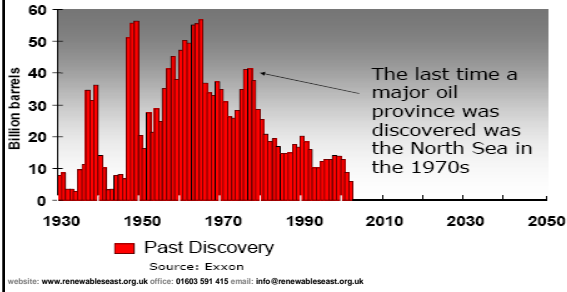
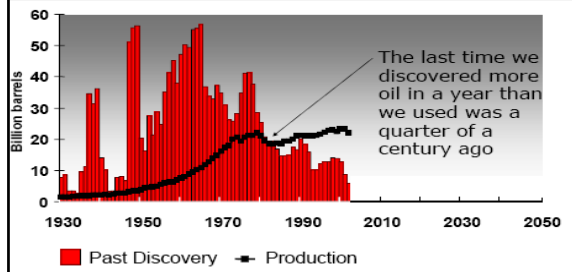


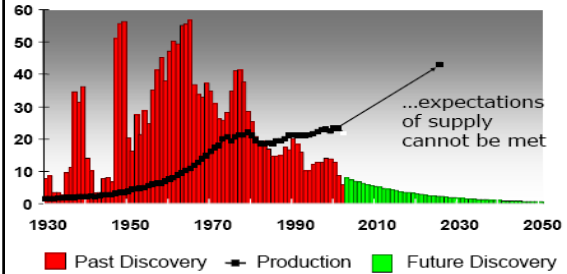
The pattern of global oil discovery



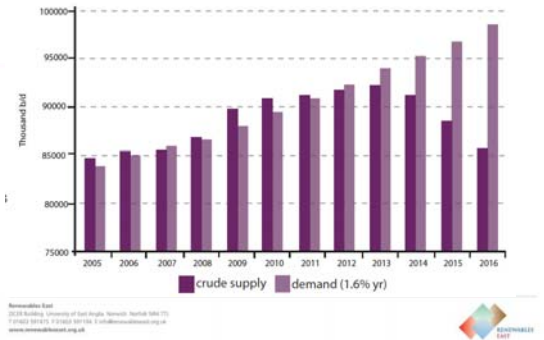
The curve of discovery versus production



SPO projects a major shortfall of future discovery against projected demand



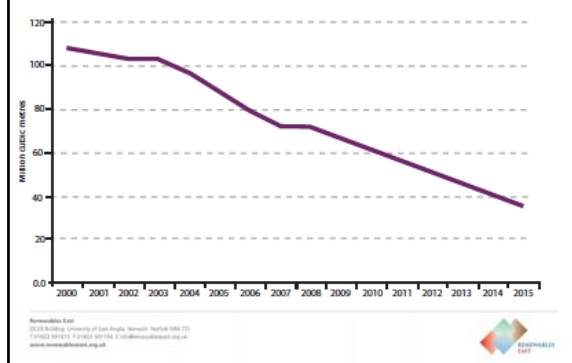
Global Oil Supply versus projected demand in best case scenario (UK Industry Taskforce on Peak Oil & Energy Security)




UK continental shelf crude oil production 99-08, extrapolated to 2014 (source Royal Bank of Scotland)



UK continental shelf gas production production 00-08, extrapolated to 2015 (source BP Statistics Review)






PEAK OIL

- Peak or Plateau?
- End of cheap oil?
- End of Energy security?
- Massive environmental impact from Oil Shales
- Huge challenges of Deep Sea Drilling


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East of England 1 of 9 Regions



- £108bn economy (2016 UK)
- 5.5m people
- 10% population increase
- UK's ideas region
- highest R&D spend
- 75% of region agricultural
- 25% of region cereal crops
- 7% of region forest
- 14% of from renewables by 2010
- 9% electricity from renewables
- Leading renewable energy
- UK first e85 filling station
- Uk first Bioethanol plant
- Circa 500K new homes
- 10% of all new build energy to come from renewables


Present – Renewables in EoE (2009)



Installed Capacity By Region


Generation By Region

Past and Present EoE



Installed Capacity By in 2003 and 2009

Current share of renewables



	Regional consumption	Regional generation from renewables	Percentage of renewables towards regional consumption
Electricity (both other and heating)	28,801 GWh	2,604 GWh	8.9% ³
Transport	54,053 GWh	454 GWh ⁴	0.8% ⁵
Heat	76,158 GWh	460 GWh	0.6%
Total	159,012 GWh	3,518 GWh	2.2%

- Current share of regional generation from renewables is around 2.2%
- Compares well against the national average of around 1.4%
- BUT 2.2% represent an alarmingly small fraction of the 15% target to be met by 2020

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East of England Centre for offshore renewables



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**6GW to 2016 (add 2GW more) ,
plus R3 of circa 25 GW by 2020
(£70B+)**



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Onshore Wind – A priority



Bioenergy Moving Forward

**World largest chicken litter plant,
World first straw**



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Anaerobic Digestion



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UK First Bioethanol Filling Station, Morrisons, Norwich



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World's Fastest Biofuel Car, Lotus Exige 270e



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World's First Sugar Beet to bioethanol plant, Wisington



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New Opportunities – FITs & RHI

- 5MW limit
- Support for:
 - Solar photovoltaic
 - Wind
 - Hydro
 - Anaerobic digestion
 - Domestic scale micro CHP (2kW)
- Tariffs provide 5-8% returns, indexed to RPI for 20-25 years
- Degression: year-on-year reduction of tariffs for new installations in line with cost reduction predictions
- MCS/RO accreditation

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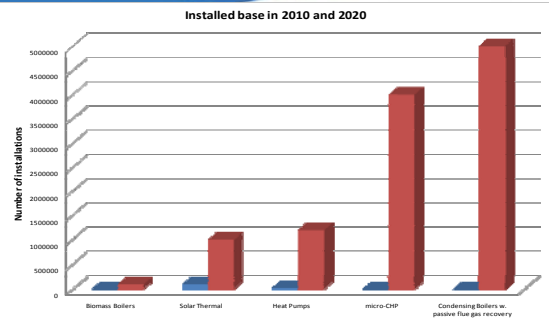
Key characteristics of FITs and RHI

	Feed-in Tariffs	Renewable Heat Incentive
Levy raised on	Licensed power suppliers	Fossil heating fuel suppliers ?
Eligible technologies	Four renewables, micro-CHP	Most renewables, biogas injection
Eligible capacities	> 5MW	Unlimited
Tariffs	4.5 – 41.3p + 3p export	1.5 – 18p
Period	20 years (PV 25 years)	10-23 years
Start date	April 2010	April 2011

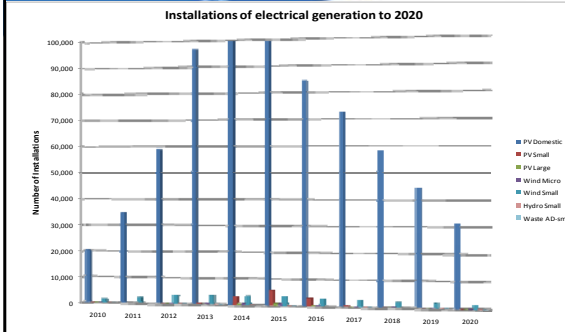
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Installed base of heating and hot water technologies in 2010 and 2020



Installations per year of electrical generation technologies to 2020



PV for free? Hold on!

1. Who's paying for the kit? Is that in full? Over lifetime?
2. Who gets (a) the feed-in tariff, (b) the export tariff, (c) the 'free' electricity? Is the exported electricity going to be measured or 'deemed'?
3. Who owns the kit? And is that all of the kit – ie meter, wires inside the building etc – or just the kit on the roof and/or in the back yard?
4. Who pays for maintenance and repairs
5. Who's insuring the kit? Against what?
6. Who's liable if the installation does damage to my building, my electrics, my family, my neighbour's building, my neighbours?
7. Are they in effect **lending** you money to do this, either as a loan or a hire purchase deal?
8. What happens if the new owners don't want to 'inherit' the deal?
9. Are you giving any performance guarantees for the kit? And what happens if it stops working and generating feed-in tariffs for you? Is that your risk?
10. Who pays for removing the kit and making good if (a) my roof needs repairing or (b) the kit is damaged beyond repair?
11. Who is responsible for addressing any planning issues or electricity distribution company notification requirements? Who pays any associated costs?
12. Do I need to let my mortgage company and/or buildings insurer know that this installation has taken place? Will I need their permission?



8000 homes undertaking

Therefore total number of houses for PV installed	4000
Total installed PV on 4000 houses with 1 ½ kW per home	6MW (6000kW)
Total investment in PV @ £3300 kWp installed	£19,800,000
Average annual electricity produced	7,688,000 kWh
CO2 emissions saved (0.537 kg per kWh produced)	4128 tonnes pa
Income from FITs for year @41.3p kWh year 1	£3,175,144
Assumption of ratio of electricity used / exported	50/50
Income from export tariff @ 3p kWh year 1	£230,640
Total income over 25 years at 2% rpi	£100m
Value of free electricity used by householder (@ 12pkWh) per year	£922,560
Capital required by public partner	£0

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Potential profit sharing benefits with a local community interest company (CIC)

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 10	YEAR 25
Income into CIC	£420,169	£426,693	£433,318	£440,045	£446,876	£482,641	£607,880
Cumulative	£420,169	£846,863	£1,280,181	£1,720,226	£2,167,103	£4,507,684	£12,713,566

The contribution increases as a result of the FIT being retail price indexed linked and therefore producing enhanced returns

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But its not that simple

Renewable generation
Which renewables suit me?
How much energy?
Do I need planning?
Who can supply and install?
What servicing is needed?
How long do they last?

Electricity used
Collect from renewables wherever available
Drawn from the grid if excess is required
Total generation = Export

Electricity grid
Connection agreement?
Cost of energy imports?
Negotiate export price?
Which supplier?
What metering?
Who reads meters?

Where renewables generate more than is needed surplus is exported to the grid

What if the sun doesn't shine / wind doesn't blow?
Who makes sure it all works together?
Load Management / Smart metering?
How to register for tariffs?
What finance is available?

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So what can we do?

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LCDI Low Carbon Development Initiative

LOW CARBON DEVELOPMENT INITIATIVE
delivering a low carbon future
A Renewables East enterprise

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What is the LCDI?

- A delivery vehicle created to address market failure
- Public funded to overcome early stage development risks in low carbon developments
- Mitigate barriers and create solutions the market can invest in
- Spreading the risk across a portfolio of projects
- Northstowe and Maylands first of several LCDI projects
- A new Community Interest Company enterprise created by Renewables East in 2009
- Phase 1 secured £2.3M (Northstowe and Maylands)
- Phase 2 secured £.5m (st Neots and ARU/Cam City)
- Phase 3 in development –
 - (Rackheath? Marston Vale? Duxford? Regional Cities East)

delivering a low carbon future
A Renewables East enterprise

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Norwich City Council already partner

- To invest in the door knocking activities
- To provide support in identifying priority areas
- To work in partnership promoting the scheme
- To potential identify further funding for the 'able to pay' schemes



six steps

1 - marketing



2 Assessment



3 Data analysis



4 Surveying



5 Installing




6 Benefits Advice
(subject to funding)












AGW Progress



- Office set up in Peterborough
- Recruited & training Assessors
- Start assessing St Neots Jan 2010
- 1st Measured identified installed Feb / March
- Norwich City 10,000 assessment under way
- Peterborough 8,000 starting Sept
- 135 ashp being installed
- Further 365 ashp programmed

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Low Carbon Future

Energy – OFGEM predict 60% rise in energy £ by 2020
– You will be paying for others renewables

Council – you need to benefit

- With policy uncertainty need to work to support appropriate renewables
- Can now develop your own renewables
- Reduce your price risk in energy
- New revenue streams

Which will provide a more competitive and progressive local economy

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