



# Flexible Research Fund: Grant Specification Document



## PLEASE ENSURE YOU HAVE READ:

- **GUIDANCE DOCUMENT**
- **FREQUENTLY ASKED QUESTIONS**

Note: This material has been funded by UK aid from the UK government; however, the views expressed do not necessarily reflect the UK government's official policies.

The Climate Compatible Growth (CCG) Flexible Research Fund (FRF) provides research funding to respond to new and emerging research opportunities and demands. This is the first FRF call run by the CCG programme, this new competition enables the CCG programme, funded by the Foreign and Commonwealth Development Office (FCDO) and delivered by Loughborough University, to fund research that will provide tangible and impactful benefits in CCG countries, the call topics are tailored to focus on four of CCG's current priority countries: Kenya, Lao PDR, Ghana, and Zambia.

This call includes seven topics. Each proposal should only focus on one of these topics. Please read the details carefully, which include research questions and requirements, indicative timescales, budgets, and countries. All successful projects will be integrated into the CCG research programme and hosted by one of our research work streams. The call topics are as follows:

- 1. The energy system implications of transitions to clean cooking in Zambia**
- 2. Financing energy efficiency and conservation in Lao PDR**
- 3. Incentives for private investment into climate-friendly projects in Zambia**
- 4. Renewable energy policies in Kenya**
- 5. The impact of low energy demand on the sustainability of electricity systems**
- 6. Macroeconomic implications of the Green Growth Strategy in Zambia**
- 7. Low carbon transport futures in Zambia**

## **Topic 1: The energy system implications of transitions to clean cooking in Zambia**

Access to clean cooking fuels and technologies for cooking (% of population) in Zambia was reported at 10.4% in 2020, according to the World Bank. Cooking utilising polluting fuels remains a major developmental challenge for the country. For example, over 75% of peri-urban and urban households use charcoal as their primary cooking fuel source, regardless of income. The demand for charcoal continues to accelerate with consequent impacts on deforestation levels.

Until recently, clean cooking has not been a major priority in policies/strategic plans for the energy sector. It is a topic that is now receiving increasing attention from policy stakeholders and foreign donor programmes with a strong focus on the need to reduce deforestation, combat emissions and improve health outcomes. The government is currently aiming to establish a national clean cooking strategy and has initiated a clean cooking committee at the Ministry of Energy (ESAG) as well as a national Charcoal taskforce. The 8th National Development Plan also commits to phasing out charcoal by 2025.

At present, it remains far from clear how this transition will occur. The challenges facing the scaling of alternative cleaner fuels, for example, remain considerable; whilst the implications on living standards of charcoal producers and consumers of rapid transitions away from charcoal will be significant and require careful management. Given the commitment to phase out charcoal production by 2025, there is an urgent need to complement strategic commitments with a tangible implementation roadmap. Without such a roadmap, there is a risk that livelihoods and supply chains will be ill-prepared.

Whilst major projects exploring the market potential of clean cooking fuel options are underway (particularly via support from USAID's Alternatives to Charcoal programme), there are a number of areas where CCG research could provide complementary evidence on the wider energy system implications. This research would strengthen understanding and help develop implementation scenarios and a tangible implementation roadmap (with particular reference to cooking with electricity or eCooking).

Research on this topic should include the following inter-related tasks:

- (a) Modelling of different electricity demand scenarios reflecting different levels of adoption of electric cooking, and the implications for future grid development scenarios.
- (b) Examination of the scope for the expansion of electric cooking within Zambia and the implications for grid stability and reliability.
- (c) Detailed cost modelling of alternative fuel solutions for clean cooking including all elements of supply chains – from energy production to use.
- (d) Review strategies for carbon financing solutions for the Zambian eCooking market

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(e) Analysis of livelihood implications and potential support mechanisms for those currently earning their living through the production and retail of charcoal

### ***Key stakeholders***

- Relevant Zambian Ministries
- USAID's Alternatives to Charcoal Programme
- The main Zambian Utility (ZESCO)
- The FCDO-funded Modern Energy Cooking Services programme.

### ***Integration with the CCG research programme***

This research would be hosted by CCG's System Design research workstream (led by Adam Hawkes). It would also have significant links with the workstream on Policies for Climate Compatible Growth (led by Julia Tomei) and related research funded by UK PACT in Kenya.

### ***Budget and duration***

We expect to fund a single project under this topic that covers the tasks listed above. The overall budget will be up to £100,000, and the duration should be up to 18 months long.

## Topic 2: Financing energy efficiency and conservation in Lao PDR

Lao PDR's latest Nationally Determined Contribution (NDC) includes a target of a 60% reduction in greenhouse-gas emissions by 2030 when compared to a 'business as usual' trajectory without climate policies. This would be primarily achieved through increasing the share of renewable energy in its energy mix and expanding forest cover. The NDC also includes a commitment to further reductions in emissions if international finance is made available. The impacts of climate change have been particularly significant to Lao PDR's economy due to its dependence on climate-sensitive natural resources including water, forestry, and agriculture.

Achieving the greater level of emissions reductions to meet Lao PDR's conditional target would require \$4.7 billion in financing by 2030. Within this, there is a plan to reduce final energy consumption by 10% when compared to the level of demand. This would help Lao PDR to meet the goals of the 2016 National Policy on Energy Efficiency and Conservation and would require an estimated \$30m of financing.

There is momentum to stimulate private capital flows in Lao PDR to achieve these goals. In September 2022, for example, the International Finance Corporation (IFC) and the Bank of Lao PDR signed a memorandum of understanding (MoU) to boost financing for climate-friendly projects. The objective is to create a green finance market, unlock funding for climate-smart business activities, and enable Lao PDR to achieve a more sustainable and carbon-neutral growth trajectory. To help Lao PDR meet its targets, a market assessment is being funded by the IFC to review the current framework for green finance and to identify market opportunities for potential green financing products.

A key research question is: what are the barriers to designing, developing, and implementing energy efficiency and conservation projects in Lao PDR? These barriers may relate to policy, institutional and regulatory factors (the 'enabling environment'); the financial viability of these projects ('bankability'); societal and cultural factors; and/ or other considerations. Research funded on this topic will be expected to build empirically on existing literature, through primary in-country research and fieldwork. The evidence base generated by this research should be used to inform detailed and substantiated policy recommendations that could incentivise and promote viable energy efficiency and conservation measures.

In addition to this primary focus, successful research applications may also include, for example: comparative analyses that draw on relevant evidence from other low- and middle-income countries; in-depth collaboration with government departments to support capacity building on policy frameworks and instruments; development of investment cases for energy efficiency and conservation projects with the private sector and/ or social enterprises; engagement with providers of concessional and commercial capital regarding specific projects; and monitoring and impact evaluation studies for energy efficiency and conservation projects. This is not an exhaustive list, and

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applications are encouraged for proposals that support the financing of energy efficiency and conservation to meet the goals of the Lao PDR NDC.

### ***Key stakeholders***

We anticipate that researchers will engage with some of the following stakeholders:

- Global Green Growth Institute
- Department of Planning and Coordination (MEM)
- Department of Energy Efficiency and Promotion (DEEP, MEM)
- Department of Energy Policy and Planning (Ministry of Energy and Mines, MEM)
- Department of Climate Change (Ministry of Natural Resources and Environment, MONRE)
- National University of Laos (NUOL)
- Bank of Lao PDR
- Economics and Private Sector Development, IFC

### ***Integration with the CCG research programme***

Projects funded on this topic will be hosted by the CCG workstreams on Economics and Policy (led by Sam Fankhauser) and Investment Pipelines (led by Alex Money).

### ***Budget and duration***

Projects should be up to 18 months long, with a start date no later than 1st January 2023. The CCG programme may commission more than one project, depending on the complementarity of the projects proposed, timelines and budget. The indicative maximum budget for a single project is £75,000.

### **Topic 3: Incentives for private investment into climate-friendly projects in Zambia**

Zambia's Eighth National Development Plan (8NDP) sets out development priorities and implementation strategies for the period 2022-26. It comprises four development areas: Economic Transformation and Job Creation, Human and Social Development, Environmental Sustainability and Good Governance Environment. Key development outcomes include enhanced generation, transmission, and distribution of electricity; enhanced management and productive use of water resources; and the promotion of applied research and development. The 8NDP recognises that a competitive private sector is needed to achieve socio-economic transformation for improved livelihoods.

The 8NDP highlights the importance of access to private sector investment in order to execute the implementation strategies. In parallel, there is a growing body of literature on 'green financialization' that considers the implications of private sector participation in development collaboration, in particular drawing on concepts such as the enabling environment and de-risking. A debate has emerged on whether the transformational effects of investment in climate-friendly infrastructure are inevitably associated with domestic dependence on foreign capital flows; or whether these investments are an important and necessary step for national development plans to reach 'escape velocity' and catalyse sustainable endogenous growth.

With this debate in mind, there are two primary research questions for this topic:

- what benefits could accrue from increased private sector investment in climate-compatible projects in Zambia?; and
- what trade-offs might arise from this investment?

Recent research on Zambia's energy infrastructures<sup>1</sup>, for example, has highlighted how prioritising 'bankability' over just transitions, affordability and equitable access may affect incentives for private sector investment in the medium term. Research funded on this topic will be expected to analyse the benefits and trade-offs of private investment in climate-friendly projects in Zambia, through primary in-country research. The analysis could take a broad approach within the CCG programme's remit or focus on specific sectors such as electricity generation or public transport.

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<sup>1</sup> Carsten Elsner, Manuel Neumann, Franziska Müller & Simone Claar (2022) Room for money or manoeuvre? How green financialization and de-risking shape Zambia's renewable energy transition, *Canadian Journal of Development Studies / Revue canadienne d'études du développement*, 43:2, 276-295, DOI: 10.1080/02255189.2021.1973971

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The evidence base generated by this research should be used to inform detailed and substantial policy recommendations for incentivising private investment into climate-friendly projects in Zambia. These should be consistent with advancing the four development areas of the 8NDP. Of particular interest are recommendations on how the challenges associated with using blended finance arrangements at scale in Zambia may be addressed through policy frameworks and incentives.

### ***Key stakeholders***

We anticipate that projects will engage with a range of stakeholders throughout the research including, for example:

- The University of Zambia
- The Copperbelt University
- Ministry of Energy
- Ministry of the Green Economy and Environment
- Ministry of Finance (Monitoring and Evaluation)
- Office of the President
- British High Commission
- Global Green Growth Institute
- CIG Zambia
- Industrial Development Corporation (IDC) Zambia
- Consumer groups
- Civil society

### ***Integration with the CCG research programme***

Projects funded on this topic will be hosted by the CCG workstreams on Economics and Policy (led by Sam Fankhauser) and Investment Pipelines (led by Alex Money).

### ***Budget and duration***

Projects should be up to 18 months long, with a start date no later than 1st January 2023. The CCG programme may commission more than one project, depending on the complementarity of the projects proposed. The indicative maximum budget for a single project is £75,000.

## Topic 4: Renewable Energy Policy in Kenya

In 2021, over 80% of Kenyan power was generated from renewables – from a combination of geothermal, hydro, wind and solar power. There is significant potential for further expansion of renewable electricity as the Kenyan economy and power sector grow in future. The Kenyan government's Least Cost Power Development Plan includes the expansion of renewable electricity capacity by 50% between 2021 and 2030.

However, efforts by the Kenyan government to support a rapid expansion of renewable electricity have had mixed results so far. A feed-in tariff policy was introduced in 2008, and has been revised several times since that date. The policy sets fixed price tariffs for a range of renewable energy technologies. However, only a small capacity of renewables has been successfully deployed with support from the feed in tariff policy. Previous research have highlighted a number of reasons for this, including problems with policy implementation.

Partly as a result of this limited progress, plans are underway to implement a renewable electricity auctions policy. Some preliminary work has been carried out by development agencies and development banks to design this policy. However, there is also demand for independent academic research that considers the policy, economic and political economy context that will shape the implementation and impacts of such policies.

The CCG programme would like to commission interdisciplinary research that can inform the design and implementation of Kenya's new policy. The research should not solely focus on the design of auctions and other policies designed to support renewable energy. It should also consider the broader economic, political and institutional context in which these policies will be implemented.

Proposals to carry out this research should include the following main elements:

- (a) A review of existing literature and evidence on opportunities and barriers for renewable electricity deployment in Kenya, supplemented by new primary research where required
- (b) A review of renewable electricity policies that have been implemented in Kenya since 2008, including the technical, economic, institutional, political economy and other factors that have affected implementation and outcomes.
- (c) Analysis of the implementation of renewable energy auctions in a range of other low-income countries, including the factors that have affected their relative success or failure. Examples of countries that have implemented such policies include Zambia, Uganda and Ghana.
- (d) Co-development of recommendations with key stakeholders. These should focus on the implementation of renewable electricity auctions in Kenya, and the mix of other policies that could be required to ensure successful growth in renewables deployment. These recommendations should explicitly address the factors identified under (b) above.

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### ***Key stakeholders***

Key stakeholders should be consulted regularly throughout the research to ensure that there is a good understanding of the Kenyan context, and that recommendations have sufficient 'buy in'. They could include:

- Ministry of Energy
- Utilities including Kenya Power and KenGen
- Energy and Petroleum Regulatory Authority
- World Bank and other development institutions

### ***Integration with the CCG research programme***

Projects funded on this topic will be hosted by the CCG workstream on Policies for CCG (led by Julia Tomei).

### ***Budget and duration***

Projects should be 6-9 months long, with a start date no later than 1<sup>st</sup> January 2023. The CCG programme plan to commission one project on this topic, but more than project may be considered if they use complementary methodologies. Bidders should plan for a maximum budget of up to £60,000. The value for money of all proposals will be assessed.

## 5. The impact of low energy demand on the sustainability of electricity systems

This topic focuses on “*the impact of low energy demand on the sustainability of energy systems*” in three countries in sub-Saharan Africa: Kenya, Zambia and Ghana. Providing energy access to remote and sparsely populated areas is important to meet the Sustainable Energy for All (SE4ALL) targets which aim to deliver universal access to electricity by 2030. However, it is widely acknowledged that this is costly and difficult to do in a cost-effective manner. Indeed, few of Africa’s utilities are able to recover their operational and capital costs, exacerbated by the inability of many customers to pay for electricity. Nonetheless, a recent report by the World Bank<sup>2</sup> states that “*it is possible for Sub-Saharan Africa’s poor to get access to affordable electricity and for the utilities that supply power to be profitable at the same time*”. They propose several options utilities can take. Nevertheless, some questions remain around the impacts of low energy demand on the sustainability of electricity systems.

To help utilities in Ghana, Kenya and Zambia to meet their electrification targets while ensuring financial sustainability research projects should focus on the following questions:

- How can the actual growth of electricity demand be understood when different people and businesses are faced with different supply options and costs?
- What are the different approaches utilities in one or more CCG partner countries have used to achieve last mile electrification?
- Given the challenges that utilities are facing, what are the possible options to address energy access for all, in light of the varying needs of different stakeholder groups, national demographics and degrees of urbanisation?
  - What can utilities and last mile providers of electricity do to boost demand where new last mile connections are incurring losses? Research to address this question could produce evidence on a range of specific areas including financing of appliances through bills, productive uses, complementary development support or e-cooking.
  - How can customers with low demand and high development needs be financed in the short-, medium- and longer-terms?
  - What novel tools or additional revenue streams might be relevant to close the viability gap on last mile connections?
- What is the scope for combining stand-alone, mini-grid and grid infrastructure to address the needs of customers with low energy demand?

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<sup>2</sup> Kojima, Masami; Trimble, Chris. 2016. Making Power Affordable for Africa and Viable for Its Utilities. World Bank, Washington, DC. World Bank. <https://openknowledge.worldbank.org/handle/10986/25091>

### ***Key stakeholders***

This would be an Africa-focused call. Relevant stakeholders are multiple as anyone with a connection to the energy sector will likely have an interest in this research and are not limited to the below:

- Ministry of Energy, utilities, generators, regulator
- Decentralised governments/ local authorities
- Development organisations
- Mini-grid and off-grid providers
- International NGOs and others focused on productive uses of energy, appliances etc.
- Women's organisations
- Consumer groups

### ***Integration with the CCG research programme***

Depending on the specific focus of funded projects, they would be hosted by one of the following CCG workstreams: System Design (Adam Hawkes); bottom-up demand and county-planning (Stephanie Hirmer); Economics and Policy (Philipp Trotter); policies for climate compatible growth (Julia Tomei); or investment pipelines (Alex Money).

### ***Budget and duration***

CCG could support up to two projects on this topic if proposals are of a sufficient quality. The total budget for all projects on this topic will be a maximum of £200,000. The duration of individual projects can be up to 18 months. Shorter projects of 6 months in duration will also be considered where there are more immediate opportunities for impact.

## **Topic 6: Macroeconomic implications of the Green Growth Strategy in Zambia**

Zambia is following in the footsteps of many other African countries in wanting to incorporate green growth and sustainable development into its economic development strategy. A new Green Growth Strategy is currently under development. The purpose of this research project is to support the Zambian government in this endeavour and making the economic case for green growth in Zambia.

The premise of green growth is that environmental sustainability – for example with respect to decarbonisation, air quality or natural resource management – can be achieved without posing an undue burden on economic development. Green growth seeks to harness economic benefits that may arise from sustainable development, for example in the form of new investment opportunities, job opportunities and areas of comparative advantage.

These benefits are well articulated in the literature and good empirical evidence of green growth benefits is emerging. However, the green growth potential of Zambia has so far not been assessed or quantified. A better evidence base would help build consensus around green growth and help Zambian decision makers to fine tune their strategies.

Research under this topic should address one or more of the following questions. There is no expectation that each project would cover all of them:

- a. The economy-wide impact of Zambia's green growth strategy on investment, productivity and growth. What are the implications of green growth on key macro-economic indicators like investment, productivity, employment and growth?
- b. Sector-specific low carbon risks and opportunities. What are potential areas of new comparative advantage, trade and economic growth for Zambia arising from low carbon sustainable growth?
- c. The macroeconomic impact of Zambia's clean energy transition. What are the economy-wide impacts of moving to clean sources of energy supply, for example in terms of affordable energy access, investment needs, and the risk of asset stranding in high-carbon sectors?
- d. The micro-economic impact of Zambia's green growth strategy on jobs. What are the implications of green growth on job opportunities and the demand for new skills?
- e. The sustainable management of Zambia's natural capital, including mineral resources, land and biodiversity. What are best practice approaches to natural capital management (e.g. resource funds, natural capital accounting) and what are their macroeconomic benefits?

Applicants are invited to identify the most appropriate analytical methods to carry out their research. Topic (a) will likely require some macro-economic modelling. Topics (b) and (c) require sector-level analysis (e.g., statistical or model-based). Topic (d) may be approached from either a labour economic or macro-economic modelling perspective. Topic (e) will likely draw on environmental economic methods. However, other approaches can be appropriate and may be suggested.

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An essential requirement of research funded on this topic is that it is carried out in close co-operation with key Zambian government ministries. This means working with them from the start, ensuring that assumptions and methods are discussed with them, and results are clearly communicated. Proposals will also need to include plans for capacity building so that government officials are able to understand the details of methods used, interpret the results and carry out their own analysis.

### ***Key stakeholders***

- Relevant Zambian Ministries, particularly the Ministry of Green Economy and Environment and the Ministry of Finance.
- Office of the President
- Local offices of development agencies and development finance institutions interested in green growth
- Involvement of a local university partner or think tank.

### ***Integration with the CCG research programme***

Projects will be hosted by CCG's workstream on economics and policy (led by Sam Fankhauser). It would also have significant links with the workstream on Policies for Climate Compatible Growth (led by Julia Tomei) and involve close cooperation with the CCG partnership team.

### ***Budget and duration***

We expect to fund up to two projects under this topic. Applicants should clearly state which of the topics listed above they will focus on. The maximum budget for individual projects will be £75,000. Projects can be up to 18 months long.

## Topic 7: Low carbon transport futures in Zambia

Public transport and non-motorised transport (NMT), principally walking and cycling, offers basic affordable mobility. Improving the availability, of public transport and the convenience, comfort and safety of walking and cycling can reduce the demand for car travel and thus help reduce congestion and air pollution. Although a high proportion trips in Zambia are made by both public transport and by walking and cycling, particularly for poorer people, transport planners have, as in other countries, focussed, overwhelmingly, on providing infrastructure for motor vehicles. As a result, the urban and rural environment is often unsafe and inconvenient for pedestrians and cyclists. Zambia has a traffic death rate of around 25, per 100,000 people. This is the average for Africa, but many times more than the rate for Europe. It is now recognised that much more attention needs to be given to planning for walking, cycling and the provision of public transport.

Zambia's National Transport Policy, published by the Ministry of Transport and Communications in 2019, states that the government will bring forward legislation to establish a Public Transport Authority (PTA) in all local areas. To complement this, a Zambia Non-Motorised Transport Strategy, was prepared by the Ministry (also in 2019) with the UN Environmental Programme and the Institute for Transportation and Development Policy (ITDP). This Strategy provides a comprehensive assessment of issues and measures, particularly for urban areas, and outlines a detailed costed action plan from 2019 to 2022. Since its preparation, Covid has had a major detrimental social and economic effect on Zambia, which is likely to have adversely affected the implementation of these strategies. Progress towards meeting the goals outlined in the NMT strategy has been limited.

There is now a need to review progress with the implementation of these strategies and their alignment with other key government documents such as the Sustainable Low Emissions Transport Study for Zambia, (Zambia Environmental Agency, 2019). Research funded on this topic should include:

- a. an exploration of solutions for greening urban mobility and their relative impacts on social inclusion. This should include both public transport and non-motorised transport, and distinguish between urban and rural areas;
- b. a review of the implementation of the plans and policies in the National Transport Policy and Non-Motorised Transport Strategy, including associated barriers and challenges;
- c. an assessment of the institutional capacity for implementing proposed solutions; and
- d. research to determine suitable locations for NMT corridors in Zambia. This should build on work done by Zambia Institute for Policy Analysis and Research (ZIPAR) and ROM Transportation.

Proposals could also include research on some of the more detailed issues for transport policies in Zambia, including:

- Progress with the introduction of Public Transport Authorities
- How the availability of finance for public transport and NMT infrastructure could be improved, including the role of Public Private Partnerships

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- Gaps in the existing government strategies such as the prioritisation of interventions, and methodologies to support such prioritisation
- The potential role of electric cycles and light scooters in future, including their impacts on Zambian transport infrastructures.

### ***Key stakeholders***

Proposals should include plans to work with key transport stakeholders throughout the research process. They could include the following:

- Ministry of Transport and Communications (MOTC)
- Zambia Environmental Management Authority (ZEMA)
- Ministry of Local Government (MOLG)
- Ministry of Housing & Infrastructure Development (MHID)
- Lusaka City Council (LCC)
- Road Transport and Safety Agency (RTSA)
- Road Development Agency (RDA)
- National Road Fund Agency (NRFA)
- Zambia Agency for Persons with Disabilities (ZAPD)
- Zambia Institute for Policy Analysis and Research (ZIPAR)

### ***Integration with the CCG research programme***

Projects will be hosted by the CCG transport workstream (led by Holger Dalkmann).

### ***Budget and duration***

A single project will be funded on this topic, with a maximum budget of £100,000 and a duration of up to 18 months.