Maximising the Benefit from a Smart Meter Roll-Out

SARAH DEASLEY, CHRISTOPH RIECHMANN, DAN ROBERTS

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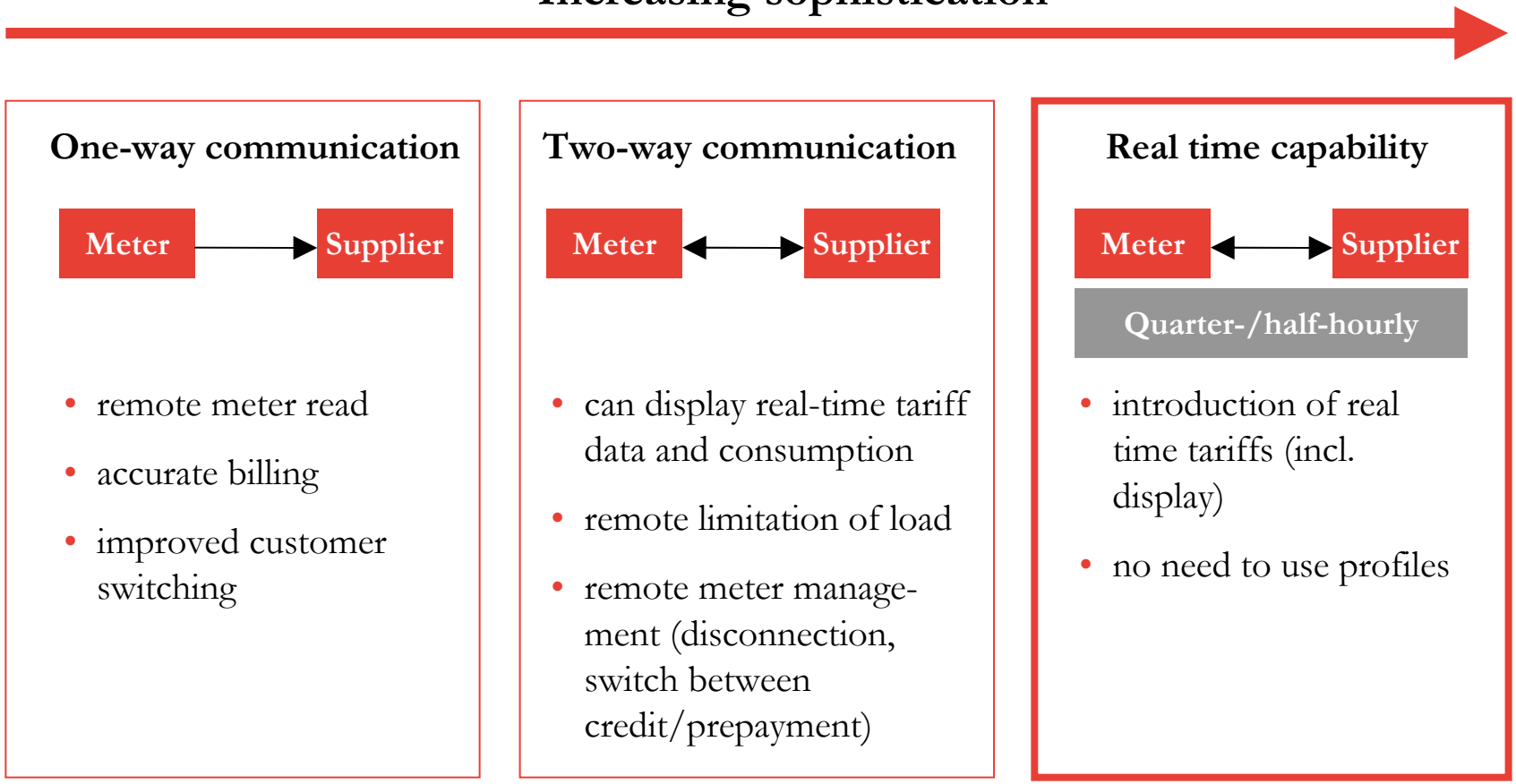
Understanding the costs and benefits of smart metering

- What are the issues?
- Externalities – why does it not all happen "naturally"?
- Policy
  - maximise the benefits of a roll-out
  - minimise the costs
  - decide on the trade-offs between the two
- Conclusions for policy makers

What is a smart meter?

Increasing sophistication



Increasing cost

What are the issues?

External effects

- Smart metering could have wider social benefits (e.g. for the environment)
- Private decision makers may not take all the benefits of smart metering into account
- The roll out of smart metering may be delayed or not happen at all

Policy failures

But policy action does not guarantee we get it right – risks are

- Not setting the right **framework** for private decisions
- Mandating the introduction of smart metering in an inefficient and thereby too **costly** way
  - The benefits could be high but so could be the cost
  - If implementation is not efficient, the costs could outweigh the benefits

What makes smart metering so difficult?

Scale

€ 100 × all customers = a lot of €s

Fragmentation & externalities		**Technology**
Suppliers	Customers	Changing rapidly, long service life
Networks	Society	Role of non-energy services?

Incentives	No single participant (or market) has the correct incentives for an "optimal" roll out
Uncertainty	Some types of uncertainty affect roll out decisions

Externalities

Externalities – do beneficiaries and those incurring roll-out cost match?

	What to target?	Who will target?	UK estimate (Gross)
Supplier benefits	Operational savings Marketing opportunities	Suppliers	£4.8bn
"Green" benefits	Carbon savings through lower consumption	Government	£1.0bn
Customer benefits	Lower consumption New tariffs	Suppliers ???	£2.6bn
Network benefits	Avoided capacity Intelligent grid	Network operators	£1.1bn

Source: Frontier Economics Smart metering cost benefit analysis October 2007

Relative importance by country?

When a fragmented industry meets a smart meter roll-out…

What are the costs and benefits?
Who can deliver them?

Network companies

- Lower costs through:
  - geographic roll-out
  - easier co-ordination of dual fuel
- But network benefits may not be the driver of smart meter case

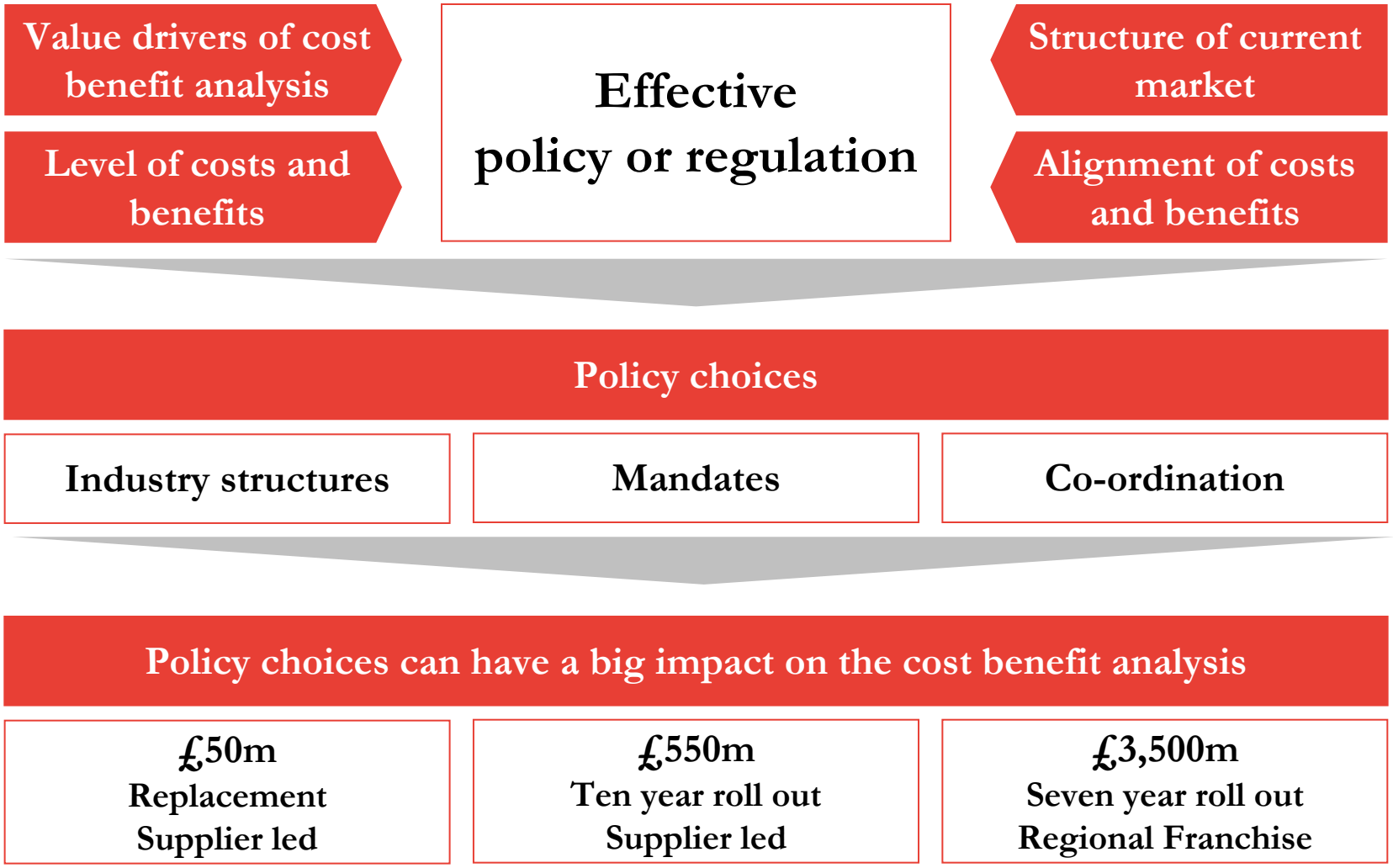
Suppliers

- Higher costs associated with uncoordinated roll-out
- But supplier benefits may be more important than network benefits

Who will/should drive the roll out?
(may differ by country)

Policy options

What decisions to policy makers have to make?



Source: Frontier Economics Smart metering cost benefit analysis October 2007

How to decide which policy to follow?

Quantifying and evaluating

What is driving the business case for society?

Understanding incentives

Who decides how to carry out the roll out?

- What order would they choose?
- What technology should they choose?

Target benefits, with mitigation

Industry structures	Mandates	Co-ordination
Do incentives justify changing structure? Should existing meter providers carry out all new activities, e.g. comms?	What mandate is likely to be required? Is an accelerated roll out justified and do benefits depend on roll out order?	Gas-elec network agreement Link incentives between parties, e.g. suppliers determine roll out order if they pay

The roll out choice can also help minimise costs

	Importance	Structural barriers
Purchase economies	Small – once minimum scale is reached	Fragmentation of players
Geographic installation	Medium - UK: c£0.5bn	Multiple players in single region
Dual fuel	High - UK: c£1.7bn	Different players for gas and electricity
Competition	???	Incumbent monopolies Closed standards

Supply market

Metering is around 2-3% of supply costs, therefore try to:

- minimise the costs of new entry
- reduce the costs of changing supplier
- reduce the failure rates of change of supplier process

Conclusion

Conclusions

No single participant will face correct incentives to produce an optimal outcome

Understand incentives and where costs raised/benefits lost

Identify mitigation strategies
(may differ by country)

Related publications for download

- Frontier Economics (2006), Current prices, anybody? The costs and benefits of „smart“ electricity meters, Frontier Bulletin September 2006 (http://www.frontier-economics.com/_library/publications/frontier%20bulletin%20-%20current%20prices%20anybody.pdf)
- Frontier Economics (2007), Smart metering, a report prepared for Centrica, October 2007 (http://www.frontier-economics.com/_library/publications/frontier%20paper%20-%20Centrica%20smart%20metering%20oct2007.pdf)
- Frontier Economics (2008), Less is more? How to optimise a smart meter roll-out, Frontier Bulletin January 2008 (http://www.frontier-economics.com/_library/publications/Frontier%20bulletin%20-%20less%20is%20more%20stp.pdf)
- Christoph Riechmann und Dan Roberts (2008), Die Einführung intelligenter Strom- und Gaszähler braucht eine intelligent Politik, Dow Jones Energy Weekly, Nr. 19/2008, S. 7-8 (http://www.frontier-economics.com/_library/publications/Frontier%20paper%20-%20Smart%20metering%20-%202008.pdf)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