Key message

For off-grid electricity systems to be “practical, reliable and durable” and for equipment and appliances meet energy efficient targets, there needs to be agreement among stakeholders on the technical standards to be applied.

Appropriate conformity assessment systems need to be in place and used to give the assurance that the performance criteria are being met.

Hence the “soft infrastructure” for standardization to implemented effectively needs to be in place.

AFSEC is developing to meet that need in Africa in collaboration with the IEC and other organizations.
IEC Family IN AFRICA

Paul Johnson
IEC ZA NC
AFSEC

Rural Energy Access
ECA Conference
Ethiopia 2013
Scope of the IEC

- Founded in 1906
- Promote international co-operation on all questions of standardization and conformity assessment
- International Standards and Conformity Assessment Systems for all electrical and electronic components, devices and systems
Types of participation

- IEC is a voluntary association of National Committees that fully represent electrotechnical interests in their countries
  - Government, industry, testing laboratories, academia, consumer groups...

- Membership – one member per country
  - Full Members (60)
  - Associate Members (22)

- Affiliate Country programme
  - 83 participants
82 National Committees

ALBANIA (AM) ALGERIA
ARGENTINA AUSTRALIA
AUSTRIA BAHRAIN (AM)
BELARUS BELGIUM
BHOSNIA-HERZEGOVINA (AM) BRAZIL
BULGARIA CANADA
CHILE CHINA
COLOMBIA CROATIA
CUBA (AM) CYPRUS (AM)
CZECH REPUBLIC DENMARK
EGYPT ESTONIA (AM)
FINLAND FRANCE
GERMANY GREECE
HUNGARY ICELAND (AM)
INDIA INDONESIA
IRAN IRAQ
IRELAND ISRAEL
ITALY JAPAN
JORDAN (AM) KAZAKHSTAN (AM)
KENYA (AM) KOREA, REP. OF
LATVIA (AM) LIBYA
LITHUANIA (AM) LUXEMBOURG
MALAYSIA MALTA (AM)
MEXICO MOLDOVA (MD)
MONTENEGRO (AM) MOROCCO (AM)
NETHERLANDS NEW ZEALAND
NIGERIA (AM) NORWAY
OMAN PAKISTAN
PHILIPPINES POLAND
PORTUGAL QATAR
ROMANIA RUSSIAN FEDERATION
SAUDI ARABIA SERBIA
SINGAPORE SLOVAKIA
SLOVENIA SOUTH AFRICA
SPAIN SRI LANKA (AM)
SWEDEN SWITZERLAND
THAILAND THE FYR OF MACEDONIA (AM)
TUNISIA (AM) TURKEY
UKRAINE UNITED ARAB EMIRATES
UK USA
VIETNAM (AM)
40 Affiliates in Africa, 3 potential ones

Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Central African Rep
Chad
Comoros
Congo
Congo DRC
Côte d’Ivoire
Djibouti
Eritrea
Ethiopia
Ghana
Gabon
Gambia
Guinea
Guinea Bissau
Gui.Equatorial

Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Rwanda
Senegal
Seychelles
Sierra Leone
South Sudan
Sudan
Swaziland
Tanzania
Togo
Uganda
Zambia
Zimbabwe
Free Programme to help developing countries comply with WTO TBT Agreement

- Active participation, but not a kind of membership

Affiliates use IEC International Standards on national level

- Access to 200 IEC IS for national adoption

Assistance to establish National Electrotechnical Committees

Selection of 10 technical fields to access and comment on working documents (up to and including CDV)

- Experts with login
Affiliate Programme in a nutshell (2/2)

- Guidance on IEC Conformity Assessment
- Active participation in IEC General Meetings
  - Attendance to technical meetings as observers
  - Affiliate Forum
- A Leader, a Secretariat, two Coordinators (Africa and Latin America)
- A dedicated zone in website and assistance through virtual meetings
  - www.iec.ch/affiliates
- Affiliate Plus status in 2009
Affiliate Team

- LEADER:
  - Phuntsho Wangdi – Bhutan

- COORDINATORS
  - Carlos Rodríguez - Costa Rica
  - Evah Oduor - Kenya
    - AFSEC Vice-President for CA

- SECRETARIAT
  - Françoise Rauser / Executive Secretary
  - Thomas Robertson / Project Coordinator
  - Sei-Yun Park / Assistant
To assist African Affiliates in using the Affiliate Country Programme to its full extent:

- Benefit from IEC IS and adopt relevant ones as national standards
- Participate in the preparation of IEC IS by commenting on IEC documents
- Make use of IEC Conformity Assessment Systems (IECEE, IECEx and IECQ)
- Establish NECs (National Electrotechnical Committees)
  - Guidelines prepared with Leader and IEC Central Office

Close collaboration with Leader and Executive Secretary

Collaboration with relevant regional organizations (SADC, EAC, ECOWAS…)

Liaison with AFSEC

Attends IEC General Meetings

Co-chairs workshops
Affiliate participation in Africa

- New Affiliate country: South Sudan (April 2013)
  - Initiative of the Ministry of Electricity and Dams to join the Programme
- Electronic library: 4441 IEC IS used in 29 African countries
  - 11 countries still passive
- Adoptions
  - 3782 IEC IS adopted by 37 Affiliate Countries; of which
  - 1594 IEC IS as national standards in 16 Affiliate Countries in Africa
- 19 National Electrotechnical Committees (NECs) in Africa
  - New: Burundi (Jan 13)
- 9 Affiliate Plus countries in Africa
  - Criteria: have a NEC and adopted minimum 50 IEC IS
  - Ethiopia (Nov 12)
1. IEC 60099: Surge arresters (TC 37)
2. IEC 62561: Lightning protection system components (LPSC) (TC 81)
3. IEC 62053: Electricity metering equipment (a.c.) - Particular requirements (TC 13)
4. IEC 62056: Electricity metering data exchange - The DLMS/COSEM suite (TC 13)
5. IEC 62058: Electricity metering equipment (AC) - Acceptance inspection (TC 13)
6. IEC 62305: Protection against lightning (TC 81)
7. IEC 61869: Instrument transformers (TC 38)
8. IEC 62055: Electricity metering - Payment systems (TC 13)
9. IEC 62059: Electricity metering equipment - Dependability (TC 13)
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<td>04</td>
<td>97</td>
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<td>SAZ IEC</td>
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</table>
Dialogue 17: Survey sent in November 2012

Objective: to assess Affiliate country current situation and their needs to establish true NEC and increase their participation in IEC technical work

56 countries participated
- 50% Africa, 25% Latin America, 25% Asia-Pacific

Needs identified from the survey:
- Establish or support NEC (45%)
- Commenting on technical documents (79%)
- National adoption (66%)
- Establish mirror committees (59%)
- Other (34%)

Implementation July 2013

Affiliate Forum 2013 on Mentoring at the General Meeting in New Delhi
Partnerships between IEC NCs and Affiliate NECs

Voluntary programme lasting up to two years

Progress report after one year and another at the end of the period

Two levels of mentoring: management and technical
Affiliates were split into four categories according to the following criteria:

- **AFF Group 1 - Affiliate Plus - Priority for mentoring**
  - NEC and 50 adoptions
- **AFF Group 2 - Potential Affiliate Plus**
  - NEC with less than 50 adoptions or no adoption
- **AFF Group 3 - Active Affiliates**
  - No NEC, with or without adoptions
- **AFF Group 4 - Passive Affiliates**
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</tbody>
</table>
First case: Rwanda and Austria

- July 2013, Rwanda NEC requested to benefit from IEC Mentoring Programme.
- July 2013, Mentoring agreement signed between Austria and Rwanda.
- September 2013, Mentoring activities begin.
- Mentoring activities planned:
  - Reinforcement of the existing NEC
  - Adoption of IEC International Standards
  - Establishment of mirror committees of the IEC
  - Commenting on IEC draft standards
- October 2013, Affiliate Forum: Rwanda and Austria invited to share their experiences.
IEC structure

IEC COUNCIL
Full Member National Committees

COUNCIL BOARD
EXECUTIVE COMMITTEE (IEC Officers)

STANDARDIZATION MANAGEMENT BOARD (SMB)
Management of consensus International Standards work

MARKET STRATEGY BOARD (MSB)
Technology watch / market priorities

CONFORMITY ASSESSMENT BOARD (CAB)
Management of Conformity Assessment operations and systems

Technical Committees
SC PT MT WG

Technical Advisory Committees

Strategic Groups

Special Working Groups

IECEE
IECEx
IECQ
Renewable energies

Legislative
Decision-making
Executive
Advisory
IEC CA Systems

CAB - Conformity Assessment Board

IECEE
System of Conformity Assessment Schemes for Electrotechnical Equipment and Components

IECEx
System for Certification to Standards Relating to Equipment for use in Explosive Atmospheres

IECQ
Quality Assessment System for Electronic Components

CB Scheme

CB-FCS Scheme

PV Programme

E3 Energy Efficiency

Ex Equipment

Ex Services

Ex Personnel

Active & Passive components

Processes

HSPM

Avionics

Hazardous Substances

IEC

IECEx

IECQ

IEC

IECEx

IECQ

IEC
ACAS for developing countries

- Survey sent in November 2012 (Dialogue 16)
- Identify Affiliate needs to support and find adapted solutions in conformity assessment within IEC
- 52 countries participated
  - 50% Africa, 29% Latin America, 21% Asia-Pacific
- New IEC ACAS (Affiliate CA Status) was submitted for CAB decision in June 2013 and received formal approval
- Launch of ACAS July 2013
ACAS benefits

- Regional awareness events
- Documentation and guides on conformity assessment at the IEC
- Webinars (upon request)
- Learning modules on IEC website and CD-ROMs (under development)
- A resource database (under development)
- Active participation in each system, based on prerequisite training conditions
IECEx-AFSEC regional seminar in Abidjan

- IECEx and AFSEC in collaboration with AFREC, UPDEA, CODINORM, in partnership with the electrical utilities CIE and CIPREL
- International event for the benefit of Africa in Abidjan, Côte D’Ivoire, 28-30 November 2012
- 40 participants from 9 African countries
  - 3 IEC Members: Kenya, South Africa, Tunisia
  - 6 IEC Affiliates: Cameroon, Côte D’Ivoire, DRC, Ghana, Mali, Zimbabwe
- Seminar addressed professionals from different sectors:
  - oil (6), gas (6), electricity (9), standardization (8), hospital (3), ministerial agencies (2), building and development (3), telecommunications (1), ABB (2)
- Intervention of 2 experts involved with the work of IEC TC 31: Equipment for explosive atmospheres
  - Theoretical approach of the implementation of IEC IS 60079-14, 60079-17 and 60079-10-1 on classification of areas
  - Inspection of the CIE and CIPREL sites
IECEE-AFSEC organized a regional event for the benefit of Africa in Nairobi, Kenya, 26-27 August 2013

Participation: IEC Members, IEC Affiliates, AFSEC Members

62 participants from 14 African countries

- 4 IEC Members: Egypt, Kenya, Nigeria and South Africa
- 10 IEC Affiliates: Côte D’Ivoire, DRC, Ethiopia, Gabon, Ghana, Namibia, Rwanda, Tanzania, Uganda and Zambia

Target: Utilities, NSBs, NCs/NECs, laboratories, retailers, regulators, consumers

Seminar in English (French translation)

Programme:

- Electrical safety of electrical appliances (refrigerators, freezers, television, luminaires)
- Testing and issuing certificates
IEC TC 82 - SE4ALL webinar, May 2013

Presentation of IEC work on renewable energy standards and its commitment to the UN Foundation SE4ALL (Sustainable Energy for All) initiative

IEC offers three packages of standards relating to rural electrification at a discounted price

Objective: to facilitate access to sustainable energy standards for stakeholders in developing countries

More information on the webinar: https://cleanenergysolutions.org/training/rural-electrification-sustainable-standards
- Under UN SE4ALL discount on IEC 62257 series
- Access to important technical documents to support rural electrification in developing countries
- 75% discount on IEC 62257-9-5 with or without normative references
- 58% on entire IEC 62257 series with normative references
- 50% on individual parts with or without normative references
AFSEC

African Electrotechnical Standardization Commission
Where did we come from?

- Initiative of the African electricity utilities 2005 - In collaboration with AFREC
- Declarations of conference of ministers of Energy, March 2006 and February 2008 – to be a subsidiary body of AFREC
- Inaugurated in February 2008, in Ghana, with 10 founding members
Membership

- Statutory members:
  National Electrotechnical committees

Currently 14: 10 founding members + Namibia, Rwanda, D R Congo and Zambia

- Affiliate members:
  - Regional Economic Communities
  - Organizations with an interest in the electric power sector e.g. African power pools
  - African Power Utilities Association (APUA)
  - African Energy Commission
Some similarities
CENELEC – European Union

- Post second world war: need to promote inter-country trade in Europe – development of a regional trading block
- Harmonized standards: minimize national differences
- Started with a few countries
- Evolved to have close collaboration with IEC
Standards used were mainly NATIONAL (different) standards from the colonizing countries (British/French/German, etc)

1960’s - “Unscramble from Africa” by Europe

Hiatus in the standards infrastructure (if it existed)

Few national standards bodies – cooperation though OAU/ARSO: 1970. But little capacity to consider electrotechnical standards

Development of regional trading blocks (e.g. SADC/COMESA) – hampered by lack of infrastructure to agree on standards/regulations

Porous borders – imports of poor quality goods

Little capacity for local manufacture of electrical equipment/ even less to test for compliance to standards

Little capacity/structure to evaluate/adopt international electrotechnical standards
Recognition of need for improving the standardization infrastructure for the physical infrastructure in the founding documents of – NEPAD/AU and African Energy Commission AFREC

Millennium development goals targets

- Electrification – universal access

Net generation shortage to meet the needs- alternative technologies – new standards (PV/Wind/tidal/CSP/electrical energy storage)
Although some 40 African countries in IEC affiliate country programme, many have yet to adopted ANY IEC standards as national reference standards.

Among the remainder + 8 members/associate members, each country adopts standards according to national interests, but with no coordination of needs for regional integration. AFSEC is set to fill that role.
The size implies massive needs and opportunities for infrastructure development – requiring appropriate standards.

Some 58% (580 million and growing) waiting for access to electricity and electrical appliances conforming to appropriate standards.
AFSEC plans to prepare guides for application of appropriate standards for rural electrification in Africa

Initial workshop on rural electrification August 2012 - Johannesburg

Project team established

IEC has provided access to IEC 62257 series

Project plan established

Funding now being sought to make progress
Pan African quality infrastructure
Thank you