



Dieter Helm is the author of  
Burn Out: The endgame for fossil fuels

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LECTURE THREE

# ELECTRICITY

## IN THE TWENTIETH CENTURY

PRESENTED BY

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# AGENDA

- The switch from horse and manpower to coal and electricity
- Early days and local municipal supply companies
- Nationalisation and rate of return regulation
- The great European vertically integrated monopolies
- Privatisation and liberalisation
- NETA and its failures
- Electricity in 2000: living with the legacy
- Return of the state: the U-turn, back to capacity
- The vertical structures and their 20<sup>th</sup> century justifications

# FROM HORSE & MANPOWER TO COAL

- The steam engine and the industrial revolution
- Steam and electricity generation
- Coal, coal mining and geopolitical advantage
- Early twentieth century dominance of coal
- Location of power stations in the coal fields

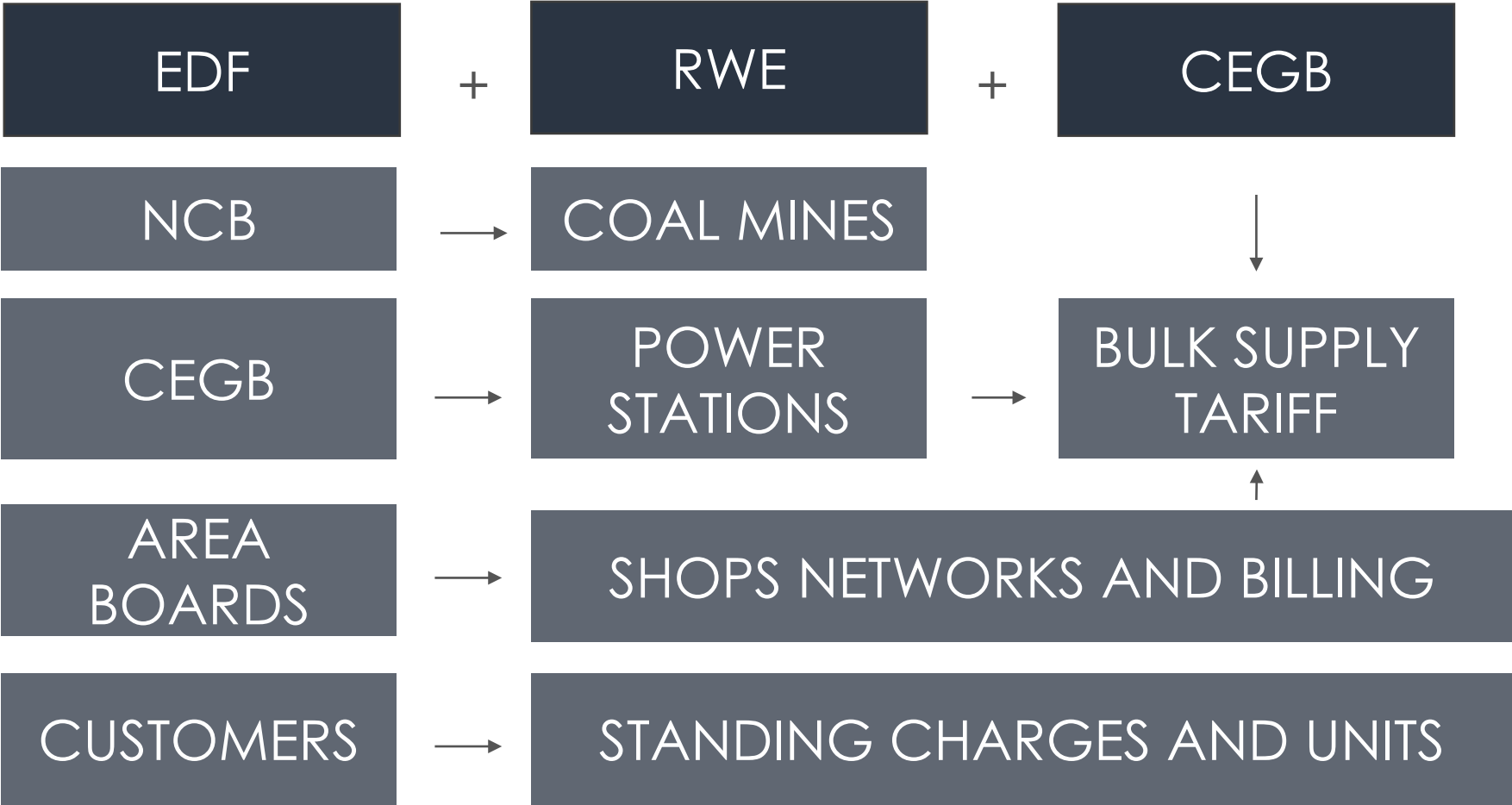
# THE EARLY DAYS AND LOCAL MUNICIPAL SUPPLY COMPANIES

- Municipalities started with water, sewerage and transport
- Street lighting and crime privatisation
- Local power stations and intermittency
- Global re-industrialisation
- The coming of the grid in the 1920s

# NATIONALISATION AND PLANNING

- Nationalisation in UK and France incorporated storage integration, planning and centralisation
- Elsewhere in Europe municipalities remained entrenched
- The 2 principles: state ownership and statutory monopoly
- Planning electricity generation and transmission and distribution of supply
- In the UK the bulk supply tariff

# THE VERTICALLY INTEGRATED MONOPOLIES



# PRIVATISATION AND LIBERALISATION

- Thatcher on ownership and competition
- Power and the break up of the CEGB
- Coal strikes in 1980/81 and then 1984/85
- The great break up argument: Lord Marshall vs. Thatcher and the nuclear option
- Long slow road to liberalisation

# THE NEW STRUCTURES

Competitive break up of NCB

Power Gen

National  
Power

British Energy

New independent  
CCGTs

RECs

Pool and capacity mechanisms

Cost-through

Regulated supply prices, gradual liberalisation



# GRADUAL STEPS

- Gas first
- Illegal to burn in power stations until 1990
- National Power and PowerGen split from CEGB and then taken over
- The Great Consolidation

EDF

RWE

E.ON

# LIBERALISATION, NETA AND CAPACITY

- Gradual liberalisation in supply
- The great NETA experiment
- The last gasp of the pure competitive commodity model
- Abandoning capacity mechanisms

# SUMMARY – ELECTRICITY IN 2000

- The 1998 liberalisation of retail supplies
- NETA and the end of the Pool
- RECs subject to multiple takeovers
- Power, National Power and British Energy passing into European hands with widespread consolidation

## **And still.....**

- Vertical integration largely intact
- Wholesale markets dominant , based upon marginal costs
- Little storage
- Positive demand side

## **All about to be transformed.**

# SUMMARY – ALL CHANGE

- Wholesale market and vertical integration
- Zero marginal cost and capacity auctions
- Passive demand → active demand
- No storage → storage

**From the 20<sup>th</sup> Century vertical integration**

**21st century break-up**



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