



BANK OF ENGLAND

August 2017

The future composition of polymer banknotes — decision document

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1 Executive summary

On 10 August 2017, the Bank announced that, following full public consultation, outreach with stakeholders, technical analysis and after careful consideration of viable options, there will be no change to the composition of polymer used for future banknotes. The new polymer £20 banknote, to be issued in 2020, and future print runs of £5 and £10 banknotes will continue to be made from polymer which contains a trace amount, typically less than 0.05%, of additives derived from animal products.

This was a difficult decision. It drew on the wide range of evidence gathered and assessed by the Bank over the past few months. This has included a full public consultation, outreach meetings⁽¹⁾ with representatives of potentially impacted groups, technical trials, commercial discussions and independent environmental research. In reaching its decision, the Bank has also taken careful account of its obligations under the Equality Act 2010 (EA 2010). This document summarises the results of the public consultation and the various factors the Bank has had to balance throughout its consideration to reach a decision.

The Bank ran a public consultation between 30 March and 12 May 2017. While the overall response rate was low with 3,554 responses, the consultation and the Bank's outreach programme helped to provide a good understanding of the potential equality impact of the Bank's decision on groups with particular protected characteristics.⁽²⁾ The responses supported the Bank's initial assessment, set out in the Consultation Paper,⁽³⁾ that there were certain groups that may be affected, and we ensured that equality considerations were part of our formal decision-making.

The only currently viable alternative additives for polymer banknotes are chemicals derived from palm oil. There was no public consensus on which option to pursue. 3,010 people (88% of those responding to the question) were against the use of animal-derived additives. 1,472 people (48% of those responding to the question) were against the use of palm oil derivatives. 1,103 people (31% of all people responding to the consultation) were against the use of both animal and palm oil-derived additives. The Bank has had to balance the differing views of the various identified protected groups against the Bank's other public duties and priorities. These include the responsibility to maintain confidence in the physical currency, through the issuance of high quality, secure banknotes, and to achieve value for money.

Feedback from the Bank's public consultation revealed significant concerns that the use of palm oil derivatives threatened environmental sustainability. The Bank's suppliers have been unable to commit to sourcing the highest level of sustainable palm oil, at this time. While the Bank judges that the achievable level of sustainability is sufficient, it acknowledges that this view may not be universally held.⁽⁴⁾

The cost implications were also a consideration in the Bank's decision. The estimated cost of switching additives has risen since the consultation. Supplier estimates for the £5, £10 and £20 are around £16.5 million over the next ten years, rather than the £5 million estimate change for the £20 indicated in the initial Consultation Paper. The Bank consulted with HM Treasury, as the taxpayer would be the ultimate bearer of this additional cost. While recognising that a decision on the future composition of polymer was for the Bank to reach, HM Treasury advised the Bank that it did not believe switching to palm oil derivatives would achieve value for money for taxpayers.

Value for money was only one factor the Bank considered when making its decision. It was however an important one in circumstances where the results of the public consultation and outreach meetings showed that (i) both polymer composition options would potentially impact groups with certain protected characteristics and,

(1) The outreach programme was conducted from January to May 2017.

(2) The protected characteristics under the Equality Act 2010 are: age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation.

(3) See www.bankofengland.co.uk/banknotes/polymer/Documents/polymerconsultation2017.pdf.

(4) Including by organisations consulted through the outreach programme, see the Annex.

(ii) there was no public consensus over which option to pursue, with 3,010 respondents to the consultation against animal-derived additives and 1,472 against palm oil-derived additives.

The animal-derived or palm oil-derived additives required in the production of polymer are only used in trace amounts. During our research and discussion with manufacturers and consultants, we were informed that animal-derived additives are used extensively in the many different types of plastics found in a wide range of household goods used on a regular basis, eg in cosmetics, plastic carrier bags, household detergent bottles, and car parts. They are also used in the production of plastics commonly used in alternative payment mechanisms, eg debit and credit cards and mobile phones. The animal-derived chemical additives are typically from tallow, a by-product mainly from livestock farming.

The case for moving to polymer banknotes remains compelling. Polymer banknotes deliver significant benefits over paper, particularly when combined with state of the art security features make them much harder to counterfeit. Polymer is also stronger than cotton-paper and so banknotes will last longer and remain in better condition. The Bank consulted in 2013 on the proposed switch to polymer banknotes. This generated feedback from nearly 13,000 people with 87% of those responding in favour of polymer banknotes, 6% opposed and 7% neutral.

Polymer banknotes are more environmentally friendly than paper due to their durability. The Carbon Trust has certified that over their full life cycle, the carbon footprint of a £5 polymer banknote is 16% lower than the £5 paper banknote, while the carbon footprint of a £10 polymer banknote is 8% lower than the £10 paper banknote. This certification was completed in accordance to the international standard PAS 2050, looking at the full life cycle of greenhouse gas emissions related to the banknotes, including from their production, use in circulation and final disposal.

Polymer banknotes are used in over 30 countries worldwide. The manufacture of our polymer banknotes is in line with international peers, whose notes also include animal-derived additives. The Bank has gone further, through public consultation and robust testing, than others in the investigations it has made into alternatives.

The Bank has not taken this decision lightly. It has treated the concerns raised by those groups sharing relevant protected characteristics under the EA 2010 with the utmost seriousness and has conducted a thorough assessment of the issues and the options available. The Bank also understands that neither option would have fully addressed the concerns of all parties but, in making this decision, the Bank has carefully considered a number of complex issues and taken into consideration all of its objectives, including its responsibility to maintain confidence in the currency, achieving value for money for taxpayers and its responsibilities under the Equality Act 2010.

2 Background

On 30 November 2016, the Bank issued a public statement⁽¹⁾ confirming that it had recently become aware, following a public enquiry, of the presence of trace amounts (typically less than 0.05%) of chemicals ultimately derived from animal products used in the manufacture of £5 polymer banknotes. Analysis found that they are used at an early stage of the production process of the polymer pellets, which are then used by the Bank's suppliers to create the polymer for banknotes. The amount of polymer used for banknotes represents a tiny fraction of global annual polymer production (see Section 8). The Bank was not aware of this issue when the contract was signed for the supply of polymer for the £5 and £10 banknotes.

On 15 February 2017, the Bank issued a further public statement.⁽²⁾ This explained that the Bank had concluded that it would be appropriate to keep the £5 polymer banknotes in circulation and to launch the £10 polymer banknote, as planned, in September 2017. In reaching its decision, the Bank considered the impact on immediate banknote supply to the public, the set-back in counterfeit resilience from withdrawing polymer banknotes which would give rise to further public detriment, the financial costs involved in destroying and reprinting polymer £5 and £10 banknotes already printed and the Bank's obligations under the EA 2010.

The Bank's statement also explained that, given the important concerns raised by some groups sharing particular protected characteristics, the Bank would conduct a full public consultation on future production of the £5 and £10 polymer banknote and the new £20 polymer banknote. Results from the Consultation would inform the Bank's final decision, alongside a number of other factors including feasibility of using an alternative, such as palm oil-derived additives in the manufacture of polymer, the Bank's obligations under the EA 2010 and cost to the taxpayer.

The Consultation was launched on 30 March 2017 and ran for six weeks, closing on 12 May 2017. As well as seeking further views, the Consultation:

- provided information on the Bank's role and objectives in banknote issuance, the rationale for the adoption of polymer banknotes and the production process for polymer banknotes;
- outlined that the only viable alternative to animal-derived additives for use in the manufacture of polymer was palm oil-derived additives;
- provided information on the cost of moving to palm oil-derived additives. At the time of preparing the Consultation Paper, the cost of this move was estimated to be broadly in the region of £5 million over the next ten years for £20 polymer banknote printing;
- described the role of animal-derived additives in the production of polymer banknotes and set out alternative options;
- highlighted the varying potential environmental and social impacts associated with the use of additives sourced from each of tallow, coconut oil and palm oil; and
- described the Bank's responsibilities under the EA 2010 and identified those groups sharing certain protected characteristics which the Bank understood might potentially be affected and in what way, by the Bank's final decision in relation to future production of polymer banknotes.

The Consultation, together with the outreach meetings conducted by the Bank, helped the Bank understand and assess the likely impact of a decision about the content of polymer in future production runs of the new £5 and

(1) See www.bankofengland.co.uk/publications/Pages/news/2016/085.aspx.

(2) See www.bankofengland.co.uk/publications/Pages/news/2017/024.aspx.

£10 banknotes and the new £20 banknotes on persons sharing certain protected characteristics. A summary of the Consultation questions and responses is set out in Section 4.

Research and discussion with manufacturers and consultants on the widespread use of polymer found it to be used extensively in the many different types of plastics found in a wide range of household goods used on a regular basis for example, in cosmetics, soaps, plastic carrier bags, household detergent bottles and car parts. Animal-derived additives are also used in the production of plastics commonly used in alternative payment mechanisms, eg debit and credit cards and mobile phones.

3 Technical requirements for polymer manufactured using palm oil-derived additives

The Bank is not directly involved in the production of polymer, but purchases finished polymer which has been coated in white ink (opacified). The two international producers of banknote polymer are CCL Secure⁽¹⁾ (CCL) and De La Rue.⁽²⁾ The polymer for the £5 and £10 banknotes is supplied by CCL, and a public tender (which was put on hold when the Bank became aware of the concern around the use of animal-derived additives) is being run for the polymer for the forthcoming £20 banknote.

As outlined in the Consultation Paper, part of the Bank's decision-making process would be to confirm whether an alternative polymer manufactured using palm oil-derived additives could meet the Bank's highly specialised technical and operational requirements for banknote production. Both CCL and De La Rue undertook extensive trialling of polymer manufactured using palm oil-derived additives, concluding in June 2017. Those trials proved technically successful and the revised polymer met the Bank's technical and operational requirements. The work did though highlight the supply chain challenges in sourcing palm oil-derived additives and the complexity of maintaining a segregated production process.

(1) Innovia Security now operates as CCL Secure.

(2) There are currently only two suppliers, CCL and De La Rue, who meet the Bank's requirements for the provision of polymer banknote substrate.

4 Public consultation

The public consultation received 3,554 responses.⁽¹⁾ Many respondents self-identified as members of potentially affected groups. By way of comparison, the character selection process in 2015/16 for the next £20 banknote generated nearly 30,000 responses from members of the public.

Consultation questions were predominantly open ended to enable the public to explain their views fully. Consequently, analysis of the reasons given to support views required some degree of judgement or interpretation, so this section provides orders of magnitude rather than precise percentages in relation to specific reasons given. Not all respondents answered every question.

A small number of respondents questioned the explanation in the Consultation Paper that the two alternative additives put forward as viable for the manufacture of polymer banknotes were the only options available to the Bank's potential suppliers. As explained in the Consultation Paper, the need to focus on palm oil was the result of an exercise that had been undertaken by the Bank's potential suppliers to identify and assess the supply chain available for banknote polymer manufacturing.

While most of the respondents were against the use of animal-derived additives, nearly half of respondents who expressed a view were against the use of palm oil-derived additives and of those who supported palm oil-derived additives (or at least preferred it), the overwhelming majority said they would only support the use of palm oil-derived additives if they came from sustainable sources. 1,103 people (31% of all people responding to the consultation) were against the use of both animal and palm oil-derived additives. In addition, the representatives of some religious groups we met during the outreach programme noted that there were differing views among members of their communities about the extent of any harm that may be experienced by the use of animal-derived additives in the manufacture of polymer banknotes. Some also noted that some members of their communities would also have concerns around the use of palm oil-derived additives.

Views on the use of animal-derived additives

Question 1 asked: 'Do you have a view on the use of animal-derived additives in the production of polymer substrate? If so:

- a. What is your view?
- b. Please explain why.'

Approximately 88% of the 3,430 people who responded to this question were against the use of animal-derived additives. Where respondents explained their view, the vast majority cited ethical concerns and commonly highlighted that they were vegans or vegetarians. Religious grounds and the lack of choice by way of alternatives to using banknotes were also cited as were, albeit by a smaller number of respondents, environmental concerns about livestock farming.

12% of respondents were in favour of continuing to use animal-derived additives. The most common reason was that they did not see the use of such additives as a cause for concern. Other reasons were that it was a by-product of livestock farming and that the amounts used were very small. Some respondents preferred it given concerns about the environmental impacts of using an alternative involving palm oil and the cost — ultimately to the taxpayer — of changing the manufacturing process to use palm oil-derived additives.

(1) In direct response to the consultation, the Bank also received a petition from Change.org, with almost 5,000 people opposing the use of palm oil. There have been several web-based petitions expressing views on the acceptability of inclusion of animal-derived additives and additives derived from palm oil. A petition launched in November 2016 opposing the inclusion of animal-derived additives in the production of polymer banknotes had attracted 136,988 signatures by 24 July. Two petitions (including the one above) launched in March and April 2017 and opposed to the inclusion of additives derived from palm oil had attracted 49,564 signatures in total by 24 July.

Views on the use of palm oil-derived additives

Question 2 asked: 'Do you have a view on whether the Bank's suppliers should move to using additives derived from palm oil as an alternative to animal-derived additives? If so:

- a. What is your view?
- b. Please explain why.
- c. Is your view dependent on whether the Bank's suppliers use sustainable palm oil? If so, is your view dependent on the type of sustainability certification standard that could be achieved by the suppliers?'

Approximately 48% of the 3,088 respondents to this question were against the use of palm oil-derived additives. Where respondents explained why, it was almost exclusively for environmental and sustainability reasons, with some respondents raising reservations as to whether any type of palm oil production was genuinely sustainable. The only other reason cited by more than 20 respondents was the cost — ultimately to the taxpayer — of changing from animal-derived additives.

Of the 52% who supported the alternative use of palm oil-derived additives, 85% said that they would only support sustainable palm oil. Although 1378 respondents expressed concerns about sustainability, just under 100 referenced specific sustainability standards, around half of whom simply cited Roundtable for Sustainable Palm Oil⁽¹⁾ (RSPO) certification in general rather than any specific RSPO standard. A further 100 respondents said that the Bank should use the highest available standard, although it was not always clear among these responses whether this meant the highest standard to any user of palm oil in all of its forms or the highest achievable given the supply chain available to the Bank's potential polymer suppliers.

Few respondents gave detailed reasons for why they supported the use of palm oil-derived additives. Of those who did, the most common reason was that they preferred them to animal-derived additives, with a smaller number highlighting that, while they were concerned about the concept of using additives derived from palm oil, they nevertheless viewed this as a preferable option to animal-derived additives. The only other reasons cited by more than 20 people were the small amounts of palm oil-derived additives required and not perceiving there to be drawbacks from its use.

Equality considerations

Question 3 highlighted that the Bank had identified three groups that it thought may be affected by the issues raised in this consultation and asked:

- a. 'Do you agree that these groups are likely to be affected? If not, please explain why?
- b. Do you think that there are other groups that might be affected? If so, please identify which groups and explain what the impact on such groups may be.'

Question 4 asked: 'Can you provide any evidence of any potential equality impacts of using animal-derived additives or switching to additives derived from palm oil? If so, please provide details.'

Responses to questions 3 and 4, which were provided by 2,198 and 1,598 people respectively, supported the Bank's initial assessment of the potential equality issues that may arise (see Section 6 for further information). Where respondents gave a view on whether the three groups that the Bank had identified in the Consultation Paper were likely to be affected, the vast majority agreed that they were. A small number of respondents (around 1%) cited additional religious groups not mentioned in the Bank's Consultation Paper, but who might be impacted by the Bank's decision on the future composition of polymer substrate. The most commonly cited

(1) Further information about the RSPO is available on their website www.rspo.org/about.

group was Buddhists and consequently, as part of its outreach programme (see the Annex), the Bank met with a representative of the Buddhist community to discuss their views.

In addition, some respondents suggested additional sources of further evidence on the potential impacts of the choice of additives. The Bank reviewed this evidence and concluded that it was in line with that set out in the Consultation Paper.

5 Sustainability

Supported by its outreach meetings and the Consultation, the Bank appreciates the importance placed on the sustainability of palm oil production. It was clear that achieving an acceptable level of sustainability was important to many respondents; however few specified the precise level of sustainability the Bank's suppliers should work to. Both CCL and De La Rue conducted research through their own supply chains to determine the level of sustainable palm oil which they could source for banknote polymer manufacture. They both concluded separately that Roundtable for Sustainable Palm Oil (RSPO) certification is currently the only practical route to secure a recognisable level of assurance on the sustainability credentials of palm oil derivatives which would be required for use in banknote polymer.

A sliding scale of standards exist with RSPO Credits providing the most basic assurance, followed by Mass Balance⁽¹⁾ which allows for mixing of certified and non-certified palm oil. Full segregation is currently the most advanced option, bringing full traceability and assurance that all of the palm oil used is from a certified sustainable source.

Both CCL and De La Rue have stated that they can supply RSPO Mass Balance from the start of £20 polymer banknote mass production in 2018. Given the specific requirements for palm oil derivatives to manufacture polymer for banknotes, it is uncertain whether CCL and De La Rue would be able to secure a higher level of sustainability certification in the future or what the timeframes for doing so might be. In particular, neither supplier was able to make a firm commitment to the Bank that full segregation could be achieved in a reasonable timeframe.

The Bank gave careful consideration to whether RSPO Mass Balance would be an acceptable level of sustainability, given it is not the highest available and allows for mixing of non-certified palm oil. Given the very small volume of palm oil which would be required and the uncertainty over whether a higher level of certification could be achieved, the Bank believed that RSPO Mass Balance would be a reasonable and proportionate level of certification. The Bank did, however, acknowledge that this may not satisfy all respondents and/or impacted groups who expressed a view in response to the consultation and/or in outreach engagements on this issue.

(1) Mass Balance allows for mixing of Certified Sustainable Palm Oil (CSPO) and non-CSPO certified palm oil in the supply chain provided that overall quantities at site levels are controlled. It therefore contributes to the production of sustainable palm oil. 95% or above of the palm oil content must be RSPO certified.

6 Equality considerations

The Bank has given careful consideration to its obligations as contained in the EA 2010, in particular the Public Sector Equality Duty (PSED), in coming to its decision on the future composition of polymer banknotes. The PSED requires the Bank to have 'due regard' to the following equality objectives when discharging its public functions:

- (i) the need to eliminate discrimination,⁽¹⁾ harassment, victimisation and any other conduct that is prohibited by or under the EA 2010;
- (ii) the need to advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it; and
- (iii) the need to foster good relations between persons who share a relevant protected characteristic and persons who do not share it.

As set out in Section 2, the Bank held a number of outreach meetings with potentially affected groups over the period from January to May 2017 and conducted a public consultation to help it better understand and assess the likely impact of a decision about the future content of polymer on persons who share relevant protected characteristics.

While recognising that some individuals may fall within more than one group and therefore oppose the use of both animal-derived additives and palm oil-derived additives, the Bank noted in its Consultation Paper that it had identified three potential groups that may be affected:

- (i) ethical vegans and vegetarians who are opposed to any consumption of, or contact with, products that may exploit or cause harm to animals;
- (ii) certain religious groups for which veganism is part of their belief or where their belief includes the avoidance of violence to animals and/or the consumption or use of specific animal groups (for example Hindus, Jains and Sikhs);⁽²⁾ and
- (iii) individuals with concerns over the impact that the use of either plant-based and/or animal-derived additives may have on the environment.

The key findings of the recent public consultation and outreach meetings are set out in Section 4 and the Annex respectively. These findings, which were carefully considered as part of the Bank's decision-making, support the Bank's initial assessment (as set out above) of the potential equality issues that may arise from its decision on the future composition of polymer substrate.

1,256 people gave a view on whether the three groups that the Bank had identified in the Consultation Paper were likely to be affected, and the vast majority agreed that they were. A few respondents observed that category (i) should include non-vegans/vegetarians, while a small number of additional religious groups (most notably Buddhists) were mentioned in the context of the second category.

A very small number (fewer than ten) of respondents also commented that polymer banknotes may impact people with limited mobility in their fingers eg the elderly, arthritis sufferers or the disabled. The Bank has noted this point but considers it to be an issue about the decision to use polymer itself, rather than the future

⁽¹⁾ This would include indirect discrimination.

⁽²⁾ In meetings with the Bank, the representatives of some religious groups noted that there were differing views amongst members of their communities about the extent of any harm that may be experienced by the use of animal-derived additives in the manufacture of polymer banknotes and commented that some members of their communities would also have concerns around the use of palm oil-derived additives.

composition of polymer banknotes which was the subject of this consultation.⁽¹⁾ Like paper banknotes, brand new polymer banknotes can sometimes stick together, but this effect is short-lived once in circulation and only relevant for those dealing in very high cash volumes, such as banks, and the Bank has provided information about how to avoid this. The general public are unlikely to experience difficulties with polymer banknotes sticking together.

The Bank has noted that some of the people affected because of the religious beliefs they hold are most likely to be from certain ethnic/national groups. The Bank has therefore also considered the protected characteristic of 'race' in addition to that of religion or belief as part of its decision-making, while recognising that the equality issues that are raised appear to be the same whether they are characterised as concerning religion or belief or race.

The Bank set out in its Consultation Paper some potential negative effects which, depending on its decision, could be experienced by members of the above groups. In particular, the Bank noted that the choice of polymer manufactured using animal-derived additives or palm oil-derived additives may:

- (i) conflict with the philosophical beliefs of some people that are opposed to any consumption of, or contact with, products that may exploit or cause harm to animals;
- (ii) conflict with the religious beliefs of some people where those beliefs include the need to avoid violence to animals and/or avoid the consumption or use of specific animal groups. For example, some members of certain religious groups (including Hindus, Sikhs and Jains) believe that polymer banknotes manufactured using animal-derived additives should not be brought into religious places of worship, thereby possibly impacting on donations; and
- (iii) conflict with the beliefs of some people holding environmental related philosophical beliefs to the extent that any polymer manufactured using palm oil-derived additives and/or animal-derived additives used in the production of polymer raise environmental sustainability issues.

In each case, the use of polymer manufactured using animal-derived additives or palm oil-derived additives — and in some cases either — will present difficulties, and in some cases give rise to potential negative effects for some people within the groups identified above.

The results of the public consultation and outreach meetings support the view that these are likely to be the main negative effects potentially experienced by members of the groups identified above as a result of a decision by the Bank on the future composition of polymer banknotes. For example:

- (i) 88% (3,010) of respondents to question 1 opposed the use of animal-derived additives in the manufacture of polymer. Where respondents explained their view, the vast majority cited concerns about cruelty to animals or religious reasons; and
- (ii) 48% (1,472) of respondents giving a view on the use of palm oil-additives opposed their use as an alternative to animal-derived additives. The vast majority of respondents who opposed the use of any form of palm oil did so for environmental/sustainability reasons.

(1) In addition to commissioning independent focus groups and surveys, the Bank also carried out a public consultation in 2013 about the proposed switch from cotton paper banknotes to polymer banknotes. Nearly 13,000 people provided feedback with 87% in favour of polymer, 6% opposed and 7% neutral. The Bank also considered disability issues by working with the Royal National Institute of Blind People (RNIB) to understand how polymer might impact on people who are blind or partially sighted.

7 Costs and commercial implications

As set out in the Consultation Paper, one of the factors that the Bank must also take account of is the cost ultimately borne by the taxpayer. While the cost of producing each individual banknote is just a few pence, the volume of banknotes required to meet demand means that overall costs of banknote production are significant. The costs of banknote production are deducted from seigniorage⁽¹⁾ income paid to HM Treasury by the Bank and therefore are ultimately borne by the taxpayer. The Bank seeks to achieve value for money in its production of banknotes and must take account of any cost impact of switching to polymer produced using palm oil-derived additives.

In the Consultation Paper, the Bank noted that, based on indicative costs from suppliers, the increase in costs from moving to palm oil-derived additives was estimated to be broadly in the region of £5 million over the next ten years for £20 polymer banknote printing.

Since publishing the Consultation, the Bank's potential suppliers have held further discussions within their own supply chains about the cost of switching to palm oil-derived additives. As part of this process, a number of options were explored involving different sourcing options and substrate production locations for different notes. The Bank considered the potential for these options to address the concerns of groups with protected characteristics, the financial costs and environmental impacts, as well as their compliance with the Public Contract Regulations 2015.

The costs of the change are significantly higher than estimated in the Consultation Paper. Taking the revised costs for the £20 together with those of future production runs of the £5 and £10 banknotes, the total cost of adopting palm oil-derived additives would be in the region of £16.5 million over the next ten years. This could lead to up to a 5% rise in the annual cost of banknote printing — and considerably more than cited in the Consultation Paper which estimated £5 million for the £20. Furthermore, as contracts for the supply of polymer for the £20 banknote are not yet finalised and a move to palm oil-derived additives could necessitate commencing a new tender, the total cost incurred as a result of moving to palm oil-derived additives could increase further through the process to finalise contracts. This uncertainty was considered as part of the Bank's decision.

Given the implications for the taxpayer of an increase in cost in the region of £16.5 million or possibly more over ten years, the Bank sought HM Treasury's opinion on the issue. HM Treasury noted that a switch to palm oil-derived additives would result in a significant cost to the taxpayer. While recognising that the decision on the future composition of polymer was for the Bank to make, HM Treasury concluded that, in its opinion, the value for money case for moving to palm oil-derived additives was not compelling and such a cost increase to the UK taxpayer did not seem proportionate. The view of HM Treasury on this point was one of the factors which was taken into account by the Bank in reaching its decision. HM Treasury's letter, dated 26 June 2017, is provided in the box on page 17.

The material increase in the cost of producing banknotes manufactured using palm oil-derived additives and the impact on achieving value for money for the taxpayer was only one factor the Bank considered when making its decision. It was however an important one in circumstances where the results of the public consultation and outreach meetings showed that (i) both polymer composition options would potentially impact groups with certain protected characteristics and (ii) there was no public consensus over which option to pursue with 3,010 respondents to the consultation against animal-derived additives and 1,472 against palm oil-derived additives.

(1) The Bank of England Charter Act of 1844 gives the Bank the exclusive right to issue banknotes in England and Wales and requires the Bank to account separately for income derived from banknote issuance. This 'seigniorage' income is the difference between the return on the investment of the value of money in circulation and the cost to produce and distribute it. This income is paid over by the Bank to HM Treasury.

Box 1**Letter from HM Treasury****HM Treasury**

HM Treasury
 1 Horse Guards Road
 London SW1A 2HQ

www.gov.uk/hm-treasury

26 June 2017

The future composition of polymer banknotes

Thank you for your letter of 20 June providing an update on the public consultation and other engagement activities that the Bank has been undertaking as part of its consideration of whether to change the future composition of polymer banknotes.

In your letter you acknowledge HM Treasury's interest in this and other issues which impact on the cost of banknote production, given the direct impact on transfers to the National Loans Fund. This is very welcome.

In light of HM Treasury's interest, you have asked for our views to be set out in a letter, which the Bank intends to take into account in reaching a decision on this matter. However, we appreciate that the Bank is an independent institution and that this is a Bank decision. It is also worth saying that we do not have access to all the information coming out of the consultation and engagement work. This has been a Bank exercise, and so we acknowledge that we are not in a position to weigh up all the evidence and reach a conclusion.

Based on the information that we have seen, our view is that the value for money case for moving from animal-derived additives (ADAs) with an alternative derived from palm oil does not seem compelling. The change would come at a significant cost to the taxpayer of £16m, which you highlight is likely to rise if the result is that the Bank need to re-run the procurement for the substrate for the new £20 note. Given the prevalence of ADAs in a wide variety of everyday products, and the fact that there are only trace-quantities present in the polymer substrate used for banknotes, this cost does not seem proportionate. Furthermore, switching to palm oil could also prove to be controversial, given the significant environmental concerns which have been raised on its use in other contexts.

You mention in your letter that you would want to refer to HM Treasury's views in any press statements and in your consultation response document. As such, it would be helpful if our press offices could liaise in the usual way ahead of any public announcement. I would also ask that you inform us of the Bank's final decision on this matter at the earliest opportunity.

8 Usage of animal-derived additives in polymer banknotes

While recognising that the ethical and religious considerations arising from any use of animal-derived additives in the production of polymer substrate may be independent of the quantity used, comparative data on sourcing volumes are informative.

The animal-derived or palm oil-derived additives required in the production of polymer are only used in trace amounts. They are used extensively in the many different types of plastics found in a wide range of household goods used on a regular basis. They are also used in the production of plastics commonly used in alternative payment mechanisms eg debit and credit cards and mobile phones.

Notwithstanding the high volume of banknotes required, the quantity of oleochemical⁽¹⁾ additives required for polymer production is small in absolute terms and tiny compared with global production, whether sourced from animals or plants. As set out in the Consultation Paper, the Bank estimated the entire anticipated production volume⁽²⁾ of the £20 banknote would equate to the usage of tallow by-products from around 25–30 cattle. The equivalent for the entire anticipated volume of the £5 banknote⁽³⁾ and of the £10 banknote, over ten years, would be around 6 and 16 cattle respectively. As a comparative figure, the total cattle production in the United Kingdom in 2016 was 2.8 million.⁽⁴⁾ Tallow itself is not directly added during any part of the banknote production process. Tallow is the ultimate source of the chemical additives that are used by polymer manufacturers in their production process.

For the entire production volumes of the £20 banknote, the same quantity of relevant compounds from palm oil could be sourced from one year's production of less than six hectares of palm oil plantation (compared with around 12 million hectares of palm in plantation in Malaysia and Indonesia alone in 2013).⁽⁵⁾ The equivalent figure for the entire production volumes of the £5 banknote and of the £10 banknote would be 1 hectare and 3 hectares of palm oil plantation respectively.

Other countries' polymer notes

In making its decision, the Bank also considered the actions of the other 30 or so central banks who issue polymer banknotes — all of which contain the same animal-derived additives. The Bank is not aware that any other central bank which issues polymer banknotes has run a public consultation or gone as far as the Bank in any investigation and trialling of alternatives. As far as the Bank is aware, no central banks are actively considering an imminent switch to palm oil-derived additives for the manufacture of polymer banknotes. While the actions of other central banks were informative, the Bank recognised its own unique set of facts, duties and responsibilities, when considering the level of weight to attribute to the actions of central banks peers.

(1) Chemicals derived from plant and animal fat.

(2) The Bank expects to print around 5 billion polymer £20 notes over the next ten years including launch stock.

(3) The Bank expects to print around 1.3 billion polymer £5 notes between 2015–25 and 3 billion polymer £10 notes between 2016–26.

(4) UK Yearbook 2017 — Cattle, Agriculture & Horticulture Development Board Beef & Lamb (2017).

(5) Vijay, V, Pimm, S, Jenkins, C and Smith, S (2016), *The impacts of oil palm on recent deforestation and biodiversity loss*.

9 Conclusions

The Bank has treated the concerns raised by those groups sharing relevant protected characteristics under the EA 2010 with the utmost seriousness and has conducted a thorough assessment of the issues and the options available.

The consultation demonstrated strong and deeply held views on both the use of animal-derived and palm oil-derived additives and the Bank has carefully reviewed and assessed the responses received. There was no public consensus on which option to pursue. 3,010 people (88% of those responding to the question) were against the use of animal-derived additives. 1,472 people (48% of those responding to the question) were against the use of palm oil-derivatives. 1,103 people (31% of all people responding to the consultation) were against the use of both animal and palm oil-derived additives. In addition, the representatives of some religious groups noted that there were differing views among members of their communities about the extent of any harm that may be experienced by the use of animal-derived additives in the manufacture of polymer banknotes and noted that some members of their communities would also have concerns around the use of palm oil-derived additives, (see the Annex).

The Bank has taken all these views into account. It accepts that some groups will potentially be negatively impacted and has carefully weighed up all of the equality objectives in the PSED.⁽¹⁾ The Bank has had to balance the potentially conflicting concerns of the various identified protected groups. The lack of consensus across respondents and across the many groups with which the Bank met, and the fact that either outcome could still have potential negative effects for some groups sharing particular protected characteristics were important factors in the Bank's decision. There was no clear consensus view that palm oil-derived additives were preferable to animal derived-additives.

The Bank has weighed all these matters along with those set out in the PSED. It recognises that the use of animal-derived or palm oil-derived additives will present difficulties for some people who conscientiously object to their use and/or to the handling of them. The Bank has taken these matters very seriously in coming to its decision.

Both CCL and De La Rue have confirmed they can supply polymer manufactured using RSPO Mass Balance palm oil-derived additives and the trials run using these additives were technically successful. The Bank gave careful consideration to whether RSPO Mass Balance would be an acceptable level of sustainability, given that it is not the highest available level of certification and allows for mixing of non-certified palm oil. Given the very small volume of palm oil which would be required and the uncertainty expressed by the Bank's suppliers as to whether a higher level of certification could be achieved, the Bank believed that RSPO Mass Balance would be a reasonable and proportionate level of certification in the event that the Bank decided to switch to polymer manufactured using palm oil-derived additives. However, the Bank understands that this level of certification would not address the concerns of all respondents to the consultation or the impacted groups it met with as part of its outreach programme, or indeed the wider public.

The Bank also balanced the potentially conflicting concerns of the various identified protected groups against the Bank's other public duties and priorities. These include the responsibility of the Bank to maintain confidence in the physical currency and to achieve value for money. The cost increase of moving to palm oil-derived additives is estimated to be around £16.5 million and possibly more over ten years. HM Treasury stated that, in light of the information provided, it did not consider that the value for money case for moving to palm oil-derived additives was compelling and that the anticipated cost increase to the UK taxpayer did not seem proportionate.

(1) In considering the first equality objective (including the need to eliminate indirect discrimination), the Bank has concluded that the continuance of the use of polymer manufactured using animal-derived additives is a proportionate means of achieving the legitimate aims described in this section, including the fulfilling of its duty to ensure value for money.

To the best of the Bank's knowledge, no other central bank is considering an imminent move to polymer manufactured using palm oil-derived additives.

The Bank has also considered the amount of animal-derived additives that are used in the manufacture of polymer. While recognising that it is subject to obligations contained in the EA 2010 such as the PSED that do not necessarily apply to other entities, the same additives are used in a wide variety of plastic products that the general public come across multiple times in everyday life.

The Bank recognises that this decision may not address the concerns of some groups with protected characteristics as identified in the Consultation Paper and has sought to explain fully its reasoning in this document. This decision has been made after careful consideration of all the relevant factors involved. In particular, consideration has been given to our obligations under the EA 2010 and to our wider objectives which include maintaining confidence in the currency through the issuance of high quality and secure banknotes, and achieving value for money in all aspects of the Bank's operations.

The Bank is grateful to the individuals and groups who took the time to respond to the consultation and provided input to the outreach programme.

Annex Key issues identified in outreach meetings

Key issues identified by representatives of the groups in the meetings with the Bank are set out below. Where shown, the proportion of the population represented by a group is for England and Wales at the 2011 Census.⁽¹⁾

In relation to all of the religious groups the Bank met, while recognising that the use of palm oil-derived additives may have environmental consequences, no representatives considered there were any religious grounds for that concern.

The Buddhist community (0.4%)

The Buddhist Society advised they were not aware of any specific concerns regarding animal-derived additives within the community. While Buddhists adhere to the principle ('Ahimsa') of not causing harm to people, animals or plants, Buddhism does not make rigid pronouncements. Rather, it leaves it to individuals to personally consider the implications of their actions.

Greenpeace

Greenpeace were unable to attend a meeting but provided a formal written response. They expressed concerns about effectiveness of RSPO standards. They judge these to be insufficient to prevent deforestation, prevent fires in forests or on peatlands, or limit greenhouse gas emissions. And, they claim that RSPO is slow in dealing with breaches of the standards it does have. Greenpeace noted that RSPO may adopt higher standards in the future but, in the absence of that, Greenpeace advise all parts of the palm oil sector to adopt higher standards than RSPO currently sets. Additionally, they noted that only full segregation provides a guarantee that palm oil supplied has actually been produced to RSPO standards.

The Hindu community (1.5%)

Representatives from the Hindu Council UK highlighted that some Hindus are concerned about the use of animal-derived additives. This is because one of the key virtues in the Hindu faith is Ahimsa — the practice of non-violence. This includes protecting animals, which symbolise many of the faith's most important deities. Hindus attach a special status to the cow, as it represents life and the sustenance of life. To maintain the purity of temples, bringing in meat is forbidden. A section of the community views use of animal-derived additives as an equivalent issue. Given this, some temples in the United Kingdom have discouraged the use of the polymer £5 in donations and offerings to deities within the temple. Some temples have seen a large decrease in donations as a consequence. Some members of the community also feel they should not handle the banknotes outside of temples. Banknotes are a key aspect of weddings and gifts to children in the Hindu faith.

The Bank also met with a representative from the National Council of Hindu Temples.

The Jain community (less than 0.1%)

Representatives of the Jain Network and the Institute of Jainology explained that a fundamental value of Jainism is a belief in total non-violence. The use of animal-derived additives therefore conflicts with this principle. The relative amount of animal-derived additives used is somewhat important for Jains as it informs views on the relative amount of violence caused. This is based on the assumption that there is a viable and non-violent alternative. Consequently, some concerns have been raised about the handling of polymer banknotes, particularly by those attending temples and wishing to make donations.

(1) Source: ONS, National Records of Scotland and NISRA.

The Jewish community (0.5%)

We are aware that the Board of Deputies of British Jews issued a statement saying that: 'The five pound notes wouldn't cause any problem to Jews. Jews are not allowed to consume tallow but are permitted to handle it'.

The Muslim community (4.8%)

The Islamic Society of Britain explained that there were no theological concerns for Muslims around the use of animal-derived additives.

The Rainforest Foundation UK

The Foundation's director expressed serious doubts as to the extent to which RSPO certification (at any level) provided a reliable assurance on sustainability and expressed views on the failings of RSPO, setting out, that RSPO is subject to a number of non-compliance complaints by local communities with the support of some Non-Governmental Organisations (NGOs).

The Roundtable for Sustainable Palm Oil (RSPO)

RSPO noted the general trend in sustainable palm oil is moving from RSPO Credits (also referred to as 'Book and Claim') to physical sustainable palm oil certification such as Mass Balance/Segregated source. RSPO were asked about the criticism faced from some leading NGOs. They stated mechanisms are in place to tackle identified issues, for instance a working group is dedicated to labour rights issues. While acknowledging there has been evidence of non-compliance among some members, RSPO is upgrading the effectiveness of the assessments, audits and accreditation systems. RSPO is the standard-setter with member certification undertaken by accredited third party auditors.

The Sikh community (0.8%)

Representatives from the Sikh Council UK explained that concern for the Sikh community focuses around the presence of an item whose production process has involved animal-derived additives being brought within Gurdwaras (Sikh places of worship). Many Sikhs do not consume meat, fish or eggs for spiritual reasons. Individual Sikhs can choose whether or not to do so, but these products should not be taken into Gurdwaras. A section of the community takes the view that polymer banknotes should be similarly prohibited from Gurdwaras. Consequently donations made during Gurdwara visits (an important aspect of the Sikh community) may be impacted. The Sikh Council noted that there is no real consensus within the Sikh community on this issue and no attempt has been made to achieve one. However, on the assumption that alternative options are available, the Sikh Council regards the use of animal-derived additives as being unnecessary.

The Vegan community (c.1%)

The Bank met representatives of the Vegan Society and a small number of individuals on behalf of the vegan community. They explained many following a vegan diet for ethical reasons sought to avoid animal products more widely, as far as was practicable. The Vegan Society estimated that c.1% of the UK population were vegans; more than half for ethical reasons. The Vegan Society felt that the strength of view over polymer had been higher than for other products containing, or being produced using animal-derived additives, due to the perceived lack of choice. Some vegans asked for other banknotes or coin rather than accept polymer banknotes. In addition, some vegan retailers felt unable to accept the banknotes, which could cost them business. It was noted that vegans in jobs that require regular contact with polymer banknotes could also be placed in a difficult position. However, the Bank's contacts also considered that the use of some other plant-derived additives, including palm oil, in the manufacture of polymer banknotes would be a concern for some vegans. This is due to harm to wildlife and for environmental reasons.

The Vegetarian community (5.7%)

The Vegetarian Society's surveys suggest that 74% of vegetarians choose that lifestyle for ethical reasons. The vegetarian community (including ethical vegans) was concerned about the use of animal-derived additives because of the harm to animals it entailed. While few vegetarians were completely refusing to handle the polymer £5 note, the Vegetarian Society considered the strength of feeling amongst the community on this issue was higher than it has been for other products containing animal-derived additives due to the perceived lack of choice. A Vegetarian Society survey found that nearly 30% of its members wanted the banknotes recalled. 66% wanted all new banknotes to be made without animal-derived additives but not to recall the current polymer £5 note.

World Wide Fund for Nature (WWF)

WWF said that because the palm oil crop is the most efficient source of vegetable oils, it could be the least environmentally damaging source when produced sustainably. However, non-sustainable production of palm oil (and other vegetable-based oil crops) can lead to deforestation. This has significant negative impacts on wildlife, as well as on the local indigenous human populations. Consequently, one of WWF's strategic priorities is to work with stakeholders on initiatives to shift the palm oil industry to produce and source deforestation-free and fully sustainable palm oil and its derivative products.

WWF explained that types of animal farming which could be a source of tallow could also result in deforestation, when sourced from countries such as Brazil, a high producer of beef livestock. However, they highlighted that in countries where such farming is managed in a sustainable manner, tallow is a by-product of such farming so its additional environmental impact can be negligible.