

#REMforum

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



Workshop 1

floor

-> Room 2.1, hall 2, 1st floor

The Convergence of Electric Mobility and Power Markets: V2G Business Models



- Dr. Emmanuelle **Reuter**, University of St.Gallen (workshop leader)
- Dr. des. Merla **Kubli**, ZHAW & University of St.Gallen (workshop leader)
- Alexandra **Asfour**, Head e-mobility, SAK AG
- Peter **Majer**, Innovationsmanager, badenova AG & Co. KG (tbc)
- Nathalie **Blumenau**, Head of Sales, Alpiq E-Mobility AG

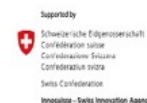
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Timeline

Time	Content
15 min	Introduction
20 min	Speaker 1: Nathalie Blumenau
20 min	Speaker 2: Alexandra Asfour
20 min	Speaker 3: Peter Majer
35 min	Workshop exercise
10 min	Summary, Open questions & Closing

Introduction of the speakers



Nathalie Blumenau

Head of Sales, Alpiq E-Mobility AG at Alpiq AG



Alexandra Asfour

Head E-Mobility at SAK AG (St. Gallisch-Appenzellische Kraftwerke)



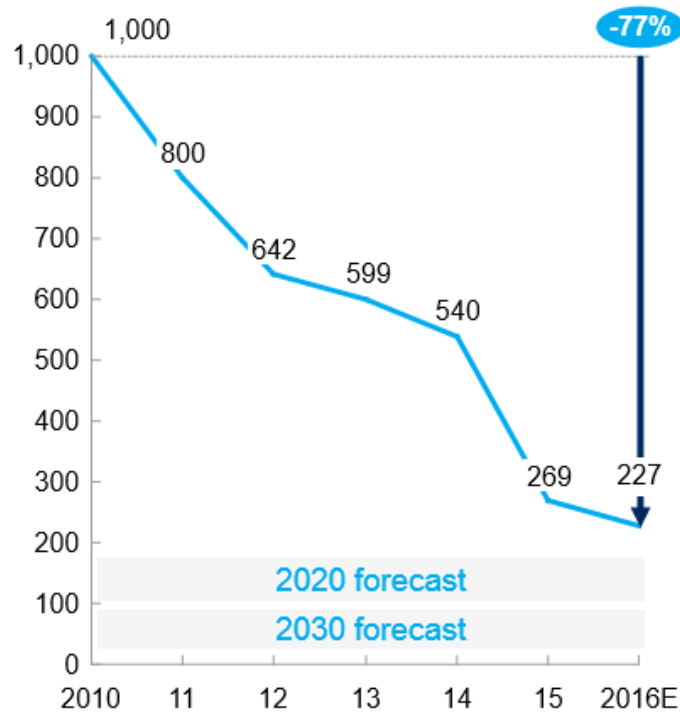
Peter Majer

Head Innovation at badenova AG & Co. KG, Lead INVADE pilot case Freiburg

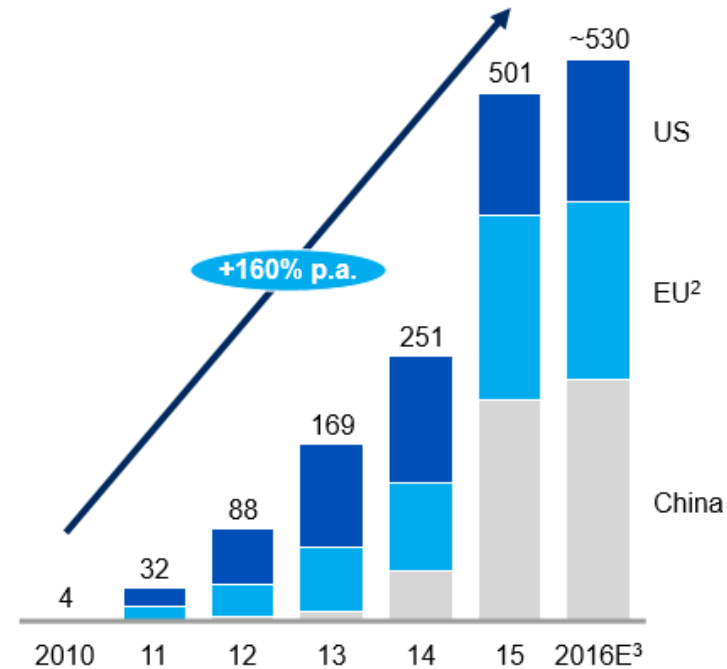
Trend 1: Decreases in battery prices help accelerate EV sales

Rapid decreases in battery prices have helped accelerate EV sales, especially in Europe and China

Average battery pack price
\$ per kWh



US, EU, and China electric vehicle sales¹
Units, thousands



¹ Plug-in hybrid electric vehicles and battery electric vehicles; excludes low-speed vehicles and hybrid electric vehicles without a plug

² Includes Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, and the UK

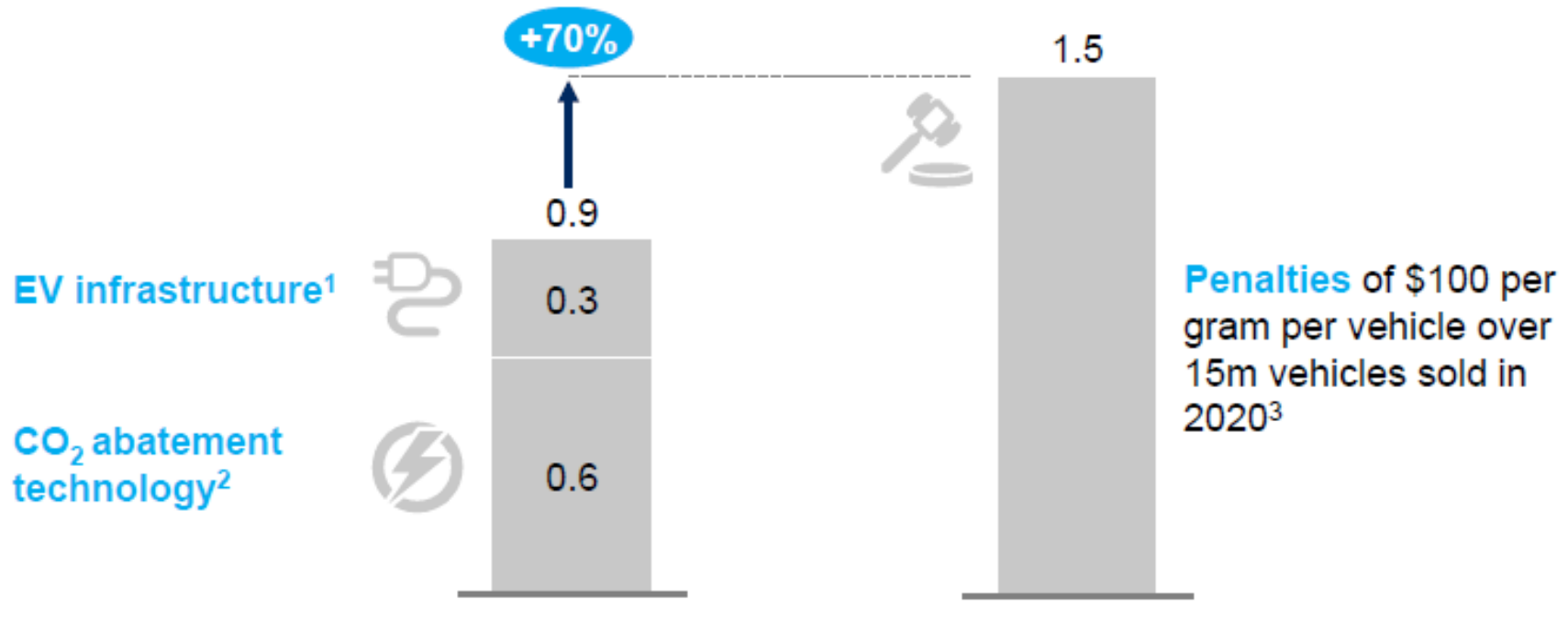
³ Extrapolated based on Q1-Q3 2016 IHS data and assuming continued growth in all three markets in Q4

SOURCE: IHS, Bloomberg, New Energy Finance

CO2 penalties may be more expensive than investing in EV technologies

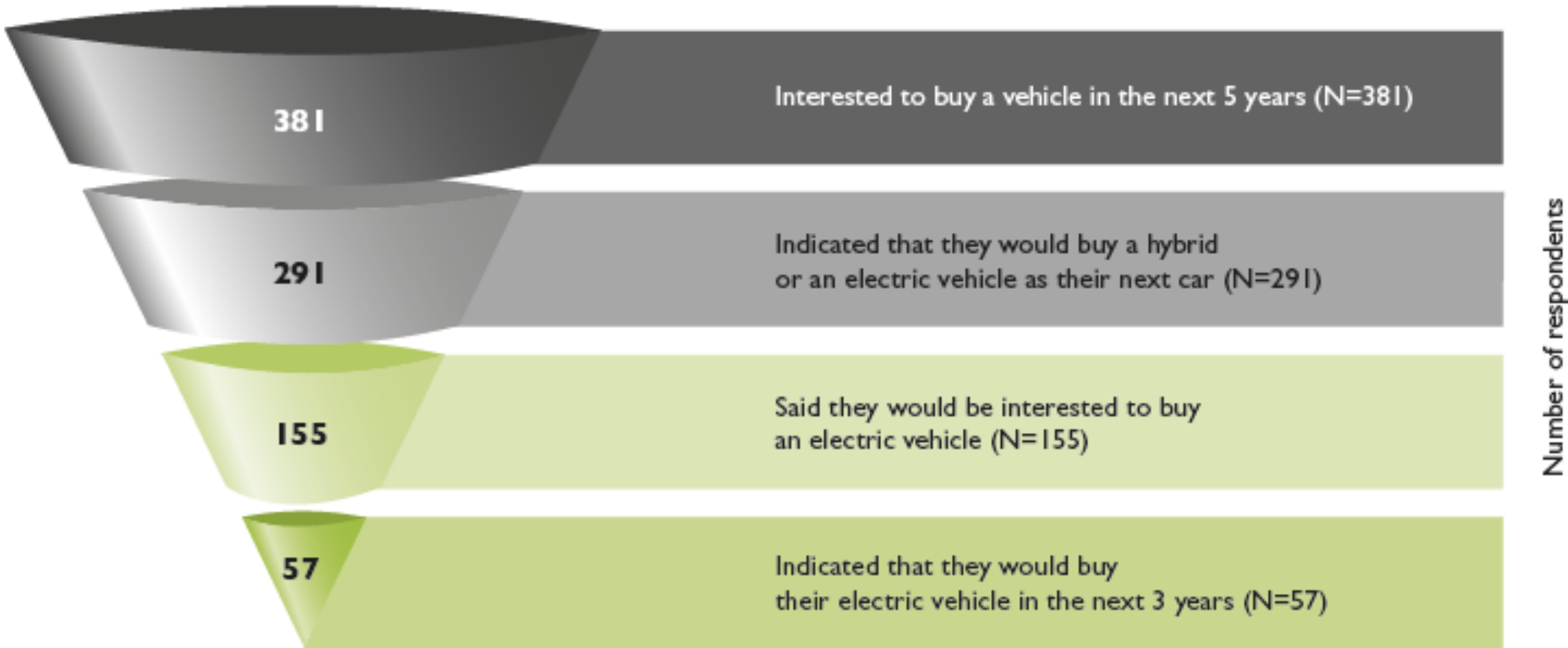
Estimated cost if automakers in the EU invest in CO₂ abatement technology and supporting EV infrastructure to lower emissions by 1 g CO₂
\$ billions

Estimated cost if automakers in the EU miss regulation targets by 1 g CO₂ in 2020
\$ billions



Swiss consumers' perspective on EVs

Market Potential for Electric Vehicles



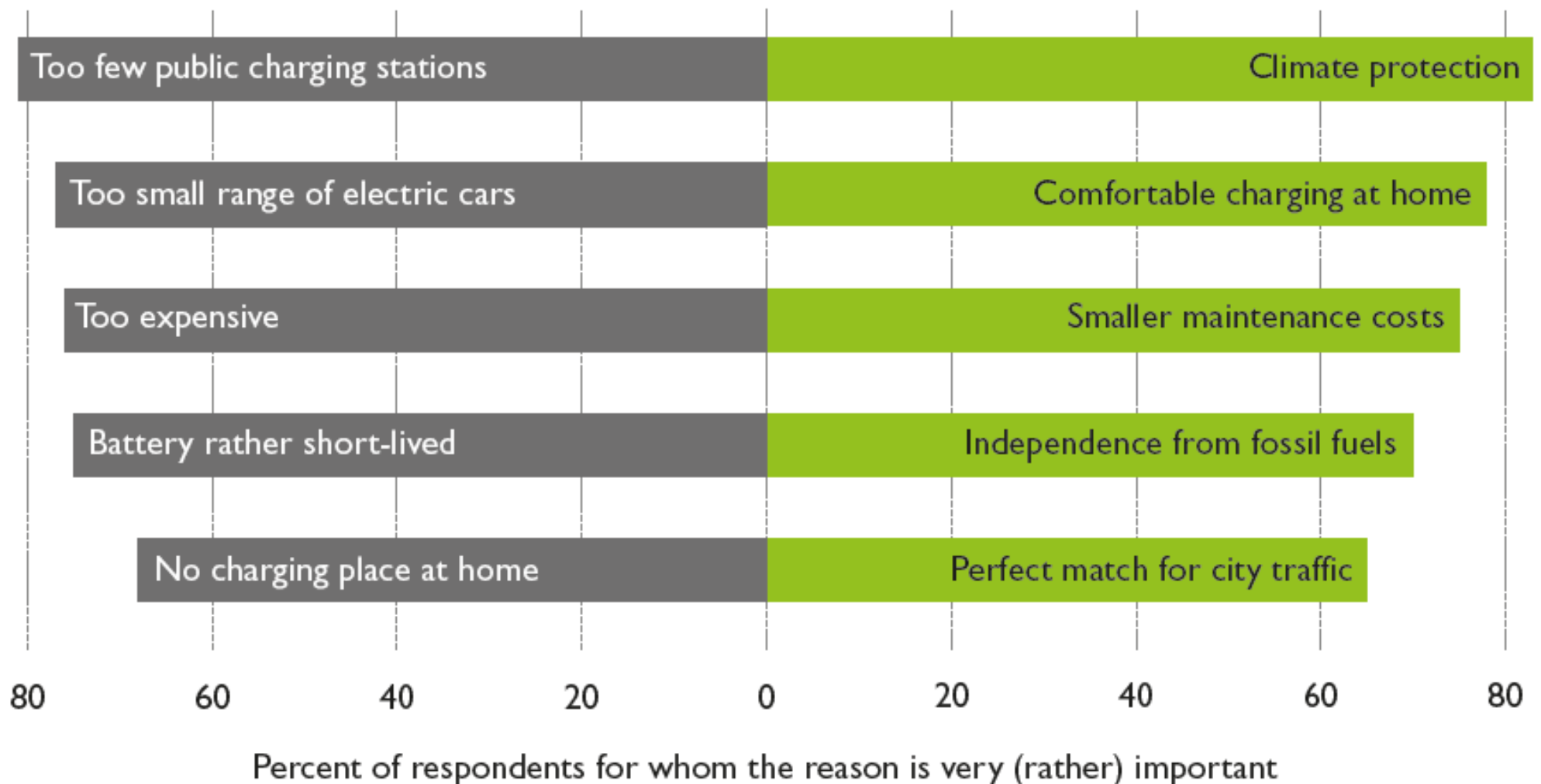
Source: KUBA. 2018.

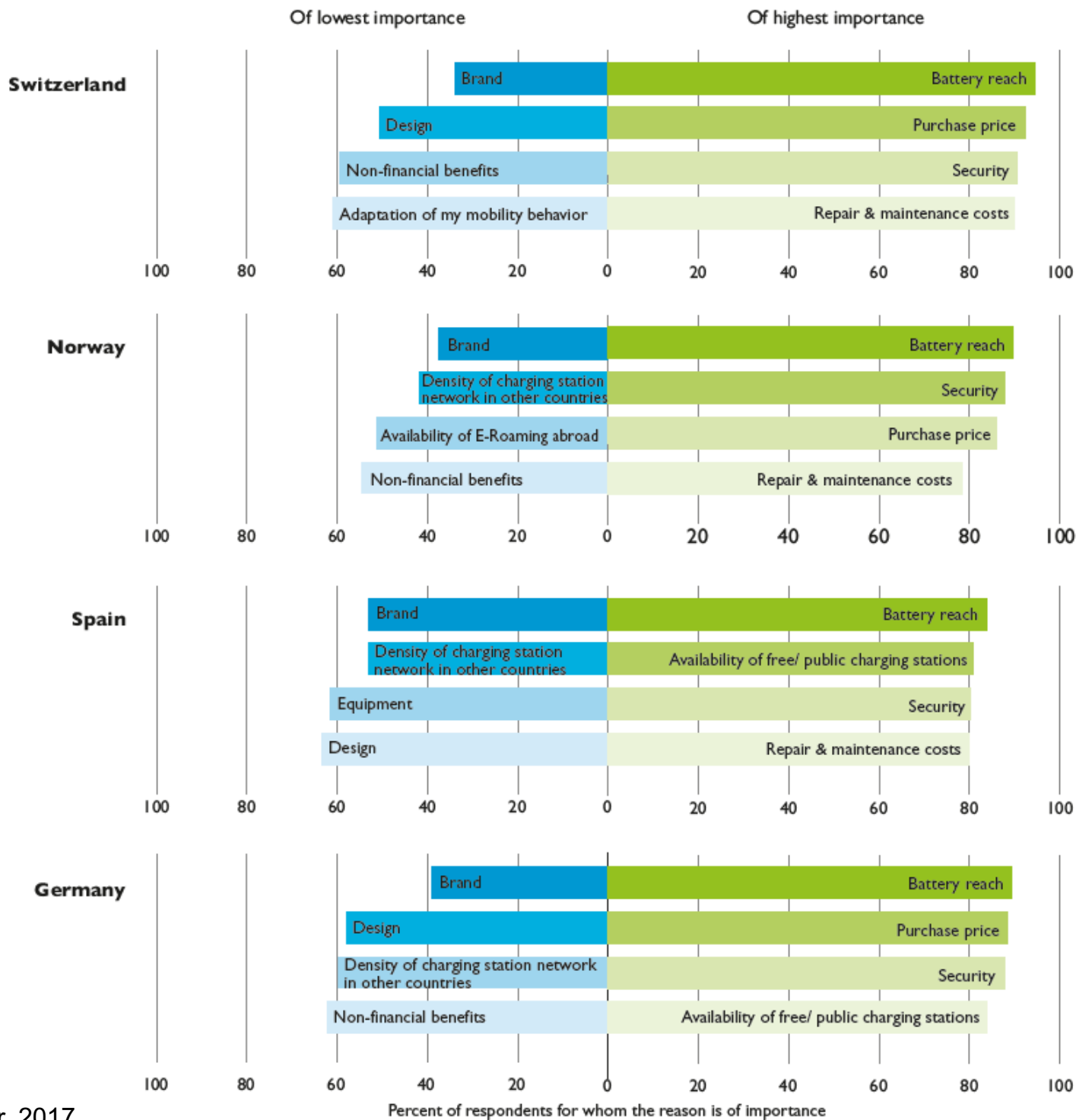
Swiss consumers' preferences for EVs

“How important are the following reasons...

against buying an electric car?”

for buying an electric car?”



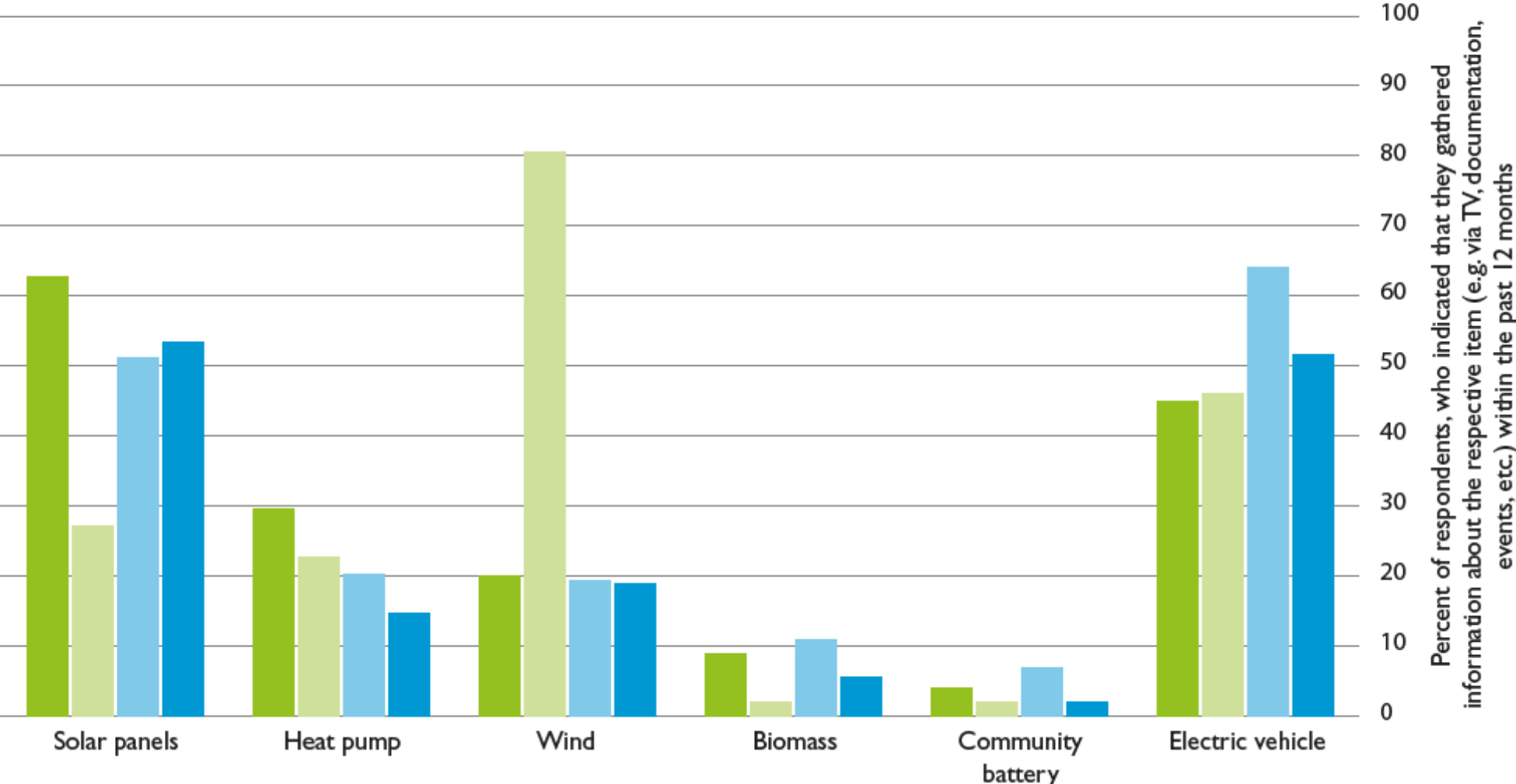


Source: Empower. 2017.

Trend 2: Disruptive Decentralization?

Respondents' information gathering by technology

Switzerland Norway Spain Germany



Source: Empower. 2017.

Input talks

Nathalie Blumenau

Alexandra Asfour

Peter Majer

Workshop exercise:

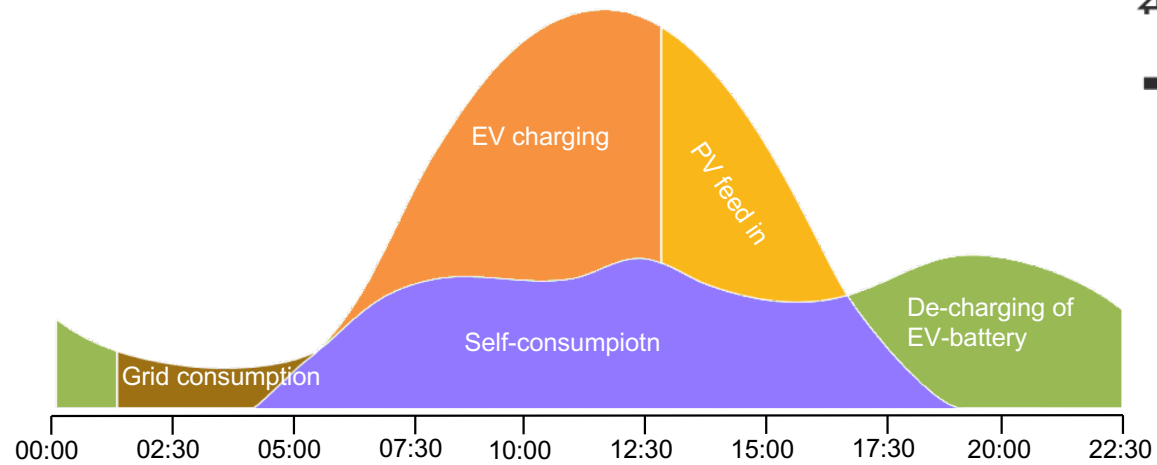
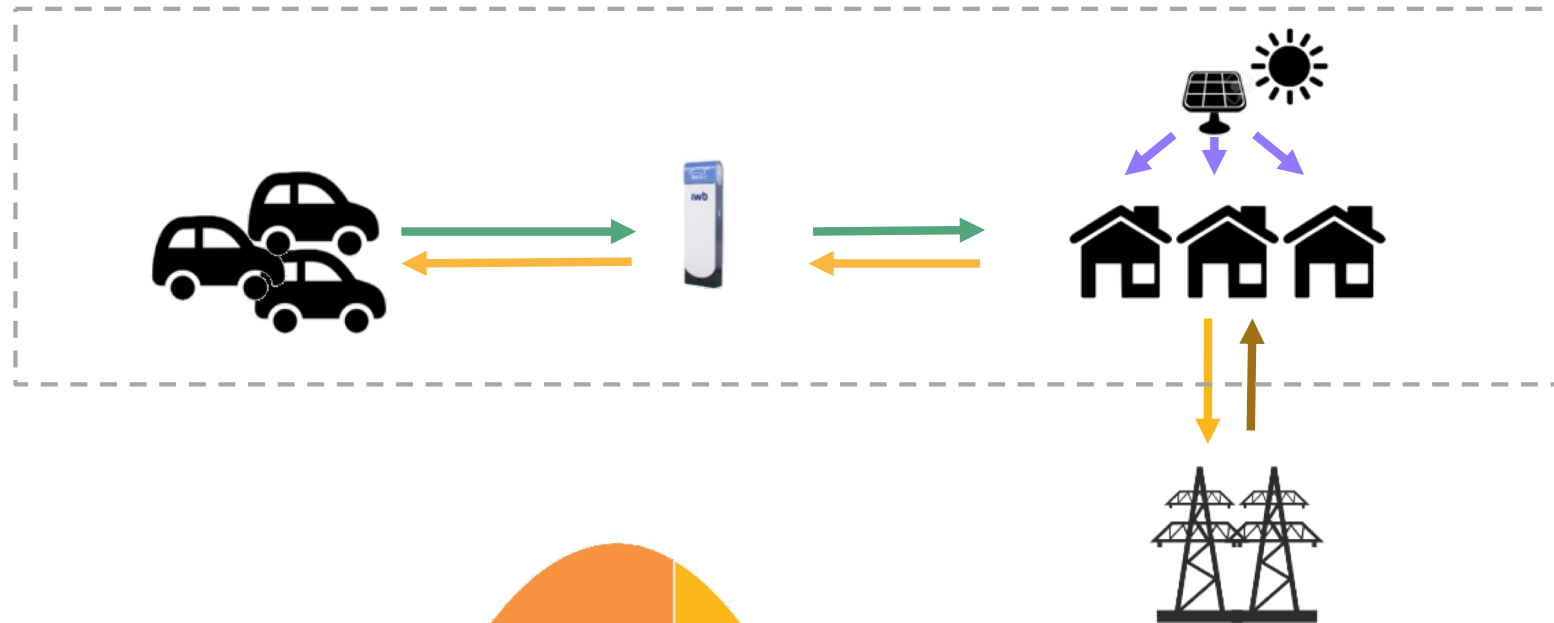
Develop your own business case

You observe the possible synergies between e-mobility and power markets. Develop business cases for **V2G / V2H** concepts from the perspective of **utility companies / car retailers**.

1. What **customer segments** do you identify (e.g. based on attributes, like: range, technology, brand/ design, performance, self-sufficiency, reliability)?
2. What is the **value proposition**? (What do you offer your customers?)
3. What is the **revenue model**? (Where do you generate income?)
4. Who are your main **competitors**?
5. In an ideal world, what would strengthen your business case (e.g. government support)?

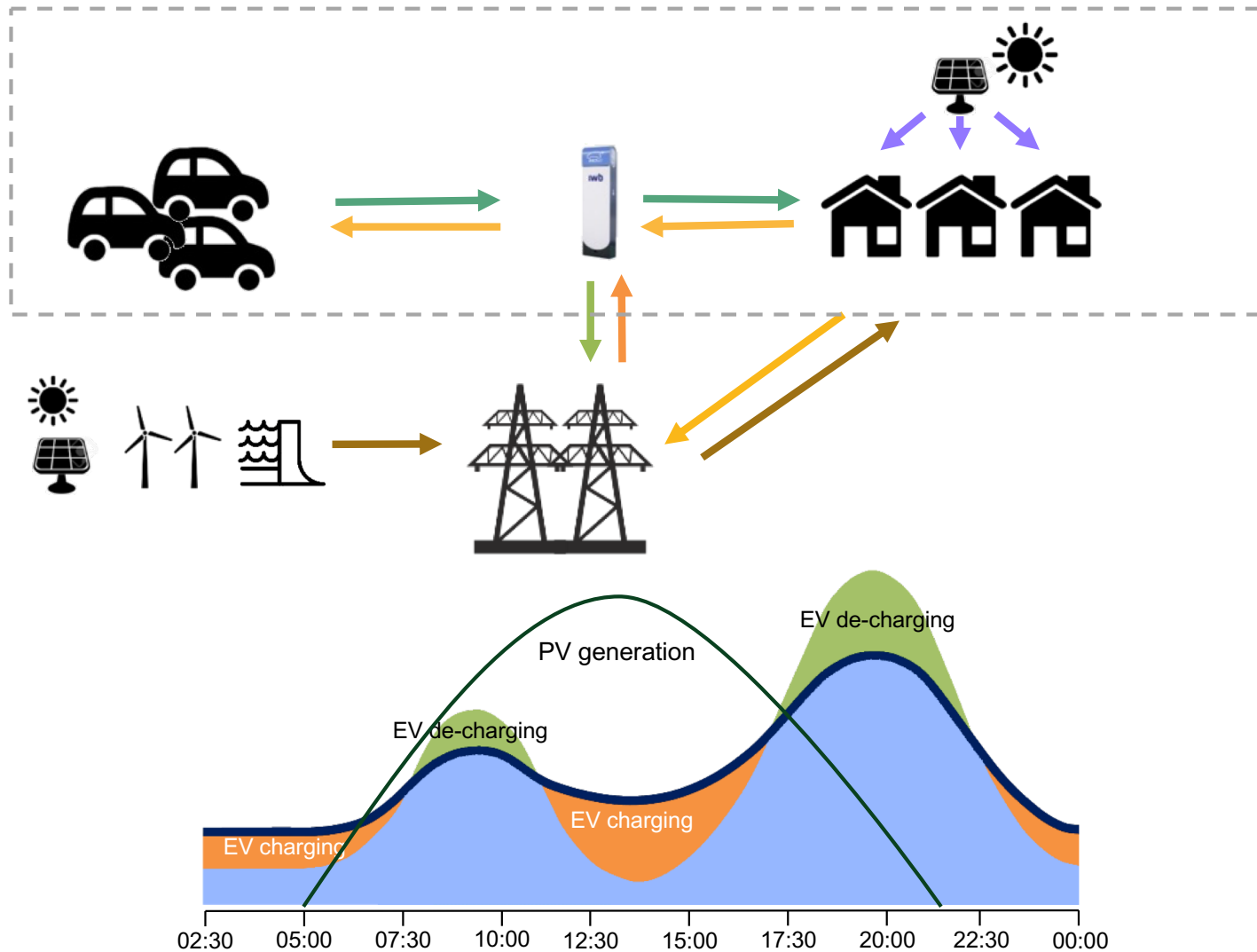
V2H: Vehicle-to-Home

Focus: Maximizing self-consumption



V2G: Vehicle-to-Grid

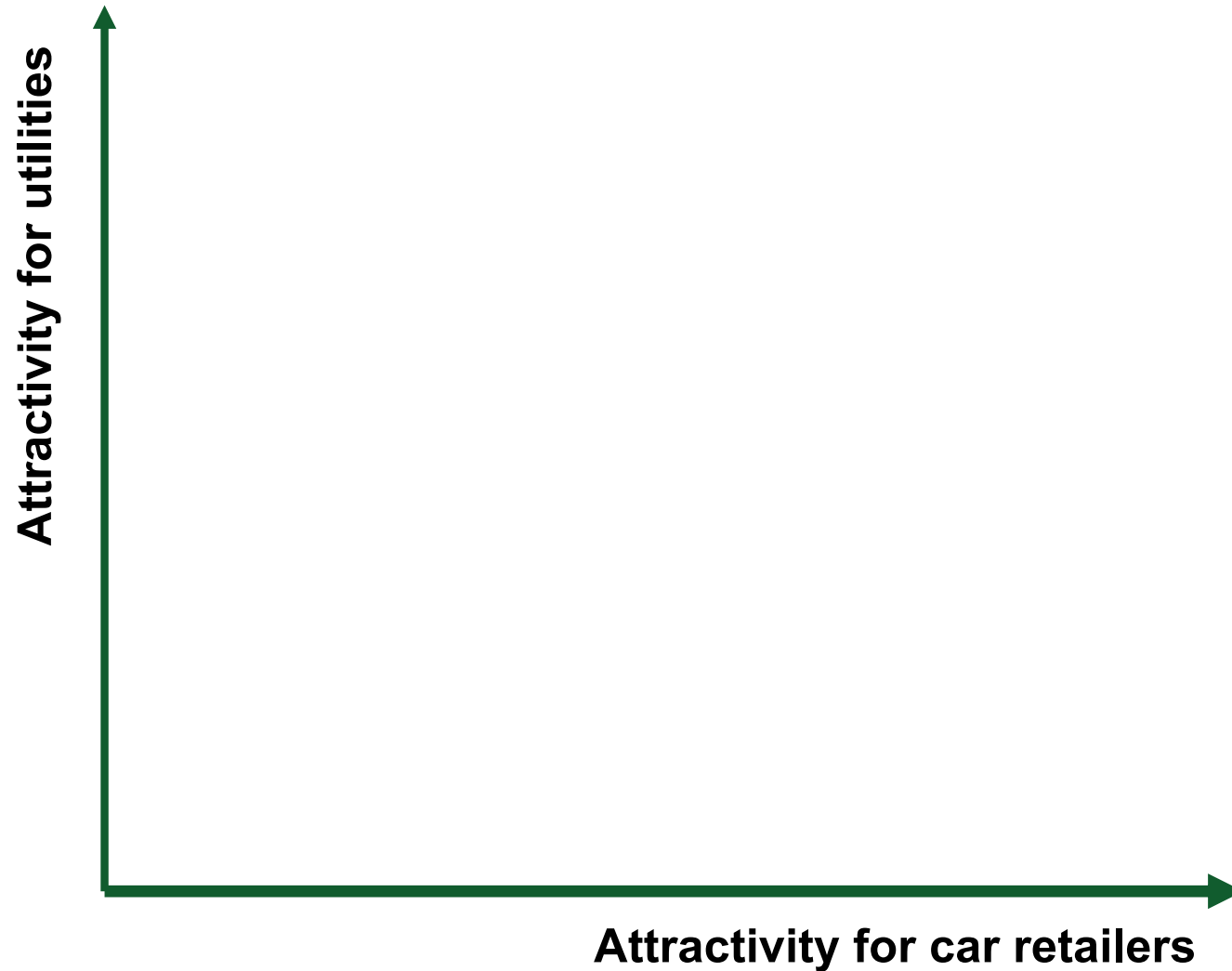
Focus: Grid-friendly behaviour



Choose a group

	Utility perspective	Car retailer perspective
V2H concept	Group 1 V2H from utility perspective (Alexandra Asfour)	Group 2 V2H from car retailer perspective
V2G concept	Group 3 V2G from utility perspective (Marcel Morf)	Group 4 V2G from car retailer perspective (Peter Majer)

Where is competition the highest? Where is market divided?



Thank you very much for your attention!

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15.45 – 16.00 h



Coffee Break

NEXT: 16.00 h Panel Discussion together with 6. *Energiekongress*



E-Mobility Outlook: Fast Lane or SloMo?

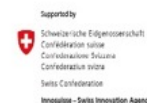
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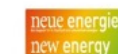
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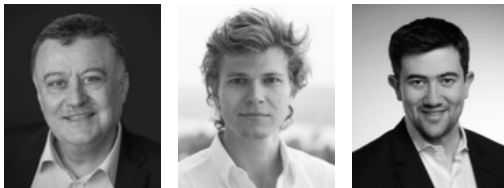
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16.00 h Panel Discussion together with 6. *Energiekongress*



E-Mobility Outlook: Fast Lane or SloMo?

Moderator: Dr. Melinda Crane



- Prof. Dr. Konstantinos Boulouchos, Head Swiss Competence Center for Energy Research (SCCER) in Efficient Technologies and Systems for Mobility, CH
- Prof. Dr. Nina Hampl, Sustainable Energy Management, Alpen-Adria-University of Klagenfurt, AT
- Moritz Meenen, Co-founder & CEO, ElectricFeel AG, CH
- Fabian Scherer, Co-Lead, SBB Green Class, CH

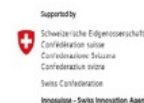
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a free entry in 2019!



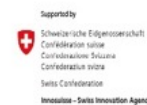
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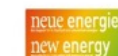
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It was great having you at #REMforum 2018 & Energie-Tage St.Gallen

Enjoy the Apéro and SAVE-the-DATE for next

#REMforum 2019 => May 23 - 24, 2019

See you again, auf Wiedersehen, à bientôt, arrivederci, «uf Wiederluege»

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