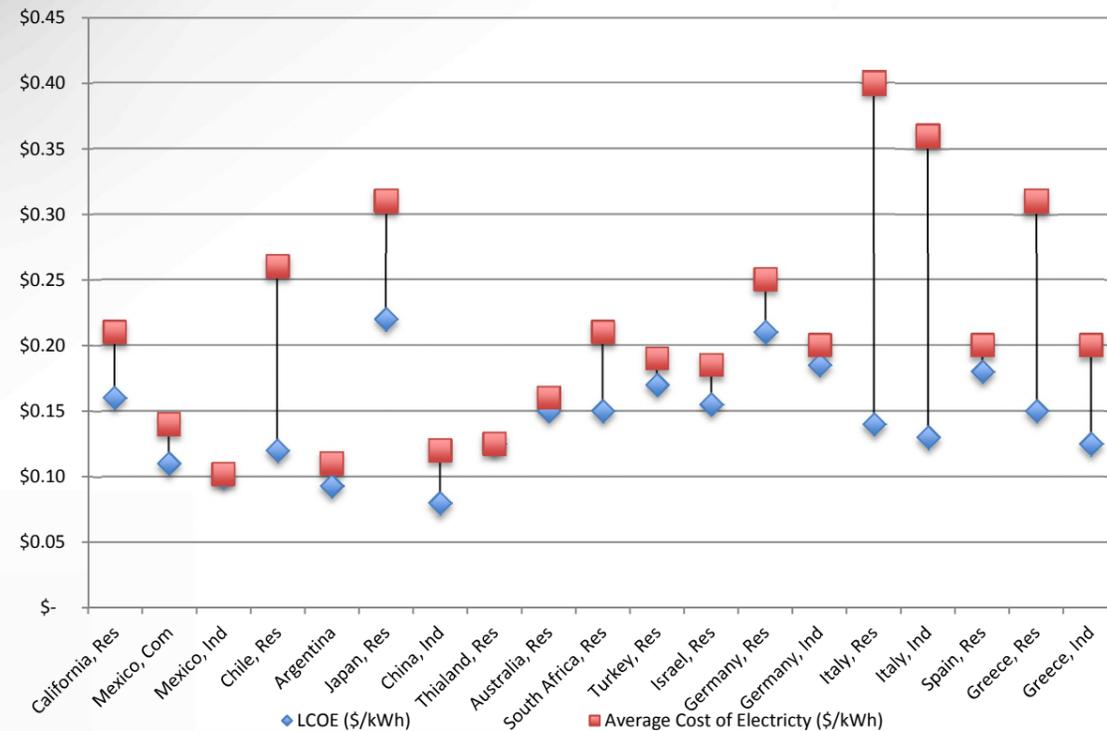


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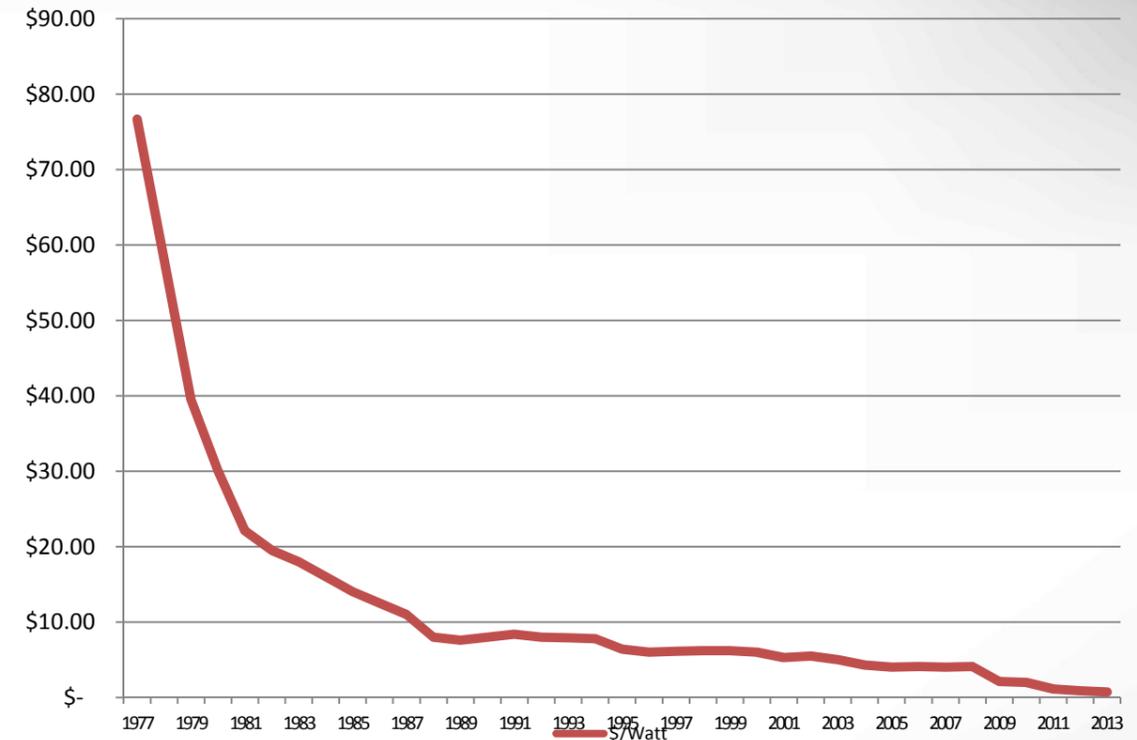


DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL- SOLAR PRICE DECLINE

Global Markets at Grid Parity in 2014



U.S. Solar PV Panel Cost



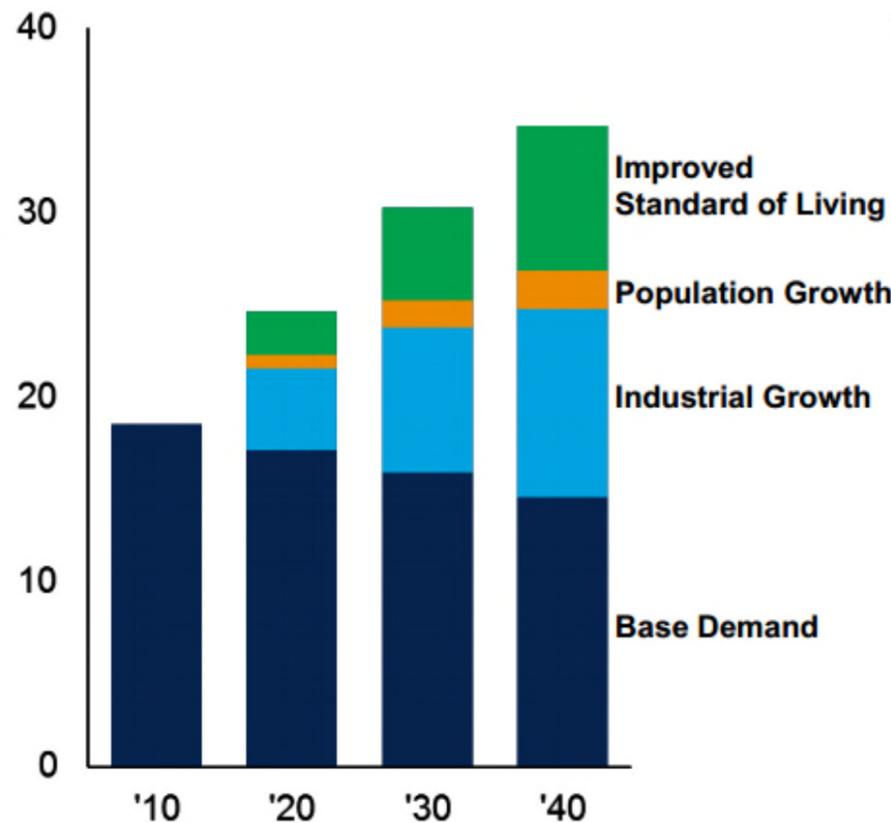
Solar becoming competitive without incentives

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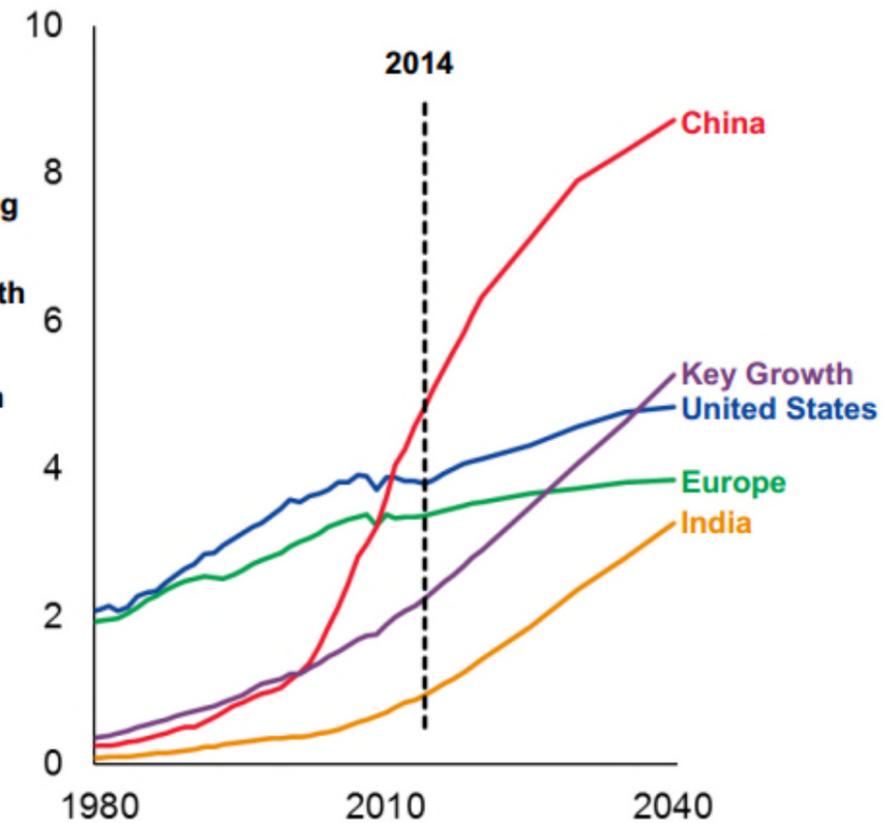


DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL-FLATLINING DEMAND

Electricity Demand
Thousand TWh



Electricity Demand by Region
Thousand TWh



U.S. /Europe demand flatlining, ROW increasing due to industrialization and improved standard of living

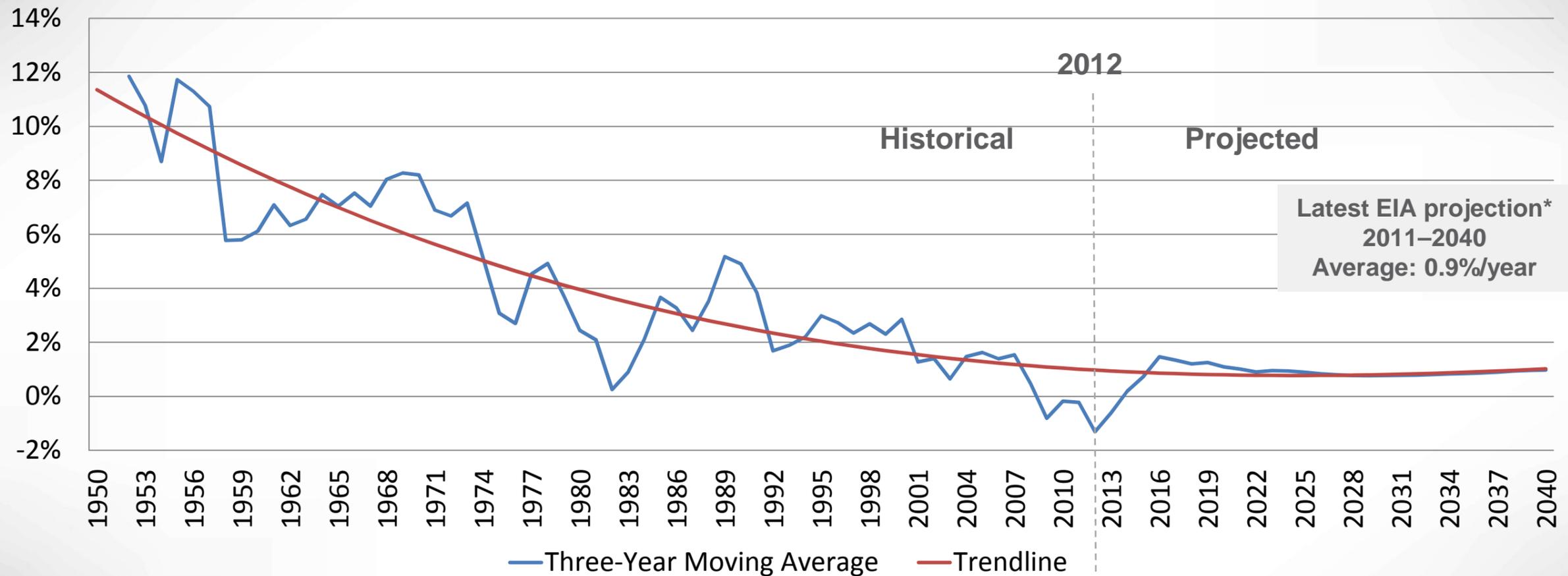
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*source: ExxonMobil 2015 Outlook for Energy

DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL- FLATLINING DEMAND

U.S. Electricity Demand Growth
(Annual and Moving Average in %)



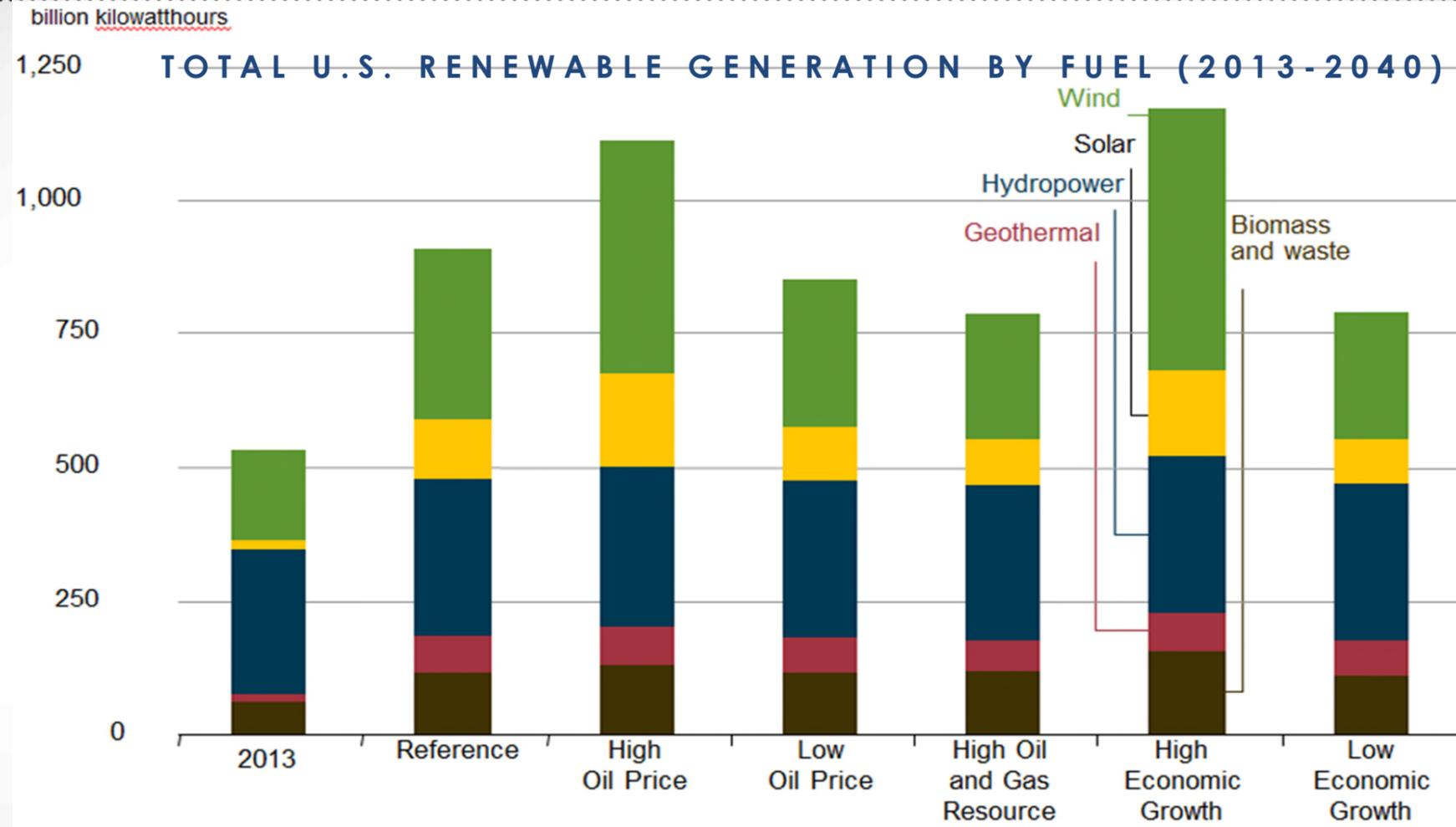
Primary product of electric utilities continues to decline year over year

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Sources: *EIA, Annual Energy Outlook 2013; EIA

DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL- INCREASE IN RENEWABLE RESOURCES

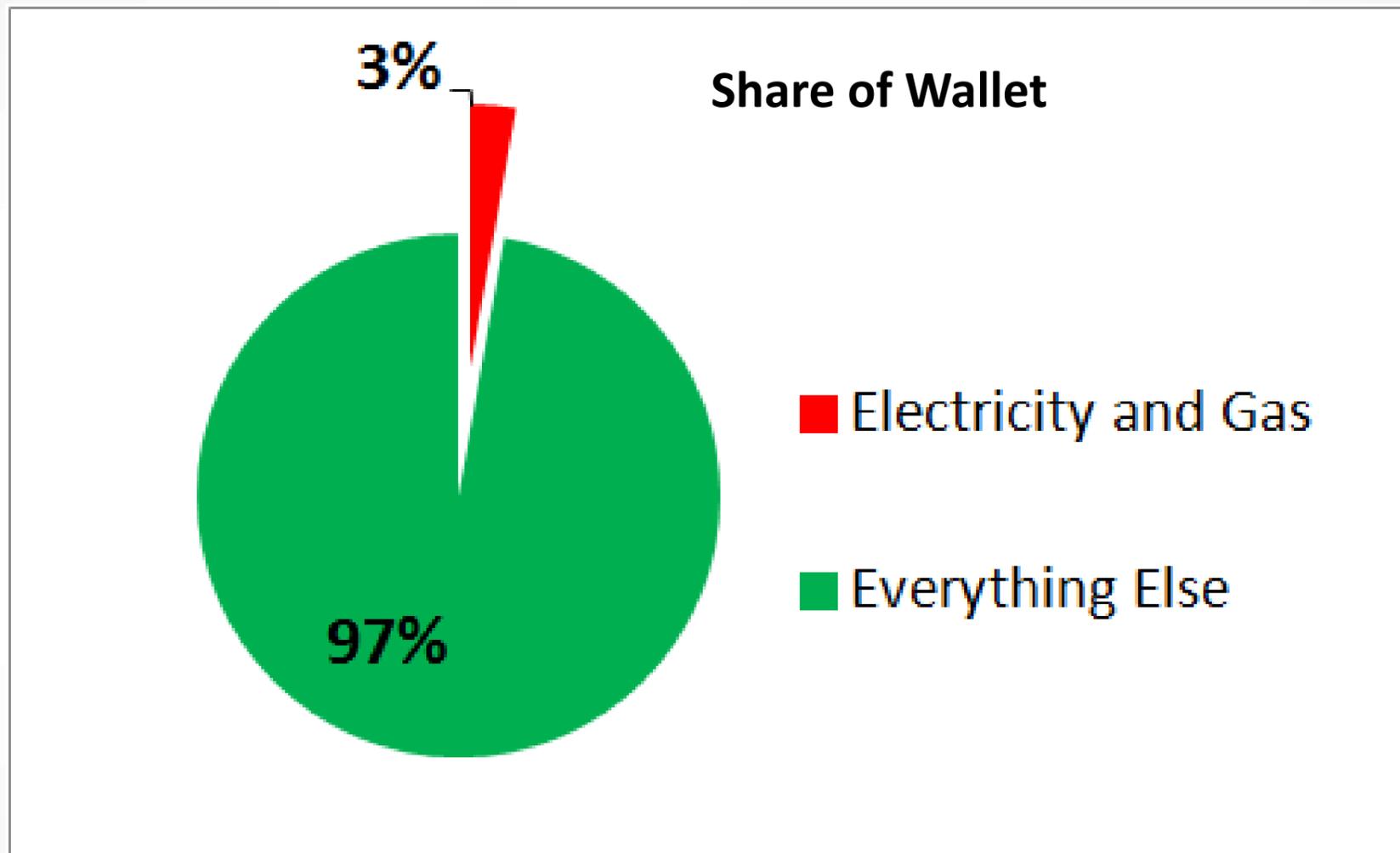


In high and low economic growth projections, renewable generation grows more than 40% by 2040

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DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL-CUSTOMER BEHAVIOR



Analytics and understanding customer behavior is critical to future growth

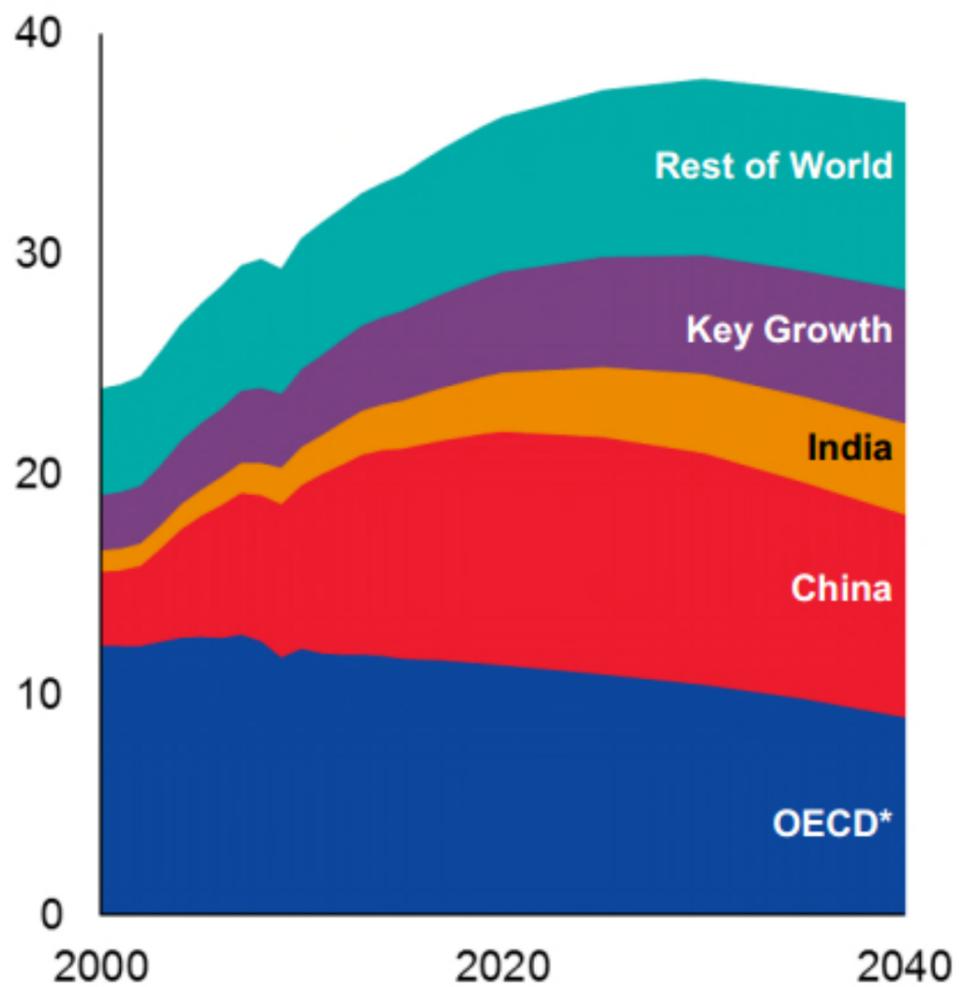
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DISRUPTIVE AGENTS TO THE TRADITIONAL MODEL- CLIMATE/CARBON "POLITICS" DRIVING REGULATORY ACTIVISM

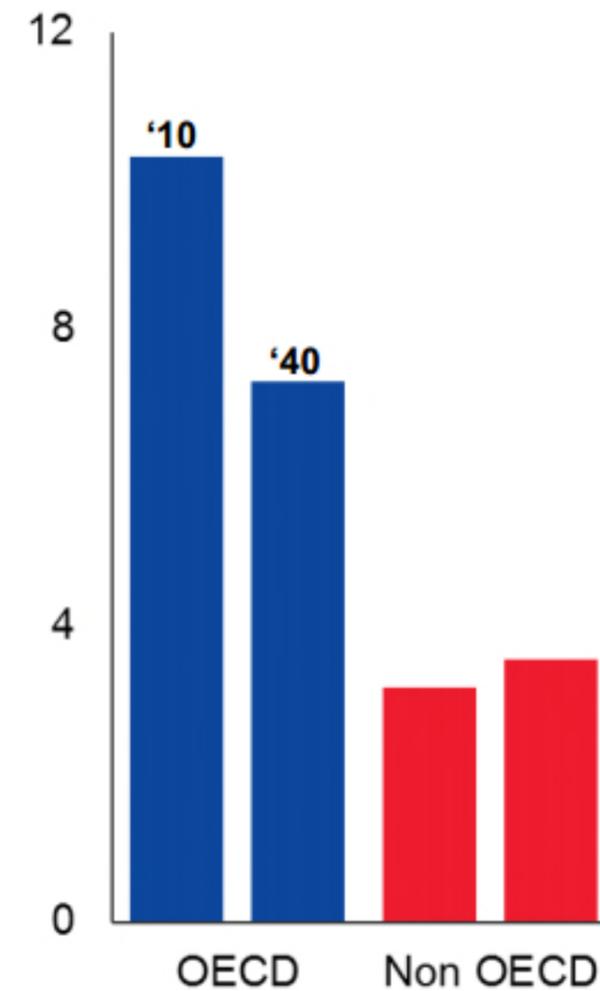
CO₂ Emissions by Region

Billion metric tonnes



Emissions per Capita

Tonnes / Person



A F F O R D A B L E : R E L I A B L E : I N N O V A T I V E



*source: ExxonMobil 2015 Outlook for Energy

FUTURE UTILITY MODEL- THINK LOCAL, ACT LOCAL

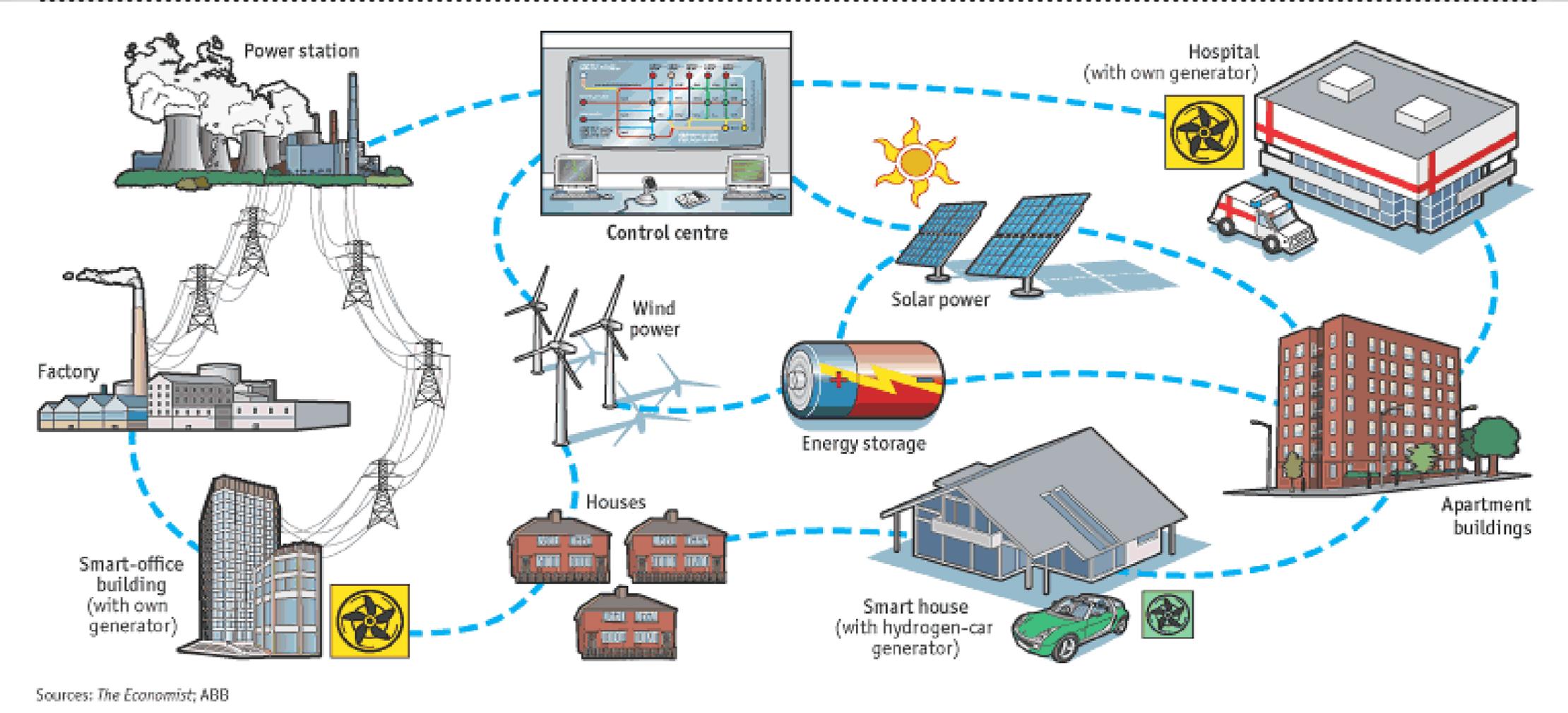
- Disaggregated Supply and Demand
- High penetration of DG (combined heat & power and renewables)
- Emergence and increased penetration of microgrids
- Initiatives focus on integrating new grid components
- Others driving the “discussion”



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FUTURE UTILITY MODEL



Business Case: Open architecture and interoperability leverage innovative technologies to provide the most value

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FitchRatings

Resetting the Utility Model - Global Context & An Asian Perspective

**Andrew Steel, Managing Director
Head of Asia-Pacific
Corporate Ratings Group**

April 2015

Agenda

Meeting Growing Demand

Realities For A Low Carbon Future

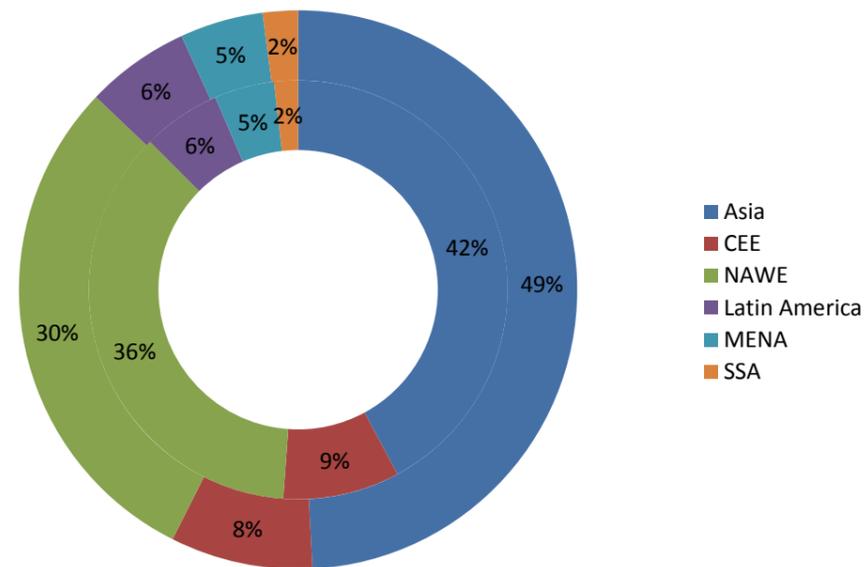
Politics & De-carbonisation

Utility Challenges

Investment & Structural Change

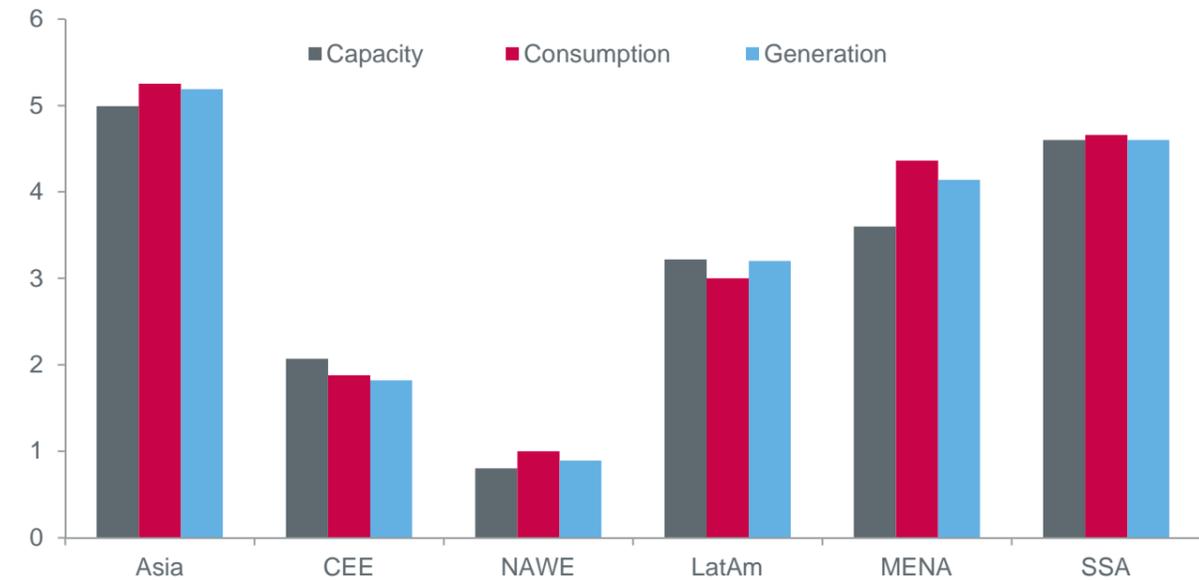
Global Capacity and Expansion

Global Generation By Region 2014 vs 2024f



Source: EIA, BMI, Fitch

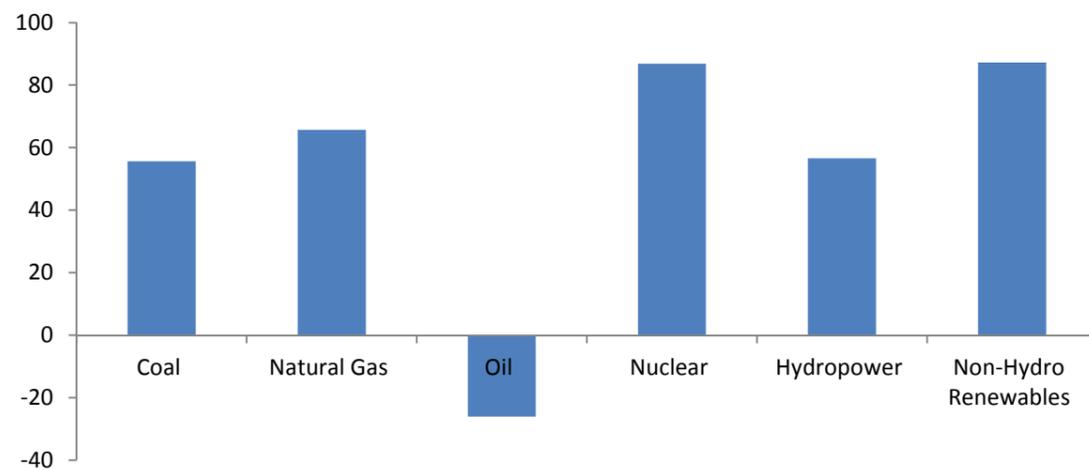
Global 10yr pa Growth Forecast Capacity, Demand & Supply



Source: EIA, BMI, Fitch

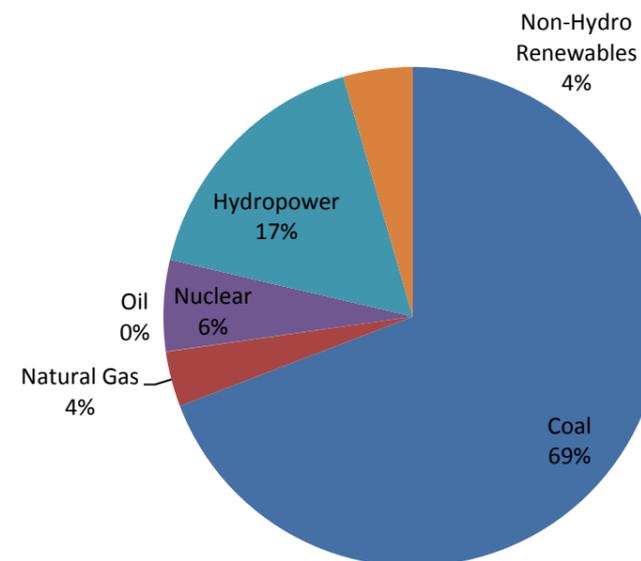
Low Carbon Optimism, But Gloomy Reality

Electricity Generation By Type, 2015f-2024f , % chg



Source: EIA, Global Carbon Atlas, BMI, Fitch

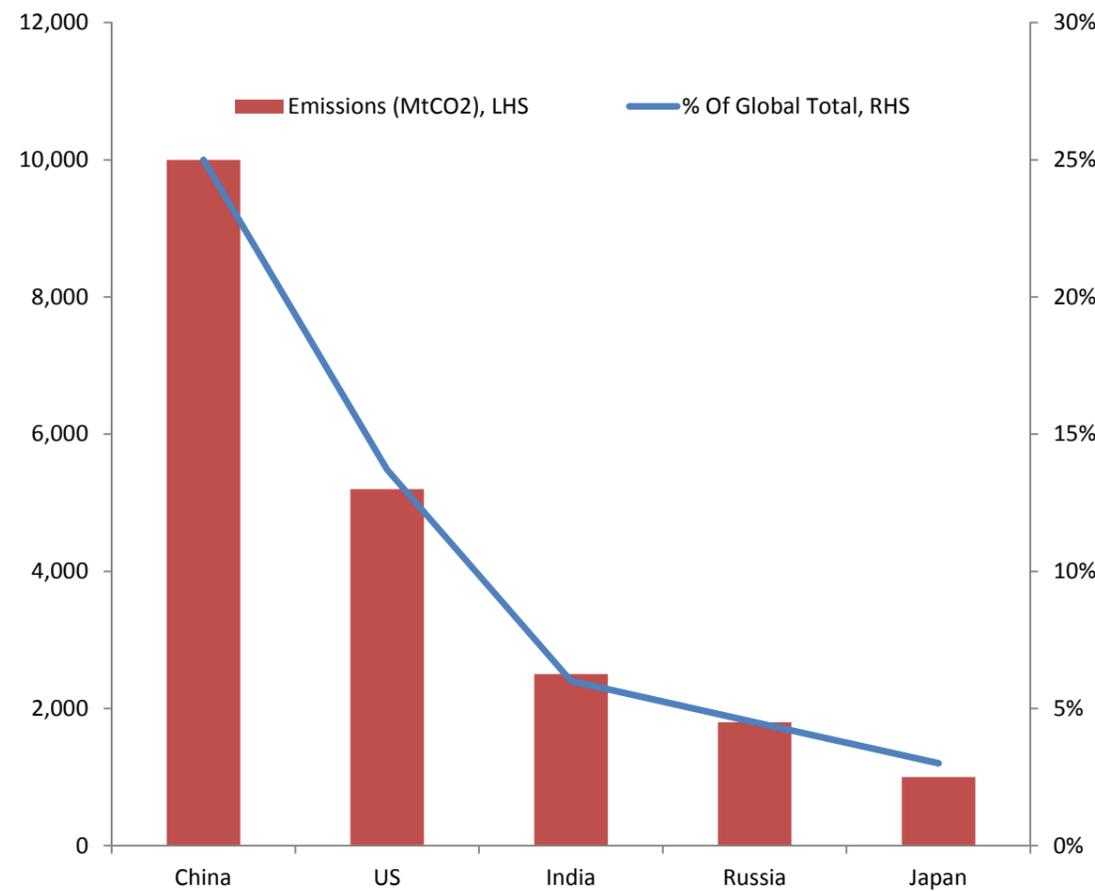
China Electricity Generation By Type, 2024f (%)



Source: EIA, Bloomberg, Fitch

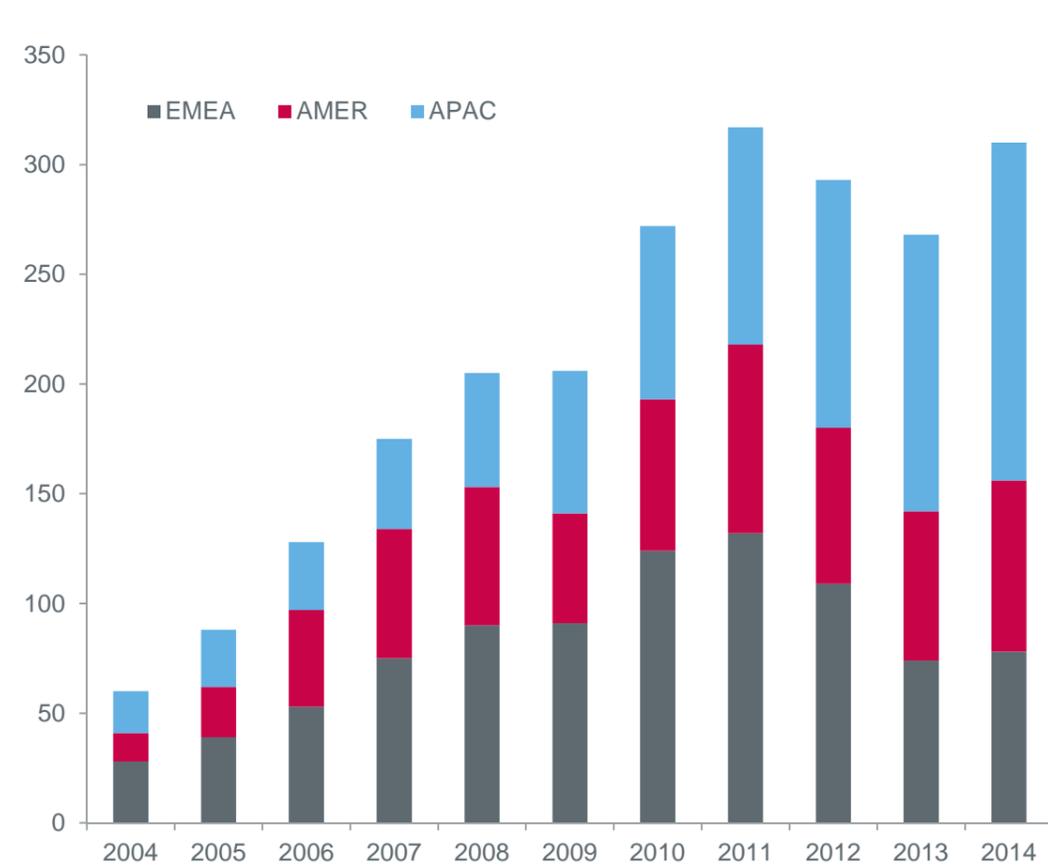
Politics & De-Carbonised Energy Markets

Total Emissions By Country (MtCO2) 2013



Source: EIA, Global Carbon Atlas, BMI, Fitch

Total p.a. Renewables Energy Investment By Region (US\$bn)



Source: EIA, Fitch

Utility Challenges

Distributed Generation v's Central Model

- What are the real drivers?
 - Costs
 - Politics
 - Uncertainty
 - Responsibility
 - Environmental
 - Accountability
- What are the Implications?
 - Grid structure
 - Consumption patterns
 - Capital Investment
 - Service culture
 - Reliability
 - Security
 - Consumer expectations

Investment & Structural Change

Overall Costs & Capital Allocation

Efficiency of investment

- Economies of scale
- Funding sources
- Subsidisation
- Long term future



People in pursuit of answers

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John Cunneen

Former Executive Director and
Member
Authority for Electricity
Regulation, Oman

Dentons Global Energy Summit

21 April 2015

Resetting the Utility Model

A Regulatory Perspective

John Cunneen

Previously with

OFFER Scotland;

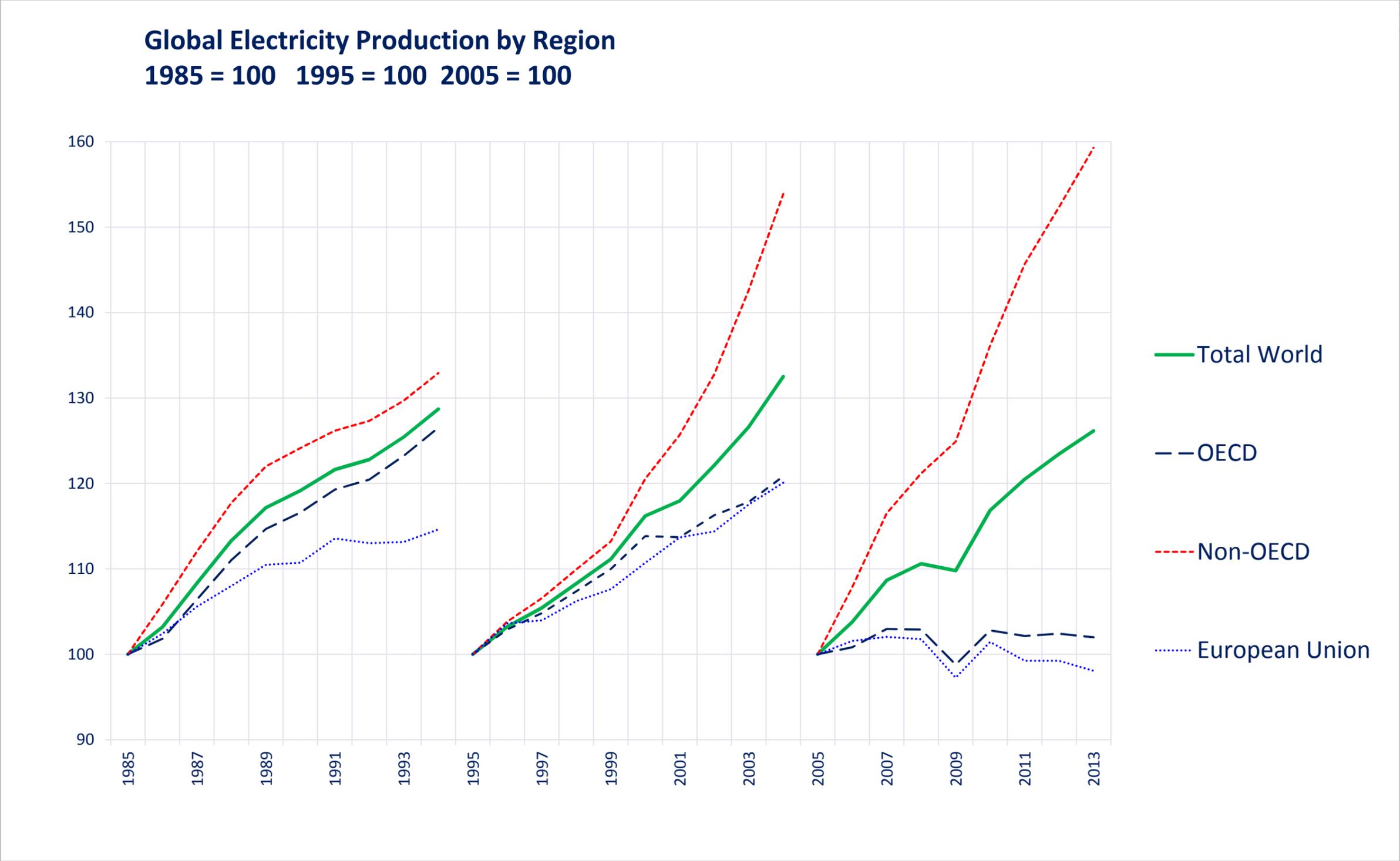
Abu Dhabi Regulation & Supervision Bureau;

Executive Director & Member Authority for Electricity Regulation, Oman

Presentation Outline

- WHY? do Utilities need to change?
- HOW? will energy markets and Utilities evolve?
- WHAT? is expected of regulators?
- BUT! Governance & Policy
- Concluding comments

Why do Utilities Need to Change?



How might Utilities evolve?

Present

Multiple models ...



From full Vertical Integration...

To competitive 'Generation' and 'Supply' segments

Future Possibilities

Only operates the grid, does not own generation, offers no services beyond grid integration.

SMART Integrator

Distribution

Transmission

'Continuum of Options'

Energy Services Utility

Distribution

Transmission

Generation

Owns generation, operates the grid, and offers many services to Customers and market participants.

Sources: The Future of the Utility Industry and the Role of Energy Efficiency, ACEEE 2014 & SMART Power, Climate Change, the Smart Grid and the future of Electric Utilities, Fox-Penner 2010

What is expected of Regulators?

A lot, perhaps too much! Some regulatory challenges:

- (i) Will be **fairly straightforward**: Cost Allocation to support Decoupling; separation of Fixed and Variable Costs and price signals for DSM ;
- (ii) Some will be **more difficult**: How to incentivise ‘innovation’ and related uncertainties; how to strengthen incentives for Energy Efficiency investment; how to ensure efficient allocations of network costs to different types of Users’;
- (iii) While some imply an **increased scope of Utility Regulation**:

“Traditionally, utility investment decisions are based on achieving the lowest present value of the revenue requirements (i.e. the annual level of revenue that the regulator allows to be collected through rates) ...

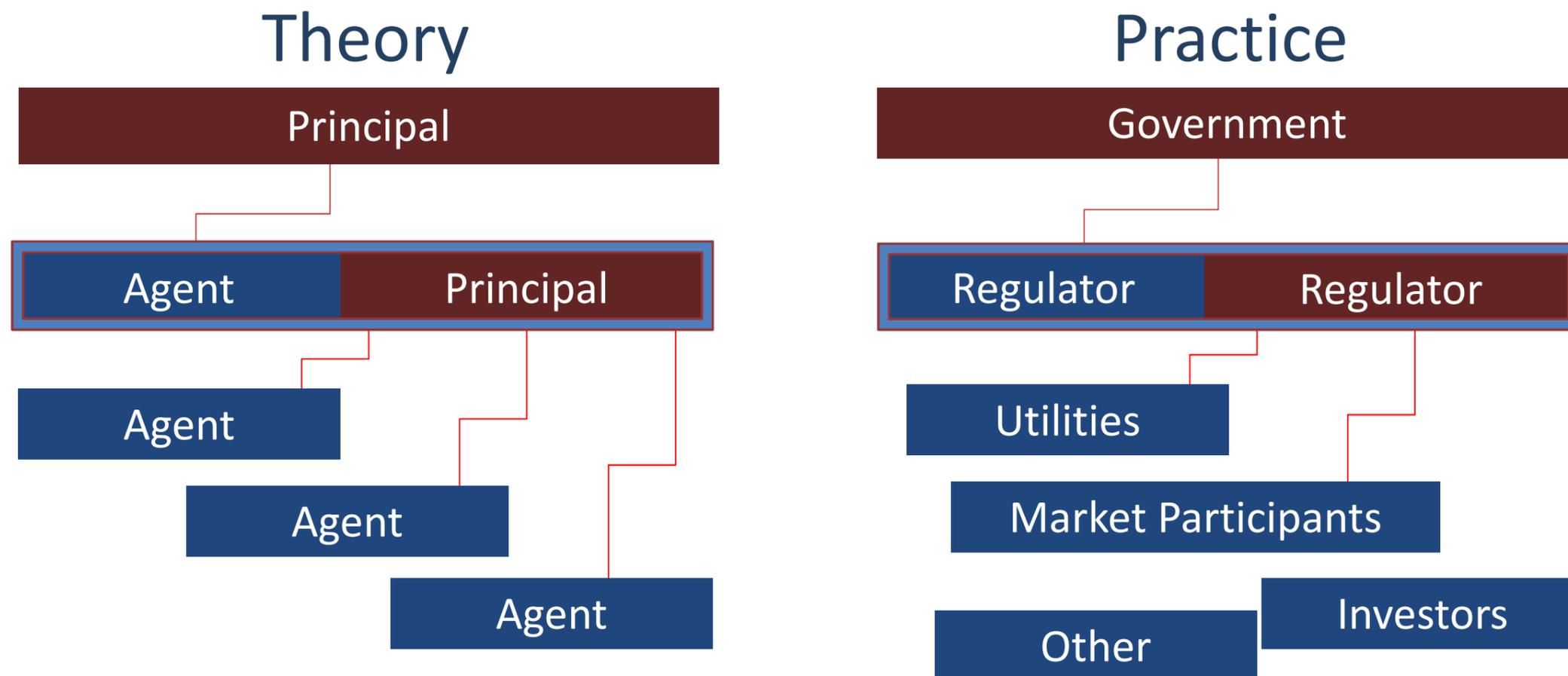
..... However, in the case of smart grid investment, much of the reduction in future expenses are realised by the consumer or the larger community , not the Utility...Using the traditional approach to valuing investments will almost assuredly show, at least at this time, the smart grid investments will not reduce utility expenses enough to justify expenses. But if one considers the potential benefits of using a smart grid that are outside of the utility, this calculus may change”

Source: Fox-Penner, (2010), page 52 quoting Illinois Smart Grid Initiative report

Policy & Governance

A Review of energy market reforms since the 1970s suggests:

- (i) Clear policies help mitigate against (investment) uncertainty
- (ii) Clearly assigned roles supports focus and improved performance
- (iii) Policy consistency and regulatory coherence are essential



So fundamental change based on clear policy – Regulators are ‘policy takers’ not makers:

Concluding comments

- Transition to new Utility framework (in some countries) already underway but (i) significant uncertainties and (ii) will take time;
- Regulators have an important role to play in this transition:
 1. To support innovation and the adoption of ‘disruptive’ technologies with no disruption to security of Supply;
 2. To encourage investment and ensure competitive pressure is applied throughout the Supply chain;
 3. To advocate for government policies to support enhanced scope of Utility regulation (e.g. enhanced CBA); and
 4. To ensure Customers actually benefit from technologies they will be required to fund.

Thank you.....

Grzegorz Gorski
Executive Vice President,
Innovation, Marketing & New
Business
GDF Suez

Dentons Global Energy Summit

Grzegorz Gorski – GDF SUEZ, EVP Innovation, Marketing & New Business
21 April 2015 - London



GDF SUEZ
BY PEOPLE FOR PEOPLE

Energy sector undergoing fundamental changes

- RES revolution with PV industrialization and costs decrease
- Minimalization of generation assets size (:1000, :1000)
- Rooftop PV in "socket parity" in more and more countries
- Digital revolution enabling smart management of mini and micro assets
- Shift in customer behaviour, emergence of prosumer

- ...and effect of all of these amplified in Europe by regulatory flaws and shale revolution in the US

Where the energy sector is heading ?

- Batteries (beyond meters) industrialization and costs decrease similar to PV
- Batteries market overcapacity and effect on prices
- Rooftop PV plus battery winning combination
- Will the electricity grid remuneration mechanism remain?
- Will the centralized grid remain? At what scale?

- ...so is the future of grid utilities as promising as consensually expected?

Why GDF SUEZ is different from its peers

- **International presence**

- Biggest IPP in emerging economies where energy sector is still « business as usual »
- Building renewable generation assets where fundamentally attractive

- **Service business line, world leader with +100K staff**

- The most innovative and customer centric part of the Group
- Allowing creation of new value proposition for our 25 million European customers

Clear strategy roadmap with two overarching ambitions

- **Be the Benchmark energy player in fast growing markets**
 - Leverage on strong positions in IPP
 - Develop our presence around the gas value chain
 - Globalize energy services leadership positions
- **Be leader in the energy transition in Europe**
 - Be the Energy Partner of choice for your customers while promoting energy efficiency
 - Be a vector of decarbonization through renewable energy
 - New businesses / digitalization

**Benefit from integrated business model
to capture opportunities along the value chain**

Innovation, Marketing and New Business Organization

Set up early 2014 as a step in realisation of our strategy

