

A faint, circular watermark logo is centered in the upper half of the slide. It features a central dark circle surrounded by several concentric rings of varying shades of purple and blue, creating a sunburst or gear-like effect.

Data Centre's and Ireland

By Kieran Cummins



Amazon-Dublin

HISTORY

- 1990's – Boom in Software on CD's
- Government knew this would come to an end and looked at Data Centre's as an alternative.
- No High speed Fiber Optic Cable to Europe
- Contracts signed within 3 months



CHALLENGES/ DOWNSIDES

- Carbon emissions
- Power hungry
- Consuming power in Ireland, but also to service other countries in Europe

EMMISSIONS

- **Consumers** give rise to the necessity for Data centres.
- Netflix, Social Media posts, sat navs, online shopping, smart phone apps or who are storing information in a 'cloud'
- Cooling
- Some countries use district heating to use the waste heat

POWER

- Eirgrid: estimated that they will consume 30% of all electricity by 2030.
- Most countries are seeing their electricity demand stagnate or decline.
- CSO statistical publication, 03 May 2022
- Roof space: Solar?

Recent Statistics



An
Phríomh-Oifig
Staidrimh

Central
Statistics
Office

Data Centres Metered Electricity Consumption 2021

Metered electricity
consumed by
data centres



5% | **14%**
in 2015 | in 2021

Metered electricity
consumed by
urban dwellings



21%
in 2021

Metered electricity
consumed by
rural dwellings



12%
in 2021

In 2021...



Median
residential
metered
electricity
consumption
3,594
kWh

Around 10%
of residential
customers
consumed
less than
1,000
kWh

NETWORKS

- data centres are being concentrated around Dublin
- Congestion leads to blackouts
- upgraded significantly
- In 2019, a report by the Irish Academy of Engineering (IAE) estimated data centre expansion will require almost €9bn in new energy infrastructure and add at least 1.5m tonnes to Ireland's carbon emissions by 2030 – a 13% spike on current electricity sector emissions.

- There is extra infrastructure costs on top of the extra generation costs.
- Climate Action and Low Carbon Development (Amendment) Act 2021; nearly every industry sector has ambitious targets save for the data centre sector.

GREEN WASHING

- like to be seen to be investing in renewable power.
- Increasing investment in renewable power is not costless.
- Amazon Web-services invested in renewable power in Donegal. BUT in order to get that power to consumption, there is a requirement for upgrade of the transmission network.

- On Mon, Jul 19, 2021, the Irish Times reported
- *‘When it comes to the huge amounts of electricity (for powering) and water (for cooling) data centres use, big tech companies are keen to green-wash, and talk about green and renewable energy, and say things like their emissions are “net-zero”.*
- *But that doesn’t mean that they aren’t using colossal amounts of energy and water. What’s happening is, tech companies are buying and building wind farms. Why are we now in a situation, having never fully capitalised on the potential of renewable energy on this island, where wind farms are being built and bought to offset big tech energy demands?*

RENEWABLE ENERGY

- Apart from the additional carbon and apart from the strain put on our carbon targets
- Renewable electricity target for 2020 was 40%
- Renewable electricity target for 2030 is 70%.
- At the moment this is done by subsidation of renewable energy.
- The subsidy costs being borne by consumer groups; generally by way of their monthly electricity bills.

EMPLOYMENT

- Employment: they create very little.
- Its been argued that it may attract principal operations of those companies.

SECURITY ISSUES

- In 2019, the National Cyber Security Strategy identified Data Centers as a major issue.
- *“Ireland is home, according to some estimates, to over 30 per cent of all EU data, and to the European headquarters of many of the world’s technology companies. Our economic success is therefore closely bound up with our ability to provide a secure environment for these companies to operate here”*
- This is all the more acute currently given the aggression in the world. Take out Data Centers and you achieve military objectives!

MATERIALS

- Rare Earth Metals (the environmental footprint in other parts of the globe is truly shocking)
- Components using Cobalt; much of which utilises child labour.
- Aggregates; many people fail to understand that sand and gravel comes from finite resources and that most of our eskers have been plundered in order to satisfy our insatiable construction requirements. Indeed, sand is so scarce in many parts of the world that dredging of river estuaries is commonplace.

PLANNING

- Large companies don't need to do detailed EIA's; is this a gap in Ireland's strategy?
- The wording of Section 182A is mandatory – not permissive. It states that an undertaker 'shall' rather than 'may' prepare an application for approval of such development under Section 182B of the Act, and make that application to An Bord Pleanála directly.
- The wording of the Planning and Development Act is clear that all development consisting of high voltage lines at 110kV or above connecting an electricity generation station with a sub-station must be made directly to An Bord Pleanála, subject to the exception provided for where the ESB has specified certain lines as not forming part of the Transmission System.
- Is this in compliance with EU law? We must consider the following directives: -
 - **Environmental Impact Assessment Directive (EIA)**.
 - **Habitats Directive.**
 - **Strategic Environmental Assessment (SEA)**; There is no national policy promoting data centres which assesses their benefits against their environmental impacts as required under the Strategic Environmental Assessment (SEA) Directive.
 - **Water Framework Directive**



The Proposed Apple Data Centre in Galway

POLICY

- The Government Statement on The Role of Data Centres in Ireland's Enterprise Strategy (2018) recognises these extreme demands, writing:
- *'However, as large consumers of electricity, data centres also pose particular challenges to the future planning and operation of a sustainable power system. The Government recognises these challenges and will take steps to mitigate them. A plan-led approach will develop a range of measures to promote regional options for data centre investment, minimising the need for additional grid infrastructure.'*



Facebook Data Centre, Co Meath

REGULATION

- Commission for Regulation of Utilities (CRU)
- Decision Paper published 23 November 2021 Reference: CRU/21/124
- The Commission for Regulation of Utilities (CRU) said it is concerned over:
- *“... continuing to allow data centres to connect to the electricity network in accordance with current arrangements.”*
- Under directions set by the CRU, EirGrid and ESB Networks will be required to assess data centre grid connection applications against set criteria:
- *“to determine whether a connection offer can be made within the system stability and reliability needs of the electricity network”.*
- *“within a constrained or unconstrained region of the electricity system”.*

- In grid applications, network providers must also consider the ability of data centre developers to access: -
- Onsite power generation, or storage, that is at least equal to their power demands is a further factor EirGrid and ESB Networks.
- Whether the data centre's energy consumption can be reduced in times of system constraint.
- Therefore, locating away from areas of high demand and constrained supply will undoubtedly be considered by would be applicants.

RECOMMENDATIONS

- May need to look at a **carbon consumption model** rather than a **carbon production model** for Europe. This would also tackle the issue of **goods being imported from high carbon China** as opposed to be manufactured in low-carbon Europe. Problem is that gives rise to import **tariffs**.
- A ‘top down’ approach would be preferable rather than the current developer led ‘bottom up’ approach.

- An integrated approach which considers wider aspects of and impacts of Data Centers in Ireland (as outlined herein) needs to be considered. This should consider: -
 - Security Issues,
 - Resource requirements,
 - Compliance with EU law,
 - Impact on Ireland's commitments under international agreements,
 - Impact on energy requirements and renewable energy ambitions,
 - Network requirements.

