

# JOBS IMPLICATIONS OF THE ENERGY TRANSITION

Chapter 5 of the report on African perspectives  
of a just transition to low-carbon economies, in  
Ngwadla *et al* 2024.

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# About the study



The study commissioned by the ACF-UNECA;



Compendium of expert perspectives

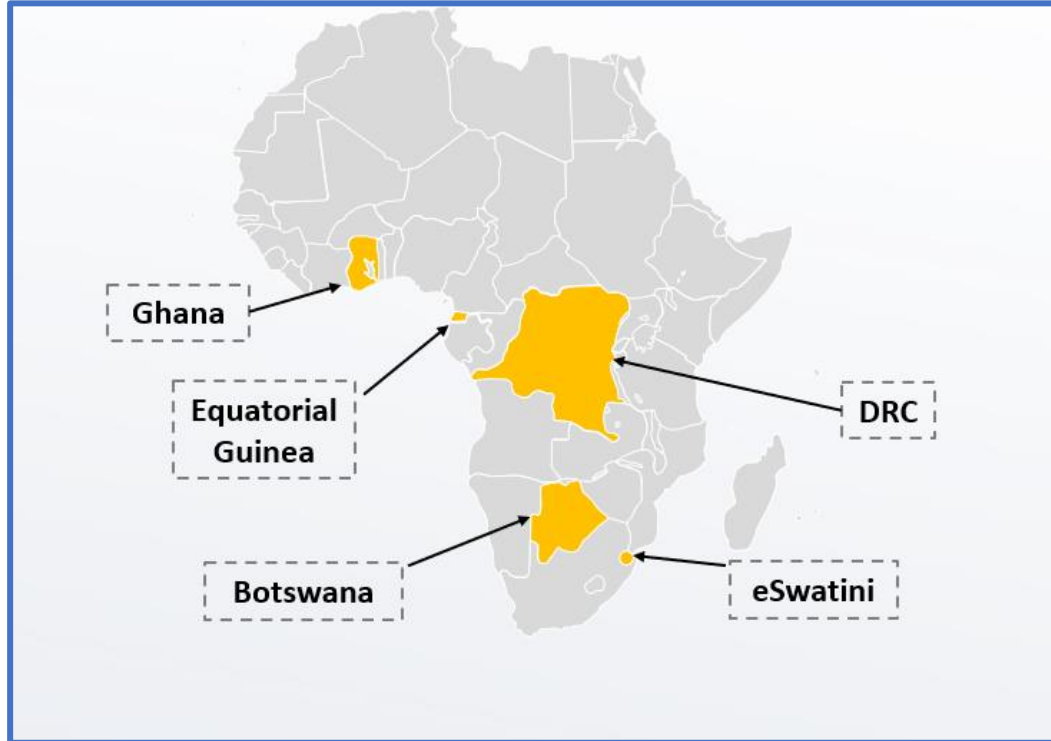


Reports launched at CCDA XII

1. African Just Transition Framework
2. Trade implications of the energy transition
3. Economic implications of the energy transition
4. Mitigation implications of the energy transition
5. **Jobs implications of the energy transition**
6. Finance implications of the energy transition

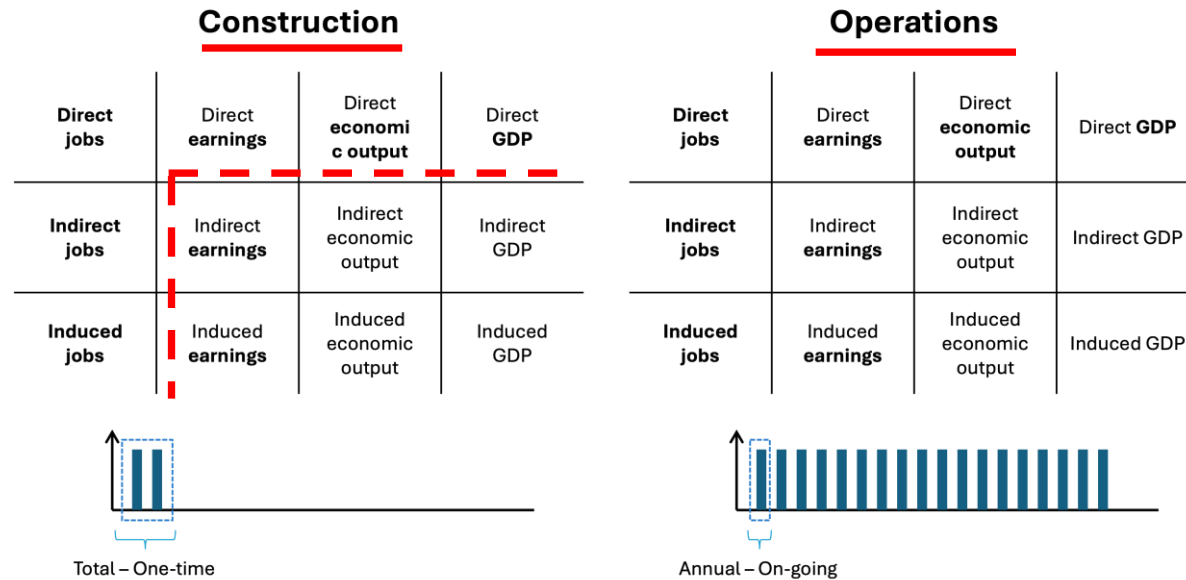


# Countries covered



- 5 African economies of different energy typologies
- Analysis based on NDCs and/or National Policies
  - Botswana; coal, natural gas, uPV, wind,
  - Ghana; uPV, dPV, wind, bioenergy, hydropower,
  - DRC; hydropower, wind, uPV, geothermal,
  - Eswatini; uPV, bioenergy, hydropower
  - Equatorial Guinea; oil, natural gas, bioenergy, waste\*

# Modeling Framework







- Jobs and Economic Development Impact (JEDI) Model;
- NREL Open source I-O Model; most suited to utility scale
- Local Content Requirement (LCR); 30% and LCR 60% scenarios - excl. geothermal and hydropower
- Results are gross, rather than net impacts; potential vs realised impacts





# Example: Botswana uPV

Year	Wind (MW)	Solar PV (MW)	Natural Gas (MW)	Coal (MW)
2021				
2022		100		
2023		100		
2024		100		
2025		100	10	
2026		100	10	300
2027	50	200	10	300
2028	50	200	10	300
2029	50	200	10	300
2030	50	200	10	300

A more localised value chain delivers higher social and economic benefits, either through LCR and/or localised supply chains

Economic Impact Estimates (ZAR R 2024)				
				
<b>30 % local content</b>				
<b>Construction Period</b>				
<b>Total Impacts</b>	<b>On-Site</b>	<b>Supply Chain</b>	<b>Worker Expenses</b>	<b>Total</b>
<b>Jobs</b>	12 637	12 085	13 463	38 184
<b>Earnings</b>	R 3 634 839 673	R 3 761 628 970	R 4 454 717 929	R 11 851 186 571
<b>Output</b>	R 20 616 844 619	R 17 314 230 686	R 29 109 488 743	R 67 040 564 048
<b>Value-added</b>	R 7 449 802 785	R 8 177 660 367	R 8 384 795 128	R 24 012 258 280

Economic Impact Estimates (ZAR R 2024)				
	On-Site	Supply Chain	Worker Expenses	Total
<b>Operations and Maintenance</b>				
<b>Annual Impacts</b>				
<b>Jobs</b>	253,8	347,3	298,5	899,60
<b>Earnings</b>	R 60 041 441	R 103 962 095	R 98 775 446	262 778 982
<b>Output</b>	R 447 108 508	R 486 570 438	R 645 451 134	1 579 130 079
<b>Value-added</b>	R 133 126 849	R 215 453 493	R 185 917 917	534 498 260

Economic Impact Estimates (ZAR R 2024)				
				
<b>60% local content</b>				
<b>Construction Period</b>				
<b>Total Impacts</b>	<b>On-Site</b>	<b>Supply Chain</b>	<b>Worker Expenses</b>	<b>Total</b>
<b>Jobs</b>	16 951	16 051	17 977	50 979
<b>Earnings</b>	R 4 870 147 449	R 5 006 374 345	R 5 948 395 219	R 15 824 917 014
<b>Output</b>	R 27 503 859 879	R 22 798 215 232	R 38 869 968 074	R 89 172 043 184
<b>Value-added</b>	R 9 155 530 946	R 10 873 666 158	R 11 196 236 451	R 31 225 433 555

# Modelled Technologies: Jobs/MW at LCR 60%

	Direct	Indirect	Induced	Total/MW
Coal	15	17	17	49
Natural gas	8	8	11	27
Utility scale Solar PV	17	16	18	52
Distributed Solar PV	13	12	14	38
Bioenergy	19	14	20	54
Geothermal	95	62	97	254
Hydropower	49	1	0	50

- Based on these case studies geothermal provides the highest potential for direct jobs per MW at 254, with natural gas generating the least number at 27 jobs/MW
- Whereas coal, utility scale PV, bioenergy, and hydropower create a comparable amount  $\pm$  50 jobs/MW

# Key Messages

Table 14.2 | Criteria for assessing effectiveness of international cooperation.

Criterion	Description
Environmental outcomes	To what extent does international cooperation lead to identifiable environmental benefits, namely the reduction of economy-wide and sectoral emissions of greenhouse gases from pre-existing levels or 'business as usual' scenarios?
Transformative potential	To what extent does international cooperation contribute to the enabling conditions for transitioning to a zero-carbon economy and sustainable development pathways at the global, national, or sectoral levels?
Distributive outcomes	To what extent does international cooperation lead to greater equity with respect to the costs, benefits, and burdens of mitigation actions, taking into account current and historical contributions and circumstances?
Economic performance	To what extent does international cooperation promote the achievement of economically efficient and cost-effective mitigation activities?
Institutional strength	To what extent does international cooperation create the institutional framework needed for the achievement of internationally agreed-upon goals, and contribute to national, sub-national, and sectoral institutions needed for decentralised and bottom-up mitigation governance?

IPCC, Working Group III, Chapter 14

**Key Message 1:** Renewable energy technologies tend to create the most jobs during the construction phase; rather than the full lifetime of a facility.

**Key Message 2:** African Governments should develop LCR policy frameworks to maximise shared benefits from the transition; noting WTO restrictions on 'mandating local suppliers', export restrictions.

**Key Message 3:** Opportunities exist for African economies to leverage regional demand driven by urbanisation, pursue economies of scale for critical technologies.

**Key Message 4:** Evidence-base is critical to implementable commitments under the UNFCCC, and a fair transition

# Thank You!

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