

AFSEC's support for Africa's electrification

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AFSEC

Challenges in the African context

Only 17% of people in rural sub-Saharan Africa have access to electricity.

More than half of the world's population without electricity access are in Africa

>630 million
without - and
growing

Total population

USA	322M
UK	64M
Japan	127M
Germany	81M
	<hr/> 594M

The latest estimate (634million) of un-electrified population for sub-Saharan Africa continue to be revised upwards, illustrating how rapid population growth can continue to outpace the rate of electrification in many countries and conceal the progress that has been made.





The size of Africa implies massive needs and opportunities for electrical infrastructure development – **requiring appropriate standards**

AND

In excess of 600 million Africans waiting for access to electricity and electrical appliances **conforming to appropriate standards**

African Electrotechnical Standardization Commission (AFSEC)

- AFSEC established in 2008, recognizing the lack of a focus on standardization in the African electricity sector
- Members are National electrotechnical committees representing the country's electricity industry/stakeholders
- Initial focus areas
 - Agreement on existing standards for common adoption : a growing catalogue of mainly IEC standards
 - Capacity building in application of internationally accepted conformity assessment system
 - Increase the knowledge on the application of standards

Membership January 2016



AFSEC

Statutory members:

National
Electrotechnical
Committees of

- Egypt
- Cote d'Ivoire
- Ghana
- Nigeria
- Namibia
- South Africa
- Zambia
- Kenya
- Rwanda
- Sudan
- D R Congo

Affiliate members

- APUA/ASEA
- AFREC
- PIESA
- SADCSTAN
- COMESA
- SAPP
- EAPP

- NECs from Senegal and Libya
[to return to full membership in
due course]

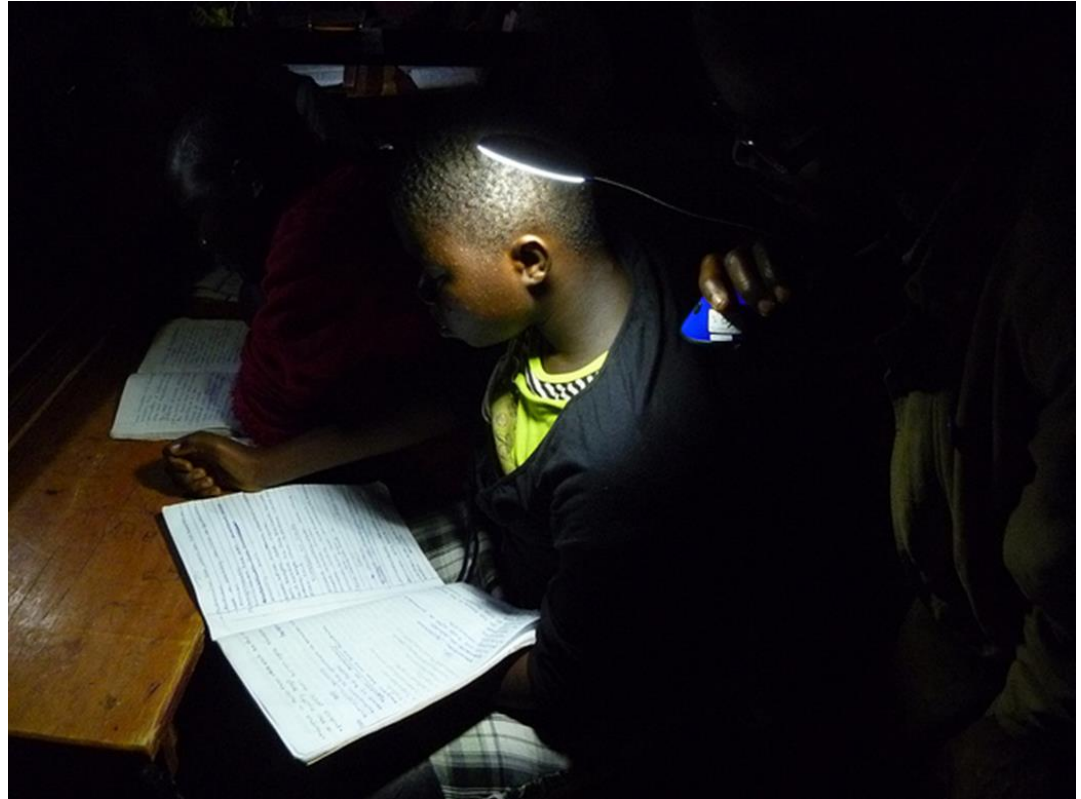
For African citizens living in areas like these – what are the prospects for access to safe, reliable electricity?
What role for standards and standardization?



From this

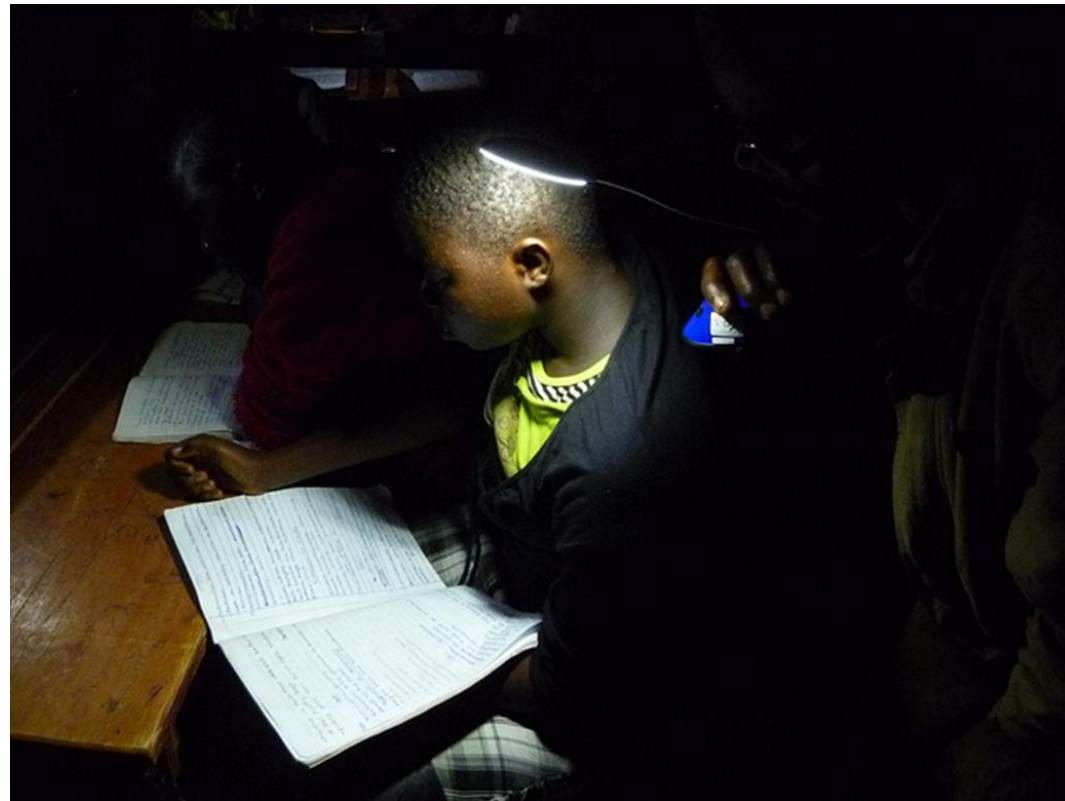


To this: solar-powered LED lamps is a step change in the progress towards “universal access” and the only that many communities will experience for decades. Safety is inherently improved



Ensuring the quality , efficiency , reliability, and long-term effectiveness of such products through appropriate standards and conformity assessment systems is a major contributor to sustainable access to modern energy, however minimal that access may be.

Here the role of standardization and quality infrastructure institutions are vital. Is there sufficient awareness among the NGOs and financing institutions?



Isolated systems – a fast growing alternative

Wind turbines and PV systems/

Hybrid systems

Main challenges :

24h availability (v) viable power output

Safety standards : high current, permanent DC source

Application of IEC 62257 series

for the UN SE4ALL initiative

- Power quality of the isolated system can be decided independently
- Some safety issues to be considered in the design – e.g constant source of large DC: fire hazard
- Where system are to be integrated into the grid (embedded generation): connection rules and PQ standards to be agreed
 - Potential for PQ limits to be exceeded. (e.g. voltage regulation)
 - Coordination of standards IEC TC 8/ IEC TC 82/ IEC TC 64
 - Each of these IEC TCs is mirrored in AFSEC

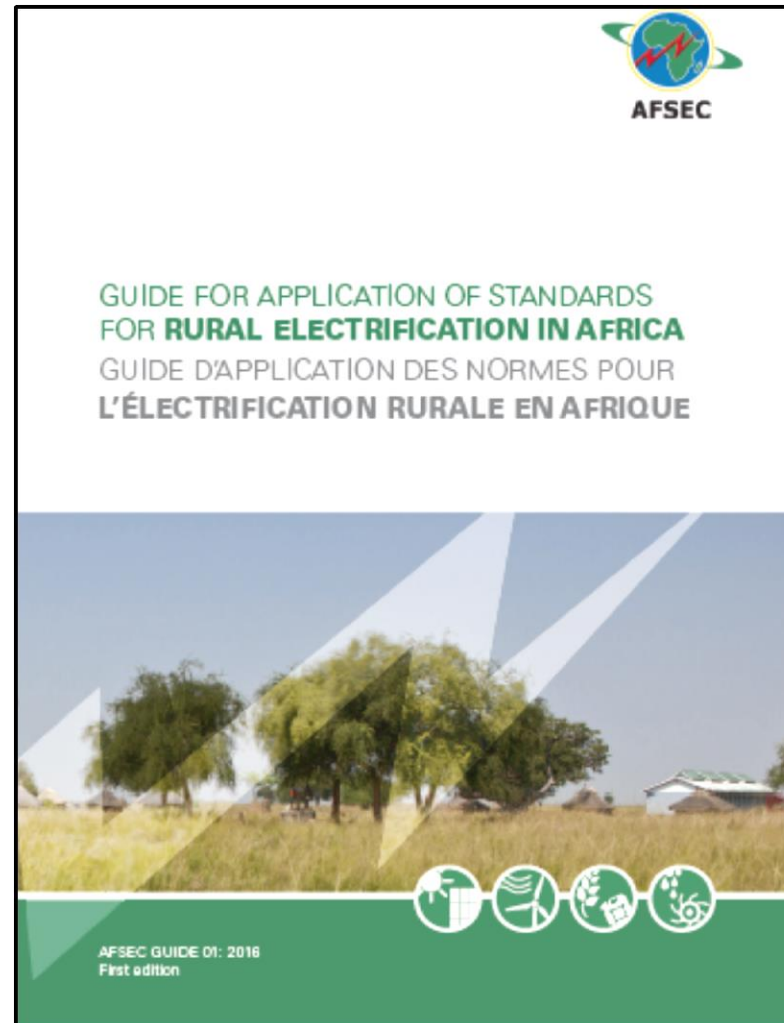


Application guides

To be developed by the AFSEC TCs - input and support from partner organizations required and welcomed

- First guide developed by a project team under AFSEC TC 82.
- ***Guide for application of standards for rural electrification in Africa***
- ***Bi-lingual***
- ***Support of PTB and DKE Germany acknowledged***
- Released at Fifth General Assembly, March 2016
- Freely available on AFSEC website

www.afsec-africa.org

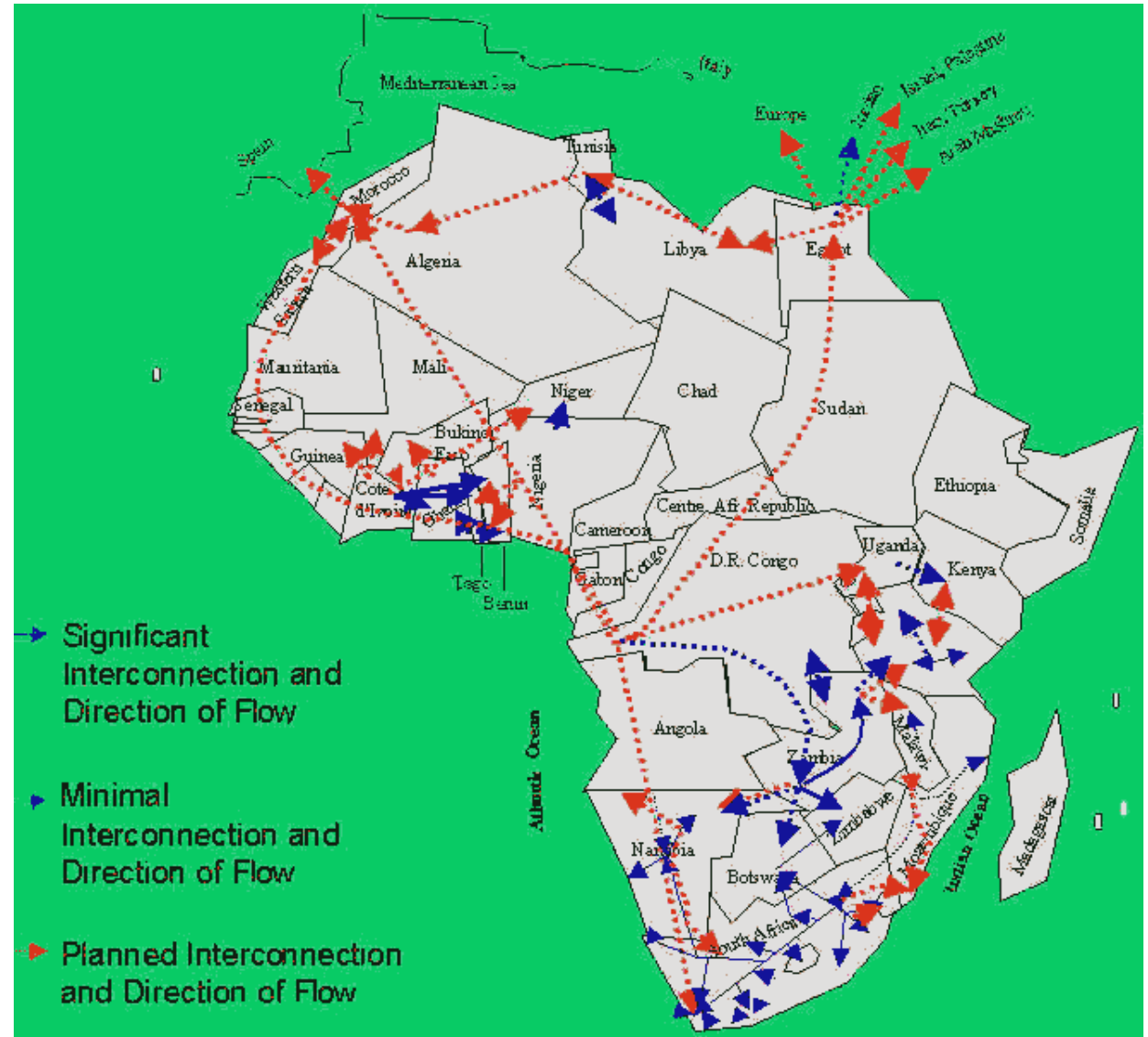


Development of pan-African electricity grid

The interconnections between African power pools now being established and being planned will result in an interconnected pan-African grid firmly connected to the European grid

Agreement on operational and network system standards are essential, while taking account of 21st century 'smart-grid' opportunities

AFSEC provides guidance on the standards to be adopted



Next steps for the technical work

- ATCs to consider draft IEC standards (CDs and CDVs) from the relevant IEC TC
 - Each AFSEC NEC has access to these working documents by arrangement with IEC
- Share comments and where mutual agreed, submit common comments
- Aim is to influence IEC standards for increasing suitability for direct adoption for application in Africa
- ATCs to propose standards developed by members for common adoption (e.g. South African National Standards identified in Guide 01)

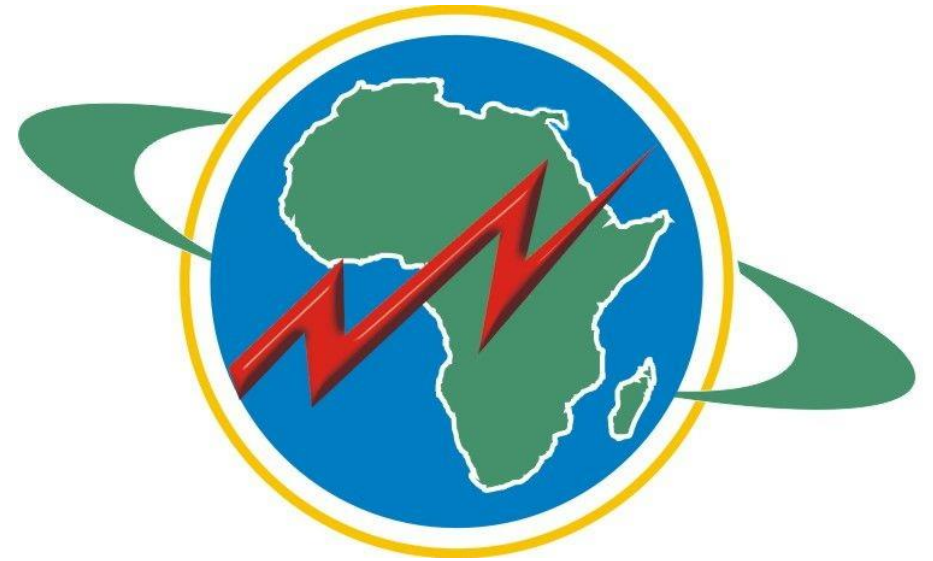
In summary

AFSEC can and will use its structure of members and stakeholders to promote the standards from IEC and other standards organization where relevant.

Feedback from practical implementations/projects is needed to know if adaptation of existing standards is appropriate, especially in relation to safety and reliability

The collaboration among AFSEC members will be used to influence future revisions of IEC standards.

AFSEC will continue to collaborate with IEC to build capacity in application of conformity assessment systems.



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In conclusion

- Electrotechnical infrastructure development in Africa is an exciting reality with many challenges
 - Power pool integration/cross border trade of power
 - Multi-country megaprojects
 - Pan-African power grid
 - Smart –grid evolution
 - Universal access to electricity/ modern energy systems in Africa/ appropriate appliances for African consumers
- Quality of electrical equipment, materials and appliances requires a standardization framework for stakeholders to reach agreement on the standards to be used, and improved conformity assessment.
- AFSEC has been established for this purpose.
- For AFSEC to be fully effective it requires increased membership and active participation of stakeholders/ collaboration with other institutions



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