

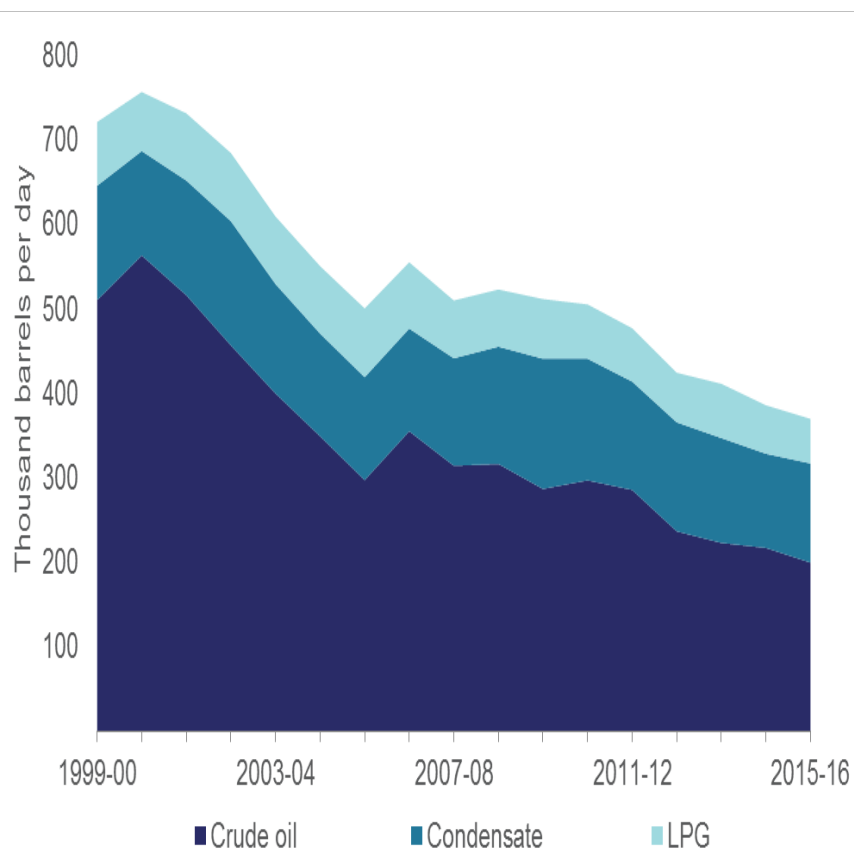
Australian Update

OIL AND GAS SECURITY

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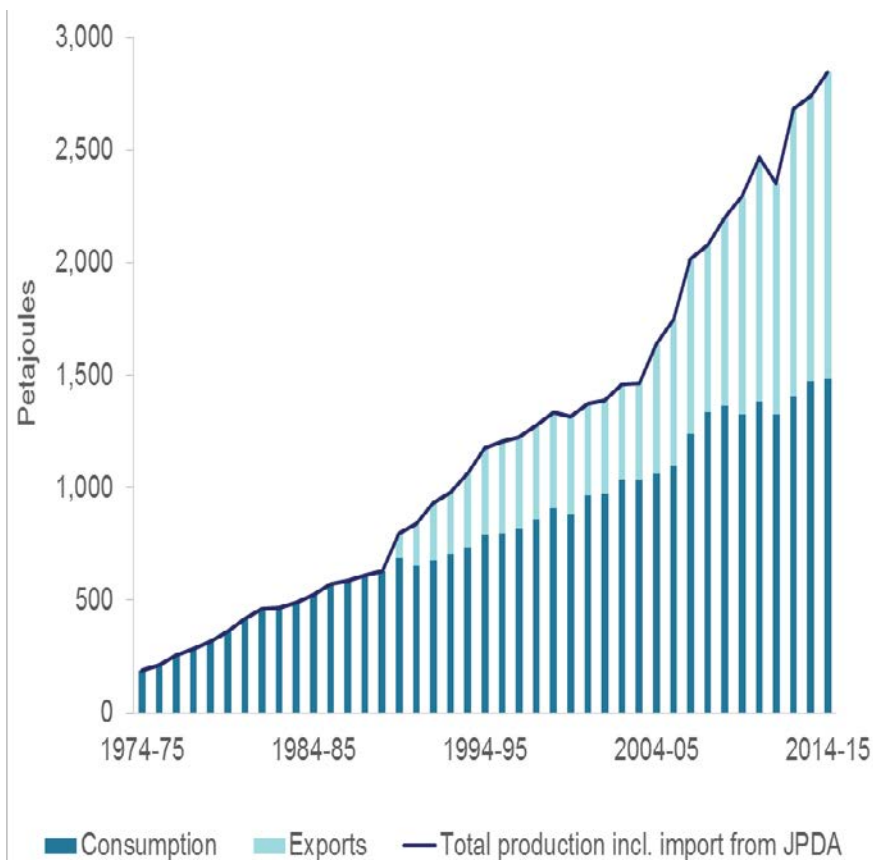
Oil and Gas Supply and Demand Situation

Oil Production



Source: Department of the Environment and Energy (2016)
Australian Petroleum Statistics – December 2016

Gas Production



Source: Department of Industry, Innovation and Science (2016)
Australian Energy Statistics

Oil and Gas Supply and Demand Situation

Gas

- o High level of gas self-sufficiency - reserves/production ratio of 63.0 years
- o 1,363 PJ exported in 2014/15
- o 24% of total energy consumption in 2014/15
- o 1.3% growth rate from the previous year
- o 4.1% average annual growth for the previous 10 year period
- o 20% of total final energy consumption in Australia in 2014/15
- o Steady from 2009/10 levels

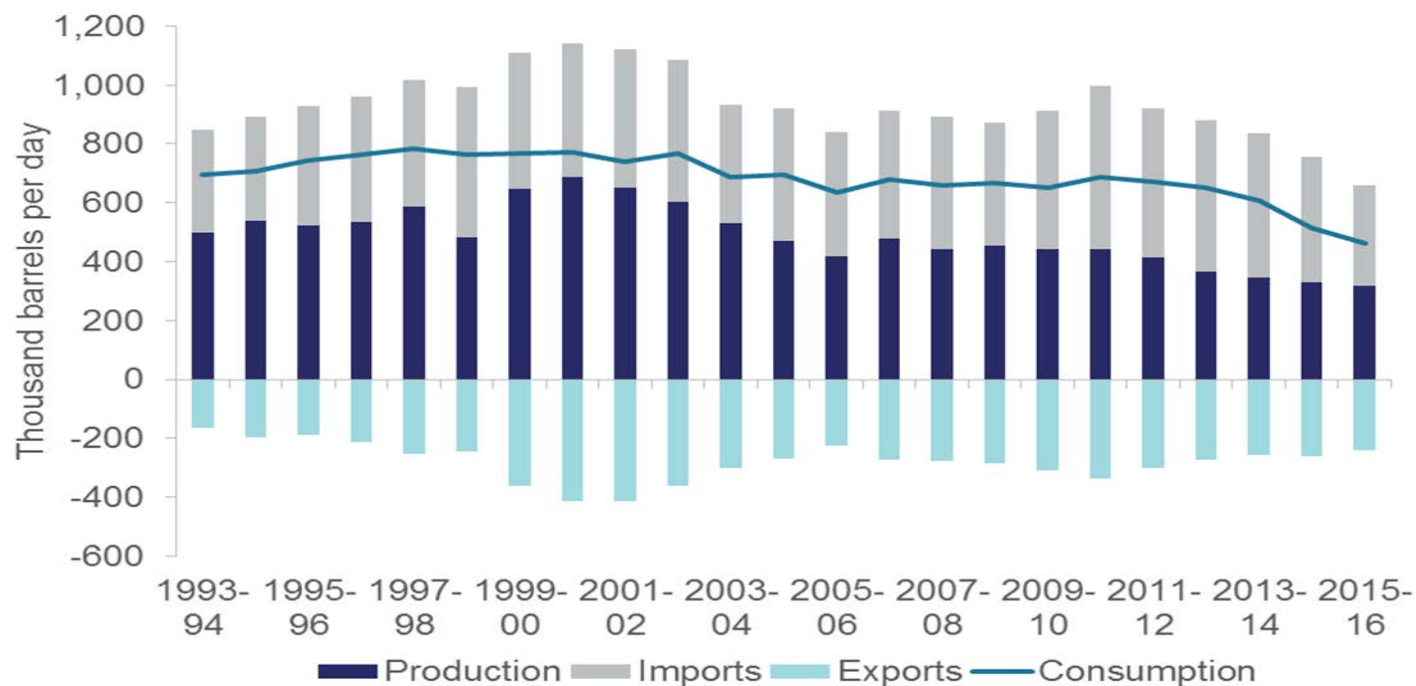
	2014–15		Average annual growth	
	PJ	share (per cent)	2014–15 (per cent)	10 years (per cent)
Coal	1,907.8	32.2	3.0	–2.0
Oil	2,237.4	37.8	–0.9	1.4
Gas	1,431.0	24.2	1.3	4.1
Renewables	343.3	5.8	1.6	2.1
Total	5,919.6	100.0	1.0	0.7

Australian energy consumption, by fuel type

Department of Industry, Innovation and Science (2016) Australian Energy Statistics

Oil and Gas Supply and Demand Situation

Australian refinery feedstock balance

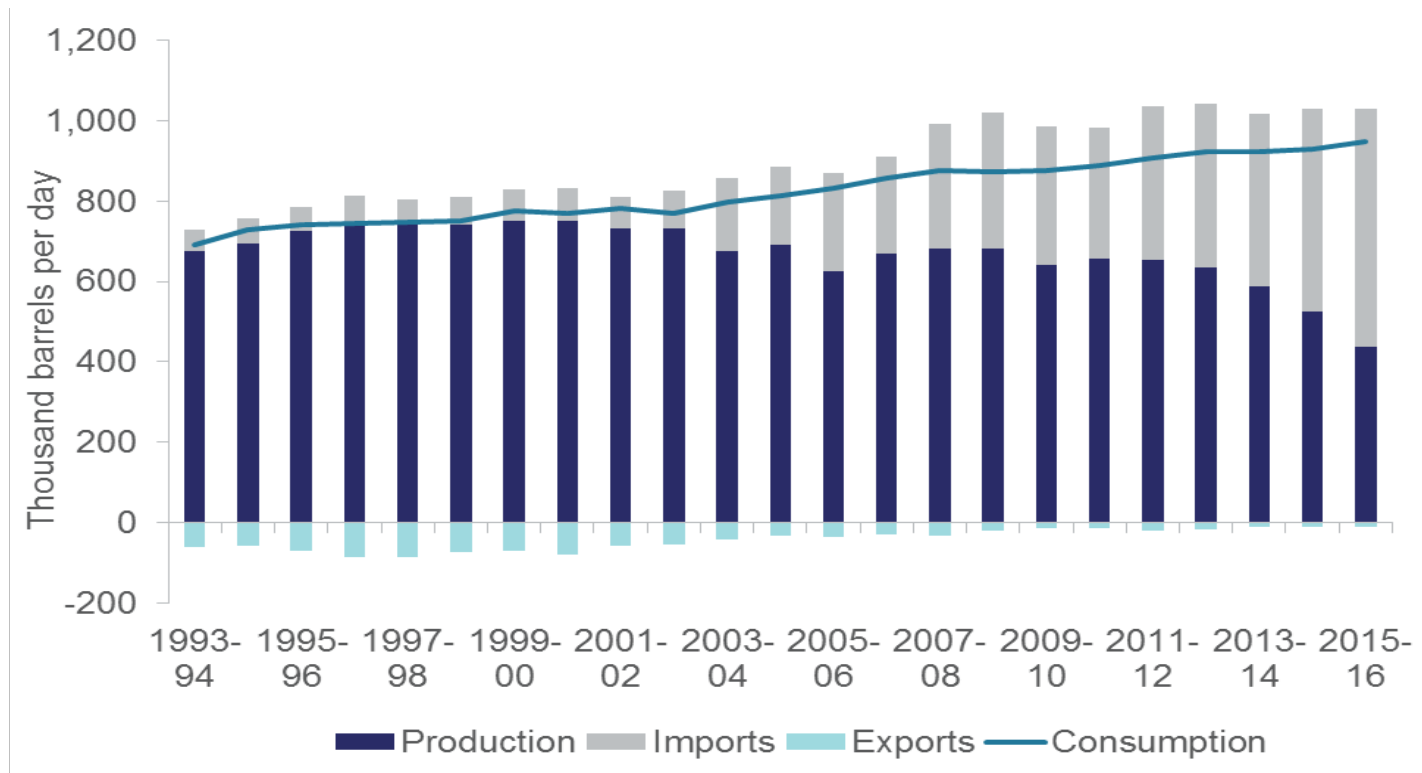


Source: Department of the Environment and Energy (2016), *Australian Petroleum Statistics – December 2016*

Oil and Gas Supply and Demand Situation

Australia

Australian refined petroleum product balance



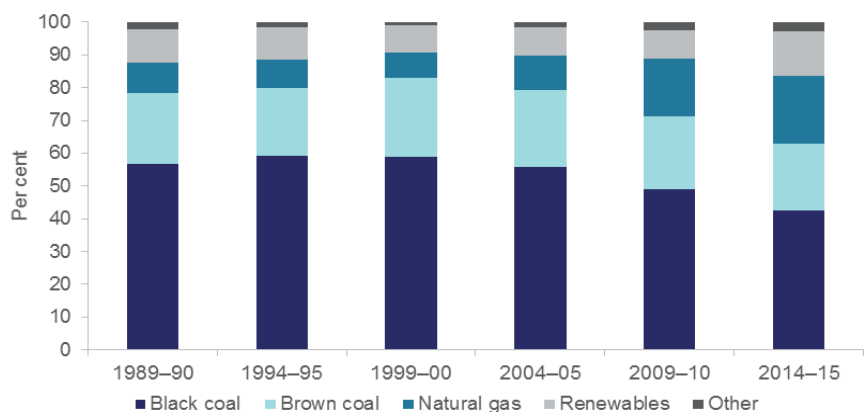
Source: Department of the Environment and Energy (2016), *Australian Petroleum Statistics – December 2016*

Oil and Gas Supply and Demand Situation

Natural Gas consumption mix

Gas was 20.8% of Australian electricity generation in 2014/15

- o 52,463GWh out of 252,359GWh in 2014/15
- o 3.6% lower than the previous year
- o 9.7% average annual growth over 10 years

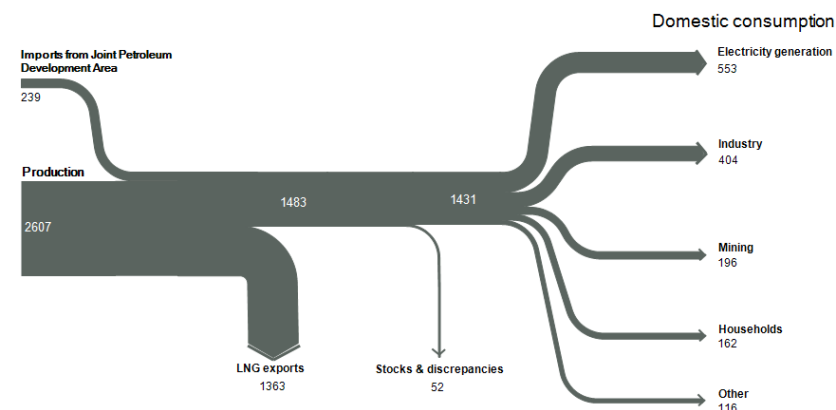


Australian electricity generation fuel mix

Department of Industry, Innovation and Science (2016) Australian Energy Statistics

Gas demand by sector 2014/15

- o 38.6% Electricity
- o 28.2% Industry
- o 13.7% Mining
- o 11.3% Households
- o 8.1% Other

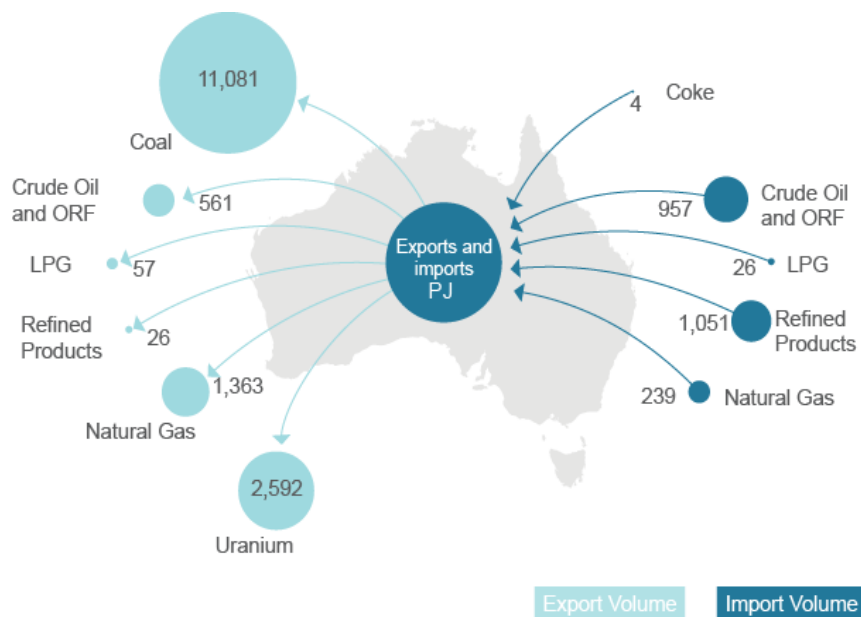


Unit: Petajoule (PJ)

Australian gas flows, petajoules, 2014-15

Department of Industry, Innovation and Science (2016) Australian Energy Statistics

Oil and Gas Supply and Demand Situation



	2014–15		Average annual growth	
	PJ	share (per cent)	2014–15 (per cent)	10 years (per cent)
Black coal	12,287.9	73.5	4.1	4.7
Brown coal	678.4	4.1	8.5	–1.0
Natural gas	2,607.1	15.6	5.2	4.9
Oil and NGL	704.9	4.2	–5.4	–2.1
LPG	89.7	0.5	–10.7	–3.8
Renewables	343.3	2.1	1.6	2.1
Total	16,711.2	100.0	3.8	3.9

Australian energy trade, 2014–15

Department of Industry, Innovation and Science (2016) Australian Energy Statistics

Australian energy production, by fuel type

Department of Industry, Innovation and Science (2016) Australian Energy Statistics

Oil and Gas Security Policy

Australia's approach to oil and gas security

- Australia allows for market-based responses in the first instance, backed up by strong regulatory powers if required.
- Role of Government
 - Establish the market rules
 - Monitor and assess the markets
 - Operate gas markets
 - Emergency response (planning, implementation)
 - Conduct regular exercises
 - Maintain emergency response procedures

Oil and Gas Security Policy

- **Gas Supply Security Framework**
 - o COAG Energy Council gas market reforms
 - o Gas and electricity interdependencies
 - o Australian Government - recent gas security mechanisms
 - o Critical infrastructure owner and operators are best placed to manage risks/vulnerabilities (all-hazards)
 - o Partnership between governments and businesses, including in response to major gas and electricity, supply interruptions
 - National Gas Emergency Response Advisory Committee (NGERAC)
 - National Electricity Market Emergency Management Forum (NEMEMF)
- **Indicators in place to gauge security of supply:**
 - o Demand/supply (including peak usage and gas powered generation)
 - o Market notices
 - o Infrastructure capacity (pipelines, storage)
 - o Prices

Oil and Gas Security Policy

- **Oil supply Security Framework**
 - Australia allows for market-based responses in the first instance
 - Government role:
 - Monitoring the market
 - Serving as a facilitator (NOSEC)
 - Conducting regular exercises
 - Maintaining emergency response procedures
 - Setting the policy framework
- **Indicators in place to gauge security of supply:**
 - Ongoing monitoring and assessment
 - Market based and industry responses
 - Monitoring the effect of price signals on supply and demand
 - Sourcing, redirecting and allocating supplies, and in-refinery options
 - Defence – increasing use of commercial supply chain

Oil and Gas Security Policy

Oil security: on-going monitoring and assessment

- Commissioned studies
 - o Oil market response to crises (2015)
 - o Market resilience to oil supply disruptions (2015)
 - o Australia's maritime supply chain (2013)
 - o Competitive pressures on domestic refining (2012)
 - o Strait of Hormuz – a major middle east oil shock disruption scenario (2012)
- National Energy Security Assessment (NESA)
 - o The NESA is an economic assessment of the effectiveness and anticipated resilience of Australia's electricity, natural gas and liquid fuel systems in continuing to meet the long term requirements of domestic energy users.

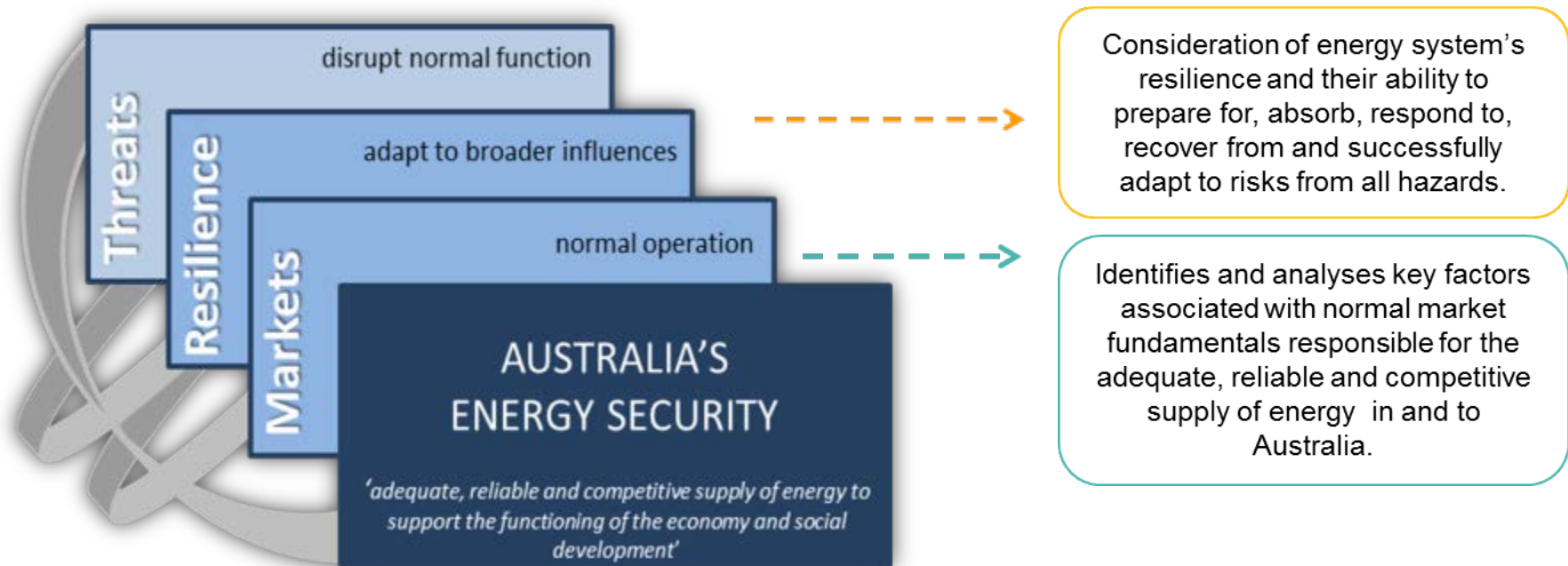
Oil and Gas Security Policy

Energy security lessons from Australia

- Physical disruptions in Australia – domestic in origin, not international
- Most severe disruptions in Australia have been gas supply, not oil supply
 - Despite Australia being a major exporter of gas (i.e. LNG)
- ***Lesson – the value of supply diversity***
- Expansion of pipeline networks and LNG trade internationally will improve gas supply diversity and enhance gas security
- The proposed Australian Domestic Gas Reservation Mechanism (ADGRM) will provide a temporary measure to address shortfalls in the Australian gas market.

Monitoring and assessment

Theoretical approach



Oil and Gas Security Policy Gaps

- Finding the balance between the role of the market and the role of government.
- Interdependencies between oil and gas security, as well as interlinkages with electricity and clean energy transition.
- Frameworks for co-operation and information sharing, both regionally and with other energy governance bodies.
- How best to adapt to future changes and developments in energy systems to ensure we have ongoing and effective emergency response capacity.

Thank you

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