

FROM SMART ENERGY TO SMART CITIES

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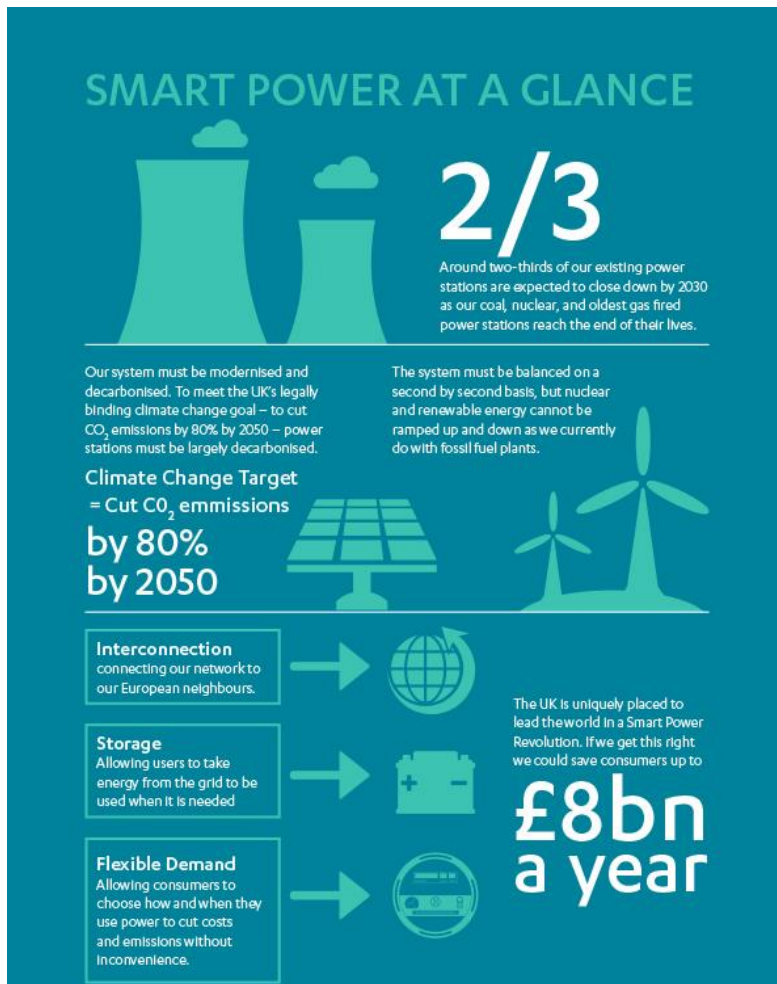
Infrastructure & Energy

OVERVIEW

- The national energy challenge
- The smart delivery challenge
- The planning opportunities for Wales

THE NATIONAL ENERGY CHALLENGE

NATIONAL INFRASTRUCTURE COMMISSION



Context

Two thirds of power stations to close by 2030...

Target

80% CO₂ reduction: 2050

Wales – 70% renewables: 2030

Solutions

- Storage
- Interconnectors
- Demand management

Source: National Infrastructure Commission 'Smart Power'

THE NATIONAL ENERGY CHALLENGE

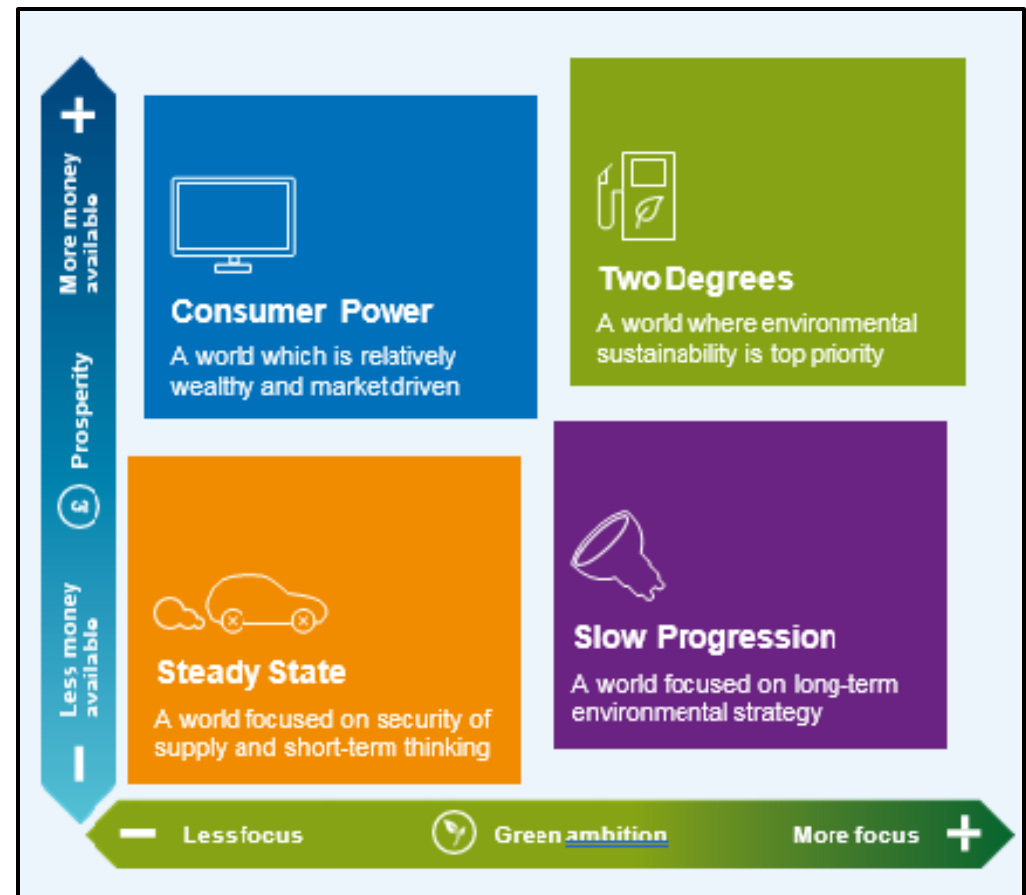
NATIONAL GRID - FUTURE ENERGY SCENARIOS

Supply

- Distributed and renewable (intermittent) generation
- New business models?
- Increasing participants

Demand

National Grid as System Operator: Impartial enabler, informer and facilitator



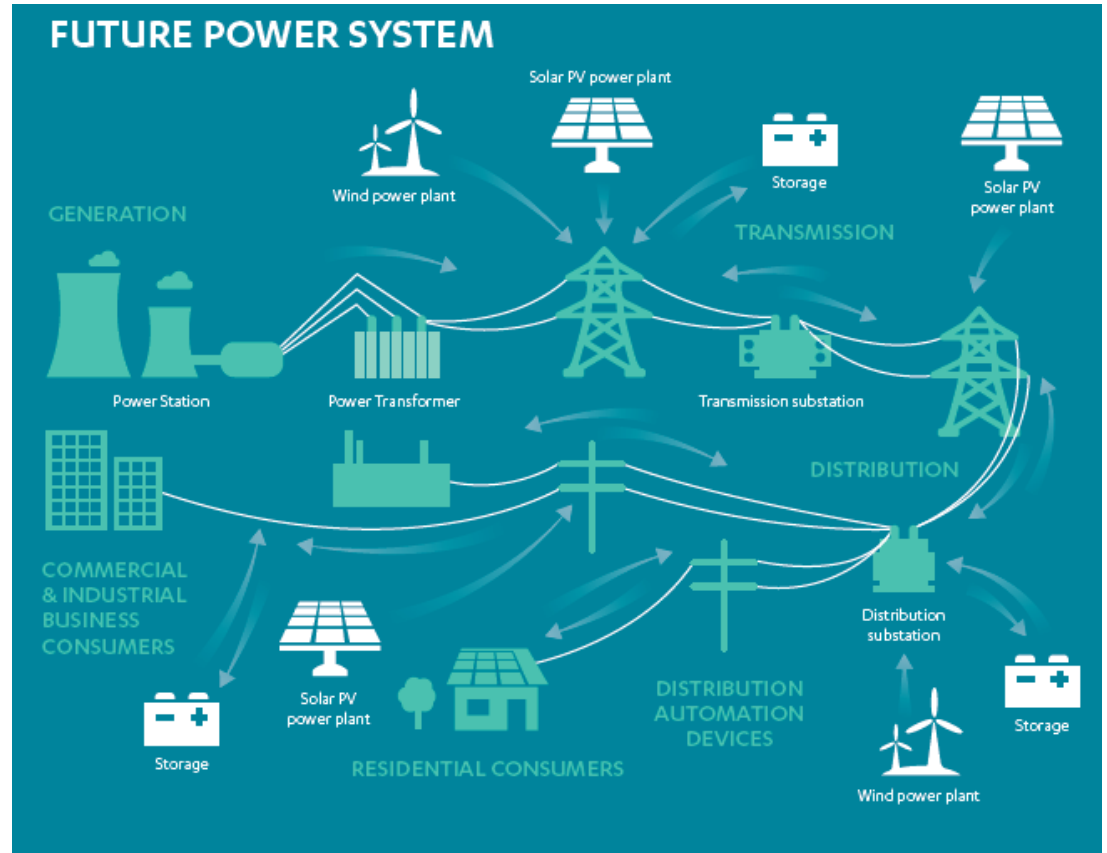
Source: National Grid 'FES in five'

THE SMART DELIVERY CHALLENGE

ENERGY INFRASTRUCTURE

- Balancing supply and demand
- Smart Grid
- The energy mix

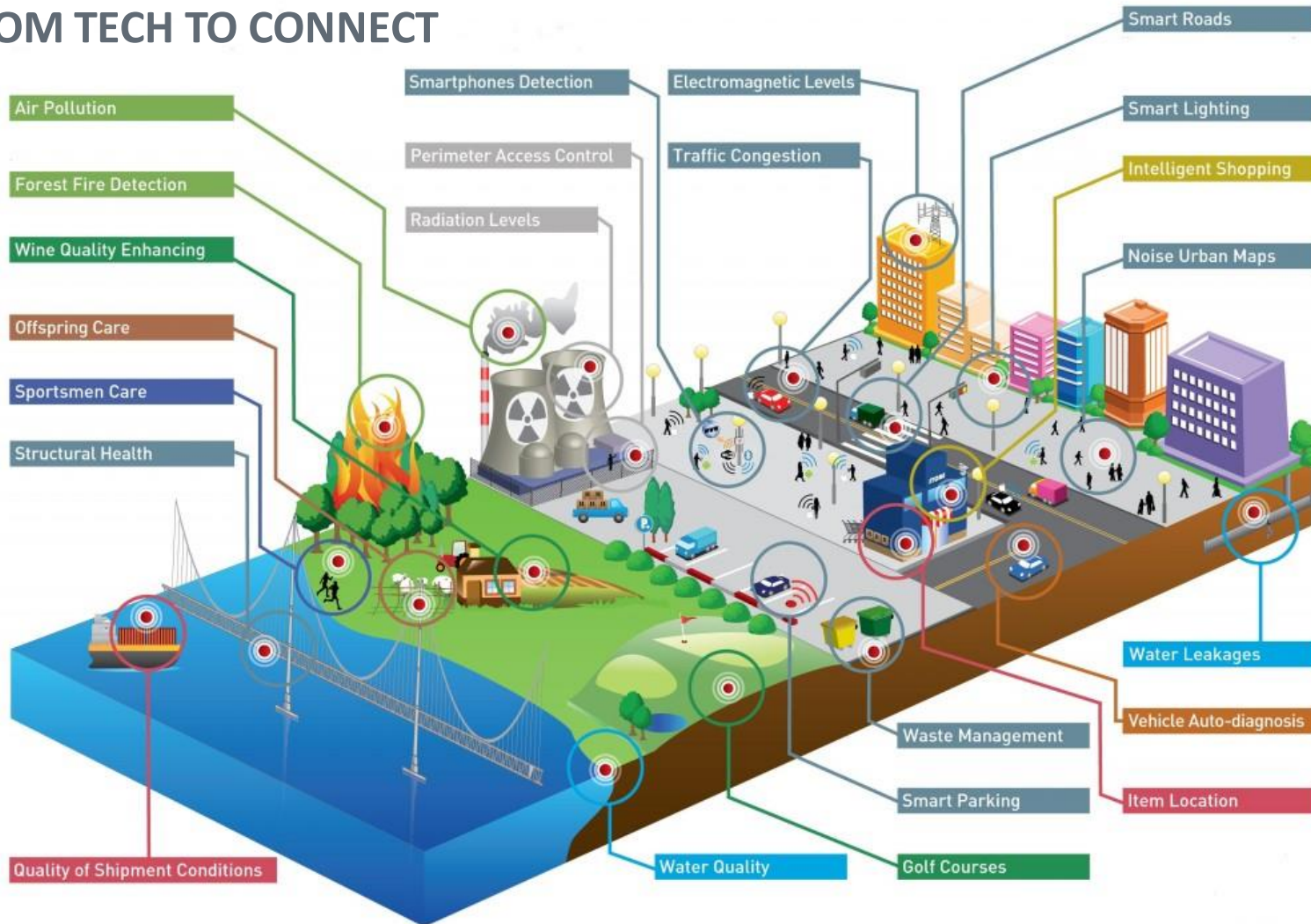
What does this mean for delivery?



Source: National Infrastructure Commission 'Smart Power'

BOSCH - SMART CITY 2.0 VISION

FROM TECH TO CONNECT



BOSCH SMART CITY DELIVERY

THE WHITE PAPER

What challenges are our cities and regions facing?

Housing – Mobility – **Energy**

Health and Social Care

What smart technology is needed?

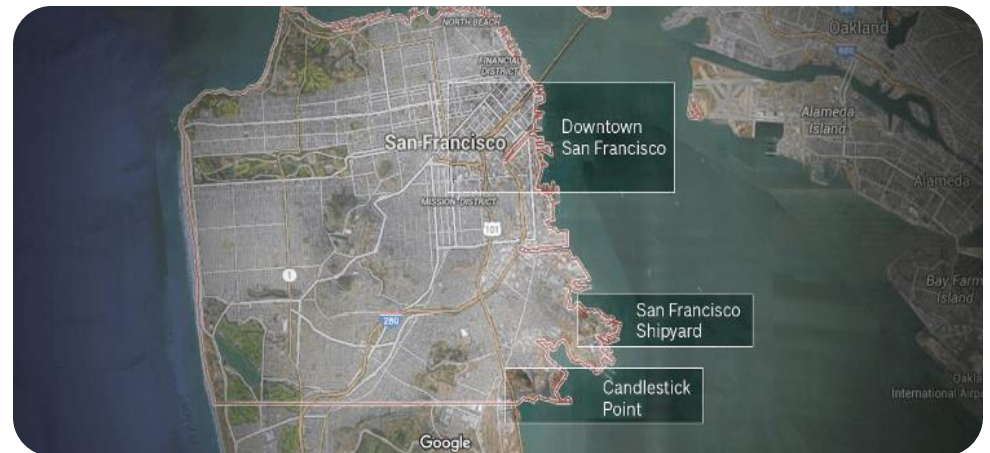
- Virtual power plant **eg. Rheintal**
- Battery storage
- Connected buildings

How to enable delivery?

- Investment partnerships **eg. San Francisco**
- Legal / regulatory frameworks?
- Development sites

San Francisco Shipyard

A new business model?



Source: Bosch

THE PLANNING CHALLENGE

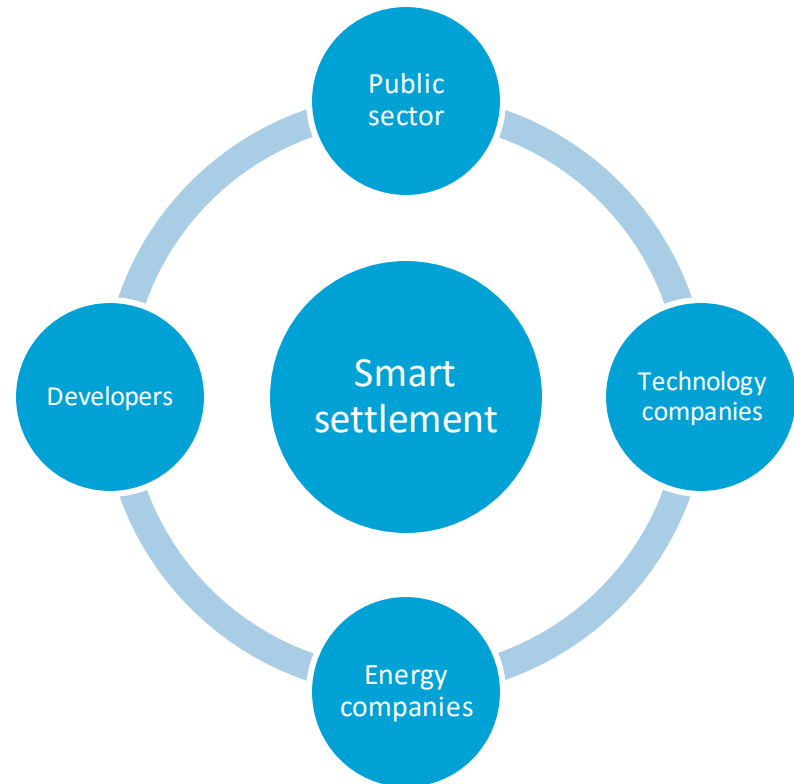
A NEW APPROACH TO ENERGY PLANNING?

Planning for a constantly evolving and adapting system is a 'wicked' problem

Change from small number of participants to diverse participants

Focus on collaborative and engaged planning

Local development in a connected system



OPPORTUNITIES FOR WALES

EMBEDDING 'SMART' IN POLICY

Strategic policy

- Well-being Act and 'Prosperity for All'
- National Development Framework
- Strategic Development Plans

Smart policy

- 'Smart' principles in national policy
- Identify smart energy opportunities
- Collaboration between public sector land owners, developers and technology providers



Source: Welsh Government

QUESTIONS?



Source: Bosch