Briefing Note on SMRs and Energy Security

Ireland is an island with **no indigenous energy resources that can adequately and reliably meet the country's needs** and has set a mandatory objective in law to be net-zero by 2050.[1]

Energy-related GHG emissions account for more than half of national emissions and, in 2024,

- 83% of the country's primary energy of 167.9 TWh contributed to GHG emissions,
- 80% of this 167.9 TWh was imported through ports (oil), in undersea pipelines (natural gas) and via undersea cables (electricity),
- Only 8% came from indigenous wind and solar which - because of intermittency - cannot meaningfully contribute to national energy security, and
- The only national energy security came from 1.7 million tonnes of oil stocks with an energy content of 20 TWh (equivalent to 12% of national consumption).[2]

There is **no credible path to net-zero energy by 2050** and Ireland's **energy security is deteriorating**. For example, Government's proposed LNG plant will replace only one third of the energy security lost when Moneypoint power station stopped burning coal in 2025.[3,4]

Although not yet proven, **small modular nuclear reactors** (SMRs) could potentially meet a large proportion of Ireland's energy needs by 2050. Ireland's electricity requirement today is 35 TWh. Electrification of heating and transport, and economic growth, could increase this to 80 TWh. The **Academy** has estimated that a fleet of SMRs - with a power capacity of 5,500 MW - could meet half (39 TWh) of the country's future electricity requirement.[5] This would require 12 SMRs of the size of the Rolls Royce units (470 MW) which **Great British Energy - Nuclear** is proposing to deploy at Wylfa in Anglesey.[6] Ireland could store nuclear fuel for such a fleet to provide many years of energy security. This would significantly address the energy security risk recognised by Government but effectively ignored in national energy policy.[7]

The **Academy has previously recommended** that Ireland commence a process - equivalent to that undertaken in response to the oil shocks of the 1970s - to prepare for the **possible introduction of nuclear power**.[8]

This process would be similar to that currently being followed by **Estonia** and is based on the milestone approach of the **International Atomic Energy Agency** (IAEA) for countries to introduce nuclear power.[9,10] The IAEA's first milestone is to reach the point where a country is *ready to make a knowledgeable commitment to a nuclear power programme*.

Once this point would be reached, there could be an informed public and political discussion on issues such as safety and nuclear waste in advance of removing legislative prohibitions.

With no credible pathway to get towards a net-zero energy sector, **ignoring the potential of SMRs** - while consistently exaggerating and misrepresenting the potential of renewables – **is a serious error of judgement and needs to be corrected**.

Primary Energy in Ireland, 2024

	With GHG emissions	No GHG emissions	Totals
Imported	74.3%	5.2%	79.5%
Indigenous	8.2%	12.3%	20.5%
Totals	**82.5%**	**17.5%**	**100.0%**

	With GHG emissions	No GHG emissions	Totals	With GHG emissions	No GHG emissions	Totals
Through ports (oil)	85.1 TWh	3.7 TWh	88.8 TWh	50.7%	2.2%	52.9%
In undersea pipelines (gas)	39.5 TWh		39.5 TWh	23.5%		23.5%
Via undersea cables (electricity)		5.1 TWh	5.1 TWh		3.0%	3.0%
Indigenous	13.8 TWh	20.7 TWh	34.5 TWh	8.2%	12.3%	20.5%
Wind and solar		*12.9 TWh*	*12.9 TWh*		*7.7%*	*7.7%*
Fossil (mainly natural gas)	*11.7 TWh*		*11.7 TWh*	*7.0%*		*7.0%*
Other	*2.1 TWh*	*7.8 TWh*	*9.9 TWh*	*1.2%*	*4.6%*	*5.9%*
Totals	**138.4 TWh**	**29.4 TWh**	**167.9 TWh**	**82.5%**	**17.5%**	**100.0%**

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1 Climate Action and Low Carbon Development Act 2015 and Climate Action and Low Carbon Development (Amendment) Act 2021

2 National Oil Reserves Agency

3 Press release - *Government approves development of State-led strategic gas emergency reserve*

4 Press release - *After 40 years, ESB announces that coal generation has ended at Moneypoint Power Station*

5 The Energy Transition, Irish Academy of Engineering, April 2025, Page 57

6 Press release - *North Wales to pioneer UK's first small modular reactors*

7 National Risk Assessment, 2024, Page 31

8 Small Modular Reactors, Irish Academy of Engineering, June 2024, Page 2

9 World Nuclear News - Estonia moving ahead on new nuclear planning

10 Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA, 2015