Chapter 5 – CEPA and its reports of 2011 and 2012

5.1 Another central theme of the Inquiry's work has been to examine the nature and adequacy of the expert reports that DETI obtained as part of developing the Northern Ireland RHI scheme. For continuity, in this chapter the Inquiry examines the CEPA reports from 2011 and 2012, before returning to the developments in DETI in 2011. The June 2013 report from CEPA, which relates to Phase 2 of the NI RHI scheme, is dealt with later in the Report.

Appointing CEPA

5.2 As already noted, DETI needed economic expertise to help with the development of the RHI scheme and on 30 December 2010 Ms Hepper had advanced a submission to Minister Foster, copied to Dr Crawford, and the Permanent Secretary, Mr Sterling, seeking approval to put a business case to DFP for the appointment of CEPA, which had previously been selected as the external consultants to carry out the economic appraisal of an RHI for Northern Ireland.[388] It seems clear that timing was regarded as being of considerable importance and the Inquiry notes that the submission emphasised the need for an early decision "as DFP approval is required and the appraisal completed to ensure spend in 2011/2012 is achievable."[389] This was echoed in the business case seeking appointment of the consultants, which recorded at paragraph 1.14:

> "There is no possibility in deferring this assignment. DECC intend to roll-out a RHI in GB from June 2011, by deferring this project there would be a significant delay in rolling out similar policy in Northern Ireland and therefore disadvantaging the renewable heat market here. ***Further to this HMT has indicated that funding for a Northern Ireland RHI is available from 2011/2012, delaying this project would also lead to this money being unspent***."[390] (the Inquiry's emphasis)

5.3 Ms Hepper explained that DETI Economics Branch did not have the skills to undertake the necessary work in-house. It was a "complex, one-off task" that required the advice of specialist heat economists and she pointed out that previous research carried out had highlighted that the GB RHI, as it then stood, could be ineffective in Northern Ireland as it did not take account of the specific local heat market.[391]

5.4 The terms of reference and the business case, prepared by Peter Hutchinson, a deputy principal in Energy Division, were annexed to the submission and the terms confirmed that "The DETI Minister has already indicated that a Northern Ireland RHI will be implemented if it is economically viable."[392] The business case also recorded that Minister Foster had issued a press release to that effect on 20 September 2010.[393]

5.5 A number of objectives for the work were specified in the terms of reference including the "development and implementation of a specific Renewable Heat Incentive (RHI) for Northern Ireland" together with "An assessment of appropriate tariff levels (pence per kWh)." There was

388 DFE-58027 to DFE-58063
389 DFE-58028
390 DFE-58036
391 DFE-58030
392 DFE-58052
393 DFE-58035

also a requirement to "Identify a full list of potential options for future delivery of a Northern Ireland Renewable Heat Incentive."[394] Each option was to be fully costed, the net present values (NPVs) calculated and the financial payback of each technology assessed. The potential risks in delivery of any future support scheme were to be identified and assessed and there was a requirement to include a sensitivity analysis of key assumptions.[395]

5.6 The consultancy project was to be supervised by DETI Sustainable Energy Branch in conjunction with DETI Economics Branch. CEPA was duly commissioned in January 2011[396] to undertake the economic appraisal of the feasibility of an NI RHI scheme. AEA Technology (AEA), which had previously advised in relation to the GB scheme, was subcontracted by CEPA,[397] with DETI's knowledge and approval, to provide specialist technical advice and input in respect of the work CEPA was undertaking for DETI.[398] However, the contractual nexus appears at all times to have been between DETI and CEPA rather than between DETI and AEA. Mr Hutchinson, along with DETI economist, Mr Connolly, participated in meetings with CEPA, attempted to ensure that agreed guidelines were observed and commented on various draft reports.

The 2011 CEPA reports

5.7 Draft reports were supplied to DETI by CEPA on 11 and 28 March 2011, with a draft final report being furnished on 31 May.[399] The final report was delivered to DETI on 28 June 2011.[400] All four documents were considered by the Inquiry, the latter two being particularly significant for the extent to which they were used or otherwise by Energy Division officials in providing advice to Minister Foster.

5.8 CEPA ultimately recommended consideration of both a Challenge Fund and an NI version of the GB RHI scheme.[401] The Challenge Fund was a system under which supporting capital funds would be awarded on a competitive basis, the rationale being to obtain the best value for money when it was not clear how much subsidy might be required to achieve a given aim.[402] CEPA's 28 June report indicated that a Challenge Fund appeared better, both in terms of heat delivered per pound and funding structure for domestic customers, although CEPA recognised that there were "wider policy considerations and stakeholder acceptability issues to consider."[403] In the event that DETI was unable to confirm a sufficient degree of certainty that funding would continue beyond 2015, CEPA had a clear view that only some form of Challenge Fund or capital grant scheme would be worth pursuing.[404] Even if such a degree of reassurance on funding was obtained, CEPA still recommended a Challenge Fund as a means of resolving genuine concerns about technology costs and uptake, although it also recommended that DETI should consult on the option of moving to an NI RHI in the long term.

5.9 The Challenge Fund was shown to have the potential to produce the most renewable heat, to be much less exposed to the risk of over-subsidisation and to offer the best value for money

394 DFE-58053 to DFE-58055
395 DFE-58055 to DFE-58056
396 WIT-105459
397 WIT-105466, WIT-110025; TRA-01230 to TRA-01231
398 WIT-110025; TRA-01230 to TRA-01231; TRA-01239 to TRA-01240
399 DFE-187754 to DFE-187887
400 DFE-188120 to DFE-188264
401 DFE-188125
402 DFE-188169
403 DFE-187624
404 DFE-187625

in terms of £ per kWh renewable heat, subject to concerns that a lack of awareness might mean that the most cost-effective heat deployment opportunities might not be targeted.[405] Table 10.3 in the 31 May draft demonstrated that a Challenge Fund, in terms of monetised benefit, would be some £26 million cheaper than the suggested NI RHI scheme.[406] In oral evidence Ms Hepper agreed that, in that draft, the Challenge Fund was shown to perform better than the proposed NI RHI scheme.[407]

5.10 It appears from the early exchanges with DETI about the initial drafts of the CEPA report that DETI had concerns about the length of time it would take to establish a challenge/grant scheme and the consequent possibility of putting the £2 million funding for 2011-12 at risk, even though the Inquiry notes that such a scheme would not have required a Legislative Consent Motion or the enactment of any additional enabling powers. The risk was one of losing the funds for that year, since the AME rules implied the funds could not be rolled over, although, as discussed earlier, £1.8 million of the 2011-12 funding was in fact ultimately re-profiled into 2012-13 following an application to DFP.

5.11 Significantly, the draft report of 31 May also recorded that none of the options considered delivered the 10% of renewable heat set as a target for Northern Ireland.[408] In the circumstances, it is not surprising that exchanges about the draft reports ensued between CEPA and DETI. Mr Hutchinson continued to raise questions and Ms Hepper stressed that they were "quite demanding" in their attempts to seek plausible explanations.[409] However, as she observed in evidence, for those without relevant knowledge or experience it was not easy to challenge the expertise which had been brought in for guidance.[410]

5.12 The Inquiry has considered a document, dated 15 June 2011, providing CEPA's response to a number of comments raised by Mr Hutchinson on 6 June.[411] He had enquired about whether additional tariff options could deliver 10% renewable heat by 2020 and/or whether there was a need for a return on capital of 15% rather than 12%.[412] CEPA replied that the switching of the large Invista plant to biomass was now included in the model and that this meant that 10% was reached for some scenarios. CEPA also undertook to deal with the impact of different return levels in a training session on the model and agreed to modify parts of their draft regarding some tariff levels.[413]

5.13 Of particular interest is paragraph 8 of this document, in which Mr Hutchinson raised the need to be very clear why RHI was the preferred option over the Challenge Fund in the long-term funding scenario. To this, CEPA replied:

> "Our recommendation is based on the assumption that DETI wants to do an RHI. The Challenge Fund option is for comparison purposes to show what could be achievable."[414]

405 DFE-188193
406 DFE-187844
407 TRA-01823 to TRA-01824
408 DFE-187759
409 TRA-01817
410 TRA-01815 to TRA-01818
411 CEP-143601 to CEP-143612
412 CEP-143601
413 CEP-143593
414 CEP-143606

5.14 With regard to tiering, CEPA had said in its 31 May draft that it had considered tiering for the NI RHI rates, using the DECC approach, and, for the reasons it gave, concluded that tiering was not required.[415] Mr Hutchinson had asked for more information as to why tiering had not been proposed for Northern Ireland.[416] By way of reply to Mr Hutchinson's question, CEPA stated:

> "It is also only applied when the reference technology has a sufficient load factor and the ongoing fuel cost of the new technology is greater than what it would have been had they stuck with their counterfactual technology (a positive additional fuel expense). We did not find these conditions to be fulfilled for any technology band."[417]

5.15 As discussed previously, during the course of its analysis CEPA compared a number of options including a Challenge Fund, capital grants, the GB RHI scheme, an NI RHI scheme based on the DECC approach to NI data, and a tailored NI RHI scheme using slightly different discount rates. CEPA concluded that the Challenge Fund approach would deliver the most renewable heat of any option and, because it was competitively allocated and technology neutral, at the lowest cost.[418]

5.16 With regard to budget control, a Challenge Fund would also have provided potentially greater natural protection compared to an RHI. While this point was not specifically highlighted by CEPA, table 5.2 of its draft and final reports recorded the potential for competitively allocated subsidies, such as a Challenge Fund, to involve the bidding for subsidy until "…the pot is exhausted."[419] Mr Cockburn explained in his oral evidence to the Inquiry that CEPA had a working assumption that steps would also be taken to protect the budget if an RHI was adopted,[420] using a 'first come first served' approach, and that it was "common sense that you've got a finite amount of money available and you commit it up to the point where there's no more available."[421]

5.17 However, regarding the ultimate choice of scheme, the CEPA report also concluded that there were other factors that might indicate that an RHI should be pursued over a Challenge Fund for commercial installations. An RHI scheme was said to be less expensive upfront, although it was likely to be significantly more expensive over the long term, and would have the advantage of consistency and administrative simplicity with GB as well as providing a "long-term signal for the generation…of renewable heat."[422] CEPA did suggest that there could be benefits for the non-domestic scheme in terms of administrative simplicity and experience in linking up with GB but CEPA was less persuaded of the benefit of RHI schemes for domestic applicants and recommended that DETI should reserve any final decision on the inclusion of domestic consumers until the final GB approach had been clarified.[423]

415 DFE-187814
416 CEP-143610
417 CEP-143610
418 DFE-188126
419 DFE-187799; DFE-188170
420 TRA-01249 to TRA-01253
421 TRA-01249; TRA-01252
422 DFE-187933
423 DFE-188128

5.18 In the end no clear recommendation was made in the 31 May draft final report,[424] or indeed in the final version of 28 June 2011.[425] A later internal email exchange between Mr Cockburn and Mr Morrow of CEPA in 2017 recalling the contextual circumstances is potentially revealing. In the course of that exchange it was agreed that the Challenge Fund had offered significant advantages as compared to an RHI, including the prevention of over-subsidisation, whereas DETI would have liked to benefit from discounted administration costs by engaging Ofgem, which had been retained in GB, and it, therefore, was seeking a recommendation in favour of RHI. DETI was concerned about its ability to administer a Challenge Fund given its limited resources. Both Mr Cockburn and Mr Morrow felt that the only professional recommendation they could make would be in favour of the Challenge Fund and any decision that non-monetary internal issues rendered such a fund unworkable was a matter for DETI. They agreed that this did not appear to go down well with DETI who had made it "very clear" that they wanted an NI RHI scheme.[426]

5.19 From an economic perspective, Mr Connolly was also involved in meetings and email exchanges during the production of the CEPA reports and the draft of 31 May was sent to him for review on 1 June.[427] Mr Connolly responded on 3 June providing some 32 paragraphs of comment under different headings.[428] Noting that Table 7.4 of the 31 May draft demonstrated that the Challenge Fund produced the cheapest unit of heat and Table 10.3 recorded that the Challenge Fund produced a cheaper net monetised benefit (cost) than the NI RHI scheme,[429] Mr Connolly concluded that it would be useful and necessary to have a preferred option finalised and fully costed prior to submission to DFP.[430]

5.20 In his evidence to the Inquiry, Mr Connolly had no recollection of being involved in negotiations with CEPA between receipt of the May and June reports and he did not pursue his recommendation after seeing the June report nor did he raise the changes in the latter with his line manager, Shane Murphy.[431] Mr Connolly accepted that part of his responsibilities in the ASU was to provide policy analysis and economic advice for the Energy Division. Mr Hutchinson provided him with a copy of the final CEPA report of 28 June, along with a Regulatory Impact Assessment (RIA). The RIA described the NI RHI scheme as the "preferred option" which "offers the highest potential renewable heat output at the best value." Mr Connolly accepted that such a statement was "inaccurate" and "totally at odds" with the final CEPA report of 28 June.[432] If he had noticed it he would have drawn it to the attention of Mr Hutchinson.

5.21 Mr Connolly told the Inquiry that he felt that the choice of option had been "settled and finished" once the Minister had expressed her contentment with the submission of 8 June 2011 (sent to the Minister by Energy Division based on CEPA's draft final report of 31 May 2011, but before receipt of the actual final report of 28 June 2011). The 8 June submission is dealt with in detail in a later chapter of this Report. As a consequence of learning of the Minister's decision,

424 DFE-187762 to DFE-187763
425 DFE-188128 to DFE-188129
426 CEP-150707 to CEP-150708
427 DFE-158468 to DFE-158602
428 DFE-158603 to DFE-158606
429 DFE-158538; DFE-158559
430 DFE-158606
431 TRA-03472 to TRA-03486
432 TRA-03497 to TRA-03498

Mr Connolly's concern about the potential of a Challenge Fund had become limited.[433] He also confirmed that he had confidence in the professional abilities of CEPA, although he conceded that he should have followed up the failure to identify a preferred option in terms of value for money, which was a requirement of step 10 of the analysis specified by the Northern Ireland Guide to Expenditure and Appraisal Evaluation (NIGEAE).[434]

5.22 Having achieved ministerial approval for the choice of scheme, on 20 July 2011 DETI issued a public consultation document on the proposed NI RHI.[435] This closed on 3 October 2011 and the main issues raised by consultees concerned the need for more generous tariffs; whether the banding suggestions were appropriate; and any potential adverse impact upon the then nascent gas industry. The outcome was a decision by DETI to seek a further opinion from CEPA on a limited number of specific matters set out in emails, dated 9 and 10 November 2011, from Mr Hutchinson to Ian Morrow of CEPA, which included banding of boiler sizes and tariffs.[436] The tasks set out in the emails were converted by CEPA into a formal RHI Extension Proposal[437] which was accepted by DETI on 15 December 2011.[438]

The February 2012 CEPA addendum

5.23 On 16 February 2012 CEPA provided an addendum to the report of 28 June 2011.[439] It seems clear that the request for this addendum was the source of tension and some irritation for CEPA who felt that too much was being asked of it at this time for too little reward. Nevertheless, it delivered this response and recommended two new biomass bands at 0-20kW and 20-100kW (replacing the previous <45kW and >45kW).[440] The main effect of this change would be to increase the size and number of boilers that could attract the new higher tariff. The assumed capital cost for boilers rose from approximately £400/kW for a 20kW reference boiler to approximately £600/kW for a 50kW reference boiler for the new 20-100kW band. CEPA warned that, wherever the bands were set, there was a potential for "gaming" by consumers choosing the number and size of boilers to maximise their benefit.[441]

5.24 Tables A25 and A27 of the addendum clearly demonstrated the amount of subsidy payable in respect of 20-100kW biomass boilers to be greater than the then price of fuel.[442] This meant that the 20-100kW biomass tariff put forward by CEPA in the February 2012 addendum for use by DETI in the NI RHI scheme created a perverse incentive for scheme members to generate more heat than they required in order to gain profit. The fact that some biomass tariffs proposed by CEPA were higher than the then cost of fuel meant that the NI RHI scheme would require tiering, or some other form of protection that prevented scheme members from profiting from the generation of unrequired heat. The existence of the perverse incentive within the tariffs also increased the separate need for proper and effective budget protection.

433 TRA-03481
434 TRA-03493; TRA-03480 to TRA-03481
435 DFE-63726 to DFE-63837
436 CEP-46468 to CEP-46470
437 WIT-106210 to WIT-106213
438 WIT-106219
439 DFE-77896 to DFE-77939
440 DFE-77899
441 DFE-77906
442 DFE-77929 to DFE-77930

5.25 Quite apart from the risk of profiteering as a consequence of a perverse incentive, CEPA was aware of the risk of overcompensation arising from a significantly greater load factor, effectively hours of usage, than that assumed in its tariff calculations, in particular its 20-100kW biomass tariff calculations. However no sensitivity analysis was provided for DETI to illustrate such a risk. Although CEPA specifically considered the question of tiering in respect of the 0-20kW Ground Source Heat Pump tariff when preparing their addendum report, CEPA does not appear to have considered the issue in respect of any of the biomass tariffs. CEPA also specifically recommended that DETI should reassess biomass prices at review points to determine whether the overall tariff levels were still appropriate.[443]

5.26 In his evidence to the Inquiry, Mr Cockburn accepted that several inputs into the tariff calculation tables set out in the addendum were incorrect, that their numerical precision gave a false sense of accuracy and certainty[444] and that using those figures should have produced a tariff of 6.6p/kWh rather than 5.9p/kWh.[445] He agreed that a revised model had been created by CEPA for the 2012 addendum but confirmed that it had not been provided to DETI.[446] Some two weeks after submission of the addendum report Mr Hutchinson was supplied with a number of spreadsheets, but not the revised model itself, by Ian Morrow who emphatically told Mr Hutchinson in an email dated 29 February 2012 that CEPA did not take responsibility for the sheets since "it's outside the ToR."[447]

5.27 The addendum was supplied to Mr Connolly, the DETI economist providing advice to Sustainable Energy Branch, to consider and 'sign off' as value for money (VFM) in accordance with NIGEAE.[448] He recognised that step 4 of NIGEAE required attention to be paid to any relevant change in circumstances. He told the Inquiry that he accepted that the addendum increased the absolute lifetime cost of NI RHI subsidy spend by approximately £111 million. However, in his oral evidence Mr Connolly explained that reassessing the Net Present Value/Cost at that stage would have been "a meaningless exercise unless you're also trying to work out how, if at all, the NPVs of all the other options have changed."[449]

5.28 As noted earlier in this Report, his knowledge of the June 2011 ministerial decision, which he understood to be in favour of an NI RHI scheme anyway seems to have terminated any further interest that he had in alternatives like the Challenge Fund. Although he said that he had carried out a further VFM calculation in an attempt to estimate the value of the difference in "carbon saved," he considered that changes between 2011 and 2012 in the reports with regard to banding and barrier costs were of a technical nature outside his expertise and that, as CEPA had not included any sensitivity calculations in respect of load factors, boiler efficiency or fuel prices, it was unnecessary for him to perform any such analysis.[450]

5.29 He was assured by Mr Hutchinson that there would be constant reviews which would capture any relevant developments. He did not suggest that Mr Hutchinson should revert to CEPA with regard to the significant alteration in CEPA's calculations over a relatively short period of time,

443 CEP-116305
444 TRA-01286
445 WIT-107780 to WIT-107781
446 TRA-01352 to TRA-01355
447 DFE-317129 to DFE-317139
448 DFE-80286 to DFE-80287
449 TRA-03532
450 WIT-29080 to WIT-29081; TRA-03534 to TRA-03537; TRA-03562 to TRA-03565

particularly in the context of the huge increase of £111 million in the cost of the NI RHI scheme between the reports of June 2011 and the addendum of February 2012.[451] He was referred by the Inquiry to the sensitivity analysis of load factor performed by Mr Murphy for Dr McCormick in September 2016 demonstrating how an increase in load factor to 50% would result in the rate of return rising from 12% to 73%. Mr Connolly stated that this was not an exercise that was generally performed by economists in ASU and that their task was to comment on the reports of others.[452]

451 TRA-03523; TRA-03552
452 TRA-03565 to TRA-03568

Findings

32. The CEPA draft and final reports from May and June 2011 provided a clear economic analysis of the potential to incentivise renewable heat production in Northern Ireland using a number of different approaches, mainly split between grant-based schemes and schemes providing ongoing revenue payments. The evidence base provided in support of this to DETI appears to corroborate the key findings and recommendations made in CEPA's reports.

33. The findings of CEPA's reports were stark: the Challenge Fund option produced the most heat at the least cost on an economic basis.

34. In contrast to the earlier reports, the addendum from CEPA of February 2012 appears to have been produced under time and resource pressure and contained a number of substantial errors. It appears that CEPA considered DETI to have underestimated the time and resource required. Despite these pressures, whilst acknowledging the limited scope of the addendum, CEPA had a responsibility to verify the quality of the final product. Furthermore, DETI was not provided with the necessary evidence or data to be able readily to understand or reconstruct the addendum findings, particularly given DETI's level of expertise. The revised model that was used for the addendum was not provided to DETI.

35. Knowledge transfer between CEPA and DETI was less than it should have been.

36. The Inquiry notes the significant variation in the key outputs of the three different reports (the May 2011 draft final report, the June 2011 final report and the February 2012 addendum), including scheme costs which varied by hundreds of millions of pounds and variation in the levels of renewable heat projected to be achieved. None of these variations in costs were sufficiently tested through adequate sensitivity analysis as required by the NIGEAE and CEPA's terms of reference. Responsibility for this is shared by CEPA and DETI: it was CEPA's job to do it and DETI's job to check it had been done. Sensitivity analysis should have provided clarity about which factors were particularly significant in determining the level of heat produced and the costs.

37. CEPA did correctly warn more generally about uncertainties in assumptions and modelling and the need for regular review. The need for monitoring was also set out.

38. CEPA should have recognised that the February 2012 addendum recommended a commercial biomass tariff greater than the cost of fuel used for heat production thus creating the perverse incentive to produce unnecessary and excessive amounts of heat. The Inquiry notes that this failure arose despite CEPA's own spreadsheet model automatically flagging up to it that this was the case and even calculating and showing what a tiered tariff might have looked like.[453] While CEPA was consulted on the basis of being an expert adviser, the Inquiry finds that the difference should also have been picked up by DETI officials who recorded the relative values upon consecutive pages of the Casework Committee synopsis, discussed later in this Report.

453 This issue is addressed in more detail later in this Report.