

Chapter 1 – The origins of the RHI in GB and Northern Ireland

Renewable energy developments

- 1.1 During the late 20th century and the early years of the 21st century widespread concerns about climate change and global warming resulted in greatly increased efforts, both political and technological, to identify and implement a meaningful mitigation strategy. The Kyoto Protocol, an international treaty, had committed signatories to reduce greenhouse gas emissions, such as carbon dioxide, resulting from burning fossil fuels.²⁶ An important element of that strategy has been the search for appropriate schemes to support and, if necessary, incentivise the transition from traditional fossil fuels to renewable and low carbon alternatives.
- 1.2 The United Kingdom has been among the front runners in the search for alternatives for use in the power, heat and transport sectors. By implementing the Renewables Obligation 2002²⁷ it was one of the first nations to adopt a policy for stimulating the use of renewables, including biomass, for the production of electricity. Renewable energy schemes were also perceived as beneficial for the security of fuel supply by utilising indigenous energy sources and reducing reliance on imports, as well as increasing the potential to boost the local economy and employment levels.
- 1.3 After the initial focus on the stimulation of renewable energy sources for the production of electricity, interest also began to turn to renewable energy sources for heat. In the UK, sources of fuel for the production of renewable heat and supply chains were relatively under-developed and some of the technologies new or unfamiliar. Following an Energy White Paper published in 2003 by a combination of the Department of Transport and the Department of Environment, Food and Rural Affairs (DEFRA) a Biomass Task Force was appointed to assist the Government and the industry to optimise the contribution of biomass energy to renewable energy targets.²⁸ The 2004 Royal Commission on Environmental Pollution suggested the introduction of a renewable heat obligation, a quota mechanism similar to that relating to electricity, although the Task Force recommended the introduction of a capital grant scheme when it reported in October 2005.²⁹
- 1.4 It was appreciated by policy makers that there was a significant difference between providing a scheme for electricity generation targeted at the owners of a limited number of power stations and one that would have to persuade many hundreds of thousands of individual commercial operators, large and small, as well as millions of homeowners to change their heating systems. However, using the Renewables Obligation as an example, the Renewable Energy Association and other similar organisations began to agitate for some form of financial support for a heat equivalent.
- 1.5 An initial proposal for such a quota-style instrument took the form of a Renewable Heat Bill in January 2005, the progress of which was brought to an end by the 2005 general election.³⁰ Debate continued after the election, including a suggestion that a tariff support system might be

26 INQ-101316 to INQ-101336

27 LEG-31501 to LEG-31518

28 INQ-101337 to INQ-101478

29 INQ-101541 to INQ-101636

30 INQ-101479 to INQ-101483

more economically attractive than one based on quotas. On 23 May 2007 the UK Department of Trade and Industry (DTI) published a White Paper entitled ‘Meeting the Energy Challenge’, which set out a short summary of the position across the European Union (EU) and noted that in March 2007 the European Council had agreed to set a target for 20% of the EU’s energy to be from renewables by 2020.³¹

Developing the UK’s renewable heat policy

- 1.6 The Department of Business Enterprise and Regulatory Reform (BERR), which had inherited many of the functions of the disbanded DTI, commissioned from NERA Economic Consulting a report entitled ‘Quantitative Evaluation of Financial Instruments for Renewable Heat’, which was published on 23 June 2008.³² The report looked at a range of policy options that could be used to provide financial support for renewable heat technologies and concluded, at section 12, that the two most realistic were either a Renewable Heat Obligation (RHO) or a Renewable Heat Incentive (RHI).³³ The central policy challenge underlying most of the early research was striking the right balance between, on the one hand, compensating applicants for the capital costs and any additional fuel expense incurred by those entering the scheme and, on the other, the risk of exposing public funds to exploitation as a consequence of ‘overcompensation’ and/or ‘gaming’ of the system.
- 1.7 On 26 June 2008 BERR published a consultation document entitled ‘UK Renewable Energy Strategy’, chapter 4 of which dealt with heat and included a section describing the key characteristics of a renewable heat incentive scheme. Responses were sought by 26 September.³⁴ The strategy document was accompanied by a series of impact assessments, one of which dealt specifically with renewable heat.³⁵
- 1.8 On 1 September 2008 NERA provided BERR with a second report examining in some detail the two preferred options identified in the earlier report.³⁶ NERA stated that the resource cost of renewable heat was highly dependent upon input assumptions, including fuel price assumptions, and advised of the importance of sensitivity analysis in the context of such uncertainty.³⁷ This report also dealt with banding of tariffs in terms of producing an appropriate return at different scales. It was emphasised that the future of biomass prices was “very uncertain” and that the prices used in the modelling were “broadly based on a combination of assumptions.”³⁸ These early notes of caution can be seen to be both particularly prescient and important in light of some of the difficulties which later arose with the Northern Ireland Non-domestic RHI scheme.
- 1.9 NERA summarised its findings by warning that an RHI offered much less certainty about meeting a target level of output than an RHO with a strict quantity target.³⁹ BERR commissioned research from a number of independent bodies on the design of measures best suited to encourage the adoption of renewable heat systems. Information and reports were shared with DETI. These exchanges were formally concluded by the passage of section 100 of the Energy

31 INQ-21610 to INQ-21953 at INQ 21632

32 WIT-175107 to WIT-175218

33 WIT-175213

34 INQ-21157 to INQ-21445

35 INQ-20001 to INQ-20112

36 WIT-175025 to WIT-175106

37 WIT-175080

38 WIT-175048

39 WIT-175092

Act 2008, by which time the Department of Energy and Climate Change (DECC) had been created (DECC took over some of the functions of BERR relating to energy). Section 100 empowered the Secretary of State for Energy and Climate Change to make regulations for the purpose of establishing an incentive scheme to facilitate and encourage renewable generation of heat.⁴⁰

- 1.10 The passage of the 2008 Act was almost certainly influenced by the debates that were taking place in the EU that led to the adoption of the 2009 Renewable Heat Directive 2009/28/EC in April 2009.⁴¹ Article 1 of the 2009 Directive explained that the Directive established a common framework for the promotion of energy from renewable sources and set mandatory national targets for the overall share of energy from renewable sources.⁴² Article 3.1 provided that:

“Each Member State shall ensure that the share of energy from renewable sources, calculated in accordance with Articles 5 to 11, in gross final consumption of energy in 2020 is at least its national overall target for the share of energy from renewable sources in that year, as set out in the third column of the table in Part A of Annex 1.”⁴³

- 1.11 The sub-target for the UK was 15% of total energy demand from renewable sources by 2020 and in July 2009 the UK published its Renewable Energy Strategy,⁴⁴ with a foreword by the then Secretary of State for Energy and Climate Change, setting out in its Executive Summary the indicative sector contributions: more than 30% of electricity from renewables, 10% of transport energy from renewables and 12% from heat. The heat target was to be met from a range of sources including biomass, biogas, solar and heat pumps.⁴⁵

The development and introduction of the GB RHI

- 1.12 An RHI consultation document was published by DECC in February 2010 and, reflecting stakeholder feedback, Government policy focused upon a phased introduction.⁴⁶ The consultation document explained that Northern Ireland (also referred to as NI) would not be included in the proposed RHI as it was “not covered by the legislation in the Energy Act 2008.”⁴⁷
- 1.13 The GB Renewable Heat Incentive Regulations 2011, which applied in Great Britain (“the GB RHI regulations”), were prepared by DECC and laid before Parliament by its Secretary of State in exercise of the powers contained in section 100 of the Energy Act 2008. The GB RHI regulations came into force on 28 November 2011 with the overarching objective of facilitating the heat sector’s contribution to the Government’s legally binding target of supplying 15% of total energy consumption from renewable sources by 2020.⁴⁸
- 1.14 The explanatory memorandum accompanying the GB RHI regulations recorded that, as the first incentive of its kind worldwide, it generated considerable interest from the public, manufacturers

40 LEG-00596 to LEG-00598

41 LEG-01706 to LEG-01752

42 LEG-01717

43 LEG-01718

44 INQ-23307 to INQ-23542

45 INQ-23317

46 WIT-177123 to WIT-177209

47 WIT-177199

48 LEG-00947 to LEG-00986

and installers as well as the international community.⁴⁹ The stated aim was to encourage the uptake of renewable heat technologies and stimulate the market to meet the objective of increasing renewable heat from 1.5% to 12%. It was recognised that, in order to achieve that end, it would be necessary to subsidise to some extent the movement from fossil fuels to renewable sources.⁵⁰ The GB RHI regulations specified the criteria for eligible plant and the eligible purposes necessary to attract subsidy and provided for the scheme to be introduced in two phases – the non-domestic sector followed by the domestic sector, both of which were to be the target of long-term tariff support.⁵¹

Protections for the GB RHI

- 1.15 It has been necessary for this Inquiry’s work to highlight relevant steps taken in respect of the GB RHI scheme, which may stand in contrast to what occurred in respect of the NI RHI scheme. It has also been essential for the Inquiry to look at important information and learning that was available from the GB RHI scheme in the context of decisions taken in respect of the NI RHI scheme.
- 1.16 However, it is important that the Inquiry points out that it has not examined the efficacy of the GB RHI scheme, and the Inquiry should not be seen as endorsing (or indeed criticising) any aspect of the GB RHI scheme which may, or may not, have the same, or different, problems to the NI RHI scheme.

The perverse incentive and its mitigation

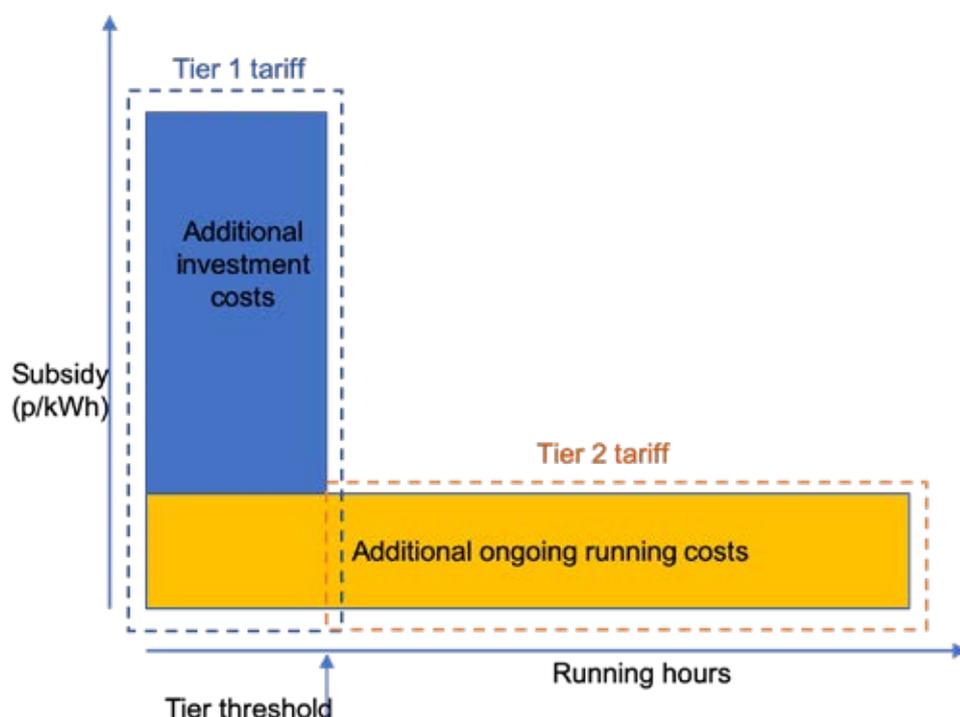
- 1.17 The main reservation about revenue support mechanisms for heat is that there could be an incentive to produce heat simply for the purpose of receiving payments and to ‘open the windows’ to get rid of the excess heat, there being no widespread means of transporting it to others or any market for it.
- 1.18 The risk of a ‘perverse incentive’ could arise at any time if payments exceed the costs of producing the heat. There is an added risk with those heat systems that rely on fuel, since the price of fuel can change at any time, potentially impacting on this perverse effect, even if initial tariffs are calculated correctly. However, it is possible to mitigate the perverse incentive, either by ‘deeming’ the amount of heat produced or through ‘tiering’ the tariffs when output is metered.
- 1.19 Deeming, where a fixed rate of payment is set based on an assumed level of production of heat, actually decreases the risk of wasted heat since it is in the operator’s interests to keep usage and costs down, knowing that the income will remain constant regardless. Deeming was not used in the GB or NI non-domestic RHI schemes but has been used for the domestic RHI schemes in GB and NI.
- 1.20 Where there are difficulties in setting a deemed level of heat use, e.g. for the more diverse applications in the non-domestic sector, tiering of tariffs can be used. This allows support to be differentiated to cover separately the additional up front investment costs and any additional ongoing running costs, i.e. when compared to the fossil fuel alternative. This is shown in Figure 1 prepared by the Inquiry below:

49 LEG-00987 to LEG-00991

50 LEG-00988

51 LEG-00947 to LEG-00986; LEG-00762

Figure 1 – Subsidies and Tiering Tariffs



- 1.21 In the GB scheme, a combined ‘Tier 1’ tariff was set that covered the combination of the additional capital and running costs for all heat produced up to the tier threshold, which was set at 1,314 hours, equivalent to 15% of the maximum possible production in each year. This ensured that the capital costs would be repaid, even for users with relatively low heat usage and that for heat produced above the threshold, only the additional running costs would be covered.
- 1.22 Above the tier threshold the perverse incentive is reduced or eliminated if the Tier 2 tariff is set at a level below the cost of heat production. However, the combined Tier 1 tariff is more likely to be greater than the cost of heat production, so there is often still the potential for a perverse incentive to maximise production up to this threshold.
- 1.23 Where a scheme is designed with a low tier threshold (e.g. in the GB RHI this was 15% of potential production capacity) the level of the Tier 1 payment has to be relatively high to ensure capital pay-back. This increases the risk of incentivising exploitation, and creates the potential for inappropriate design and operation of installations to maximise production at the higher Tier 1 tariff. One example of this would be to install multiple over-sized boilers, all to be run at or below the tier threshold.

Tiering in the GB RHI

- 1.24 When the GB RHI scheme commenced in November 2011 it did have tiering in some of its biomass tariffs.⁵² In its March 2011 Renewable Heat Incentive consultation document,⁵³ DECC set out that the RHI tariff structure could provide a “perverse incentive” to generate (useless) heat in order to maximise returns. It recognised that the perverse incentive would

52 LEG-00981 to LEG-00982

53 WIT-177210 to WIT-177310

arise in those cases where the tariffs payable under the scheme were higher than the cost of the required fuel.⁵⁴ It considered that the potential for a perverse incentive did exist in respect of some of its biomass tariffs and determined that the risk would be dealt with through tiering the relevant tariffs.⁵⁵

1.25 In Annex II of the consultation on the “Details of Tariffs”, DECC explained:⁵⁶

“Under the tiered structure, a higher initial tier allows installations to receive most of the support needed, upon generating a minimum level of heat generation that any reasonable installation can be expected to require. Upon reaching a prescribed level of heat generation, the tariff drops to a lower tier 2 tariff, which ensures that participants still receive sufficient support to help with fuel costs of further heating requirements, but do not actually make a profit by generating heat purely for the purpose of gaining more support.”

The subject of tiering is highly significant in respect of the NI RHI scheme and will be returned to throughout the Inquiry’s Report.

The concept of degression

1.26 Degression mechanisms are commonly used around the world on feed-in tariff schemes for renewable electricity. These automatically ratchet down the tariff levels in a predictable manner as pre-set deployment and cost triggers are reached.

1.27 Although not part of the GB RHI scheme when it commenced, DECC was also considering degression as a different form of long-term protection to avoid over subsidising.

1.28 In NERA’s February 2010 report for DECC on ‘The Design of the Renewable Heat Incentive’,⁵⁷ at paragraph 4.3.4⁵⁸ the authors discussed the concept of degression. They described it as the process by which subsidies might be reduced in a step-wise fashion over time depending upon the developing circumstances of the scheme. The same report emphasised the importance of sensitivity analysis, cautioning that many inputs to a scheme would be highly uncertain and citing, in particular, variation in fossil and renewable heat source prices over time.

The 2012 GB RHI interim cost control

1.29 While DECC was working on the development of its long-term degression mechanism, and despite it having only launched the GB RHI scheme just four months earlier, in November 2011, it began a consultation in March 2012 on an interim cost control for the GB RHI scheme,⁵⁹ which would see the GB RHI scheme suspended if a certain percentage of the available budget was known to have been committed through accreditations on to the scheme.

1.30 In the Ministerial Foreword to the consultation document,⁶⁰ the DECC Minister explained that:

“...the RHI is funded from Government spending and we have to ensure that

54 WIT-177272

55 WIT-177273

56 WIT-177291

57 WIT-175219 to WIT-175302

58 WIT-175267

59 INQ 22081 to 22086

60 DFE-53098

we maintain value for money for the taxpayer and do not spend more than the annual budgets allocated to fund it. We have to learn lessons from the Feed-in Tariffs and ensure that we maintain budgetary control whilst providing appropriate certainty to stakeholders about how we will do this. The RHI must be a long-term, sustainable policy in order to be effective. For this reason, we plan to introduce a comprehensive cost control mechanism which ensures the long-term future of the RHI whilst also providing the transparency and certainty that the market needs to drive investment. We will be consulting on a degression-based mechanism in the summer which would automatically reduce tariffs should spending against the overall budget or deployment of certain technologies exceed forecasts.

Until we are able to introduce the longer-term solution, we need assurance that the scheme will not exceed its budget for the next financial year. Therefore, we are consulting on a short-term measure to give us the confidence that spending will not exceed our budget. The measure proposed is that we suspend the scheme until the next financial year if our evidence shows that the budget could be breached.”

- 1.31 DECC acknowledged that the then current uptake levels on the GB RHI scheme were very low relative to the available budget but cautioned that RHI was a new policy in an immature market, which meant that there was a high degree of uncertainty about deployment in the short-term. Uptake of renewable heat could fluctuate based on volatile variables and, given the infancy of the renewable heat market in the UK, it was necessary to assume a significant level of uncertainty and potential for variance from modelling projections.⁶¹
- 1.32 The experience of feed-in tariffs and solar PV (usefully summarised in the Court of Appeal decision of *Secretary of State for Energy v Friends of the Earth* [2012] EWCA Civ 28)⁶² had taught the Government that it needed to be prepared for rapid, unexpected changes in uptake and to be able to respond quickly. The Minister noted that if the Department had no way of controlling short-term spending, the long-term future of the RHI might be jeopardised. Therefore, it was being proposed that, initially, there should be a power to suspend the scheme until the next financial year if there was evidence that the budget could be breached.⁶³ A further consultation would be held with regard to the adoption of a degression-based mechanism which would automatically reduce tariffs should spending against the overall budget or deployment of certain technologies exceed forecasts.⁶⁴
- 1.33 In June 2012 the Government published the response to the consultation⁶⁵ confirming its intention to introduce, as a temporary measure, the suspension mechanism enabling the GB RHI scheme to be closed to new accreditations for the remainder of the financial year if the forecast indicated that the budget could be breached.⁶⁶
- 1.34 The March 2012 consultation document, and the June 2012 response, are two short documents. The narrative in each spanned less than 10 pages. They clearly articulated a significant potential financial risk to the GB RHI scheme, its budget and the need to have budgetary protections in place to deal with it.

61 DFE-53098; DFE-53103

62 INQ-05001 to INQ-05016

63 DFE-53103 to DFE-53104

64 DFE-53106

65 INQ-22038 to INQ-22053

66 DFE-53139

- 1.35 The interim cost control was introduced to the GB RHI scheme in July 2012, some 4 months before the introduction of the NI RHI scheme, through the Renewable Heat Incentive Scheme (Amendment) Regulations 2012.⁶⁷

The 2013 GB RHI degression mechanism

- 1.36 In the same month, July 2012, DECC published a further consultation which dealt with, amongst other things, the long-term degression mechanism.⁶⁸ DECC published its response in February 2013⁶⁹ and replaced its interim cost control with degression through the Renewable Heat Incentive Scheme (Amendment) Regulations 2013, which came into force on 30 April 2013.⁷⁰
- 1.37 The consultation document explained that degression affords a means of graduated tariff reduction to take account of anticipated breaches of forecast expenditure thresholds or “triggers.” Once an installation is accredited, participants are entitled to payment of subsidy. In effect, degression means that as the scheme becomes increasingly popular and demand rises placing the budget under pressure, the size of the tariff payments for new entrants can be reduced, thereby helping to reduce the risk to the budget from overspend. Since the mechanism only impacted on the tariff and did not control the volume of applicants, there was still a residual risk of overspend.
- 1.38 Tests were to take place quarterly to see if degression was needed, providing one month’s notice of any degression. Triggers were set for each tariff and, if a trigger were hit, a 5% to 10% reduction of that tariff would take place. If take-up of any technology were significantly higher, a “super trigger” 20% reduction might be triggered. This was not expected to occur apart from in exceptional circumstances, but it served to guard against sudden and unexpected popular deployment of any technology. Tariffs reduced as a consequence of degression only applied to new applicants. In practice the time lag of one month’s notice is mitigated by the limited number of suppliers of equipment, the requirement that equipment must be fully operational before approval, and lead times from installation to approval.
- 1.39 In the GB scheme, degression successfully avoided any significant budget over-spend, although it did lead to volatile stop-start deployment rates, which caused severe spikes in demand as degression triggers were approached, followed by periods of very low deployment thereafter. The deployment patterns can be seen in Figure 2 below. The Inquiry has produced this based on statistics from BEIS and Ofgem for monthly applications and applicable tariffs.⁷¹

67 INQ-22062 to INQ- 22066

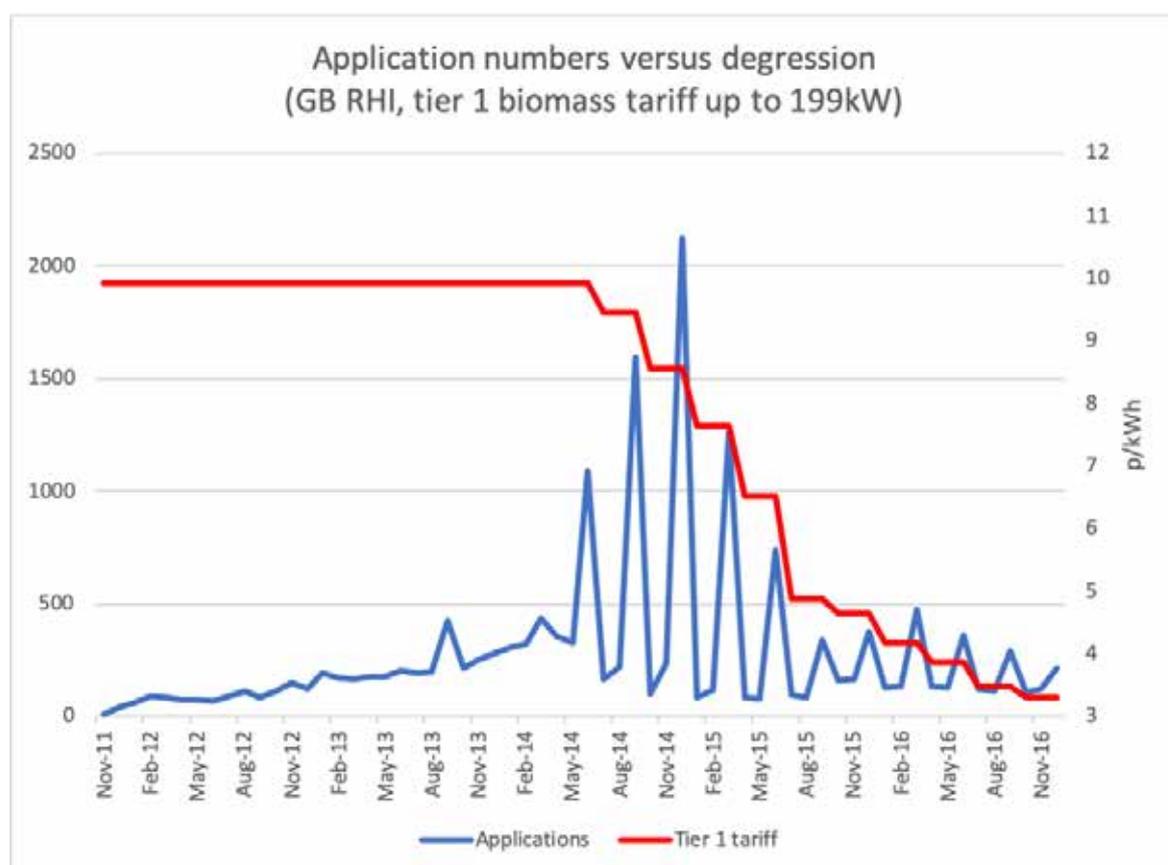
68 INQ-23042 to INQ-23112

69 INQ-23192 to INQ-23273

70 LEG-01054 to LEG-01068

71 INQ-17566; INQ-17567

Figure 2 – Application Numbers versus Degression



Ultimately, the application of degression severely inhibited deployment. The GB scheme is now only expected to deliver about a third of the renewable heat originally projected.⁷²

- 1.40 The GB RHI scheme has continued to be subject to change, including in respect of the form of protections on the scheme. The GB RHI scheme itself has also been the subject of an investigation by the National Audit Office⁷³ and an inquiry by the Westminster Parliament’s Public Accounts Committee.⁷⁴

72 INQ-26011

73 INQ-26001 to INQ-26069

74 INQ-91001 to INQ-91129

Findings

- 1. There were strong environmental policy pressures to move towards low-carbon and renewable energy sources.**
- 2. In 2009 the UK adopted legally binding EU targets for the deployment of renewable energy as part of the wider European Directive.**
- 3. The UK indicative target of 15% renewable energy included an aspiration of 12% for the heat sector. This was very challenging due to the low starting point.**
- 4. As appears later in this Report, the original 2011 GB RHI regulations formed the basis of the Northern Ireland RHI scheme. For the purposes of this Inquiry certain provisions contained in the GB RHI regulations, and how they were subsequently amended, are of particular significance and are revisited later in relevant sections of this Report.**