re:heat

How Scotland has Approached Growing the Use of Wood Energy and its Application to Otago

Dunedin, 30 May 2018

Neil Harrison

WHA
Wood Heat Association

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Setting the Scene

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Life with the RHI

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INTRODUCING RE:HEAT

Company established in 2011, but with a biomass pedigree going back to ~2000;

Business is a hybrid of consultancy, developer and installer;

Large part of consultancy is investigation and remediation of failed, problematic and inefficient systems;

Procurement support services to public and private sector for over £25m of investment since 2012;

Offices in Alnwick, Shrewsbury and Glasgow. Working across the UK and internationally.

NHS Highland

Coimisean na Coilltearachd Alba
Forestry Commission Scotland

National Trust

Close Brothers
Asset Finance

drax

FORMICA®

Newcastle University

UNDP
Empowered lives.
Resilient nations.

Argyll & Bute COUNCIL

INTRODUCING ME

Working in forestry & bioenergy since 2003 in UK, NZ EU & former Soviet states;

Wrote UK standard training course for woodfuel production (2004/5);

Have produced in excess of 200 feasibility studies, from breweries to castles;

Sold and/or installed 500+ wood-fired boilers;

WHA board member since 2013, Chair since 2018;

Have worked with Forestry Commission, DECC/BEIS, Carbon Trust, EU Research Directorate and UNDP in advisory positions on biomass energy.

INTRODUCING THE WOOD HEAT ASSOCIATION

- The UK trade association for the modern wood and biomass heating industry;
- Undertake lobbying, policy development, information dissemination and promote the installation of high quality wood heating systems;
- Bring together wood fuel suppliers, biomass boiler and stove installers and distributors, energy companies and developers;
- Members of all sizes - sole traders to multinationals, with a democratic, *one member one vote* structure;
- Pro-active membership - our greatest resource;
- The WHA offers a single integrated voice for the industry with >250 member companies.

INTRODUCING SCOTLAND

INTRODUCING SCOTLAND'S FORESTRY SECTOR

Forests and woodlands comprise ~17.5% of Scotland's land area;

Forestry businesses and supply chain is characterised by large-scale timber processing based on just over 8 million m^3 timber production/year;

National forest estates comprises ~35% of all woodland, predominantly Sitka Spruce and other non-native conifers;

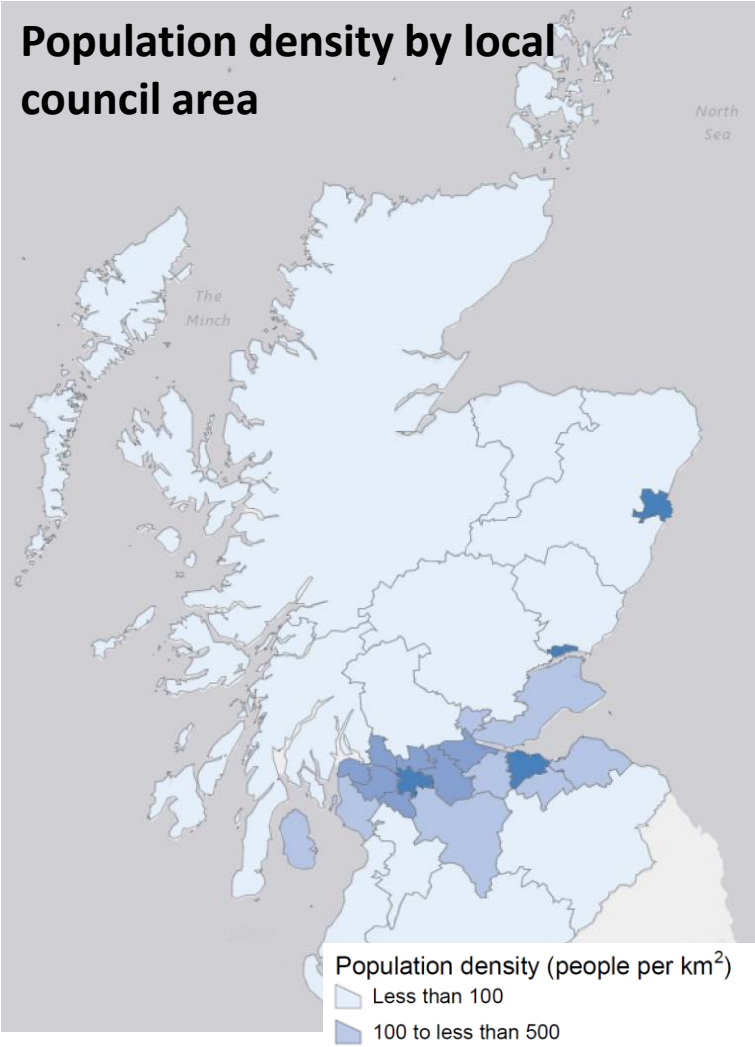
Management system is predominantly clear-fell (>50% of total);

Last statistics (2015) had 775,207 ODT of wood used in biomass boilers in Scotland.

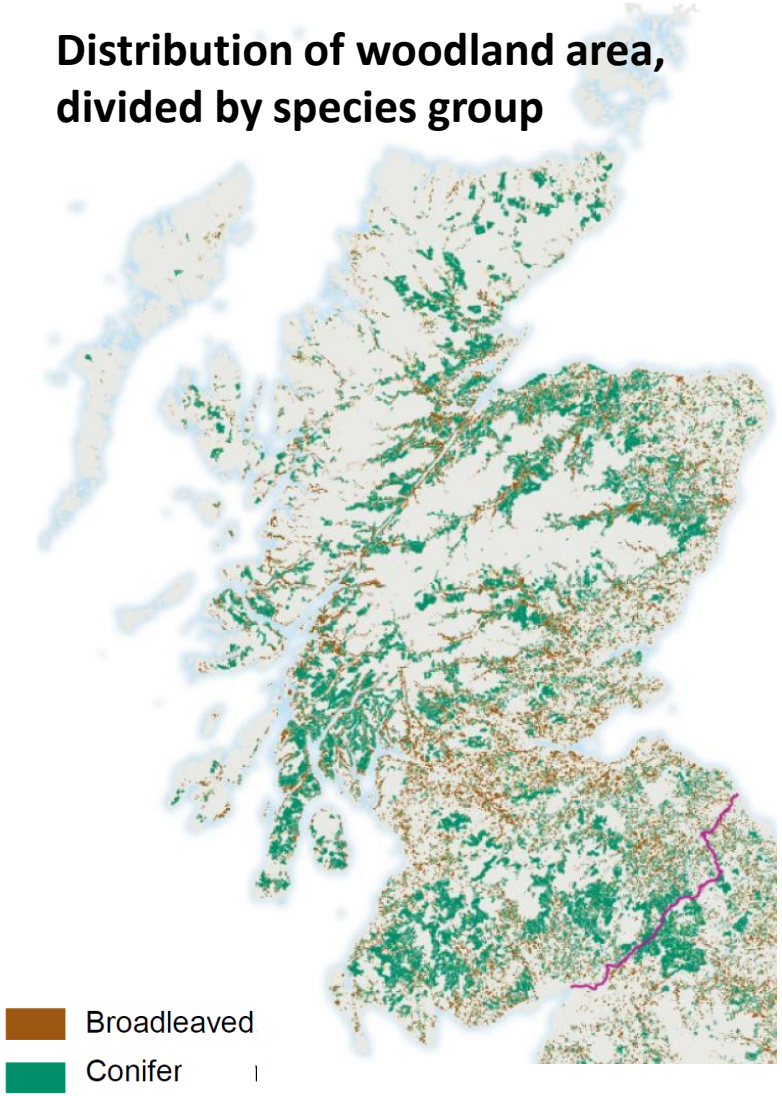
SCOTLAND'S POPULATION AND FORESTS

re:heat

Population density by local council area

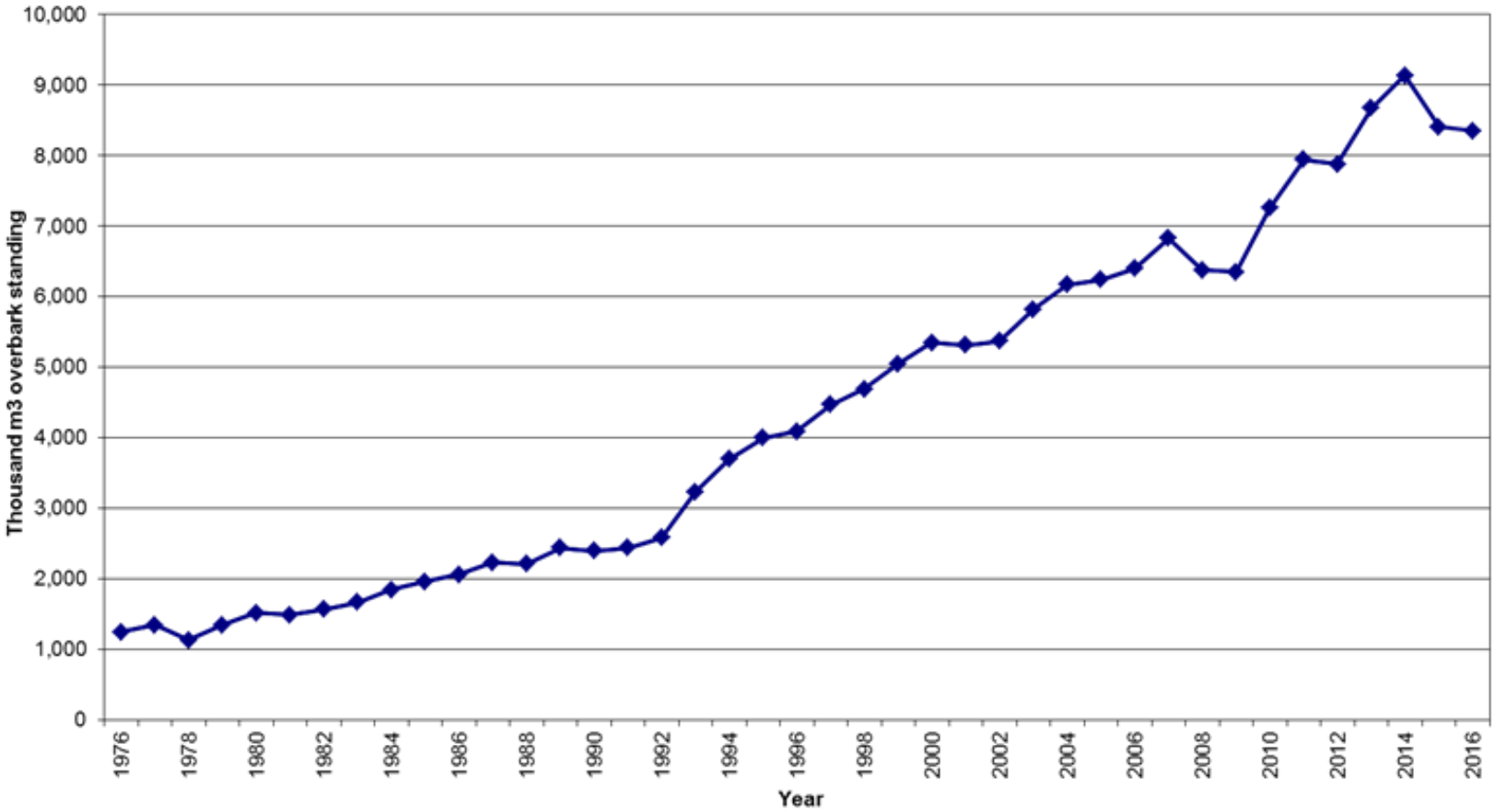


Distribution of woodland area, divided by species group



INTRODUCING SCOTLAND'S FORESTRY SECTOR

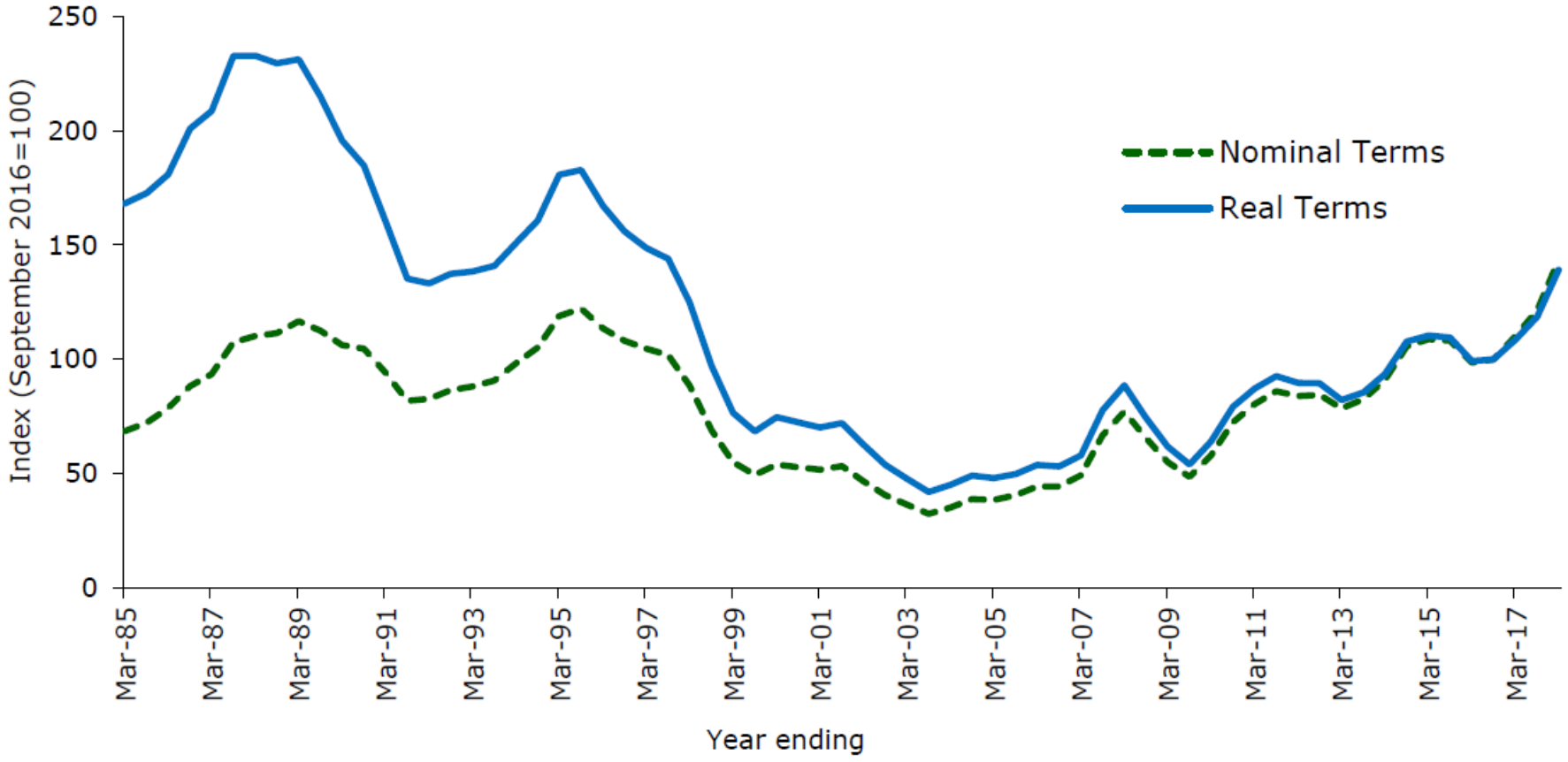
Timber Harvested in Scotland 1976-2016



http://www.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/TrendTimberHarvested

INTRODUCING SCOTLAND'S FORESTRY SECTOR

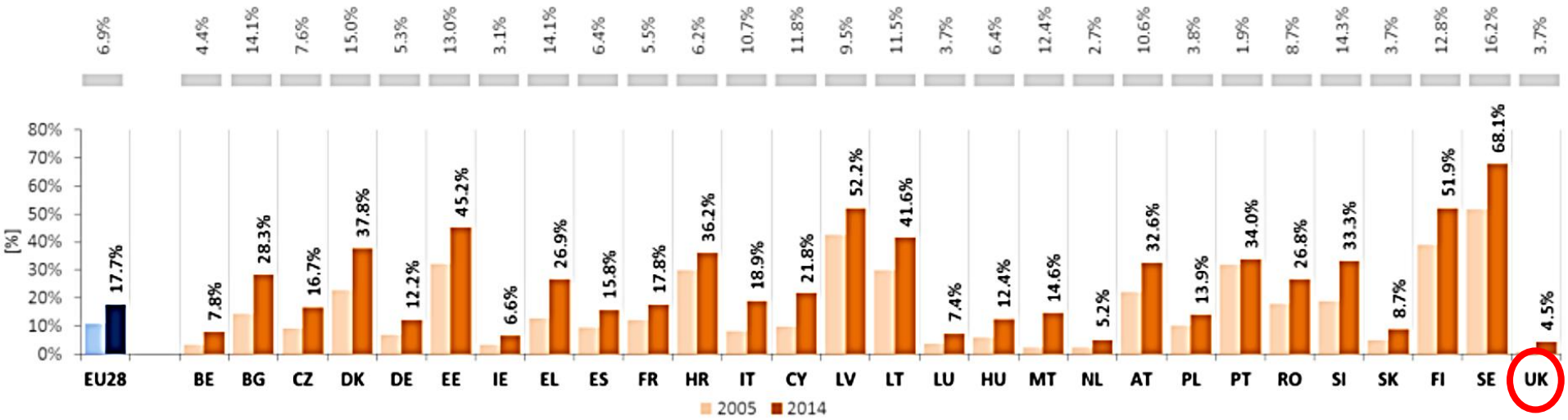
Timber Price Index 1985-2018



SETTING THE SCENE

HOW DO WE COMPARE TO OUR NEIGHBOURS?

Renewables in Heating and Cooling, 2005-2014



SOURCE : Second Report on the State of the Energy Union, Staff Working Document, 1/2/2017

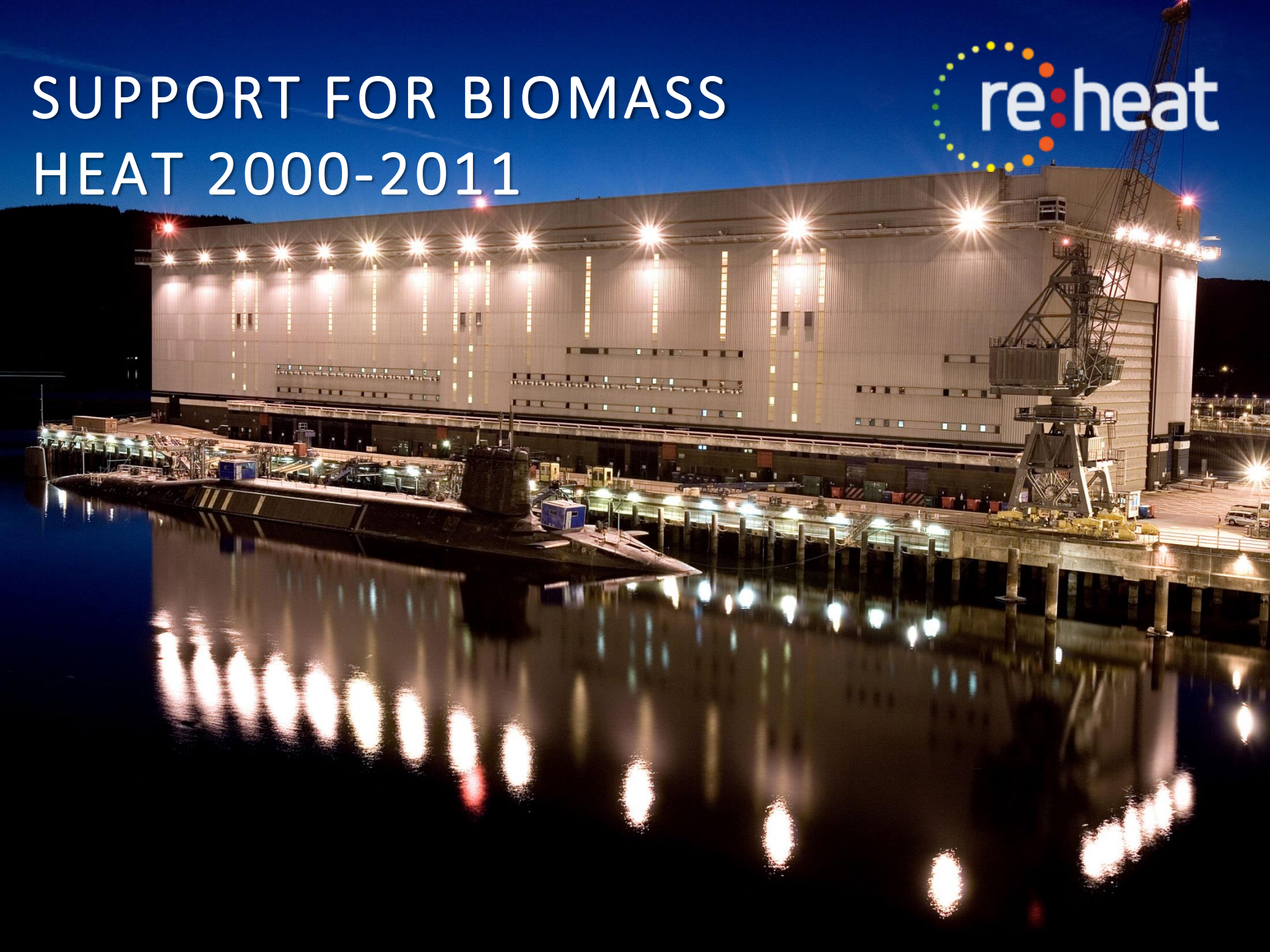
Lowest penetration of renewables into heating and cooling in the EU28

4th lowest (joint with LU and SK) absolute increase between 2005 and 2014

Overall 2020 renewables target is 15%, 30% electricity, 12% heat and 10% of transport

UK will miss its 2020 renewable energy targets without major policy improvements

SUPPORT FOR BIOMASS HEAT 2000-2011



DEVELOPMENT OF THE BIOMASS HEAT SECTOR

What did the biomass heat sector look like before the RHI?

Pre-RHI, the UK was (and arguably still is) an immature market for biomass heat;

Government recognised this, and alongside capital grants, provided a range of other 'soft support' to support growth in the industry;

Programmes ran on UK, national (i.e. Scotland and Wales) and regional (e.g. North East, South West) basis;

Grant programmes had built-in checks on the front end to assess eligibility, economics and (sometimes) appropriateness of the project being supported.

DEVELOPMENT OF THE BIOMASS HEAT SECTOR

Principal Grant Mechanisms for Biomass Heat, 2001-2011

Scheme / Aspect	Bioenergy Capital Grant Scheme	Low Carbon Building Programme Phase 1	Low Carbon Building Programme Phase 2	Scottish Biomass Support Scheme	Scottish Biomass Heat Scheme	Wood Energy Business Scheme 1	Wood Energy Business Scheme 2
Dates	2002-2011	2006-2010	2007-2010	2006-2008	2008-2010	2004-2008	2009-2013
Total Budget	$135m	$269m		$22m	$6.7m	€25m	$42m
For Bio-heat	$10m	$8m		$12m* **	$6.74m	$25m**	$2m***
Format	Framework then "random rounds"	Capped monthly rounds	Rolling programme	Rounds	Rounds	Rolling	Rolling
Bio-heat Schemes	c. 350	752		55	64	90	c. 33
Availability	UK-wide	UK-wide		Scotland	Scotland	Wales	Wales
Funder	BERR/Defra & Lottery	DECC		Scot. Exec./ FCS & EU	Scot. Govt./ FCS & EU	Welsh Assy. & EU	Welsh Assy. & EU

* Balance unallocated because of tight time constraints on applications from EU funding.

** Portion of funds also available for supply chain and soft support, but primarily boilers.

*** Arrival of RHI meant large underspend, but portion allocated to supply chain and soft support

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DEVELOPMENT OF THE BIOMASS HEAT SECTOR

What did the biomass heat sector look like before the RHI?

Biomass installations were typically found in the public sector, particularly PFI schools, hospitals, prisons, etc…, and on estates or in large rural buildings;

Investment decision was typically made on 10+ year payback against an expensive counterfactual fuel, or as part of PFI contract arrangements to reduce GHG emissions from the public estate.

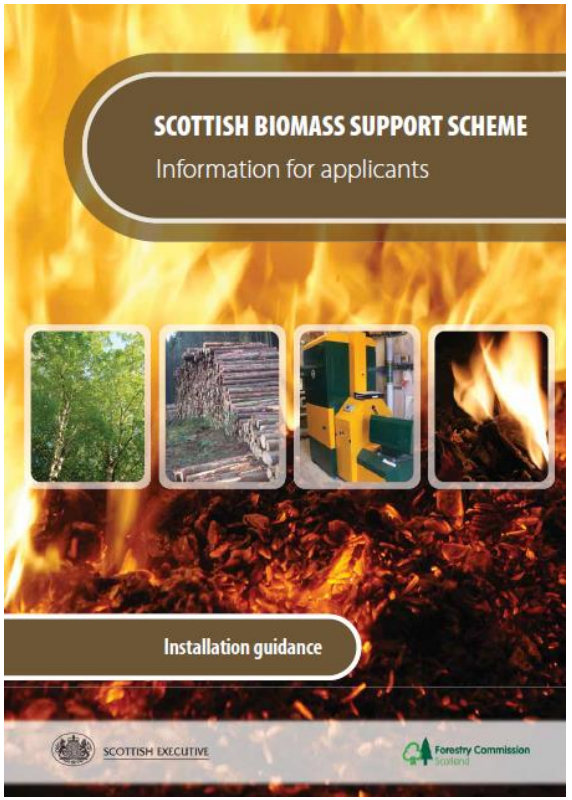
DEVELOPMENT OF THE BIOMASS HEAT SECTOR

Scottish Biomass Support Scheme, 2006 - 2008

Scotland-only scheme to support installation of biomass boilers and associated infrastructure, producer groups, etc…;

Budget of $15.3m available initially, then extended to $21.7m, available for spending within 2 years;

Ultimately, grants of $12.4 million were drawn down by 77 projects, comprising :
55 boiler projects, 19 supply chain projects and 3 ‘other’ projects.



DEVELOPMENT OF THE BIOMASS HEAT SECTOR

Scottish Biomass Heat Scheme, 2008 - 2011

Boiler-only successor scheme SBSS to support installation of biomass boilers (predominantly wood-fuelled);

$6.7m allocated for biomass heating systems and district heating schemes;

64 grants approved across Scotland;

Useful educational/promotion campaign “Usewoodfuel”, which continues in limited form to this day.

DEVELOPMENT OF THE BIOMASS HEAT SECTOR

Regional Support Mechanisms, 2003 - 2010

Agencies charged with driving economic development, supported a wide range of initiatives, often with $2m+ funding pots for :

- Information & advice;
- Supply chain training;
- Feasibility studies;
- Limited capital and revenue grants.

DEVELOPMENT OF THE BIOMASS HEAT SECTOR

What did the biomass heat sector look like before the RHI?

Almost impossible to gauge exact spend on supporting biomass heat between 2000 and 2011, but figure was **<u>at least</u> $114m.**

Number of identified woodfuel heating installations in England by 2011 : 2,372*

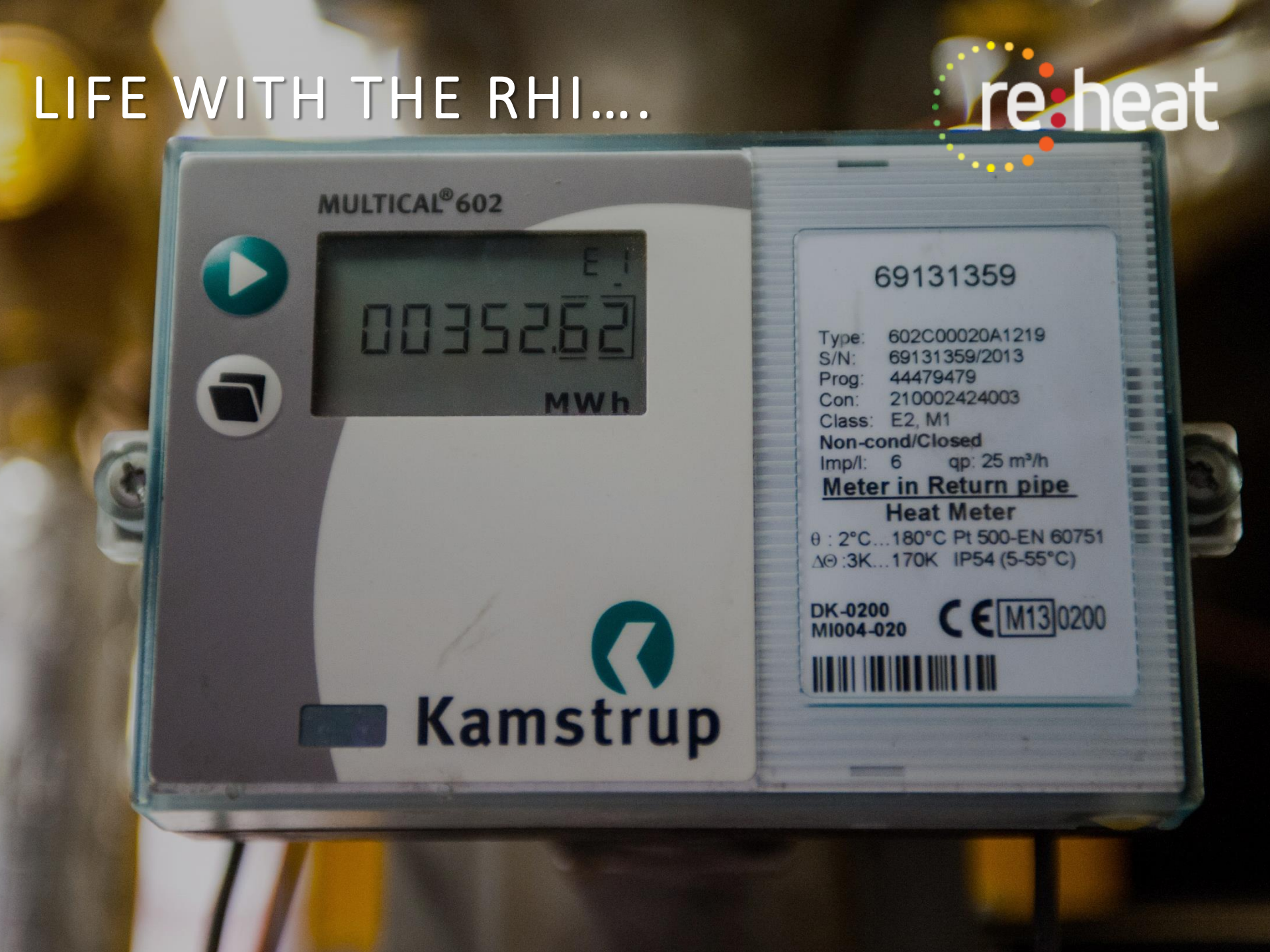
Number of identified woodfuel heating installations in Scotland 2010 : c. 230**

Number of identified woodfuel heating installations in Wales by 2012 : <150 (estimate)

* FORESTRY COMMISSION BIOMASS ENERGY CENTRE, 2011

** FORESTRY COMMISSION SCOTLAND, 2010

LIFE WITH THE RHI….



"The scheme will help drive around a seven-fold increase in renewable heat over the coming decade, which will help shift what currently is a fringe option, firmly into the mainstream."

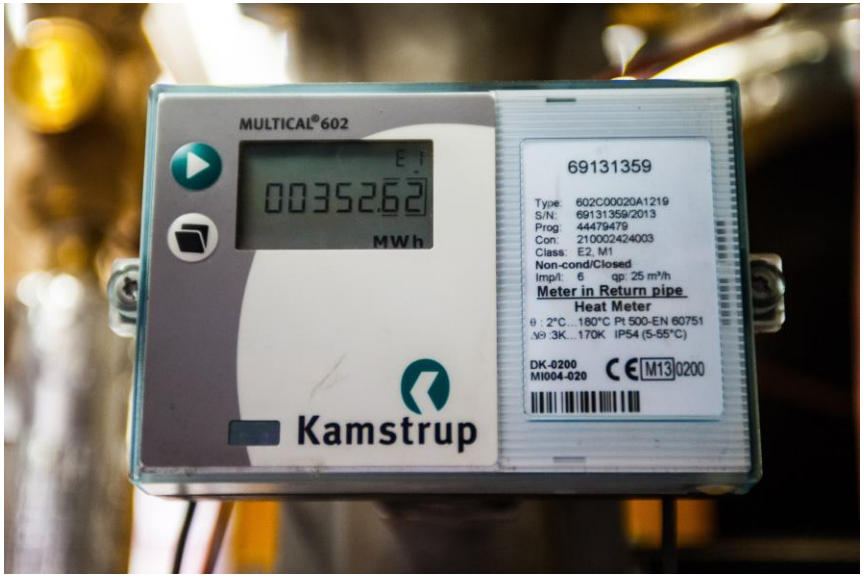
Greg Barker, Minister of State
Department of Energy and Climate Change

Renewable Heat Incentive went live on 28th November 2011;

Pays a fixed subsidy per kWh of heat produced to anyone installing renewable heat equipment;

Designed to deliver a 12% rate of return (on average);

Covers a range of technologies : solid biomass, biogas, deep geothermal, GSHP, EfW, solar thermal, biomethane Injection, ASHP, biomass CHP and on-site biogas combustion.



LIFE WITH THE RHI…

What has the RHI done to the biomass heat sector?

Since the introduction of the RHI in November 2011, there have been 17,518* accredited renewable heating installations on the scheme;

Number of biomass schemes totals 16,039, making up **87.7%** of all accredited installations to date :

- 12,763 small biomass (≤199kW)
- 3,213 medium biomass (200-999kW)
- 63 large biomass (>1MW)

6 fold increase in the number of biomass installations in 6 years.

*ND-RHI Data to end of March 2018, BEIS

LIFE WITH THE RHI…

What has the RHI done to the biomass heat sector?

RHI has driven uptake across a range of sectors, ranging from food production to hospitality, rural district heating to chemical processing.

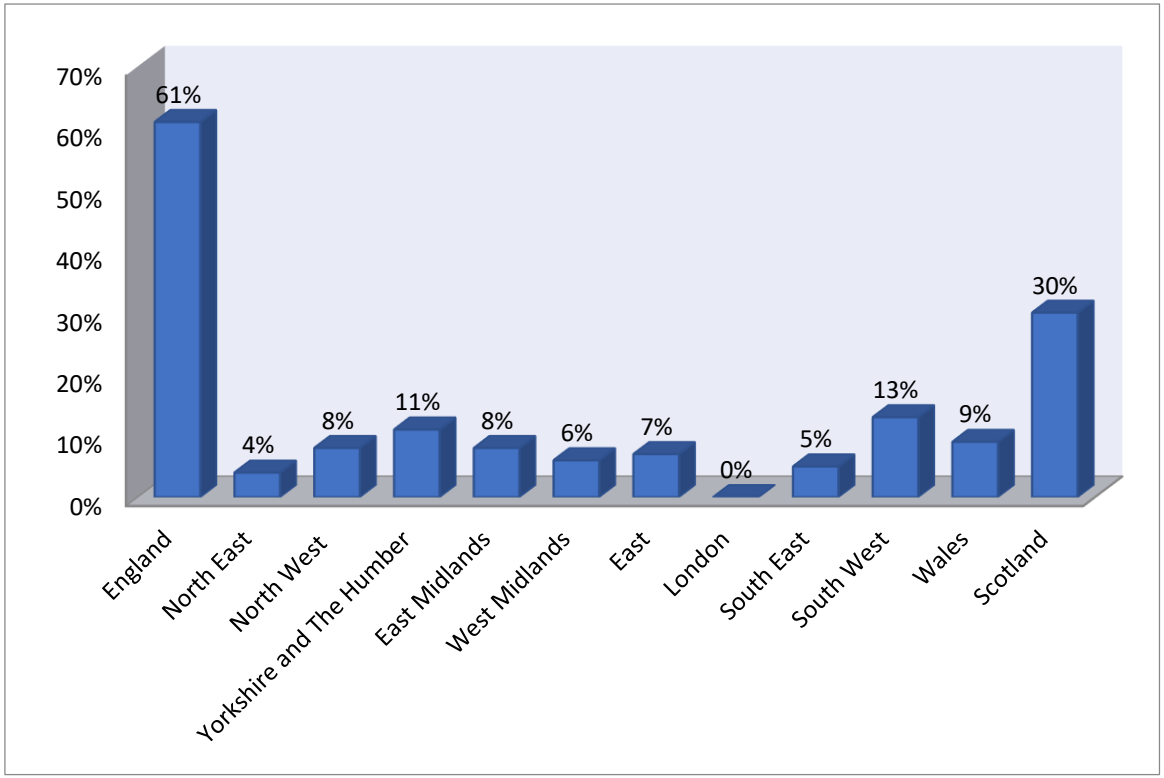
Investment decision typically made on a (promised!) 5 year payback, with tanker-delivered fuels most commonly displaced, but mains gas also being replaced with biomass.

LIFE WITH THE RHI…

What has the RHI done to Scotland's biomass heat sector?

Scotland has done particularly well out of the RHI, with 3,517 accredited installations;

This equates to ~30% of all the installations, but Scotland has only 8.7% of the UK population;



LIFE WITH THE RHI…

What has the RHI done to Scotland's biomass heat sector?

UK has seen a 6 fold increase in the number of biomass installations over the 2011 baseline;

Scotland has seen a 15 fold increase over the same period!

Why?!

LIFE WITH THE RHI…

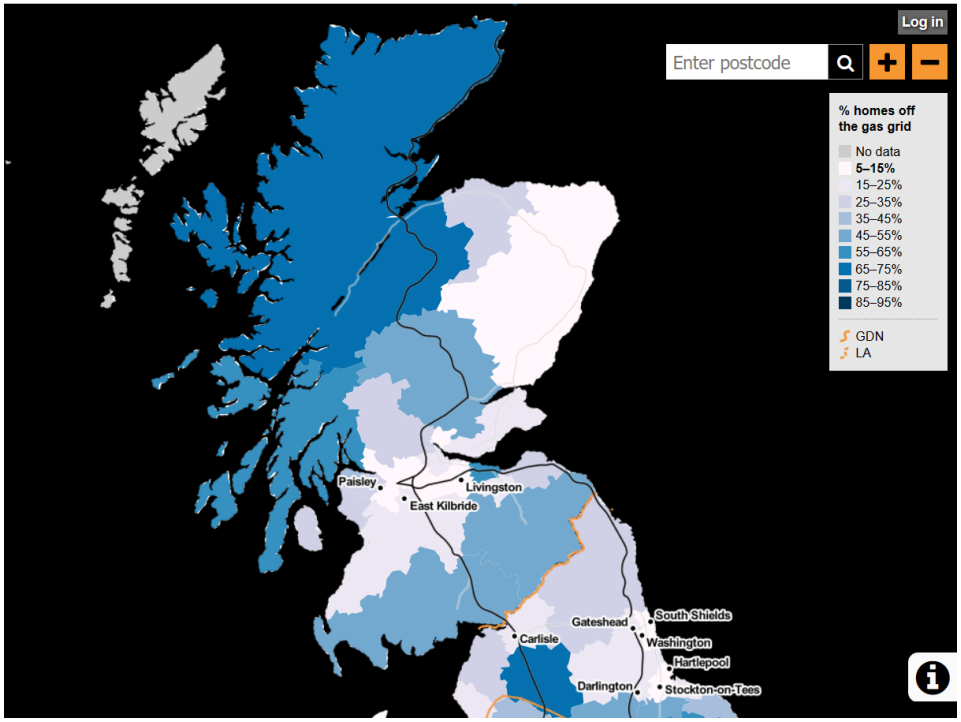
Why has Scotland's biomass heat sector done so much better?

Significant proportion of Scotland is off the mains gas grid, meaning expensive tanker-delivered fuels are the only option;

Forest industry is better developed and supported;

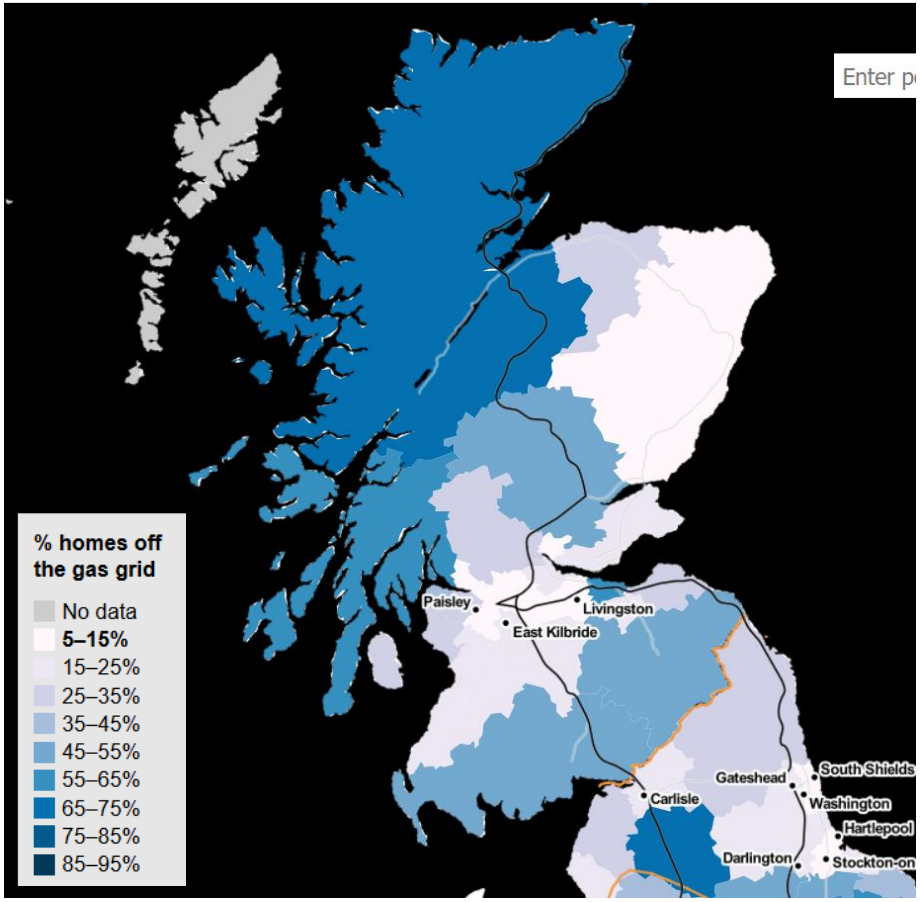
Early pioneer companies and installations paved the way;

Usewoodfuel?

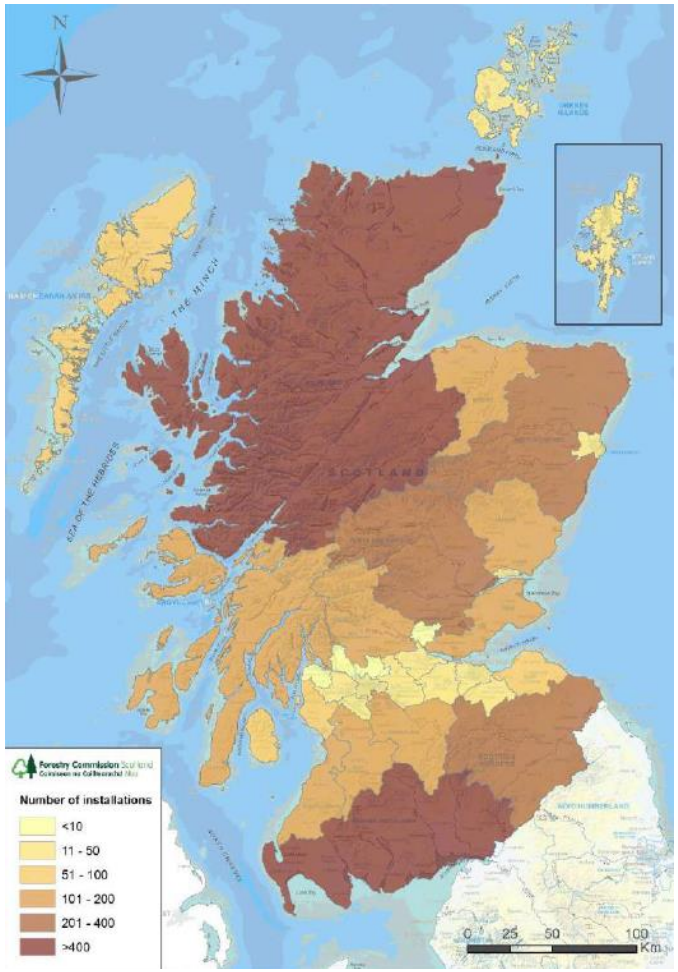


LIFE WITH THE RHI…

Why has Scotland's biomass heat sector done so much better?



% of homes connected to mains gas grid



RHI accredited boilers by end of 2014

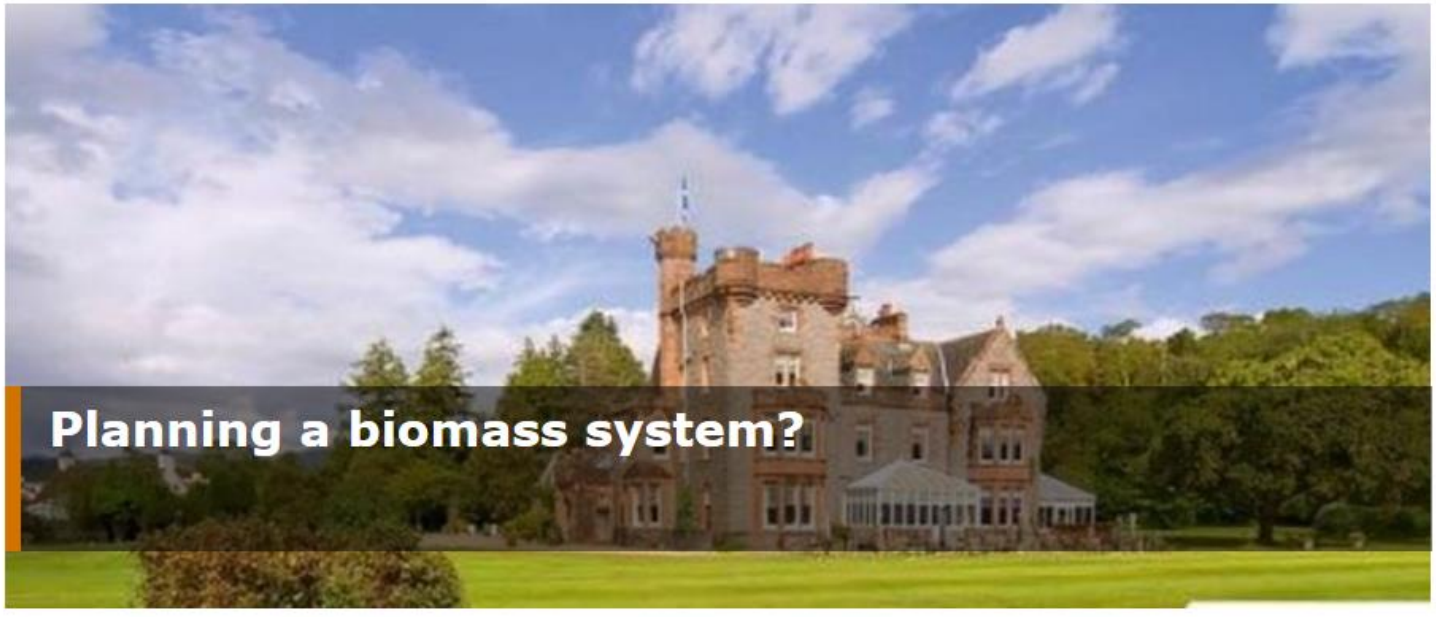
Why has Scotland's biomass heat sector done so much better?

Geography and infrastructure undoubtedly play a key role in the success of Scotland's biomass heat sector under the RHI;

The Usewoodfuel programme, or Wood Fuel Support Service to give it its proper title, have also played a key role in providing regional support and driving the sector forward;

Early days of programme included a network of 4 Development Officers, presence at trade shows, dedicated workshop programme, training programme for fuel producers and various other forms of 'soft support'.

This has reduced to website and email enquiry line over 10 years.



Biomass: a sustainable source of renewable energy

Usewoodfuelscotland provides an impartial source of information on biomass in Scotland. It seeks to support market growth, improve standards and spread best practice.

- Find out what biomass is and the benefits of biomass.
- Find out more about the policy framework and the scale of the industry and its vital contribution to our renewable energy objectives here.

Guidance for biomass users

Key resources

News and Events

1st February 2018:

Woodland: Making it work for you. Creation and Funding. A practical event looking at benefits of woodland creation and funding opportunities. 28th February - Lanark Agricultural Centre. Find out more here.

January 2018:

The Government issues response to RHI consultation on eligible heat. See the consultation response here.

January 2018:

Between October 2017 and January 2018, 333 full applications and 3 preliminary applications were accredited by Ofgem. See the quarterly report here.

January 2018:

Progetto Fuoco: international exhibition for the wood-fired

SOME PARTING LESSONS…

SOME PARTING LESSONS…

You need more than just a subsidy

RHI is tariff-based, with no application process or inspection as part of the 'front end' of the scheme - all information is provided to Ofgem (regulator) on registration of an operational plant;

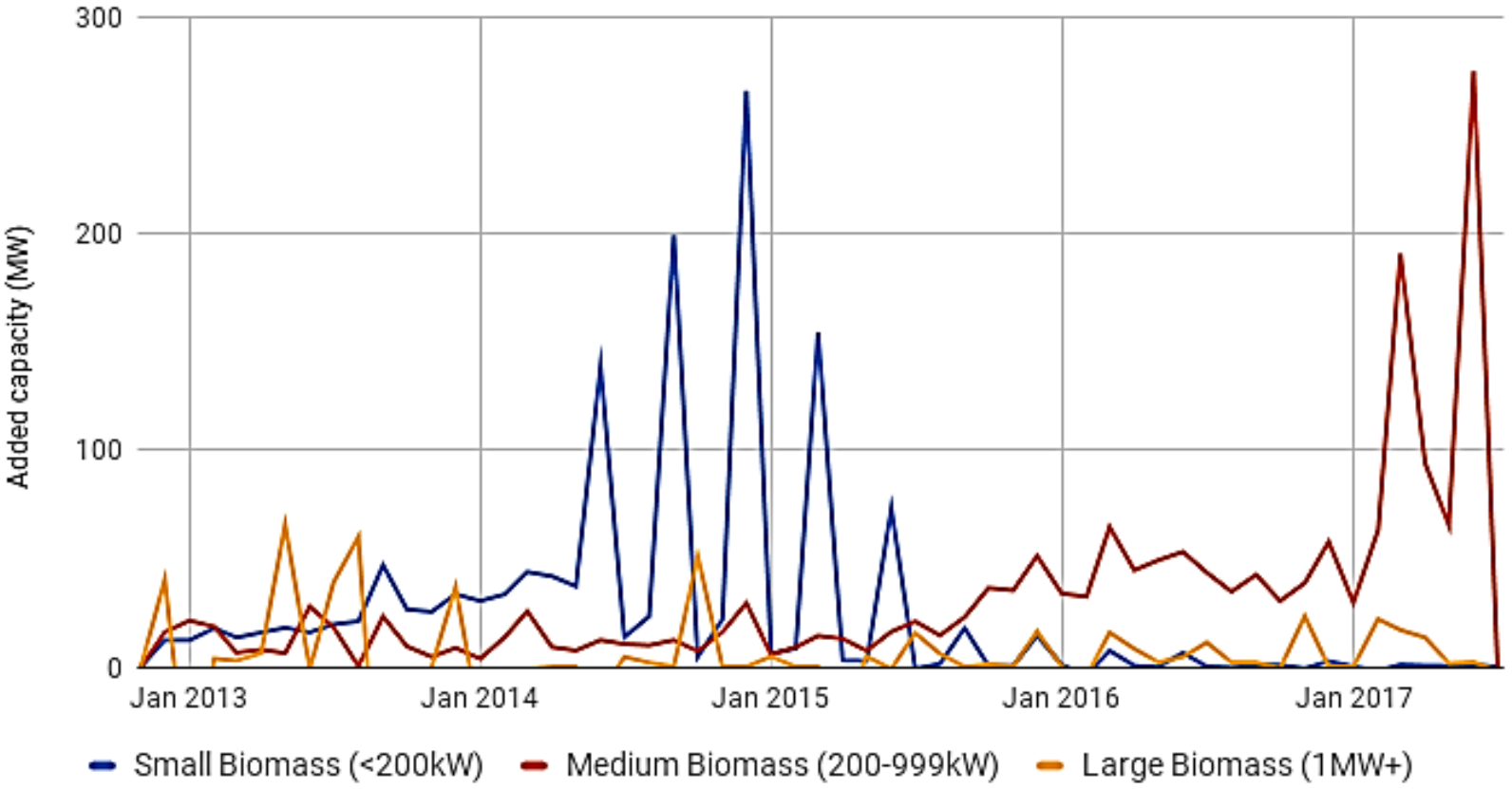
Inspections focus only on compliance with the RHI regulations (primarily to detect fraud - intentional or otherwise), not the quality, efficiency or safety of the installation;

RHI designed to put a foundation under the renewable heat industry, and remove cycles of boom and bust…

SOME PARTING LESSONS…

You need more than just a subsidy

New added capacity (full applications ND-RHI)



SOURCE : Wood Heat Association analysis of BEIS/Ofgem datasets, September 2017

SOME PARTING LESSONS…

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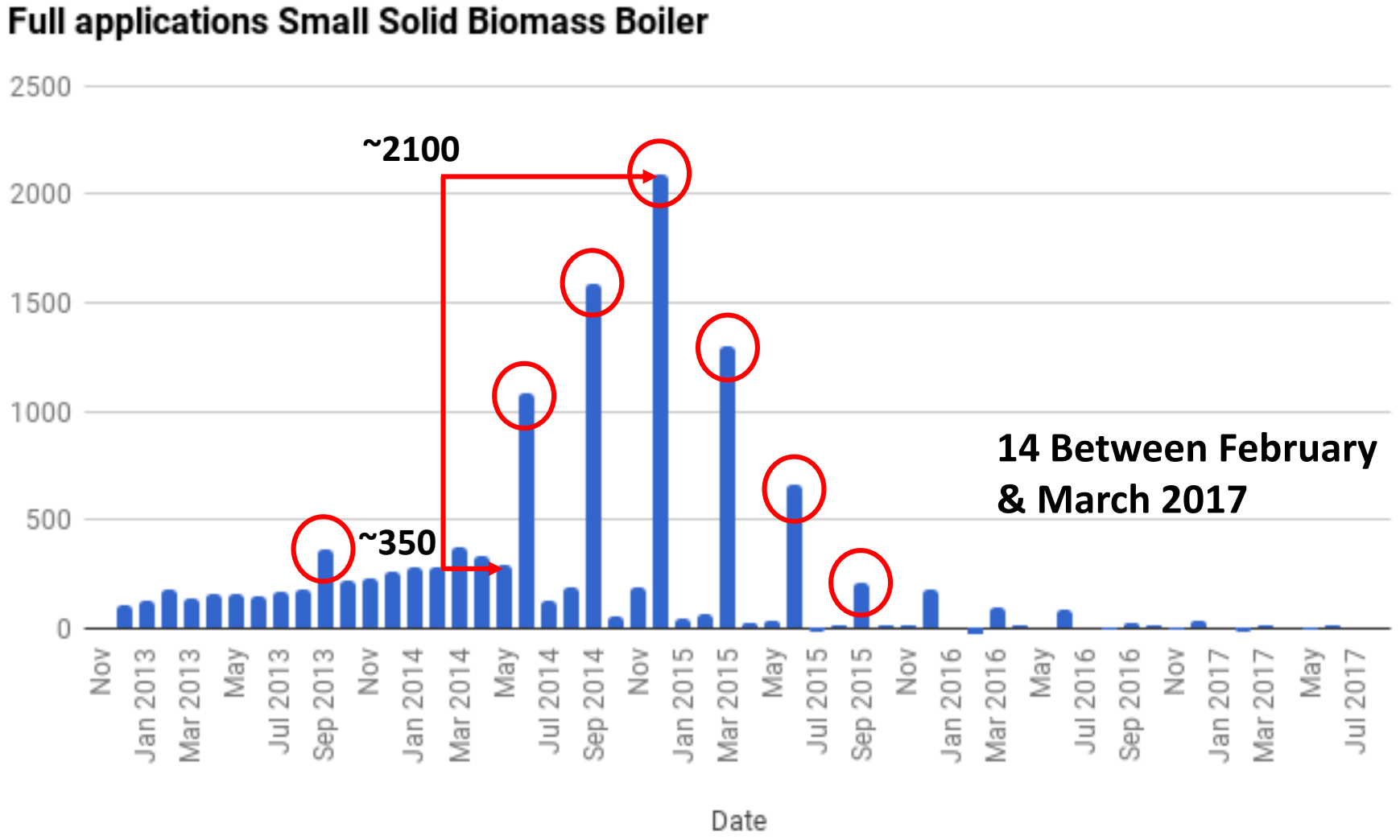

SOME PARTING LESSONS…

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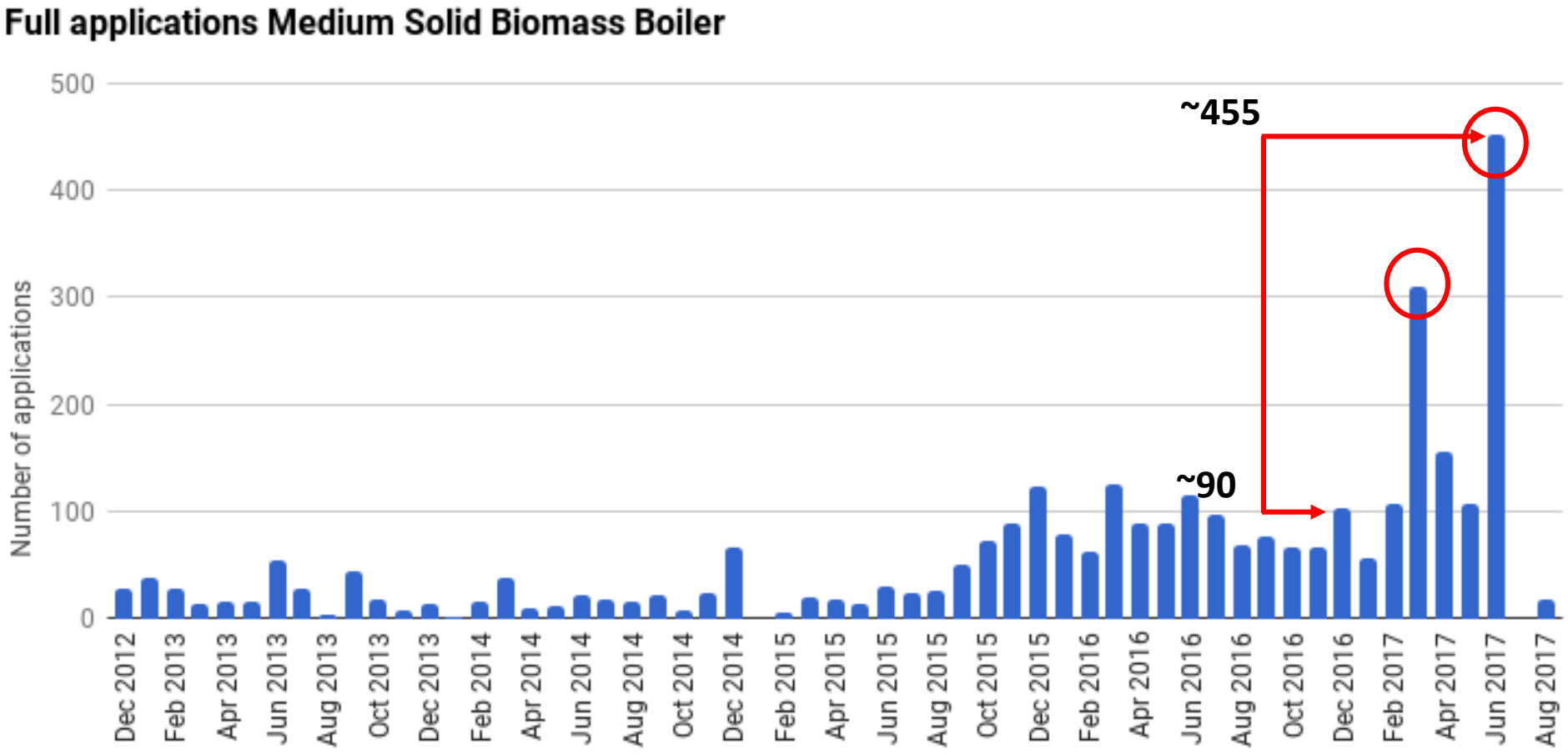


SOME PARTING LESSONS…

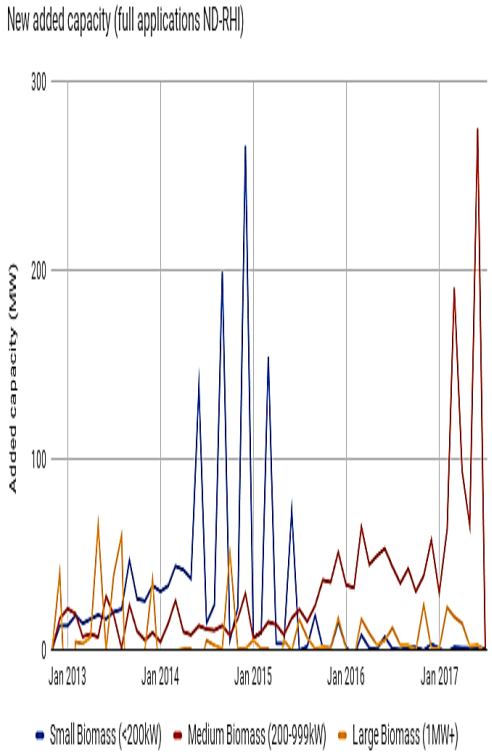
You need more than just a subsidy

New growth in the small biomass market has stopped when compared to 2012-2015 rates.

Fuel supply chains in many areas is insufficiently mature and without enough scale to continue - consolidation and need to drive up efficiency.

Previous exponential growth of RHI-driven market has meant complacency, ignorance and ‘flabbiness’ in our approach to efficiency.

Legacy of rapid market growth under the RHI needs to be addressed…



LIFE WITH THE RHI…

Where are we today?

re:heat

RHI & Other Factors	"Industry" Response	Impacts
No Barriers to Entry	Flood of New Entrants	Dangerous Installations
No Up Front Inspections	Dishonest Behaviour	Low Efficiencies
Incentive to Oversize	Misrepresentation	High Emissions
No Quality Standards	Sweet Spots Targeted	Net CO_2 Emissions Rise?
Quarterly Degressions	"That'll Do" Attitude	Reputational Damage
Falling Oil Prices	Rushed Installs	Business Failure
Uncertainty Over RHI	Corners Cut	Skills Exit

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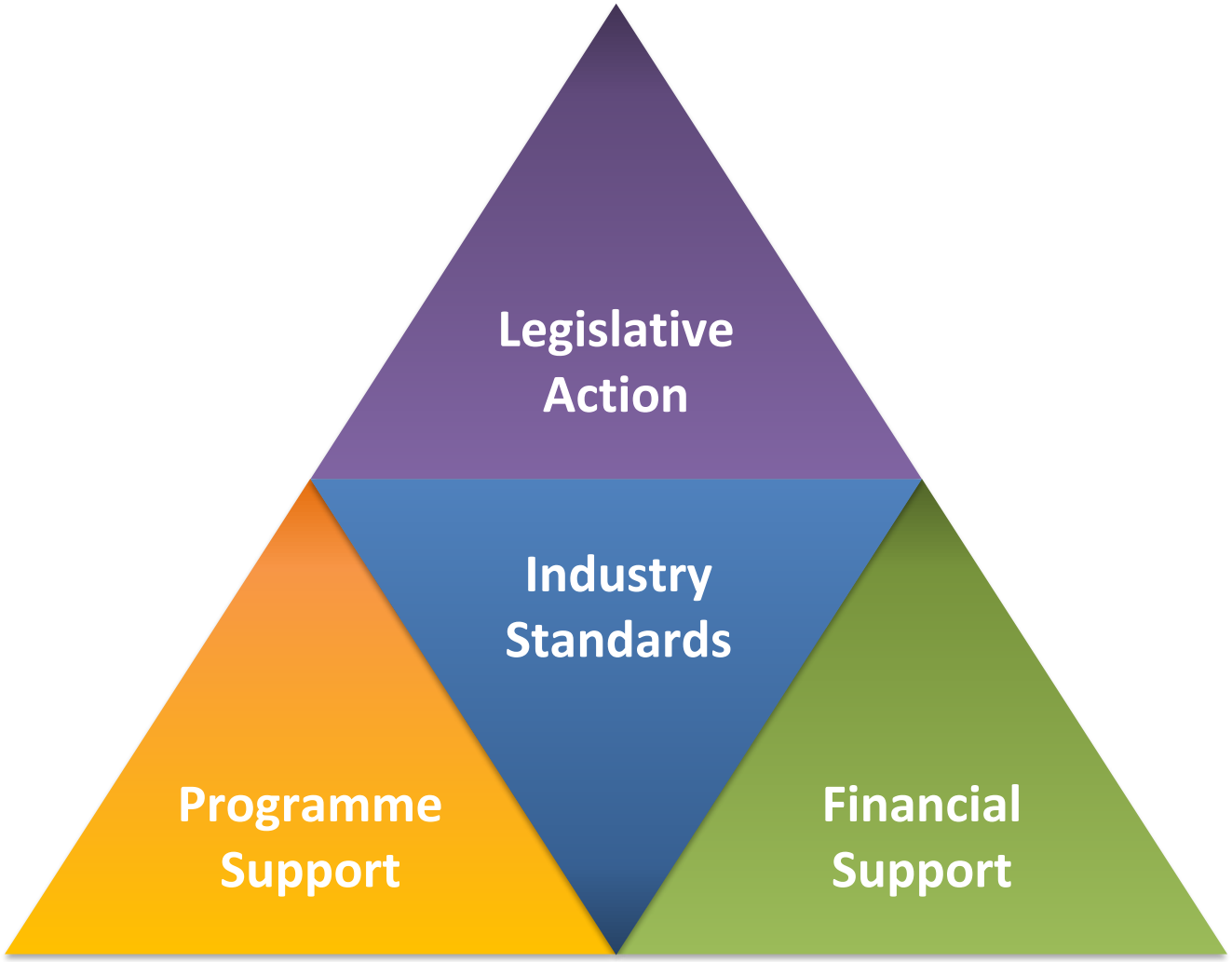
SOME PARTING LESSONS…

More than just a subsidy…



IN SUMMARY

1. Life before the RHI was hard!

2. The RHI has driven a 15-fold increase in biomass installations in Scotland, creating a major new market for timber;

3. The RHI has helped raise the profile of biomass as an energy source with the public and politicians;

4. The design of the RHI and constant uncertainty have not delivered the growth or the industry we might have wanted;

5. We have barely scratched the surface of our potential…

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Installation | Monitoring | Expert Witness | Due Diligence