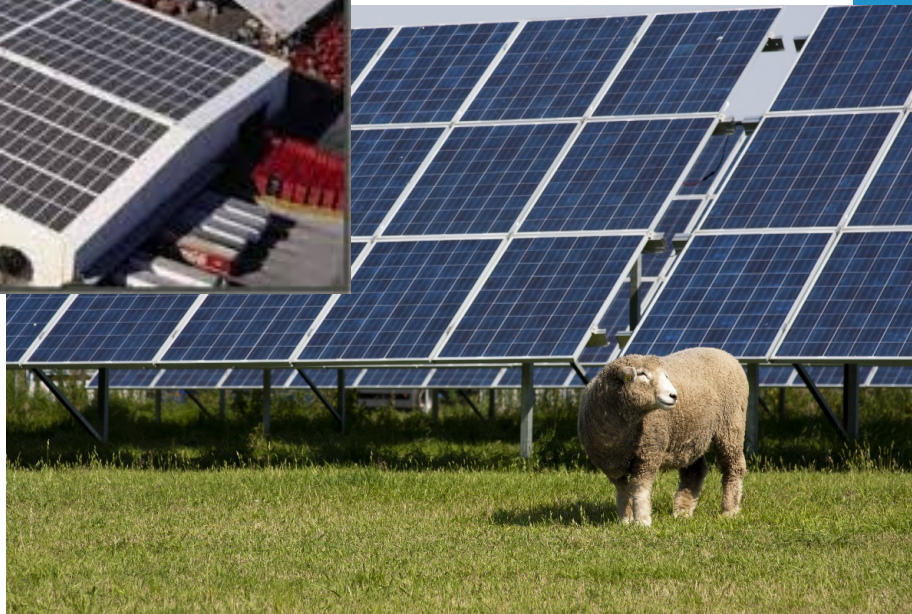


Solar PV in Ireland

April 2018



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Contents

1. About Power Capital Renewable Energy
2. How solar PV works
3. Irelands Energy Mix
4. Construction methods
5. Solar market
6. Ireland's late mover advantage
7. Business case for solar in Ireland
8. Opportunities for communities
9. Equipment bankability and warranties
10. Conclusion

About

Power Capital Renewable Energy –
established in 2011

Specialist in solar energy development
and investment

Developed a range of photovoltaic
projects including rooftop and ground
mounted systems across,

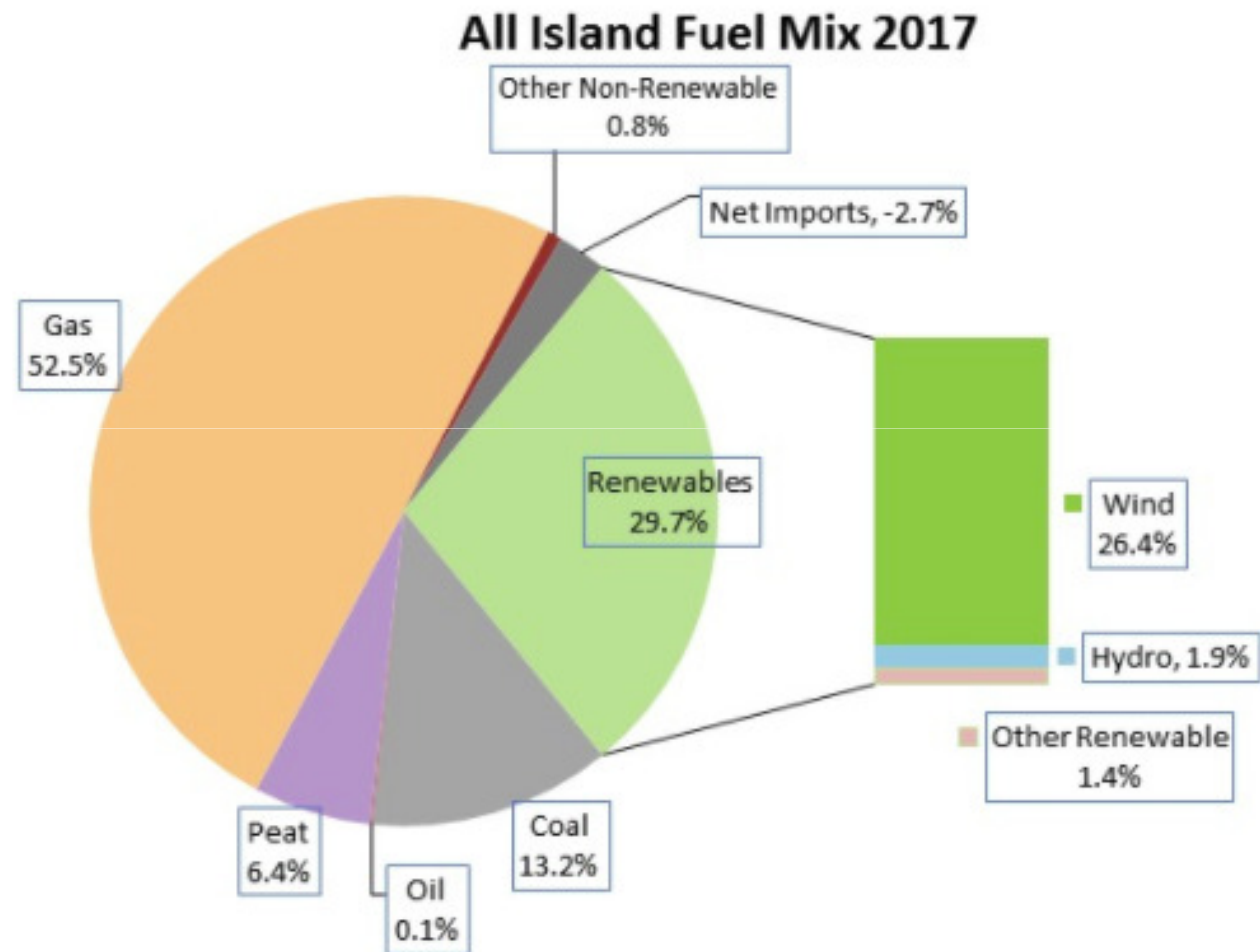
Germany the UK and Ireland



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The future of Solar PV in Ireland

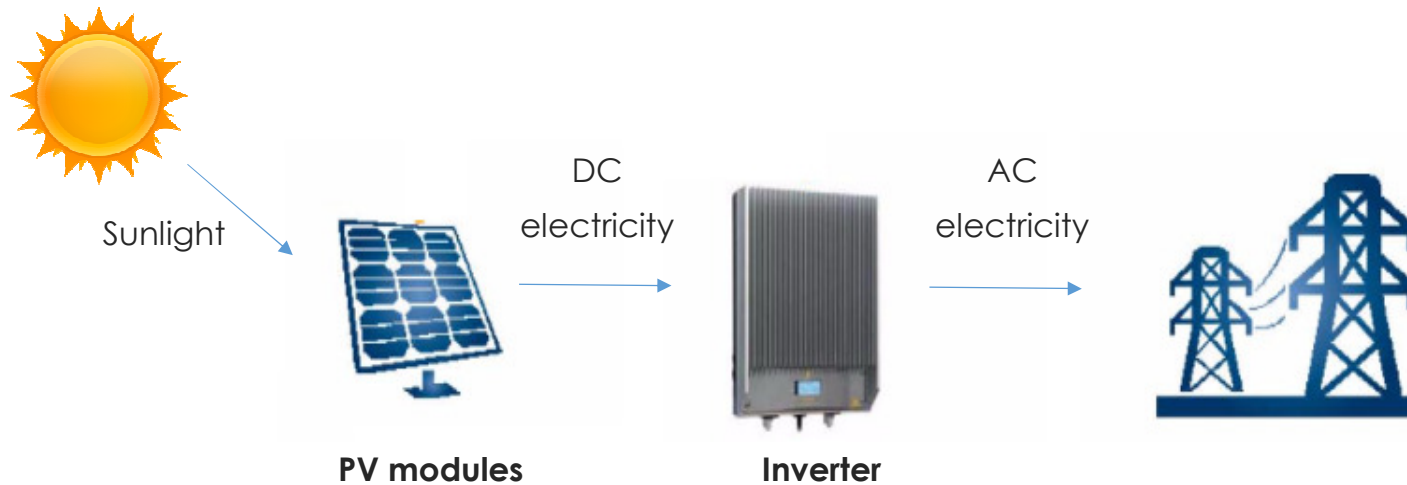
Ireland's Energy Mix 2017



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How solar PV works

The **PV Modules** convert daylight into direct current (DC) electricity by means of the Photoelectric effect. This DC is then fed into an **inverter**, that converts this DC into Alternating Current (AC).



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Construction methods

Utility scale

PV utility-scale installations can be any of the following:

Fixed



Tracking



Floating



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Construction methods

Roof top

PV roof top installations are generally either ballasted or fixed:

Flat roof



Sloped roof



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Construction methods

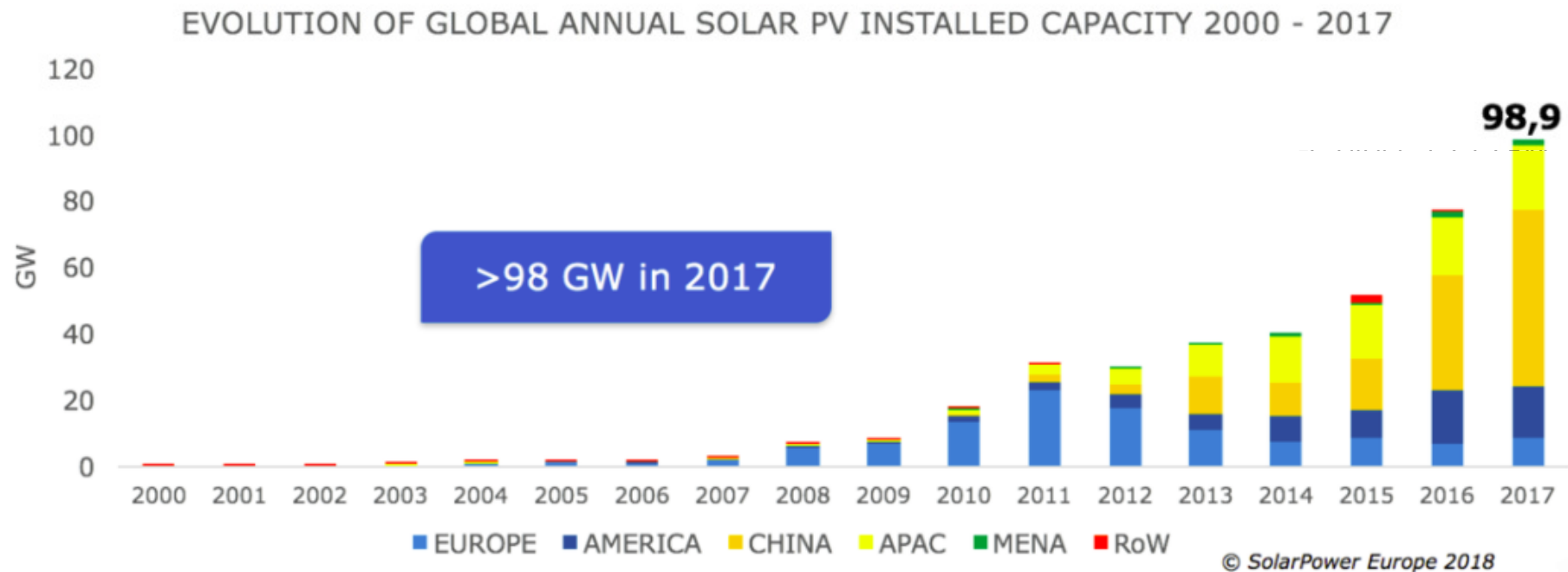
Key considerations in design

- Orientation & inclination
- Shading
- Equipment
- Live & Static loads and structural effects
- Condition of roof membrane
- Cable routes
- Health & Safety
- Planning permission
- Grid connection

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Global Solar market

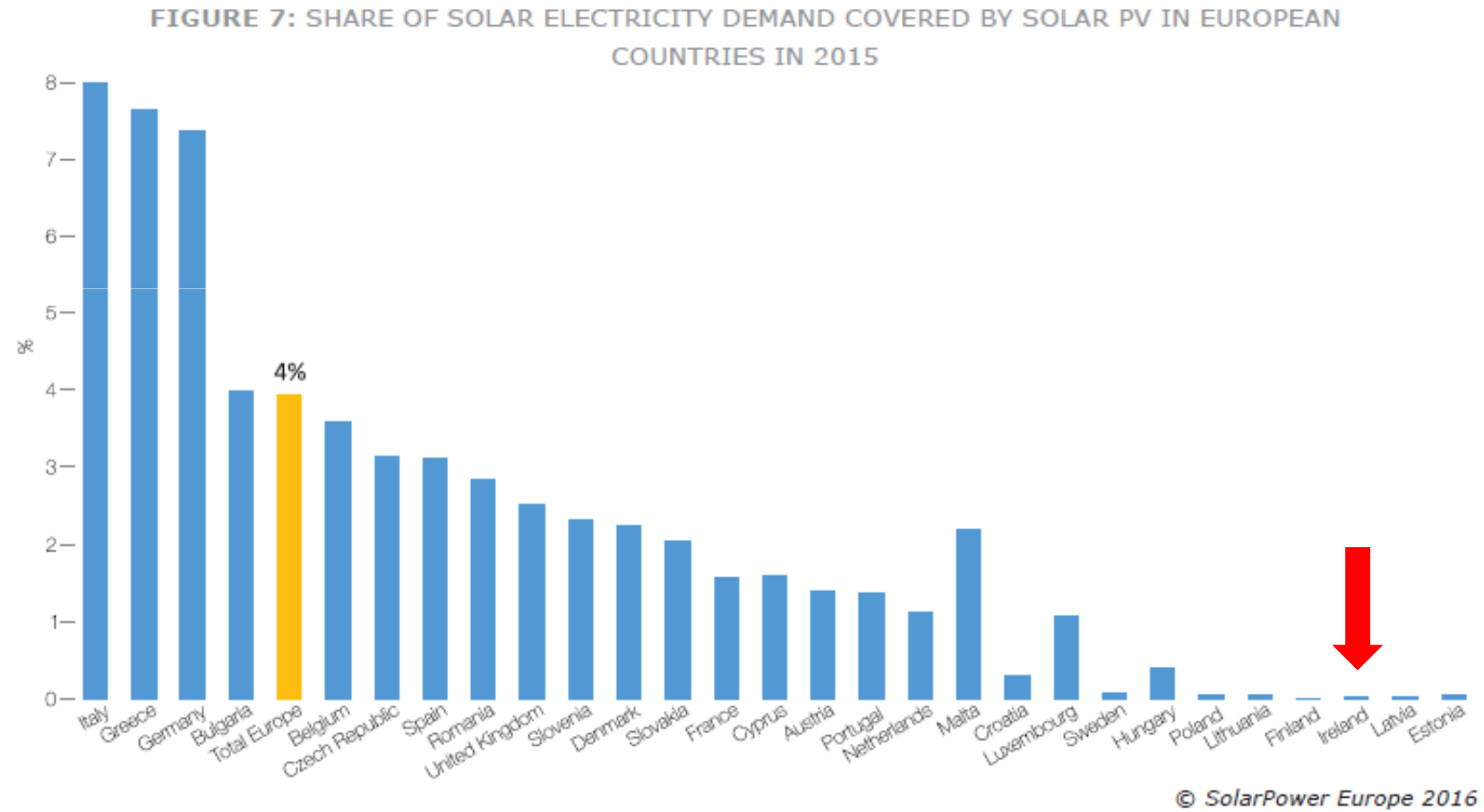
In 2017 **99 GW** of PV systems were installed globally.



© SolarPower Europe 2016

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European Solar market



Ireland's late mover advantage

Unlike other countries, very little solar PV has been deployed in Ireland to date, due in part to the absence of direct support mechanisms such as REFITs, CFDs or PPAs.

Ireland has a '**late mover advantage**':

- Advances made in the technology and cost reductions
- Planning and installation best practices
- Familiarity of financial institutions with the asset class
- Properly designed support mechanisms from the outset

Business case for solar in Ireland

Why solar should be considered as an essential part of Ireland's renewable energy mix:

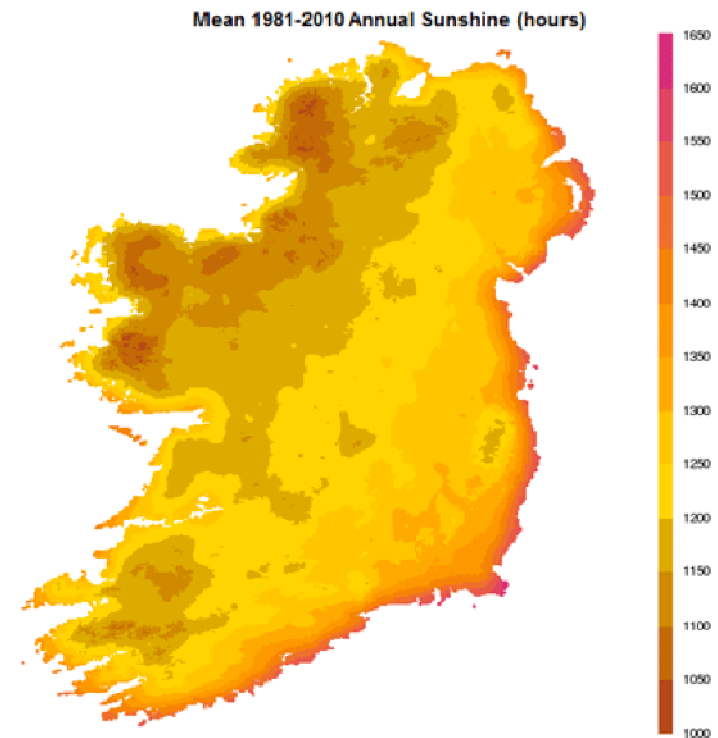
- Rapid deployment to assist in meeting 2020 targets
- Over 6GW has applied for a grid connection
- Over 1GW has been submitted for planning permission
- Suitable irradiation levels
- Positive benefits vs cost
- Corporate Social Responsibility
- Positive public perception
- The UK has installed circa 14 GW since 2012

Business case for solar in Ireland

Suitable irradiation levels

While it is commonly believed that the poor Irish weather limits the potential of solar power, the solar radiation in Wexford is 78% of the level enjoyed in France, and is equivalent to the levels found in the UK

Plus, the moderate temperatures contribute to increase the efficiency of the modules



Business case for solar in Ireland

Positives benefits vs costs

The cost of solar modules in Europe has fallen by circa 60% since 2011, standing currently at €0.30 > €0.35/W.

This contrasts heavily with energy prices in Ireland, which have increased by 27% in the same period.

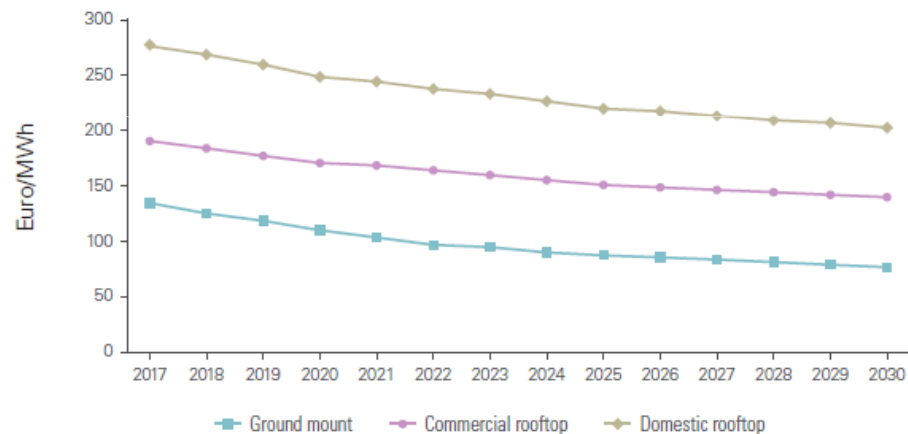
Both trends are bound to continue in the following years, with grid parity on Solar PV expected no later than 2025.

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Business case for solar in Ireland

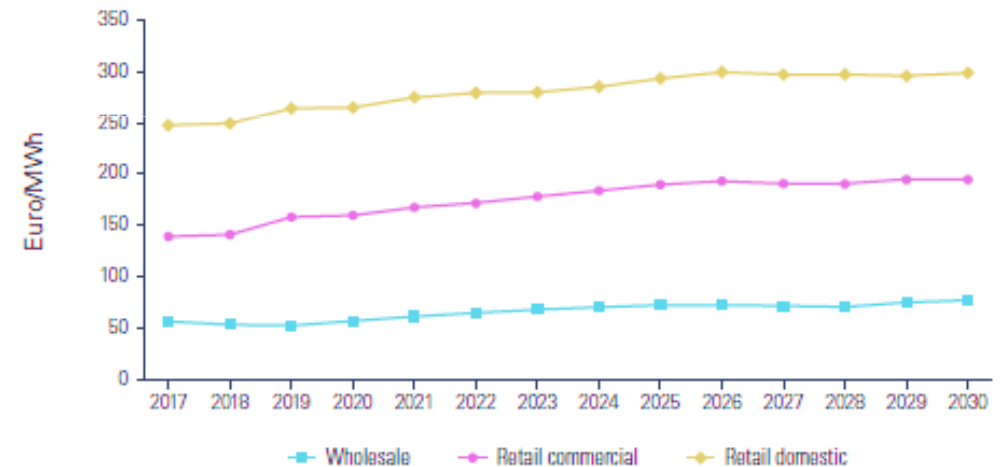
Positives benefits vs costs

Solar PV levelised costs in Ireland, 2017-2030



Source: KPMG.

Irish electricity price projections, 2017-2030



Source: KPMG, SEAI, DECC.

The future of Solar PV in Ireland

Business case for solar in Ireland

Corporate Social Responsibility

Solar PV can help business address Corporate Social Responsibility requirements (CSR). The CSR agenda strongly differentiates companies from their competitors and is something we are seeing being imposed down their supply chain

Regarding households, PV can help a new dwelling comply with the renewables requirement in Part L of the Building Regulations

Home owners can feed back energy into the network and get paid for it by installing Solar PV on their roof.

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Business case for solar in Ireland

Positive public perception













Solar energy continues to grow in popularity due to:

- Limited or no Landscape Visual Impact
- Little or no noise pollution
- Compatibility with agricultural activity such as grazing
- Little or no concrete is used in solar farm construction.
- Land can be restored in often better condition with enhanced biodiversity

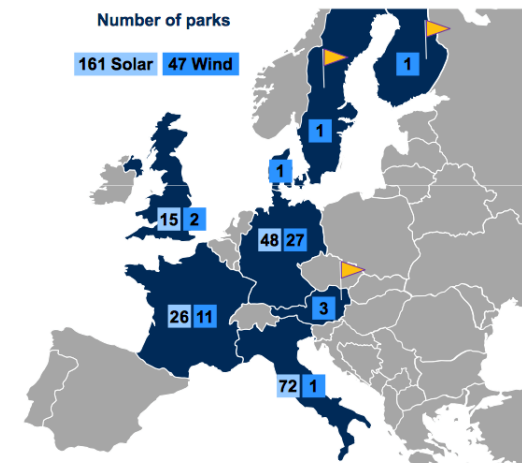
The future of Solar PV in Ireland

What has Power Capital been working on?

- Partnered with Encavis (Capital Stage AG)
- IPP Holding 1.6GW of Wind and Solar
- Flexible funding arrangement
- Experience in PPA's

WINDPARKS		Own Assets	Asset Mgmt
	Germany	183 MW	138 MW
	France	36 MW	85 MW
	Austria	30 MW	-
	Finland	-	13 MW
	UK	-	18 MW
	Sweden	-	10 MW
	Italy	6 MW	-
	Denmark	15 MW	-
Total		270 MW	264 MW
SOLARPARKS		Own Assets	Asset Mgmt
	Germany	251 MW	7 MW
	Italy	153 MW	7 MW
	France	202 MW	12 MW
	UK	93 MW	-
Total		699 MW	26 MW
Group Total		1 259 MW	

*Updated: June 2017



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The future of Solar PV in Ireland

What has Power Capital been working on?

- 180MW Pipeline
- 120MW with Planning Granted



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Thank you

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