Renewable Energy Auctions in Sub-Saharan Countries

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Renewable Energy Auctions: A New Paradigm for Asia

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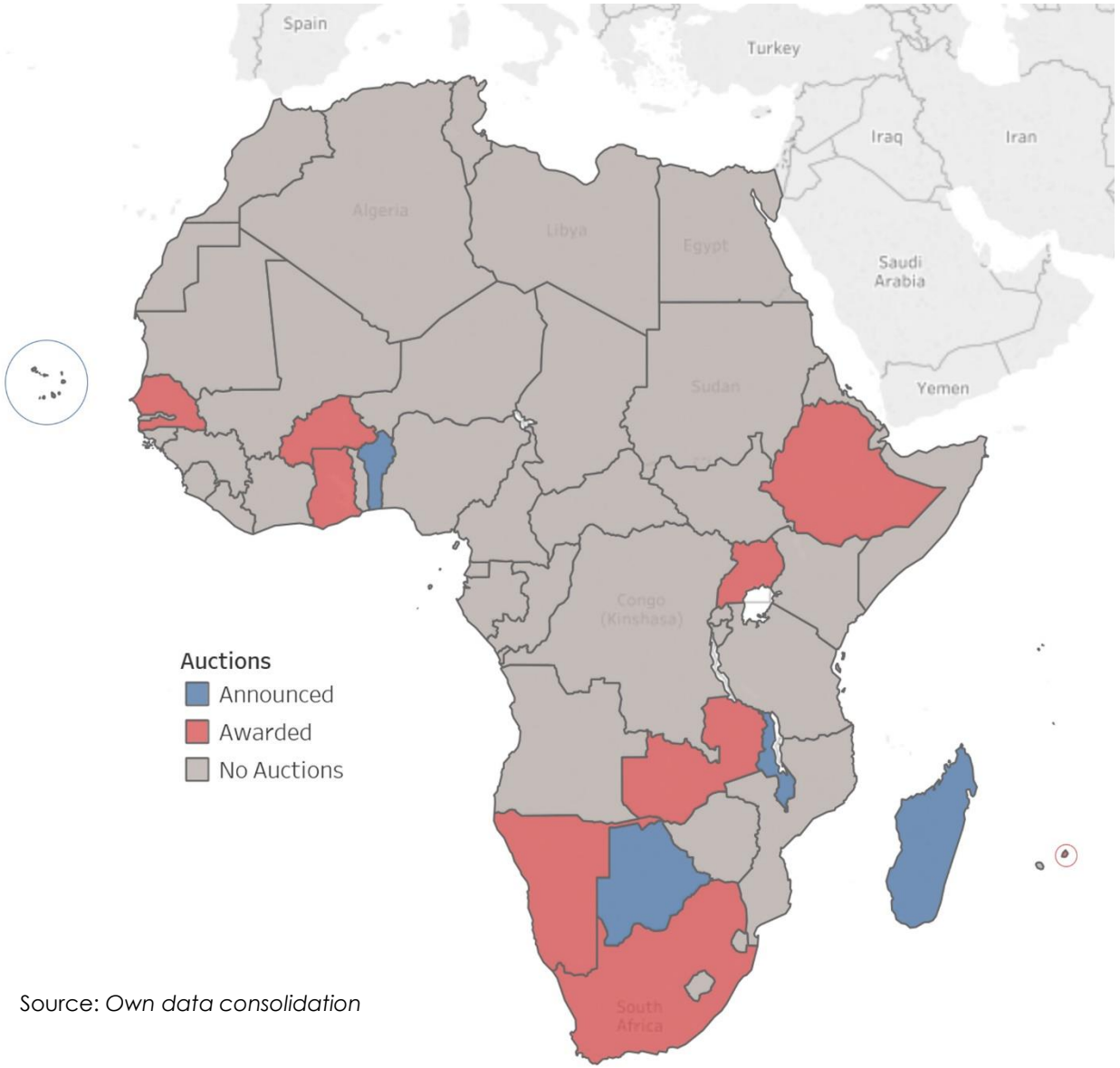
Factor
Ideas for change

1. Introduction

SSA Renewable Energy Auctions Mapped



Source: *Own data consolidation*

Increasing experience and increasing interest

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Design and Assessment of Renewable Electricity Auctions in Sub-Saharan Africa

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Abstract Auctions have recently been regarded as a useful alternative to other support schemes for setting the remuneration of renewable electricity (RES-E) worldwide. They have also been increasingly adopted in the sub-Saharan Africa (SSA) region, mostly due to their promise to support the deployment of RES-E projects cost-effectively. The aim of this article is to identify the design elements of RES-E auctions in SSA and assess their pros and cons with respect to different criteria. The results show that the design elements adopted in the SSA auctions are similar to other countries, but some design elements are deemed very relevant in order to address specific constraints to RES-E investments in SSA countries, including pre-selection of sites, technology-specific (solar PV), and price-only auctions. However, the main distinctive feature of auctions in SSA is that they are part of a broader policy mix of support mechanisms aimed at de-risking and providing technical suppo-**

Keywords: sub-Saharan Africa, renev
design elements, policy mix.

1 **Introduction**

Many countries in sub-Saharan Africa
currently experiencing an energy crisi
in SSA lack access to electricity (Caste
electrification rate of only 26 per cent
has 13 per cent of the world's populat
of the global population without acce
region in the world where the absolute
electricity is increasing (IEA 2014: 30)

Some authors provide in-depth analys
(see Castellanos *et al.* 2015; KPMG 20
et al. 2016; Climatescope 2016; IEA 2
the energy crisis, including high-dema
non-cost recovering tariffs, low utilisat

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RENEWABLE ENERGY AUCTIONS

CASES FROM SUB-SAHARAN AFRICA

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February 20th, 2018

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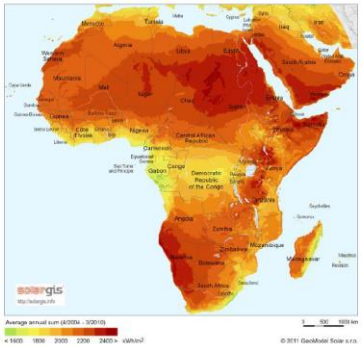

2. Design Options

- **Contextual factors** explain **25%** of the prices:
  - Solar irradiation
  - Easy doing business
  - Size of the auction
  - Time

- Sector and **tender specific factors** explain 75% of the prices:
  - Overall financial viability of the sector
  - Transaction documents
  - **Tender design**

Comparative auction design option in selected SSA countries

DESIGN ELEMENT (Category and Subcategory)		UGANDA	ZAMBIA	GHANA	REST OF THE WORLD*
TECH. SCOPE		Small PV (< 5 MW)	PV	PV	
1 VOLUME	Generation (GEN), budget (BUD) or capacity-based (CAP)	CAP (20MW)	CAP (2x50 MW)	CAP (20MW)	CAP: 21 BUD: 4 GEN: 4
2 PERIODICITY	Schedule (Y/N)	N	N	N	Y: 10 N:16
3 DIVERSITY	Geographically-neutral (Y/N)	N; preferred zones for the location identified.	N (site-specific)	Y; the developer chooses the site in coordination with the off taker (ECG)	Y: 17 N: 9
	Size neutral (Y/N)	N Maximum project capacity 5MW	N	N Maximum project capacity 20 MW	Y:10 N:16

Source: *Own elaboration.*

** Number of countries applying to each design element.*

Comparative auction design option in selected SSA countries

DESIGN ELEMENT (Category and Subcategory)		UGANDA	ZAMBIA	GHANA	REST OF THE WORLD*
4 PARTICIPATION CONDITIONS	Prequalification requirements	Technical Financial Bid Bond	Technical Financial Bid Bond	Technical Financial	
	Local content rules (Y/N)	N	N	Y (minimum of 20%)	Y:11 N:15
5 SELECTION CRITERIA	Price-only vs. Multicriteria	Multicriteria 70% price 30% (technical, financial, environmental and social parameters)	Price	Price	Price: 18 Multicriteria: 8
6 AUCTION TYPE	Static, dynamic and hybrid	Static	Static	Static	Static: 25 Dynamic: 0 Hybrid: 1

Source: *Own elaboration.*
** Number of countries applying to each design element.*

Comparative auction design option in selected SSA countries

DESIGN ELEMENT (Category and Subcategory)		UGANDA	ZAMBIA	GHANA	REST OF THE WORLD*
7 PRICING RULES	Pay as bid vs. uniform	Pay as bid	Pay as bid	Pay as bid	PAB: 21 Uniform: 3 First-price: 3
8 CEILING PRICES	Ceiling prices (Y/N)	Y	N	Y (ceiling price is the FIT)	Y: 19 N: 7
9 REALIZATION PERIOD	Deadlines for construction (years)	2	1	2	Variable

Source: *Own elaboration.*
** Number of countries applying to each design element.*

- The simplicity of **PV projects** makes the setting of support through **auctions** (rather than administratively) an appropriate choice since competition is likely to be greater than in projects with longer lead times (biomass) changing the perception that cheap renewable energy projects cannot be deployed **in poor countries with weak institutions and high costs for conducting business**.

- Auctions for RES-E support might be **useful to address** some of the **constraints** to RES-E investments **in SSA**, including **limited economic resources and weak grids**.

- Key design aspects to attract investors in a high-risk perceived environment such as the one existing in SSA countries: **technology-specific (PV), sealed-bid with Pay as bid and price-only auctions**
- **Auctions were part of a broader package** of measures aimed at de-risking (land agreement, World Bank's partial risk guarantee) and capacity building (need for technical assistance for the design and implementation of the auction processes including the PPA)
- Regarding **"a priori" effectiveness**, the results can be deemed quite **satisfactory**. In Uganda and Ghana, 20 MW were auctioned and they were all awarded. In Zambia, whereas 100 MW were auctioned for the two projects (50 MW each), 73 MW were awarded (45 MW and 28 MW)

- Regarding the types of actors, **mostly large, international investors** have been attracted, although some local developers have participated (in Uganda). The presence in Uganda of local developers can be explained by the small maximum size of the projects (5 MW)

- Advantage
  - **Guarantees integration** of variable electricity into the grid (dispersion)
  - **Reduces** risk of project **delays**
  - **Reduces** the **administrative burden** for project developers
  - **Reduces cost** if it comes with free land agreement
- Disadvantages
  - May not be in the sites with optimal resources (**increases final price**)
- There are **other design options** to mitigate impact of variable electricity
  - To limit the project capacity
  - Technical requirement (pre approval or to the machines)
  - Zoning (caps)
- It has to be a **technical decision**

Thank You

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