

#REMforum

9th St. Gallen Forum for Management of Renewable Energies
May 31 – June 1, 2018 – Olma Messen St. Gallen

#DisruptiveDecentralization – Introduction to the Conference Theme

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 @wuestenhagen

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A warm welcome to all of you – in particular to participants and alumni of our executive education programme REM-HSG

Executive Education Programme
Renewable Energy Management (REM-HSG)

Visit the
REM Alumni Lounge



www.es.unisg.ch/rem

Ingredients of #DisruptiveDecentralization



Rooftop PV

Storage

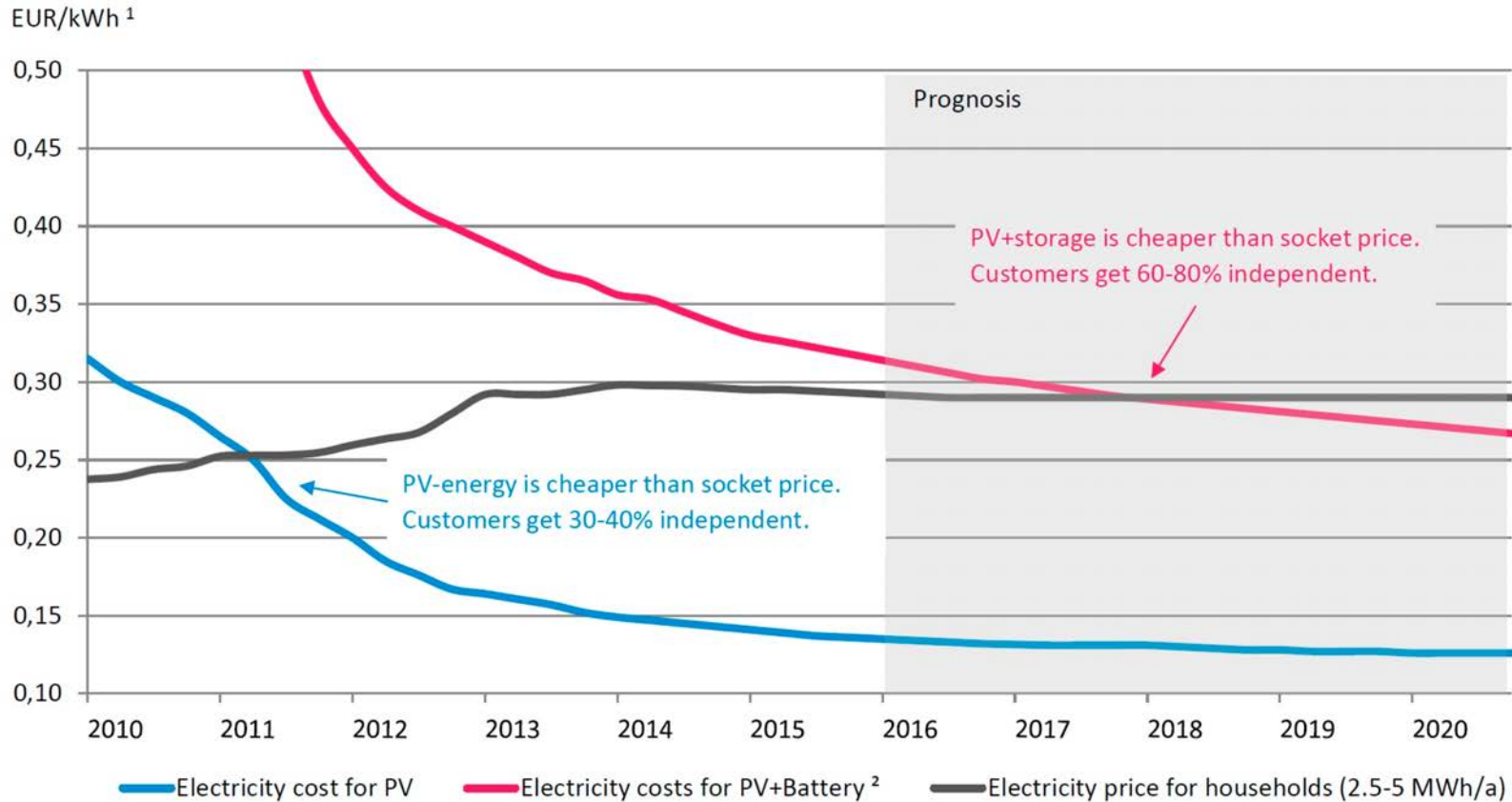
Electric
Mobility

Demand-
Side
Flexibility

IT-
enabled
Peer-to-
Peer
trading

Economics of #DisruptiveDecentralization (1)

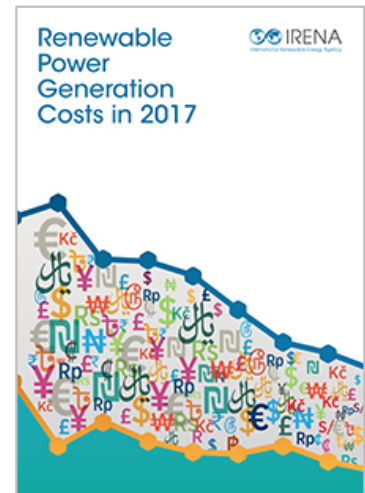
Learning curves enabling grid parity of PV+storage



Moore & Shabani 2016

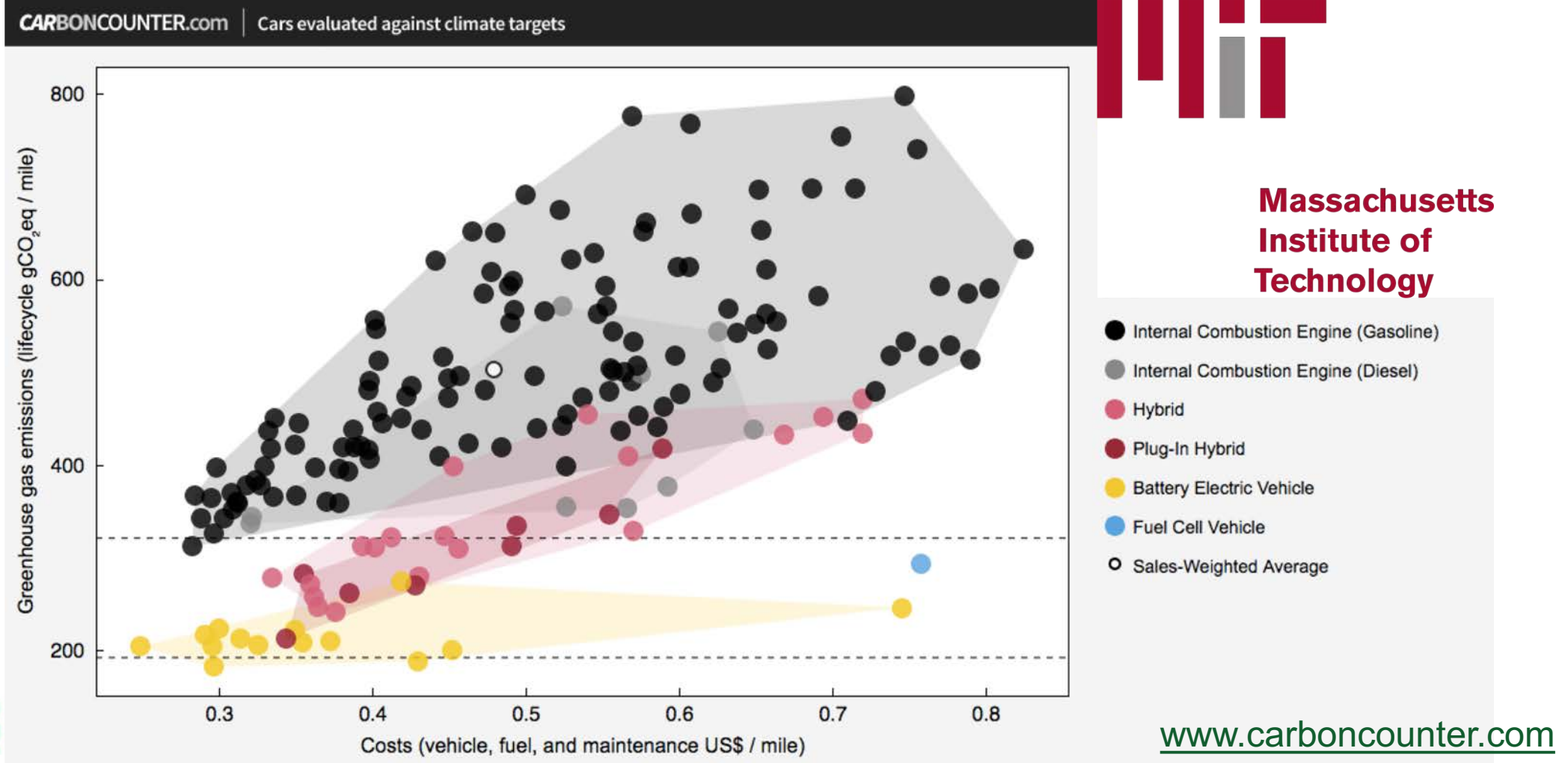
¹ Model calculation for rooftop systems, based on 802 kWh/kWp (Frankfurt/Main), 100% financing, 6% interest rate, 20 year term, 2% p.a. O&M costs

² based on 5,000 cycles, C2, 87% efficiency



Economics of #DisruptiveDecentralization (2)

Electric cars: lower emissions, competitive life-cycle cost



Economics of #DisruptiveDecentralization (3)

It's not just about cost, but also customer value



Jess Shankleman ✓

@Jess_Shankleman

Following

The economics of electric vehicles get thrown out the window if they become cool enough, says BP chief economist Spencer Dale. #BNEFSummit

3:22 PM - 11 Oct 2016

9 Retweets 11 Likes

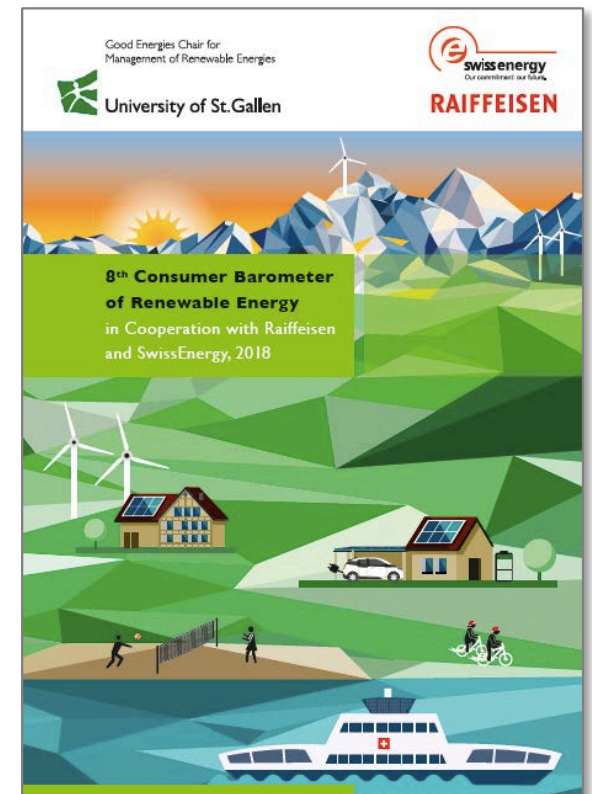


Markets

Shell CEO Says His Next Car Will Be Electric

By [Jess Shankleman](#), [Manus Cranny](#), and [Rakteem Katakey](#)

27. Juli 2017, 11:39 MESZ Updated on 27. Juli 2017, 14:22 MESZ



> 11:55 a.m.

Audience Polling Q1

Can you imagine buying* an electric car?

1. Yes, I already have one
2. Yes, I can imagine buying an electric car, but haven't decided yet
3. No, I prefer buying a car with an internal combustion engine
4. No, I don't have a car and do not intend to get one



*) or leasing

The flip side of #DisruptiveDecentralization: Some of the world's largest industries are at risk



base-load
power plants



peak-load
power plants



central
storage



oil & gas



automotive
industry

Menu of options for incumbents

1. Step up investment in decentralized assets
2. Write down stranded assets
3. Get acquired by Asian investors
4. Lobby the government to slow down the transition



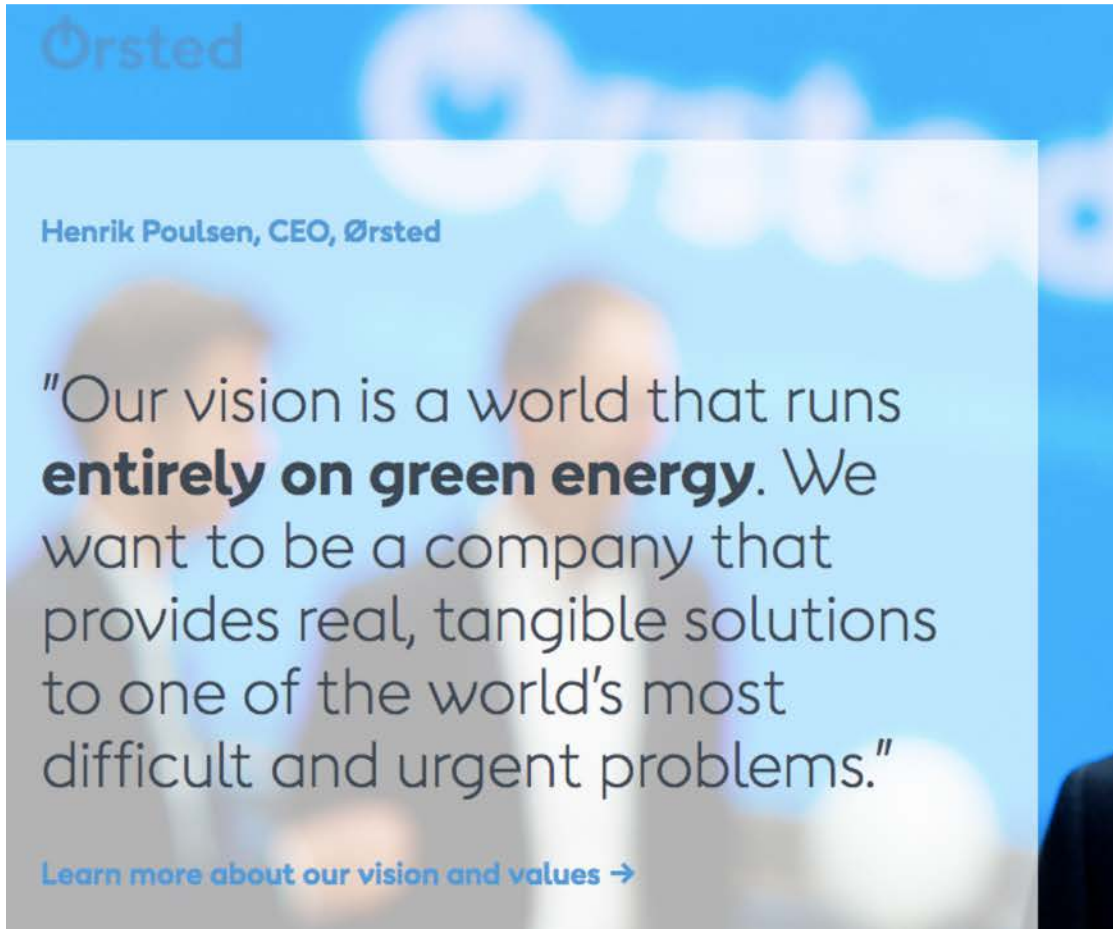
Audience Polling Q2

How are the majority of European incumbents currently responding to #DisruptiveDecentralization?

1. Significantly stepping up investment in decentralized assets
2. Writing down stranded assets
3. Getting acquired by Asian investors
4. Lobbying the government to slow down the transition



#1: Some firms are seriously changing gears



Shell beteiligt sich an 60-Millionen-Runde für Sonnen: gruenderszene.de/automotive-mob

...

 Translate Tweet



12:02 PM - 23 May 2018

#1: Some firms are seriously changing gears



NACHHALTIGKEIT

Die E-Mobilität ist in den Köpfen angekommen



von **FRANK APPEL**

Dezember 19, 2017



Deutsche Post

#2: For others, stranded assets are a reality

BUSINESS | EUROPE | EUROPEAN BUSINESS NEWS

THE WALL STREET JOURNAL

Vattenfall Likely to Need to Spend Billions to Sell German coal-fired power plants

Bidders for Swedish state utilities' lignite plants in Germany will seek \$2.2 billion,



May 27, 2015 11:12 pm

Norway oil fund plans to withdraw from coal-burning utilities

By David Crouch in Gothenburg and Pillita Clark in London

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FT FINANCIAL TIMES

The Economist

European utilities

How to lose half a trillion euros

Europe's electricity providers face an existential threat

Oct 12th 2013



Peabody President & CEO Glenn Kellow on Ch. 11 Protection

http://www.wsj.com/articles/vattenfall-likely-to-need-to-spend-billions-to-sell-german-coal-fired-power-plants-1458038991

#3: Chinese investors as agents of change?

DEALS MAY 14, 2018 / 6:57 PM / 15 DAYS AGO



China's bid for EDP is a pre-emptive strike against rivals: sources



BUSINESS DEALS

Geely buys into the electric future with Daimler investment

Chinese automaker enticed by the German company's battery technology

WATARU KODAKA and KOSEI FUKAO, Nikkei staff writers
February 25, 2018 02:27 JST

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Management Erneuerbarer Energien



#4: Lobbying to slow down the transition?

ARCHIVE 2017

Question 1

Why is the energy transition not happening more quickly?

1. First things first, there are more important issues to address

10.4 %

2. Lobbying reached an all-time high

31.3 %

3. Citizens lack awareness about energy issues

26.0 %

4. There is a lack of political leadership

32.3 %

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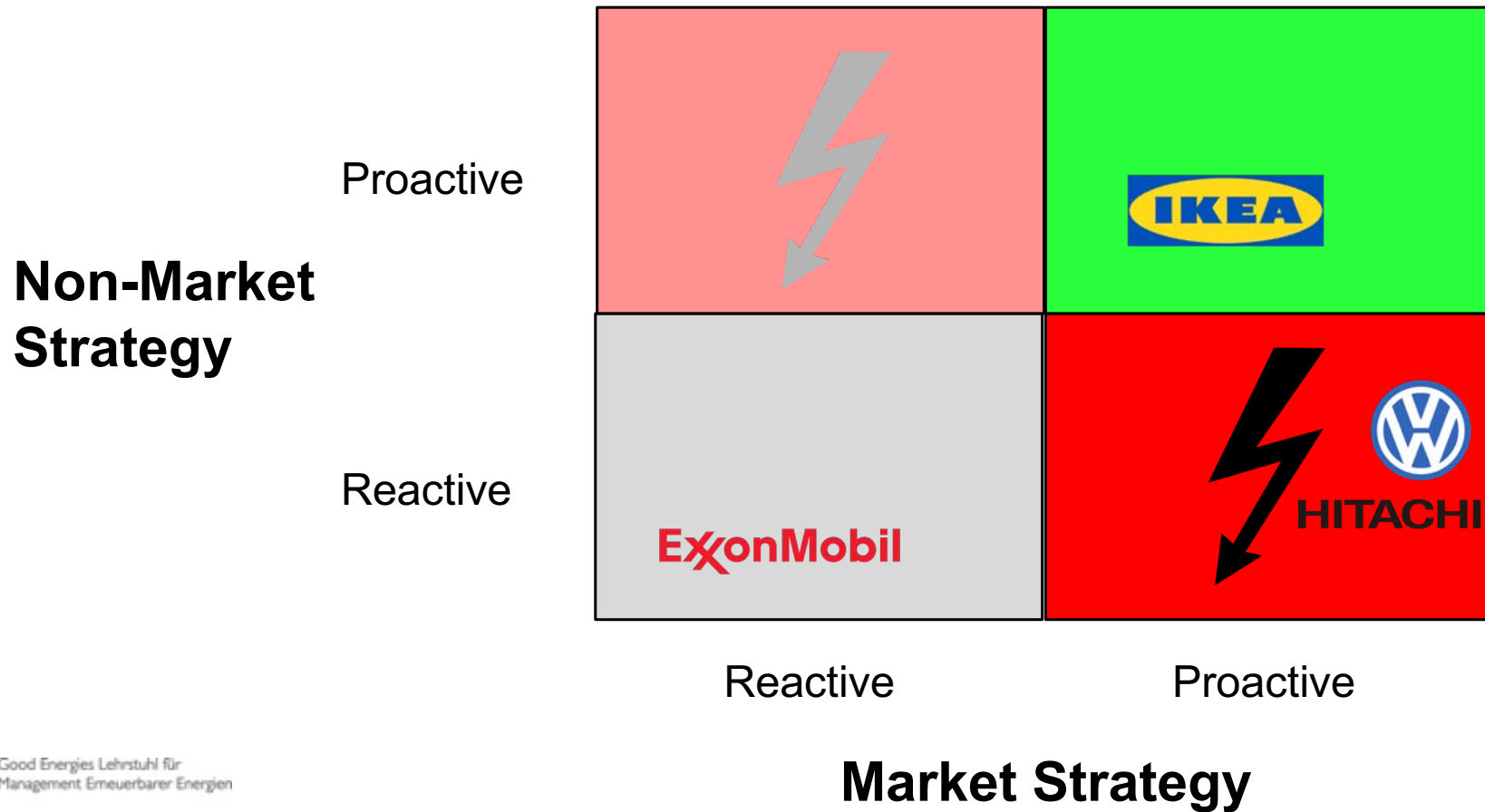


Universität St. Gallen

Result of #REMforum 2017 audience polling

#4: Aligning Market- and Non-Market Strategy

Leaders in #DisruptiveDecentralization need to be consistent



Summary

1. #DisruptiveDecentralization is driven by the convergence of renewable power generation, storage, electric mobility and digital technology at building scale
2. Falling costs + increasing customer value = accelerating the transition
3. As a consequence, centralized assets face serious disruption
4. Firms need to take consistent decisions to succeed

Navigating #DisruptiveDecentralization

Tech Options \ Issues	Business Models	Consumer Preferences	Social Acceptance & Policy	
Decentralized Renewables	Morning Panel 1	WS3	WS5	
Storage		Consumer barometer	WS2	
Demand-side flexibility	WS1			WS4
E-Mobility	Afternoon Panel			
Digital Technology	WS6	Morning Panel 2		

A symmetrical architectural rendering of a modern building facade. The building features a dark blue, textured lower section and a large, multi-paned glass upper section. The facade is mirrored across a central vertical axis. In the center, a bright sunburst effect radiates from a point on the horizon, set against a clear, vibrant blue sky. The overall composition is clean and professional, suggesting a high-tech or corporate environment.

Let's make it happen!

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