ADDENDUM TO BRAZIL LOW-CARBON AGRICULTURE PHASE II BUSINESS CASE

SUMMARY INFORMATION	
Title	**Phase II: Low-carbon Agriculture for Avoided Deforestation and Poverty Reduction** (Defra International Climate Finance - ICF)
Country / Region	Brazil
Senior Responsible Owner	Tamsin Ballard, Emma Williams
Start Date of original ICF investment	16/12/2016
(Original) End Date	15/12/2020
New End Date	12/08/2024 (44-month extension)
Original ICF Project Budget	£30 million (downsized from £36 million during the negotiation phase of the Administrative Agreement with delivery partner, due to removal of the Private Guarantee Mechanism)
Cost Extension Value	£7.42 million
% increase from original ICF Budget	24.8%

This business case addendum focusses on updates to the 2016 business case: "**An International Climate Fund Business Case for investment in Phase II: Low-carbon Agriculture for avoided deforestation and poverty reduction**" (attached in Annex A).

The programme aims to reduce deforestation by improving agriculture and land use practices among rural producers in Brazil. This includes delivering forest restoration activities on degraded pasturelands and the adoption of sustainable agriculture, which can improve agricultural production whilst protecting native vegetation. This leads to a more sustainable system of agricultural production and secures sustainable livelihoods for rural communities. The Inter-American Development Bank is the delivery partner of this programme. This programme directly supports the implementation of the Low-Carbon Agriculture Plan by the Brazilian Ministry of Agriculture.

This addendum avoids duplicating information in the original business case and therefore assumes some familiarity with the original rationale.

ATTACHMENTS	
Annex A	An International Climate Fund Business Case for investment in Phase II: Low-carbon Agriculture for avoided deforestation and poverty reduction (Original Business Case, approved December 2016)
Annex B	LCA Phase II Delivery timelines (with extension)
Annex C	LCA Phase II Theory of change (without extension)
Annex D	LCA Phase II Logframe (without extension)

INFORMATION

I. What is the project's purpose?

Background

1. Every year, 26 million hectares of forests, equivalent to the size of the United Kingdom, is lost around the world[1]. In industrialised countries, the largest proportion of greenhouse gas (GHG) emissions come from energy, industry, transport, and other fossil emissions[2,3], whereas the majority of Brazil's emissions derive from deforestation due to agriculture and land use change[4]. Whilst large-scale agricultural activities are accountable for a high proportion of deforestation in the sector, unsustainable farming practices amongst small-scale production are increasingly contributing to the overall GHG emissions in Brazil. Lands are being cleared at an alarming rate, often due to factors such as limited awareness of livelihood alternatives and the inaccessibility of rural credit lines to adopt more productive methods.

2. **The Department for Environment, Food, and Rural Affairs (Defra)'s investments in *Low-carbon Agriculture for avoided deforestation and poverty reduction* through International Climate Finance (ICF) are part of Her Majesty's Government's (HMG) wider efforts to tackle deforestation and alleviate poverty globally.** Our investments in Brazil support the implementation of low-carbon agricultural practices, with the aim to transition the country's agricultural sector towards a more sustainable agenda, whilst combatting deforestation and ensuring sustainable livelihoods in rural communities.

3. To date, Defra has invested £54.9 million of ICF, as part of Official Development Assistance (ODA)[5], to promote low-carbon agriculture in Brazil:
   i. The first tranche of investment was made in 2012, when Defra committed £24.9 million into *Low-carbon Agriculture for avoided deforestation and poverty reduction programme* ("**LCA Phase I**" hereafter), delivered by the Inter-American Development Bank (IDB). The programme aimed to support the adoption of low-carbon agricultural practices amongst small-[6] and medium-sized[7] farms in the Amazon and Atlantic biomes of Brazil.
   ii. In 2016, Defra committed a further £30 million to a second phase programme ("**LCA Phase II**" hereafter), with the initial aim of extending LCA Phase I activities to another major biome in Brazil, the Cerrado, specifically focussing on the geopolitical region of "MATOPIBA" (comprised of the states of Maranhão, Tocantins, Piauí, and Bahia). LCA Phase II subsequently expanded its geographical scope to include the entire Cerrado biome as well as earmarking £5 million to expand activities to the Caatinga biome, in March 2018. LCA Phase II was established as a trust fund, known as the Low-Carbon Agriculture Trust Fund (LCA Fund). The LCA Fund was managed by the IDB to finance projects that deliver the objectives as set out in an Administrative Agreement.

[1] Forest Declaration. (2019, accessed on 30 Jan 2020). Protecting and Restoring Forests (https://forestdeclaration.org/images/uploads/resource/2019NYDFReport.pdf)

[2] UN Environment. (2018, accessed on 07 Feb 2020). Emissions Gap Report (https://www.unenvironment.org/resources/emissions-gap-report-2018)

[3] United States Environmental Protecting Agency (IPCC 2014, accessed on 07 Feb 2020). Global Emissions by Economic Sector. (https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data)

[4] Greenhouse Gas Emissions and Removals Estimation System (SEEG 2018, accessed on 10 Feb 2020). Brazil's Total Emissions (https://plataforma.seeg.eco.br/total_emission#)

[5] **Official Development Assistance (ODA)** is "the internationally agreed criteria for funds provided to developing countries or multilateral institutions to fight poverty and promote development". The UK commits to spending 0.7% of its Gross National Income on ODA. Find out more here: https://www.gov.uk/government/publications/official-development-assistance/official-development-assistance

[6] **A small-sized farm** in Brazil is a rural property from 1 to 4 fiscal modules (the fiscal module size varies from municipalities). The fiscal module is a unit of measurement, in hectares, taking into account: (a) the predominant type of exploitation in the municipality; (b) the income obtained from the predominant type of exploitation; (c) other explorations in the municipality which, although not predominant, are expressive according to the income or area used; (d) the concept of "family property". The size of a fiscal module varies according to the municipality where the property is located. The value of the tax module in Brazil varies from 5 to 110 hectares.

[7] **A medium-sized farm** is a rural property which has from 4 to 15 fiscal modules.

4. This business case extension has two purposes:

   i. **It requests time extension for LCA Phase II by 44 months.** This is due to longer-than-expected programme set up time for the existing projects in the Cerrado and Caatinga. This time extension will enable the climate mitigation and poverty reduction objectives to be effectively achieved in these biomes[8]; and
   ii. **It seeks approval for an additional ICF investment of £7.42 million to expand project activities to the Amazon biome.** There will be a focus on developing sustainable value chains, building on LCA Phase I's achievements in promoting and implementing low-carbon agriculture in the region. This additional investment will support the objectives of the programme by widening the geographical reach, and the type of beneficiaries (beyond farmers and technical assistants to the wider rural communities, including cooperatives and small business owners), as well as extending to support beyond primary production, on activities such as marketing and commercialisation of agricultural products. The proposed project is fully aligned with the objectives and components of LCA II, and includes additional activities tailored to the needs of the Amazon region and stage of project readiness. This project is expected to last for three years, starting in March 2021.

5. **The approval of this business case extension will launch a six-month project design phase by the IDB.** A break clause will be introduced to enable Defra the right to withdraw the remainder of the funds committed, should the IDB fail to deliver a satisfactory project design after the six-month period.

6. **The proposed cost extension value of £7.42 million originates from LCA Phase I**, which upon completion in August 2019 accumulated USD $9.63 million (equivalent to £7.42 million, based on USD-GBP rates as of 13th January 2020) due to interest rate accrual and favourable Brazilian Real-US Dollar exchange rates. In September 2019, Defra ministers agreed to reinvest the accrued resources to extend Defra's sustainable agriculture work in Brazil. To enable this, the accrued funds from Phase I were transferred to the IDB-managed LCA Fund (Phase II) on 12 December 2019, upon receipt of HM Treasury approval to reinvest. The mobilisation of such funds is subject to Defra Ministerial approval of this extension business case. Thus, no further financial commitment from Defra's accounts is required to extend the business case and there will be no resource impacts in Defra's accounts.

7. The following options have been considered:
   i. **Option 1:** Do nothing. LCA Phase II would be closed prior to implementation. The remainder of programme funding would need to be returned to the UK Government. The extension to the Amazon biome would not take place. The £7.42 million surplus, accumulated under Phase I, would also need to be returned to the UK Government. This option does not enable Phase II to demonstrate results.
   ii. **Option 2 (Recommended):** Grant a time-extension for LCA Phase II. Invest the £7.42 million surplus into funding the expansion of LCA Phase II project activities to the Amazon biome. The rationale for expanding the project into the Amazon biome is outlined in the remainder of this report. There are no alternative options for investing the surplus into another IDB programme. The funds would need to be returned to Defra.
   iii. **Option 3:** Grant a time-extension for the existing LCA Phase II projects. Request the surplus funds to be returned to the UK. This option is not recommended as withdrawing funding will affect Defra's ability to meet the spend target for the UK's Official Development Assistance[9]and could compromise Defra's partnership with stakeholders in Brazil.

[8] Expected results for Cerrado and Caatinga are indicated in LCA Phase II logframe (Annex D).

[9] In accordance with the International Development Act (2015), the UK Government is required to meet the target for ODA to amount to 0.7% of gross national income. (http://www.legislation.gov.uk/ukpga/2015/12/section/1/enacted)

The context and problem that the extension addresses, and how it addresses them.

8. **Brazil has become an agriculture powerhouse.** Over the past four decades, Brazil has grown from being an importer to one of the largest exporters of agricultural goods in the world. This growth owes much to the vast amount of unexploited, arable lands available in the country and favourable climate conditions to produce key commodities such as soy and cattle. However, continuous unsustainable exploitations in the agriculture sector have continued to deprive the country of its natural resources and environment at an alarming rate. Agricultural expansion is adding incredible pressures on Brazil's natural environment, whereby over 30 million hectares of arable land are now degraded as a result of unsustainable farming practices in the country. In 2018, agriculture and land use change constitute 69% of Brazil's overall emissions[10].

9. **Agriculture is playing an increasingly important role in the country's economic development, but small-scale and family farmers[11] have failed to benefit from such growth.** In 2019, the agriculture sector produced USD $96.8 billion (£74.4 billion) worth of exports, contributing to 43.2% of the country's total[12]. However, this is primarily driven by major agribusiness players. Data from the 2017 Agriculture Census showed that small-scale farms represent 77% of the total number of farms in Brazil, which takes up 80.9 million hectares of land. However, they only account for 23% of Brazil's total agricultural production[13]. Currently producing mainly for domestic consumption, small farmers often face multiple barriers to participating in the main commodity supply chains. Most notably, the current rural credit system is bureaucratic and demands extensive paperwork from rural producers, making it extremely inaccessible for small farmers who has limited access to this information. This, coupled with low productivity rates due to unsustainable practices, continues to drive economic inequality within the sector.

10. **As women are playing an increasingly important role in agriculture, there is a need for tailored capacity building activities for women to promote gender equality in the sector.** Historically, men have dominated the agriculture sector in Brazil, but women are playing an increasingly central role in income generation and decision-making for the household. In 2017, female producers made up 18.7% of the sector, compared to 12.7% in 2006[14,15]. Nevertheless, a recent study from the Brazilian Agribusiness Association shows that 71% of women working in the sector have faced gender-related challenges. Further incentives are needed to increase women's representation in the sector and provide the conditions to empower women at all levels.

11. **Low-carbon agriculture is key to supporting rural livelihoods whilst protecting the environment.** The Government of Brazil has been promoting low-carbon agriculture for a decade. As part of its National Policy on Climate Change, the Brazilian Ministry of Agriculture introduced the Low-Carbon Agriculture Plan ("Plano ABC") in 2010[16], aiming to reduce greenhouse gas emissions from agriculture and increase

[10] Angelo, C., & Rittl, C. (November, 2019). "Relatorio Sintese. Observatorio do Clima", *SEE*.

[11] **Family farm** refers to a farm that is owned by a family, who is typically involved in managing the farm operation. Family farms usually operate on a small-scale.

[12] Ministério da Agricultura (2020, accessed on 13 Feb 2020) Vendas externas do agronegócio somas US$ 96,8 bilhoes em 2019 (http://www.agricultura.gov.br/noticias/vendas-externas-do-agronegocio-somam-us-96-8-bilhoes-em-2019)

[13] Brazilian Institute of Geography and Statistics, IBGE (2017, accessed on 12 Feb 2020) "Censo Agropecuário, Resultados Definitivos Agricultura Familiar 2017", (https://censos.ibge.gov.br/agro/2017/templates/censo_agro/resultadosagro/pdf/agricultura_familiar.pdf)

[14] IBGE (accessed on 14 Feb 2020) "Censo Agro 2017: População ocupada nos estabelecimentos agropecuários cai 8,8%" (https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/25789-censo-agro-2017-populacao-ocupada-nos-estabelecimentos-agropecuarios-cai-8-8)

[15] A more in-depth gender analysis is required during the design phase to further understand whether this statistical data truly reflects how involved women are in the agricultural sector.

[16] Ministry of Agriculture, Brazil (accessed on 06 February 2020) "Plano ABC - Agricultura de Baixa Emissão de Carbono" (http://www.agricultura.gov.br/assuntos/sustentabilidade/plano-abc/plano-abc-agricultura-de-baixa-emissao-de-carbono)

the resilience of agricultural production in the country. Under this plan, the ministry aims to promote the adoption of seven low-carbon agricultural technologies in the sector. Through the application of these practices, crop and livestock productivity can be doubled with existing pasturelands[17]. In fact, evidence from LCA Phase I showed that implementing the Integrated Crop-Livestock-Forest system (ICLF, one of the technologies support by Plano ABC) can increase livestock productivity by 7.2 times whilst saving more than 175,000 ha of pastureland and reducing 52% more carbon emissions compared to a baseline scenario[18]. It is therefore possible to intensify production, reducing the need to open new areas for pasture or crop production, whilst also securing steady incomes for farmers and avoiding further deforestation. This results in a win-win for the environment and the economy.

12. **Despite federal efforts, results achieved so far on the sustainable, low-carbon agriculture agenda have been limited.** Considerable progress has been made on promoting sustainable agriculture, but policy implementation still face multiple challenges to effectively promote conversion to sustainable practices at scale. For instance, technical assistance to help farmers in adopting low-carbon practices is scarce. Public rural extension services, which are provided by state government agencies, have extremely low coverage. Private technical assistance is costly and is therefore only accessible by a small proportion of producers. Farmers also either lack awareness of, or do not have access to, the appropriate incentives to convert from conventional to sustainable technologies. Further, there is insufficient co-ordination amongst the various activities related to agriculture, including agricultural production, agro-processing, and marketing. An integrated approach facilitated by the federal government will be essential to accelerate the development of sustainable supply chains in Brazil.

13. **Supporting climate mitigation, adaptation and sustainable livelihoods in developing countries are the main strategic aims of UK's ICF.** The premise of the UK's continued investments in LCA programmes in Brazil is that promoting low-carbon agriculture (i.e. selected low-carbon technologies under Plano ABC) can support the livelihoods for those most disadvantaged by the agricultural expansion in the country, whilst effectively reducing deforestation and protecting the country's precious native vegetation and ecosystems. Through provision of technical assistance and the use of demonstration effects[19] to promote low-carbon agriculture, the UK's LCA programmes have been supporting federal and state governments in implementing their sustainable development agenda, transforming the country's agriculture sector into a more sustainable model whilst helping to achieve the country's ambitious nationally determined contributions (NDCs).

14. **The Amazon rainforest, the largest tropical ecosystem in the world, is of important environmental significance to the regional and global climate and biodiversity needs**. It is an important carbon sink, sequestering 76 billion tonnes of carbon from the atmosphere[20] and providing habitats for more than a third of the world's species[21]. The tropical rainforest also crucially provides livelihoods to over 25 million people in Brazil, including half of the country's indigenous population. However, accelerating deforestation rates, driven by the conversion of forests to pastureland and plantations for agricultural production, are already causing a number of regional environment impacts, such as savannisation and

[17] Strassburg et al (2014) ""When enough should be enough: Improving the use of current agricultural lands could meet production demands and spare natural habitats in Brazil", *Global Environmental Change,* vol.28, p84-97.
[18] This is based on a scientific analysis conducted by Embrapa during LCA Phase I. The findings have not been officially published but the information has been shared for wider use of research on the application of ICLF.
[19] LCA Programmes utilise the 'demonstration effect' to promote low-carbon agriculture by implementing **Demonstration Units** (farms that already adopt low-carbon technologies that hold workshops to demonstrate to neighbouring farmers) and **Multiplier Units** (farmer that will adopt low-carbon technologies as a result of project intervention).
[20] Helmholtz Association of German Research Centres (2019, accessed 21 Feb 2020). "The forests of the Amazon are an important carbon sink." (https://phys.org/news/2019-11-forests-amazon-important-carbon.html)
[21] WWF (accessed on 13 Feb 2020) "Amazonia" (https://www.wwf.org.br/natureza_brasileira/questoes_ambientais/biomas/bioma_amazonia/)

desertification[22]. Unsustainable agricultural practices in the region are also directly related to the effects of global climate change. For instance, cattle-ranching alone accounts for 80% of deforestation in the Amazon, releasing more than 340 million tonnes of carbon dioxide annually[23]. The need to maintain such vast natural resources while ensuring viable livelihoods for the region's population requires continued international effort.

15. **Surplus funds generated from Phase I present a key opportunity to continue our low-carbon agriculture legacy in the region.** LCA Phase I, upon completion in 2019, has surpassed all its target results – in the Amazon biome, the programme supported livelihoods for over 1,738 farmers through technical and financial assistance, and converted 25,098 hectares of land to low-carbon practices. This drives carbon emission reduction by 5.9 $MtCO_2e$ (mega tonnes of carbon dioxide equivalent) and will avoid a further 38 $MtCO_2e$ of emission over the next 20 years.

16. **Valuable lessons have been learned from Phase I in the Amazon biome [24]**:

    i. **The current enforcement mechanism in the Amazon means that farmers lack positive incentives to protect forests.** Under the Brazilian Forest Code, landowners of the Amazon biome are legally required to preserve 80% of their land as native vegetation. Such threat of enforcement alone may not be sustainable in the long term, as beneficiary farmers from Phase I expressed resentment towards this law as it is perceived as a major obstacle for development. There is a need to explore options to encourage compliance and induce long-term behavioural change amongst rural communities. In addition to supporting policies to end the expansion of agricultural commodities into native forests, future programmes should explore mechanisms such as payment for ecosystem services (PES)[25], biotechnology research opportunities, and sustainable exploitation of forest-based products.

    ii. **The full cycle of supply chains must be supported to effectively combat deforestation.** Sustainable development is a relatively new concept in the Amazon. To sustain a continuous uptake of low-carbon agriculture and effectively change farmers' perceptions and behaviour, LCA Phase I recognised the need to address barriers in subsequent activities along the supply chain, beyond primary production. Strengthening rural capacities in these activities, such as marketing and commercialisation of products, will ensure that sustainable agricultural and forest-based supply chains can replace the current deforestation-based model.

    iii. **Current supply of technical assistance in the Amazon on low-carbon agriculture is not meeting growing demand.** LCA Phase I showed strong evidence of growing demand for conversion to low-carbon agriculture. It also identified that continuous on-the-ground technical assistance of good quality is essential to ensuring continuity and success of promotion and adoption of low-carbon technologies, at scale[26]. It is therefore crucial to continue to provide technical assistance in supporting the entire cycle of supply chains, from accessing finance to production methods and marketing. This will ensure that the programme can transform the current model to a truly viable economic alternative for rural populations.

    iv. **The need to provide "collective benefits" to farmers**. LCA Phase I only focussed on providing assistance on the individual farm level. A post-implementation reflection highlighted the need to

[22] Nobre, A. (2014) "The Future Climate of Amazonia", WWF.
(https://d2ouvy59p0dg6k.cloudfront.net/downloads/the_future_climate_of_amazonia_report.pdf)
[23] WWF. (2019, accessed on 30 Jan 2020). Unsustainable cattle ranching.
(https://wwf.panda.org/knowledge_hub/where_we_work/amazon/amazon_threats/unsustainable_cattle_ranching/)
[24] No lessons from LCA Phase II are applicable to this extension as: (i) LCA Phase II has only started implementation in recent months and (ii) LCA Phase II is taking place in two other biomes of very different social, environmental and political contexts from the Amazon.
[25] **Payment for Ecosystem Services (PES)** is a mechanism whereby landowners are incentivised financially in return for a guaranteed flow of ecosystem services.
[26] This is supported by findings from LCA Phase I as well as amongst reputable experts, applied research institutions and reference institutions such as Embrapa, ESALQ and Senar.

provide more "collective benefits" to farmers through supporting and strengthening rural associations and cooperatives on sustainable agriculture and land management. This will strengthen local communities and rural networks, which create more desirable conditions for farmers to participate in dialogues on low-carbon agriculture.

17. **Lesson learning on the importance of supporting the whole supply chain has also been incorporated into the project designs for the Cerrado and Caatinga in LCA Phase II.** Following a thorough design phase, the projects now incorporate elements to support the full cycle of supply chains. In the Caatinga, activities to support low-carbon production that are tailored to the social and environmental contexts of the biome have been designed, with a focus on small-sized, low-income farmers[27]. In the Cerrado, given the profile of rural producers, the high potential of the region for agricultural production and the main drivers of deforestation, emphasis will be placed on medium-sized producers with higher value-added potential production.

18. To sustain and scale up the UK's climate mitigation, adaptation and poverty reduction impacts in the Amazon, an extension project is proposed to focus on:

    i. **Promoting the economic value of standing forests:** The project will explore various mechanisms to incentivise farmers in protecting native vegetation in their property, including the PES mechanism, as well as to introduce forest-based economic alternatives to farmers in the Amazon, such as forest-based or extractive crops[28] and agroforestry systems[29]. By switching to selected alternative crops that have high market potential, native vegetation can be preserved whilst providing sustained flows of income to farmers. Standing forests will no longer be perceived as an obstacle for development, but instead offer a viable and climate-friendly economic alternative, as well as a new model for natural capital-based economic opportunities in the region.
    ii. **Continuing the provision of technical assistance to farmers as well as rural organisations:** This project will provide technical assistance at two levels, individually and collectively, to promote sustainable agriculture. In addition to assistance on implementing low-carbon technologies, farmers will also be supported in subsequent activities along the supply chain. The project will also explore options to provide more support to the poorest farmers, who face additional challenges in accessing rural credit. Rural associations and cooperatives will be supported on activities such as business modelling and management, liquidity, storage, transport and logistics, product processing, marketing, and securing business deals.

19. **This proposal is therefore a result of Defra's ongoing efforts to deliver the department's ICF strategy and theory of change on sustainable land use** to adapt to the changing economic and political contexts in Brazil. The extension requests are:

    i. **A time extension for the Cerrado and Caatinga projects (no-cost extension)** to deliver the climate mitigation and poverty reduction objectives set out in the LCA Phase II original business case. This is required due to longer-than-expected design and mobilisation stages.
    ii. **Reinvest Phase I surplus to fund a new project in the Amazon biome,** which will draw on the lessons from, and build on the groundwork of, Phase I on low-carbon agriculture in the region. This additional investment will ensure social and economic resilience for the forest-dependent population, whilst continuing to protect native vegetation and reduce deforestation and land degradation in Brazil's most critically at-risk biome.

[27] **Low-income farms** are not officially defined, but the project will seek to prioritise farmers who earn less than $20,000 Brazilian Reals (£3,516) per year.
[28] For example, Brazilian nuts, rubber, açaí, cupuaçu, natural oils, babaçu, copaiba.
[29] For example, cocoa, palm oil, coffee, banana, guaraná, pineapple.

Programme alignment with Brazilian policy implementation

20. **There is increasing commitment from the federal government for low-carbon agriculture and clean growth.** The recently launched Bioeconomy Programme[30,31] by the Brazilian Ministry of Agriculture, offers a great opportunity for programme-policy alignment with this additional ICF intervention. The proposed extension will also align with the implementation of other policies, such as the National Plan for Promoting Socio-Biodiversity Supply Chains[32]. The Ministry of Agriculture is increasingly prioritising its low-carbon agenda, particularly through enhanced work in *Plano ABC*. Having reached the 2020 targets with the support of LCA Phase I amongst a portfolio of other programmes, the Ministry will revise the targets for 2030. The main mechanisms to achieve Brazil's Nationally Determined Contributions (NDC) under the 2015 Paris Agreement are through strengthening Plano ABC and enforcing the Forest Code.

21. The UK's continued support through LCA programmes is a step-change to enhance Brazil's transition to a low-carbon economy, alongside other key international commitments the country has made, including the NDC emission targets, which include eliminating illegal deforestation in the Amazon by 2030 and restoring 12 million hectares of land. Brazil reaffirmed its commitment to the Paris Agreement at the G20 summit in 2019, supporting vital international cooperation to combat climate change.

22. **The UK is uniquely positioned as a global leader to support Brazil in its low-carbon agriculture and clean growth agendas. Between 1990 and 2017, the UK's economy grew by two-thirds whilst reducing emissions by over 40%[33].** The Brazilian Ministry of Agriculture sees Defra as a key partner and recognises the instrumental role LCA programmes play in strengthening policy implementation in the sector. The IDB, which delivers development programmes in Latin America and the Caribbean, is considered by its borrowing countries as highly influential[34]. Defra's longstanding partnership with the IDB, since 2012, has been able to strengthen the bilateral relationship between the UK and the Government of Brazil.

Strategic alignment with Defra and HMG priorities

23. **The UK is intensifying its efforts to support transitions to sustainable supply chains, both domestically and globally.** Increasing international demands for cash crops such as soy, beef and leather, has been the driving force behind the rapid development of agriculture in Brazil. In 2019, the UK Government commissioned the Global Resource Initiative (GRI) taskforce to identify and recommend key actions to green the UK's international supply chains and leave a lighter footprint on the global environment. These recommendations may also be applicable to other consumer countries in the future. This extension will support broader UK efforts to accelerate the transfer to deforestation-free supply chains. "Greening supply chains" is expected to be a key campaign under the proposed "Nature" theme of the UK's Presidency of the COP26 in Glasgow later this year.

[30] **Bioeconomy** refers to the "production, utilisation and conservation of biological resources, including related knowledge, science, technology, and innovation, to provide information, products, processes and services across all economic sectors aiming toward a sustainable economy" (Global Bioeconomy Summit, 2018, https://gbs2018.com/fileadmin/gbs2018/Downloads/GBS_2018_Communique.pdf).

[31] **The Bioeconomy Programme** aims to increase small farmers' and local communities' participation on productive and economic arrangements based on the concept of bioeconomy (Ministry of Agriculture, Brazil. (Accessed 07 Feb 2020: http://www.agricultura.gov.br/noticias/publicada-portaria-que-institui-o-programa-bioeconomia-brasil)

[32] Ministry of Agriculture, Brazil (accessed on 30 Jan 2020) "Plano Nacional para a Promoção dos Produtos da Sociobiodiversidade" (https://www.mma.gov.br/desenvolvimento-rural/sociobiodiversidade)

[33] Committee on Climate Change (accessed 12 Mar 2020) (https://www.theccc.org.uk/our-impact/reducing-the-uks-emissions/)

[34] "Raising the standard: the Multilateral Development Review 2016" (Inter-American Development Bank), Department for International Development, UK (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/573462/Inter-American-Development-Bank-Review.pdf)

24. **The synergy between this extension and the UK's ongoing work in greening supply chains is strong.** ICF programmes to support deforestation-free supply chains in key exporting countries such as Brazil will provide the appropriate incentives on the *supply* side to complement the ongoing GRI work on the *demand* side. This programme will also provide alignment with, and potential continuity of impacts of, other existing ICF programmes in Brazil and in Latin America, such as *Partnership for Forests* (P4F) in Brazil and *Silvopastoral Systems* (SPS) in Colombia, building on the overall cross-Whitehall coherence in ICF investments.

25. **The addition of the Amazon project will ensure LCA Phase II continues to provide a strategic fit for Defra's ICF portfolio for the next 5-year period (2021/22-2025/26)**, which aims to mitigate and adapt to climate change by mainstreaming nature-based solutions, including supporting the sustainable intensification of agriculture to meet increasing demand for food and non-food resources and move agricultural populations out of poverty. By resetting the incentives behind ecosystem loss and degradation, this extension is set to complement future ICF programme which aim to deliver long-term, system change. This programme will also continue to be closely aligned with Defra's strategic and policy objectives in order to deliver the department's and HMG's wider international priorities. In particular, this investment will contribute to the commitments made in the department's 25 Year Environment Plan[35], on protecting and improving our global environment (Chapter 6). By supporting developing countries in improving their agricultural productivity sustainably and increasing farmers' resilience to climate change, this investment will contribute to the pledged £5.8 billion of ICF for the 2016 – 2020 period, as well as to the multi-national commitment on $100 billion of climate finance. This will support UK's commitment to deliver the following United Nations Sustainable Development Goals (SDGs)[36]:
    - SDG1 :No Poverty
    - SDG4: Quality Education
    - SDG5: Gender Equality
    - SDG8: Decent Work and Economic Growth
    - SDG10: Reduced Inequalities
    - SDG12: Responsible Consumption and Production
    - SDG13 Climate Action
    - SDG15: Life on Land
    - SDG17: Partnerships for the Goals

Progress to date

26. **Following business case approval for LCA Phase II in 2016, the programme entered an extensive design phase.** This phase designed the interventions planned for Phase II in Cerrado and Caatinga. The project team conducted in-depth analyses of Phase I and workshops with key project stakeholders, whereby key lessons were drawn to inform the design work in the new biomes. The design has been based on the applicability of Phase I mechanisms to the different socioeconomic and environmental contexts (the details of which are outlined in the latest Annual Review, which will be published on Development Tracker[37] by no later than 30th April 2020).

27. A 14-month mobilisation phase followed the design phase. Stakeholders were consulted and engaged (a crucial milestone being obtaining support from the Ministry of Agriculture under the newly elected administration in 2019), procurement activities for executing agencies to carry out field activities in

[35] 25 Year Environment Plan, Defra (2018): https://www.gov.uk/government/publications/25-year-environment-plan
[36] Implementing the Sustainable Development Goals, UK government (Updated 2019) : https://www.gov.uk/government/publications/implementing-the-sustainable-development-goals/implementing-the-sustainable-development-goals--2
[37] Development Tracker, UK Government: https://devtracker.dfid.gov.uk/

Cerrado and Caatinga took place and their project proposals were finalised and approved after IDB and Defra review.

28. The time required to complete the design and mobilisation phases was longer than expected. The programme therefore has only recently entered into the implementation phase and has therefore not achieved any climate mitigation or poverty reduction results at the time of writing this addendum. This is reflected in the B score in the latest Annual Review. The Annual Review recommended the IDB to deploy more robust use of project management tools and improve its Monitoring, Evaluation and Learning (MEL). The performance of the programme will be closely monitored in the next 12 months, whereby **momentum is picking up as programme implementation is underway in the Cerrado and Caatinga**.

II. What will the Low-carbon Agriculture Phase II extension deliver?

29. **The extension requests an additional 44 months to deliver planned activities within the implementation phase in the Cerrado and Caatinga, as well as additional activities in the Amazon.** The indicative delivery timeline for the entire programme, including the Amazon project, is attached in Annex B.

30. **The extension will channel the surplus funds from LCA Phase I towards a new project under Phase II in the Amazon biome.** This project will take place in two or three selected states in the Amazon region, where Phase I took place. The specific states and project areas will be selected during the detailed design stage based on key criteria such as: demand for technical assistance on low-carbon agriculture (based on evidence from Phase I), level of agriculture-driven deforestation, agriculture productivity rates, potential for expanding or developing forest-based economic activities and level of political buy-in.

31. These objectives will be delivered through three main components, which will be further refined during the design phase:

    i. **Component 1: Promoting low-carbon agriculture**
    The project will continue the provision of technical assistance to the Amazon biome as it has in Cerrado and Caatinga, with a heavier emphasis to deliver more "collective benefits" by supporting rural organisations. The component will support rural communities at two levels – at farm level, it will provide technical assistance to small-sized farmers in the Amazon biome, supporting them in adopting low-carbon agricultural technologies and accessing rural credit under Plano ABC. This will improve agricultural productivity and improve farmers' income over time. PES mechanism will also be explored to ensure farmers are incentivised to protect native vegetation. At the community level, this component will include provision of technical assistance to small enterprises, rural associations and cooperatives on value chain-related activities, such as financial management, storage, processing and marketing of low-carbon agricultural and forest-based products. This integrated approach will ensure that improved agricultural productivity is met with strengthened supply chains, which will better equip the entire local rural communities to access national and international markets.

    ii. **Component 2: Connecting strengthened supply chains with markets**
    This component will develop a pipeline of investment projects relating to low-carbon agricultural or forest-based products, and connect them with the financing necessary for their implementation. The project will identify suitable business opportunities for farmers and cooperatives and assist them in accessing private or public finances to develop their businesses. Under this component, new financial products from private or public investments may also be identified to secure

commercial deals with retailers and markets for rural producers. By promoting the necessary links between community organisations, cooperatives, private businesses and government, the low-carbon agricultural and forest-based business environment will be consolidated. In the longer term, this will also promote improvements or adjustments of regulatory frameworks to improve rural communities' access to credit.

iii. **Component 3: Promote knowledge generation on low-carbon supply chains**
This component will partner with experienced rural producers, government stakeholders and leading institutions in the agricultural research and environment policy fields (e.g. as Embrapa[38], IPAM[39], IMAZON[40] and universities) to support agricultural research and knowledge generation on low-carbon agriculture in the Brazilian Amazon. Findings and deliverables from this component will directly feed into the implementation of components 1 and 2. For instance, georeferenced maps may be produced by universities to map out key low-carbon supply chains in the Amazon. These will be made available to farmers and rural associations who will better understand the supply and demand of different products in particular regions, and thus will be able to adapt to the local market conditions.

32. **The extension project will strengthen its focus on gender equality and empowerment of women in rural Brazil.** A consideration of gender will be at the core of the project, ensuring that women have equal opportunities compared to their male counterparts. During the design phase, the project will ensure a proportionate participation of beneficiaries from both genders. Under components 1 and 2, in addition to incorporating materials to raise awareness of gender equality in rural workshops, tailored trainings will be developed for female producers and businesswomen to address the common barriers faced by them in the sector (informed by analyses under component 3). The project will also assist women in accessing specific credit lines designed for female producers, which offer more favourable interest rates and longer repayment periods (such as those offered by the Brazilian Development Bank to support Brazil's National Programme for the Strengthening of Family Farming[41]). Under component 3, the project will seek to commission a gender-focused meta-analysis, using data gathered from Phase I and other studies to inform workshop design for women in component 1, which can also be applied to future programmes.

33. The following table illustrates the types of activities being delivered in the participating biomes (Figure 1) under LCA programmes, with the activities in **bold** showing what the additional Amazon project will deliver:

Activities	Amazon	Atlantic Forest	Cerrado	Caatinga
Provide financial incentives for farmers to disseminate benefits of low-carbon agriculture	Phase 1	Phase 1		
Provide technical assistance to farmers to implement low-carbon agriculture	Phase 1, **Phase 2+**	Phase 1	Phase 2	Phase 2

[38] Embrapa – Brazil's Agriculture Research Agency (https://www.embrapa.br/en/home)
[39] IPAM - Amazon Environmental Research Institute (https://ipam.org.br/en/)
[40] IMAZON – Institute of People and the Environment of the Amazon (https://imazon.org.br/en/)
[41] **The National Programme for the Strengthening of Family Farming (PRONAF)** was established in 1994 first policy in 1994 to meet the specific credit needs of family farmers in rural Brazil. Under this programme, the Brazilian government has partnered with banks to offer specific credit lines for female farmers. An example of this is the **"*PRONAF Mulher*"** credit line (https://www.bndes.gov.br/wps/portal/site/home/financiamento/produto/pronaf-mulher).

Strengthen awareness and capacity of sustainable land management amongst rural communities	Phase 1, **Phase 2+**	Phase 1	Phase 2	Phase 2
Support farmers in accessing rural credit	**Phase 2+**		Phase 2	Phase 2
Enhance value chains (e.g. storage, marketing, production) to support farmers in accessing markets	**Phase 2+**		Phase 2	Phase 2
Develop pipelines of sustainable supply chain businesses	**Phase 2+**			
Analyse and map existing supply chains	**Phase 2+**		Phase 2	Phase 2
Support knowledge sharing and policy replication relating to LCA	Phase 1, **Phase 2+**	Phase 1	Phase 2	Phase 2

Table 1: Types of activities being delivered under LCA programmes (Phase 2+ refers to the additional Amazon project)

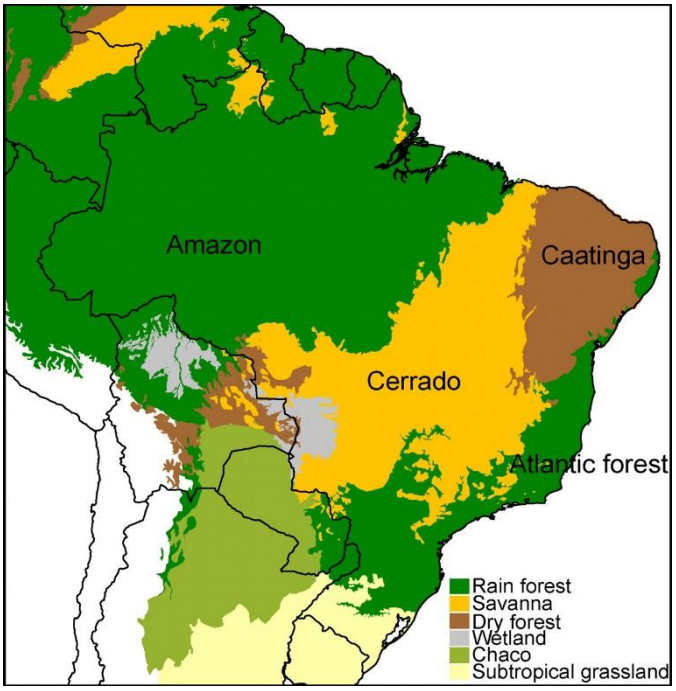

Figure 1: Location of the four participating biomes of LCA Phases I and II, Simon et al (2009)[42]

34. The theory of change (Annex C) illustrates the logical flow of the LCA Phase II programme in supporting climate mitigation and poverty reduction in Brazil.

35. **A Theory of Change and logframe will be developed during the design phase to set out the outcomes and impacts the project will deliver, as well as the underlying assumptions that are used to derive the targets.** The project is expected to deliver the following indicative outcomes, with an aim to reach 10,000 beneficiaries, including farmers, local business owners and technical assistants:

    i. Small farmers and business owners will have improved understanding of low-carbon production systems;
    ii. More farms will have adopted low carbon technologies which support sustainable, forest-based supply chains;

[42] M.F. Simon et al (2009) "Recent assembly of the Cerrado, a neotropical plant diversity hotspot, by in situ evolution of adaptations to fire", *PNAS,* vol.106, no.48, 2009, pp.20359-20364.

iii. Knowledge and information relating to low-carbon agriculture and low-carbon supply chains will be better shared amongst rural producers, business owners, research institutions and non-governmental organisations;
iv. Farmers, small enterprises and local cooperatives will be better equipped to participate in the value chains for low-carbon agriculture commodities;
v. Women are empowered in the low-carbon supply chain business, from production to commercialisation and management; and
vi. Selected low-carbon supply chains, such as Brazilian nuts, natural oils, will be strengthened.

36. **With additional time and resources, this extension will help consolidate HMG's climate mitigation, adaptation and sustainable development work in Brazil to date by**:

i. Building on existing positive UK-Brazil partnership in promoting low-carbon agriculture;
ii. Testing an updated theory of change on ICF intervention in the agriculture sector in Brazil to continue to achieve climate mitigation, adaptation and poverty reduction objectives;
iii. Informing future scale up opportunities by testing the value chain development and bioeconomy approach in the Amazon;
iv. Expanding UK leadership in sustainable forest and land use dialogue, with opportunities to link the programme with UK's domestic policies relating to sustainable supply chains;
v. Reinforcing political momentum for UK's hosting of the UNFCCC COP26[43] in late 2020 by promoting climate mitigation and adaptation through nature-based solutions.

III. What is the additional and total support the UK will provide?

37. Approval is sought for a no-cost extension of 44 additional months for continued delivery against the Business Case in Cerrado and Caatinga biomes of Brazil. In addition, a further £7.42 million is sought to sustain and scale programme impact in the Amazon biome. **This will bring the total investment value to £37.42 million over 8 years.** Defra will continue to be the single donor of the LCA Fund, managed by the IDB to finance the projects in Cerrado, Caatinga and Amazon biomes.

38. The original programme has disbursed 80% of the committed £30 million to date, and the last tranche of disbursement will be made in July 2020. Since the £7.42 million is currently placed in the IDB-managed trust fund, no further financial disbursements (from Defra to the IDB) need to be arranged.

39. **An amount of up to £150,000 will be drawn down to fund the design phase for the extension project in the Amazon.** Subject to approval of this Business Case extension by the end of March 2020, the IDB will immediately mobilise a team of three to four specialists and contracted consultants to detail the design and plan the delivery of the Amazon project. Defra will set out criteria against which the design phase will be assessed. The design phase will start by no later than 1st May 2020, and at the end of the period (October 2020), a set of project documents[44] will be delivered for Defra to review. Should the agreed criteria not be met, Defra will reserve the right to withdraw the remainder funds from the uplifted amount. Implementation will begin officially by no later than March 2021. The extension project in the Amazon is expected to run for three years. An indicative delivery timeline is shown in Annex B.

[43] **The 26th United Nations Climate Change Conference of the Parties**, which will be held in November 2020 in Glasgow, UK.

[44] In addition to the IDB Technical Cooperation document (project proposal), Defra will require the IDB to: (i) Specify the Amazon states and municipalities that the extension will take place; (ii) Present identified beneficiary groups; (iii) Undertake wider consultation and risk assessments to inform project design; (iv) Arrange sufficient project team resources to oversee the extension; (v) Deliver indicative delivery timelines; and (vi) Put in place a robust MEL framework, including an updated logframe and Theory of Change. The extension will also be subject checks for fraudulent, corruption or safeguarding risks. These requirements will be set out in a Terms of Reference by no later than 30th April 2020.

40. As the surplus £7.42 million has been generated from a previous Defra investment, no additional administrative fee will be charged by the IDB to manage this additional project.

41. **Budget and cost profiling for implementation activities will be finalised during the design phase, subject to Defra review and approval.** Since the £7.42 million is accrued from a previous project, this extension will not incur administration fees charged by the IDB. An indicative budget for the proposed components is as follows:

Component	Budget (£)
Promote knowledge generation and sharing on low-carbon supply chains	600,000
Promote and support low-carbon agriculture and production	4,000,000
Strengthen low-carbon value chains and develop pipelines of business development for sustainable supply chain	2,080,000
Project management and administration for the procured executing agency[45]	740,000
TOTAL	**7,420,000**

IV. What is the approach to implementation?

42. Two Defra officials in the ICF team, one of whom is based in the UK Embassy in Brazil, provide strategic and technical oversight for LCA Phase II as programme managers. The Senior Responsible Owner (SRO) is accountable for ensuring the project is appropriately monitored throughout the year, with significant changes to the logframe agreed with the Head of Department or delegate. The programme managers will carry out regular field visits (once to twice a year) to monitor programme progress and assess the programme's continued Value for Money (VfM) and report accordingly in Annual Reviews.

43. The Defra project team may escalate issues relating to LCA Phase II to the ODA Board as appropriate. The ODA board is held quarterly to provide accountability and assurance for the ODA budget and provide strategic direction for ODA spend in Defra. These boards are held quarterly and are chaired at Director-General level, with senior level representation from the ICF team, Defra ODA team, Finance, Chief Scientific Adviser, Chief Economist, and relevant Policy Directors and DfID (Department for International Development) officials. When appropriate, programme issues may also be escalated to the UK Director at the IDB Board, which is a Board of Executive Directors responsible for the conduct of the operations of the Bank.

44. LCA Phase II is managed by an IDB in-country team in Brazil, with additional support from the headquarters in Washington D.C., United States. Similar to the current operational arrangements for the Cerrado and Caatinga projects, the IDB project team will continue to oversee the overall programme implementation of LCA Phase II, under which an externally procured agency will be executing the Amazon extension project on the ground. The procurement exercise will follow the IDB's robust procurement policies[46]. The NDC Invest Platform, as set out in the original management case, will no longer apply due to the removal of the Private Guarantee Mechanism component. The IDB will act as the primary point of contact for the UK project team, but the in-country Defra officer will also liaise with other project stakeholders directly if necessary.

45. In terms of governance, the Amazon project will follow the arrangements as set out in the Administrative Agreement signed between Defra and the IDB for LCA Phase II. Defra is the single donor of the project with the IDB managing the fund (LCA Fund). The Brazilian Ministry of Agriculture is the

[45] This refers to the fees charged by the executing agency who will deliver field activities.

[46] Policies for the Procurement of Goods and works financed by the IDB, Policies for the Selection and Contracting of Consultants Financed by the IDB.

main programme beneficiary[47]. A project steering committee will be set up where all stakeholders (this includes IDB, Defra, executing agency, Ministry of Agriculture, state government, partnering institutions such as Embrapa, representatives of farmers and rural associations) will participate to guide project execution. The Administrative Agreement, which governs the partnership between Defra and the IDB on LCA Phase II, will be amended to reflect the increase of funding and the proposed break clause whereby Defra reserves the right to withdraw the remainder of the £7.42 million should the final design be unsatisfactory (see footnote 32).

Managing risks and monitoring performance

46. Overall **programme risk is considered moderate.** The main risks relating to this extension are detailed as follows:

    i. **Whilst federal policies are currently supportive of the programme, continued engagement is needed to mitigate against any changes in policy direction.** HMG's agreed approach is to proactively engage with Brazil and seek positive partnership to influence policies on sustainable agriculture. HMG sees this programme as supporting a 'clean growth narrative' to build on our positive relationship with the Government of Brazil.
    ii. **Delivery risk of political factors that may affect programme progress or successful delivery, most notably the general election of 2022 in Brazil** (for both federal and state level). Extending the programme beyond 2022 means that the programme must ensure ongoing political buy-in from the Government of Brazil, which is instrumental to a successful delivery. Since the majority of political engagement of this programme is currently at the federal level, Defra and IDB will ensure the programme is managed through a flexible mix of engagement, including increasing the dialogue and extent of project involvement by state governments (such as setting up state-level technical committees). The UK Embassy in Brazil is also actively involved in engaging with stakeholders at different levels to promote the interest of UK ICF projects.
    iii. **Delivery risk of delays to programme design and follow-on e.g. due to institutional changes within the IDB or an inability of the IDB team to deliver.** To ensure LCA Phase II will deliver against time ongoing forward, the latest Annual Review sets out a comprehensive set of improvement measures to provide better assurance on future performance. These include more frequent communication between Defra and IDB project teams and IDB to show evidence of more robust project management going forward. Interim milestones and associated deadlines will be established to ensure timely progression. There will be a break clause allowing Defra to withdraw remaining funds if the design phase is not delivered satisfactorily. Should the programme scores another B or C in the next Annual Review, this will follow an appropriate escalation route up to the ODA Board and IDB Board. If this is not resolved within the timeframe as per the Administrative Agreement, the UK reserves the right to terminate this partnership.
    iv. **Continued weak MEL (monitoring, evaluation and learning) for the project may affect the programme's overall value for money.** Strong MEL enables the UK to better understand the impact of LCA Phase II, facilitating course-correction and evidence-based project development. The latest Annual Review of LCA Phase II highlights that the programme currently has weak MEL, which has drawn a significant amount of Defra resources to resolve. If the issue of weak MEL persists, this will affect the programme's value for money. In additional to the improvement measurements recommended in the Annual Review, Defra will ensure the IDB will deliver a robust MEL framework during the design phase for this project.

47. In line with LCA Phase II original business case and ODA guidance, measures will be put in place to ensure the project will be delivered to quality, cost and time.

[47] The ministry will not receive finances from the project – it will benefit from the project which helps implement policies.

i. **Delivery against time and quality:** Defra works closely with the IDB and in-country support to provide intelligence, identify bottlenecks and facilitate stakeholder interactions. Quarterly project steering group meetings will be held between main project stakeholders (Defra, IDB, executing agency and Brazilian Ministry of Agriculture) to monitor project progress and address performance dips promptly.

ii. **Fraud, error and safeguarding:** The IDB has robust governance and transparency policies[48] in place to minimise fraud and safeguarding risks, and all agencies selected along the delivery chain will undergo a due diligence process. To monitor risks relating to fraud and error, audited financial reports will be submitted by the IDB to Defra every two years. In addition, Defra requires that the IDB provides unaudited annual financial reports, as well as quarterly progress reports which will report on safeguarding risks.

48. Throughout the project lifecycle, risks will be appropriately escalated in accordance with ICF's risk management framework.

Monitoring, Evaluation and Learning

49. Efforts to establish a MEL framework for the programme impact have fallen short in the past. This has been mainly due to a lack of clear definition of Monitoring and Evaluation (M&E) requirements when agreeing the Administrative Agreement. Enhanced capacity in the Defra project team and increased dialogue with IDB in the past year have since improved M&E standards. Defra has since specified the need for a robust M&E framework in place ahead of the implementation of the original projects in LCA Phase II. **An M&E framework for the additional work in the Amazon will be an essential deliverable for the six-month design phase.**

50. Defra ICF has recently developed and agreed a set of portfolio-wide M&E requirements, pending Defra ODA Board approval. **It is Defra's intention to introduce, by way of amending the Administrative Agreement, this set of newly established requirements to improve the programme's M&E robustness.** The requirements will clearly specify the need for using ICF's official methodologies to measure key performance indicators (KPIs)[49], the requirements for an evaluation plan as well as key timeframes on delivering M&E work.

51. **Relevant ICF KPIs will be monitored for both the existing projects in Cerrado and Caatinga as well as the extension Amazon project** – i.e. MtCO2e of greenhouse gas emissions reduced (KPI 6), hectares of avoided deforestation (KPI 8), and with the potential to measure a new indicator on hectares of land under sustainable management. Since the extension emphasises the transformational change aspect to rural Brazil, the programme will also partner with Embrapa to develop a methodology for measuring KPI 15, which will assess the degree of transformational change that the programme will deliver. This will inform future ICF scoping work in Brazil and in sustainable agriculture. Target numbers will be confirmed during the design and the results framework will be updated to capture results in the Amazon biome.

52. The three projects (Cerrado, Caatinga and Amazon) will be overseen by an overarching 'Monitoring, Evaluation and Knowledge Management' project executed by the IDB to enhance monitoring and evaluation, knowledge and lesson dissemination, as well as to ensure coherence across the programme.

[48] Environmental and Safeguards Compliances Policy, IDB (http://www.iadb.org/document.cfm?id=665902).

[49] A set of key performance indicators (KPIs) have been developed and agreed across HM Government to guide programme teams, delivery partners and analysts in their data collection for results from ICF programmes. Programmes are asked to report achieved and forecast results annually against relevant KPIs. More details can be found here: https://www.gov.uk/government/publications/uk-climate-finance-results.

53. **Ongoing monitoring and evaluation will inform Defra's decision to continue its investment in this programme.** As per the original Business Case, Annual Reviews will be conducted to assess the programme's value for money and performance, as part of the requirement for ODA programmes. Should the project be seriously underperforming or failing to improve at any point, appropriate improvement measures will be included within the delivery plan. An independent mid-term review will also be conducted by an externally procured consultancy by December 2022 to assess programme performance hitherto. The report will provide key evidence and important check-point on whether the Phase II mechanisms are indeed delivering better VfM and more transformational impacts than Phase I. If the programme fails to demonstrate continued value for money, Defra reserves the right to terminate the programme.

54. **This project will play a key role in ensuring lessons are being captured and disseminated effectively across the LCA Phase II programme and beyond.** Defra will ensure the IDB enhance its efforts on collecting and analysing data and evidence throughout the course of programme delivery to inform ongoing agile programme development. Another key requirement will under the LCA Phase II programme is the development of a robust impact evaluation methodology, which is being led by two evaluation specialists in the IDB and is expected to be finalised by July 2020. The finding of this evaluation, along with lessons learned captured in Annual Reviews, will be shared more widely to other similar programmes in the region via programme events and participations. The project will also incorporate activities in its planning to ensure lessons are captured to influencing federal policies.

Gender equality and safeguarding

55. Gender issues will be at the fore-front of the programme design for LCA Phase II. Both Defra and the IDB have included gender expertise within programme management structures. In addition, safeguard policies will be applied to identify and prevent any negative side effect on indigenous populations. During the project design phase, potential social impacts on the wellbeing of different social groups (including considerations of gender and ethnicity) will be identified, including environmental justice dimensions (equitable distribution of benefits, equal participation and recognition of different social groups). Mitigating actions will be identified and planned. Throughout the project lifecycle, the IDB's gender safeguarding policies will be applied across the delivery chain[50]. In addition, safeguarding policies will be applied to identify and prevent any negative side effect on indigenous populations[51]. Any emerging safeguarding concerns will be prompted to the safeguarding lead in Defra's ODA team.

V. What are the expected results of this programme?

56. **The time extension will continue to deliver the expected results on climate mitigation and poverty reduction projected for Cerrado and Caatinga biomes**, as outlined in the original business case. The logframe has been revised (Annex D) since approval of the original business case, as a result of consolidated KPI methodologies and an updated theory of change.

57. The following indicative results have been provided by the IDB, based on assumptions used in LCA Phase I in the Amazon and LCA Phase II in the Cerrado. Due to the participatory approach of LCA Phase II, this is with the understanding that these figures will be revised during the design phase when the IDB has accurately identified intervention activities and as targeted beneficiaries:
    i. **Avoid deforestation in over 5,640 hectares of land**;
    ii. **Reduce GHG emissions by 2 $MtCO_2e$ by the end of the project, and in total 10 $MtCO_2e$ over 20 years;**

[50] Gender Equality in Development, IDB (http://www.iadb.org/document.cfm?id=35428399).
[51] Indigenous Peoples Policy, IDB (http://www.iadb.org/document.cfm?id=2032081).

iii. **Increase income of rural families by at least 15% in 700 households,** as a result of diversification of production, adoption of low-carbon agricultural technologies and improved access to markets;
iv. **Convert 4,550 hectares of land to low-carbon agriculture,** in approximately 700 small-scale rural properties;
v. **Consolidate business conditions for five low-carbon supply chains,** as a result of strengthened capacity amongst local cooperatives, rural associations and small business owners; and
vi. **Support 100 community-based enterprises in accessing markets and credits**;

Benefit-cost Analysis

58. The table below shows the summary of the Cost-Benefit Analysis of the Amazon extension over 20 years. Green Book guidance was used in deciding to account for benefits and costs over the 20 year period, as the environmental benefits are expected to be sustainable beyond the end of the programme. Also, IDB suggest that the overall GHG emissions avoided (10MtCO2e) will be much larger over the long-term than during the programme duration (4 years, 2MtCO2e).

LCA Phase II extension Cost Benefit Analysis over 20 years (£ figures rounded to nearest 100,000)		
Costs/Benefits	**Nominal values**	**Discounted values**
Cost of Defra investment (£)	7,400,000	6,400,000
Cost to producers of implementing low-carbon agriculture (£)	3,200,000	3,000,000
Number of households benefitting	700	700
Land that will have avoided deforestation (hectares)	5,640	5,640
Total GHG avoided (£)	365,200,000	243,900,000
Incomes increased (£)	5,900,000	2,600,000
Ecosystem Services (£)	72,800,000	36,400,000
Net Present Value (£, nearest million)		**273,600,000**
Benefit-Cost Ratio		**30.2**

59. **Based on the assessment from current expected results, the project is expected to represent very positive VfM.** Taking in consideration the expected benefits and costs of the project, this extension will return a Benefit-Cost ratio (BCR) of 30.2 over a 20-year appraisal period with a Net Present Value (NPV) of £273 million. The net benefits realised by the intervention are a result of GHG emissions avoided, an increase in farmers' income and an increase in the value of ecosystem services. The expected value of avoided GHG emissions is the largest component of the benefits and the main driver of the Benefit-Cost ratio.

60. Present value costs and benefits are discounted over the course of the project, allowing costs and benefits with different time spans to be compared on a common "present value" basis.

COSTS:

i. **Project funding, £6.4m**: the funding the project is receiving from Defra
ii. **The cost to project participants:** there is a cost to producers for implementing low-carbon agriculture practices. An average upfront capital cost is R$3,125 (£562.50) per hectare. The total cost here is expected to be £3.0m.

BENEFITS

iii. **Value of emissions avoided:** the project aims to avoid 10 MtCO2e throughout the project lifetime, through avoided deforestation and the increased efficiency of agriculture. The value of the

emissions avoided is then calculated using the standard international ICF carbon price series central values (in £ per tCO2e avoided). Additionality and leakage factors[52] are applied to the calculation in accordance with cross-departmental ICF Appraisal Guidance, which reduce the benefits from GHG emissions avoided. The overall benefit from emissions avoided is estimated at **£243.9m**.

iv. **Incomes of project participants increased:** the project will improve the incomes of participating farms by 15%, 3 years after the initial investment[53]. This equals an annual increase of R$750 (£135), leading to an R$3,000 (£540) increase per farm, the staggering of the increase is a conservative assumption. This is assumed to be a sustainable increase and therefore the benefits are calculated over the entire appraisal period. Income benefits total **£2.6m**.

v. **Value of ecosystem services conserved:** Using the TEEB Ecosystem Services Valuation Database[54], the value of the ecosystem services on the avoided deforestation were able to be calculated. The ecosystem services were calculated at USD $1,007 per ha per year and included: non-timber forest products, flood prevention, erosion prevention, biodiversity protection and recreation. This is estimated to increase linearly as deforestation is avoided during the project lifetime, and then continue for the remainder of the appraisal period. However, like GHG emissions avoided, additionality and leakage factors are applied in line with ICF Appraisal Guidance[55]. The value of ecosystem services protected totals **£36.4m.**

61. **Sensitivity testing would have ideally compared the extension results to those of the original business case.** However this proved unrealistic because the design of the project has changed significantly since the business case was completed and the updated logframe (and expected results) is still under development. The below sensitivity analysis is indicative, attempting to identify which variables are the main drivers of value for money for this programme and recognising that the current expected results appear ambitious.

62. **The current expected project results are estimated to be ambitious.** The estimated results outlined in paragraph 55 have been calculated based on some high-level assumptions which need to be reviewed during the design phase. A sensitivity analysis has been conducted to consider the different scenarios whereby the BCR will be affected if a target is not met. The following variables were investigated for sensitivity analysis:

i. **Deforestation avoided:** a 50% reduction in the deforestation avoided by the project would lead to an NPV of £256.8m and a BCR of 33.6.

ii. **GHG emissions avoided:** a 50% reduction in the GHG emissions avoided by the project would lead to an NPV of £151.6m and a BCR of 17.2.

iii. **Farms affected:** a 50% reduction in the farms affected by the project would lead to an NPV of £272.3m and a BCR of 38.3.

iv. **Brazilian R$ to British £ Exchange rate:** a 50% reduction in the exchange rate would lead to an NPV of £273.7m and a BCR of 35.7.

v. **Incomes of participants increased:** a 50% reduction in the increase in incomes for project participants would lead to an NPV of £272.3m and a BCR of 30.1.

[52] ICF Appraisal Guidance: The additionality factor reduces benefits to account for the effect of other actors also contributing to efforts to reduce deforestation in an area. The leakage factor reduces benefits to account for an intervention potentially pushing deforestation to another area rather than avoiding.

[53] The increase occurs 3 years after the investment, because it takes 3 years to pay off the investment. This is an assumption made by the IDB.

[54] Ecosystem service valuation database (https://www.es-partnership.org/services/data-knowledge-sharing/ecosystem-service-valuation-database/).

[55] ICF Appraisal Guidance: The additionality factor reduces benefits to account for the effect of other actors also contributing to efforts to reduce deforestation in an area. The leakage factor reduces benefits to account for an intervention potentially pushing deforestation to another area rather than avoiding.

vi. **Cost optimism bias**: a 50% increase in the costs of the project would lead to an NPV of £268.9m and a BCR of 20.1.

vii. **Benefits optimism bias**: a 50% reduction in all benefits of the project would lead to an NPV of £132.1m and a BCR of 15.1.

From the sensitivity analysis, it was determined that under most circumstances the programme would continue to be positive value for money. GHG emissions avoided was the greatest driver of the BCR and thus the largest risk. It can be concluded that the project still represents excellent value for money, even with a significant reduction to benefits and a significant increase to costs.

63. **However, it should also be noted that the current benefit-cost ratio figures only partially reflect the expected benefits of the project.** There are also uncertainties around some of the variables which may affect the accuracy of this analysis. For instance, the exact incomes of farmers prior to receiving support from the project are not yet known. This analysis also does not include gender and poverty alleviation impacts as there is insufficient data to measure at this point. Once more details on expected results are determined in the design phase, Defra will conduct an analysis to assess the project's revised VfM.

Other results

64. **It is expected that the lessons and results from the programme will be of value to the wider agriculture sector.** Business models based on sustainable and inclusive low-carbon value chains that will be developed through this project can be replicated across other regions within the Amazon biome. The project will include activities to disseminate lessons learnt and results in support of this.

65. **With a heavier emphasis on promoting gender, the extension will contribute to the ongoing effort to close the gender gap in Brazilian agriculture.** Whilst the number of women that will benefit from the project cannot be quantified at this stage, the project will ensure a proportionate participation as beneficiaries by both genders during design phase. Qualitative and quantitative data will also be collected throughout the project's progress on promoting gender equality.

66. **Upon completion, the extension project will continue to deliver transformational impacts to the agriculture sector beyond the Brazilian Amazon.** Business models based on sustainable and inclusive low-carbon value chains that will be developed through this project can be replicated across other regions within the Amazon biome. The project will include activities to disseminate results, in particular lessons on production and marketing standards developed by the project could help improve competitiveness.

67. **The extension will support the programme to continue to align with and support federal policy.** Promoting knowledge and technology transfer on low-carbon agriculture and sustainable supply chains will directly support key national policies such as the aforementioned Bioeconomy Programme, Low-carbon Agriculture Programme (ABC Programme) as well as the National Plan for Promoting Socio-Biodiversity Supply Chains. For every farmer adopting a low-carbon agriculture technology, the project directly supports the work of the ABC Programme. For every sustainable supply chain strengthened, the project supports the implementation of the bioeconomy policy – aiming to improve income for family farmers and traditional communities. Avoided greenhouse gas emissions will also directly contribute to Brazil's Nationally Determined Contributions (NDCs).

VI. Describe any changes to the original business case, including the theory of change or new evidence from ongoing monitoring, evaluation or learning work?

68. **The originally proposed £36 million Business Case for Phase II was downsized to £30 million.** Defra requested to eliminate the proposed Private Guarantee Mechanism component from the original business case, prior to drawing the Administrative Agreement with the IDB. The rationale behind this was based on assessments of the high fiduciary risks identified, insufficient improved terms and conditions and interest rates that could be provided with the Defra resources for de-risking compared to existing public credit lines.

69. **The programme has replaced the results-based financing component with additional technical assistance.** LCA Phase I, which provided financial rewards for farmers to encourage low-carbon adoption, recognised the need for more technical assistance. Whilst result-based financing has proven to be a successful mechanism to induce behavioural change, in the context of this programme, providing technical capacity will deliver a longer-lasting impact than payments of a one-time benefit. In Phase I, a farmer would receive one-off payments for converting their land to low-carbon practices, once an independent verification had been conducted. This posed challenges in terms of logistics and efficiency as these farms are scattered across 70 municipalities across seven states in Brazil. Hence, the original results-based financing component in LCA Phase II has evolved to focus on providing more technical assistance to strengthen low-carbon agriculture and low-carbon supply chains (see paragraph 16).

70. **Due to its close partnership with the Brazilian Ministry of Agriculture, national elections that took place in Brazil in November 2018 implied the need to re-engage federal-level stakeholders.** After the new administration took place in 2019, Defra and the IDB maintained several meetings with the new authorities to present and discuss the objectives and components of the second phase. The Ministry of Agriculture played an important role in the change of geographical focus, as well as on the increased emphasis on technical assistance as key intervention to promote the adoption of low-carbon technology.

71. **The programme will also increase the frequency of engagement with state-level stakeholders.** Whilst governance arrangements for the programme remain similar, additional state-level technical committees will be established to increase dialogues with state governments, due to the need for more state-level involvement in projects.

72. As explained above, the theory of change has been updated (see Annex C) since the approval of the original business case. It now reflects the need for capacity building to enable low-carbon agriculture uptake, as well as the current appetite around bioeconomy and strengthening low-carbon value chains. A revised theory of change will be determined during the design phase, as part of the M&E framework.