
Consumer satisfaction KPIs for smart metering in EU-28

1er juin 2018



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Contexte et objectifs

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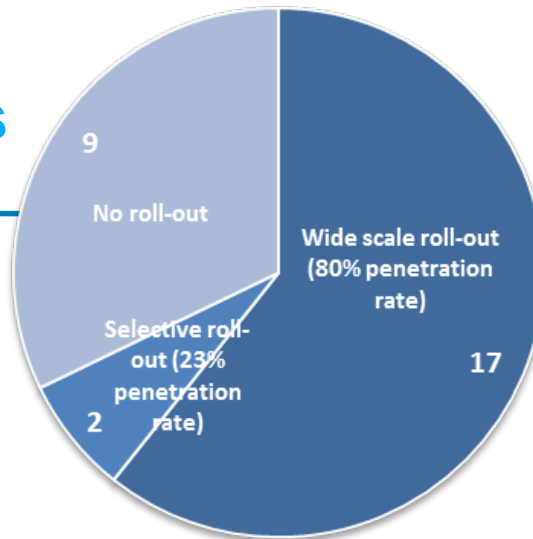
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1. Context & objectives

Context

- Third Energy Package Electricity and Gas Directive
- Results on CBA of smart metering (SM) :



Actual situation – weak consumer focus

- “Smart metering success should be monitored from a consumer outcomes perspective” (ANEC)

Objective

Objective:

- **Design**, building on available best practices, a **comprehensive framework** with **KPIs**
- **Systematically** and **transparently monitor progress** and satisfaction from a **consumer perspective**
- Establish the success of **SM deployment in the EU**.

Expectations

1. **Guide** MS in anticipation to planned roll-outs, to design/refine their **monitoring scheme** for assessing progress and effectiveness SM deployment from **consumer’s perspective**
2. Support regulators (ACER/CEER) in tracing **consumer satisfaction**

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Etat des lieux européen

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2. European state of play

> Assessing how Member States are implementing Smart Meters to enable consumers' benefits

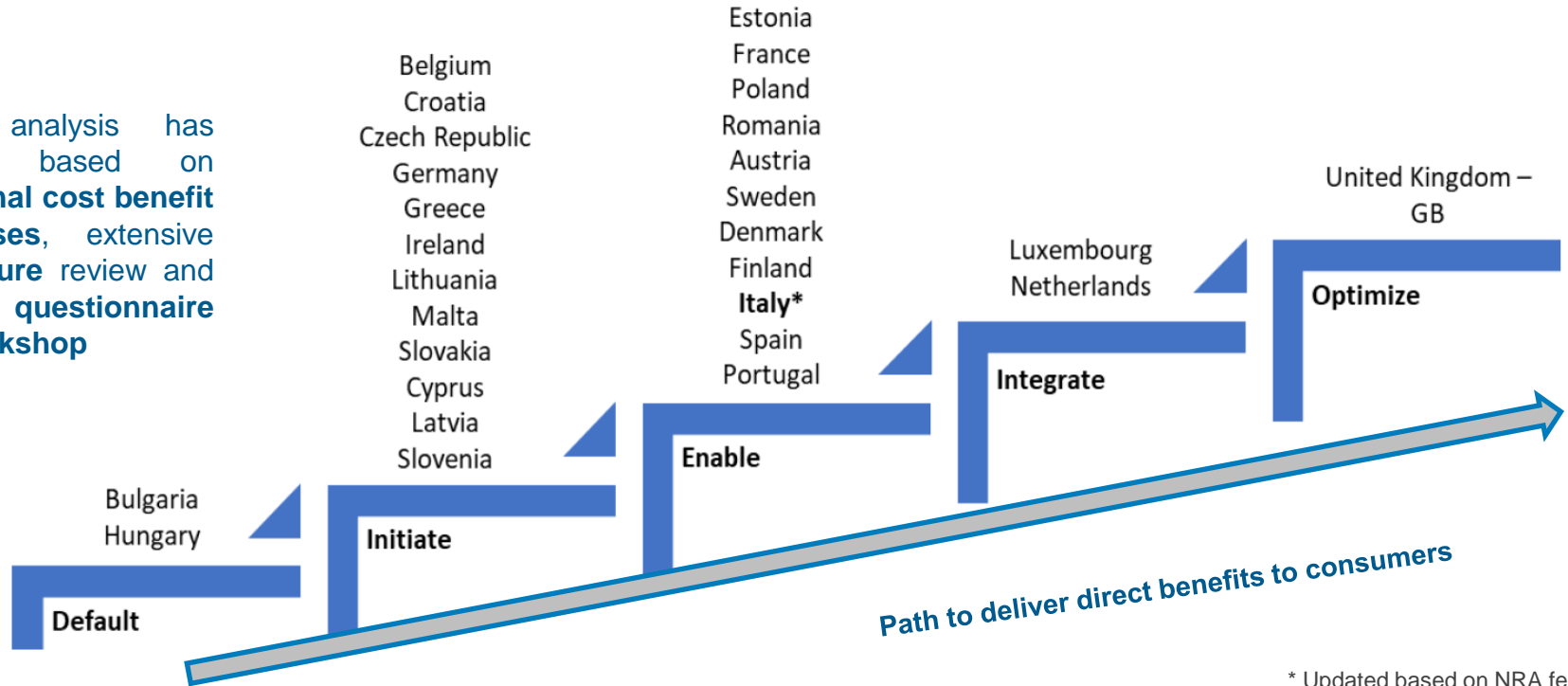
Five maturity levels (and their associated criteria) have been defined and applied to benchmark EU Member States

Maturity levels	1 - Default	2 - Initiate	3 - Enable	4 - Integrate	5 - Optimize
Criteria		1. Conducted a cost benefit analysis	3. Has an existing legal framework in place	5. Has its smart meter compliant with EC recommended functionalities a, b and f	7. Has commercial offers available
		Or	And	And	And
		2. Realized a roll-out of > 1%	4. Realized a roll-out of > 10%	6. Did research on consumer benefits	8. Implemented commercial offer
Description		MS that conducted a CBA show interest in the potential value of smart meters. MS that started without a CBA are also included	A legal framework is used for deployment and/or regulating specific matters. A significant roll-out is relevant to empirically assess the benefits that a smart meter brings.	Functionalities a, b and f are most critical to provide direct benefits to the consumers. Member States should also show interest in consumer benefits	The availability of commercial offers shows that both the market and the consumer are aware of the value of smart meters.

2. European State of play

> Ability to enable direct benefits to consumers from Smart Metering deployment

The analysis has been based on **National cost benefit analyses**, extensive literature review and **NRA questionnaire & workshop**



* Updated based on NRA feedback

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Nouveaux services

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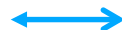
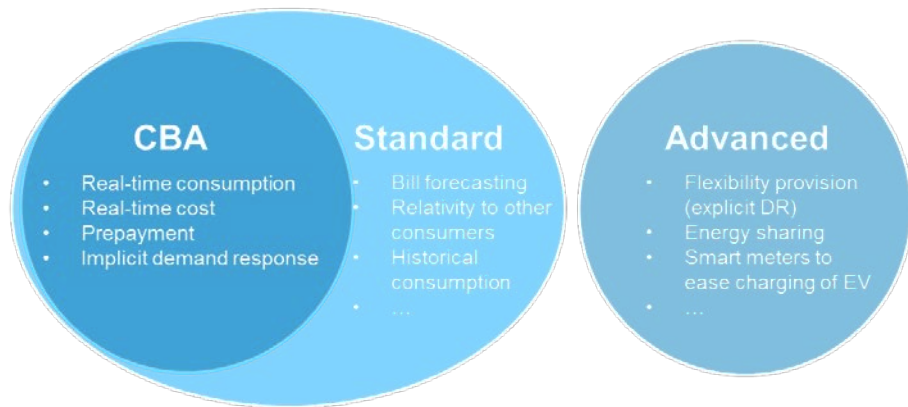
3. New services

> Smart meter enabled new services for consumers and associated benefits

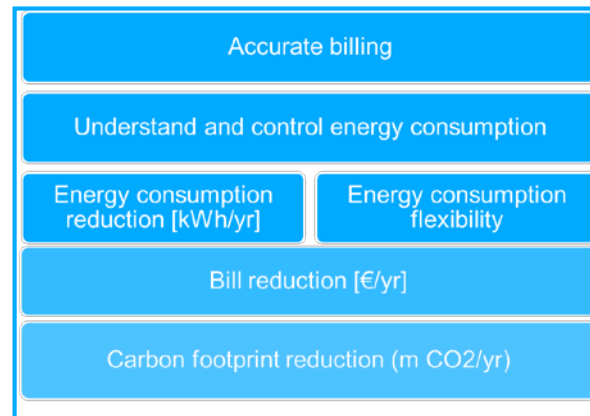
A service provides **direct benefits** to the consumer:

- **Monetary** (bill reduction, accurate billing etc.) ; **Non monetary** (Reduced CO2 emissions, safety, etc.)

SM-enabled new services for consumers



Main associated direct consumer benefits



Two sets of services:

1. Standard (including those considered in MS CBAs)
2. Advanced (in line with Clean Energy Package)

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Consumer expectations & concerns

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4. Consumer perspective

> Consumer concerns

Concerns

Privacy



- Concerns about use of data about energy use by utilities or third parties
- Know when consumer is home or not → fear of break in

Cyber security



- AMI network (Advanced Metering Infrastructure) needs to be secure and safe from cyber attacks

Electromagnetic radiation



- Fear of health issues after smart meter instalment
- Some consumers link their health issues to the instalment of a smart meter at their household

Accuracy of meters



- University Twente Enschede: Errors in smart meters when 10 led lamps connected to dimmer → Higher energy consumption than reality

Price of meters



- Fear of hidden price of smart meter in countries with no upfront cost
- Fear of not having competitive price where smart meter is delivered by supplier

Back-billing



- Difference bill on estimated consumption and new bill of smart meter based on accurate consumption → pay more than before
- → catch-up bill

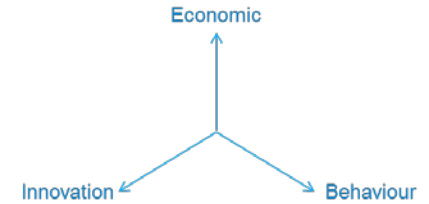
Installation barriers



- Inconvenience that installer must pass by and enter house

4. Consumer perspective

> Interests and needs of the consumer relevant to SM roll-out



Interests and needs of consumer

Economic



- **Direct savings:** By reducing your energy consumption or comparing tariffs and choosing the optimal one. The benefit of direct savings is often emphasised in brochures for smart meters.
- **Indirect savings:** Savings made by DSO since he can run his network more efficiently. In France, the economic success of the deployment only relies on indirect economical savings

Behavioural



- **Conformity of society:** consumers like to do what rest of society is doing, the norm of the society
- **Green aspect:** consumers who value environment. Suppliers of smart meters can implement services which emphasise the green aspect of the meter
- **United Kingdom:** IHD shows the amount of CO2 emissions

Innovation



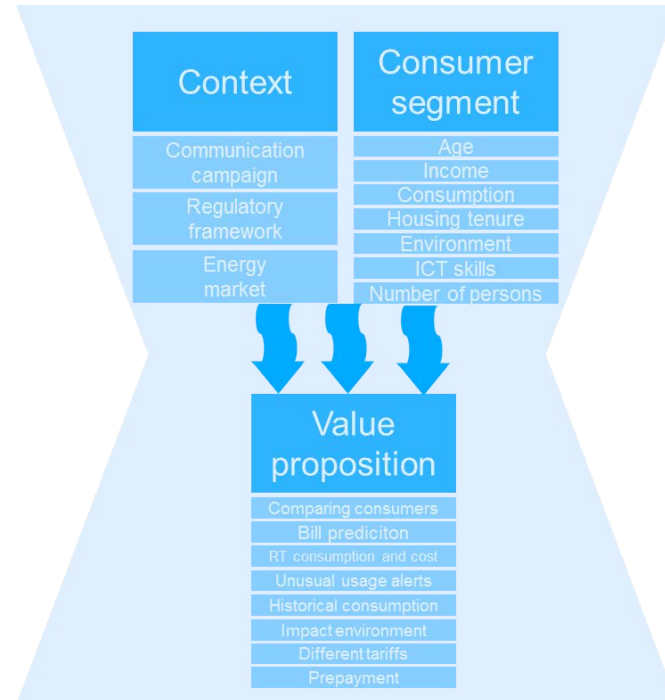
- Motivation and ability to learn, understand and use new products and services
- Importance of **interoperability** and **portability of data** and access to data from third parties

4. Consumer perspective

> Enabling factors for consumers to reap smart metering benefits

Two set of factors affecting ability of consumers to benefit from SM-enabled value propositions

- **Impact of context conditions**
 - **Communication campaign**
 - **Regulatory framework**
 - **Market innovation**
- **Impact of consumer characteristics**



4. Consumer perspective

> Communication campaign

Communication campaign

Initial communication campaign



- Advertisements and brochures
- SEAS-NVE (Danish DSO/retailer) studied their consumer base to better market their web portal and future advertisement
- Also rights of consumers concerning privacy can be shared

Pre-installation communication



- Prepare consumer what installation entails
- Communication by letter, telephone, text message
- Arrangement of date

During installation



- Importance of certified installer who can explain to the consumer how smart meter works and how to benefit from it

Post-installation



- Collect feedback about installation
- Check if still questions unanswered

4. Consumer perspective

> Regulatory framework

Addressing the concerns

Privacy

- **FRANCE:** Frequency reading

Privacy design features FRANCE	May the consumer refuse	How to exercise its right to refuse
Smart meter installation	No	
Data storage	Yes	Explicit refusal (opt out)
Hourly data to DSO	Yes	No consent (opt in)
Hourly Data to supplier and 3 rd parties	Yes	No consent (opt in)

Cyber security

NL: Two independent entities (College Bescherming Persoonsgegevens, Autoriteit Consument en Markt ACM) Concluded that the network operators have protected the smart meter well against fraud, abuse and infringement

Electromagnetic radiation

UNITED KINGDOM: The Public Health England (PHE) provides advice and information about several domestic appliances. They have stated that there is **no evidence of health risk** by exposure to smart meters and that the **exposure is lower than other appliances**.
Directive 2014/32/EU: smart meters under class E1 (CE marking) comply with electromagnetic standards

Accuracy of meters

ESMIG: Found that test circumstances (University Twente) **far exceed anything found in normal household** and that electromagnetic disturbances **exceed defined electromagnetic compatibility levels of Directive 2014/32/EU**, which led to errors of measured energy between +582% and -54%
ANEC: **Concerned** and calls for further independent research

Price of meters

UK: Suppliers are adding roughly 6£ per year to the energy bills to cover roll-out costs
Spain: Cost smart meter to consumer includes also maintenance and installation costs. Consumer should be made aware of this.

Back-billing

Limit back billing to 1 year for electricity meters of domestic consumers

Installation barriers



UK: Some appliances get condemned by the installer
Spain, Italy: Electricity meter accessible from outside the house

4. Consumer perspective

> Energy Market Innovation

The energy market

Smart meter appliances



Application in the Netherlands



IHD in the UK

- **FRANCE:** IHD will be introduced in this year and will be free for vulnerable consumers
- **THE NETHERLANDS:** Smart meter appliances are the responsibility of the market. There exist several IHD, smart phone applications for free or for a fee.
- **UNITED KINGDOM:** Suppliers obliged to deliver smart meter with an IHD.

Smart home appliances



- **FINLAND:** Asela E Electricity saver, with switches and sensors connected to a central unit. The connection of the appliances can be controlled and programmed to react automatically to the electricity price
- **SPAIN:** PVPC provides day ahead price signals

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Indicateurs proposés

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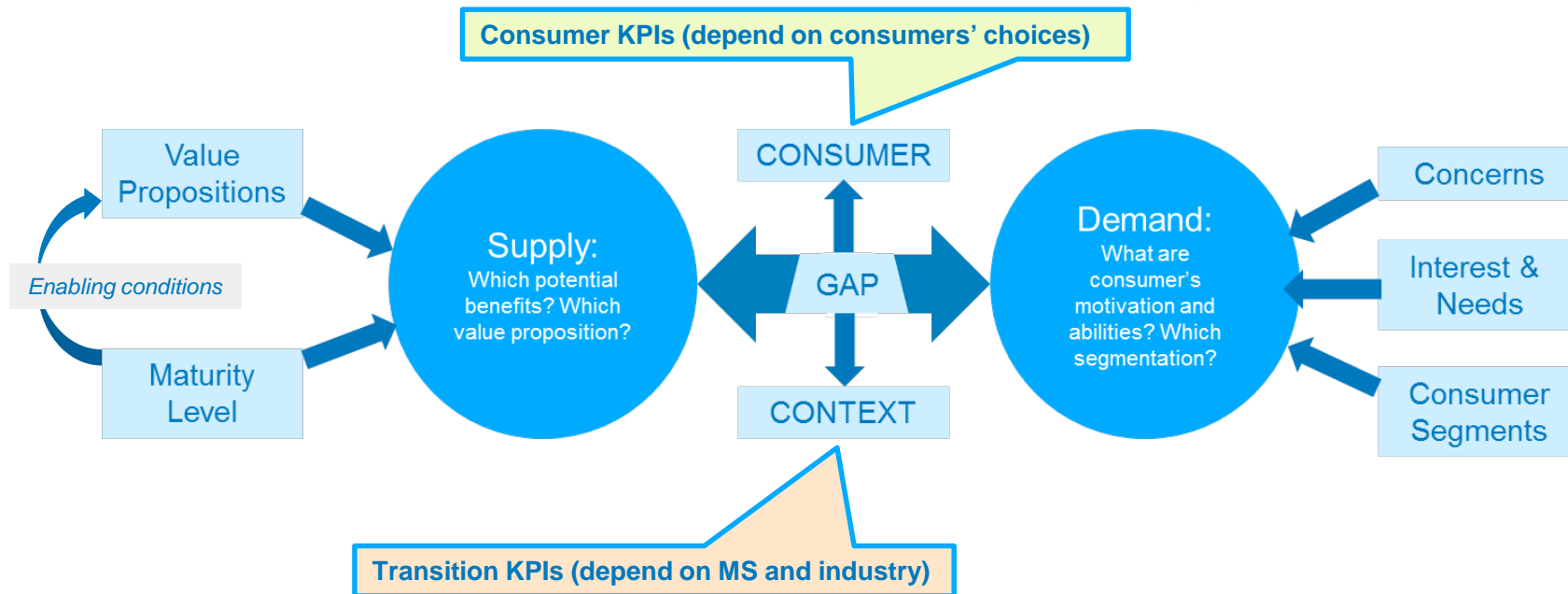
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5. KPI

> Assessing consumer's path to reap smart metering benefits

Consumer KPI: are consumers actually benefitting from the smart metering deployment?



Transition KPI: are the right conditions in place to enable consumers to reap benefits?

5. KPI

> Transition KPIs and Consumer KPIs

	Domain	1. Transition KPI	2. Consumer KPI
1	Consumer awareness	Communication campaign level	Awareness of installation Awareness of available services
2	Consumer satisfaction	<ul style="list-style-type: none">• Response to consumer concerns• % bills based on actual meter readings	<ul style="list-style-type: none">• Ratio of complaints• Deactivation ratio
3	Active engagement	<ul style="list-style-type: none">• Maximal allowable switching time• Availability of detailed load curve	<ul style="list-style-type: none">• Switching rate• Number of consumers changing to different tariff
4	Benefit realisation	Available new services	<ul style="list-style-type: none">• Energy consumption reduction• Peak demand reduction

5. KPI

> Preliminary feasibility study

	Domain	1. Transition KPI				2. Consumer KPI			
			Relevance	Computability	Comparability		Relevance	Computability	Comparability
1	Consumer awareness	Communication campaign level				Awareness of installation			
						Awareness of available VP			
2	Consumer satisfaction	Response to consumer concerns				Ratio of complaints			
		% bills based on actual meter readings				Deactivation ratio			
3	Active engagement	Maximal allowable switching time				Switching rate			
		Availability of detailed load curve				Number of consumers changing tariffs			
4	Benefit realisation	Available value propositions				Energy consumption reduction			
						Peak demand reduction			

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Conclusion

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6. Conclusion

> The way forward

- Proposed KPIs are intended to **provide guidance to MS** in monitoring the benefits of SM-roll out for consumers.
- In a first phase Member States should be allowed to freely **choose the KPIs** and the **computation mode**
- Progressively, Member States should target **KPI convergence** as a **desirable end-state** to facilitate the **benchmarking** of outcomes, identify and share best practices.

- This report is a starting point in the discussion the EC will engage with relevant stakeholders (NRA, industry & consumer representatives).
- Ready-to-use framework put at ACER/CEER disposal as a source of inspiration for their yearly monitoring exercise