Employment metrics in South Africa's electricity value chains: Creating a basis for coherent discourse and decision-making

OVERVIEW

This policy brief aims to clarify the currently used metrics, what value they have, what they miss, and their policy implications. It begins by unpacking the technical definitions of various metrics used in the South African context, considering the implications associated with each metric. Additional concerns regarding methodologies and assumptions, and data sources are also elaborated. Having clarified these metrics, figures reported by key actors are systematically presented. Finally, this brief reflects on what the reported figures do and do not say, and policy suggestions, including a proposal for a standard metric, are made.

1. CONTEXT

South Africa has an extensive suite of policies that respond to the global climate crisis. These policies encompass mechanisms for decarbonising the economy and facilitating new climate-resilient and transition-compatible economic opportunities. The coal-dependent electricity sector is central to the country's decarbonisation plans, contributing about 41% of greenhouse gas (GHG) emissions. The national government has committed to a scheduled retirement of coal-fired power generation to transform this sector, which will have implications for the whole coal value chain, including mining and related businesses.

The Integrated Resource Plan (IRP2019) states that "the timing of the transition to a low-carbon economy must be in a manner that is socially just and sensitive to the potential impacts on jobs and local economies" (DMRE, 2019). The resultant employment planning imperative is central to the country's "just transition" policy and planning, which aims to manage the risks and vulnerabilities that arise from the process of transitioning from a carbon-intensive economy to one that is low-carbon, sustainable, and has a more equitable distribution of opportunities.

Given South Africa's significant unemployment, the prospect of job losses resulting from decreased demand for coal must be managed to protect livelihoods and create new opportunities. There are significant social, economic and political issues and trade-offs to be navigated. Different technology options and the pace and scale of deployment will have distinct consequences – costs, benefits and risks – for various actors across geographical regions and economic sectors. To surface the complex socio-political and socio-economic issues at stake, a clear, legitimate, robust and factual evidence base must be established. In other words, to achieve the country's just transition vision, it is necessary first to know where we are now.

Key to this evidence base is a credible assessment of the level of employment in the electricity sector as well as evolving and anticipated changes to this employment. Robust, credible employment figures are essential to just transition planning. The need to clarify job numbers for electricity generation across the coal and renewable energy value chains is urgent, given that these two value chains are already experiencing changes in employment.

Employment figures are necessary to answer several related questions, including:

- How much employment exists currently in the electricity sector across technology value chains?
- How many people depend on the electricity sector for their livelihoods?
- How much employment is anticipated to be lost in the coal value chain, and over what timescale?

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- How much employment will be generated by different electricity technologies, and over what timescale?
- What is the quality of jobs that stand to be lost and those that are being created?

The answers to these questions feed into essential policy decisions, including the process design for implementing the IRP's coal-fired power station decommissioning schedule, social security planning for energy workers, and industrial policy and Investment to support existing and new value chains.

Several assessments of current and anticipated levels of employment in the electricity sector have produced important data and information, and extrapolated various policy implications. However, there is variation in the figures that these various assessments have generated, based on:

- Different metrics;
- Methodologies and assumptions; and
- Data sources.

Resulting variations in the design and outcomes of studies has caused considerable confusion, leading to stakeholders speaking at cross-purposes at a time when looming job losses in the coal sector demand urgent and coherent action. It is vital that the differences be made transparent to facilitate a minimum level of consensus on the factual base and reasonable assumptions for employment policy between different actors and interest groups. At least some of this disagreement could be resolved by creating a clear framework for counting existing, diminishing and projected employment.

2. HOW MUCH EMPLOYMENT EXISTS IN ELECTRICITY VALUE CHAINS?

The question of how many jobs there are in the electricity sector depends on the assessment of different technology value chains, for coal and renewable energy. These assessments do exist, providing partial characterisations of employment. However, gaps and variations in these characteri-sations make planning within and comparisons across value chains difficult, if not impossible.

The Sector Jobs Resilience Plan, commissioned by the then-Departments of Environmental Affairs and Economic Development, has provided increased clarity and detail on the jobs in the coal value chain (Patel et al, 2020). However, what is still required is a level of detail on the status (permanent or casual), duration, and quality of this employment. Additional, more granular, understanding of indirect employment would also be useful.

These jobs are also not measured in a way that makes them easily comparable with other value chains, as explained below. In contrast, the relatively new renewable energy value chains (wind and solar) are not as well understood.

There are, however, a growing number of studies by the national government, research institutions, civil society and industry bodies that aim to characterise these value chains and their potential for future employment. The result is a rich but incoherent set of figures that aim to capture how much employment exists and how this would change under different policy scenarios.

Across the renewable energy and coal value chain assessments, the variation between assessments arises from differences in:

- Metrics (unit of employment).
- Methodologies, assumptions and boundaries (direct, indirect and induced employment; sector vs value chain; actual numbers vs modelling).
- Data sources (company data, surveys, and administrative data).

While divergences cannot be wholly resolved, given the inherent complexity of assessing jobs and the adaptation to particular research contexts and needs, it is possible to demystify different approaches. This is a crucial step towards facilitating greater coherence as a basis for a rigorous policy discussion on the current and potential employment within the electricity sector. The following section of this brief unpacks the metrics, methods and assumptions, and data sources currently applied within the sector and presents existing employment figures in South Africa's electricity policy and planning debates.

2.1. Employment metrics, methods and data

Incommensurate definitions of units of employment significantly hamper the comparability of job numbers. Table 1 on page 3 provides a summary of these units of employment. It is important to note that an employee is 'any person who has been engaged in paid employment or self-employment at a place of work or not over a specified period'. The unit of employment tells what is counted. It should be noted that these definitions and their limitations are not specific to the electricity sector.

Table 1: Definitions of units of employment and relevant actors applying these metrics

UNIT OF EMPLOYMENT	DEFINITION	PROS AND CONS	ORGANISATIONS USING DEFINITION
Headcount/ jobs	- A headcount measures the actual number of people employed over a specified period in a full-time or part-time capacity for a particular bounded project, organisation, value chain or geographical region, generally measured at a specific moment in time (for example, at financial year-end).	- Only a headcount indicates the number of people employed in and dependent on a value chain. - A headcount does not indicate the quality or duration of work performed by particular individuals. - The snapshot generated by a headcount may also overstate or understate employment, depending on the period considered at the time of measurement. - The current headcount in the coal sector does not have associated FTE or job-year measures to compare with other value chains.	- Minerals Council South Africa - Department of Labour - Statistics South Africa - Eskom - International Renewable Energy Agency (IRENA)
Job-year	- A job-year is a unit of employment that counts a quantity of time (hours, days, weeks, months) worked, benchmarked at an average equivalent for a year of employment for one person, working full-time. A job-year is not necessarily attributed to a particular working person. Several part-time or short-term jobs can be added to comprise a single job-year. - In South Africa, the IPP Office defined a job-year as 174 hours a month (about 43.5 hours a week) for 12 months for BW1 and BW2*. Thereafter, for BW3, BW3.5, BW4, 1S2 and 2S2, a job-year was defined as 160 hours a month (about 40 hours a week) for 12 months. - Person-year is used interchangeably with job-year, full-time employment for one person for one year. The term is also used as an adjective, as in person-year job, describing a job that was full-time for one year. *Note:*The REIPPPP has been implemented over several distinct rounds of procurement termed, 'bidding windows', each with respecified procurement criteria".*	- Job-years are cumulative measures of an amount of time (hours, days, weeks, years) of employment, not people employed. Several discrete jobs undertaken by different persons can add up to one job-year. - Depending on the number of hours specified in a particular methodology, the same amount of work can appear inflated or understated. - Employment measured in job-years does not indicate particular individuals' hours or quality of work. - Considering cumulative job years, the total number of job-years of employment over several years, without any disaggregation, further obscures the duration and quality of jobs performed by specific individuals. - The IPP Office's methodological change from 174 hours a month to 160 hours has led to a mechanically inflated representation of employment. The same number of job-years now represents fewer days of work.	- Department of - Minerals Resources and Energy (DMRE), notably in the IRP - Independent Power Producer (IPP) Office CSIR - South African Renewable Master Plan uses "cumulative job years"
Full-time equivalent (FTE)	- A FTE is a unit of employment equivalent to a year of employment for one person, working "full-time" over a specified period, taking into account non-productive days, such as weekends, holidays, sick leave. - When counting the work of a person working part-time, this would be assigned a proportion of an FTE (for example, someone working half the standard days would be counted as 0.5 FTE). - No universal number of hours is applied to measuring FTEs. A standard threshold is at least 35 hours a week, but this threshold could be higher, as in South Africa. - Office defines FTE as 230 days of work a year (about 153 hours a month).	- FTEs are cumulative measures of an amount of time (hours, days, weeks, years) of employment, not people employed. Several discrete jobs undertaken by different persons can add up to one FTE. - Not all FTEs are equivalent. Depending on the number of hours specified in a particular methodology, the same amount of work can appear inflated or understated. - The current definition of FTE translates into one FTE representing less employment than one job-year, approximately 10 fewer days of work over a year.	- Department of Public Works (DPW) - Broadly used by listed companies in annual reports in South Africa - The IPP Office converts its reporting in job-years to FTEs, applying the DPW's approach.

Sources: ILO, 2013; Messenger, 2018; IPP Office, 2021.

Another critical methodological concern is the boundary. This is not what is being counted, but where within the economy it is being counted. Defining the boundary can increase or decrease the employment attributed to energy infrastructure.

For all the metrics in Table 1, figures are often expressed as units per megawatt (MW) of installed capacity. The latter should be applied with caution when directly comparing coal-related employment to wind- and solar-related employment, as wind and solar technologies require greater installed capacity for the same level of electricity generation. The measure is more useful when deciding on the balance between utility- and small-scale solar PV installations, as there are indications that small-scale embedded generation is more employment-intensive than utility-scale infrastructure (Fourie, 2021).

2.1.1. Methodological concerns

Once the job metric has been selected, there is also the matter of how the unit of employment is operationalised. Important factors include the threshold for hours of work deemed full-time or part-time, the boundary for analysis, and other relevant assumptions. This is clearly illustrated in the way job-years has been redefined in South Africa, as well as the variable number of days considered full-time employment for FTEs in different reporting forums. These definitions and redefinitions can be confusing, especially if not well-communicated with a clear rationale.

Another critical methodological concern is the boundary. This is not *what* is being counted, but *where* within the economy it is being counted. Defining the boundary can increase or decrease the employment attributed to energy infrastructure. For electricity sector jobs, a critical conceptual issue is whether to include:

- Direct employment (employment in the construction or operation of power plants);
- Indirect employment (employment in the supply chains – including manufacturing – for the construction or maintenance of power plants; mining; oil and gas); and
- Induced employment (employment generated as a result of direct and indirect employees spending money on goods and services) (Zinecker et al, 2018).[1]

While linking job creation to economic activity seems intuitively simple, in reality attribution is a significant challenge, which amplifies as assessment boundaries expand, moving from a focus on direct employment to include indirect and induced employment. Indirect and induced jobs are inherently ambiguous and require clearly articulated and credible assumptions to be useful. Because applicable assumptions must be accepted by stakeholders engaging with studies, they are shaped by *why* and *for whom* employment is quantified.

In the South African context, the way different studies are scoped and where they place the boundary has significant consequences for debates when figures are compared to motivate alternative policies, plans and strategies. An erroneous comparison is often made between jobs in the entire coal value chain (direct and indirect employment), on the one hand, and renewable energy jobs associated only with the construction and operation of power plants (direct jobs), on the other. The latter, by definition, excludes manufacturing and mining jobs, among others. This kind of comparison understates the level of employment associated with renewable energy. To enable a reasonable comparison, the coal value chain must be viewed alongside solar and wind total value chains. While some preliminary work has been published on the solar value chain, there is currently no value chain employment assessment for wind (Fourie, 2021).

2.1.2. Data considerations

Different data sources can produce inconsistent employment figures, even if the same methodology is applied. Renewable energy employment studies use data sources that are mainly reported by selected companies in the electricity value chains. To be robust and enable standardisation, firms providing plant-level data require precise definitions of work to be uniformly applied across companies. Survey data and direct engagements with firms, workers and other stakeholders are also commonly used in bottom-up employment data collection. Surveys can provide rich data to create a fuller picture of the nature and experience of employment for employees.

In South Africa, renewable energy employment studies have drawn on data from independent power producers (IPPs) in the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). This has limited the understanding of, and debates on, renewable energy employment, failing to consider how different renewable energy deployment in residential, commercial and public sectors, as well as by Eskom, could shape employment. It has also limited the

[1] *Measuring informal employment that is connected to energy value chains is also a significant and relevant challenge, given the extent of informal sector employment and associated livelihoods connected to coal-based power generation supply chains (notably, mining).*

REIPPPP contracts with independent power producers have included non-disclosure agreements. These agreements have made accessing data a challenge, even at the aggregate level. The result is that, in South Africa, renewable energy employment data is provided only by an indicative and often insufficient sample of companies.

boundary for analysis, framing renewable energy employment as confined to only one part of the value chain. In addition, REIPPPP contracts with IPPs have included non-disclosure agreements. These agreements have made accessing data a challenge, even at the aggregate level. The result is that, in South Africa, renewable energy employment data is provided only by an indicative and often insufficient sample of companies.

2.1.3. Forecasting future employment must be sufficiently qualified

While assessments of current levels of employment count either a quantum of time (hours, days, weeks, months, years) of work or people working, projections of future employment extrapolate from a labour-intensity ratio (the average number of people employed per MW of installed capacity). These ratios are inferred from current national and international employment data of varying robustness. Applicable assumptions vary by assessment and can be contentious. Different stakeholders may believe assumptions to be overly optimistic or inflationary (for example, failing to account for increasing efficiency correlated to diminishing additional labour per MW per project), or they may be considered artificially limited. These respective perspectives depend on stakeholder access to information, as well as their own positions in the electricity sector. It is essential that these assumptions are tested with relevant stakeholders to facilitate greater acceptance of and engagement with research outputs.

A further consideration for forecasting future employment in the energy sector is whether studies use gross or net employment (Tyler, 2018). Net employment figures account for jobs created, minus jobs lost over a period of time in the sector. Gross employment projections do not account for jobs lost, only jobs created, thus overstating the overall level of employment in the sector in the future. Net employment figures, with as much disaggregation of data as possible, are required to generate an accurate view of overall employment trends and to adequately assess the extent of necessary social security interventions.

2.2. Applying job metrics to the measurement of South African energy jobs figures

As noted, the unit, method, and data chosen for particular studies lead to varying figures for current employment, as well as projected future employment. Table 2 provides a selection of employment assessments measuring current and projected employment for South Africa.

Table 2: Definitions of units of employment and relevant actors applying these metrics

Actor	Unit	Methodology / formula	Latest figures (2020/21)	Publication
CSIR*, Energy Systems Analysis, Economics and Policy Group, Institute for Advanced Sustainability Studies	Job-year	- Assessment of jobs created by the IRP 2018 planned renewable energy investments	- Job years produced by a typical 86 MW solar PV power plant direct value chain: - Project development: 386 - Construction: 1 709 - Operations and Maintenance: 1 575 - Total estimated construction job-years created between 2018 and 2030: 399 600 (with the bulk coming from wind plan construction) - The study projects 150 000 job-years by 2050.	IASS and CSIR, 2019
IPP Office	Job-year	- One hundred seventy-four hours per month for REIPPPP bid window (BW) 1 and 2, averaged over 12 consecutive months. - One hundred sixty hours per month for BW3, BW3.5, BW4, 1S2 and 2S2), averaged over 12 consecutive months. This change inflates the job-years created.	- Job-years created from 2016 to 2021: 57 071	IPP Office, 2021
	FTE	- Two hundred and thirty person-days of work (equivalent to 365 days, minus non-productive days)	- FTEs created from 2016 to 2021: 67 033	

Table 2: Selected energy employment figures, with a focus on electricity *(continued)*

Actor	Unit	Methodology / formula	Latest figures (2020/21)	Publication
DMRE (IRP)	Headcount/ jobs	- Total number of jobs (headcount)	- Total net employment increased by 2030 (2020 baseline year) based on allocated MW per technology**: +55 000 (Natural Gas) +50 000 (Solar) +60 000 (Wind) +44 000 (Nuclear) - 100 000 (Coal)	Department of Energy, 2018; DMRE, 2019
Eskom	Heacount/ jobs	- Total number of people employed per year	- As of 31 March 2020: 44 772 - As of 31 March 2021: 42 749 – Cumulative headcount, reflective of annual jobs created from new build projects (2007 - 2021): 189 000***	Eskom Holdings SOC Ltd, 2021
IRENA	Headcount/ jobs	- Estimates are derived from primary data (typically government reports) and fed into the Cambridge E3ME macroeconomic model. - IRENA has dedicated country focal points which provide country-specific data.	Total jobs Solar PV: 21 451 CSP: 10 442 Wind: 18 840 Coal (direct): 92 000 Coal (indirect): 170 000	IRENA and ILO, 2021
Minerals Council	Headcount/ jobs	- Total number of jobs over an unspecified time	- Direct Coal Generation jobs (2017): 42 300 - Estimated figure in 2030: 42 667 - Coal mining jobs tied to Eskom generation (2017): 37 834 Estimated figure in 2030: 34 162	Minerals Council South Africa, 2020a, 2020b
Statistics South Africa	Headcount/ jobs	– Persons employed	- Electricity Sector (June 2021): 56 000 employees - Loss of 1000 jobs registered from 2020 to 2021 in the electricity sector	Statistics South Africa, 2021
South African Photovoltaic Industry Association (SAPVIA)	FTE	-Two hundred and thirty person-days of work (equivalent to 365 days, minus non-productive days)	- Solar PV Job intensity: 39 FTE per MW for SSEG 17 FTE jobs per MW for utility-scale - Total FTE under different scenarios: IRP2019 (Solar PV): 35 000 FTE Accelerated scenario (using the I-JEDI Model, up to 2030): 38 000 FTE High road scenario (using the I-JEDI Model, up to 2030): 40 000 FTE	Fourie, 2021
TIPS	Headcount/ jobs	Persons employed	- Total employed persons: Coal Mining: 80 000 Electrical Generation (Eskom only): 12 000 Petrochemical production (Sasol only): 26 000	Patel et al. 2020

* Based on preliminary findings using a customised version of the Jobs and Economic Development Impacts (JEDI) model, presented in *Formal comments on Draft Integrated Resource Plan 2018*, the CSIR applies the IRP 2018 job-years in its latest modelling of projected employment in the electricity sector (Wright et al., 2018). Updated results expected by end 2021.
**These employment figures include direct, indirect and induced jobs.
***This number is based on successive annual headcounts for direct employment. On 31 March 2021, 13 480 contractor employees were employed at the Medupi and Kusile, together with transmission projects.

A further consideration for forecasting future employment in the energy sector is whether studies use gross or net employment (Tyler, 2018). Net employment figures account for jobs created, minus jobs lost over a period of time in the sector. Gross employment projections do not account for jobs lost, only jobs created, thus overstating the overall level of employment in the sector in the future.

3. WHAT THE AVAILABLE NUMBERS DO AND DO NOT REVEAL

3.1. There is no robust comparable total for people employed in different electricity value chains (coal, nuclear, wind, solar)

Comparisons across value chains are limited due to different job metrics (job-years and FTE for renewable energy, and headcount for coal). As a result, for renewable energy, the FTEs and job-years do not indicate how many people depend on these value chains for employment. In contrast to the coal value chain, there is no full headcount for people employed in renewable energy value chains. The coal sector's use of headcounts fails to capture the overall amount of employment available to people employed in its value chain. The scoping of value chains between technologies is also inconsistent, making comparisons relatively meaningless at present.

A bottom-up headcount is needed for renewable energy value chains, considering all renewable energy installed in residential, commercial, and public sectors, as well as IPPs and Eskom. To allow for comparability, an expression of employment in FTEs is required for the coal value chain.

3.2. There is no agreed understanding of the state of underemployment in the energy sector or electricity value chains

FTEs, job-years, and headcounts do not communicate the extent to which individual workers are working full-time, overtime or part-time. Part-time employment is a broad category. It is imperative to understand the range of part-time employment in energy value chains and to establish the prevalence of marginal part-time employment (low hours, sometimes pegged at fewer than 15 hours a week). Understanding the vulnerability and needs of workers requires an understanding of underemployment, as well as supplemental work (formal and informal) undertaken to derive a viable livelihood.

In South Africa, there has been significant resistance to the use of job-years from labour stakeholders to assess the level of employment in the energy sector. While there is a preference for using FTE instead, it is crucial to understand that full-time equivalents are not full-time employees. FTEs are similar to job-years in what they communicate. Job-years, FTEs, and headcounts are not able to communicate any information about the security of employment, the rights of workers, and the viability of livelihoods. The DMRE's IPP Office has required renewable energy IPPs to report only "meaningful employment", but the absence of a clear definition of meaningful work effectively renders this requirement moot for the purposes of evaluating employment.

FTEs, job-years and headcounts also only provide a snapshot of employment at a particular time. From year to year, these measures offer no understanding of job tenure, whether the same people are employed over time or whether employed people fall into unemployment and other individuals are employed. It is crucial to understand these dynamics, especially given that increases in employment in the coal value chain over the past decade have been increases in casual labour via labour brokers (Hermanus and Montmasson-Clair, 2021). From the perspective of companies in the value chain, notably mining companies, people employed in this way are not employees. The intermediary companies that hire casual employees are service providers to mining companies. These people are therefore not fully accounted for in private sector transition planning, encompassing early retirement with compensation, reskilling or reemployment plans.

Reporting on jobs should include hours worked per person per job to understand how underemployment and associated vulnerabilities persist despite gross or net job creation. Measures of casual versus permanent employment and employee attrition rates would be helpful in understanding the precarity of labour in coal and renewable energy value chains. Consistently applied methodologies should also track changes in employment over time as a basis for adequate policy and planning for the energy transition.

3.3. The quality of work in electricity value chains is not well understood

While tracking the number of employees and the amount, location and duration of employment is paramount, it does not provide all the information needed to plan for the vulnerability or wellbeing of workers and the communities in which they reside. Additional information is required that needs to be collected at the plant level and associated supply chains. This is required to adequately understand the nature and quality of employment and associated worker livelihoods and needs, as well as the extent to which employment in the coal and renewable energy value chains is "decent work" (Van der Ree, 2019).

FTEs, headcounts and associated quantitative information should be supplemented with quantitative and qualitative data that allows for a thorough understanding of remuneration, working conditions, social protection, nature of contracts, and other livelihood considerations, including access to infrastructure and basic services.

Without a clear evidence base, just transition policy, planning and implementation are at risk of an unaffordable misallocation of scarce resources.

3.4. The application of electricity employment data in policy and planning

Zooming out from these issues, a critical matter not determined by the data or its analysis is how electricity employment information is incorporated in decision-making, both within the electricity and broader energy sectors and within national industrial policies. It is not clear how trade-offs between employment generation within the sector, and enabling employment through affordable, reliable and sustainable energy access in the broader economy, are being considered and navigated. One connected policy consideration is the extent to which the full financial, social and ecological cost of marginal employment creation for different energy value chains can be justified, as opposed to opting for facilitating job creation in the broader economy, particularly in sectors prioritised in just transition planning. Understanding the relative cost of employment creation in different just transition sectors, such as electricity or agriculture, is also necessary for planning for the geographical location of electricity infrastructure investments, as well as economic diversification planning for coal-dependent regions.

Where pertinent, policy trade-offs regarding employment creation in the electricity sector and the broader economy should be articulated. Clear articulation would allow for more responsive engagement from key stakeholders.

4. POLICY CONSIDERATIONS AND THE NEED FOR COHERENCE

Robust job numbers are necessary to make adequate policy and investment provisions, make provision for workers that stand to lose employment, support workers who are precarious and underemployed, and make critical investment decisions to realise potential job creation in South Africa's energy transition. Without a clear evidence base, just transition policy, planning and implementation are at risk of an unaffordable misallocation of scarce resources. While there is an inherent complexity to the measure of both the level and quality of employment in energy value chains, it is possible to derive clear points of necessary action. For the purposes of just transition planning, the following steps are proposed:

Metrics

- Given that there is a preference from stakeholders for FTE over job-year, it is proposed that FTE is supplemented with headcounts and that these are used together as the standard measures for future employment studies and communications in policymaking, implementation, monitoring, and evaluation. This allows for the ascertainment of how much employment exists and how many people are impacted by employment dynamics. FTEs can also easily be converted into job-years for comparability with international cases.
- Employees should also be categorised in terms of hours of work and duration of contracts.
- Additional qualitative information regarding the quality of work needs to be collected to allow for appropriate support for workers. This includes wages, benefits, and other decent work metrics that characterise the worker's experience of employment and their home and community life, in relation to their employment.

Methodology

- There is a need to supplement top-down modelling with bottom-up assessments of employment, qualitative surveys and qualitative case studies that aim to understand the extent to which decent work requirements are met and the vulnerability of workers and their livelihoods. This would entail place-based, detailed mapping of the type and conditions of direct and indirect employment and additional livelihood information for all electricity value chains.
- Studies that aim to understand induced employment will have localised, context-specific relevance for particular investments, which will aid in the assessment of local economic vulnerability to coal-based power station decommissioning, particularly in Mpumalanga province, in which 80% of the coal value chain is concentrated. It is suggested that such studies are targeted towards supporting place-based local economic development planning as induced employment figures have limited value for comparisons between technology value chains at the aggregate level.
- Due to the methodological challenges associated with measuring induced employment, value chain assessments for just transition planning should focus on direct and indirect employment. This is crucial for industrial policy and planning, including the South African Renewable Energy Masterplan and related decisions to incentivise the localisation of manufacturing.

Data

- Clear guidelines and definitions for reporting on employment need to be provided for companies in energy value chains – for voluntary and mandatory reporting.
- Company data needs to be supplemented with survey data to test its robustness and to ascertain additional qualitative information regarding the nature and quality of employment, indicators of decent employment and livelihoods data.

Clear guidelines and definitions for reporting on employment need to be provided for companies in energy value chains – for voluntary and mandatory reporting.

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