



Introduction to Regulation and Sustainable Energy

Dr Xavier LEMAIRE
Sustainable Energy Regulation Network



Aim of the introduction

- What is regulation?
- The current context of regulation
- Types of regulation
- Who regulates?
 - Regulation and distributed generation
 - Support mechanisms for renewable energy
 - Regulation and energy efficiency



Purpose of regulation

- In very broad terms, regulation is necessary to protect the public interest by:
 - overcoming or compensating for market failure
 - to ensure the most efficient allocation of resources
- Aims of regulation:
 - market power (to reduce the influence of companies and groups over a market)
 - social (to ensure universal supply or to protect consumers by keeping prices reasonably low)
 - environmental (to control impacts of generation & use)
 - security of supply (“to keep the lights on”)



Regulation and technology

- In public electricity systems, technology choices are made (directly or indirectly) by government
 - In a competitive market, the choice of technology is made by companies rather than government
- BUT:**
- companies act according to the economic signals of government (policy) and the regulator (market rules)
 - the regulator therefore has a direct influence on what generating technologies are economically attractive
 - **regulation is therefore fundamental to influencing what gets built, where and when**



Regulatory issues for sustainable technology 1

Generation

- Market rules for trading electricity (Demand side bidding, transaction costs, penalties, etc)
- New entry
- Adoption of new technologies
- Implementation/administration of environmental tax schemes ([Renewables Obligation in the UK](#))
- Imposition of emission limits



Regulatory issues for sustainable technology 2

Transmission and distribution

- 'natural monopolies' (where the market can be best served by a single firm and network)
- regulated to:
 - ensure the most efficient operation of the network
 - maintain quality of supply
 - protect consumers, often through price capping:
 - *Rate of return regulation (costs plus a defined added amount)*
 - *RPI-X (price regulation with efficiency factor)*
 - *Performance-based regulation*



Regulatory issues for sustainable technology 3

Aim of regulating transmission and distribution

- Access to the network
- Connections (and costs)
- Increased efficiency through reduced transmission losses
- Balancing rather than just shifting power
- Active management of distribution network



Types of regulation

Command and control:

Imposing rules and standards (laws) backed up with criminal sanctions

Self-regulation:

Organisation or association setting rules which it monitors and enforces with its members (often to avoid or delay government action)

Incentive-based regulation:

The use of taxes or subsidies/grants to encourage compliance

Market based:

Channelling market forces to influence competition (competition laws; tradable permits, disclosure etc)



Who regulates?

- Government – issues of democratic control and legitimacy
- Independent regulators – in theory free from political interference, but can lack accountability
- Other:
 - General competition regulators
 - Local authorities
 - Courts and tribunals
 - Self-regulation



In conclusion

- Regulation is primarily designed to address the failure of markets to deliver desired goods – whether economic, social or environmental
- As environmental considerations are now at the top of the political agenda, the role of regulators in the implementation of sustainable energy systems can be considered as crucial
- Whatever the context of the country
 - Quest of sustainability → specific regulation
 - 1. Public utility in situation of monopoly
 - 2. Competition (Privatisation/Unbundling)
 - Deregulation? = Re-regulation!