Ayrton Fund: Green Jobs Insights Study

A deep dive into the jobs created, measured and reported by the Ayrton Fund portfolio between 2021/22 and 2023/24.

Image credit: Innovex, Uganda 2024 – PREO

Report | September 2024

Contents

Introduction

About the report

This report was commissioned to assess, examine and analyse the jobs created through Ayrton Fund programmes during the first two years of the Fund. The report collates insights from desk research and interviews with key Ayrton Fund practitioners, as well as external stakeholders, to make recommendations on the Ayrton Fund's jobs reporting processes. The report also examines the types of jobs reported across the Ayrton Fund and includes case studies to provide personal stories and demonstrate the positive on-the-ground impact of employment creation.

Acknowledgements

The Carbon Trust wrote this report based on an impartial analysis of primary and secondary data sources, including expert interviews. The Carbon Trust would like to thank everyone who has contributed their time and expertise during the preparation and completion of this report. A special thanks goes to those who participated in interviews, including representatives of the following organisations and programmes, and to the companies and individuals who are featured in case studies throughout the report.

Table 1: Organisations interviewed within the Ayrton Fund

Organisation Interviewed	Relevant Ayrton Fund Programme
Acumen	Pioneer Energy Investment Initiative (PEII)
The Carbon Trust	Transforming Energy Access (TEA)
CLASP	Low Energy Inclusive Appliances (LEIA)
Department for Energy Security and Net Zero (DESNZ)	Clean Energy Innovation Facility (CEIF)
Energy 4 Impact	TEA – Powering Renewable Energy Opportunities (PREO)
Energy Saving Trust (EST)	Low Energy Inclusive Appliances (LEIA)
Grand Challenges Canada	Creating Hope in Conflict: A Humanitarian Grand Challenge (CHIC)
Loughborough University	Modern Energy Cooking Services (MECS)
Shell Foundation	Strengthening Impact Investment Markets for Agriculture (SIIMA) and TEA – Transforming Inclusive Energy Markets (TIME)
Shortlist	TEA - Energy Access Talent Initiative (EATI) and Off-Grid Talent Initiative (OGTI)
SNV	BRILHO Mozambique
World Bank	Energy Sector Management Assistance Program (ESMAP)

Table 2: Organisations interviewed external to the Ayrton Fund

Organisation	Programme (external to Ayrton Fund)
African Development Bank (AfDB)	Joint Impact Model (JIM)
DESNZ	International Climate Finance (ICF)
Power for All	Powering Jobs Census
USAID	Power Africa

Table 3: Organisations who are featured and participated in the development of case studies

Organisation	Programme
BURN Manufacturing	MECS
InfiCold	SIIMA
Innovex	TEA (PREO)
InspiraFarms	SIIMA and TEA (PREO and TIME)
InstaVeg	N/A
Mobile Power (MOPO)	Energy Catalyst and PREO (TEA)
Prado Power	CHIC

Image credit: Volt Terra,Uganda 2023 – PREO

Who we are

The Ayrton Fund

The Ayrton Fund is a commitment by the UK Government to spend up to £1 billion of Official Development Assistance (ODA) on the research, development and demonstration (RD&D) of clean energy technologies and business models for developing countries over five years. This includes the partnerships and associated skills needed to deliver Sustainable Development Goals 7 (Affordable and Clean Energy) and 13 (Climate Action). The Ayrton Fund is jointly overseen and managed by the UK's Foreign Commonwealth & Development Office (FCDO), the Department for Energy Security & Net Zero (DESNZ) and the Department for Science, Innovation and Technology (DSIT) through a portfolio of ongoing, new, and scaled-up clean energy innovation programmes.

The Carbon Trust

The Carbon Trust's mission is to accelerate the move to a decarbonised future. We have been climate pioneers for more than 20 years, partnering with leading businesses, governments and financial institutions globally. From strategic planning and target setting to activation and communication, we are your expert guide to turn your climate ambition into impact. We are one global network of 400 experts with offices in the UK, the Netherlands, South Africa, China, Singapore and Mexico. To date, we have helped set 200+ science-based targets and guided 3,000+ organisations in 70 countries on their route to Net Zero.

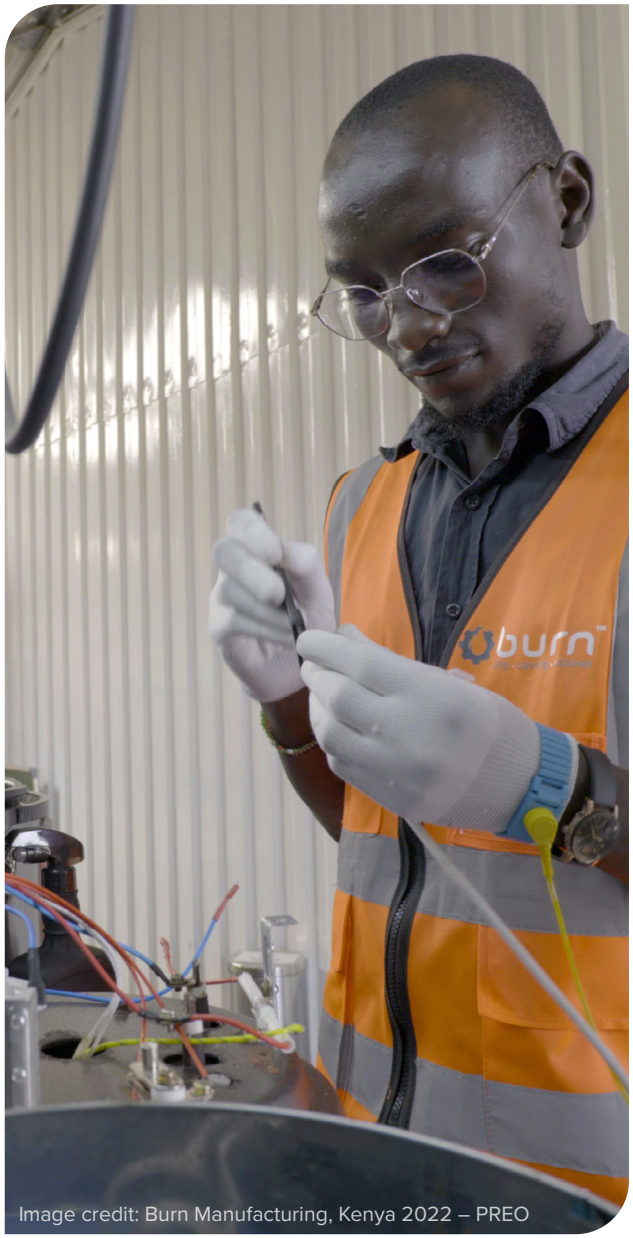

Image credit: Burn Manufacturing, Kenya 2022 – PREO

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Tables

Figures

Abbreviations

Abbreviation	Definition
AfDB	African Development Bank
BAU	Business-as-usual
CASEE	Catalysing Agriculture by Scaling Energy Ecosystems
CEIF	Clean Energy Innovation Facility
CHIC	Creating Hope in Conflict: A Humanitarian Grand Challenge
COO	Chief Operating Officer
DESNZ	Department for Energy Security and Net Zero
DSIT	Department for Science, Innovation and Technology
EATI	Energy Access Talent Initiative
ESG	Environmental Social Governance
ESMAP	Energy Sector Management Assistance Program
EST	Energy Saving Trust
FCDO	Foreign, Commonwealth & Development Office
FT	Full-time
FTE	Full-time equivalent
GCRF	Global Challenges Research Fund
GHG	Greenhouse gas
GIZ	German Agency for International Cooperation
ICF	International Climate Finance
ILO	International Labour Organisation
IO	Input-output
JIM	Joint Impact Model
KPI	Key Performance Indicator
LEIA	Low Energy Inclusive Appliances
M&E	Monitoring and evaluation
MECS	Modern Energy Cooking Services
O&M	Operation and maintenance

OECD	Organisation for Economic Co-operation and Development
OGTI	Off-Grid Talent Initiative
O*NET	US Department of Labour Occupational Information Network
PEII	Pioneer Energy Investment Initiative
PREO	Powering Renewable Energy Opportunities
PT	Part-time
PURE	Productive use of renewable energy
R&D	Research and development
RD&D	Research, deployment and demonstration
SIIMA	Strengthening Impact Investment Markets for Agriculture
SMEs	Small and medium-sized enterprises
SSA	Sub-Saharan Africa
TEA	Transforming Energy Access
TIME	Transforming Inclusive Energy Markets
USAID	US Agency for International Development

Executive summary

'Green jobs' is a priority outcome of the Ayrton Fund's clean energy innovation portfolio, though it is a term which can be interpreted, measured and understood in a range of ways. Green jobs, which support the transition to a low carbon economy and contribute to environmental goals, are pivotal in creating sustainable economic opportunities and enabling a just transition as countries move towards low carbon economies.[1] For this report, we conducted desk research and interviews with leading Ayrton Fund practitioners and international development organisations to analyse data for jobs reported across the Ayrton Fund portfolio, assess reporting methodologies against best practice, and make recommendations for processes going forward.

Learning from best practice: Defining, measuring and reporting green jobs created

This report takes a broad definition of green jobs, including all jobs created under the Ayrton Fund portfolio which contribute to the acceleration of clean energy innovation and demonstration. Key organisations – for example, the International Labour Organisation (ILO)[2] and the UK Green Jobs Taskforce[3] – take a top-down approach, defining green jobs as those which contribute towards environmental objectives, while others include any job working within a green sector, regardless of the specific job activities. Narrower, bottom-up approaches (for example, the O*NET classification) examine jobs at an organisational or individual level and require more granular detail on the specific activities and tasks of a job before classifying it as 'green' or 'non-green'. Narrower definitions, however, require an in-depth analysis to assess consistently, and need adapting for application in different contexts. Broader approaches to defining green jobs are therefore more practical, align with international practice and account for the wide-ranging economic transformation required to transition to a low carbon economy.

Across the literature, jobs impacts are scoped and defined as direct, indirect or induced, depending on their proximity to the intervention.[5,6,7,8,9] Based on methodologies used across economic assessments, these categories characterise job impacts in relation to the project/programme, and the exact scope of each category can therefore vary depending on the nature of the intervention. For example, jobs within a beneficiary company which are not directly created, but are perhaps improved, sustained, and/or made more secure as a result of the support, may be classified as direct or indirect jobs depending on whether the support is, say, a grant or an equity investment. These categorisations can also be used to determine the scope of impacts that programmes monitor.

Generalised definitions are as follows:

- **Direct jobs** are those within the immediate scope of the project and are often immediately attributable to programme funding. Direct jobs may not always be sustained beyond the project. The definition of direct jobs can vary depending on the timescale and geographical scope of the assessment. Direct jobs may include new jobs created and/or pre-existing jobs which have been improved, sustained and/or made more secure as a result of programme funding.
- **Indirect jobs** are those which are supported, though not directly created through the project or intervention, such as employment supported across the value chain. Indirect jobs are generally external to the direct beneficiary. Indirect jobs may include new jobs and/or pre-existing jobs across the value chain which have been improved, sustained and/or made more secure as an indirect impact following on from programme funding.
- **Induced jobs** are those which are stimulated or supported through the increased economic activity and spending of people in direct and indirect jobs.

Once the scope has been determined, the terminology used to report the indicator must reflect the methodology used to measure or model the data, with many key organisations moving towards the broader indicator of jobs 'supported' rather than claiming jobs 'created'. The uncertainty intrinsic to ongoing research, development and demonstration (RD&D) and commercialisation processes means that determining additionality (whether the job would have existed in the absence of the project) and attribution (drawing a direct and proportionate causal link between the intervention and the job), both of which are required to claim job 'creation', is challenging. Shifting the terminology of the indicator towards jobs 'supported' enables more flexibility in assessments of additionality and attribution. Approaches for reporting jobs 'supported' can also allow for measurement of a wider range of employment impacts, such as improving livelihoods and creating additional income streams, which are particularly relevant for capturing impact in energy access contexts. In development contexts, for example, underemployment is often more of a challenge than unemployment, so interventions are more likely to move people from one type of employment to another, rather than creating an additional job in the overall economy. In this context, 'jobs supported' is a more appropriate, practical and relevant indicator of impact than 'jobs created'.

Tracking granular and qualitative data on the types and quality of jobs supported – including whether they are 'decent' jobs, whether they are sustained over time, where these jobs impacts are focused, and who is accessing these opportunities – are important to understand, where practically possible. Whether jobs are 'decent' (which the ILO requires in their definition of green jobs[10]) often includes consideration of the working conditions, health and safety, wages and other remuneration/benefits, labour rights and job security, although definitions are likely to vary across contexts and can be difficult to define consistently. For example, informal employment may not be considered high-quality in some contexts, whereas in other markets the informal economy provides decent, steady and well-paid employment opportunities which should not be discounted. The characteristics of those benefitting from employment are important to understand the distribution of opportunities, particularly for women and youth, and to ensure that existing inequalities are not being embedded or exacerbated. Achieving this level of granularity and disaggregation of data can, however, be time-consuming and resource intensive for programme delivery organisations, so all stakeholders should be aligned on priorities and the value that more granular data will bring.

Creating and measuring jobs across the Ayrton Fund

The Ayrton Fund portfolio has been reporting sustainable, long-term jobs created as a key co-benefit of clean energy innovation interventions. In the first two years of the Ayrton Fund, eight programmes reported jobs created, with a total of 159,727 jobs reported across 2021-23[1]. These include both direct and indirect jobs and span over 30 countries, reflecting the broad impact of interventions.

The **direct jobs** include those created or supported within the beneficiary company, or in the construction, installation and operation and maintenance (O&M) of a clean energy project. Direct jobs also include those within the beneficiary company that have been created or sustained beyond the initial investment. For example, where a company has leveraged funding from an initial grant and used this leveraged funding to set up a factory, direct jobs can include those employed in the factory.

The indirect jobs include those supported or improved through productive use of renewable energy (PURE) technologies outside the beneficiary company. For example, an investee company which develops solar-powered, energy efficient cold storage systems may include in their reporting the indirect jobs supported when this innovative cold storage technology is implemented at a client's produce processing facility. These jobs will also likely include livelihoods improved and additional income streams as a result of access to clean energy, improved conditions or increased productivity.

[1] Including 1,029 jobs reported by the CEIF programme, which were not included in the Ayrton Fund Year 2 Annual Report.

Image credit: Ecobodda, Kenya 2023 – PREO

Key statistics: Jobs reported through the Ayrton Fund

The majority of jobs reported in the first two years of the Ayrton Fund were through the Strengthening Impact Investment Markets for Agriculture (SIIMA) programme and the Transforming Energy Access (TEA) platform:

- SIIMA accounted for 77% of jobs reported in 2021/22 and 24% in 2022/23. In 2021/22, both direct and indirect jobs were included in SIIMA's reporting.
- TEA accounts for 26% of jobs reported, with 98% of these reported through the Transforming Inclusive Energy Markets (TIME) programme, which followed the same approach as SIIMA, reporting direct and indirect jobs in 2021/22.
- Low Energy Inclusive Appliances (LEIA) accounts for 6% of jobs created. These numbers include modelled estimation of indirect jobs in the supply chain, as well as direct jobs created.
- BRILHO Mozambique accounts for 2% of jobs reported, all in the energy generation sector and focusing on solar home systems and improved cooking solutions.
- Modern Energy Cooking Services (MECS) accounts for 1% of jobs reported, all in the clean cooking sector, and including core business staff, sales agents and field staff.

83% of jobs reported through the Ayrton Fund are in sub-Saharan Africa (SSA) and 11% in South Asia (with the remainder in Europe and North America), reflecting localised value creation:

- More than 50,000 jobs have been supported in Ghana, almost 35,000 in Kenya, nearly 6,000 in Tanzania and 2,400 in Mozambique.
- Almost 32,000 jobs were supported in the solar industry in SSA, including solar energy developers, installers, operations and maintenance (O&M), as well as indirect jobs, including livelihoods supported through productive use of renewable energy (PURE).
- Ayrton Fund programmes reported 28,000 jobs created in the PURE sector in SSA, primarily in agricultural processing, cold storage and farming.
- The Ayrton Fund reported creating more than 15,000 jobs in South Asia, spanning India, Myanmar, Nepal, Sri Lanka and Vietnam. Across the region, 77% of these jobs were for women, and most were created in India.

Image credit: Bbox, Rwanda 2024 – TEA

Historically, the International Climate Finance key performance indicator 5 (ICF KPI 5) methodology (which was discontinued by the ICF team in 2020) has been recommended for use across ICF programmes, though in practice different methodologies and definitions have been applied by some Ayrton Fund programmes.

- Programmes take different approaches to defining and measuring direct and indirect jobs, with the scope of assessment varying across projects.
- The jobs data reported through the Ayrton Fund includes jobs supported and improved, alongside jobs created, reflecting the markets in which programmes operate, where clean energy technologies improve livelihoods and support the diversification of income streams as well as create new jobs.
- Programmes differ on whether they report full-time equivalent (FTE) numbers, full-time (FT) jobs only, or the number of both FT and part-time (PT) jobs.
- There is no consistent approach across the portfolio to assessing whether a job is 'decent', and the quality of jobs is generally assessed during the due diligence process, although this is more challenging for indirect jobs.

Methodological challenges to reporting on jobs, which can be mitigated and/or resolved through robust and clear guidance, include:

- Definitions and methodologies on job impacts measurement can be ambiguous and easily misinterpreted. Defining the scope of direct, indirect and induced jobs is challenging and will vary depending on the nature of the project/programme and over time.
- Measuring 'jobs created' and 'jobs supported' can overlap with other impact indicators (for example, productive use of renewable energy), which risks double counting.
- Job creation is often not directly linked to programme KPIs or Theories of Change, so it is deprioritised for impact measurement, with resources diverted elsewhere.
- There are often evolving and differing requirements from different donors for the same programme, which is challenging to accommodate in annual reporting cycles.
- The mechanisms by which jobs are created in innovation contexts is challenging to align with standardised definitions, and therefore requires flexible methodologies.
- Attribution of jobs impacts between partners and across years can be challenging and time-consuming to implement appropriately and consistently, particularly across complex and long-term programmes. A lack of clear guidance on attribution risks double counting and overestimation of impact.

Operational challenges to reporting on jobs, which relate to on-the-ground practicalities and should be considered on a programme-by-programme basis, include:

- Long reporting chains with multiple layers of communication risk time-consuming engagement processes, misinterpretations and misalignment. There can be 6-12-month delays in reporting data on jobs created, particularly for those programmes which are more centrally managed and report through several layers of governance.
- Programmes involving multiple large delivery partners and/or multiple funders can face the challenge of aligning several different reporting requirements; there is a risk of wasting resources on overly burdensome reporting processes.
- It takes time to build capacity across the reporting chain to meet specific reporting requirements; many programmes existed prior to the Ayrton Fund and so have legacy reporting processes built into their operations.


Image credit: Innovex, Uganda 2024 – PREO

Conclusions and recommendations

There is no 'right' way to define and measure the jobs that result from RD&D interventions; methodologies should be designed with programme objectives in mind.

Job creation is a complex topic; in practice, there are significant challenges to measuring, assessing and attributing impacts, particularly in developing markets and innovation contexts. Many Ayrton Fund programmes collect high-quality, detailed data on jobs, though approaches are currently not consistent across the portfolio. A new set of guidance that meets the priorities of the Ayrton Fund, while being flexible to incorporate programme-specific considerations, would support the achievement of greater consistency. Recommendations to support a new methodology include:

1. Discontinue use of the now defunct ICF KPI 5 methodology across the Ayrton Fund portfolio and develop new guidance and criteria on defining, quantifying and reporting jobs.
2. Implement new guidance and criteria for jobs reporting which is clearly scoped and supports understanding of the types of jobs created, as well as the numbers.
3. Build flexibility into the new guidance and criteria to allow for project-specific considerations and KPIs, while enabling consistent reporting and aggregation at portfolio level.
4. Consider the monitoring and evaluation (M&E) budget and resources required for the level of data disaggregation requested, and work with programmes to determine the data that is required for their reporting and the value and priority that should be placed on this in resource- and time-constrained settings.
5. Define and communicate the importance and objectives of collecting jobs data and determine how the data will be used, ensuring that this is directly aligned with programme KPIs and Theories of Change.

The outline of a proposed alternative methodology is set out towards the end of the report. Any new methodology must be tested with a range of programme delivery partners and piloted before being implemented formally. It should also be adapted and applied on a programme-by-programme basis to facilitate effective, efficient, and relevant data collection and reporting, while maintaining consistency across the portfolio.

1. Introduction

The creation and support of green jobs is a critical outcome of development and clean energy interventions. Green jobs are pivotal in supporting the just transition, ensuring that the move to a low carbon energy system occurs in a way which maximises local socioeconomic opportunities and creates decent livelihoods, supporting long-term local economic development.[11] Employment creation is therefore a key mechanism by which to maximise the sustained impact of clean energy interventions, ensuring long-term, positive impacts beyond the duration of individual projects.[12] The reporting, measurement and assessment of programme impacts on employment is central to understanding and optimising these opportunities.

The Ayrton Fund's portfolio of programmes and projects accelerate the clean energy transition in developing countries, with jobs created being a key outcome in the portfolio's Theory of Change and a measure of on-the-ground impact. The Ayrton Fund is the UK's up to £1 billion commitment to support clean energy RD&D, managed by the UK's Foreign, Commonwealth & Development Office (FCDO), the Department for Energy Security and Net Zero (DESNZ) and the Department for Science, Innovation and Technology (DSIT). The Ayrton Fund operates in a wide range of geographic regions, with a strong focus on SSA, South Asia, and the Indo-Pacific region. Within the first two years of the Ayrton Fund (April 2021 to March 2023), more than 159,000 jobs were created and supported across its programmes and projects, through direct funding and support, as well as through broader leveraged impact, supporting indirect jobs across value chains and in local communities.

This report assesses the jobs created across the Ayrton Fund portfolio, the methodologies used to define, measure and report these, and makes recommendations to align with best practice approaches. The report first summarises key best practice learnings from the literature and interviews with key international organisations, before presenting analysis of the Ayrton Fund's jobs data and methodologies. Supplemented with case studies to highlight the personal stories and on-the-ground experience of employment creation, the report aims to provide insight into the types of jobs created through the Ayrton Fund's interventions. By comparing methodologies used by Ayrton Fund programmes against best practice approaches, recommendations are made for green jobs measurement and reporting going forward.

2. Methodology

This study set out to achieve the following objectives:

1. Assess the Ayrton Fund's green jobs measurement and reporting methodologies in relation to best practice (that exists both within the Ayrton Fund portfolio and beyond), then developing, documenting and disseminating recommendations to inform future reporting.
2. Disaggregate and analyse the jobs results reported to date by Ayrton Fund programmes, with analysis of the results achieved, to understand where and across which sectors these have been delivered.
3. Draw out key lessons for best practice which can be applied across the Ayrton Fund portfolio, including for the improvement of data collection and reporting.

To achieve these objectives, the following approach was followed:

1. **Review of best practice on jobs reporting and measurement in international development, innovation, and RD&D interventions.** We carried out a desk-based literature review alongside interviews with key international organisations, including the US Agency for International Development (USAID), the World Bank Energy Sector Management Assistance Program (ESMAP), the African Development Bank (AfDB), Power for All, as well as FCDO and DESNZ. This research aimed to understand the approaches taken by other key members of the international development and innovation community, and their reasoning behind the definitions and methodologies they use.
2. **Review of reporting of jobs created across the Ayrton Fund.** This included collating disaggregated data on jobs reported from the relevant Ayrton Fund programmes. We developed a data collection template, based on variables of interest to the project team and FCDO (this template can be found in Appendix 4). This template was shared with Ayrton Fund programmes which had reported jobs created in the period 2021–23. The disaggregated jobs data was then reviewed, with basic analysis to understand key trends. We then interviewed key Ayrton Fund practitioners (see the full list of interviewees in Appendix 1) to establish the definitions and methodologies applied in their reporting of jobs created. Case studies and illustrative personal stories were also developed

for inclusion in the report, to provide further context around the nature of jobs created, and to illustrate the broad beneficial impacts arising from Ayrton Fund interventions.

3. **Assessment of best practice to inform recommendations.** The recommendations in this report aim to identify where Ayrton Fund programmes could enhance job reporting processes to ensure consistency across the Ayrton Fund portfolio, aligned with international best practice. Recommendations have also been developed to inform future ambitions and strategy for sustainable job creation through Ayrton Fund interventions.

Scope and limitations

This research is guided by the following scope:

- This report focuses on jobs created in the first two years of the Ayrton Fund (April 2021 to March 2023). Where programmes were operational prior to the establishment of the Ayrton Fund, jobs created prior to 2021 are not included.
- This report focuses on definitions and methodologies around jobs impacts in the context of innovation and RD&D programmes. Approaches to defining and calculating green jobs can vary significantly depending on the objective; for example, assessing employment impacts at an economy level due to a policy intervention. This research is focused on a development intervention context.
- This research focuses on Ayrton Fund programmes that have reported jobs, which is not the full scope of the Ayrton Fund portfolio but represents around 54% of the portfolio's spend to date.
- This research focuses on understanding methodologies used by programme delivery partners, not on the experiences of those receiving support, i.e. companies who self-report jobs created to programme delivery managers were not interviewed as part of this study.

Limitations of this research include:

- Not all the Ayrton Fund programmes that had reported jobs created were able to provide comprehensive disaggregated data that aligned with numbers previously reported. This was due to historic data collection processes, or relevant colleagues no longer working at the organisation, meaning the relevant data was no longer accessible. For consistency, the values used in this report are those that were reported through the disaggregation templates. The variations between these data and those that were included in the Ayrton Fund Year 2 report are detailed in Appendix 3.
- For similar reasons, not all relevant Ayrton Fund programmes were interviewed. In some cases, the key contacts on historic reporting had since left the organisation or were not available to speak with us.
- Not all variables of interest were collected from partners; for example, skill level, FT/PT, short-term/long-term.


Image credit: SokoFresh, Kenya 2022 – PREO

3. Learning from international best practice: Defining, measuring and reporting on green jobs

3.1 What is a 'green' job?

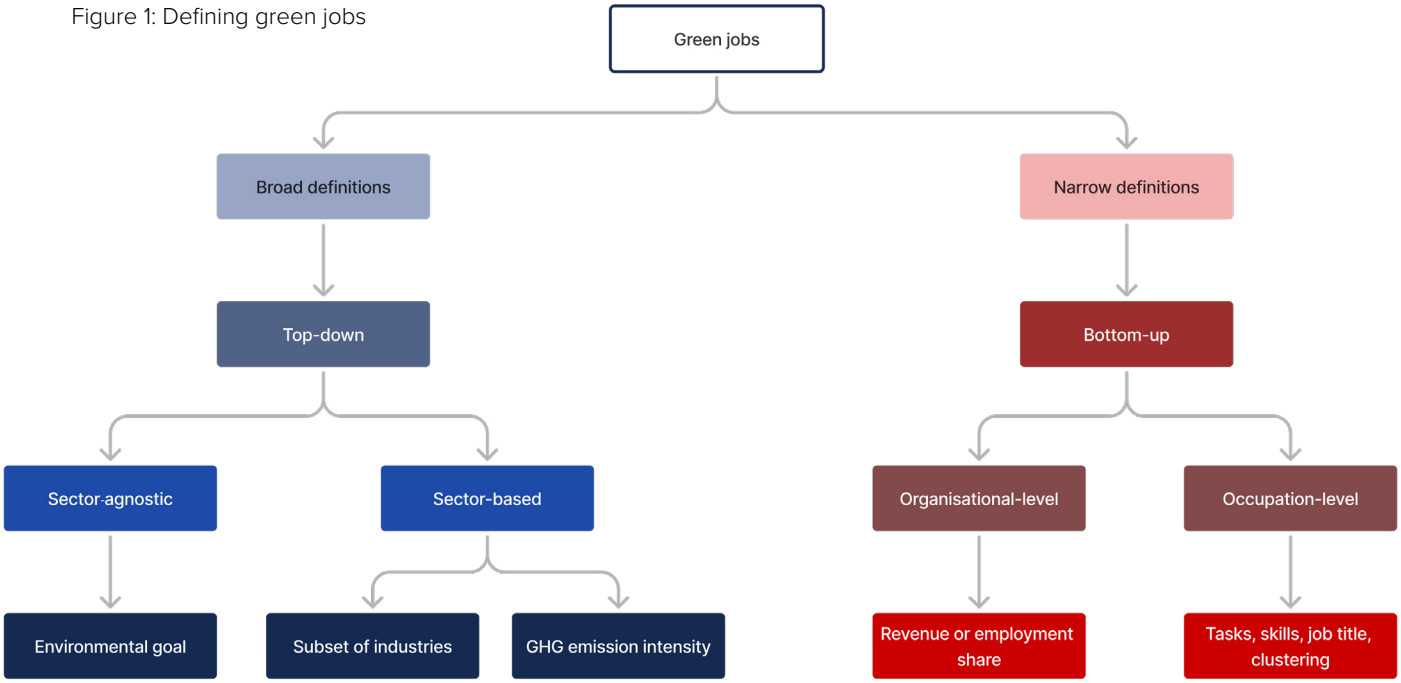
There is no agreed approach to defining what constitutes a green job, though definitions can be categorised as broad (top-down) or narrow (bottom-up). The broadest definitions (for example, those taken by the ILO[13] and the UK Green Jobs Taskforce[14]) take a green job to be any that contributes to the achievement of environmental objectives, regardless of the industry in which the job operates. The UK Green Jobs Taskforce defines a green job as "employment in an activity that directly contributes to – or indirectly supports – the achievement of the UK's Net Zero emissions target and other environmental goals".[15]

In contrast to these 'sector-agnostic' approaches, other top-down approaches include any job working within a defined 'green sector' to be a green job. Narrow approaches require more granular detail on the specific activities and tasks that a job entails before classifying it as 'green' or 'non-green', and often examine jobs at an organisational or individual level. A table summarising key definitions of green jobs is included in Appendix 2. The range of different approaches means there is limited consensus on what a green job is, making it challenging to compare and aggregate data from sources that apply varying definitions.

Broad, or 'top-down' approaches that define green jobs by their sector are relatively straightforward to implement but can lack nuance and granularity. Broad, sector-based approaches are used often in programme reporting and research projects due to their flexibility and replicability. Sectors can include, for example, renewable energy, environmental protection, and recycling. Other sector-based definitions calculate the greenhouse gas (GHG) emissions intensity of certain industries and use this to classify industries based on 'greenness'. However, broad, sector-based approaches risk overestimation as they include all jobs within an industry (such as a security guard), as green, whereas that same occupation would not be defined as green in another, non-green sector. Simultaneously, there is a risk of underestimation where there are workers focused on sustainability in 'non-green' industries, such as those developing low carbon vehicles in the motor industry, or educators raising awareness of environmental challenges.[16]

Narrow, bottom-up approaches provide a more granular view on green jobs but can be challenging and resource-intensive to implement. Occupation or task-based (bottom-up) definitions provide a more detailed assessment of what can be considered a green job, accounting for the specific activities, outputs and services that make up the role. Examples of this include the US Department of Labour Occupational Information Network's (O*NET) green jobs classification, which defines 12 sectors of activity and assesses the 'greenness' of occupations within these, and is often cited as best practice.[17] The Organisation

Figure 1: Defining green jobs



for Economic Co-operation and Development's (OECD) 'green task' jobs definition is based on the O*NET taxonomy and defines jobs as green if at least 10% of their tasks are green.[18] However, this type of assessment requires a detailed typology developed for application in specific contexts. The O*NET classifications, for example, were developed in 2010 for the US market, so require significant adaption for use in other contexts and are likely to be out of date with new and emerging green industries and jobs.

In the context of clean energy and development programmes, broad approaches are relevant, practical to implement and account for the range of transformation required to transition to a green economy. Complex bottom-up approaches are time- and resource-intensive to apply and are generally not feasible in regular programme reporting, particularly when attempting to aggregate data over a range of geographies, sectors and contexts. Definitions of green jobs that are too narrow can also risk missing out on the broader economic transformation required across all economic sectors and within non-green roles to achieve global environmental objectives. Broad approaches are particularly relevant where a portfolio or programme has a specific 'green' objective, such as reducing GHG emissions, and where all jobs created through interventions are contributing to that objective. This report therefore takes a broad approach to green jobs, including all jobs which contribute towards the objective of accelerating clean energy innovation and deployment.

3.2. Measuring green jobs created

3.2.1. How are jobs impacts measured?

In assessing the impact of development assistance, organisations and programmes take varying approaches to the scope of jobs that they measure and track. Most aim to find a balance between an approach that provides high-quality, relevant and accessible data, while avoiding overly burdensome approaches that divert resources away from programme delivery. There are a range of employment impacts of development interventions – from those that are directly funded or enabled by programme funding or activities, to economy-wide employment opportunities created through increased economic activity – and frameworks can be adapted to capture the most relevant impacts.

It is common practice to categorise jobs impacts into direct, indirect and induced, although interpretations of these categories, and which types are measured and reported, vary.[19,20,21,22,23] This categorisation follows general practice from economics and input-output models (see below), which uses this classification to define economic impacts in relation to interventions.[24] General definitions used, and relevant examples, are as follows:

- **Direct jobs:** Those jobs directly and immediately attributable to the programme or intervention, usually within the beneficiary company. For example, if an intervention is funding the installation and operation of a mini-grid, the direct jobs created would include those employed to construct and operate the mini-grid. If grant funding is provided to a business, direct jobs created would be those directly paid for through the grant money, and further jobs supported within the company through leveraged funding or growth can be classed as direct jobs supported.
- **Indirect jobs:** Those jobs that are enabled by, but not directly created through, the programme or intervention. This includes jobs upstream or downstream in the value chain. In the mini-grid example, indirect jobs would encompass those employed to manufacture the mini-grid components, and those whose livelihoods are enabled by new and improved energy access in the community. For a company receiving grant funding, indirect jobs would include those enabled by the productive use of the company's services or technologies, or jobs supported in the company's suppliers.
- **Induced jobs:** Those jobs supported through the increased economic activity and spending of direct and indirect workers. This would include those working in shops or restaurants who are supported by the custom of indirect and direct workers, and enhanced employment opportunities across the wider economy. Induced jobs in energy efficiency programmes, for example, might include jobs created when household financial savings occur and there is an implied increase in expenditure on other goods and services.[25]

Measurement of direct jobs focuses on those within the immediate scope of the project, though this may risk underestimation of the project's impact. Several methodologies prioritise measurement of direct jobs only, including the ICF methodology (see Figure 3).[26] However, indirect jobs are often considered to be within the 'sphere of influence' of the project or intervention, and therefore a relevant and prioritised indicator of impact. In the context of Ayrton Fund RD&D programmes, indirect jobs will be those enabled by the provision of innovative clean technologies, services and business models, and are an important co-benefit of interventions. Indirect jobs often also include micro-entrepreneurs and the self-employed, as well as employment that has been enabled in

supported companies through leverage of the initial grant funding. For some programmes, such as those focused on productive use of energy or leveraging investment, these indirect beneficiaries will be the primary target for interventions.

Indirect and induced jobs may not be directly measurable; programmes often utilise modelling or estimations. While some indirect jobs can be counted and reported by the companies or projects receiving support, this is likely to underestimate the full indirect and induced impact due to the challenges of tracking across value chains and the wider economy. Methodologies have been developed to measure and assess the indirect and induced impacts of development interventions, including multiplier analysis,[27] input-output (IO) models, and micro-econometric analysis. IO models, such as the Joint Impact Model (JIM)[2], require a set of inputs (e.g. direct jobs, appliances sold) and use a set of multiplier factors to obtain the indirect and induced impacts.[28] These multipliers are typically based on a country or industry, informed by specific local factors and defined by a geographical boundary.[29]

There are limitations to the relevance of IO models in development contexts and for programme-level reporting. IO models rely on good quality, comprehensive data to inform the inputs and the multipliers. This can be challenging to obtain, particularly in developing contexts where the uncertain nature of labour markets can make it difficult to place values on employment effects.[30] Furthermore, IO models, and the data required to implement them, are complex and resource-intensive, and therefore not necessarily appropriate for annual reporting processes. For the reasons stated, this type of calculation is more appropriate in an evaluation of aggregated programme activity and impact following completion of the intervention, rather than as an ongoing reporting mechanism.

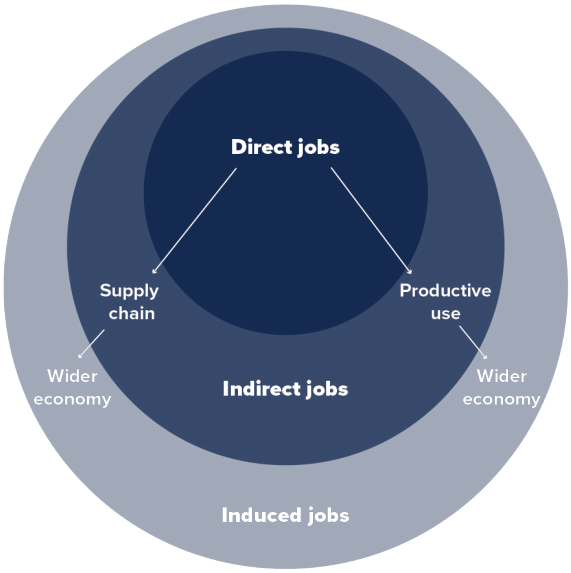


Figure 2: Scoping direct, indirect and induced jobs

Figure 3: Summary of the ICF direct jobs created assessment methodology

ICF KPI 5 Methodology: Overview of the ICF jobs created methodology note

The ICF methodology was developed to provide data on direct jobs created through ICF projects and programmes. Discussions with the ICF team indicate that the methodology was discontinued in 2020 due to challenges in applying it at a project level and obtaining data that aligned with the methodology. Historically, some Ayrton Fund programmes have been using the ICF methodology for the purposes of tracking job creation. Key aspects of the methodology are outlined below.

- **Units:** Number of individual direct jobs
- **Headline data:** Absolute number of direct jobs created, with explanatory text justifying assessment of additionality and attribution.
- **Disaggregation required:** Skill level (skilled/unskilled), contract status, sex, gender, geography and age. Skill level is used as a proxy for employment opportunities accessible to the poor, and contracted jobs is used as a measure of formality.
- **Exclusions:** Indirect, induced, and displaced jobs are not included. The ICF methodology therefore does not include new employment created in the supply chain of a supported company.

Methodology:

1. Quantify the number of direct jobs created.
2. Determine total additional jobs by subtracting 'business as usual' job creation from total created jobs.
3. Attribute jobs among all partners responsible for job creation.
4. Report direct jobs created, disaggregating across key dimensions.

[2] The JIM was launched in 2021 by a consortium of international finance institutions (IFIs) and consultancies. The JIM is a publicly available web-based tool which takes input data such as revenue and power production from.

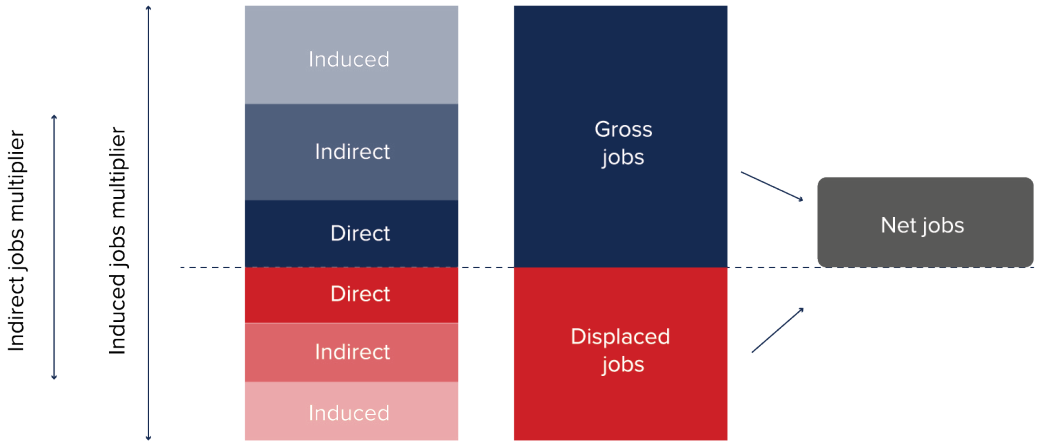


Figure 4: Schematic demonstrating net jobs impact through taking the difference between total gross jobs created and the displaced jobs to obtain the net impact. Adapted from: UK Energy Research Centre (2014) Low carbon jobs

3.2.2. How do organisations define and attribute job creation?

Defining jobs 'created' is not straightforward, particularly in development and innovation contexts. While the World Bank have included indirect and induced jobs, as well as direct jobs, in their 'job creation' figures[31], the AfDB cites all jobs reported as 'supported' rather than 'created'; the UK government's DESNZ is also moving towards a jobs 'supported' terminology. This is generally a result of the resource required to demonstrate that an intervention has 'created' a job, requiring evidence of both attribution and additionality, which can be challenging to build into programme reporting cycles. A less formal approach to distinguishing between jobs created and supported uses the former to refer to new jobs, with the latter referring to jobs that existed previously being maintained through programme support. Definitions differ and it is therefore important to define what is and is not included in each definition for the purposes of their application.

Claiming job creation requires programmes to demonstrate that the jobs are directly attributable to their intervention. Attribution might be straightforward in some cases, such as where a job is paid for directly through grant funding. In other cases, it will require the judgement and assessment of monitoring officers to determine that jobs were created as a direct result of the programme. Attribution becomes particularly complex when there are multiple donors and private financers involved. In such cases a common approach is to divide the impact according to the proportion of funding contributed by a given actor; thus, a donor who has funded 10% of a project will report 10% of the jobs created. However, this is challenging when considering non-financial interventions, such as governance advice or acceleration support; some argue that this proportion of funding approach misses key elements of support that are not captured by financial considerations alone.

Additionality requires determining that jobs would not have been created in the absence of the intervention or programme. The ICF approach, for example, asks that additional jobs are identified through calculating the number of jobs that would have been created under a 'business as usual' (BAU) scenario and subtracting these from the total jobs created to obtain a 'net' number of jobs. The German Agency for International Cooperation (GIZ), too, requires at a minimum a 'before-after' comparison.[32] Estimating the counterfactual (what would have happened without the intervention) to identify the number of jobs that are additional is complex and resource-intensive, and impossible to prove conclusively. Many programmes and organisations conclude that the capacity required is excessive for the purposes of the data collection. Furthermore, it is challenging to define the scope of what the jobs must be additional to – i.e. the company receiving support, the sector or the overall economy – with the answer likely to vary across programmes, sectors and regions.

In practice, innovation and RD&D programmes take the number of jobs that existed prior to the intervention, or assume zero jobs, as a baseline to calculate the additional jobs. Assessing the counterfactual in innovation contexts is particularly challenging due to the volatile and uncertain nature of early-stage ventures. In many cases, it is impossible to know whether the company or job would have existed, or continued to exist, without programme support. ICF methodology recommendations on measuring additionality include assessing whether funding is supporting new or pre-existing investments

or companies, and the type of support provided (e.g. grant funding versus technical assistance). However, most programmes interviewed for this study cited challenges in using this methodology due to its subjectivity and resource-intensive requirements, particularly where there is no in-country monitoring officer to make on-the-ground observations.

Few approaches account for 'displaced' jobs. Displaced jobs refer to the fact that new jobs created will be filled by people who already have jobs, and so these jobs created do not necessarily represent a net gain in employment across the economy. This is where it becomes important to define what the jobs created are additional to. In the context of a programme, jobs might be additional to the company or project, but not to the sector or economy as a whole. This is not seen as a problem or issue with the data collection, given the challenges of calculating displaced jobs in the context of a specific intervention, though should be specified in methodologies and when sharing data. Many clean energy access innovations are disrupting or displacing previous incumbent energy industries and jobs, such as in the kerosene or charcoal value chains, so where programmes may not create a net increase in employment across the economy, they are supporting the transition of workers from non-green to green industries.

Development contexts introduce specific challenges to claiming jobs 'created', given the nature of the labour markets. In emerging economies, 'unemployment' tends to be relatively low (and social safety nets for those unemployed, such as benefits, may be limited or non-existent), and underemployment is the primary challenge.[33] This means that people are not without work but are unable to earn a sufficient income to lift themselves out of poverty. Jobs enabled through programmes are therefore more likely to move people from one type of employment to another, or improve their existing income, rather than lifting them out of unemployment. Jobs are therefore not so much being 'created' in the overall economy but are being displaced, shifted or improved.

Key organisations are moving towards the broader indicator of jobs 'supported'. This requires a less extensive and complex methodology which does not include a need for assessment of the counterfactual to identify 'additional' net jobs and can be more flexible in evidencing causality and attribution. Methodologies that report jobs 'supported' rather than 'created' can be particularly relevant in innovation contexts where jobs in start-ups are not necessarily created by the support but are directly maintained through funding and investment. 'Jobs supported' definitions can also be broader to account for the range of employment impacts that development programmes support, including additional income streams and improved livelihoods.

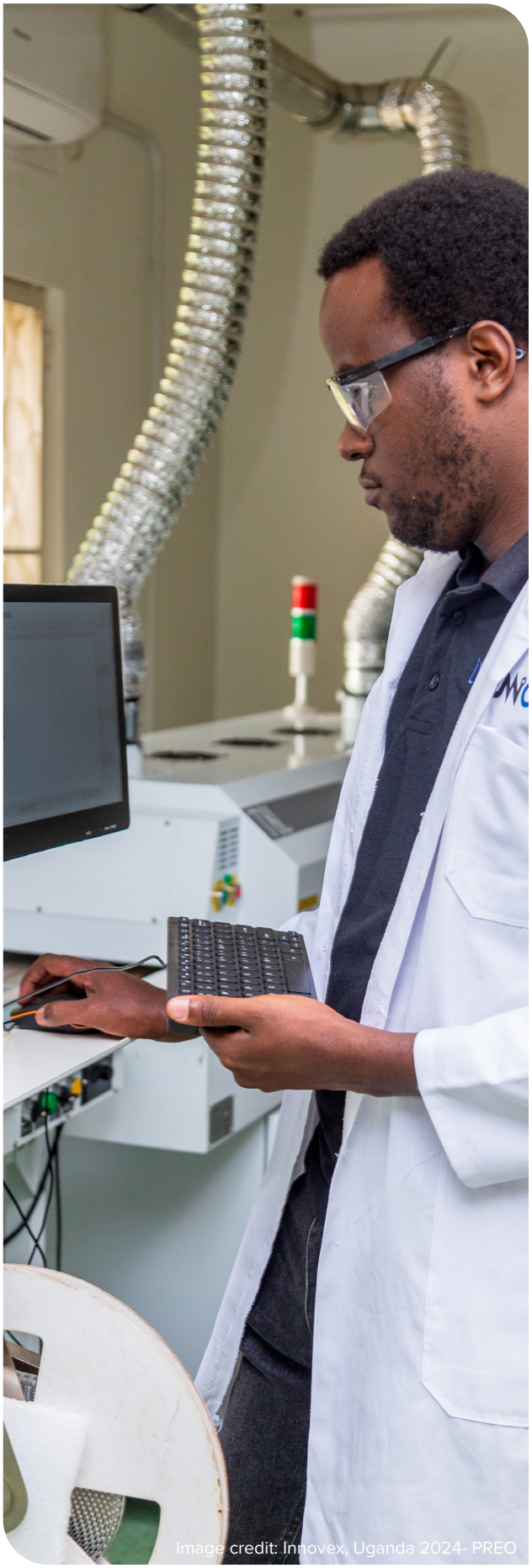


Image credit: Innovex, Uganda 2024- PREO

3.2.3. Understanding the quality of jobs created

Measuring the 'quality' of a job is multi-dimensional and generally requires the judgement of project monitoring officers who are familiar with the context. There are multiple ways to define a 'decent' job; these can include considerations of working conditions, wages and other remuneration/benefits, labour rights, skill level and job security. The ILO defines 'decent work for all' as productive work that delivers a fair income, with workplace security and social protection, prospects for development and social integration, freedom to organise and equality of opportunity.[34] In a World Bank assessment of global job quality, job quality is defined using four dimensions: sufficient income, access to employment benefits, job stability and adequate working conditions.[35] Whether a job is 'decent' can also be measured in accordance with national labour laws or standards, though implementing this in practice is complex. The ILO requires that jobs which are defined as 'green jobs' are also decent, and highlights that applying international labour standards to emerging green sectors can support the growth of high-quality employment opportunities.[36]

Assessment of whether jobs are formal (contracted) or informal (uncontracted) does not necessarily reflect the quality of the employment. In many geographies, informal jobs are generally lower paid, with fewer rights for workers, and formalising the economy is critical to advancing development and creating decent jobs. However, in other markets, informal employment offers high-quality, steady income-generating opportunities that would not otherwise be available. This might include temporary and/or part-time work, such as casual, day-to-day construction work, or uncontracted income generation as a food delivery or taxi driver. Informal jobs are also likely to include self-employment opportunities and micro-entrepreneurs (for example, see Case study 3: Prado Power, Nigeria). The flexibility, too, of uncontracted or informal work can allow women to generate income around the domestic or childcare responsibilities that often fall to them.

The characteristics and demographics of those benefiting from employment created are important to understand such as the distribution of opportunities, particularly for women and youth. Most methodologies highlight the importance of tracking the gender and age of beneficiaries, with employment for women and youth a key driver of long-term, sustainable, equitable development. For example, while informal work can be a positive opportunity for women, enabling access to employment and income, it is important to understand whether women are over-represented in these types of roles and, therefore, whether inequalities are being embedded and/or widened. Other variables of interest are likely to include whether jobs are short-term or long-term, PT or FT, and the skill level of the jobs. Measurement of these can support understanding of the types of jobs that are being created, and whether opportunities are being created equitably.

Where the jobs are being created is a key measure of local impact, particularly in development and innovation interventions. If international companies are involved, it may be important to recognise what share of jobs created or supported are 'in-market', thereby estimating the extent to which jobs created will deliver local benefits, including income uplifts and expansion of the local economy as employees spend their increased incomes on other services. Indirect and induced jobs may be less localised than direct jobs, where value chains can extend beyond the community, region or country of the direct beneficiary. Local manufacturing and locally led projects and initiatives are therefore crucial to ensuring that economic opportunities can be retained locally.

Image credit: Ampersand, Rwanda 2024 – TEA

Case study 1: Innovex, Uganda

Innovex is a Ugandan company that aims to spur Africa's social and economic transformation through the development of novel technologies. Their Internet of Things solution, REMOT, has been used by more than eight countries in Africa, by solar companies and solar energy researchers, to provide after-sales service support, remotely monitor and control solar photovoltaic (PV) systems and equipment, and support preventative maintenance and repair activities.

Under the TEA platform, the Powering Renewable Energy Opportunities (PREO) project funded the setup of Innovex's initial pilot facility and provided funding to train and hire engineers and technicians. Today, Innovex has significantly expanded its manufacturing and RD&D operations, creating 50 direct jobs with a focus on supporting women and youth. Notably, Innovex ringfences roles in the manufacturing of electronics for women. Continued support through PREO has facilitated the establishment of valuable networking opportunities, partnerships and client relationships, leading to an expanded market presence for Innovex, and supporting the creation of further local employment opportunities.

> *Joining Innovex was a turning point. Before, I was unsure of my abilities, especially when it came to leadership and public speaking. But the company invested in me, providing opportunities and mentorship that helped me blossom. Now, I stand confidently as a leader, representing Innovex with clarity and passion. My income has grown significantly, allowing me to provide for my family and achieve financial goals I once thought were out of reach. Additionally, the company's events and network have connected me with inspiring individuals in the engineering and technology sector, further enriching my professional journey.*

Figure 5: Maria, Production Lead Technician at Innovex, Uganda. Source: Innovex

> *The journey from being an individual contributor to becoming the team lead hardware engineer has been both personally rewarding and professionally transformative. The project has played a pivotal role in not only shaping my career trajectory but also in creating substantial employment opportunities within our team.*
>
> *When I initially joined as a hardware engineer, I was enthusiastic about contributing to sustainable technology development. With the support from PREO and the Energy Catalyst Initiative, our projects gained momentum, and my role evolved to lead the hardware engineering team. This transition not only allowed me to apply and enhance my technical skills but also exposed me to leadership responsibilities.*

Figure 6: Mubiru, Head of Hardware RD&D at Innovex. Source: Innovex

4. Creating and measuring jobs across the Ayrton Fund

4.1. Jobs created by the Ayrton Fund

The Ayrton Fund portfolio targets sustainable, long-term jobs as a key co-benefit of clean energy innovation interventions. Several Ayrton Fund programmes work directly with project beneficiaries to collect jobs data, which is generally self-reported by the company or beneficiary, and then verified by the relevant monitoring officer. These responses are then aggregated at a programme and portfolio level. In the first two years of the Ayrton Fund, eight of the 23 programmes reported jobs numbers, with a total of 159,727 jobs reported across 2021- 23[3], as presented in Table 4. These include both direct and indirect jobs and span more than 30 countries.

[3] This value includes the 158,698 jobs reported in the 2021-23 reporting period, as well as 1,029 jobs supported through CEIF, which were supported through interventions in 2021 but not reported at a portfolio level in this period. All charts exclude the CEIF numbers unless otherwise specified.
[4] Not included in the Ayrton Fund Y2 Annual Report

Table 4: Jobs reported in the Ayrton Fund Year 2 Annual Report

Programme	Green jobs created 2021/22	Green jobs created 2022/23	Total
SIIMA	94,000	8,091	102,091
TEA	21,271	19,370	40,641
LEIA	6,972	2,817	9,789
BRILHO Mozambique	2,821	2,401	5,222
CEIF[4]	1,029	-	1,029
MECS	373	379	752
GCRF – Energy Catalyst	-	156	156
CHIC	22	25	47
Total	126,488	33,239	159,727

Overview of the available data and limitations

Programmes disaggregated the available jobs data according to a standard template developed for this analysis. We note the following limitations of the dataset:

- A small minority of the numbers presented in the following analysis do not directly correspond to those reported in the Ayrton Fund Y2 Annual Report. This is a result of historical delays in reporting which meant values were not included in annual totals but are included when looking at retrospective data.
- Jobs created at a portfolio level are reported incrementally (annual values), while many programmes report cumulatively. At portfolio level, incremental values are calculated by taking the difference between subsequent cumulative totals which reflect the peak numbers of jobs each year. This helps avoid double counting by looking only at the difference between reporting periods. However, this introduces challenges in identifying which jobs had been included in the Ayrton Fund annual values.

For example, if 10 cumulative jobs are reported in 2021/22 and 12 cumulative jobs are reported in 2022/23, at a portfolio level this is reported as two jobs created in 2022/23. However, given that, for example, five jobs may have been created and three jobs lost, the jobs 'created' data shared at programme level reflects the five jobs created and not the 'net' two jobs created. The dataset analysed here therefore included the total jobs created (i.e. five, rather than two, in the previous example), leading to some discrepancies between the total values.

- Not all programmes were able to provide data against all the requested variables, and some programmes did not provide any data.
- Each programme takes different approaches to defining, measuring and reporting on jobs created, which can make comparison across programmes challenging. The data have therefore been aggregated where possible and analysed in sub-sets where relevant.
- The template was not comprehensive in requesting all the data which are tracked by some projects (e.g. skill level, or full-time/part-time), so some programmes collect data which go beyond the disaggregated set requested for this study.
- Fifteen Ayrton Fund programmes (not included in the table above) have reported zero jobs. This may reflect challenges in measuring and reporting rather than zero job creation, so this dataset is a representation, rather than a comprehensive assessment, of the Ayrton Fund's job creation impacts.

The following sections present first a high-level overview of the disaggregated dataset, before presenting more detailed analysis and findings.

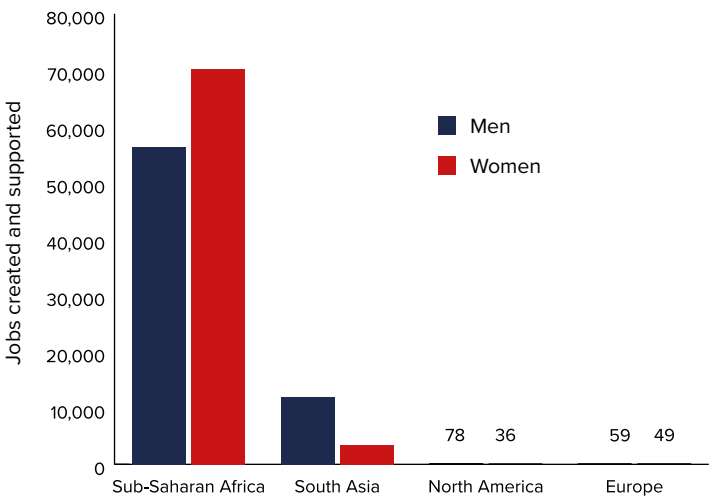


Figure 7: Jobs reported by region

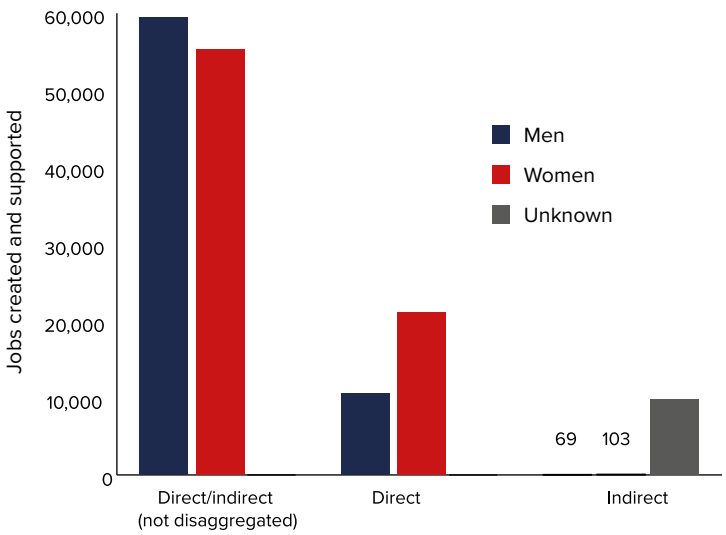


Figure 8: Jobs reported by direct and indirect classification


Image credit: InspiraFarms, Kenya 2024 - PREO

4.1.1. High-level findings

The vast majority of jobs reported through the Ayrton Fund (83%) are in SSA, reflecting local value creation and on-the-ground impact. 11% of the jobs were reported in South Asia, with the majority of these in India. A very small proportion of jobs are in North America and Europe, which are likely to represent direct employees within beneficiary companies. 73% of jobs created are direct/indirect, reflecting the large number of jobs reported through the SIIMA and TEA – TIME programmes. Most of the indirect jobs (9,780) were reported through LEIA, calculated using an estimation of jobs created per appliance sold. The remainder of the indirect jobs are manufacturing roles created in India through the MECS programme, enabled through enterprise and entrepreneur development. All other programmes reported direct jobs only, and so the indirect jobs impact is not captured for most programmes.

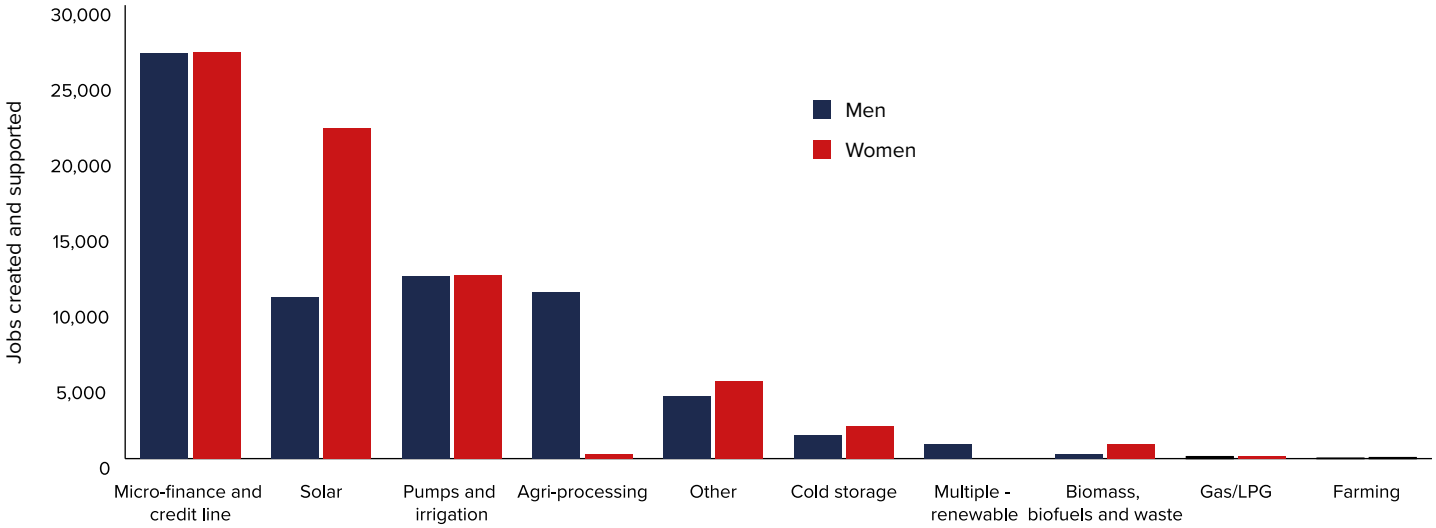


Figure 9: Jobs reported by technology

Micro-finance, solar and farming equipment account for a majority proportion of the jobs created through Ayrton Fund interventions. More than 50,000 of the jobs created in micro-finance and credit line were in Ghana through one company which supports rural financial inclusion, supported by the SIIMA programme. These jobs are likely to include smallholder farmers who have increased access to digital financial services. They are likely to be indirect jobs, including increased income and additional income streams, which have improved farmers' livelihoods. The gender split has been assumed by the programme here, rather than directly observed, due to the nature of the intervention and challenge in collecting data. More than 30,000 jobs were created in solar, with two thirds of these jobs for men, reflecting global renewable energy employment trends. The vast majority of jobs created in solar are in SSA, with a minority in South Asia, Europe and North America. In agri-processing a very high proportion of the jobs have been for women, reflecting the impacts of one project in particular which created more than 10,000 jobs for women in India, through the SIIMA programme. By contrast, more than two thirds of the jobs created in the solar industry are for men, and one third for women, reflecting broader global trends in renewable energy employment.

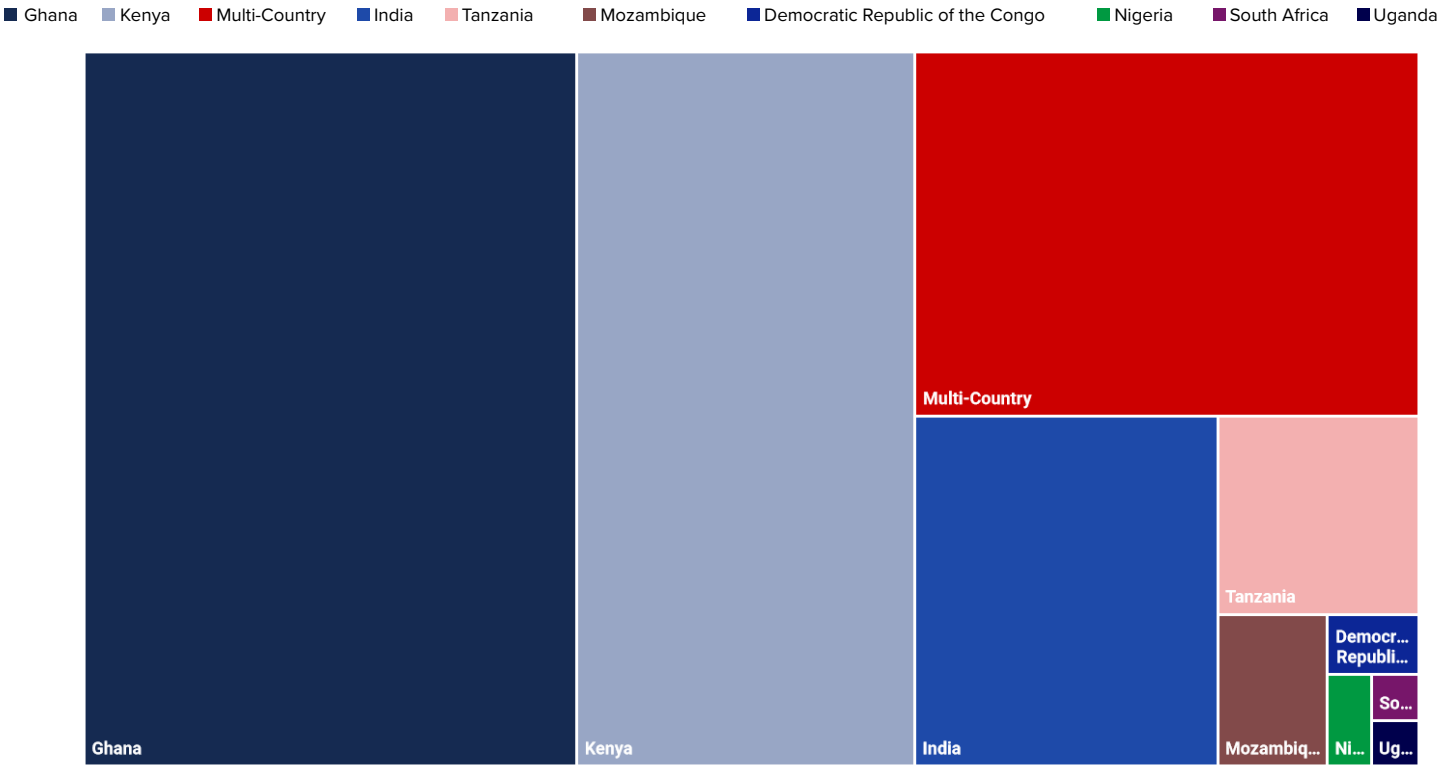


Figure 10: Jobs created and supported by country (top 10 by number of jobs)

4.1.2. Jobs created by programme

The vast majority of jobs reported in the first two years of the Ayrton Fund were through the SIIMA programme and the TEA platform. SIIMA accounted for 77% of jobs reported in 2021/22, and 24% in 2022/23. This is primarily due to historical reporting methods, which meant that in 2021/22, both direct and indirect jobs were included in reporting. This was changed in 2022/23 by the Shell Foundation, who operate the SIIMA programme (and similarly for the TIME element of TEA, TIME also being delivered by the Shell Foundation) to align with the ICF methodology, resulting in the reduced number of jobs reported against the SIIMA programme for the second reporting year. The TIME programme accounts for 98% of jobs created through the TEA platform across both years, with the same reporting practices which included both direct and indirect jobs having been applied by the Shell Foundation for TIME in 2021/22 but only direct jobs in 2022/23.

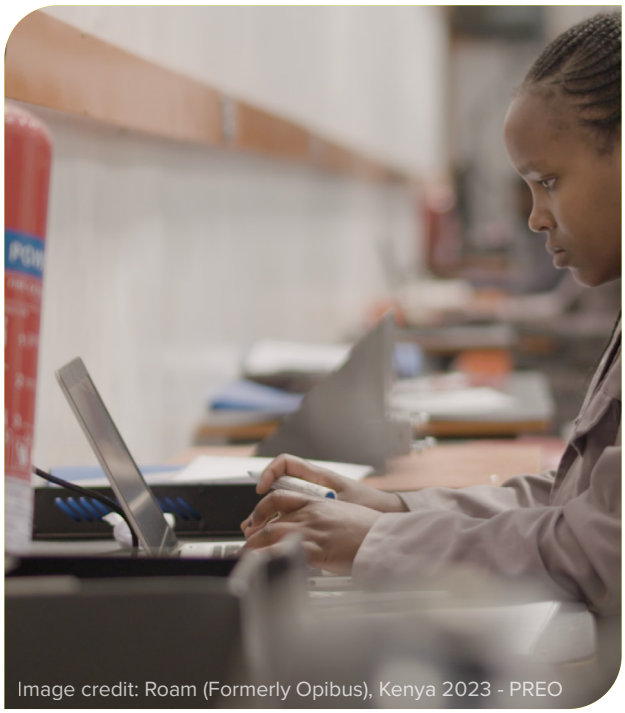


Image credit: Roam (Formerly Opibus), Kenya 2023 - PREO

The indirect jobs reported include those created through productive use of clean energy technologies, where funding has been used to support enterprise development and entrepreneurship, as well as those created through the leveraging of grant funding. For example, where initial grant funding or investment has been leveraged to set up a factory which has then gone on to create jobs, these have been included as indirect jobs. The approach taken by TIME (within TEA) and SIIMA in measuring indirect jobs in 2021/22 was project-specific, with the inclusion of relevant indirect jobs determined on a project-by-project basis. For example, a project investing in early-stage companies is likely in their assessment of indirect jobs created and supported to include the jobs created within those companies following the investment, as well as including the jobs supported through the provision of the companies' innovative technologies or services to clients in their value chain. So an investee company that develops solar-powered, energy-efficient cold storage systems will include in their reporting the jobs supported when this innovative cold storage technology is implemented at a client's produce processing facility, as demonstrated in Case study 2: InspiraFarms Cooling, Kenya.

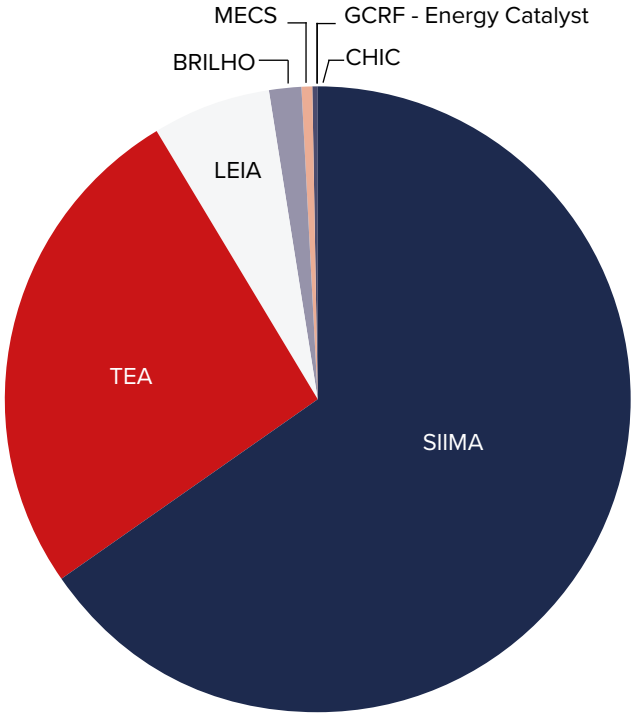


Figure 11: Jobs created and supported by Ayrton programmes (including CEIF)

Image credit: Mobile Power, Sierra Leone 2022 – PREO

Case study 2: InspiraFarms Cooling, Kenya

InspiraFarms Cooling, based in Kenya, designs, develops, installs, services and finances modular and energy-efficient cold rooms, packhouses, precoolers and other sustainable cooling solutions to agribusinesses and food distributors across Africa. Their solutions significantly cut energy costs and reduce food losses to increase revenue and create high quality employment opportunities. With support from the TIME, SIIMA and PREO programmes, InspiraFarms Cooling has supported more than 540 jobs across 2021–23. The productive use of InspiraFarms' clean energy technology by outgrowers and agribusinesses, and the livelihoods that this has supported and improved, demonstrates the potential impacts of clean energy innovation interventions beyond the direct beneficiary.

Figure 12: Julian Mitchell, CEO, InspiraFarms Cooling

Instaveg Ltd, an InspiraFarms Cooling client, is an aggregator and exporter of high-value vegetables. In 2021, InspiraFarms Cooling delivered a 240sqm packhouse with a precooling room, processing area and dispatch cold room. Having access to this technology has enabled Instaveg to fulfil export product demands while becoming the largest employer in the local area, creating local value and employment opportunities for rural women. InspiraFarms' technology has enabled Instaveg to reduce their food waste from 40% to 15%, as well as double the amount of produce processed every week, enhancing their productivity and creating local economic value.

Figure 13: Instaveg produce, processed using an InspiraFarms packhouse. Source: Instaveg Ltd - AgriFI Kenya Challenge Fund

Esther is currently the Packhouse Manager at Instaveg, responsible for overseeing daily processing operations after receiving training and support to develop her skills.

Creating rural employment opportunities for women is crucial to enable local, sustainable economic development, and is supported through the technologies developed with Ayrton Fund support.

> *Getting cold chain, deploying it on the farm, teaching people how to use it: it's an expensive investment. A big way the Ayrton Fund supported us was through the grant to help us try and design on-farm cooling, and really make sure we got it right for our customers.*
>
> - Julian Mitchell, CEO, InspiraFarms Cooling

> *With the packhouse, we have been able to increase our labour force to 55 and reduce our [product] loss by 25%.*
>
> – Ashibon Mwangi, Director, Instaveg

> *We are giving agribusinesses such as Instaveg the opportunity to access energy efficient, high-quality cooling systems, that would not be affordable had we not had the support from the Ayrton Fund.*
>
> – Julian Mitchell, CEO, InspiraFarms Cooling

> *My standard of living has really improved: my day-to-day life is better because I've been able to meet my objectives, I've been able to educate my kid and I've been able to meet the rising standards in our economy."*
>
> – Esther, Packhouse Manager, Instaveg

4.1.3. Jobs created by geography

Sub-Saharan Africa

The vast majority of jobs created through the Ayrton Fund (83%) are in SSA. More than 50,000 jobs have been created in Ghana, almost 35,000 in Kenya, nearly 6,000 in Tanzania and 2,400 in Mozambique. The jobs created across SSA demonstrate an almost even gender split, with 44.5% of jobs created for women.

The top three sectors that saw job creation in SSA were the financial, energy generation and productive uses sectors. The 56,000 jobs created in the financial sector were supported through SIIMA and are primarily indirect jobs, with 50,000 created in Ghana through one company which supports rural financial inclusion. These jobs are likely to include rural smallholder farmers whose access to digital financial services has increased their income through enabling access and participation in markets and digital payment channels. An even gender split is reported in the jobs created across these sectors. However, because many of these jobs were indirect and not within the immediate scope of the project, it is understood that the gender of the beneficiaries is not known, so this has been based on assumptions of an equal gender split, rather than direct observation.

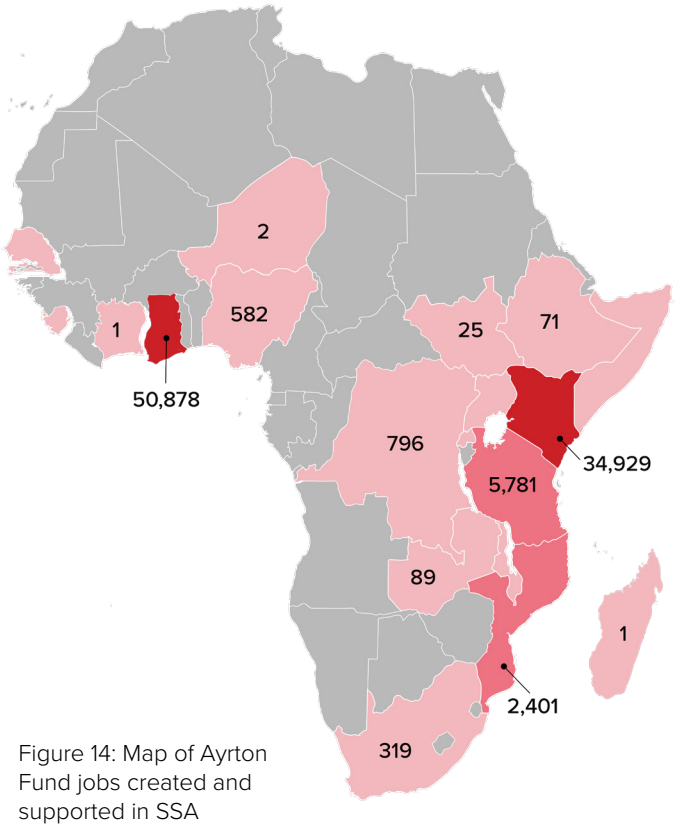


Figure 14: Map of Ayrton Fund jobs created and supported in SSA

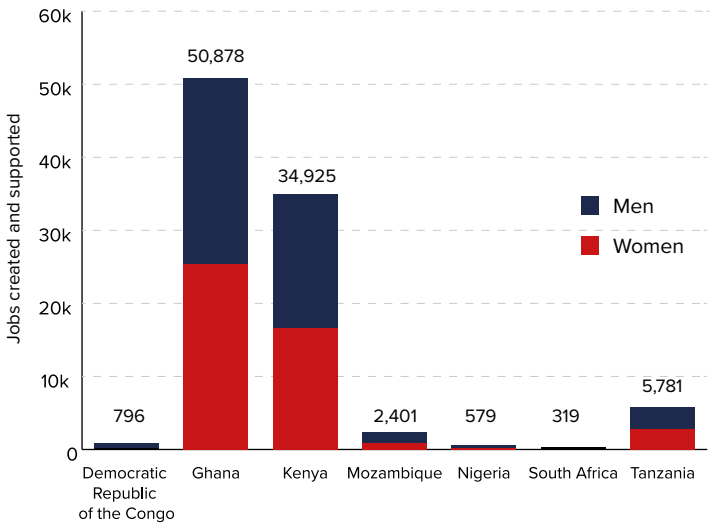


Figure 15: Jobs reported in SSA by country

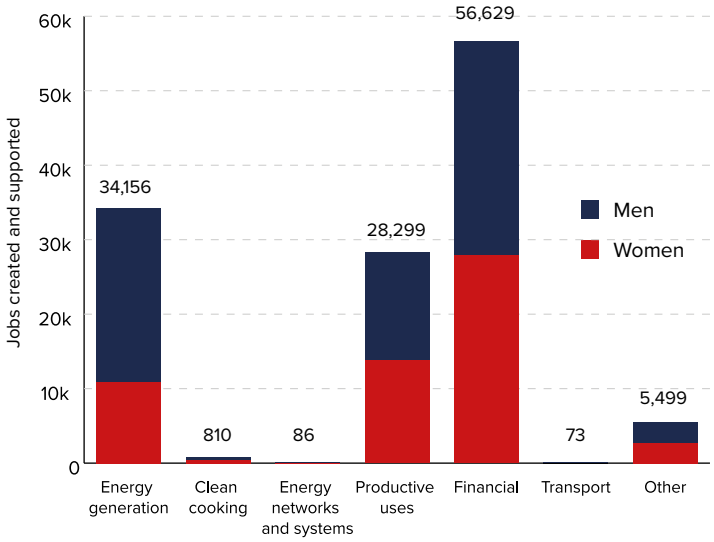


Figure 16: Jobs reported in SSA by sector

More than 30,000 jobs were created in energy generation, with the majority in the solar industry. Over 99% of the energy generation jobs reported were in solar, with the remainder across batteries, energy storage, and smart grids and meters. There is limited data on the types of jobs created, though this is likely to include solar energy developers, installers, O&M, as well as indirect jobs, including livelihoods supported through PURE. 69% of the jobs created in the solar energy sector are for men, reflecting global employment trends where women are underrepresented in key sectors relating to the solar industry, including construction and engineering. [37] The PURE sector saw an additional 28,000 jobs created, primarily relating to pumps and irrigation technologies, cold storage and farming. This number is likely to reflect indirect jobs supported through implementation of clean energy appliances, such as renewable-powered cooling equipment, or energy efficient processing equipment, enabling additional income streams and indirect employment.

technology, engineering and mathematics (STEM) and more senior positions in the renewable energy sector. According to International Renewable Energy Agency research, while women occupy 40% of positions in the solar PV sector – almost twice as much as in the oil and gas sector (22%) – they are most frequently hired for administrative positions, where they account for 58% of roles.[39] Women represent 32% of STEM positions, 35% of non-STEM technical positions, and 38% of other non-technical positions in solar PV. The higher proportion in this latter category is largely due to off-grid solar, which has multiple positions and initiatives targeting women.[40] Ayrton Fund programme delivery partners observe that cultural factors, domestic responsibilities, access to education and security concerns, particularly in conflict-affected regions, impact the ability of women to access employment and to participate in key green sectors.

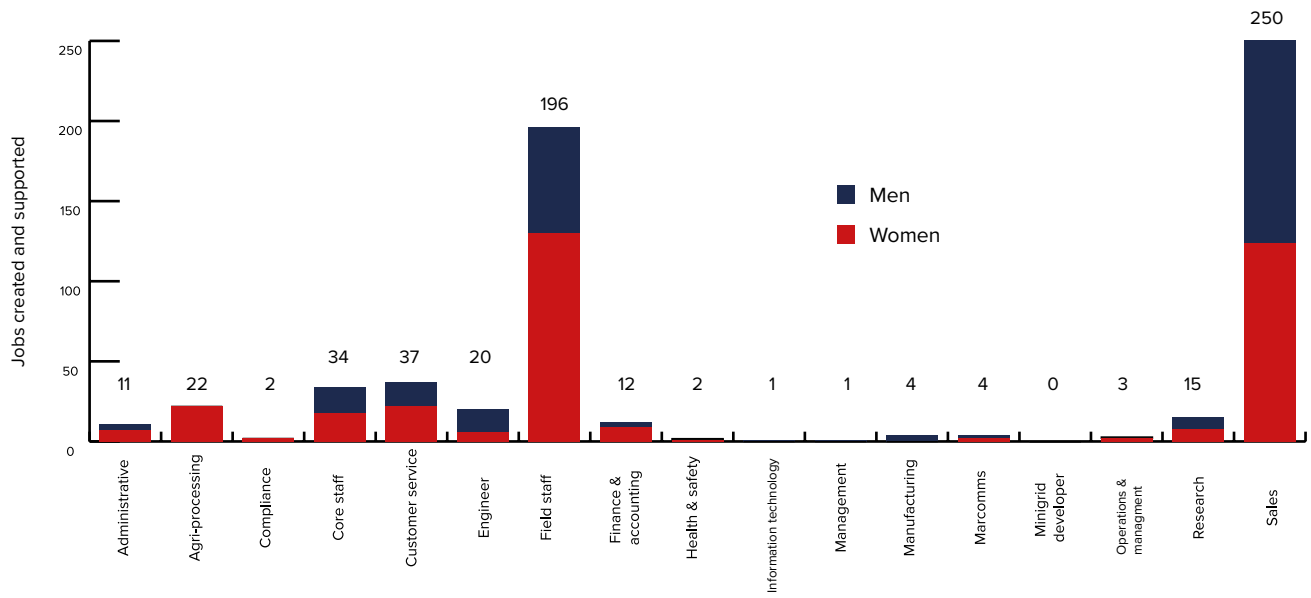
Jobs classified as indirect or informal are important accessible employment opportunities, particularly for women, young people or those who may not have access to education and training. A high proportion of the jobs reported through the Ayrton Fund are informal jobs, where employees do not have a contract and do not earn a set wage. This includes sales agents for clean energy products, for example battery storage systems (Case study 4: Mobile Power (MOPO), Sierra Leone) or clean cookstoves. It may also include delivery drivers who have saved costs on fuel through switching to electric motorbikes. While in some contexts these might not be classified as 'decent' jobs, they provide important income-earning opportunities where there may be few alternatives, and they support local economic value creation and sustainable development.

Clean cooking is a significant provider of employment, with jobs including sales, core business staff, and field agents. 800 jobs were created in the clean cooking sector throughout 2021-23, primarily through MECS and TIME. The gender balance in the clean cooking sector is slightly biased towards women, who account for 60% of roles created in the sector. This is likely due to social and cultural factors, as cooking has often traditionally fallen to women. The nature of the employment, too, is likely to increase accessibility of these roles for women. Many of the jobs are as sales agents, who work flexibly to sell clean cookstoves in their local communities and earn commission when they do so. These types of roles can be more accessible for women, who can fit the flexible work around domestic and childcare responsibilities.

Many programmes implement gender-based hiring targets for the companies they support, which is reflected in the gender balance of jobs created across the portfolio. 45% of the reported jobs created and supported in Africa are for women, reflecting active gender equality initiatives that are built into many of the programmes to enhance female access to employment. Within the subset of data which provides information on job roles (Figure 16), women access an equal or high proportion of the jobs compared to men across many of the roles. However, it should be noted that it is likely that programmes/projects which actively track both gender and job role include initiatives to encourage women into higher skilled roles and are tracking data to reflect this focus

In the jobs created, women are underrepresented in roles such as manufacturing, engineering and management, reflecting global trends.[38] Data across the programmes suggests that women are more likely to occupy roles in sales, customer service and administration, rather than in engineering or research roles, which often require specific skillsets and qualifications. This reflects broader, global trends which sees women underrepresented in science,

Figure 17: Jobs reported in SSA by job type (limited dataset)



Case study 3: Prado Power, Nigeria

Prado Power is a Nigeria-based renewable energy company, providing clean energy systems and retrofitting productive use appliances to enable individuals and small and medium-sized enterprises to access and utilise renewable energy systems. Operating in conflict-affected environments, Prado Power aims to contribute to peacebuilding efforts and socioeconomic resilience through their clean energy services and by creating local employment opportunities.

Funding from the CHIC programme enabled Prado Power to develop energy access and agricultural produce processing hubs in Mbadede and Jera Bakari rural communities in Nigeria, providing access to energy, water, agricultural processing mills and cold storage equipment for more than 2,500 people. The project supported livelihoods in construction, installation and O&M, as well as enabling improved livelihoods and additional income streams through PURE.

Hadiza Yakubu is a farmer based in Lafia Kpada, in rural Nigeria. She is leveraging Prado Power's clean energy agro-processing hub to process produce, including maize, sesame seeds, soya beans, guinea corn and much more, which is improving her income and livelihood.

Prior to accessing the grinder through Prado Power, Hadiza relied solely on manual and expensive processing methods; the retrofitted equipment has enabled a significant improvement in her farming activities. Access to the hub has streamlined her processing operations, increased efficiency and improved the quality of her products. This has not only led to improved market opportunities and increased income but has also empowered Hadiza as a female entrepreneur in her community.

Figure 18: Hadiza using Prado Power's electric grinder in the agro-processing hub. Source: Prado Power

Case study 4: Mobile Power (MOPO), Sierra Leone

MOPO's battery technology is distributed across the SSA market through MOPO Hubs, located within communities and run by local Agents. Each MOPO Hub provides up to four full-time jobs for local women and men as MOPO Agents, who distribute MOPO batteries to consumers. MOPO is headquartered in the UK and is 100% focused on the African market, where it has subsidiaries in Nigeria, DRC, Sierra Leone and Liberia. Across the first two years of Ayrton Fund, MOPO has supported 44 direct jobs with the Ayrton portfolio's support.

Support through the Energy Catalyst and PREO projects enabled MOPO to develop and de-risk their technology and business model, accelerating their scale-up and supporting the deployment of their solution across countries in SSA. With support from Energy Catalyst, MOPO has also developed and implemented a Gender Equality and Inclusion strategy for the recruitment of female MOPO agents, having launched its first all-female MOPO Hub in Sierra Leone in 2022 and working towards its target to achieve 50% female agents.

Hawanatu is one of these female MOPO agents. She is a bright and energetic 21-year-old woman who enjoys the recognition brought by being a MOPO Agent in an otherwise patriarchal society. Since becoming an Agent, Hawanatu feels more respected and valued within the community. She takes pride in making donations or helping her friends access loans, thanks to her MOPO earnings. Since starting her job, she has been able to take care of her family, providing them with food, shelter, and medical care. Her mother has been blind for nearly two decades, and Hawanatu is using her savings to pay for her care.

Figure 19: MOPO's battery technology. Source: MOPO

> *The money I earn as an Agent is extremely important to me. We are all seeking independence because when you rely on someone, you never know when they will say enough is enough." – Hawanatu, MOPO Agent*

Hawanatu invested part of her MOPO income into developing a business selling food and women's garments, to increase her earnings and be able to save more.

> *I have just come from the young women's meeting, where I donated Le 50,000. It turned out to be the biggest donation. It makes me pleased with how far I've come.*

Figure 20: MOPO agent Hawanatu with her mother. Source: MOPO

South Asia

The Ayrton Fund has created more than 15,000 jobs in South Asia, spanning India, Myanmar, Nepal, Sri Lanka and Vietnam. Across the region, 77% of these jobs were created for women and most of the jobs were created in India. Of the 15,000 jobs, over 10,000 jobs were created through SIIMA support for Science for Society (S4S) Technologies in India which created employment for women in agricultural processing. This is reflected in the high number of female jobs created in the 'productive uses' sector in Figure 22. These jobs are likely to include livelihoods improved and increased incomes through the provision of energy efficient, renewable energy powered processing equipment. The remainder of the jobs created in the productive use sector are in cold storage, also in India, while those in the energy generation sector include employment in solar, biomass and biofuels, and energy storage. The clean cooking sector is also a key enabler of employment in South Asia, with more than 300 jobs created in the sector, including in manufacturing, sales and micro-entrepreneurship.

Figure 21: Map of Ayrton Fund jobs reported in South Asia by country

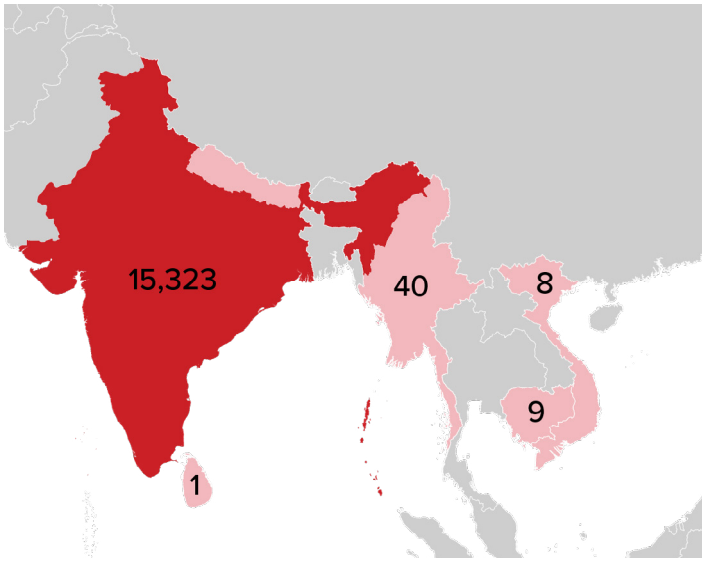
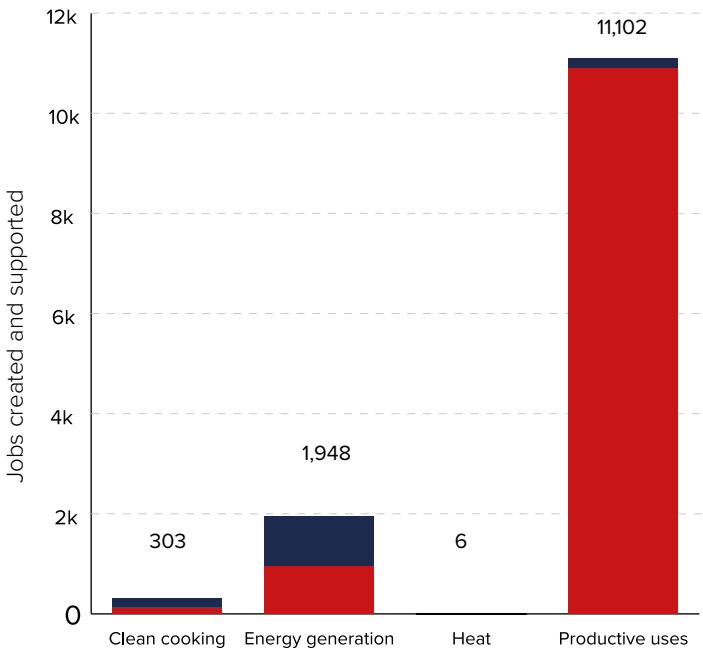



Image credit: Koolboks, Nigeria 2022 - PREO

Figure 22: Ayrton Fund jobs reported in South Asia by sector



Case study 5: Inficold, India

Inficold develops and deploys solar-powered refrigeration and cold chain equipment, supported by SIIMA, with a vision to become a global leader in sustainable cold chain solutions. Support from the Ayrton Fund's SIIMA programme has enabled the company to scale up from a workforce of less than 20 to more than 150, with employees in manufacturing, installation and servicing of products, as well as sales and RD&D. Its cold storage technology supports farmers and businesses to reduce food waste, increase productivity and improve their incomes through clean cold storage. Inficold now has around 300 installations across India and Africa, and provides India's largest off-grid, solar-powered cold storage facility. The company has a wide reach in enabling employment and improved livelihoods through its technology. It has empowered more than 10,000 dairy farmers with instant solar milk cooling in Northeast India's largest milk cooperative, enabled female vegetable vendors to access solar cold storage in Karnataka and Odisha, and provides training to horticulture farmers in Mizoram on-off grid solar cold storage.

Figure 23: An all-female dairy farming cooperative. Source: Inficold

> *We are very thankful to the programme for supporting us through four years of research and development. Our technology would not have been developed without this support.*
>
> – Nitin, CEO of Inficold

Figure 24: Inficold's milk cooler system supporting an all-female dairy farming cooperative. Source: Inficold

Sundarban Dairy, an all-female cooperative spread across the Sundarban mangrove area, uses Inficold's clean milk cooler to enable increased productivity and market access. Milk is procured from these islands via boats that transport the milk to mainland India, but this journey can only be carried out once a day. Without cooling, the milk will go off if left too long, which limits the amount that can be sold. However, thanks to Inficold's clean energy milk cooling system, the dairy farmers are now able to collect, cool, store and sell more milk to mainland India every day. Inficold's technology provides cooling solutions for the entire Sundarban Milk Union, which is spread across more than 20 islands, connecting at least 5,000 female dairy farmers with milk coolers, and supporting increased revenues for the cooperative.

Europe and North America

273 of the jobs reported were in Europe and North America, with the majority of these in the UK (145) and the US (120). Figure 25 presents the technologies covered by the jobs created in Europe. However, this result is likely a consequence of Energy Catalyst reporting processes which assume that jobs are based in the country in which the lead beneficiary organisation is registered, rather than tracking the location of specific roles. These 120 jobs are therefore likely to be based in Kenya, despite being reported as being in the USA. There is limited further detail on the types of jobs created in Europe but given the geography these jobs are likely to include core company staff, and jobs created in RD&D.

Figure 25: Jobs reported in Europe and North America by country

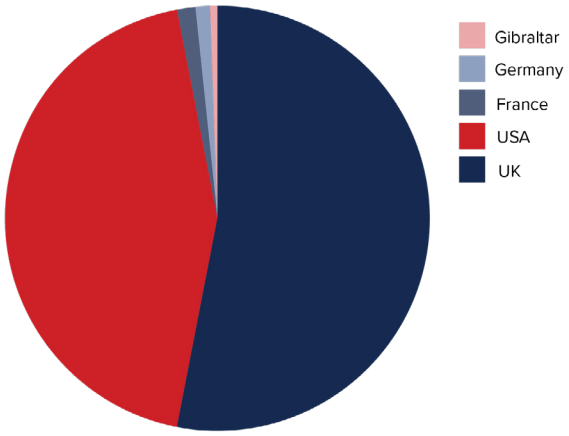


Figure 26: Jobs reported in Europe by technology

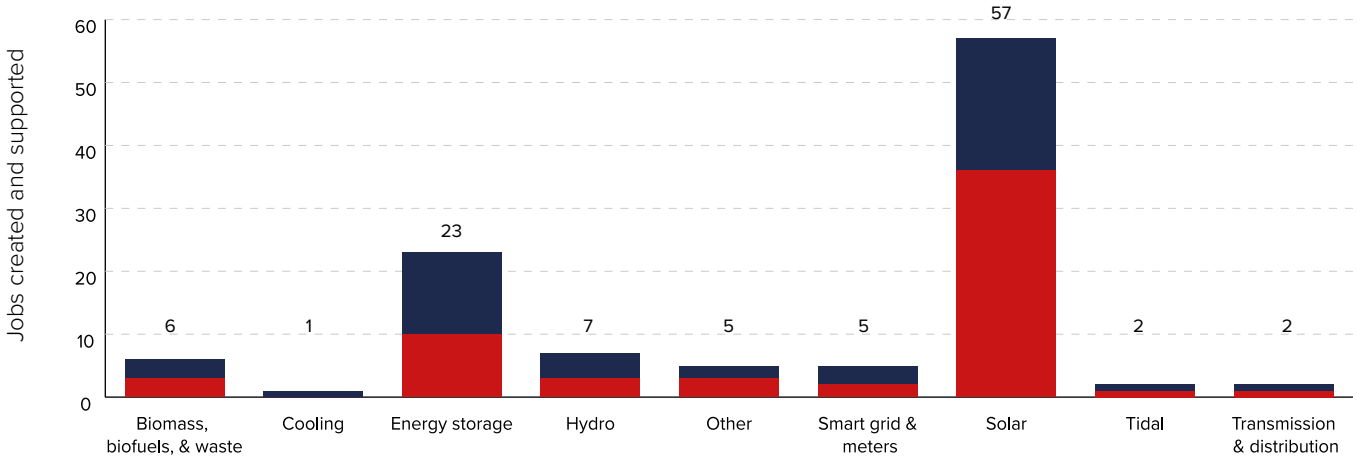


Image credit: Community Carbon, Mozambique 2024 - BRILHO

Case study 6: Mobile Power (MOPO), Sierra Leone

MOPO is a leading UK battery technology company that operates through its subsidiaries in Nigeria, the Democratic Republic of the Congo, Sierra Leone and Liberia, providing pay-per-use battery rental to individuals and businesses in Africa. MOPO has almost 30 staff based in the UK, including hardware/software developers, engineers, finance, logistics and project managers. MOPO is 100% focused on the African market, where its subsidiaries have grown to almost 1,000 full-time team members. Support through the Energy Catalyst and PREO projects have enabled MOPO to develop and de-risk their battery technology and business model, accelerating their scale-up and allowing them to grow.

Joe joined MOPO through the UK Government's Kickstart scheme in 2021, having graduated from university during the COVID-19 pandemic. Starting off as an assistant, he steadily took on more responsibility and is now the company's Environmental Social Governance (ESG) Officer. His role includes overseeing the day-to-day management of the company's Environmental and Social Management Systems, coordinating with external stakeholders and finance partners, and managing key projects.

With MOPO, Joe is currently undertaking a training course on ESG risk management at the University of Cambridge to further develop his professional skills.

Figure 27: MOPO's battery swap technology. Source: MOPO

> *Back when I was studying for my degree, I never expected to be working to bring renewable energy to Africa. I'm grateful to MOPO for helping me find a role I'm passionate about and training me for my future career.*
>
> *– Joseph Collins, ESG Officer at MOPO*

Creating jobs in clean energy innovation

In innovation contexts, larger numbers of long-term, steady jobs tend to be created at later stages of technology and company development. While programmes do not typically track the technology stage at which jobs are created, interviews and anecdotal evidence suggest that the jobs created at the transition-to-scale and later stages of company development are much larger than at early (RD&D and seed) stages. Early on, companies are small, operate in volatile environments, rely on project funding and do not have the bandwidth or stability to support large-scale job creation. Ayrton Fund programmes often play a key role at these early stages in researching and de-risking solutions, providing consistent funding to enable scale-up, which can lead to more significant direct and indirect job creation in the long term. Providing stable, consistent funding, investing in contexts that might not attract traditional funders (e.g. in very low income or conflict-affected environments) and supporting companies through challenging RD&D processes are all crucial to enable technologies and business models to be tested and scaled up, ultimately creating essential employment opportunities.

Supporting a long-term green economy requires ensuring that green jobs are decent, well-paid and attractive to workers. Based on interviews with practitioners active in recruitment in SSA's clean energy sector, it can be challenging to retain workers in the clean energy industry, where pay in relation to other sectors can be relatively low. Employees may, therefore, move to a different, non-green industry once they have gained transferable skills and work experience. Retention of workers is particularly challenging in innovation environments at early stages, where companies are likely to be looking for specific skillsets and are trying to access talent and skills with low budgets. In these contexts, employment may lack long-term security, being dependent on uncertain innovation outcomes and companies' ability to attract further investment. Consideration of job quality is therefore essential to enable long-term growth, and incentives such as providing employees with a share in the company's future success, can also play a role in retaining workers and supporting long-term success in the clean energy sector.

Training and capacity building for workers in green jobs can support long-term retention and create growth opportunities. Offering training opportunities prior to employment, as well as offering employment alongside training, can be highly valuable to increase access to, and improve, the quality of green jobs – particularly for communities who may find it challenging to find work, such as women, young people and marginalised groups. This can include work readiness training to ensure graduates are equipped with key skills for the workplace, and targeted programmes that account for the needs of specific groups and sectors. This can be crucial in enabling access to highly specialised sectors, such as carbon finance, that require specific qualifications and experience. In line with best practice, training opportunities are not counted in jobs created or supported indicators but are crucial to enhancing the employment value that programmes can provide.

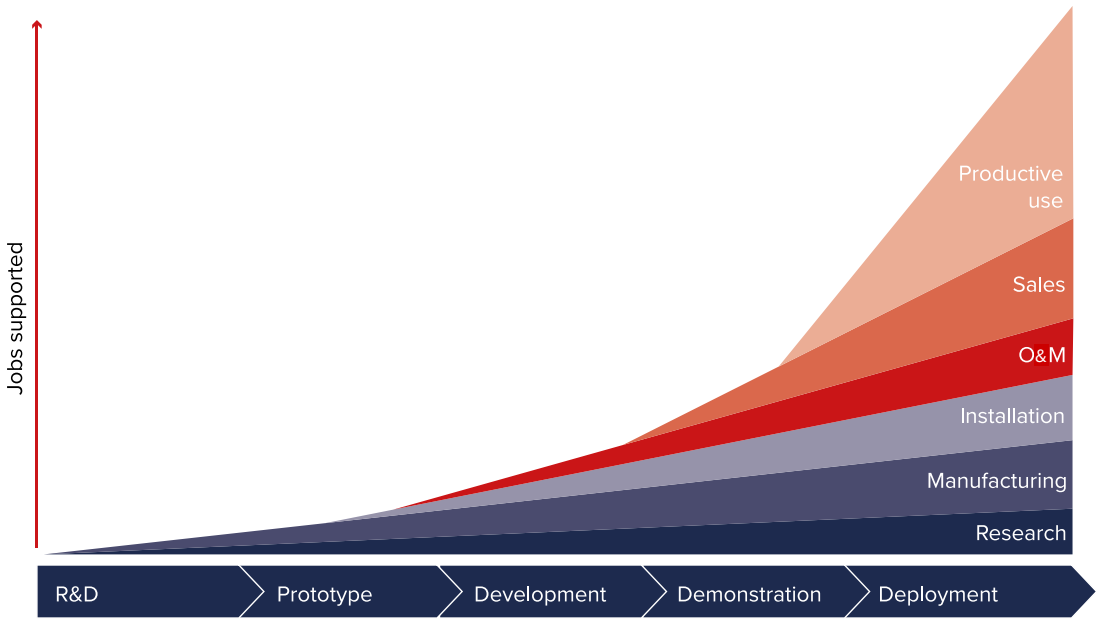


Figure 28: Illustrative graphic showing how, as innovations are developed and established, increasing numbers of jobs are supported

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Image credit: Ampersand, Rwanda 2024 – TEA

4.2. Reporting on jobs created across the Ayrton Fund

4.2.1. Definitions, indicators and methodologies

The Ayrton Fund takes a broad definition of 'green' jobs, including all jobs created under the clean energy innovation portfolio. This is appropriate and applicable, given the focus of programmes and the types of jobs supported. Historically, the ICF KPI 5 methodology, which provides definitions and a methodology for reporting on direct green jobs created, was recommended for use across ICF programmes. For example, for the TEA platform, all delivery partners have been given the guidance that their reporting should adhere to the ICF KPI 5 methodology. This study has found, however, that in practice, for pragmatic and other reasons, there have been different methodologies and definitions applied by different programmes and project delivery partners. Table 5 provides an overview of the categories of jobs that have been reported by each programme, and the indicators used.

Not all programmes employ the ICF methodology, and a range of alternative approaches have been taken, which means that the jobs data are difficult to aggregate and compare at a portfolio level. Several programmes within the Ayrton Fund were not familiar with the ICF KPI 5 methodology, with many employing their own reporting methodologies, or those of other organisations such as the ILO or World Bank. While these methodologies are often designed to reflect the impact of the specific programme, the lack of consistency at the portfolio level makes it challenging to aggregate the data. Key challenges include varying definitions of 'direct' and 'indirect' jobs, 'jobs created' and 'jobs supported', and different approaches to additionality and attribution. It is important to note, however, that the application of any methodology relies heavily on access to high-quality consistent data, often sourced through multiple tiers of delivery partners and value chains, representing a significant challenge (particularly when timescales for reporting can be relatively narrow between the end of a reporting period and the required deadline for submission of results). This is discussed further in Section 4.2.2.

Table 5: Ayrton Fund programme reporting indicators and inclusion of direct and indirect jobs

Programme	Total jobs reported 2021-23[6]	Direct	Indirect	Indicator used
TEA (TIME) and SIIMA (CASEE) via Shell Foundation	39,755 and 102,091	■	■	2022/23: ICF definition (direct jobs only). Net number of people employed directly by funded partners and indirectly by other businesses to which a funded partner is a core supplier of products, services, human resources, finance or technical support, counting both jobs within the companies supported and micro-entrepreneurs created.
TEA – PREO via Carbon Trust	467	■		Jobs supported within the grantee company, reported each month.
TEA – OGTI/ EATI via Shortlist and African Management Institute	171	■		The number of people placed into green jobs.
TEA – PEII via Acumen	-	■	■	Jobs supported in investee companies.
TEA – Energy Catalyst via Innovate UK	301	■		Sustainable, long-term jobs created.
MECS via L. University and ESMAP	752	■	■	Number of jobs created through activity. Jobs can be part-time or full-time, in any aspect of the clean electricity or clean cooking service chain.

[6] According to data gathered for the purposes of this report. These numbers differ slightly from those included in the Ayrton Fund Y2 Annual Report due to the reasons specified previously in this section.

Programme	Total jobs reported 2021-23[6]	Direct	Indirect	Indicator used
LEIA via CLASP and EST	9,795	■	■	Direct jobs: jobs created based on staff costs as set out in project budgets.
BRILHO via SNV	5,222	■		Peak employment number in a given year. Reported as FTE.
CHIC via Grand Challenges Canada	47	■	■	The number of additional sources of income created as a result of the project.
GCRF – Energy Catalyst via Innovate UK	375	■		Sustainable, long-term jobs created.

4.2.1.1. Key methodological differences

Programmes take varying approaches to defining and measuring direct and indirect jobs, with the inclusion of indirect jobs indicating a broader assessment of employment impacts. The MECS programme, for example, primarily report direct jobs (those where MECS money has directly funded the jobs), though also include indirect jobs where MECS money has been used for enterprise development. This captures instances such as where companies have received a start-up grant, enabling them to leverage a bank loan and set up a factory that employs large numbers of workers. The TIME and SIIMA programmes both included indirect jobs in 2021-22 values, which capture livelihoods supported through productive use of energy, as well as micro-entrepreneurship. The PEII/PEII+ programmes, which invest in early-stage companies, reported numbers including both direct and indirect jobs, considering both to be within the sphere of influence of the programme, given the nature of early investment in relation to employment creation. One programme takes a multiplier approach to calculate indirect jobs, while the remaining indirect jobs numbers are those that can be directly observed but are not within the direct scope of programme, therefore reflecting a broader scope of programme impact.

The reported data include jobs supported, jobs improved and 'additional sources of income', which are highly relevant to the markets in which programmes operate. Measuring jobs improved is important, for example, in the agricultural sector, where a solar-powered or energy efficient appliance can increase incomes for farmers and agribusinesses through enhancing productivity, though this is not necessarily creating the job. Similarly, the indicator used by CHIC is 'additional sources of income', which would refer to livelihoods improved or supported. The programme cites examples including street vendors who can sell late at night due to new and improved street lighting; while the project focused on the provision of street lighting, and so included the creation of direct jobs in the installation and operation of the technology, additional indirect income streams were created by enabling vendors to sell for longer hours. This broader approach to measuring job creation reflects the on-the-ground reality of local labour markets and offers measurement of the wider impact of programmes.

Assessment of whether jobs are 'decent' is generally addressed in the due diligence process, rather than being quantitatively tracked. Many programmes cite that companies receiving programme support are responsible for adhering to their code of conduct, which will include standards around safe working environments. However, this is difficult to apply in the case of assessing indirect jobs, where the relevant employer is not bound to the programme's standards. The ICF methodology recommends using the formality of a job as a proxy for whether it is decent; application in practice is, however, limited and formality may not be a good indicator of job quality in many contexts, as discussed above. The ICF methodology notes that the extent to which the jobs are 'decent' could be the subject of a more in-depth evaluation exercise, reflecting the complexity and resource required to assess the quality of employment accurately.

Currently, programmes that do assess the quality of jobs take varying approaches; there is no universal definition. Shortlist, for example, who place people in jobs, define decent jobs as those that pay above minimum wage, extend beyond a six-month period and are not commission-only jobs. However, many other programmes do create and report commission-based jobs, such as some sales agent roles, and in the relevant context these may be considered high-quality jobs. This is not an attempt to determine a 'correct' definition of a 'decent job'; rather it is to reflect the varying relevance of factors and circumstances across regions and sectors, and in relation to specific programme objectives. In our interviews, it became

clear that guidance around what constitutes a 'decent job' would be welcomed. It should be noted, however, that this is likely to be context specific and the resource and time required to make the assessments should reflect the ways in which the data will be used.

Table 6 presents the levels of disaggregated data tracked by programmes. Dark blue indicates that the variable is tracked, light blue that the variable is tracked partially or indirectly (e.g. skill level can be indirectly tracked through job role), and grey that the indicator is not relevant (e.g. some programmes do not measure indirect jobs, so do not disaggregate direct/indirect), or that the information is unavailable. It should be noted that this is based on understanding of 2021-23 reporting practices and may not reflect updated processes applied for the 2023/24 reporting year.

Table 6: Levels of disaggregation reported by the Ayrton Fund programmes that reported on jobs between 2021-23

Programme	Company	Job role	Country	Gender	Skill level	FT/PT	Long/ short-term	Formal/ informal	Direct/ indirect
TEA – TIME and SIIMA									
TEA – PREO									
TEA – OGTI/ EATI									
TEA – PEII/ PEII+									
TEA – Energy Catalyst									
MECS									
LEIA									
BRILHO									
CHIC									
GCRF – Energy Catalyst									

Image credit: Ampersand, Rwanda 2024 – TEA

To demonstrate additionality, most programmes assume a baseline of zero jobs and count all jobs created as additional. None of the programmes carried out an assessment of a business as usual scenario to calculate net jobs (as recommended by the ICF KPI 5 methodology), given the challenges of applying this at a project level. Most programmes assumed a baseline of zero jobs, given the innovation context, while others used the number of jobs in the beneficiary company at the start of the programme as a baseline to subtract from total numbers of jobs. The PEII/PEII+ programme assumes all jobs created as additional, given that they are often an early investor in the company, and it is likely that the innovators would not be able to operate without this investment. Programmes, where possible, trace back the jobs across the year to identify and determine which jobs are truly additional to the programme, but this is resource and time intensive, and particularly challenging when multiple donors are involved.

Disaggregation of data is more straightforward for direct jobs, where programmes typically have greater visibility over the jobs created. The ICF methodology recommends disaggregation across a range of variables, though we found that reporting against these is varied and inconsistent, depending heavily on data availability. The OGTI/EATI programmes, for example, can provide significant detail because they are directly placing employees in roles, where green job creation is the programme's primary objective, and the collection of jobs data is built into its operations. Most programmes align with the ICF methodology in counting full-time (FT) and part-time (PT) jobs equivalently, i.e. PT jobs are generally not translated into full-time equivalent (FTE) but are reported in the unit of 'jobs created' in the same way as FT jobs. An exception to this is the BRILHO programme, which counts FT and PT jobs separately, then reports a total FTE number. The SIIMA and TIME programmes, too, reported an FTE value in 2021/22. Most programmes track job role, which can be used to assess skill level, and gender is a key variable of interest tracked across projects. However, most variables are more challenging to track for indirect jobs, being one step removed from the direct programme beneficiaries, where the indirect beneficiaries are not bound by programme reporting requirements.

There is a lack of clarity around whether jobs created should be reported cumulatively or annually, contributing to inconsistency across programmes. Most Ayrton Fund programmes report cumulative jobs created, with the difference between years then taken

to obtain annual data. However, BRILHO, for example, reports annual peak numbers of jobs, since many of the jobs related to that programme are seasonal and short term; this number therefore includes jobs created in previous years, but it is not the cumulative total of jobs created over the length of the programme. The cumulative reporting approach also makes it challenging to identify which jobs have been created in which year and therefore to understand the types of jobs created. Where cumulative approaches assume that jobs are sustained beyond the project duration, this can be underpinned by an assumption that funds leveraged from initial support are sustaining the role and so the employment is still within the project's sphere of influence. These types of assumptions can be validated over the longer term in evaluation processes but are difficult to know within annual reporting timelines.

4.2.2. Challenges in reporting on green jobs

Many Ayrton Fund programmes do not report jobs created, which is often likely to be a result of lack of data, rather than lack of impact. For this report, programmes that have historically reported jobs were interviewed; this study has therefore not systematically attempted to understand why many programmes report zero jobs. However, there are significant challenges faced by programmes that do report on jobs, particularly around accessing high-quality data, lack of clear definitions and guidance, challenging on-the-ground contexts, and the volatile nature of innovation contexts. Understanding these key challenges can support the design of reporting methodologies that account for the range of resources and data available. These challenges can be broadly categorised into methodological and technical challenges, which can be resolved through clear guidance, and operational, which relate to the practical realities of reporting jobs data and require contextual adjustments. With reporting on green jobs coming from programmes representing only 54% of Ayrton Fund spend to date, this is likely to represent an underestimation of the total jobs impact of Ayrton Fund investments, and so is a source of conservatism in the figures presented overall for Ayrton.

4.2.2.1. Methodological and technical challenges

Definitions and methodologies on jobs created are unclear and can be easily misinterpreted. Top-down definitions of jobs created must be broad to apply in a range of contexts yet, in doing so, are often challenging to translate into specifics. There is also potential overlap with other impact indicators (for example, PURE), risking double counting. Indirect jobs, for example, are often a result of PURE, so reporting must ensure that definitions and methodologies account for this overlap and are clear on where the distinction lies. The distinction between direct and indirect jobs can be particularly challenging to communicate. One programme interviewed highlighted that they often work with local partners who are unfamiliar with these terms and reporting requirements; to explain the distinction between direct and indirect could require monitoring officers on the ground in every country. Additionally, there are companies who receive support from more than one Ayrton Fund programme, and there is therefore a risk of double counting where two programmes may claim the impact. This can be mitigated through clear guidance on attribution between multiple programmes or funders.

Job creation is often not defined or communicated as a primary objective of programmes and does not relate to programme KPIs, so reporting on other impact measures is prioritised. While job creation is included in the Ayrton Fund's Theory of Change, it is often not included at programme level. This means it is not seen as a priority for impact measurement, and resources are diverted elsewhere. 'Jobs created' is one of many log frame indicators that programmes must report against; limited capacity can mean that 'jobs created' is often deprioritised, particularly given the complex nature of the definitions and methodologies involved.

Innovation and RD&D contexts present unique challenges to reporting on job creation and require flexible definitions and reporting methodologies. In innovation contexts, the mechanisms by which jobs are created are not always straightforward and depend on the stage of the company, the type of project, the sector and region. The volatile nature of innovation and operating at the early stages of developing a technology/business model typically mean that jobs are uncertain, which makes aligning them with standardised definitions of 'jobs created' challenging. For example, an early investment in a small company may not lead directly to new jobs, although it may sustain existing jobs that would otherwise have been lost. In this case, the programme has had a clear impact on employment opportunities without necessarily creating the job.

Understanding the long-term impact of job creation is challenging beyond the duration of programmes. In the sectors targeted by many of the programmes, jobs created are often seasonal or short-term and it is not possible to know whether they will be sustained beyond the duration of the project. In a mini-grid project, for example, there will be short-term jobs created through the installation and construction of the mini-grid connections, and their employment related to the project ends once the installation is completed. Employment for O&M technicians is then

created, which tends to be longer term, though these jobs may not be directly funded by the project, and it may not be possible to track the impact of these jobs beyond the project's end. In agriculture, too, jobs are often seasonal, so it is difficult to ascertain whether they are short or long term.

4.2.2.2. Operational challenges

Long reporting chains with multiple layers of communication risk time-consuming engagement processes, misinterpretations, and misalignment. For many centrally managed programmes, the M&E team may or may not work directly on the ground. Data collection therefore occurs a few steps removed, with top-down requirements being implemented through several layers of reporting. This leaves room for misinterpretation of definitions and requirements, and often results in a significant lag on reporting. Programmes cited, for example, six-to-12-month delays in reporting data on jobs, particularly for those that report through several layers of governance. Top-down approaches, with definitions and methodologies being passed through several layers of reporting, risks enforcing methodologies that are not applicable at project level, and where high-quality data collection is extremely challenging.

Programmes involving multiple large delivery partners and/or multiple funders can face the challenge of aligning several different reporting requirements; there is a risk of wasting resources on overly burdensome reporting processes. Programmes are often working with multiple, large, multi-lateral organisations with their own reporting frameworks, with limited capacity and ability to be flexible around what data they are already collecting. For example, where a partner is delivering a programme on behalf of several donors, with each donor requiring slightly different data in varying formats, this becomes incredibly burdensome and resource-intensive for the central delivery partner and can result in damaging the programme by directing a high proportion of funding on administration.

It takes time to build capacity across the reporting chain to meet specific reporting requirements. Many Ayrton Fund programmes existed prior to the establishment of the Ayrton Fund and had existing reporting methodologies. It is challenging to introduce new definitions and methodologies part-way through a programme when M&E teams, processes and structures have been built around a specific method and/or requirement of reporting. Interviewees cited building in reporting requirements from the start of their programmes as essential to enabling consistent and high-quality reporting and allowing time for delivery partners and grantees to familiarise themselves with the methodology. Small, early-stage innovators generally have very limited resources and can find it challenging to engage with rigorous reporting requirements, so maximising consistency and providing support that matches the level of data collection is essential to facilitate engagement.


Image credit: Community Carbon, Mozambique 2024 - BRILHO

5. Conclusions and recommendations

5.1. Conclusions

There is no 'right' way to define and measure the jobs created through the impact of interventions, but definitions and methodologies should be aligned with the objectives of the data collection. Measuring jobs created or supported at a project and programme level is complex, particularly in developing markets and innovation contexts, and can be an extremely time-intensive and complicated process. There is a balance to be struck between the time and resource dedicated to this process, and where jobs are claimed as 'created', methodologies must be rigorous and applied comprehensively to support this claim. The more detailed and involved a methodology, the more resource is required to facilitate its implementation. Programmes have differing levels of resource available to put towards M&E, and so are able to obtain differing levels of data. Any recommended methodology should be accompanied by sufficient resource, funding and time available to implement, which aligns with the level of disaggregation expected and supports the overall objectives of the interventions.

Many Ayrton Fund programmes collect high quality, detailed data on the jobs created, but this is currently not consistent across the portfolio. It is therefore challenging to aggregate and compare data. Programmes that existed prior to the Ayrton Fund have their own methodologies and jobs reporting practices, and it has been challenging to adapt these to meet the former ICF KPI 5 methodology. Furthermore, implementation of the ICF methodology is inconsistent, with several practical challenges, particularly in developing and innovation contexts. A new set of guidance – that is adapted to meet the needs of the Ayrton Fund, accounts for the different types of programmes and interventions, and is flexible to enable context-specific analysis – would support greater consistency.

Best practice approaches suggest that a jobs supported approach is a reliable, practical and informative way to measure employment impact in annual reporting, as well as support assessment of the broad positive employment impacts of programmes. Several key organisations and development programmes already use, or are implementing, jobs supported indicators, rather than jobs created. Jobs supported measurements approaches are broader in their assessment of impact, require less complex modelling of attribution and additionality, and can capture the context-specific impacts of innovation, RD&D and development impacts. It is challenging and resource intensive to claim causality and additionality to back up claims of jobs 'created' by programmes, and it is rarely carried out thoroughly in practice. Moving towards a methodology that aims to measure jobs 'supported' relaxes these requirements and can include jobs created as a result of indirect impacts, e.g. leveraged funding and productive use of energy, which are key positive economic impacts of the Ayrton Fund's interventions.

5.2. Recommendations

1. **Discontinue use of the ICF KPI 5 methodology across the Ayrton Fund portfolio and develop new guidance and criteria on defining, measuring and reporting jobs.**

a. The ICF methodology was discontinued by the ICF team due to practical challenges in applying it at project level.

b. This study suggests that a significant number of Ayrton Fund programmes do not currently, and have not historically, reported on jobs in a way that aligns with the ICF methodology, due to similar challenges applying the methodology in practice.

c. The ICF methodology prioritises additionality and attribution, both of which are challenging and resource-intensive to demonstrate, are less applicable in the context of reporting on development interventions and are rarely carried out comprehensively in practice.

d. New guidance can provide definitions, criteria for counting jobs and examples to demonstrate what should and should not be included, in a way that aligns with portfolio-level needs and is flexible to account for the range of programmes within the portfolio.

e. Any new guidance and criteria should be tested with a diverse set of programme delivery partners (e.g. fund managers, technology innovators, technical assistance providers) and adapted before being introduced formally, to ensure that it is practical and applicable at project level.

f. Communication and capacity building around the new methodology should support buy-in and ensure that there is a coherent and consistent understanding of the approach across the portfolio.

2. **Implement new guidance and criteria for jobs reporting which is clearly scoped and supports understanding of the types of jobs created, as well as the numbers.**

a. Understanding the types of jobs created is crucial, particularly in emerging markets, to instil confidence that interventions are supporting positive social and economic development. However, this must be balanced with the scope of data collection that is practical and feasible within the available resources.

b. Report at portfolio level on 'jobs supported' and disaggregate this further at programme level, depending on the data and resource available to the relevant M&E team.

c. Continue using the terms 'direct' and 'indirect' jobs, given their widespread use across development organisations, while ensuring they are clearly defined in the context of the Ayrton Fund. Avoid using these terms when collecting data from companies who may not be familiar with the terminology.

d. New guidance should exclude estimations and modelled jobs numbers, where the nature of the job cannot be seen or specified. Induced jobs should also be excluded, given the term's wide scope and practical challenges in assessing accurately. This exclusion can also enable reasonable scoping of the 'indirect' jobs to those within the immediate supply chain which can be reasonably observed by projects and monitoring officers.

e. Disaggregate jobs data by gender and collect further information as is feasible and relevant to the interests of the programme. This can include the country where the job operates, youth employment, job role and job quality, but should be clearly linked to the objectives of the programmes and supported through reasonable budget allocation, so as not to displace programme resources.

f. Include assessments of the quality of jobs where possible, understanding that this will look different across regions, sectors and programmes. Assessment of job quality is particularly important where indirect jobs are included in measurements, where the employers are not subject to the standards and due diligence processes of the programme.

3. **Build flexibility into the new guidance to allow for project-specific considerations, while also enabling consistent reporting and aggregation at portfolio level.**

a. This could involve having several different log frame indicators which can be used at a programme level and can be aggregated to a total 'jobs supported' number at portfolio level.

b. Implement a set of questions that can be asked of companies to reflect each variable of interest, and which avoid ambiguous or complex terminology. This can reduce burdens on companies self-reporting results by minimising training required and centralising the data processing so that data can be reviewed consistently within programme M&E teams.

4. **Work with programmes to determine the data that is required for their reporting and ensure that M&E budgets, resources and timelines allocated reflect this.**

a. It will not always be possible for programmes to collect comprehensive data that fully aligns with any – particularly a new – methodology. Determining the data which is most relevant to the programme, and providing the budget and resource required to meet these needs, can support more consistent data collection.

b. Work with programmes to define clearly the level of data collection that is appropriate for their projects. This will include considerations of the region, the nature of the project, the number of partners involved and resource availability.

c. In innovation contexts, for example, it might be relevant to prioritise measurement of jobs created at later stages of technology and company development, where more jobs are created and the company receiving support has greater bandwidth to meet reporting requirements.

5. **Define and communicate the importance and objectives of collecting data on jobs, and determine how the data will be used, ensuring that it is linked to programme KPIs and Theories of Change.**

a. Defining how the data will be used with programme delivery partners upfront can guide the rigour required from the methodology. It is likely that there will be several objectives, and the methodology should aim to find a middle ground which can meet these different needs. For example, if data will be used in public facing documents, to inform future programme design, or for evaluations following the programme's end, different types and levels of data will be needed. This should be defined as early as possible.

b. Building flexibility and ensuring buy-in from programmes early on can support a coherent

and consistent understanding of the relevant definitions, methodologies and implementation, and ensure that methodologies are designed with programme and portfolio needs in mind.

6. **Provide clear guidance on attribution, including between different funders and across reporting periods.**

a. Where beneficiaries receive support from multiple Ayrton Fund programmes, implement processes to centrally assess reported numbers to identify potential double counting.

b. Where a programme is funded by multiple donors, implement a consistent approach to attributing impact. For example, the ICF methodology recommends attributing impacts proportionally by the amount of funding provided by each donor. A 'jobs supported' approach can allow a broader definition of attribution given that the jobs are not being claimed to be directly created by programmes, but this should be specified and implemented consistently.

c. Implement processes to ensure that jobs are not double counted across years. For example, ask reporting officers to identify which jobs are new positions, and which are continuations of previously existing roles. These can then be assessed centrally to identify where jobs are new in each reporting period.

d. Provide guidance on how far legacy impacts should be included in annual jobs numbers. Ensure that there is consistency across programmes by providing a maximum period within which jobs can be included in annual numbers after a company has ceased receiving direct programme support. This is particularly relevant in innovation programmes where jobs impacts often continue for several years following interventions.

Figure 29: Recommended definitions and scope for Ayrton Fund jobs reporting

	Recommended for inclusion in Ayrton Fund reporting		Recommended for exclusion
	Direct jobs	Indirect jobs	Induced jobs
Jobs created	Directly funded by and attributed to interventions. Clear additionality where it is evident that the job would not have existed without the programme.	N/A	N/A
Jobs supported	Jobs within the direct scope of the project or within the company which existed prior to the intervention but are sustained by support.	In the immediate value chain of the project. Includes entrepreneurs, self-employed, livelihoods improved, income streams enabled.	Supported through the increased economic activity and spending of direct and indirect workers.

5.2.1.2. Recommended jobs reporting methodology

This methodology is illustrative only and should be tested with key Ayrton Fund stakeholders prior to further development or implementation.

The creation and support of green, decent jobs is essential to sustainable development and is a crucial co-benefit of clean energy innovation and RD&D programmes. The Ayrton Fund takes a broad approach to defining 'green' jobs, considering as 'green' any jobs created under the clean energy portfolio, given the sector's contribution to the transition towards a low carbon economy.

The Ayrton Fund encompasses a range of intervention types and the jobs supported through these vary significantly, requiring a flexible, adaptable approach to measurement. A methodology which assesses jobs supported, as outlined below, allows integration of the necessary flexibility while enabling consistency across the portfolio.

Figure 30: Recommended indicators and exclusions for Ayrton Fund jobs reporting

	Headline indicator (required across the portfolio)	Sub-indicators (determined on a programme basis)	Exclusions
Indicators	Jobs supported	• Direct • Indirect jobs	• Induced jobs • Displaced jobs • Modelled and estimated numbers
Variables	• Gender • Country	• Youth employment • Job quality • Job role • Formality of job • Skill level • Long-term/short-term • FT/PT	To be determined on a programme-by-programme basis

Figure 31: Suggested methodology for Ayrton Fund jobs reported moving forwards

Reporting process

1. Request jobs created data from companies or projects using the standardised questions outlined in Table 7 against the relevant sub-indicators.
2. Assess and process the data, translating self-reported answers to the questions into the relevant disaggregation variables. This can be flexible and adapt to the relevant context, particularly for more subjective measures such as 'decent' jobs. This will require the judgement of the relevant monitoring officer. This process should record any key assumptions made.
3. Where multiple partners, donors or programmes are involved, attribute the jobs supported according to the recommended portfolio approach.
4. Report an aggregated annual jobs supported number in the standardised format, disaggregated by the relevant sub-indicators (direct and indirect) and variables as agreed on a programme-by-programme basis, alongside a summary of the process used to obtain and process the data and any key assumptions.

Table 7: Recommended indicators and definitions for Ayrton Fund jobs reporting

Indicators		
Headline indicator	Jobs supported	An aggregation of the two sub-indicators (below). Programmes should report against the sub-indicators where relevant to their programme; data will then be aggregated to a total 'jobs supported' value. Both FT and PT jobs should be reported (i.e. the total number of distinct jobs, not the FT equivalent, should be stated).
Sub-indicator	Direct jobs	1. New and sustained jobs within the immediate scope of the project or company receiving support. 2. Jobs directly funded through the project/intervention. 3. Jobs created within the company following funding leveraged from initial investment/support.
Sub-indicator	Indirect jobs	1. Supported jobs immediately upstream or downstream from the intervention/project. 2. Jobs enabled, livelihoods improved, and additional income streams through productive use of energy access and/or clean energy appliances. 3. Entrepreneurs and self-employed workers engaged in activities directly related to the project or company receiving support. This should not include modelled or estimated numbers, only those which can be reasonably observed by the project and monitoring officer. This should exclude induced jobs.
Exclusions	Induced jobs Displaced jobs Modelled numbers	Induced jobs are those which are supported through increased economic activity of the direct and indirect workers. Displaced jobs refer to the fact that jobs created are likely to move people from one form of employment to another, so may not represent an overall increase in jobs. Displaced jobs are not considered in this methodology. Modelled numbers should not be included in reported values.

There are a range of programmes and intervention types across the Ayrton Fund, and any methodology recommended at portfolio level should be discussed with and adapted for specific programmes. Figure 31 includes some examples of the different types of employment opportunities supported through interventions, showing how these align with the sub-indicators recommended by this methodology.

This methodology can be used as a starting point to test with Ayrton Fund programme leads and delivery partners, adapted for each programme and pilot tested before implementation. Further guidance – for example, on attribution – should be developed and implemented alongside this methodology. Ensuring that methodologies align with, support and further the objectives of programmes will be essential to enable further uptake of jobs tracking, obtain high quality jobs data, and to maximise the employment impact of clean energy interventions moving forward.

Table 8: Recommended approach to disaggregation, including portfolio level requirements and programme level considerations

Level of priority	Variable	Questions for companies
Portfolio	Gender	What is the gender of the employee?
Portfolio	Country	In which country does the employee work?
Programme	Long-term/short-term	Does the job role last for longer than six months? Will the job only exist for the duration of the project?
Programme	Job role	What is the employee's job role?
Programme	Youth employment	In which of the following age categories does the employee fall: • 16–17 (apprentices) • 18–25 • 26–64 • 65+
Programme	Job quality	Note: what constitutes a 'decent' job will vary significantly across contexts and may include considerations of formality and skill level. Project monitoring officers should adapt questions as necessary to reflect the context, recording any changes made. Is the employee paid above the local minimum wage? Are the working conditions safe and healthy? Is the job paid on commission only?
Programme	Formal/informal	Is the worker employed on a formal contract?
Programme	Skill level	Does the job role require specific qualifications or training?
Programme	FT/PT	Is the worker employed for more than 240 days in a year?

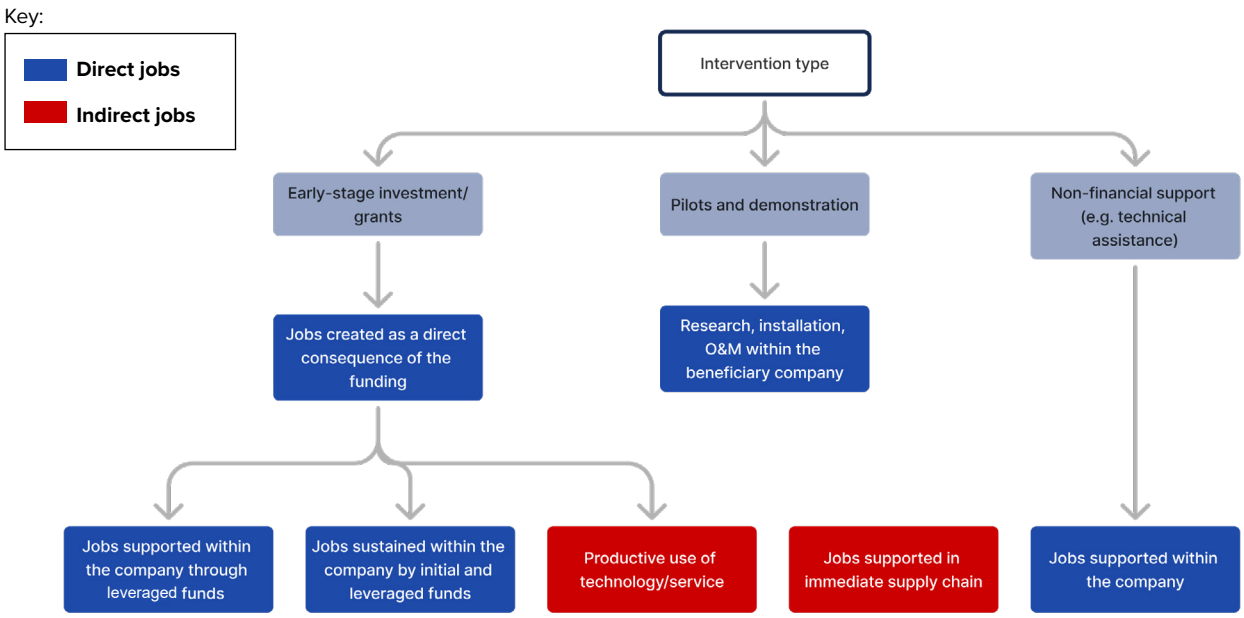

Figure 32: Identifying jobs created and jobs supported across intervention types (illustrative only)


Image credit: Ecobodda, Kenya 2023 - PREO

6. Appendices

Appendix 1: Stakeholders interviewed for this study

Table 9: Programmes and organisations interviewed for the purposes of this study

Programme	Organisation
BRILHO Mozambique	SNV
CEIF	Department for Energy Security and Net Zero
CHIC	Grand Challenges Canada
EATI and OGTI	Shortlist
ESMAP	World Bank
ICF	DESNZ
Joint Impact Model	AfDB
Low Energy Inclusive Appliances (LEIA)	CLASP and Energy Saving Trust (EST)
MECS	Loughborough University
PEII	Acumen
Power Africa	USAID
Powering Jobs Census	Power for All
SIIMA	Shell Foundation
TEA – PREO	Carbon Trust and Energy 4 Impact
TEA – TIME	Shell Foundation

Appendix 2: Defining green jobs

Table 10: Definitions of green jobs. Adapted from: Green jobs: rapid evidence review report

Organisation	Definition of 'green job'/sustainable livelihood	Comments
International Labour Organisation[41]	Jobs that reduce the consumption of energy and raw materials, limit GHG emissions, minimise waste and pollution, protect and restore ecosystems and enable enterprises and communities to adapt to climate change. Green jobs must be decent. They can be found in any economic sector and any enterprise.	• Sector-agnostic, broad approach. • Requires green jobs to be 'decent'.
UK Office for National Statistics Low Carbon and Renewable Energy (LCREE) survey	Jobs in sectors which "deliver goods and services that are likely to help the UK generate lower emissions of GHGs."	• Specifies 17 sectors. • All roles within these sectors are classed as green. • Includes renewable energy but omits protection and management of natural resources and recycling.
UK Green Jobs Taskforce	"Employment in an activity that directly contributes to – or indirectly supports – the achievement of the UK's Net Zero emissions target and other environmental goals, such as nature restoration and mitigation against climate risks."[42]	• Broad, sectoral approach. • For research purposes, defines 'green sectors'
O*NET[43]	Defines the green economy as "economic activity related to reducing the use of fossil fuels, decreasing pollution and GHG emissions, increasing the efficiency of energy usage, recycling materials, and developing and adopting renewable sources of energy". O*NET defines 12 sectors of activity within this and assesses the levels of greenness of occupations within these 12 sectors.	• Narrow (bottom-up) approach. • Assesses specific occupations within defined 'green' sectors.
OECD[44]	Green-task jobs have a significant share of tasks that directly help improve environmental sustainability or reduce GHG emissions.	• Task-based definition (bottom-up) approach. • Draws on the O*NET classifications.

Appendix 3: Ayrton Fund jobs data

Table 11: Jobs created data including both the values reported for the purposes of this report through the data disaggregation template, and the numbers included in the Ayrton Fund Year 2 report

Programme	Jobs created 2021/22		Jobs created 2022/23	
	Green Jobs Insight Study	Ayrton Fund Y2 report	Green Jobs Insight Study	Ayrton Fund Y2 report
TEA	20,981	21,271	19,712	19,370
MECS	373	373	379	379
LEIA	6,965	9,972	2,827	2,817
BRILHO Mozam-bique	-	2,821	2,401	2,401
SIIMA	94,340	94,000	8,091	8,091
CHIC	22	22	25	25
GCRF – Energy Catalyst	0	0	156	156
Total	122,681	125,459	33,591	33,083

Appendix 4: Data collection template

Table 12: Template for data disaggregation shared with Ayrton Fund partners who had reported jobs created 2021-23

Indicator	Guidance
Employer (company name)	The company receiving support who created the job.
Job type (direct/indirect)	Whether the job is direct, indirect or not specified, according to the definition used by the programme.
Job role	Job title or occupation of the employee.
Year	The financial year in which the job was reported (2021/22 or 2022/23).
Platform/Programme name	The platform or programme against which the job were reported.
Region	Categories as specified in Ayrton Fund reporting processes.
Country	As above.
Ayrton Challenge	As above.
Sector	As above.
Scale	As above.
Technology	As above.
Gender	As above.
Notes and assumptions	Any estimations, assumptions made in calculating or measuring the jobs created figures.

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