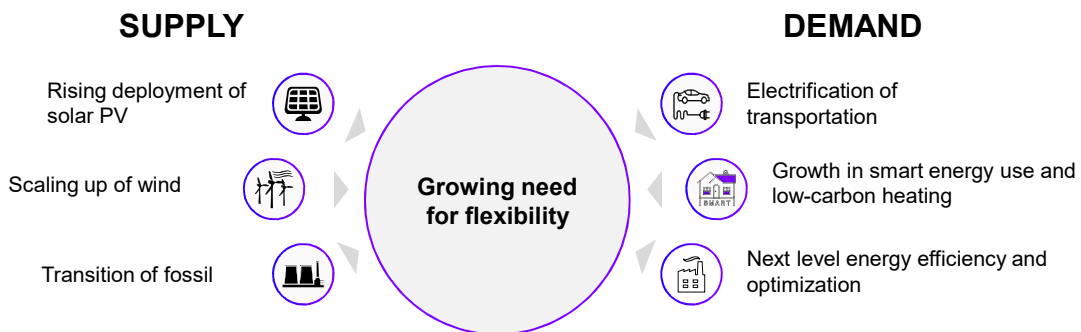


UNLOCKING VALUE FROM FLEXIBILITY IN THE EUROPEAN POWER SYSTEM

MAY 2018

accenture

TRANSFORMATION OF THE EUROPEAN ENERGY SYSTEM CREATES **GROWING NEED FOR FLEXIBILITY** CHANGES IN THE SYSTEM



DIGITIZATION unlocks new resources, facilitates new markets, and enables new business models

HOW LARGE IS THE FUTURE NEED FOR FLEXIBILITY AND HOW CAN IT BE MET?

STUDY SCOPE

USES OF FLEXIBILITY

PORTFOLIO BALANCING

SYSTEM BALANCING

CONGESTION MANAGEMENT

SIX COUNTRIES

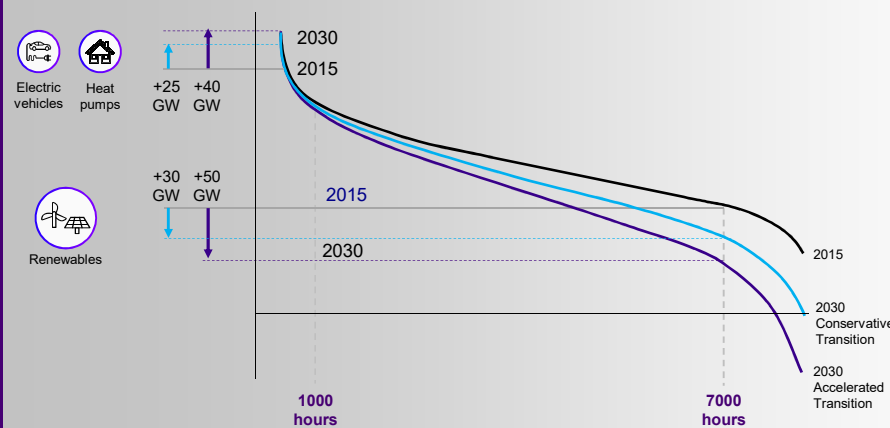


THREE KEY QUESTIONS

- 1 How big is the future need for flexibility?
 - Conservative transition
 - Accelerated transition
- 2 What are the business approaches for unlocking new sources of demand flexibility?
- 3 What are the guiding principles in regulation?

MORE FLEXIBLE CAPACITY NEEDED BY 2030: 25 TO 40 GW FOR PEAK AND 30 TO 50 GW FOR MID-LOAD FLEXIBILITY NEED ACROSS SIX COUNTRIES

Annual Load Duration Curve



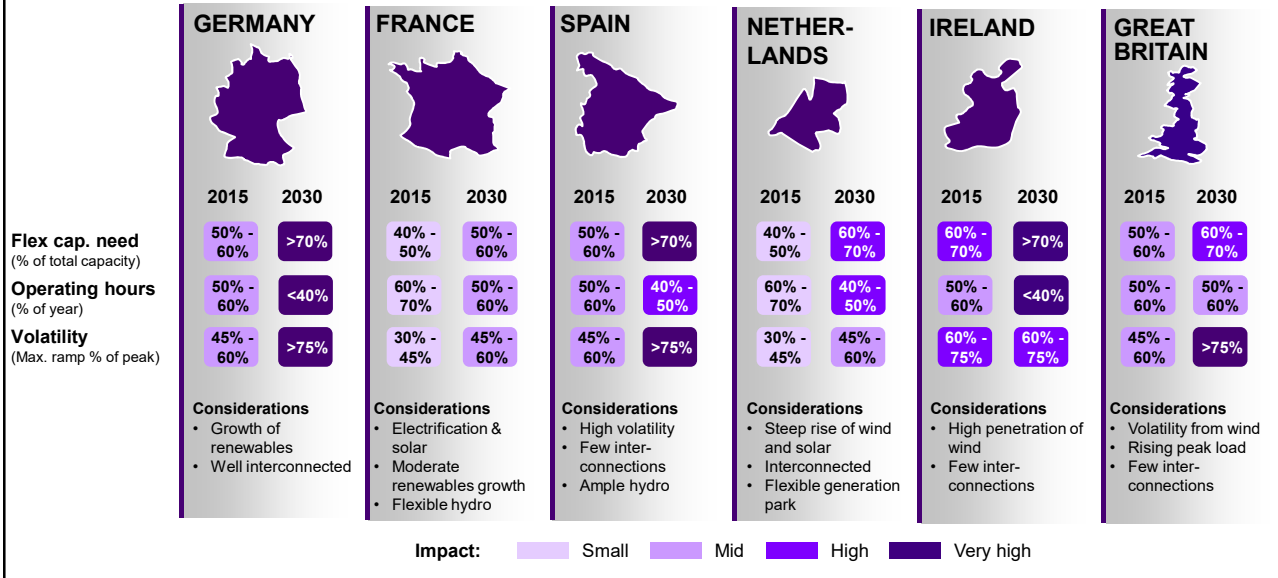
2030 VS. 2015

- 30 to 45 percent additional flexible capacity needed (peak and mid-load)
- 20 to 30 percent fewer operating hours of all flexible capacity
- Fluctuations in supply and demand of greater magnitude and shorter duration
- Instances of oversupply will be more common

Source: Accenture Flexibility Needs Assessment model, based on EU energy reference scenario of 2016

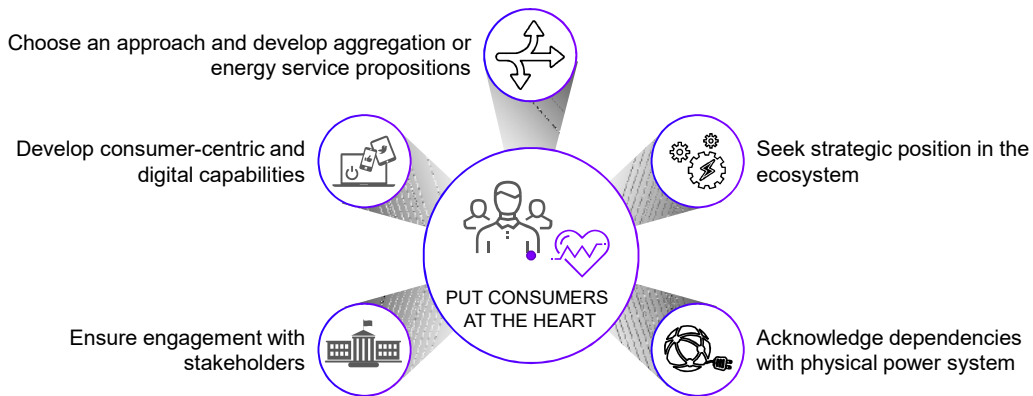
IMPACTS VARY BY COUNTRY

COUNTRY INSIGHTS



A CUSTOMER-CENTRIC APPROACH IS REQUIRED

KEYS TO SUCCESSFUL BUSINESS APPROACHES



PARTICIPATE IN AN OPEN AND CONSTRUCTIVE DIALOGUE ON THE REGULATORY FRAMEWORK

FIVE GUIDING PRINCIPLES



EQUAL TREATMENT

- Technology agnostic
- Non-discriminatory
- Equal access to markets



MARKET-BASED PRICING

- Time-based
- Dynamic
- Broader exposure to wholesale prices



TRANSPARENT INFORMATION

- Amount of flexibility available
- Location
- Use of flexible resources



ACCOUNTABLE ACTORS

- Firmness of transactions
- Responsibility for imbalances
- Realistic demand response baselines



STANDARDIZED SOLUTIONS

- Standards for interoperability of smart energy technology
- More harmonized market rules

UNLOCKING VALUE FROM FLEXIBILITY IN THE EUROPEAN POWER SYSTEM